



MANUAL DE SERVICIO

DARSE CUENTA

Toda la información incluida en esta publicación se basa en la información más reciente disponible en el momento de aprobarse la impresión.

Todas las ilustraciones que aparecen en este manual pueden ser diferentes de los vehículos reales.

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PREFACIO

Estamos encantados de ofrecerle la primera edición de la nueva **Televisores Apache RTR 200 4V** manual de servicio de la motocicleta.

Este manual está preparada para proporcionar la asistencia durante el proceso del servicio de la nueva **Televisores Apache RTR 200 4V** motocicleta.

En este manual se describe acerca de las operaciones básicas de este nuevo producto, qué hacer y qué no lo es, los límites de servicio de los componentes individuales y subsistemas cuando dé servicio al

Televisores Apache RTR 200 4V motocicleta. Le rogamos que siga cuidadosamente este manual y siga las instrucciones dadas.

Todas las instrucciones e ilustraciones de este manual se preparan con base en la información reciente disponible durante la preparación del manual. Modificaciones o cualquier mejora en el producto serán comunicadas a través de ' **Boletines de información SERVICIO** ' de vez en cuando.

Este manual le ayudará a los técnicos que ya tienen conocimientos técnicos sobre las motocicletas.

Si bien el servicio, algunas partes pueden necesitar ser reemplazados. Para ordenar repuestos consulte **Catálogo de piezas de TVS APACHE RTR 200 4V** motocicleta. Las ilustraciones de este manual no le puede dar el nombre exacto, número de pieza y cantidades.

En caso, se enfrentan a problemas críticos durante el curso de mantenimiento y si necesita cualquier otra aclaración o asistencia técnica puede contactar con nuestro servicio de área personal.

También puede ponerse en contacto con nosotros en

TVS Motor Company Limited, Marketing (Servicio)
Departamento, Post cuadro No.4, HARITA, Hosur -
635 109, Tamil Nadu, India.

CÓMO LEER ESTE MANUAL

Este manual de servicio está dividida en siete capítulos como "Información general", "Mantenimiento periódico", "Mantenimiento del motor", "Sistema de combustible, lubricación y de escape", "Sistema eléctrico", "chasis" y "Información de servicio".

Sobre todo las páginas se disponen en dos columnas en las páginas interiores con las instrucciones en el lado izquierdo y las ilustraciones en el lado derecho. Algunos de los dibujos de despiece ocupan páginas enteras. En medio de las instrucciones de funcionamiento que hemos utilizado las anotaciones como por los ejemplos que se dan a continuación:

Título:- CADENA conjunto de accionamiento

Sub partida: - laxitud cadena

Nota :- Esto proporciona una mayor clarificación de comprensión clara de cualquier información / operación / datos en particular.

Nota:

Inspeccionar y ajustar la velocidad de ralenti después de completar todas las otras acciones de mantenimiento.

Precaución / advertencia: - Esto indica procedimientos especiales de las precauciones que han de seguirse por la mecánica durante el servicio. Evitar estos mensajes puede causar daño a ellos, así como daños en los componentes.

Precaución:

Compruebe que la entrada de junta está intacta y en buenas condiciones.

Herramientas manuales :-

17 mm llave

	Parte? Número	Descripción
Herramientas especiales :-	N231 002 0	herramienta de apriete la tuerca del embrague

Límites de servicio: -	límite de servicio	0,05 mm
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Televisores Apache RTR 200 4V



Fig. 1.1

LADO DERECHO



Fig. 1.2

LADO IZQUIERDO

NÚMEROS DE IDENTIFICACIÓN DEL VEHÍCULO

LOCALIDADES

NÚMERO DE CUADRO

El número de serie del bastidor está impreso en el lado derecho de la pipa de dirección. (Fig. 1.3)



Fig. 1.3

NÚMERO DE MOTOR

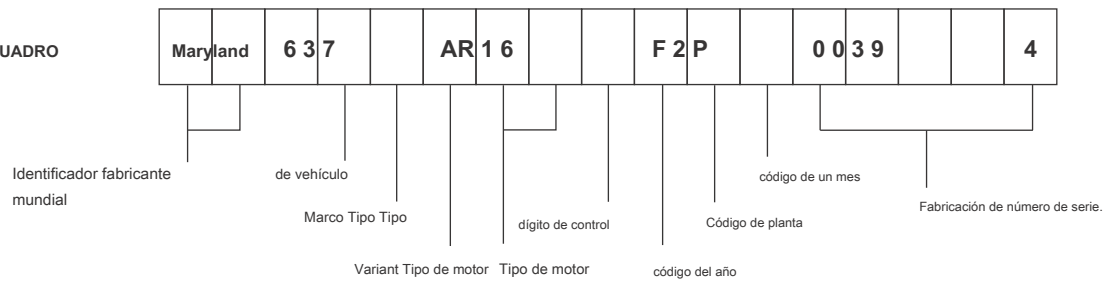
El número de serie del motor está estampado en la montaje izquierda del cárter lateral cerca de bloque de cilindros. (Fig. 1.4)



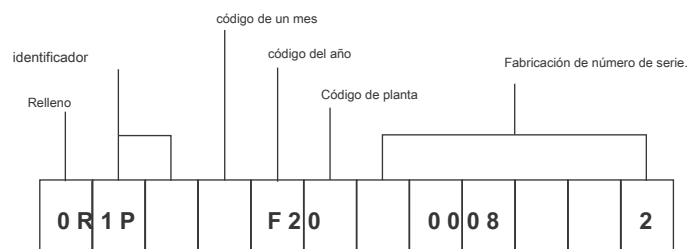
Fig. 1.4

Bastidor y del motor códigos numéricos

NÚMERO DE CUADRO



NÚMERO DE MOTOR



Año y mes CÓDIGOS

CÓDIGO DE LA PRODUCCIÓN DE AÑO

CÓDIGO	AÑO
1	2001
2	2002
3	2003
4	2004
5	2005
6	2006
7	2007
8	2008
9	2009
UNA	2010
segundo	2011
do	2012
re	2013
mi	2014
F	2015
sol	2016
H	2017
J	2018
K	2019
L	2020
METRO	2021
norte	2022
PAG	2023
R	2024
S	2025
T	2026
V	2027
W	2028
X	2029
Y	2030

CÓDIGO PARA LA PRODUCCIÓN DE MES

CÓDIGO	MES
UNA	ENERO
segundo	FEBRERO
do	MARZO
re	ABRIL
mi	MAYO
F	JUNIO
sol	JULIO
H	AGOSTO
K	SEPTIEMBRE
L	OCTUBRE
norte	NOVIEMBRE
PAG	DICIEMBRE

ESPECIFICACIONES TÉCNICAS

DIMENSIONES Y PESO

Longitud total	2050 mm
Ancho promedio	790 mm
Altura total	1105 mm
Altura del asiento	800 mm
Claridad del piso	180 mm
Distancia entre ejes	1353 mm
Peso en vacío (con conjunto de herramientas y el 90% de combustible)	148 kg
carga útil	130 kg
peso máximo de carga	278 kg

MOTOR

Tipo	4 tiempos, refrigerado por aceite, monocilindro OHC
Aburrir	66 mm
Carrera	57,8 mm
Desplazamiento del pistón	197,75 cc
Índice de compresión	9.7: 1
No. de válvulas	4
tipo de carburador	Keihin CV 30 VE
Filtro de aire	El filtro de papel viscoso
Filtro de aceite	malla de alambre y papel de filtro micrónico
Sistema de lubricación	cárter húmedo forzado
La potencia máxima en kW	15,09 kW (20,5 PS) @ 8500 rpm
El par máximo en Nm	18,1 Nm @ 7000 rpm
Velocidad máxima	Alrededor de 128 kmh
rpm de ralentí del motor (en la condición caliente)	1500 ± 100 rpm
Sistema de arranque	Arrancador eléctrico

TRANSMISIÓN

Embrague	Wet - tipo multidisco
patrón de cambio de marcha	1 hacia abajo y 4 hasta
transmisión primaria	Los engranajes helicoidales
transmisión secundaria	Cadena y piñones

ESPECIFICACIONES TÉCNICAS

RELACIÓN DE TRANSMISIÓN

Primera marcha	2,917
Segunda marcha	1.857
tercera velocidad	1,333
cuarta velocidad	1.050
Quinta velocidad	0,880
reducción primaria	2,818
reducción secundaria	3,461

CHASIS

Cuadro	Doble TIESO Cuna de Split Synchro (DCSSS)		
Suspensión delantera	aceite telescópica amortiguada		
Suspensión trasera	Gas amortiguador Mono cargada, de 7 pasos ajustable con brazo basculante rectangular		
Ángulo de dirección	34 °		
Ángulo de avance	25,5 °		
longitud Trail	95,5 mm		
Frenos	Frente	Mano operado, 270 mm disco pétalo	
	Posterior	Foot operado, 240 mm disco pétalo	
Neumático*	Frente	90/90 x 17 Tubeless	
	Posterior	130/70 x 17 Tubeless	
Presión de los neumáticos	Frente	1,75 kg / cm (2 ⁵ PSI)	
	Posterior	Solo	2,00 kg / cm (2 ⁸ PSI)
		Doble	2,25 kg / cm (3 ² PSI)

ELÉCTRICO

Tipo	generador de corriente alterna		
Sistema de encendido	La carga del motor de encendido digital basada - IDI		
Bujía	BOSCH - UR4KE		
Tipo de Batería	12V, 9 Ah		
puesta a tierra del cuerpo	terminal negativo		
Generador	Fly rueda magneto 12V, 200W		
lámpara de cabeza	12V, 60 / 55W H4 x 1		
La luz de posición	lámpara de LED (2W) x 2		
Lámpara de cola / freno	indicador LED (1W máx. / 2,5 W máx.)		
Intermitente	12V, 10W x 4		
alumbrado de la placa Número	12V, 5W x 1		
Tablero de instrumentos	LCD / LED indicadores		
cuerno	12V, DC x 2		
Fusible	12V, 15A y 10A (cada uno)		

* Los neumáticos instalados en este vehículo cumplen los requisitos especificados por BIS y cumplen con los requisitos establecidos en Central Motor Vehículos reglas (CMVR), 1989.

ESPECIFICACIONES TÉCNICAS

CAPACIDADES

Tipo de combustible	gasolina sin plomo
Capacidad del tanque de combustible*	12 litros (incluyendo reserva)
reserva	2,5 litros
grado de aceite de la transmisión del motor cum	TVS TRU4 aceite completamente sintético (SAE 10W30 API SL, JASO MA2)
capacidad de aceite de la transmisión del motor cum	1200 ml (después de drenaje) 1400 ml (encajona de desmontaje)
Frente grado de aceite tenedor	aceite de KYB G10
cantidad de aceite tenedor delante	325 ± 2 cc
Líquido de los frenos	TVS Griling DOT 3 / DOT 4

Nota:

Especificación están sujetos a cambios en la cuenta de mejoras continuas en el producto.

* El depósito de combustible no es un instrumento de medida y la capacidad del depósito de combustible puede variar de la capacidad indicada.

Ventajas y particularidades de televisores APACHE RTR 200 4V

- | 200 CC, 4 de válvula, aprender quemar el motor con la potencia de pico de 20,5 PS @ 8500 rpm y un par máximo de 18,1 Nm @ 7000 rpm ayuda a alcanzar la velocidad de 0 a 60 kilómetros por hora en 3,9 segundos.
- | IDI - La carga del motor basa encendido digital, en sintonía para la entrega de potencia suave
- | Alta combustión pistón nanofriks recubierto
- | 6 embrague de disco para el lanzamiento de carreras
- | caja de cambios de 5 velocidades para alta velocidad
- | Large resonador de admisión - aumenta el par de gama baja
- | filtro de papel en el filtro de aire para una mayor durabilidad
- | Aceite enfrió junto con refrigeración asistida de aire dinámico para un rendimiento óptimo del motor
- | sistema de escape tubo de escape de acero inoxidable
- | Doble escape barril diseñado con técnicas de diseño de sonido Europea
- | origen Race doble cuna división Syncro marco rígido
- | válvula de retención doble frente arbusto tenedor de suspensión delantera excelente y suave
- | KYB suspensión tubo mono para las carreras agresivo
- | Los frenos de disco lobulado roto
- | neumáticos Remora agarre Race (neumáticos Pirelli opcional)
- | Aluminio forjado manillar
- | pantalla interactiva de carreras
- | Todo nuevo - la lámpara del día del LED
- | carenado tanque agresivo
- | Racing conjunto de asiento de división ergo
- | Longer base de la rueda para una mejor estabilidad

TÉRMINOS DE GARANTIA

Televisores Apache RTR 200 4V

24 meses desde la fecha de venta o 30.000 km, cualquiera de los dos ocurra primero

RUNNING - EN PERIODO

Los primeros 1000 km es una parte crucial. Buen funcionamiento en funcionamiento durante este período ayuda a la hora de garantizar una vida más larga y un funcionamiento sin problemas de **Televisores Apache RTR 200 4V**.

La fiabilidad y el rendimiento de **Televisores Apache RTR 200 4V** depende de cuidados especiales y restringir ejercido durante el período de rodaje. Es especialmente importante que evite el funcionamiento del motor de una manera, que podría dejar expuestas las piezas del motor a un calor excesivo. La velocidad máxima recomendada hasta 750 km es de 50 km / h.

No circule a baja velocidad constante durante un tiempo más largo durante cualquier parte del período de rodaje. Mantener la variación de la velocidad del motor para un mejor acoplamiento de las piezas.

Combustible y aceite RECOMENDACIONES

Televisores Apache RTR 200 4V tiene un motor de cuatro tiempos. No mezcle el aceite con la gasolina. Asegúrese de utilizar el siguiente combustible y el aceite especificado.

Combustible:

- ¡ gasolina sin plomo con número de octano entre 85 a 95 por el método de investigación.
- ¡ Utilice aditivos de combustible **IFTEX** en la gasolina según lo recomendado por el fabricante para la deposición de bajo carbono.

aceites:

Solicitud	Cantidad	fabricante Marca	
aceite de la transmisión cum motor de 1200 ml (durante el servicio regular) TVS-M	1400 ml (en caso de desmontaje)	TVS TRU4 aceite completamente sintético (SAE 10W30 API SL, JASO MA2)	
aceite de tenedor delante	325 ± 2 cc	KYB	aceite de KYB G10
aceite de los frenos de disco	-	TVS Girling	DOT 3 / DOT 4

Otro lubricante:

Solicitud	Cantidad	Fabricante	Marca
Grasa	-	Bharat petróleo	MP Grease no. 3
		COI	Servo Gem no. 3
		Bechem	Bechem prima de grado 3
		Klüber Lubrication	Klüber Centoplex 2
lubricante para cadenas	-	TVS Motor Company	SPRAY TRU

PRECAUCIONES E INSTRUCCIONES GENERALES

Tenga en cuenta las siguientes precauciones sin fallar cuando desmontaje y el montaje.

- ¡ No haga funcionar el motor en espacios cerrados con poca o ninguna ventilación.
- ¡ Asegúrese de reemplazar las juntas, las juntas tóricas, anillos de seguridad y chavetas por otras nuevas, para la seguridad.
- ¡ Al apretar tuercas y tornillos, empezar primero con los más grandes o centro. Apretar estos con el par especificado usando un patrón cruzado.
- ¡ Uso especifica solamente herramientas especiales y comunes.
- ¡ Cuando el motor y los componentes de accionamiento finales son desmontados y inspeccionado, revestir las superficies de acoplamiento con una lubricante para evitar la corrosión.
- ¡ Durante el montaje de los componentes, el uso de lubricantes recomendados.
- ¡ Después de montar, comprobar cada parte para su correcta instalación, el movimiento y el funcionamiento.
- ¡ garantizar siempre la seguridad mutua cuando se trabaja con los socios.
- ¡ Utilice únicamente **TVS Motor Company** piezas y lubricantes recomendados.

LISTA DE necesidad de usar herramientas

1. Llaves de cabeza plana:

7 mm, 8 mm, 10 mm, 12 mm, 14 mm y 21 mm

2. Llaves de:

8 mm, 9 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 16 mm, 17 mm, 22 mm, 24 mm, 27 mm y 32 mm

3. llaves tubulares:

8 mm, 10 mm, 12 mm, 14 mm, 16 mm y 17 mm

4. llaves de vaso:

12 mm, 14 mm, 17 mm, 22 mm, 27 mm y 32 mm

5. Teclas de Allen:

4 mm, 6 mm, 8 mm, 10 mm y 12 mm

6. conductores de tornillo:

controlador-pequeño tornillo plana, destornillador plano, cabeza Phillips no.1 destornillador, cabeza Phillips destornillador no. 2 y Phillips cabeza del tornillo conductor no. 3

7. Martillos:

martillo Nylon, mazo de goma y un martillo de metal

8. Alicates:

alicates recta nariz, la combinación de los alicates, alicates bomba de agua, externo circlip alicates-6 pulgadas y el anillo elástico circlip alicates-7 pulgadas

9. Otros:

Deriva, cincel, tapón de llave, el medidor de compresión, adoptante especial, micrómetro, calibrador Vernier, un medidor de escala, placa de superficie y un plato caliente

Lista de herramientas especiales que se requieren

Sl. no.	Número de parte.	Descripción
1	M131 002 0	extractor de Magneto
2	M131 007 0	ajustador de empujador
3	M131 011 0	estructura de tracción - cárter
4	N231 001 0	herramienta útil de embrague
5	N231 002 0	herramienta de apriete la tuerca del embrague
6	N931 009 0	Frente tenedor instalador de sello de aceite
7	N931 011 0	soporte del cilindro tenedor Tool
8	N931 012 0	Herramienta de precarga
9	N931 013 0	Herramienta de instalación de cono inferior
10	N931 014 0	Herramienta para tuercas de dirección
11	N931 015 0	Herramienta de servicio de brazo oscilante
12	N931 016 0	Herramienta de taza de dirección removedor
13	N931 017 0	conjunto de herramienta Magneto
14	NB31 004 0	Herramienta de montaje copas de dirección ajustador
15	S131 002 0	entrada Extractor y la válvula de escape
dieciséis	S131 050 0	Teniendo conjunto instalador
17	S131 111 0	extractor de cojinete principal
	031 180 0	indicador de nivel de aceite tenedor delante
19	031 240 1	removedor de la junta de aceite universal

HERRAMIENTAS ESPECIALES Y SU APLICACIÓN

1. Magneto puller - M131 002 0 (Fig 1.5A).

Se utiliza para quitar el rotor del magneto de la conjunto del cigüeñal. (Fig. 1.5B)

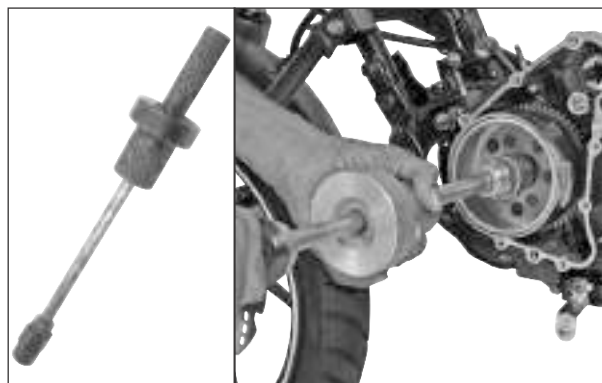


Fig. 1.5A

Fig. 1.5b

2. Varilla de levantamiento ajustador - M131 007 0 (Fig.1 6A)

Se utiliza para ajustar el juego de válvulas de la válvula. (Fig. 1.6B)

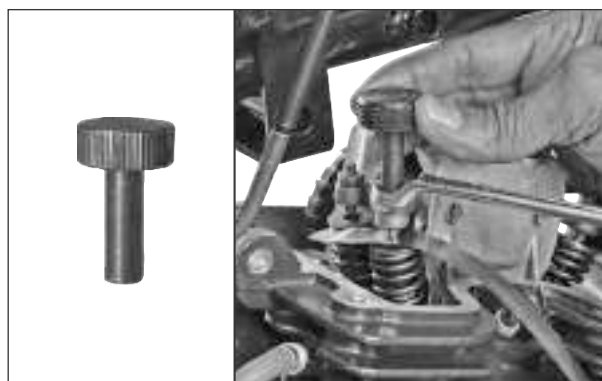


Fig. 1.6A

Fig. 1.6B

3. Conjunto de tirador de cárter - M131 011 0 (Fig 1,7A).

Se utiliza para separar la parte izquierda ya la derecha cárteres. (Fig. 1.7b)

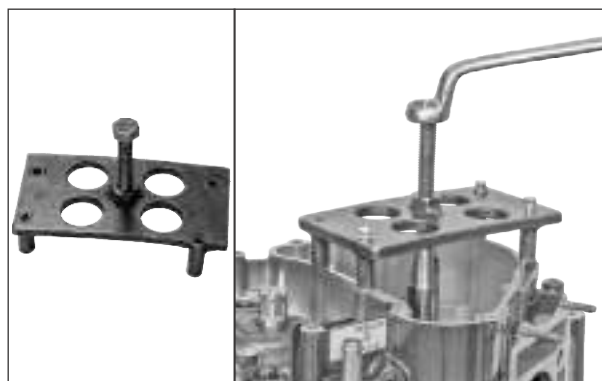


Fig. 1,7A

Fig. 1.7b

4. herramienta de soporte de embrague - N231 001 0 (Fig.1.8A)

Se utiliza para mantener el conjunto de embrague durante conjunto de embrague de montaje eliminación tuerca. (Fig. 1.8B)



Fig. 1.8A

Fig. 1.8B

5. Embrague herramienta de tuerca de apriete - N231 002 0 (Fig.1.9A)

Se utiliza para quitar / volver a montar la tuerca del embrague durante el mantenimiento del embrague. (Fig. 1.9B)

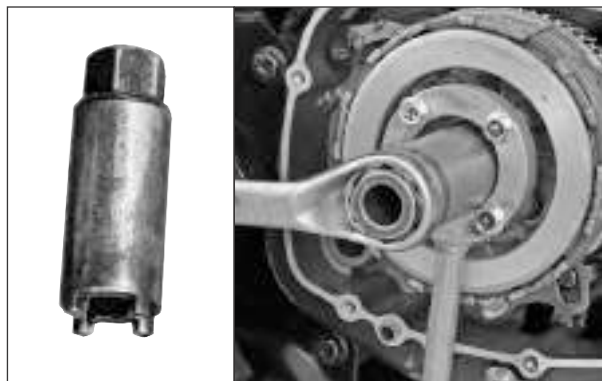


Fig. 1.9A

Fig. 1.9B

6. Frente instalador sello de aceite tenedor - N931 009 0 (Fig 1.10A).

Se utiliza para montar el sello de aceite tenedor frontal y tapa contra el polvo. (Fig. 1.10b)

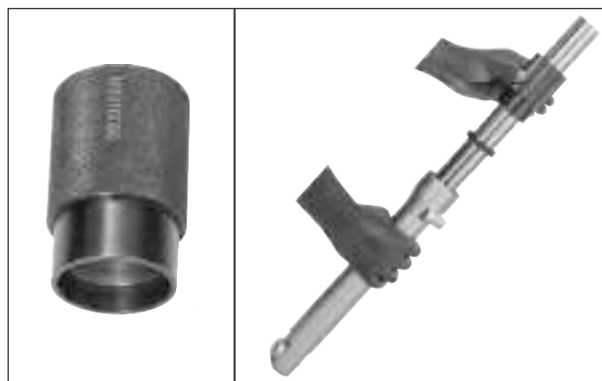


Fig. 1.10A

Fig. 1.10b

7. Herramienta de soporte del cilindro tenedor - N931 011 0 (Fig. 1.11A)

Se utiliza para mantener el cilindro tenedor frontal durante el tenedor desmantelamiento conjunto de pata. (Fig. 1.11b)

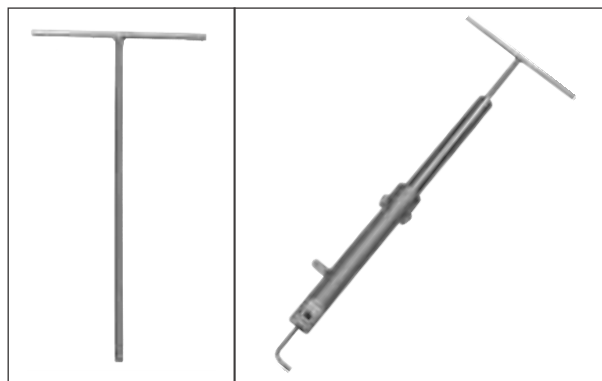


Fig. 1.11A

Fig. 1.11b

8. Herramienta de pre-carga ajustador - N931 012 0 (Fig. 1.12A)

Se utiliza para ajustar el monoamortiguador trasero pre-primavera carga. (Fig. 1.12b)



Fig. 1.12A

Fig. 1.12b

9. Herramienta de cono inferior instalador - N931 013 0 (Fig. 1.13a)

Se utiliza para montar la parte inferior del cono a la
vástago de dirección. (Fig. 1.13b)

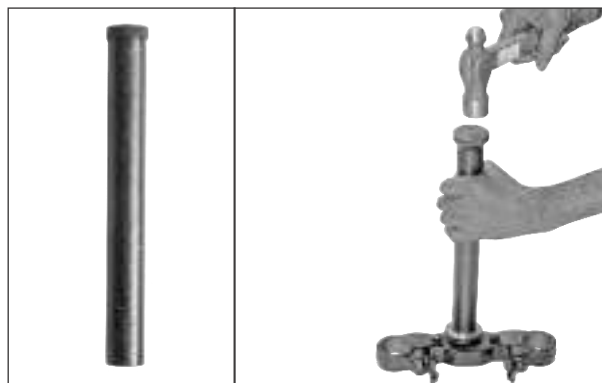


Fig. 1.13a

Fig. 1.13b

10. Herramienta de tuerca de dirección - N931 014 0 (Fig. 1.14a)

Se utiliza para eliminar / montar el bloqueo de dirección
tuerca y vástago de dirección descargador. (Fig. 1.14b)

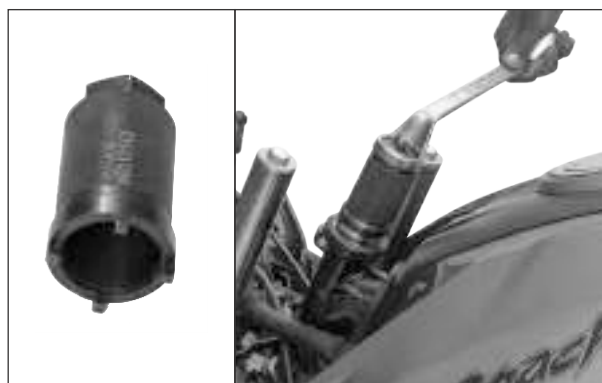


Fig. 1.14a

Fig. 1.14b

11. Herramienta de servicio de brazo basculante - N931 015 0 (Fig. 1.15a)

Se utiliza para eliminar y volver a montar el columpio
armar cojinetes de agujas. (Fig. 1.15b)



Fig. 1.15a

Fig. 1.15b

12. Herramienta de taza de dirección remover - N931 016 0 (Fig. 1.16a)

Se utiliza para eliminar la dirección superior e inferior
tazas. (Fig. 1.16B)

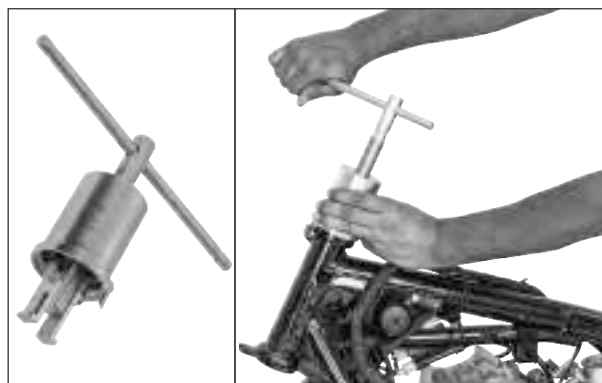


Fig. 1.16a

Fig. 1.16B

13. conjunto de herramienta Magneto - N931 017 0 (Fig. 1.17A)

- Se utiliza para mantener el magneto al rotor mientras la eliminación / montaje de las tuercas de engranaje de arrastre y del rotor magneto primarios. (Fig. 1.17B)



Fig. 1.17A

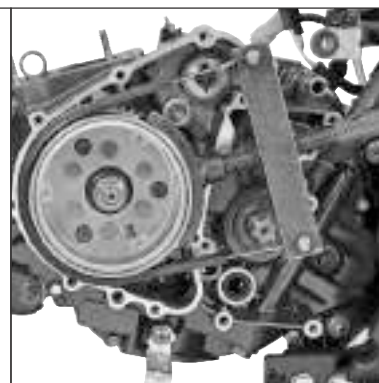


Fig. 1.17B

14. Herramienta de tazas de dirección conjunto ajustador - NB31 004 0 (Fig. 1.18a)

- Se utiliza para montar el fondo de la copa y la raza gobierno interior durante el mantenimiento de la dirección. (Fig. 1.18b)



Fig. 1.18a



Fig. 1.18b

15. Extractor de entrada y la válvula de escape - S131 002 0 (Fig. 1.19a)

- Se utiliza para mantener la compresión la entrada y primavera valor de escape durante la eliminación de válvulas. (Fig. 1.19B)



Fig. 1.19a

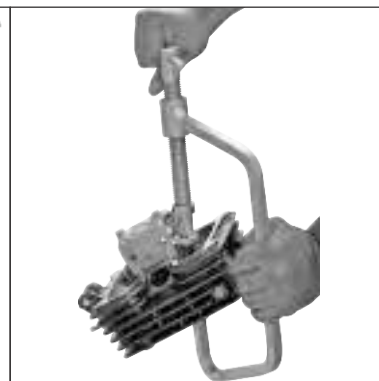


Fig. 1.19B

16. oso ing conjunto ler instal - S131 050 0 (Fig. 1.20A)

- Se utiliza para eliminar / montar los cojinetes, sellos de aceite y arbustos. (Fig. 1.20B)

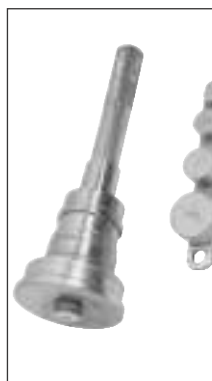


Fig. 1.20A

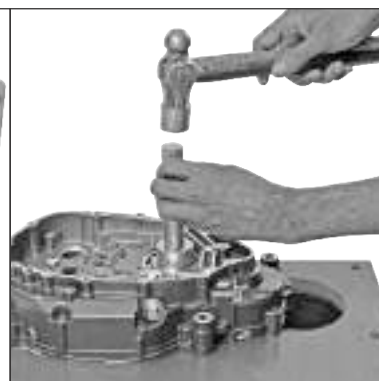


Fig. 1.20B

17. extractor de rodamientos principal - S131 111 0 (Fig. 1.21A)

Se utiliza para eliminar el cojinete principal de la cigüeñal. (Fig. 1.21b)

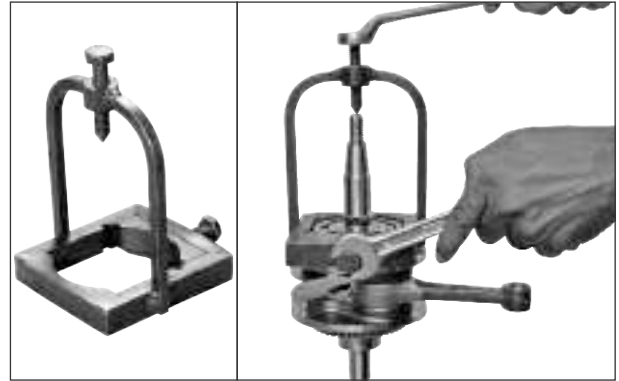


Fig. 1.21A

Fig. 1.21b

18. Frente indicador de nivel de aceite tenedor - 031 180 0 (Fig. 1.22A)

Se utiliza para mantener el nivel de aceite tenedor delante en el altura especificada. (Fig. 1.22B)

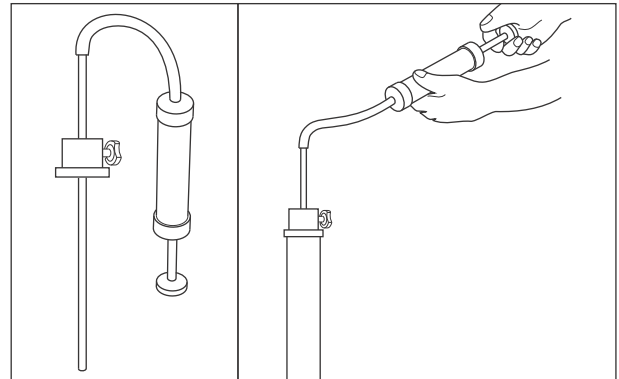


Fig. 1.22A

Fig. 1.22B

19. Universal sello de aceite remover - 031 240 1 (Fig. 1.23A)

Se utiliza para eliminar los retenes instalados. (Fig. 1.23B)

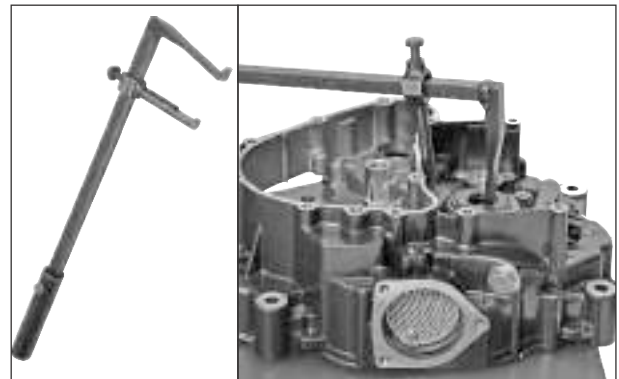


Fig. 1.23A

Fig. 1.23B

DESCRIPCIÓN	PÁGINA NO	Capitulo 2
PROGRAMA DE MANTENIMIENTO PERIÓDICO	1	
PROCEDIMIENTO DE EXTRACCIÓN DEL ASIENTO	3	
MARCO DE L & R DESMONTAJE	4	
DEPÓSITO DE COMBUSTIBLE DESMONTAJE COMPLETO	5	
DESMONTAJE DE LA CUBIERTA DEL DEPÓSITO DE COMBUSTIBLE	6	
COLA DESMONTAJE CUBIERTA	10	
MANTENIMIENTO PERIÓDICO Y PROCEDIMIENTO DE AJUSTE EN MARCHA	12	
ACEITE DE MOTOR CUM TRANSMISIÓN	12	
FILTRO DE ACEITE DE MOTOR COMPLETO	13	
BUJÍA	14	
Filtro de aire Elemento	dieciséis	
MONTAJE CARBURADOR	18	
el juego de válvulas	19	
CONJUNTO DEL MOTOR enfriador de aceite	21	
PLACAS DE EMBRAGUE	24	
MANGUERA DE MOTOR DE RESPIRO	24	
DUCTOS CARBURADOR DE GOMA	24	
GALLO DE COMBUSTIBLE cubeta de sedimentos	25	
MANGUERA DE COMBUSTIBLE	25	
CONJUNTO CABLE EMBRAGUE	25	
CABLE acelerador	26	
PUÑO DE GAS	27	
CHOCK FUNCIONAMIENTO	28	
JUEGO DE DIRECCIÓN Y Refinado	28	
FRENTE TENEDOR DE ACEITE	31	
Suspensiones delanteras y traseras	31	
Todos los sujetadores	32	
CADENA DE TRANSMISIÓN	32	
GUARDAGOTAS SEAL	36	
PARTE INFERIOR guía de la cadena	37	
Todos los focos, la bocina y INTERRUPTORES	38	
CABEZA faros o	38	
montaje de la batería	39	
FRENOS	40	
LLANTAS	43	
RALENTÍ CO%	44	
Bola del engranaje CONJUNTA DE CAMBIOS DE VELOCIDAD	45	
CENTRO Y SOPORTE LATERAL PIVOT	45	
RODAMIENTOS balanceo de los brazos	45	
equilibrado de ruedas	48	
PUNTOS DE LUBRICACIÓN	51	
SERVICIO DE PROCEDIMIENTO DE REPOSICIÓN DEL RECORDATORIO	52	

MANTENIMIENTO PERIÓDICO

Gratis una actuación problemas del vehículo y su vida más larga, el vehículo debe ser inspeccionado periódicamente para el desgaste de los componentes, los depósitos de carbón, cables estirados, etc. Los componentes gastados ser reemplazados o reparados y ajustes necesarios para garantizar unos elementos para un mejor rendimiento del vehículo, como se indica en la tabla.

Nota:

Más frecuentes revisiones de mantenimiento se pueden realizar en los vehículos que se utilizan en condiciones graves como el ambiente polvoriento, las condiciones de tráfico denso, pleno accionamiento de mariposa sostenido y caminos empedrados-ONU.

PERIODICA DE MANTENIMIENTO - SERVICIOS GRATUITOS

it	Servicio km	En servicio gratuito					Después de servicio gratuito		observaciones
		primero	segundo	tercero	cuarto	quinto	Cada	Cada	
		500-750	2500-3000	5000-6000	8500-9000	11500-12000	3000 km	6000 kilómetros	
Periodo comprendido entre la fecha de venta 1 mes 3 meses 6 meses 9 meses 12 meses									
aceite de la transmisión del motor cum		R	ESO	R	ESO	R	ESO	R	
filtro de aceite (colador)		do	-	do	-	do	-	do	
filtro de aceite (filtro de papel)		R	-	R	-	R	-	R	
Bujía		I & C	-	-	-	R	-	- Cambiar cada 12000 km	
Aire elemento del filtro		-	-	-	-	R	-	- Cambiar cada 12000 km	
el montaje del carburador		C & A	-	-	-	C & A	-	-	C & A cada 12000 km
el juego de válvulas		I A	-	I A	-	I A	-	I A	
Las aletas del refrigerador de aceite		-	-	I & C	I & C	I & C	I & C	-	
Aceite de pipas más frías		-	yo	yo	yo	yo	yo	-	Inspeccionar y sustituir en caso necesario cada 15.000 km
placas de embrague		-	-	-	-	-	-	-	Inspeccionar y sustituir en caso necesario cada 21000 km
manguera de ventilación del motor		yo	yo	yo	yo	yo	yo	- Cambiar cada 21000 km si es requerido	
conductos de goma del carburador		-	yo	yo	yo	yo	yo	- Cambiar cada 21000 km si es requerido	
Combustible de la cuba gallo sedimentos		do	do	do	do	do	do	-	
manguera de combustible		yo	yo	yo	yo	yo	yo	- Cambiar cada tres años	
Juego del cable del embrague y del acelerador ¹		I, A & L	I, A & L	I, A & L	I, A & L	I, A & L	I, A & L	-	
El puño del acelerador		-	-	L	-	L	- L		Lubricar con grasa
el funcionamiento del estrangulador		yo	yo	yo	yo	yo	yo	-	
Directivo de la Operación / reproducción suave ²		I A	-	-	-	C, L & A	-	- C & L con Bechem fresca prima de grado 3 grasa cada 12000 km	
aceite de tenedor delante		-	-	-	-	-	-	- Cambiar cada 18000 km	
Suspensiones delanteras y traseras ³		yo	yo	yo	yo	yo	yo	-	
todos los sujetadores		I & TI	I & TI	I & TI	I & TI	I & TI	I & TI	-	Apretar si es necesario
Cadena de transmisión**		C, L & AC, L & AC, L & A				C, L & AC, L & A	-	-	Ajustar si es necesario

R - Sustituir; I - Inspeccione; T - Completar; C - Limpio; A - Ajuste; TI - Apriete; L - Lubricar; S - Ajuste

¹ Inspeccionar para su correcto funcionamiento y ajustar el juego. Lubricar termina con grasa.

² Inspeccionar para la rotación dirección suave, dirigiendo sacudida / ruido. Ajuste de la dirección si es necesario.

³ Controlar por función suave y adecuado de suspensión delantera y trasera. También inspeccione por cualquier daño visual y la pérdida de aceite.

* * Limpiar la cadena con un paño seco y aplicar el aceite de TRU SPRAY / TRU 4 con una frecuencia de 500 km para una mejor vida de la cadena y el vehículo en marcha sin problemas.

it	Servicio km	En servicio gratuito					Después de servicio gratuito		Remarks
		primero	segundo	tercero	cuarto	5th	Every	Every	
		500-750 2500-3000	3000 5000-6000	8500-9000	11500-12000	3000 km 6000 km			
Period from the date of sale 1 month		3 months	6 months	9 months	12 months				
Retainer oil seal ⁴		I	I	I	R	I	I	–	Replace every 9000 km
Chain guide bottom ⁵		I	I	I	R	I	I	–	Replace every 9000 km
All bulbs, horn and switches		I	I	I	I	I	I	–	Inspect for proper functioning
Head lamp beam		I & A	I & A	I & A	I & A	I & A	I & A	–	
Battery electrolyte level		I & T	I & T	I & T	I & T	I & T	I & T	–	
Specific gravity and voltage ⁶		I	I	I	I	I	I	–	
Brake effectiveness		I	I	I	I	I	I	–	
Brake pedal shaft		L	L	L	L	L	L	–	Lubricate using TRU4 oil
Brake pad wear		I	I	I	I	I	I	–	Replace if necessary
Brake fluid		I & T	I & T	I & T	I & T	I & T	I & T	–	Replace every 21000 km
Brake hose		I	I	I	I	I	I	–	Replace every three years
Master cylinder cups		–	–	–	–	–	–	–	Replace every 21000 km
Wheel freeness		I	I	I	I	I	I	–	
Tyre pressure at cold condition		I & S	I & S	I & S	I & S	I & S	I & S	–	
Engine idling RPM		I & S	I & S	I & S	I & S	I & S	I & S	–	
Idling CO% ⁷		I & S	–	–	–	–	–	–	I & S every 12000 km
Ball joint gear shift lever		–	–	L	–	L	– L		Lubricate using grease
Centre / side stand pivot		L	L	L	L	L	L	–	Lubricate using TRU4 oil
Swing arm bearings		–	–	–	–	–	–	– C & L	with fresh Bechem premium grade 3 grease every two years
Wheel balancing ⁸		–	–	–	–	I	–	–	

R - Replace; I - Inspect; T - Top up; C - Clean; A - Adjust; TI - Tighten; L - Lubricate; S - Set

^{4,5} Inspect at every service. Replace if found damaged. However the retainer oil seal and the chain guide bottom need to be replaced every 9000 km.

⁶ Recharge if necessary.

⁷ Idling CO% should be set with the help of exhaust gas analyser and tachometer only.

⁸ Wheel balancing to be done every 1 year or every 12000 km. In addition, after every tyre puncture repair or tyre replacement, wheel balancing to be done.

SEAT ASSEMBLIES

REMOVAL

Rear seat (passenger seat) removal

- Insert the ignition key into the seat lock (A).
- Turn it in clockwise, then pull and release the front section of the seat (1) first, followed by the rear section as shown in the figure. (Fig. 2.1)

- To reassemble the rear seat, reverse the removal procedure.

Utility box removal

- To remove the utility box (A), remove the rear seat. (refer Fig. 2.1)
- Take out the utility box by dislocating it from the seat release cable (B). (Fig. 2.2)
- To reassemble the utility box, reverse the removal procedure.

Front seat (rider seat) removal

- To remove the front seat (2), remove the rear seat (refer Fig. 2.1) and take out the key from the lock.
- Pull the seat release cable (A) to release seat lock. Keeping the seat release cable pulled, lift the seat from rear end and slide it backward to remove. (Fig. 2.3)
- To reassemble the front seat, reverse the removal procedure.

Caution:

Make sure that the seat is locked securely in position after installation.

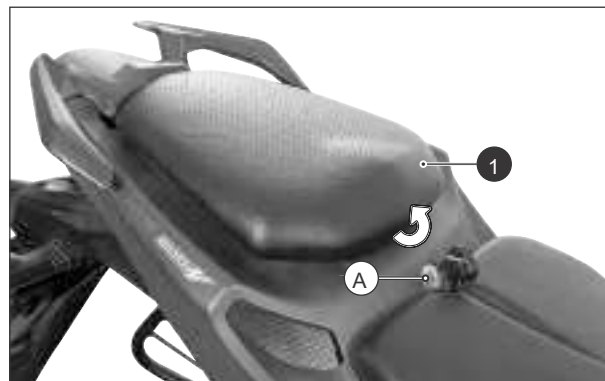


Fig. 2.1

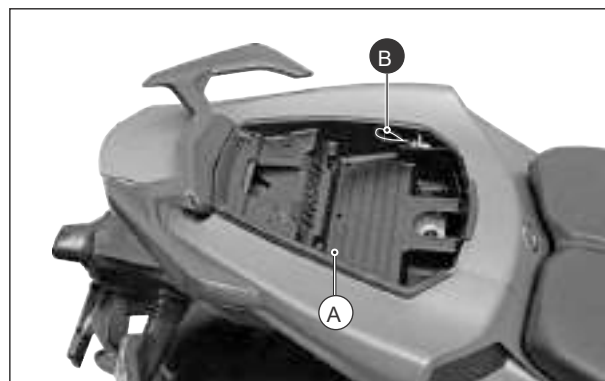


Fig. 2.2



Fig. 2.3

COVER FRAME R & L

REMOVAL

- Remove the seats as explained earlier.
- Remove the CRR pan head screw (M6x16 - 3 nos.) from the cover frame R. (Fig. 2.4)

Phillips head screw driver

- Take out the cover frame R by carefully dislocating it from the lugs.

- Remove the CRR pan head screw (M6x16 - 3 nos.) from the cover frame L. (Fig. 2.5)

Phillips head screw driver

- Take out the cover frame L by carefully dislocating it from the lugs.

- To reassemble the cover frame R & L, locate the lugs of the cover frame at the holes provided on the frame and install the CRR pan head screw (M6x16 - 3 nos. each side).

Phillips head screw driver

Tightening torque

3 ± 1 Nm

Caution:

Make sure that the cover frame is locked securely in position after installation.

Note:

Ensure the availability of cushions in the cover frame 1front lug mounting area (at fuel tank).



Fig. 2.4

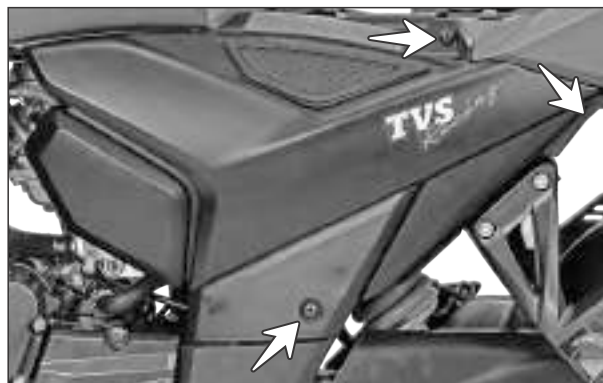


Fig. 2.5

FUEL TANK COMPLETE

REMOVAL

- 1 Remove the seats and cover frame assembly as explained earlier.
- 2 Turn fuel cock knob to 'OFF' position and disconnect the fuel hose from the carburettor assembly. (Fig. 2.6)

Nose plier

- 3 Remove the hexagonal screw (M6x38 - 2 nos.) along with plain washers from the fuel tank rear mounting. (Fig. 2.7)

10 mm spanner

Tightening torque

10 ± 2 Nm

- 4 Remove the cushion fuel tank rear upper (2 nos.)
- 5 Carefully lift the rear portion of fuel tank and disconnect the fuel sender unit wiring socket. (Fig. 2.8)
- 6 Take out the cushion fuel tank rear lower (2 nos) from the fuel tank mounting.
- 7 Remove fuel tank complete along with drain hose by sliding it out from both the cushion fuel tank front.

Note:

While reassembling fuel tank complete, ensure that fuel sender unit wiring socket is connected and fuel tank drain hose is routed properly.

Ensure the fitment of both lower and upper fuel tank cushions rear and proper seating of the fuel tank at cushion fuel tank front during reassembly.

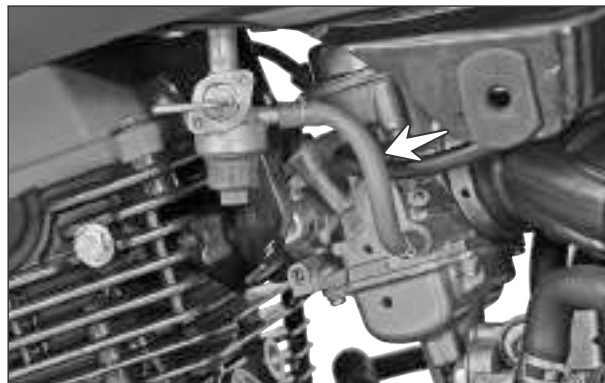


Fig. 2.6



Fig. 2.7



Fig. 2.8

COVER FUEL TANK ASSEMBLY

REMOVAL

Remove the fuel tank as explained earlier.

- Remove the CRR flanged pan head tap screw (A) (ST4.2x13 - 2 nos.) from the mounting of deflector. (Fig. 2.9)

Phillips head screw driver

Tightening torque	1.5 ± 0.5 Nm
-------------------	--------------

- Similarly, remove the CRR pan head screw (B) (M6x12 - 1 no.) from the mounting of deflector with cover fuel tank. (Fig. 2.9)

Tightening torque	10 ± 2 Nm
-------------------	-----------

- Take out the deflector by carefully dislocating it from the lugs.

- Remove the CRR pan head screw (M6x12 - 1 no.) from the mounting of cover fuel tank inner L with the fuel tank. (Fig. 2.10)

Phillips head screw driver

Tightening torque	10 ± 2 Nm
-------------------	-----------

- Remove the CRR pan head screw (M6x12 - 2 nos.) from the cover fuel tank front mounting. (Fig. 2.11A)

- Similarly, remove the CRR pan head screw (M6x12 - 1 no.) from the cover fuel tank rear mounting. (Fig. 2.11B)

Phillips head screw driver

Tightening torque	10 ± 2 Nm
-------------------	-----------

- Remove the CRR pan head screw (M6x12 - 2 nos.) from the cover fuel tank rear mounting. (Fig. 2.12)

Phillips head screw driver

Tightening torque	10 ± 2 Nm
-------------------	-----------

Note:
Ensure the presence of retainer clips before installing the screws during re-assembly.

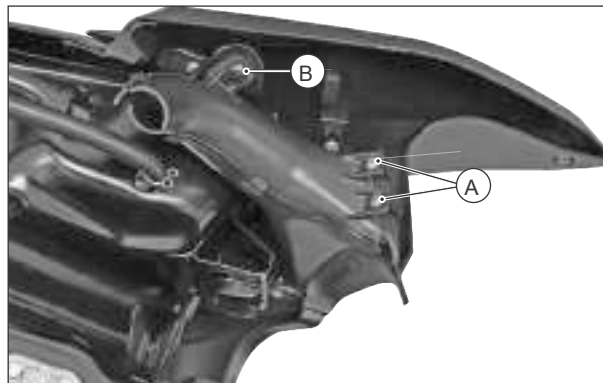


Fig. 2.9

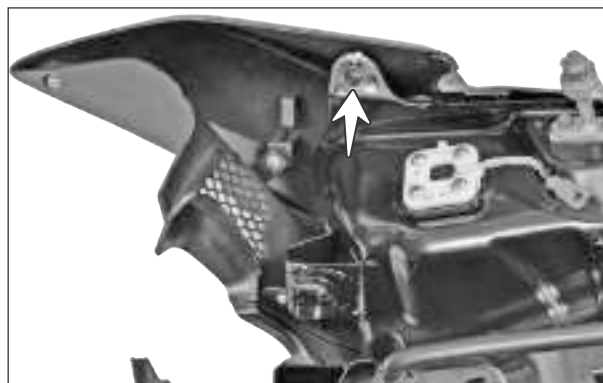


Fig. 2.10

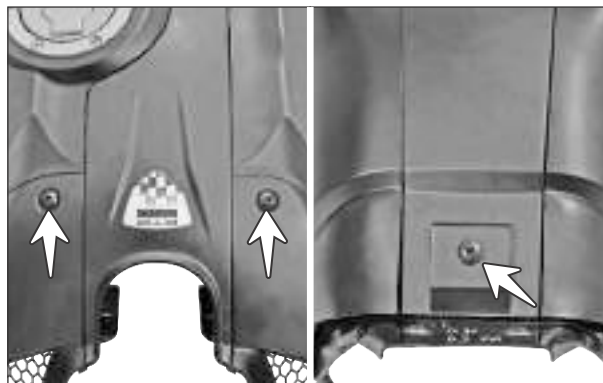


Fig. 2.11A

Fig. 2.11B



Fig. 2.12

- Remove hexagonal socket cap screw (M5x30 - 3 nos.) from the mounting of fuel tank cap assembly. (Fig. 2.13)

4 mm allen key

Tightening torque

4.5 ± 0.5 Nm

Note:

Remove only the marked screws (refer Fig. 2.13). Do not disturb the other screws as they do not required any removal.

Caution:

Do not use the screws having more than 14 mm length as it may puncture the tank and lead to fuel leakage.

- Open the fuel tank cap by using the control key. (Fig. 2.14)

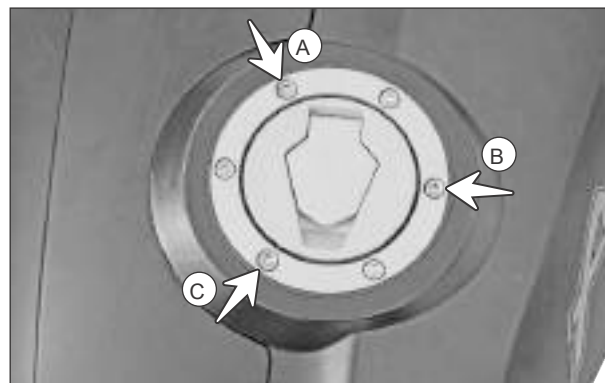


Fig. 2.13



Fig. 2.14

- Remove the CRR pan head screw (M5x12) from the fuel tank cap inner mounting. (Fig. 2.15)

Phillips head screw driver

Tightening torque

4.5 ± 0.5 Nm

- Take out the fuel tank cap assembly along with seal fuel tank cap.

Note:

Ensure the presence of seal in the fuel cap assembly before re-installing the cap.



Fig. 2.15

- Carefully dislocate and remove the cover fuel tank assembly from the fuel tank.

- Remove the CRR flanged pan head tap screw (ST4.2x13 - 3 nos.) from the mounting of cover fuel tank inner R. (Fig. 2.16)

Phillips head screw driver

Tightening torque

1 ± 0.5 Nm

- Dislocate the cover fuel tank inner R from the cover fuel tank assembly.

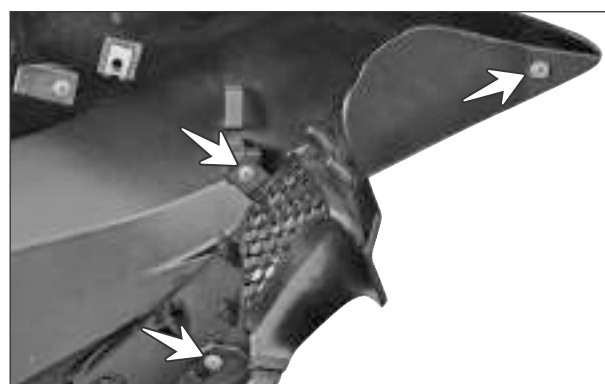


Fig. 2.16

- Similarly remove the cover fuel tank inner L from the cover fuel tank assembly.

Note:

While reassembling, ensure the presence of clips (clip nut ST4) before installing the screws.

- Remove the CRR flanged pan head tap screw (ST4.2x13 - 3 nos.) from the mounting of cover fuel tank outer R. (Fig. 2.17)

Phillips head screw driver

Tightening torque	$1 \pm 0.5 \text{ Nm}$
-------------------	------------------------

- Carefully dislocate and take out the cover fuel tank outer R from the cover fuel tank top.

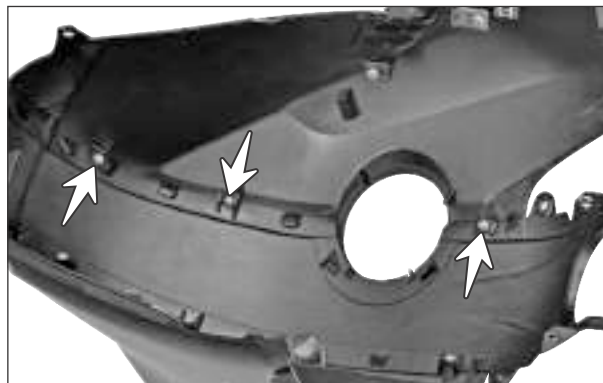


Fig. 2.17

- Remove the CRR flanged pan head tap screw (ST4.2x13 - 4 nos.) from the mounting of cover fuel tank outer L. (Fig. 2.18)

Phillips head screw driver

Tightening torque	$1 \pm 0.5 \text{ Nm}$
-------------------	------------------------

- Carefully dislocate the cover fuel tank outer L from the cover fuel tank top.

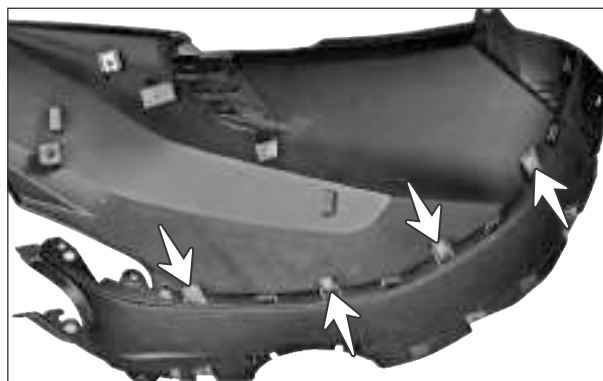


Fig. 2.18

- Remove the CRR flanged pan head tap screw (ST4.2x13 - 2 nos.) from the mounting of grill cover fuel tank R. (Fig. 2.19)

Phillips head screw driver

Tightening torque	$1 \pm 0.5 \text{ Nm}$
-------------------	------------------------

- Dislocate and take out the grill cover fuel tank from the cover fuel tank outer R.

- In similar manner, remove the grill cover fuel tank L from the cover fuel tank outer L.

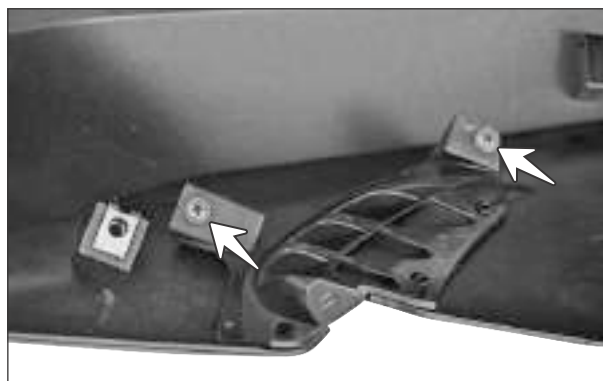


Fig. 2.19

REASSEMBLY

For re-assembly, reverse the procedure removal. Assemble the covers separately and then assemble them as a set into the fuel tank.

Refer exploded view for assembly details. (Fig. 2.20)

Note:

Before assembling the cover fuel tank assembly into the fuel tank. Ensure the availability of cushions at the respective places. Else it may create rattling noise.

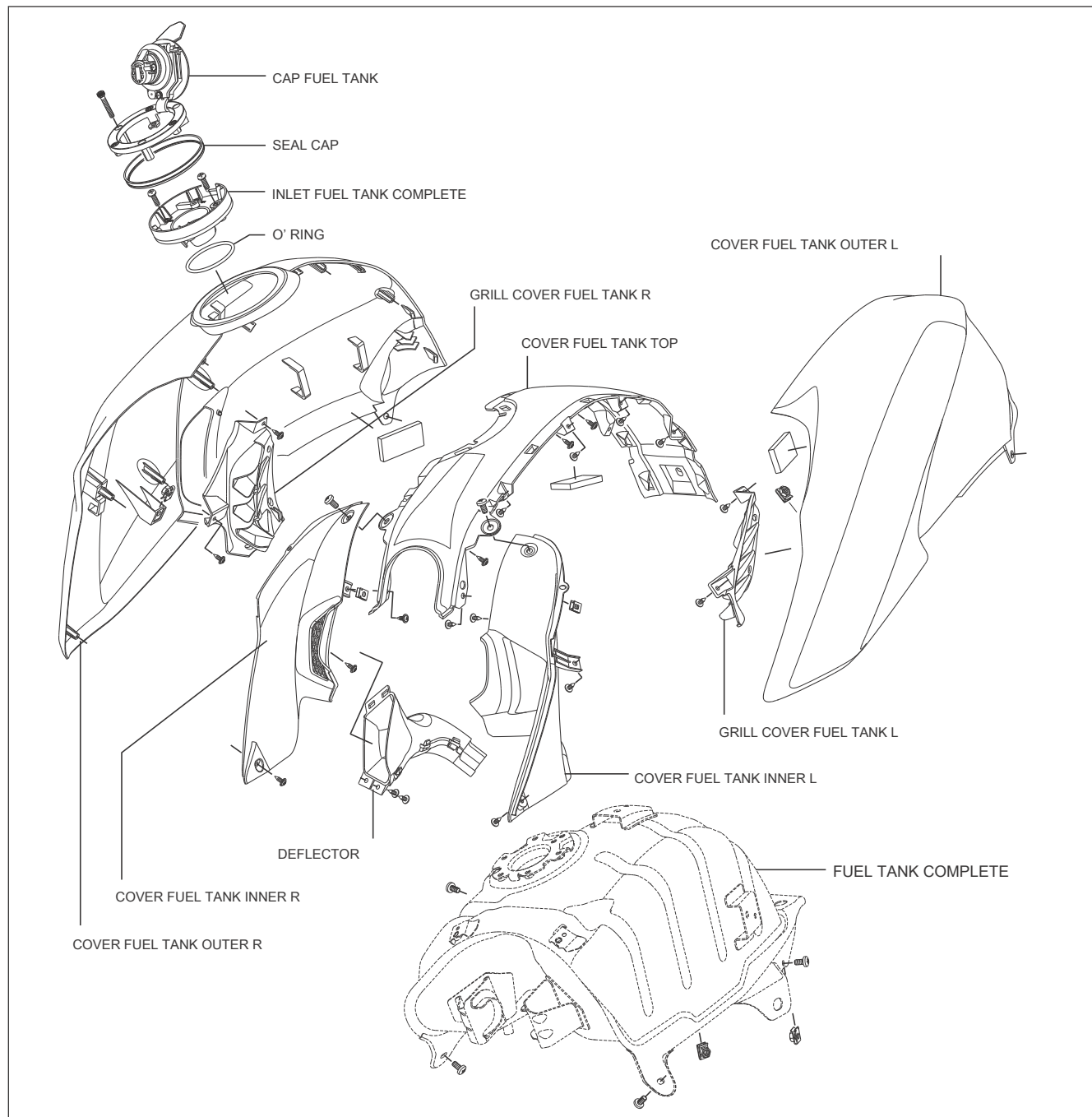


Fig. 2.20

TAIL COVER ASSEMBLY

REMOVAL

- 1 Remove the seats and cover frame L & R as explained earlier (refer page nos. 2-3 & 2-4).
- 2 Remove the hexagonal socket cap screw (M8x25 - 4 nos.) from the mounting of pillion handle and take out the pillion handle. (Fig. 2.21)

6 mm allen key

Tightening torque

22 ± 2 Nm

- 3 Disconnect the tail lamp coupler (A) from the wiring harness. (Fig. 2.22)
- 4 Disconnect the rear seat lock cable (B) from the seat latch and release it from its locating bracket. (Fig. 2.22)
- 5 Similarly, release the seat release cable (C) of front seat from its locating bracket. (Fig. 2.22)

- 6 Remove hexagonal bolt (M6x20 - 4 nos.) along with punched washers from the mounting the tail cover assembly with the chassis. (Fig. 2.23)

10 mm spanner

Tightening torque

6 ± 2 Nm

- 7 Remove hexagonal bolt (M6x20 - 1 no.) along with the cup washer from the mounting of tail cover assembly with the chassis. (Fig. 2.24)

10 mm spanner

Tightening torque

6 ± 2 Nm

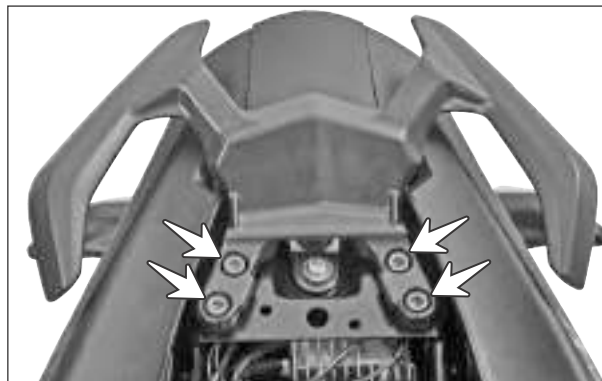


Fig. 2.21

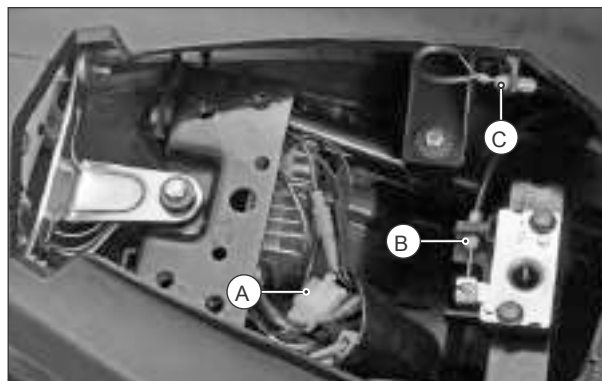


Fig. 2.22

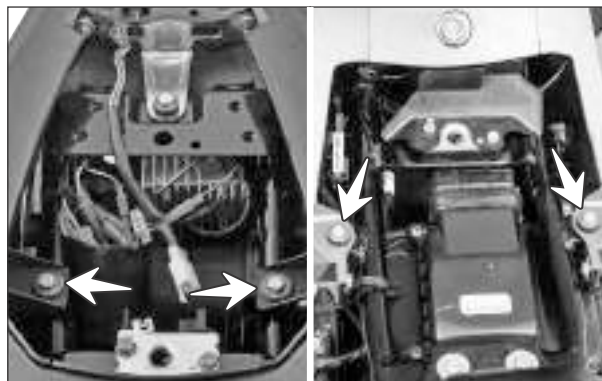


Fig. 2.23



Fig. 2.24

- Remove the CRR pan head screw (M6x16) from the tail cover centre rear. (Fig. 2.25)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	--------------

- Dislocate the tail cover centre rear from tail cover assembly.



Fig. 2.25

- Remove the CRR pan head screw (M6x16 - 4 nos.) from the mounting of tail cover assembly bottom. (Fig. 2.26)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	--------------

- Gently dislocate and take out the tail cover assembly from the vehicle.
- Reassemble the parts in the reverse order of removal.

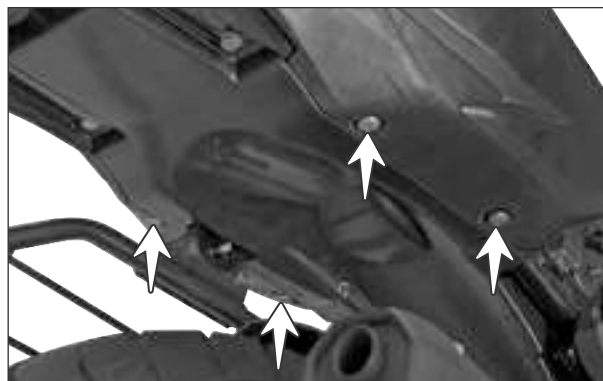


Fig. 2.26

Note:

Ensure the availability of cushions at the top mounting of tail cover assembly.

PERIODIC MAINTENANCE AND TUNE- UP PROCEDURE

ENGINE CUM TRANSMISSION OIL

Replacement

Replace at initial 500 - 750 km and every 6000 km there after. Inspect and top-up every 3000 km.

After long period of use, the engine cum transmission oil will get contaminated and accelerates the wear of sliding and interlocking surface. Replace the engine cum transmission oil periodically by following the procedure given below:

Place the vehicle on center stand. Using a clean cloth clean the surrounding surfaces of gauge oil level and plug complete oil drain. Start the engine and warm to normal operating temperature and switch 'OFF'.

Remove the gauge oil level to facilitate easy draining of oil. (Fig. 2.27)

Loosen and remove the hexagonal flange head bolts (M6x20 - 3 nos.). (Fig. 2.28)

8mm spanner

Tightening torque

10 ± 2 Nm

Remove the cap oil strainer along with 'O' ring and drain the engine cum transmission oil.

Oil filter (Strainer)

Loosen the CRR pan head screw (M5x12 - 2 nos.) and remove the strainer complete engine oil along with a 'O' ring. Inspect the strainer for any damage. Replace if necessary. Otherwise clean and reassemble the parts in the reverse order of removal. (Fig. 2.29)

Phillips head screw driver

Tightening torque

8 ± 2 Nm

Note:

Check the condition of the 'O' ring and replace if required. Ensure the availability of 'O' ring in the cap during reassembly.

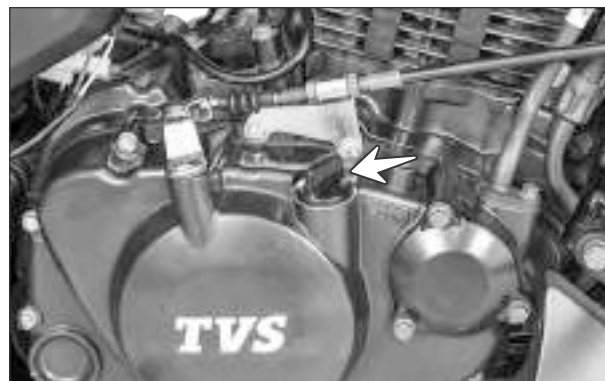


Fig. 2.27

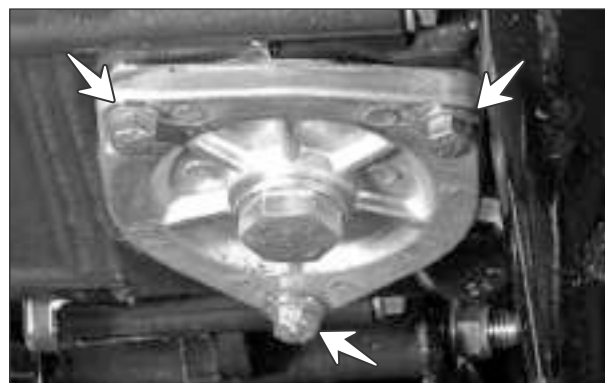


Fig. 2.28

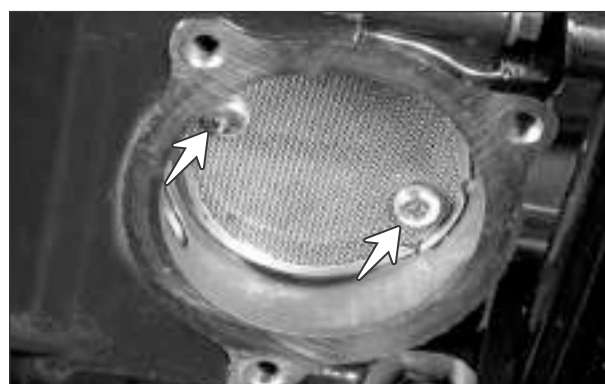


Fig. 2.29

- Fill TVS TRU4 FULLY SYNTHETIC oil (SAE 10W30 API-SL, JASO MA2).

Capacity	1200 ml (after draining)
	1400 ml (after disassembly)

Note:

Before adding the fresh oil, replace the filter complete engine oil without fail.

- Refit gauge oil level.

Oil level check

- Ensure that the engine is in cold condition.
Place the vehicle on center stand on a flat surface with front wheel touching the ground.

- Unscrew the gauge oil level and wipe it clean.
Insert the gauge in its hole by threading it in completely.

- Check the oil level. The oil level should be between minimum and maximum levels. (Fig. 2.30)

- If the oil level is below the minimum level, top-up with the TVS TRU4 FULLY SYNTHETIC oil (SAE 10W30 API-SL, JASO MA2) upto the maximum level.

Note:

Check the condition of the 'O' ring (A) and replace if required. Ensure the availability of 'O' ring in the gauge during reassembly.

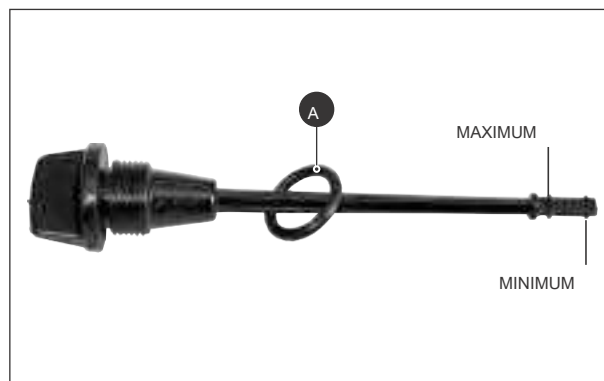


Fig. 2.30

FILTER COMPLETE ENGINE OIL

Replace at initial 500 - 750 km and every 6000 km there after.

- Before removing the filter complete engine oil, drain the engine cum transmission oil as per the guidelines mentioned above.

- Loosen and remove the hexagonal flange bolts (M6x16 - 2 nos. and M6x75 - 1 no.). (Fig. 2.31)

8 mm spanner

Tightening torque

10 ± 2 Nm

- Remove the cap oil filter along with the 'O' ring and spring oil filter cap.

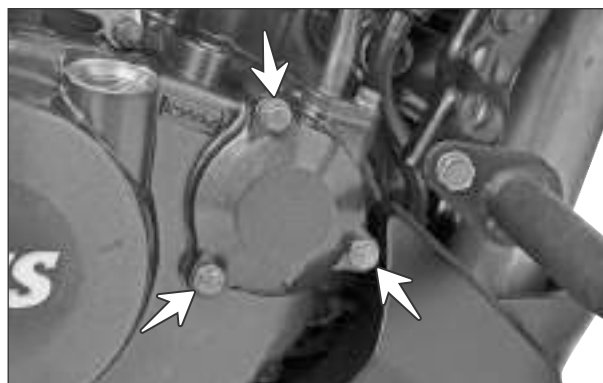


Fig. 2.31

- Remove the filter complete engine oil and 'O' ring (A). (Fig. 2.32)

Note:

Keep an oil bowl while opening the cap oil filter to collect the left over oil.

While reassembling, ensure to assemble the 'O' rings (A & C) and spring oil filter (B). (Fig. 2.33)

Locate the seal end (1) of the filter towards crankshaft. (Fig. 2.33)

Whenever the filter complete engine oil is replaced, it is recommended to replace the engine cum transmission oil along with it.

- Reassemble the parts in the reverse order of dismantling.

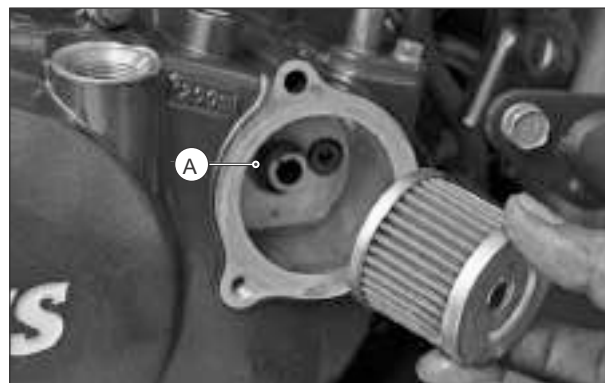


Fig. 2.32

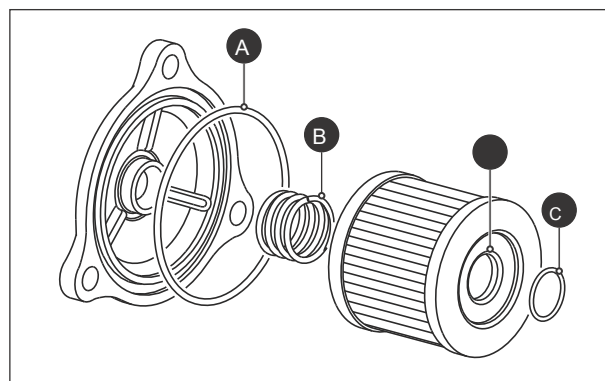


Fig. 2.33

SPARK PLUG

- Check the type of the spark plug.

Inspect and clean at initial 500 - 750 km. Replace spark plug every 12000 km.

- Neglecting the spark plug leads to difficulty in starting and poor performance.
- Before removing the spark plug, clean the spark plug surroundings to prevent any foreign materials from falling inside the cylinder bore.
- Disconnect the sparkplug cap and remove the spark plug. (Fig. 2.34)

Plug spanner

- Carbon deposits on the spark plug electrodes prevents good sparking and causes misfiring. Clean the deposits by blasting sand and compressed air using a spark plug cleaning machine as explained below:
- Ensure the air and power supply to the spark plug machine is on.

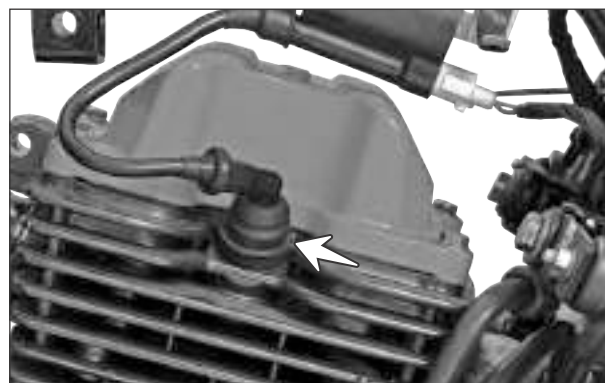


Fig. 2.34

- 1 Fix the spark plug into the machine as shown in the figure. (Fig. 2.35)
- 1 Blast the sand (abrasive) by pulling the lever (A) towards sand blasting mode while rotating the spark plug. (Fig. 2.35)
- 1 Now, blow the air by pushing the lever (A) towards air blasting mode. This will remove any sand material stuck into the plug. (Fig. 2.35)
- 1 Remove the plug from the machine and once again confirm cleanliness of the plug.

Caution:

Do not use flared steel cables to clean the spark plug as it may spoil the spark plug's electrodes.

- 1 Check the spark plug for wear of central (A) and ground electrode (B). If either of them are worn-out replace the spark plug with a new one. (Fig. 2.36)

Caution:

Use only the recommended make and type of spark plug for the good performance of the engine. Do not use spark plug that fallen from the hand/carton box (internally they may have crack and the profile may change).

Sparkplug	BOSCH UR4KE
-----------	-------------

- 1 Visually inspect the spark plug gap. If the gap is found more, replace the plug with a new.

Spark plug gap	0.7 mm
----------------	--------

Caution:

Since hook profile spark plug is used, do not try to adjust the gap as it may affects the profile.

- 1 Check the spark plug for correct spark performance in the spark plug tester as instructed below:
- 1 Rotate the plug gap setting knob (A) and match the plug gap reading (0.7 mm) with the red line (B) marked in the pressure gauge. (Fig. 2.37A) Fix the spark plug in the plug testing socket and connect the HT card of the machine to the plug. (Fig. 2.37B)



Fig. 2.35

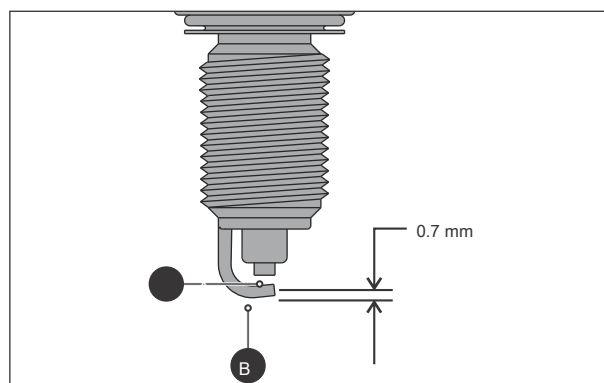


Fig. 2.36

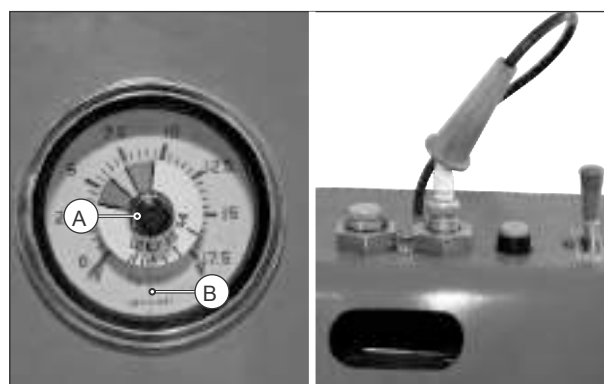


Fig. 2.37A

Fig. 2.37B

- Open the air control knob (A) and adjust the air pressure of the tester in such way that the pressure gauge needle is lying either in yellow band or in green band. (Fig. 2.38)



Fig. 2.38

- Now, press the spark testing button of the machine and look for strong, blue continuous spark through the window (A) of the machine. (Fig. 2.39)
- After confirming the performance, fix the spark plug back and connect the HT card.

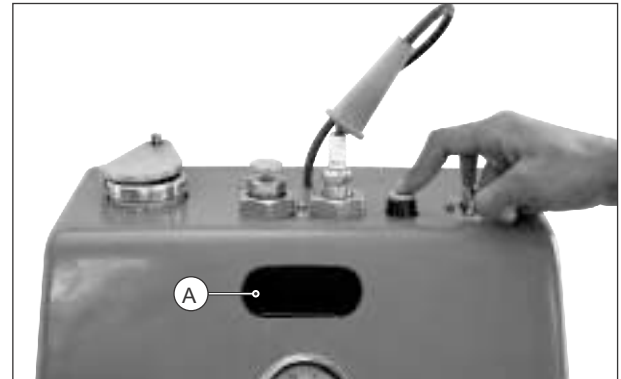


Fig. 2.39

Caution:

Do not over tighten or cross thread the spark plug to avoid the cylinder head threads damage.

It is advised to tighten the spark plug by hand till the end and then tighten using the right sized spark plug spanner. (Tightening torque : 10 ~ 15 Nm)

AIR CLEANER ELEMENT

Replace cleaner element every 12000 km.

Note:

Replace the air cleaner element (filter holder complete) early if it is clogged with excessive dirt (based on the usage and environment) or found with any damage. Cleaning the air cleaner element with solvent / other chemicals can damage the element and consequently reduces the life of engine parts.

- Clogged air cleaner element increases the air intake resistance which results in decreased power output and increased fuel consumption. In case any such complaints observed in the vehicle, check and replace the air cleaner element in the following manner:

- Remove the seats as explained earlier.

- Disconnect the tube inlet from the cover filter element. (Fig. 2.40)



Fig. 2.40

- Remove the CRR pan head screw (M5x16 - 4 nos.) from the cover filter element. (Fig. 2.41)

Phillips head screw driver

Tightening torque

2 ± 0.2 Nm

- Take out the cover filter element from the case air cleaner complete.

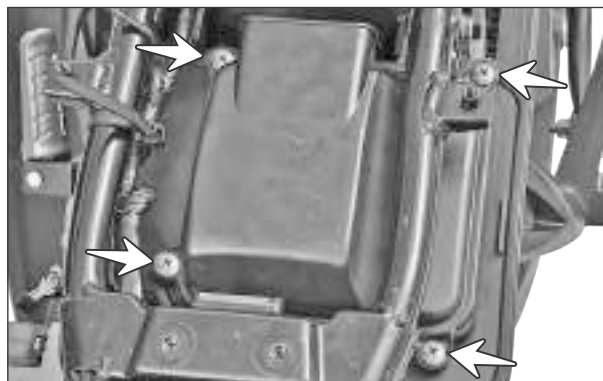


Fig. 2.41

- Remove and inspect the air cleaner element for any blockage / abnormality. Replace the element if any block or damage is found. (Fig. 2.42)

Caution:

Do not wash or clean the air cleaner element. It needs only replacement. However the air cleaner element must be replaced at every 12000 km.

Note:

While removing / reassembling the air cleaner element do not hold the paper element portion. Hold only at the sides.

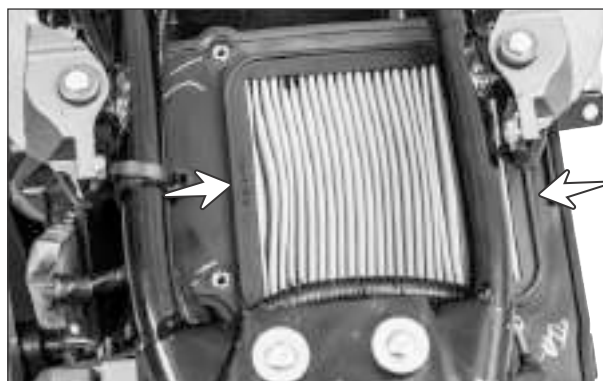


Fig. 2.42

- Inspect and ensure that the cover air cleaner and case air cleaner assembly is clear from any dust, dirt and foreign particles. (Fig. 2.43)

- Before reassembling the air cleaner element, clean the case air cleaner and cover air cleaner using a cloth and cleaning solvent.

Note:

Before reassembling the cover, ensure the availability and the intactness of seal cleaner (A & B) in both cover and the case.

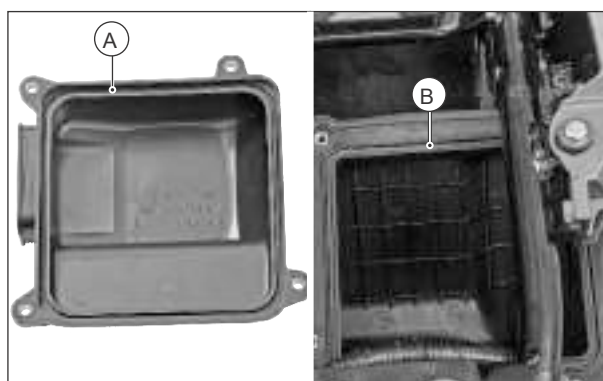


Fig. 2.43

Reassemble the parts in the reverse order of removal while ensuring the following:

- Use only hands to assemble paper filter. Do not use any tool. Ensure that the hands are free from oil and dust.
- Position the air filter snugly and correctly in the case air cleaner so that no incoming air will by pass it. Remember rapid wear of valves guide valves valve oil seals piston, piston rings and cylinder is often caused by a defective or incorrectly fitted air filter.

CARBURETTOR ASSEMBLY

Clean and adjust carburettor at initial 500 - 750 km and every 12000 km there after.

Inspect and set engine idling rpm at initial 500 - 750 km and every 3000 km there after.

Inspect and set idling CO% at initial 500 - 750 km and every 12000 km there after.

If the engine performance is good, the mixture volume control screw (A) (MCS screw) need not to be disturb. The idling speed can be adjust only with idling screw (B) to specified limit. (Fig. 2.44)

Idling rpm	1500 ± 100 rpm
------------	----------------

Note:

Inspect and set the idling speed after attending all other maintenance job

If there is a performance deterioration, clean the carburettor and tune.

Cleaning:

For removing, dismantling and cleaning of carburettor assembly refer chapter "Fuel, lubrication and exhaust system" page no. 4-3.

Note:

After remounting the carburettor check for smooth operation of throttle grip.

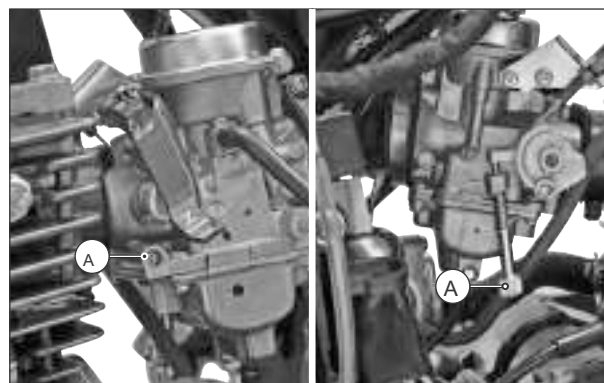


Fig. 2.44

Tuning:

Note:

Before tuning the carburettor, correct the free play of throttle cable as explained in page no. 26.

- Turn out the MCS (mixture control screw) to the specified limit from fully-in (tight) position. (Fig. 2.45)

MCS turns

1 ~ 4 turns

Flat screw driver (small)

Caution:

Do not over tight the mixture volume control screw against its seat as it will damage in the mixing body assembly and its seating.

- Start the engine and allow it to warm up.
- Select the mode for four stroke in tachometer and connect the tachometer cord to HT lead to measure the engine rpm.

Tachometer

- Turn the idling screw so that the engine idles at the specified idling rpm (1400 ± 100 rpm). (Fig. 2.46)
- After adjusting the idling rpm check the CO%.
If necessary, readjust the mixture control screw to set the CO% to the specified limit (refer page no. 4-17 for CO setting procedure).

Idling CO% 1.0 to 3.0 % (with SAI & CAT)

TAPPET CLEARANCE

Inspect and adjust at initial 500 - 750 km and every 6000 km there after.

- For inspecting and adjusting the tappet clearance, fuel tank assembly need to be removed. Refer page no. 2-5 for fuel tank removal procedure.
- Disconnect HT card and remove the sparkplug.
(Fig. 2.47)

Plug spanner



Fig. 2.45



Fig. 2.46

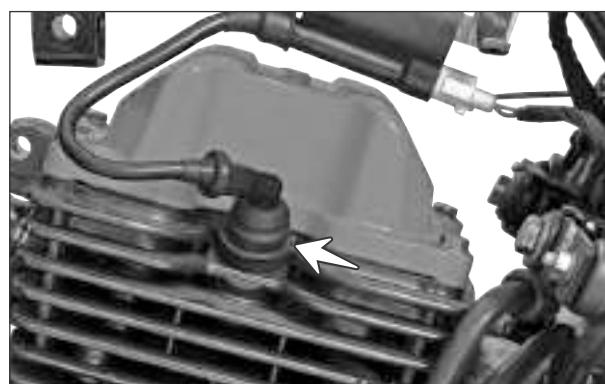


Fig. 2.47

- Remove the hexagonal flange bolt (M6x20 - 2 nos.) mounting the ignition coil assembly with the frame. (Fig. 2.48)

10 mm spanner

Tightening torque	5.5 ± 1 Nm
-------------------	----------------

- Dislocate and take out the ignition coil assembly from the frame.

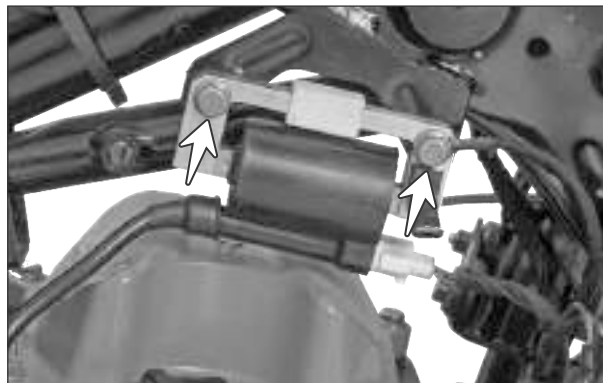


Fig. 2.48

- Remove the hexagonal bolt (M6x25 - 4 nos.) from the mounting of cover cylinder head. (Fig. 2.49)

10 mm spanner

Tightening torque	10 ± 2 Nm
-------------------	---------------

- Dislocate the cover cylinder from the left hand side of the vehicle as shown in the figure.

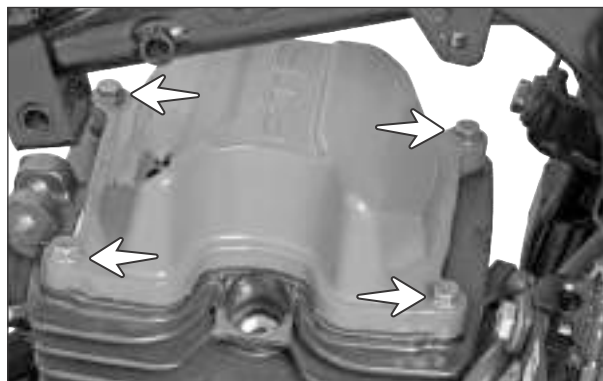


Fig. 2.49

- Remove plug TDC (A) along with the gasket. (Fig. 2.50)

17 mm spanner

Tightening torque	27.5 ± 2.5 Nm
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- Remove plug crankshaft hole (B). (Fig. 2.50)

10 mm allen key

Tightening torque	10 ± 2 Nm
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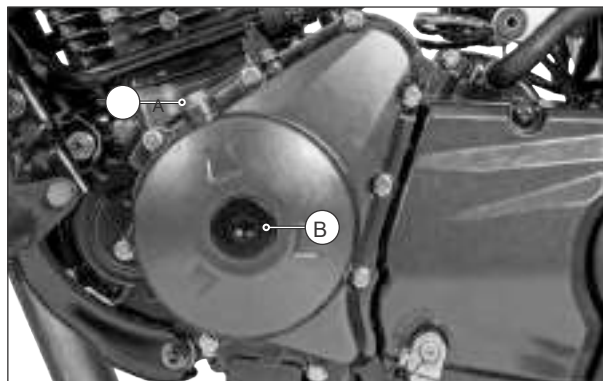


Fig. 2.50

- Align the TDC mark (A) on rotor assembly with centre of the inspection hole provided in the cover magneto by rotating the rotor assembly. (Fig. 2.51)

17 mm tubular spanner

Note:

At this point both the rocker arm should have free play. Otherwise rotate the rotor assembly one more complete round and align the mark again.

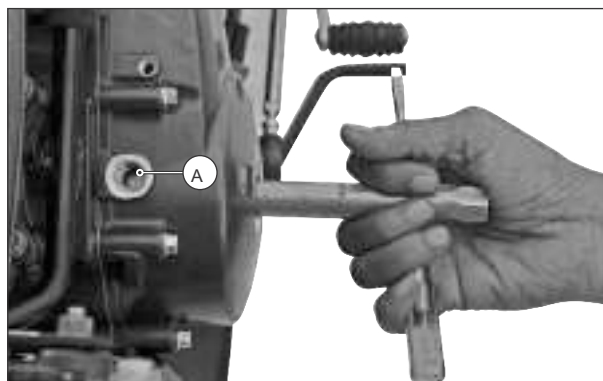


Fig. 2.51

- Check the valve clearance when the engine is in cold condition. (Fig. 2.52)

Feeler gauge

Valve	Standard
Inlet valve	0.06 mm
Exhaust	0.08mm

- If the clearance measured is not within the specified limit, loosen the nut tappet adjusting. (Fig. 2.53)

9 mm spanner

- Adjust valve clearance using a special tool.

M13 100 70 Tool, tappet adjuster

Feeler gauge

- After adjusting to the specified clearance, tighten the nut tappet adjusting, while holding the screw tappet adjusting in the same position using special tool. (Fig. 2.54)

M13 100 70 Tool, tappet adjuster

Feeler gauge

- Reassemble the parts in the reverse order of removal.

ENGINE OIL COOLER ASSEMBLY

Removal

- Remove the hexagonal flange bolt (M6x20 - 1 no.) mounting the pipe complete outlet with the cover clutch assembly. (Fig. 2.55A)
- Remove the hexagonal flange bolts (M6x16 - 2 nos.) mounting the pipe complete outlet with the oil cooler assembly. Dislocate and take out the pipe complete outlet. (Fig. 2.55B)

8 mm spanner

Tightening torque 10 ± 2 Nm



Fig. 2.52



Fig. 2.53



Fig. 2.54

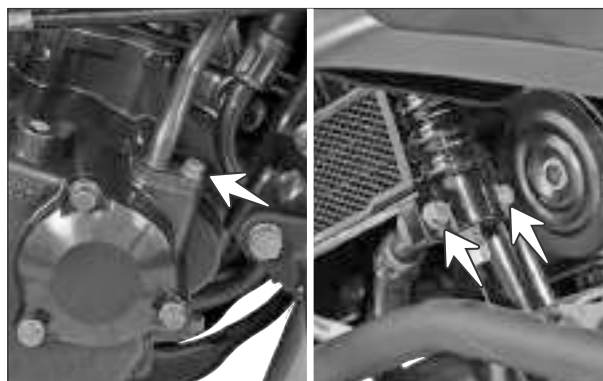


Fig. 2.55A

Fig. 2.55B

- Remove the hexagonal flange bolt (M6x20 - 1 no.) mounting the pipe complete inlet with the crankcase assembly R. (Fig. 2.56A)

- Remove the hexagonal flange bolts (M6x16 - 2 nos.) mounting the pipe complete inlet with the oil cooler assembly. Dislocate and take out the pipe complete inlet. (Fig. 2.56B)

8 mm spanner

Tightening torque

10 ± 2 Nm

- Remove the hexagonal flange bolts (M6x25 - 2 nos.) from the oil cooler assembly mounting and take out the oil cooler assembly. (Fig. 2.57)

10 mm spanner

Tightening torque

10 ± 2 Nm

Oil cooler assembly fins

Inspect and clean at 6000 km first and every 3000 km thereafter.

- Gently dislocate the guard oil cooler along with cup washers from the oil cooler assembly. (Fig. 2.58)

- Visually inspect the oil cooler fins for any blockage.

- If found any, clean them using a small blend tool and compressed air.

Caution:

Care should be taken not to damage the fins while cleaning with the tool and compressed air.

- Inspect the oil cooler fins (A) for any deformation. If it so, straighten them with a thin, flat head screw driver. (Fig. 2.59)

Note:

If the air passages of the cooler assembly are blocked more than 20% by unremovable objects or if the fins of the cooler are un-repairable, replace the cooler assembly with a new one.



Fig. 2.56A

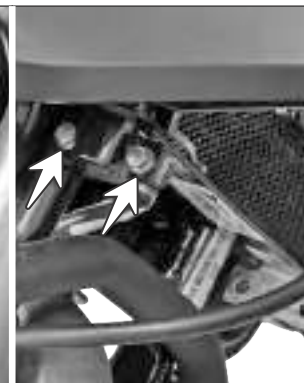


Fig. 2.56B

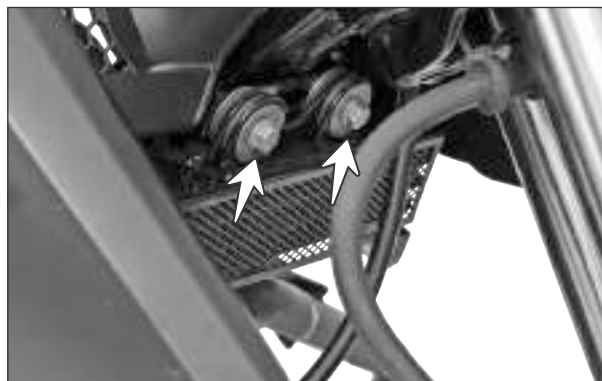


Fig. 2.57

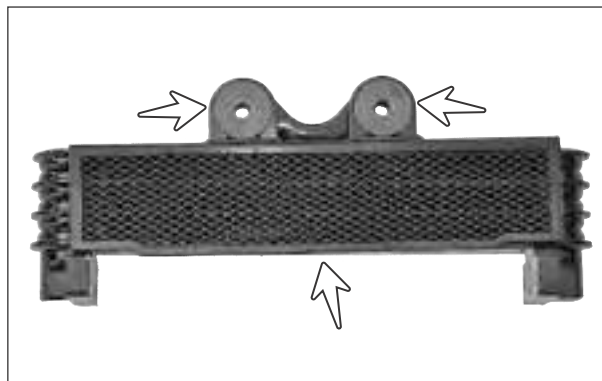


Fig. 2.58

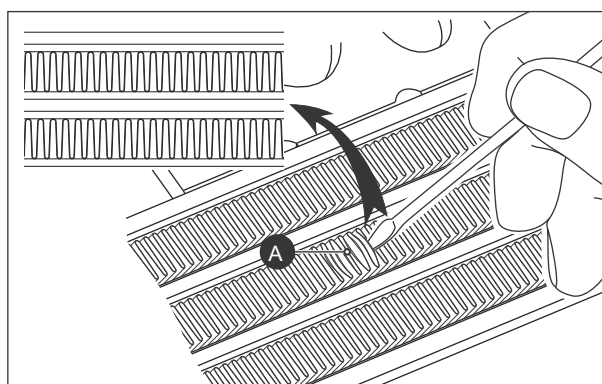


Fig. 2.59

Oil cooler assembly pipes

Inspect at every 3000 km. Replace every 15000 km if required.

- ▮ Visually inspect the cooler assembly inlet and outlet pipes for any crack, leakage, damage or deformation. (Fig. 2.60)
- ▮ If found any replace the oil cooler pipes with a new one.

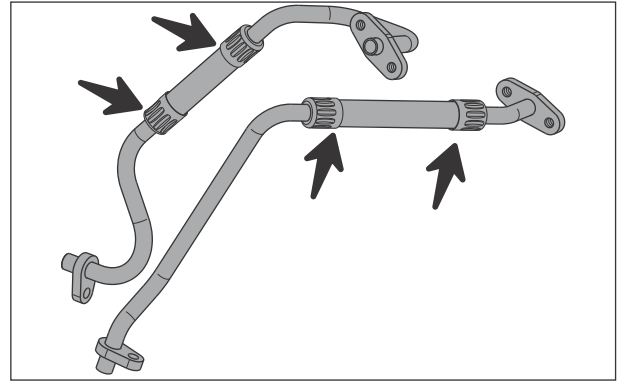


Fig. 2.60

Re-assembly

- ▮ Reassemble the parts in the reverse order of removal. Refer exploded view for details. (Fig. 2.61)

Note:

Ensure to assemble the 'O' rings at both inlet and outlet pipes ends.

Ensure the availability of grommet and cup washers at the mounting area of oil cooler assembly.

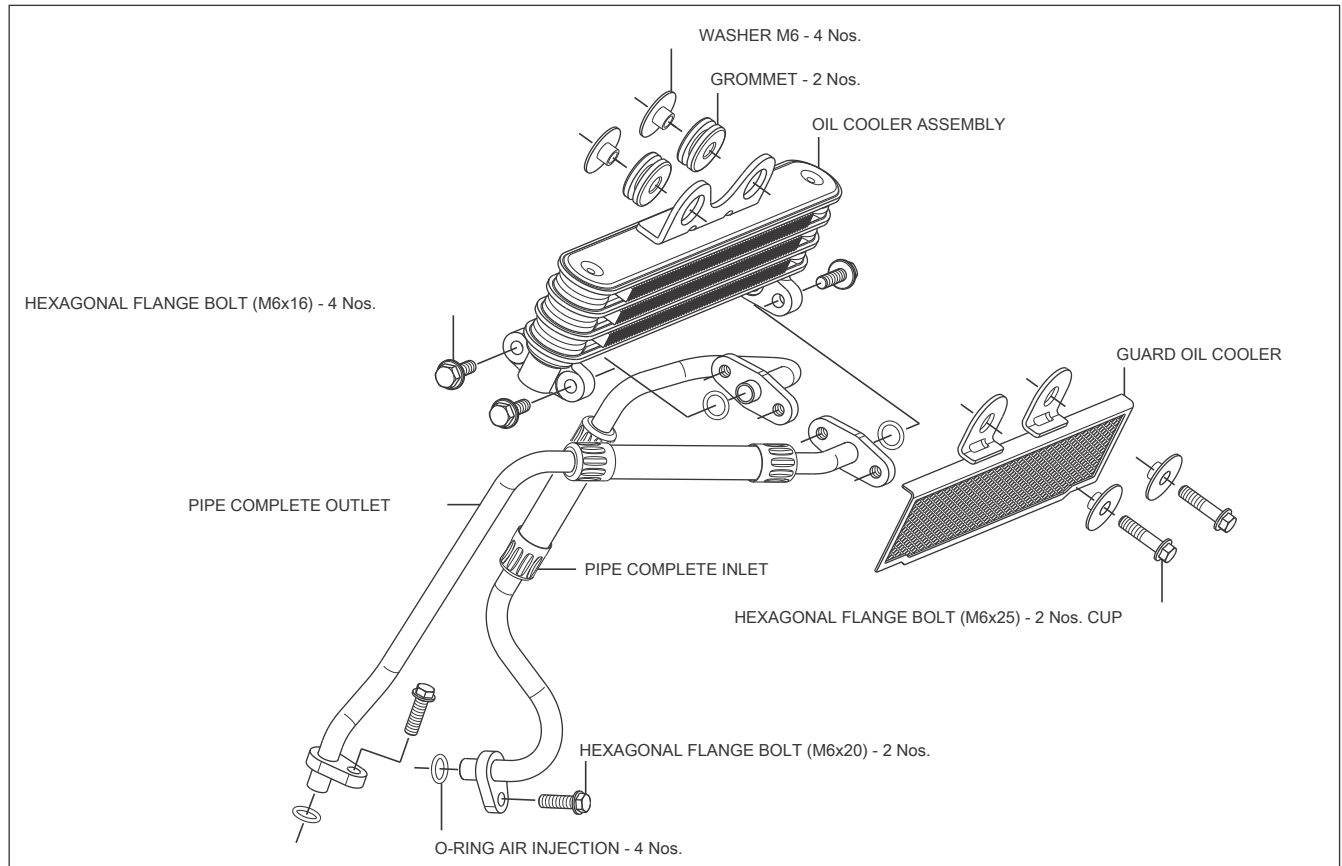


Fig. 2.61

CLUTCH PLATES (Plate clutch drive & driven)

Inspect the plate clutch drive and driven at every 21000 km. Replace if required.

Normally clutch is serviced for:

- Lose of power / low pick-up
- Jerking of vehicle
- Any abnormal noise from clutch

But as a precaution measure the clutch drive and driven plates must be inspected and if required replaced at every 21000 km for the better performance of the vehicle. (Fig. 2.62)

Refer chapter "Servicing of engine" page no. 3- for clutch removal and servicing procedure. 2

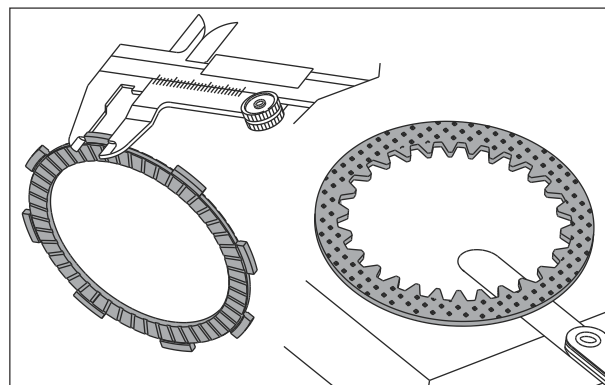


Fig. 2.62

ENGINE BREATHER HOSE

Inspect at every service. Replace every 21000 km if required.

Visually inspect the engine breather hose for any crack, leakage, damage or deformation. If found any, replace the engine breather hose. (Fig. 2.63)



Fig. 2.63

CARBURETTOR RUBBER DUCTS (Pipe intake complete and Tube outlet)

Inspect at every 3000 km. Replace every 21000 km if required.

Visually inspect the pipe intake complete and air cleaner tube outlet for any crack, leakage, damage or deformation. (Fig. 2.64)

If found any, replace the pipe intake complete and air cleaner tube outlet.

Note:

Since the air cleaner tube outlet is pasted with the case complete air cleaner, the air cleaner outlet tube must be changed along with the case.

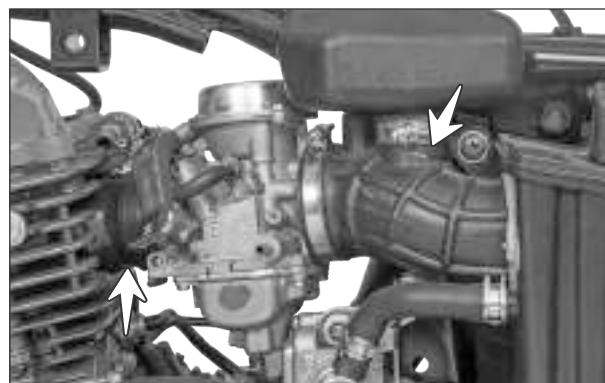


Fig. 2.64

FUEL COCK SEDIMENT BOWL

Clean at initial 500 - 750 km and every 3000 km thereafter.

- ! Dirty, fuel cock sediment bowl with sediment or water affects the smooth flow of petrol and may cause loss of engine power.
- ! Turn the fuel cock assembly lever to 'OFF' position and remove the fuel cock sediment bowl. (Fig. 2.65)

10 mm spanner

- ! Take out the 'O' ring and fuel filter. (Fig. 2.66)
- ! Clean the fuel filter and sediment bowl using cleaning solvent.
- ! Reassemble the parts in the reverse order of removal.

Caution:

Care should be taken not to damage the threads of sediment bowl while reassembling as it may lead to fuel leak.

HOSE FUEL

Inspect hose fuel at initial 500 - 750 km and every 3000 km thereafter. Replace every three years.

- ! Inspect the hose fuel and connections for damage and leakage. (Fig. 2.67)
- ! If any abnormality is found replace the hose fuel. However fuel hose must be replaced every three years.

CABLE ASSEMBLY CLUTCH - FREE PLAY

Inspect, adjust and lubricate ends with grease at initial 500 - 750 km and every 3000 km there after

- ! Cable assembly clutch free play is one of the most important adjustments, which may need to check regularly for better life of the clutch plates.

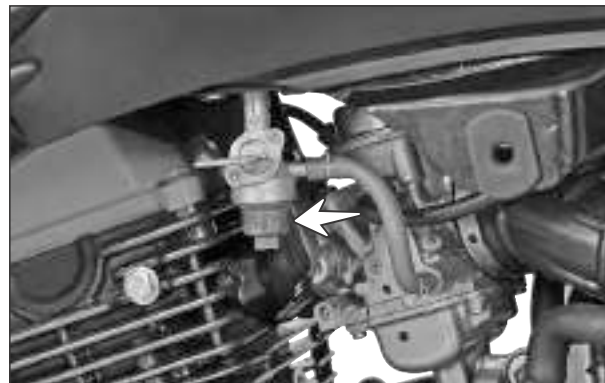


Fig. 2.65

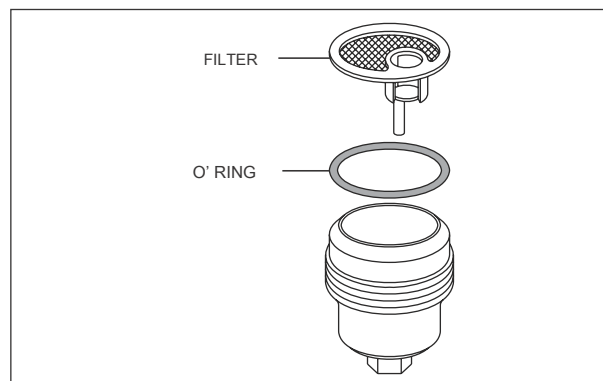


Fig. 2.66

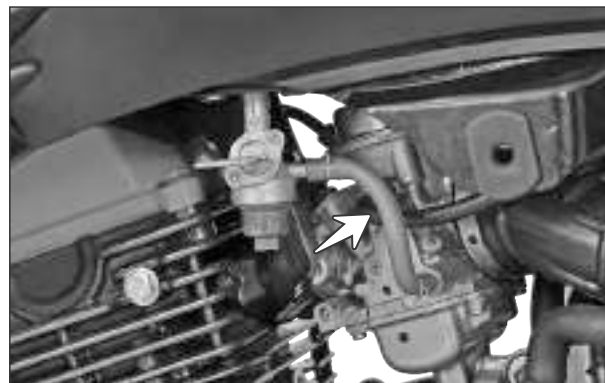


Fig. 2.67

- Measure the free play at the lever assembly clutch end as shown in the figure, before the clutch begins to disengage. (Fig. 2.68)

Free play	8 ~ 15 mm
-----------	-----------

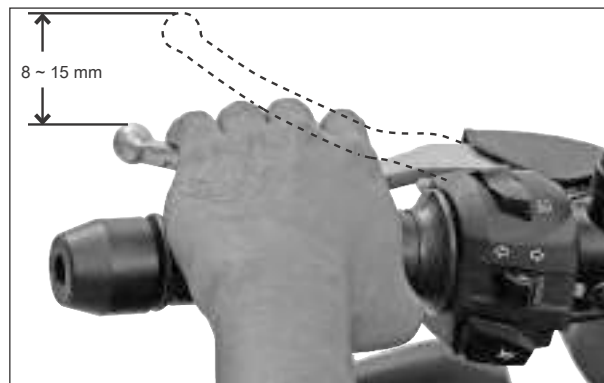


Fig. 2.68

- If the play is more or less, loosen the lock nut (A) and turn the adjusting nut (B) 'in' or 'out' until the specified play is obtained. And then tighten the lock nut (A), while holding the adjusting nut (B) in the same position. (Fig. 2.69)

12 mm spanner

Note:

Adjust the clutch play when the engine is in cold condition

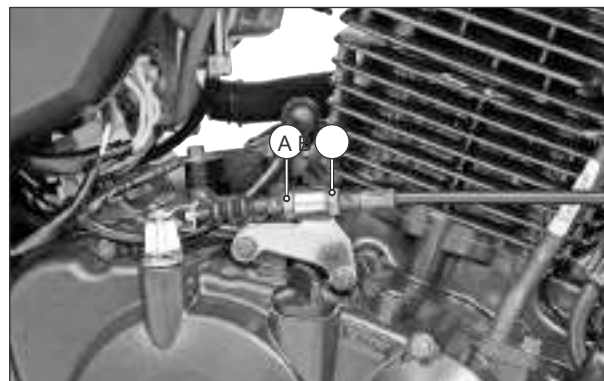


Fig. 2.69

CABLE ASSEMBLY THROTTLE - FREE PLAY

Inspect, adjust and lubricate ends with grease at initial 500 - 750 km and every 3000 km there after

- For checking the cable assembly throttle (throttle cable) free play, first dislocate the boot throttle (A) from its position. (Fig. 2.70)

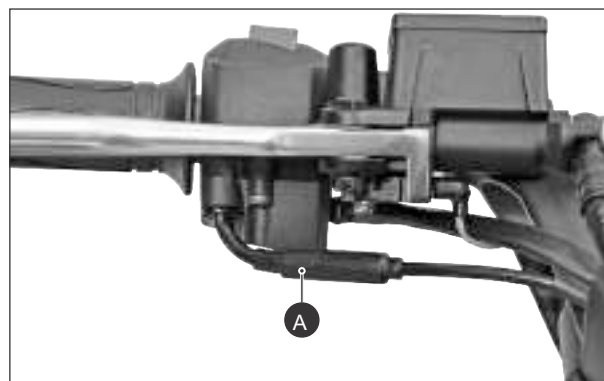


Fig. 2.70

- Gently pull the throttle cable while holding the adjuster (A) to check the free play. (Fig. 2.71) If the free play is more or less adjust as follow:

Free play	1 ~ 2 mm
-----------	----------

- Loosen the lock nut (B) and turn the adjuster (A) 'in' or 'out' until the specified play is obtained.

10 mm / 8 mm spanner

- Tighten the lock nut (B) while holding the adjuster (A) in place.

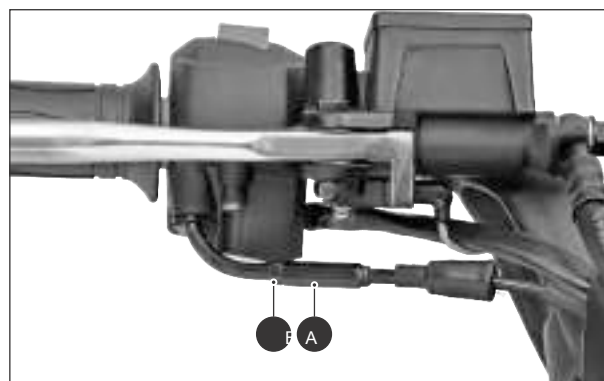


Fig. 2.71

After adjusting, start the vehicle, let the engine run in idle, turn the handle bar to extreme right, left and check whether idling rpm varies. If it varies check the routing of throttle cable and if required correct it. Readjust the free play once again.

The throttle cable also can be adjusted at the carburettor end. Follow the procedure to adjust the play.

Measure the throttle cable free play as explained earlier.

If the measured free play is more or less, loosen the lock nut (A) and turn the adjuster nut (B) 'in' or 'out' until the specified play is obtained. And then tighten the lock nut (A), while holding the cable adjuster (C). (Fig. 2.72)

10 mm spanner

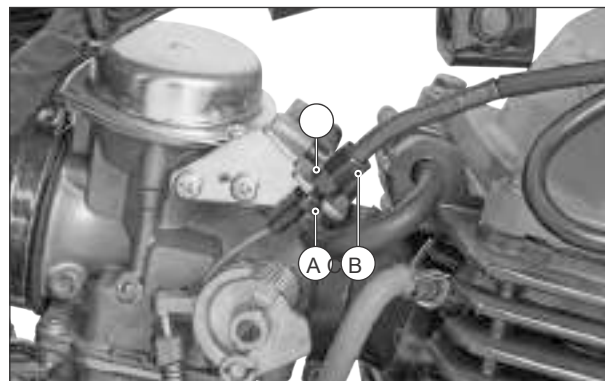


Fig. 2.72

THROTTLE GRIP

Lubricate with grease every 6000 km.

Inspect throttle grip for smooth rotation. If found hard remove and lubricate as explained below:

Remove the throttle cable locking screw from throttle case lower. (Fig. 2.73)

Phillips head screw driver

Tightening torque	2.25 ± 0.25 Nm
-------------------	----------------

Remove the CRR pan head screws (M5x30 2 nos.) from the throttle case upper and lower mounting. (Fig. 2.74)

Phillips head screw driver

Tightening torque	1.75 ± 0.25 Nm
-------------------	----------------

Gently dislocate the throttle case upper and lower. Disconnect the throttle cable from grip complete throttle.

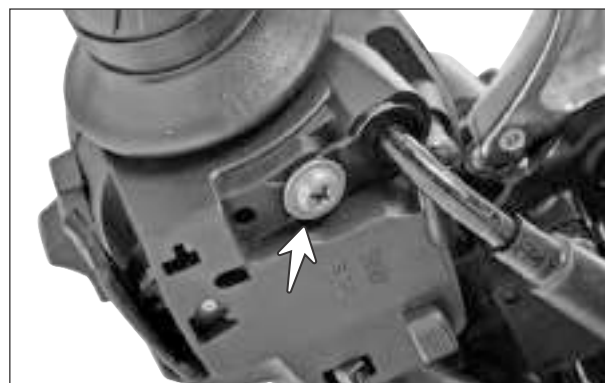


Fig. 2.73

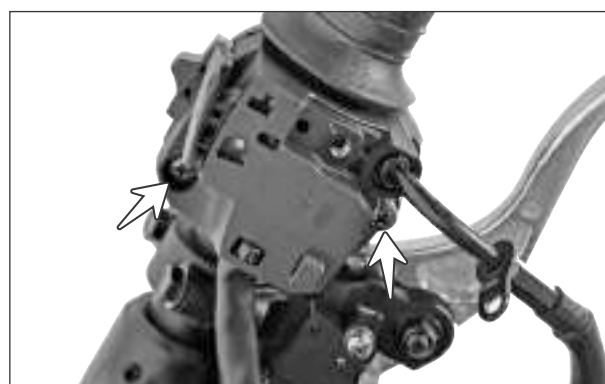


Fig. 2.74

- 1 Clean the dust and grease from both the cases and grip. Apply fresh grease.
- 1 Reconnect the throttle cable to the grip and reassemble the parts in the reverse order of removal.

Note:

After assembling the cases, ensure the proper locking of throttle cable with throttle case lower. Also check the free play of throttle cable. If found more, adjust as explained in page no. 2-26.

CHOKE OPERATION

Inspect every 3000 km.

- 1 Inspect for proper operation of choke lever by applying the choke. (Fig. 2.75)
- 1 If any abnormality is found, inspect the choke lever at the carburettor for any stuck up. In case found any, remove and clean the choke assembly as explained in chapter "Fuel, lubrication and exhaust system" page no. 4-3

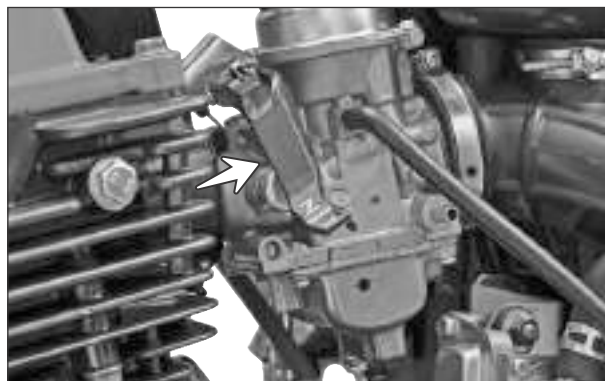


Fig. 2.75

STEERING PLAY AND FREENESS

Inspect at initial 500 - 750 km. Adjust if necessary. Clean and lubricate the steering with Bechem premium grade 3 grease every 12000 km.

- 1 Steering should be adjusted correctly for smooth movement of handle bar and safe riding. Stiff steering prevents smooth movement of handle bar resulting in poor directional stability. Too loose steering will cause vibration and damage to the steering bearings.
- 1 Check to see that there is no play in the steering bearings. (Fig. 2.76)

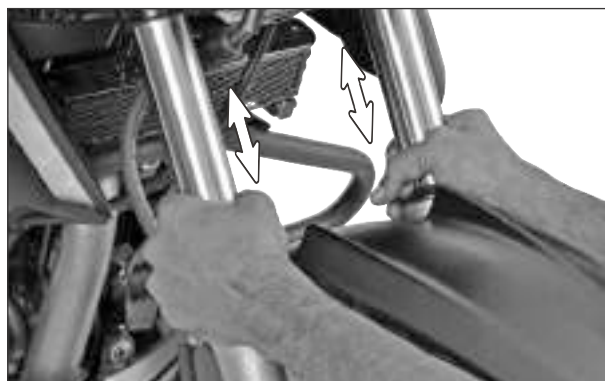


Fig. 2.76

- ! If any play is found, remove the CRR pan head screw (M6x20 - 2 nos.) housing head lamp front top mounting. (Fig. 2.77)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	--------------



Fig. 2.77

- ! Loosen both side bottom mounting hexagonal flange bolt of housing head lamp and tilt the housing head lamp forward. (Fig. 2.78)

10 mm spanner

Tightening torque	4.5 ± 1.5 Nm
-------------------	------------------

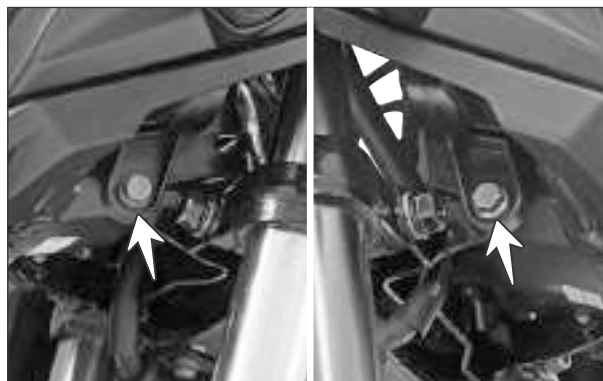


Fig. 2.78

- ! Take out the cap lock nut (A) and remove the lock nut steering along with a special washer. (Fig. 2.79)

32 mm spanner

Tightening torque	80 ± 20 Nm
-------------------	----------------



Fig. 2.79

- ! Loosen hexagonal socket head cap screws (A) (M8x30 - 2 nos.) from the mounting of handle bar assembly with the front fork. (Fig. 2.80)

6 mm allen key

Tightening torque	16 ± 2 Nm
-------------------	---------------

- ! Similarly, loosen hexagonal socket head cap screws (B) (M8x45 - 2 nos.) from the mounting of lower bracket complete (fork upper mounting). (Fig. 2.80)

Tightening torque	19 ± 2 Nm
-------------------	---------------

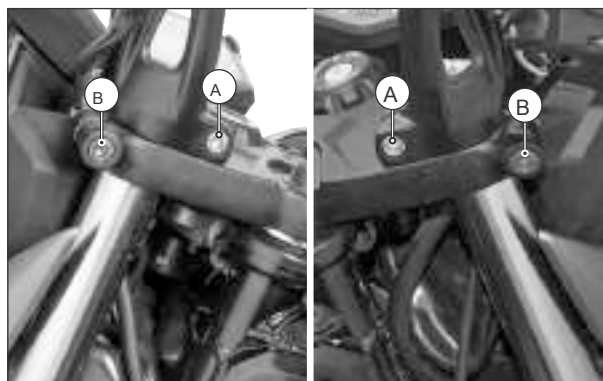


Fig. 2.80

- 1 Gently lift the handle bar assembly. Support and hang the handle bar assembly on the vehicle itself.

Note:

Ensure that the cables are not too much stretched or bent and the surfaces of fuel tank assembly and head lamp assembly not got damaged.

- 1 Using a blunt tool, unlock the lock washer locking arrester steering stem top and bottom. (Fig. 2.81)

Small flat screw driver

- 1 Using a special tool loosen and remove the arrester steering stem and take out the lock washer. (Fig. 2.82)

N931 014 0

Tool steering nut

32 mm spanner

- 1 Using the special tool turn the arrester steering stem bottom either clockwise or anticlockwise to reduce or to increase steering play respectively. (Fig. 2.83)

N931 014 0

Tool steering nut

32 mm spanner

- 1 After ensuring there is no play in the steering, assemble the lock washer and arrester steering stem top.
- 1 Locate the lock washer properly and tighten the steering stem top. Finally lock the lock washer and then assemble the other parts in the reverse order of removal.
- 1 Finally, tighten the steering lock nut to the specified torque.

Note:

After adjustment the steering, ensure the handle bar moves smoothly without any jerk or sticky. When slowly moved by hand the handle bar moves freely from center position to either left or right with its own weight.

Check the head lamp beam position and adjust if required after reassembling.



Fig. 2.81

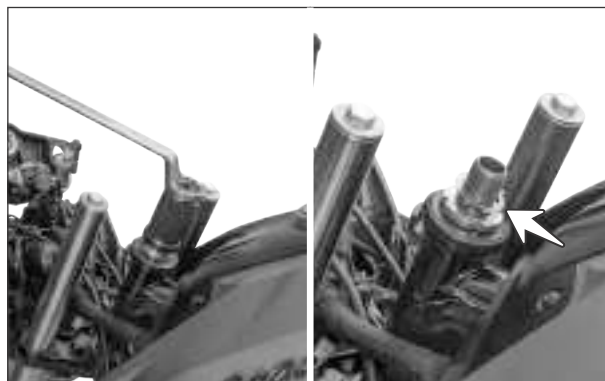


Fig. 2.82



Fig. 2.83

- ▮ If any play is still found, inspect the following items and replace the affected parts, if necessary (refer chapter "Chassis" page no. 6-23 for removal, checking and reassembly procedures)

- ▮ Wear of the race steering inner and outer
- ▮ Wear of cup bottom and cone bottom.
- ▮ Wear or damage of steering balls.
- ▮ Number of balls in cage.
- ▮ Distortion of lower bracket complete.
- ▮ Rusting of races and balls
- ▮ Grease washout

Note:

However, the steering need to be cleaned and lubricated with fresh grease every 12000 km.

FRONT FORK OIL

Replace every 18000 km.

- ▮ Inspect both the leg assemblies of front fork for any oil leak / abnormality. (Fig. 2.84) If found any, front fork leg assemblies need to be serviced.
- ▮ However, the front fork oil need to be replaced every 18000 km. Refer chapter "Chassis" page no. 6-17 for service and oil replacement procedure of front fork.



Fig. 2.84

FRONT AND REAR SUSPENSION

Inspect for proper function at initial 500 - 750 km and every 3000 km thereafter.

- ▮ Inspect the front fork (both the legs) for smooth operation / proper action. If found any abnormality service the leg assemblies as explained in chapter "Chassis" page no. 6-17. (Fig. 2.85)
- ▮ Similarly, inspect the rear shock absorber for smooth operation / proper action. If found any abnormality replace the shock absorber. Check the shock absorber for any mud / dirt accumulation. If found with mud or dirt, clean them thoroughly. (Fig. 2.85)
- ▮ Inspect for any oil leak in shock absorber.
Replace the shock absorber if found leaking.



Fig. 2.85

ALL FASTENERS (Bolts and nuts)

Inspect and tighten at initial 500 - 750 km and every 3000 km there after.

- All the bolts and nuts must be in good condition, for safety. They must be checked and re-tightened, as necessary to the specified torque (refer chapter "Service information" page no. 7-8 & 7-9 for torque details).

CHAIN ASSEMBLY DRIVE (Drive chain)

Clean, lubricate and adjust at 500 - 750 km and every 3000 km thereafter.

Note:

However, the drive chain must be cleaned (on the vehicle) with dry cloth and lubricated with TRU SPRAY / TRU 4 oil as frequently as every 500 km for better chain life and smooth vehicle running.

- If dirt / dust particles deposition on the drive chain is found less, the drive chain can be cleaned and lubricated on the vehicle itself.
- Place the vehicle on the center stand.
- Clean the drive chain thoroughly using a cloth wet with kerosene while rotating the wheel assembly.
- Allow 3 minutes for the drive chain surface to dry and wipe the surface with dry cloth.
- After cleaning the drive chain, check the slackness of drive chain as shown. (Fig. 2.86)

Slackness	20 ~ 25 mm
-----------	------------

- If slackness if found more or less, adjust the slackness as follows:

Note:

Excess chain slackness consumes more fuel.

- Slightly loosen the hexagonal flanged U-nut (M14x1.5) of axle rear. Fig. 2.87)

22 mm spanner	
---------------	--

Tightening torque	78 ± 18 Nm
-------------------	------------



Fig. 2.86



Fig. 2.87

- Loosen and adjust the chain adjusting bolts (A and B) 'in' or 'out' equally by looking at the line mark (C and D) on chain adjusters until the specified play (slackness) is obtained. (Fig. 2.88 A & B)

12 mm spanner

Caution:

Adjust both the chain adjuster exactly the same amount to maintain correct wheel alignment

- After obtaining the specified play, rotate the rear wheel by hand and apply rear brake.
- Hold the brake pedal in applied condition and tighten the rear axle nut to the specified torque.

- Now, tighten the chain adjusting bolts (A and B). (Fig. 2.88 A & B)

- Using TRU SPRAY lubricate the chain while rotating the wheel slowly. (Fig. 2.89)

Note:

Shake TRU SPRAY container well before use. Attach the extension tube to the TRU SPRAY container for pin point application. Hold the container upright and spray from a distance of 4-6 inches as shown in the figure.

- If dirt / dust particles deposition on the drive chain is found more, it is recommended for the first time alone to follow the procedure given below:

- Remove the seats and cover frame assembly as explained earlier.

- Remove the hexagonal bolt (M6x20) from the gear shift linkage assembly and dislocate the gear shift linkage from the shaft gear shift. (Fig. 2.90)

10 mm spanner

Tightening torque

12 ± 2 Nm

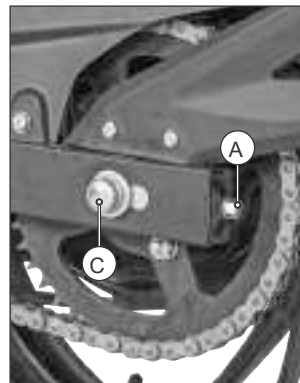


Fig. 2.88A

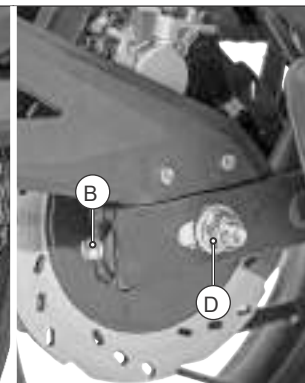


Fig. 2.88B



Fig. 2.89



Fig. 2.90

- Remove the CRR pan head screws (M6x20 - 2 nos.) from the cover engine sprocket mounting and take out the cover. Fig. 2.91) (

Phillips head screw driver

Tightening torque	10 ± 2 Nm
-------------------	-----------

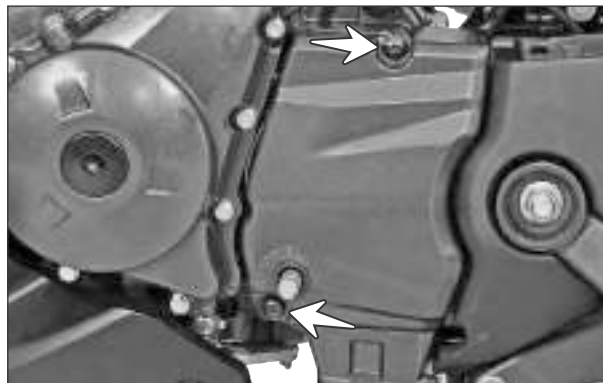


Fig. 2.91

- Remove the hexagonal flange bolt (M6x16 - 1 no.) from speed sensor cable guide mounting and dislocate the cable guide so that the sprocket mounting screws are visible. (Fig. 2.92)

8 mm spanner

Tightening torque	10 ± 2 Nm
-------------------	-----------

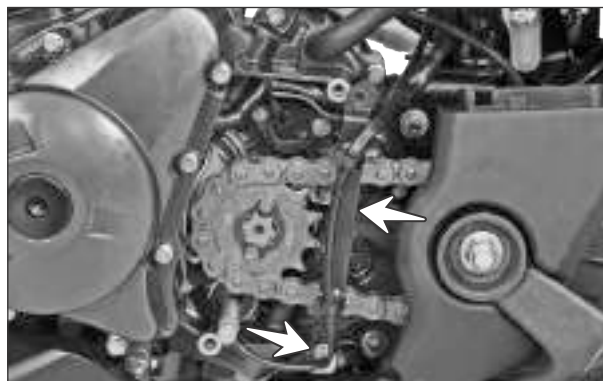


Fig. 2.92

- In-order to remove the foot rest assembly, remove the swing arm axle nut along with punched washer. Fig. 2.93) (

17 mm spanner

Tightening torque	40 ± 4 Nm
-------------------	-----------

- Also, remove the hexagonal socket head cap screw (M10x25 - 1 no.) along with punched washer from the rider foot rest assembly and take out the rider foot rest assembly. (Fig. 2.93)

8 mm allen key

Tightening torque	18 ± 2 Nm
-------------------	-----------

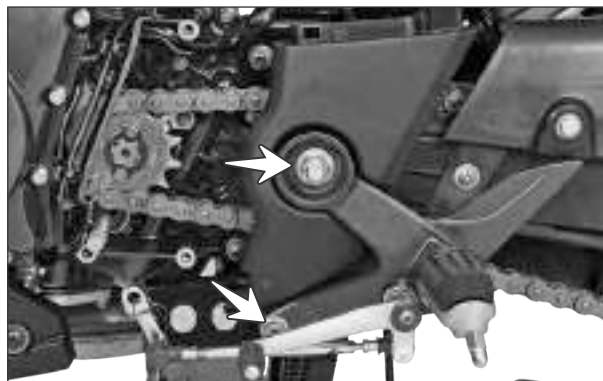


Fig. 2.93

- Remove the hexagonal bolts (2 nos.) and take out the lock washer by rotating it either clockwise or anti-clockwise from the sprocket engine. Fig. 2.94A & B) (

8 mm spanner

Tightening torque	8 ± 1 Nm
-------------------	----------

- Dislocate the sprocket engine along with the chain from the drive shaft.

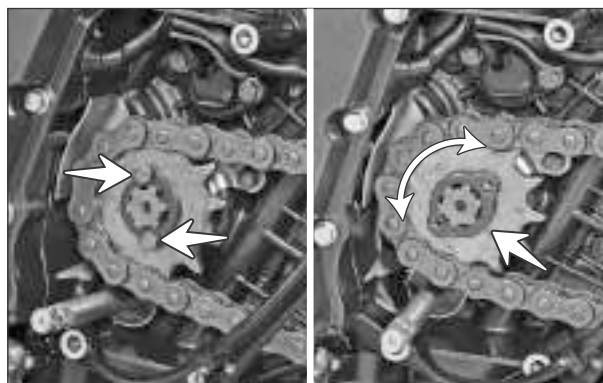


Fig. 2.94A

Fig. 2.94B

- Remove the hexagonal bolts (M6x16 - 4 nos.) from both LH & RH mounting wheel hugger rear mounting. (Fig. 2.95A & B)

10 mm spanner

Tightening torque

8 ± 2 Nm

- Loosen the hexagonal flanged U-nut (M14x1.5) of axle rear. Fig. 2.96A)

22 mm spanner

Tightening torque

78 ± 18 Nm

- Similarly, loosen the chain adjuster bolts (A and B) to some extent in order to remove the chain. (Fig. 2.96B)

12 mm spanner

- Remove the hexagonal bolts (M6x12 - 2 nos.) along with the washers from the chain guard. (Fig. 2.97)

10 mm spanner

Tightening torque

8 ± 2 Nm

- Push the rear wheel from the back towards front so that the drive chain loosens and hangs as shown. (Fig. 2.98)
- Now, lift the chain guard upward. Gently take out the drive chain by dislocating it from the rear sprocket and swing arm assembly.
- Clean the drive chain by dipping it in kerosene. Brush off any dirt / dust sticking to it.
- Drain / dry the kerosene by hanging the chain for 5 minutes.



2.95A

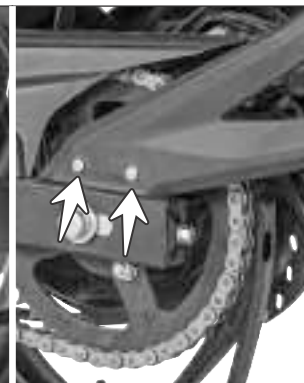
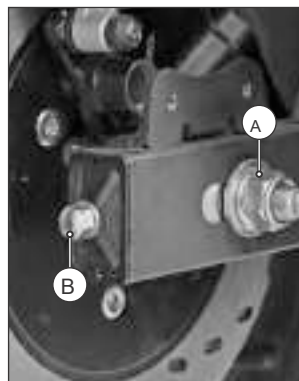


Fig. 2.95B



2.96A Fig.

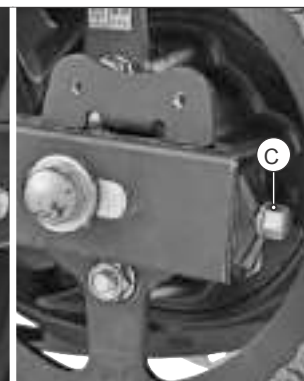


Fig. 2.96B

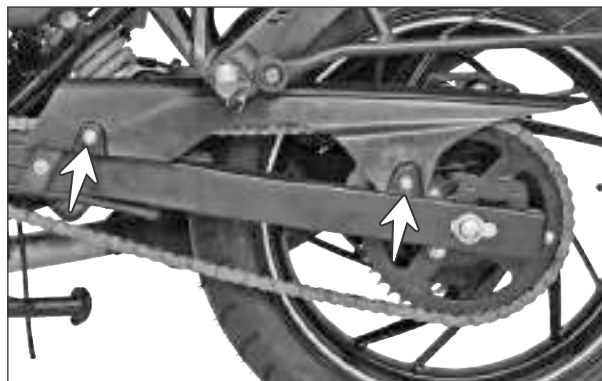


Fig. 2.97 Fig.

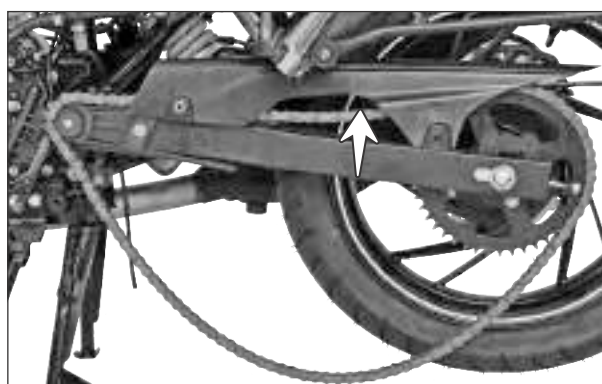


Fig. 2.98

Visually inspect the chain assembly drive for the below listed possible malfunctions.

- Loose pins
- Damaged rollers
- Excessive wear

If found any defects, the chain assembly drive must be replaced with a new one.

Similarly, to check the drive chain elongation, count 21 pins on the drive chain and measure the distance between 20 pitch. (Fig. 2.99)

Vernier caliper

Service limit

256 mm

If the measured distance exceeds the service limits, replace the driver chain with a new one.

If the drive chain is found OK, assemble back to the vehicle. Adjust the drive chain slackness and lubricate.

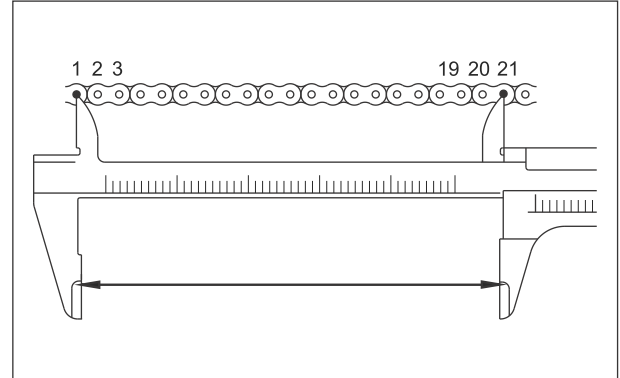


Fig. 2.99

RETAINER OIL SEAL (Drive shaft oil seal)

Inspect at initial 500 - 750 km and every 3000 km thereafter. Replace the retainer every 9000 km.

Remove the sprocket engine along with drive chain as explained in page no. 2-33. Inspect the retainer oil seal for any physical damage. If found any,

Remove the hexagonal flange bolt (M6x16 - 2 nos.) from the mounting of retainer oil seal and take out. (Fig. 2.100)

8 mm spanner

Tightening torque

10 ± 2 Nm

Replace the retainer with a new one.

Note:

Please remember the retainer oil seal must be replaced at every 9000 km irrespective its condition.

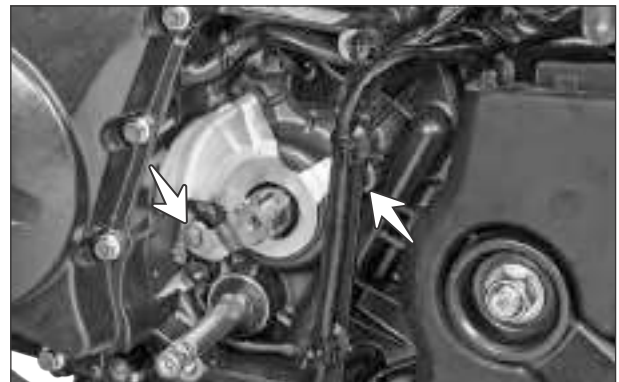


Fig. 2.100

Reassemble the parts in the reverse order of dismantling. Check the drive chain play and if required readjust as explained earlier.

CHAIN GUIDE BOTTOM (Drive chain guide)

Inspect at initial 500 - 750 km and every 3000 km thereafter. Replace the chain guide bottom at every 9000 km.

- Remove the hexagonal bolt (M6x20) from the gear shift linkage assembly and dislocate the gear shift linkage from the shaft gear shift. (Fig. 2.101)

10 mm spanner

Tightening torque

12 ± 2 Nm

- In-order to remove the foot rest assembly, remove the swing arm axle nut along with punched washer. Fig. 2.102)

17 mm spanner

Tightening torque

50 ± 5 Nm

- Also, remove the hexagonal socket head cap screw (M10x25 - 1 no.) along with punched washer from the rider foot rest assembly and take out the rider foot rest assembly. (Fig. 2.102)

8 mm allen key

Tightening torque

18 ± 2 Nm

- Remove the hexagonal flange bolt (M6x16 - 2 nos.) from the mounting of chain guide bottom and take out the chain guide. (Fig. 2.103)

10 mm spanner

- Inspect the chain guide bottom and its bushes for any damage / deformation. If found any replace the guide / bushes with a new one. (Fig. 2.104)

Note:

Please remember the chain guide bottom must be replaced at every 9000 km irrespective its condition.

- Reassemble the parts in the reverse order of dismantling.



Fig. 2.101

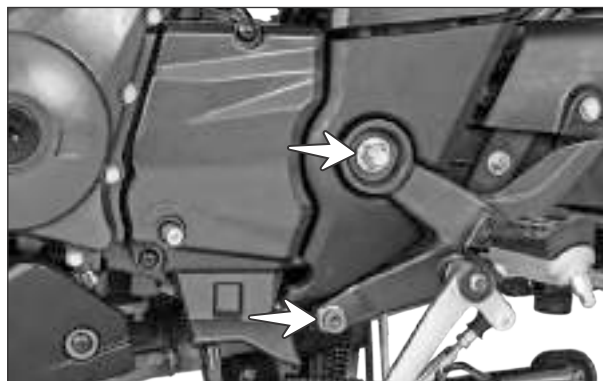


Fig. 2.102

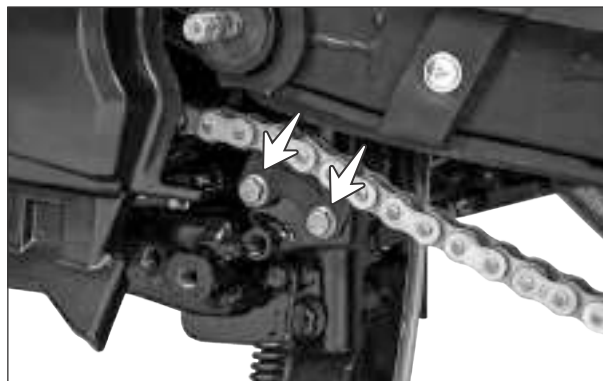


Fig. 2.103

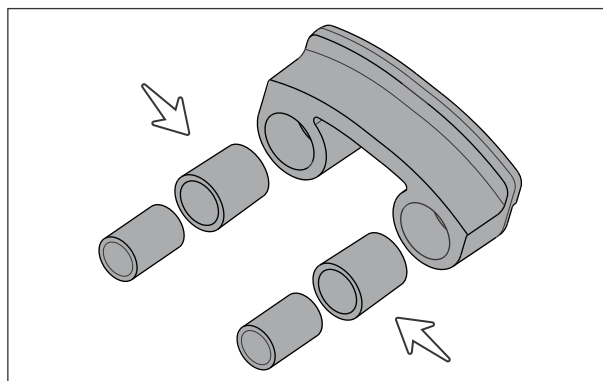


Fig. 2.104

ALL BULBS, HORN AND SWITCHES

Inspect at initial 500 - 750 km and every 3000 km thereafter.

- Inspect for the proper functioning of all bulbs, horn and switches.
- Incase found any abnormality, replace them.
Refer chapter "Electrical system" page no. 5-19 for checking and replacement procedure.

HEAD LAMP BEAM ADJUSTMENT

Inspect and adjust at initial 500 - 750 km and every 3000 km there after.

- Keeping the bike in a straight line, sit on the bike to aim the head lamp beam vertically. Focus head lamp high beam on a vertical screen, which is at a distance of 10 meter from the head lamp bulb's center point. Adjust head lamp assembly such that the focal point of high beam on the screen is 100 mm lower than the head lamp bulb's center. (Fig. 2.105)

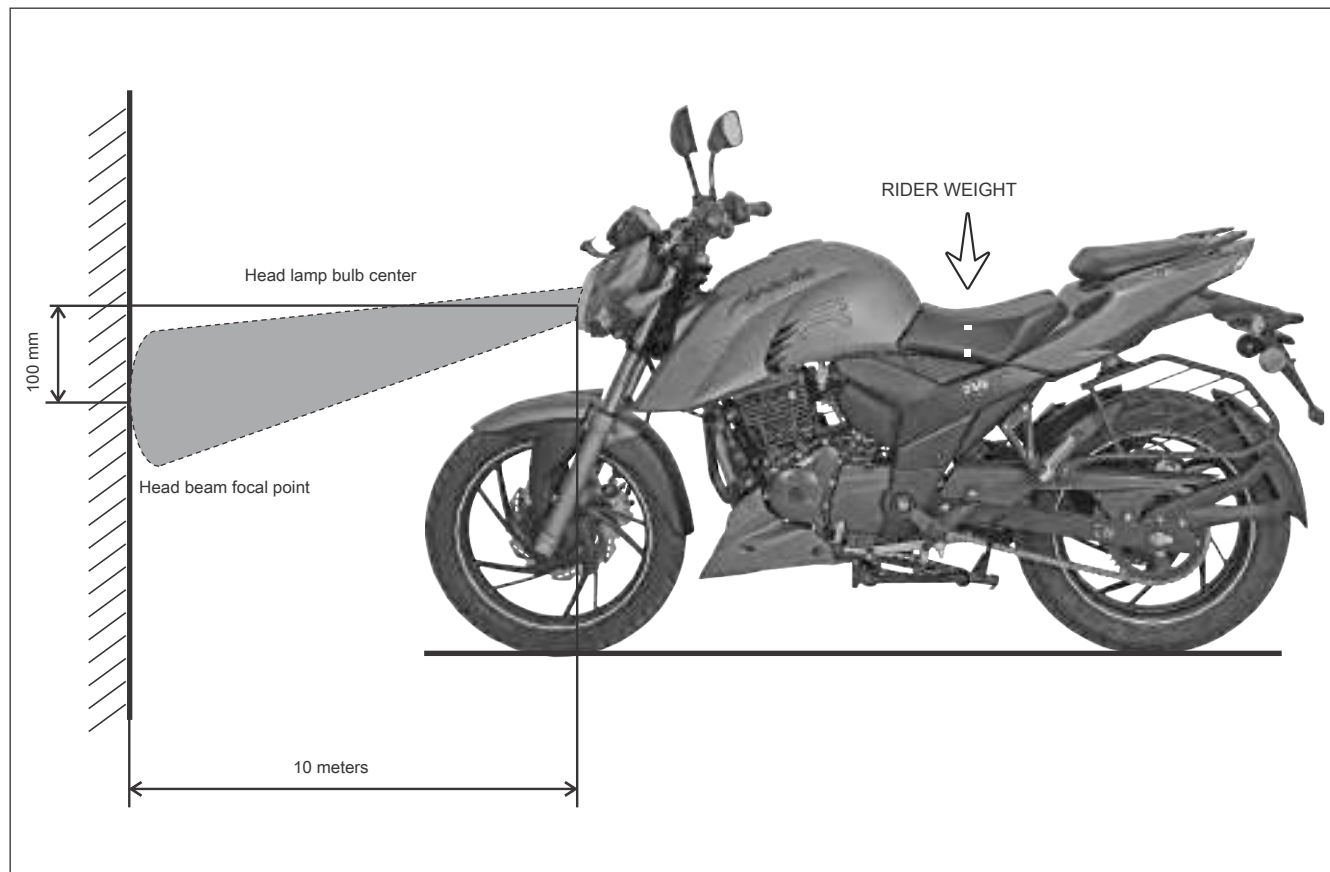


Fig. 2.105

Note:

Head lamp focus should be adjusted only when the head lamp is in high beam.

- 1 To adjust the head lamp focus, insert a small phillips head screw driver into the slot provided on the left side the head lamp and rotate the head lamp adjuster till the focus is adjusted to specification described earlier. (Fig. 2.106)

Small phillips head screw driver



Fig. 2.106

BATTERY ASSEMBLY

Inspect and top-up electrolyte level / Inspect the electrolyte specific gravity and battery voltage at initial 500 - 750 km and every 3000 km thereafter. Recharge if necessary.

- 1 Remove the battery from the vehicle as explained in the chapter "Electrical system" page no. 5-24.

Note:

While removing the battery terminals, remove the '-' terminal first. While reconnecting, connect the '+' terminal at last.

- 1 Visually inspect the surface of the battery container. If any sign of cracking or electrolyte leakage from the sides of battery is noticed, replace the battery with a new.

- 1 Measure the open circuit voltage of battery using pocket tester. (Fig. 2.107)

Pocket tester

Open circuit voltage	12.9 Volts
----------------------	------------

- 1 If the voltage measure is less than 12 Volts, then charge the battery using constant current battery charger by referring the procedure mentioned in chapter "Electrical system" page no. 5-24.

- 1 If the battery lead terminals are found rusty with acidic white powdery substance, then clean them with sandpaper / warm water.



Fig. 2.107

- Add distilled water as necessary, to ensure the electrolyte is above the minimum level line but not above the maximum level line. (Fig. 2.108)

Caution:

Do not add tap water or acid for topping up the battery. Use only distilled water.

Electrolyte specific gravity at 20 C

Battery type	Normal	Under charged
12V, 9.0 Ah	1.28	1.25

- If the specific gravity reading is not in normal condition the battery needs charging. (Fig. 2.109) Recharge the battery with constant current battery charger (refer chapter "Electrical system" page no. 5-26 for charging procedure).

- After doing the necessary check and charging, re-fit the battery in the reverse order of removal and reconnect the terminals. Apply petroleum jelly in the terminals to avoid corrosion.

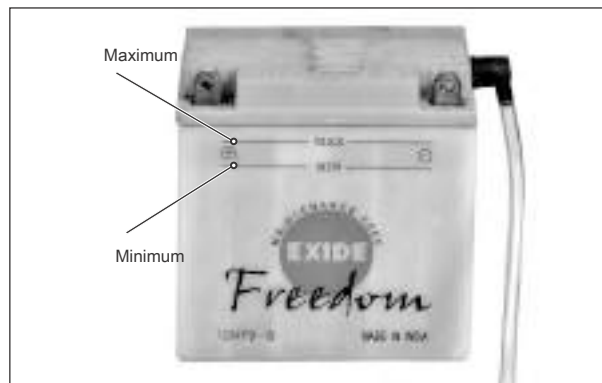


Fig. 2.108

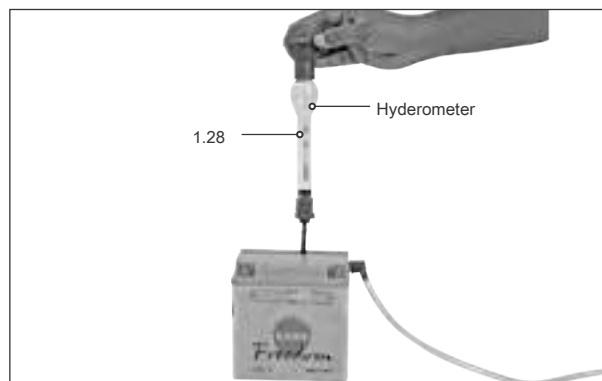


Fig. 2.109

BRAKES

Inspect the front brake and rear brake effectiveness at initial 500 - 750 km and every 3000 km thereafter.

Inspect front and rear brake fluid level and top-up at initial 500 - 750 km and every 3000 km thereafter. Replace brake fluid every 21000 km.

Inspect front and rear brake pad wear at initial 500 - 750 km and every 3000 km thereafter. Replace if necessary.

Inspect brake hose at initial 500 - 750 km and every 3000 km thereafter. Replace brake hose and master cylinder cups every 21000 km.

Brake effectiveness

- Inspect the front and rear brake for its effectiveness. If the brakes are more spongy or ineffective, it may be because of air entry in the brake system which needs bleeding. Refer chapter "Chassis" page no. 6-7 for the procedure of brake bleeding.

Brake fluid level - front brake

- Place the vehicle on center stand. Keep the handle bar straight. Ensure that the master cylinder is parallel to the ground.
- Inspect the brake fluid level in master cylinder through the inspection window. The level should be above the lower mark (A) provided on the reservoir body. (Fig. 2.110)
- If the level is found below the lower level mark on the cylinder, then replenish the level up to the top by following the procedure given below:

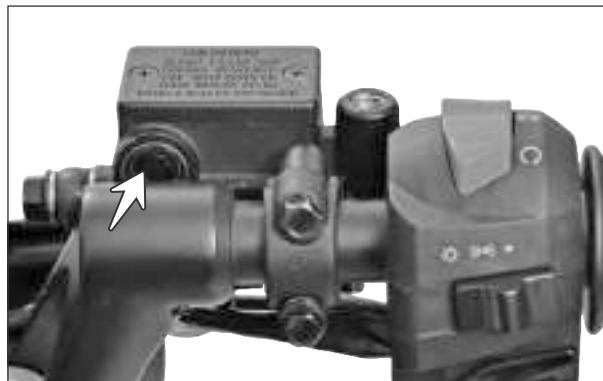


Fig. 2.110

- Remove the mounting screw of reservoir cap. (Fig. 2.111)
- Remove the reservoir cap and take out the plate diaphragm and diaphragm.
- Fill fresh brake fluid of recommended grade

Brake fluid	TVS Grilling DOT3 / DOT4
-------------	--------------------------

- Reassemble the parts and apply the front brake to check the effectiveness.
- If the lever travel is more or the lever feels soft or spongy, air bleeding from the system to be carried out. Refer chapter "Chassis" page no. 6-7 for bleeding procedure.



Fig. 2.111

Brake fluid level - Rear brake

- Remove cover frame R. (refer page 2-4 for removal procedure) Place the vehicle in center stand. Inspect the brake fluid level in the reservoir.
- The brake fluid level in the reservoir should be at the maximum mark provided in the reservoir. Fig. 2.112)
- If the level is found the lower level mark on the reservoir, then replenish the level up to the maximum level.
- Remove the cap and take out the diaphragm. (Fig. 2.113)
- Fill fresh brake fluid of recommended grade.



Fig. 2.112



Fig. 2.113

Brake fluid	TVS Grilling DOT3 / DOT4
-------------	--------------------------

- Reassemble the parts and apply the rear brake to check the effectiveness.
- If the brake pedal travel is more or the pedal feels soft or spongy, air bleeding from the brake system to be carried out. Refer chapter "Chassis" page no. 6-7 for bleeding procedure.

Caution:

Please remember to be replace the brake fluid every 21000 km without fail for the better performance of the brake system.

Disc pad wear - Front & Rear

- Observe the wear limit line marked on the pad and check wear condition of brake pads. (Fig. 2.114)
- When the wear exceeds the limit line replace the pad as a set. Refer chapter "Chassis" page no. 6- & page no. 6-36 for the front and rear pads replacement procedure.

Note:

Brake pad wear can be checked without removing the caliper assembly from the fork and rear wheel.

Caution:

Replace the brake pad with set, otherwise braking performance will be adversely affected.

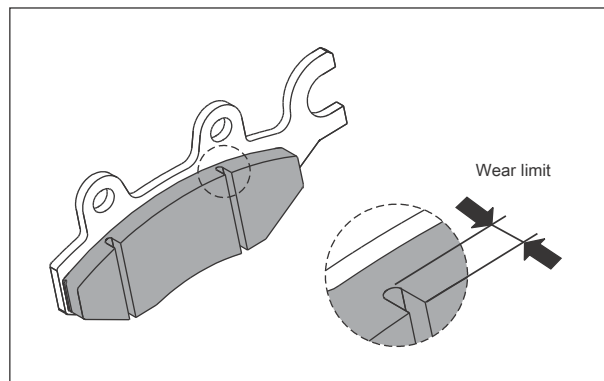


Fig. 2.114

Front & rear brake hoses

- Inspect the front and rear brake hoses for any visual damage / crack and oil leak. If found any, replace the respective hose. However the brake hoses must be replaced every three years without fail for the safety. (Fig. 2.115)
- Refer chapter "Chassis" page no. 6-8 and 6-9 for the brake hoses front and rear replacement procedures.

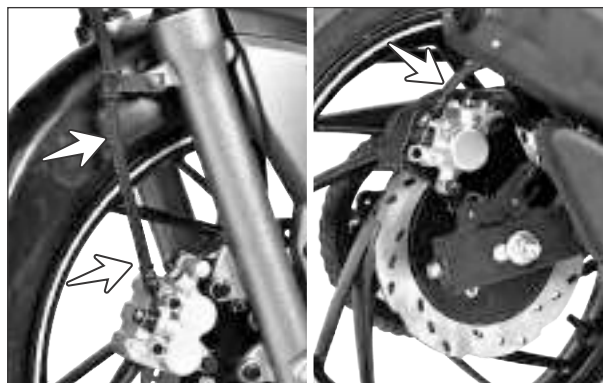


Fig. 2.115

WHEEL FREENESS

Inspect at initial 500 - 750 km and every 3000 km thereafter.

- Slowly rotate both the wheels by hand and observe for any abnormal noise / tightness. (Fig. 2.116)
- If found any, inspect for the proper functioning of brakes. If found OK then, inspect for the proper play in the drive chain (refer page no. 2-32). Also inspect for correctness of wheel bearing, alloy wheel etc., (refer chapter "Chassis" page no. 6-1 & 6-28 for removal and inspection procedure).

Note:
Tight wheel rotation increases fuel consumption.

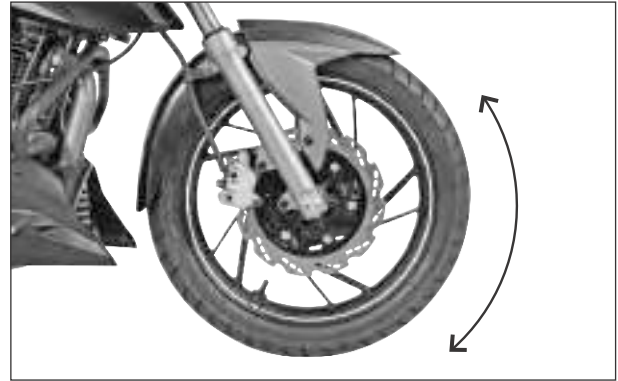


Fig. 2.116

TYRES

Inspect at initial 500 - 750 km and at every 3000 km thereafter.

Tyre tread condition:

- Using the vehicle with excessively worn tyres will decrease riding stability and consequently invite a dangerous situation due to loss of control. It is highly recommended to replace the tyre with a new one when the groove depth of tyre from tread surface reaches the following specifications: (Fig. 2.117)

Service limit	
Front	1.5 mm
Rear	1.5 mm

Tyre depth gauge

Note:
Tyre depth also can be checked by tyre wear indicator. (Fig. 2.118)

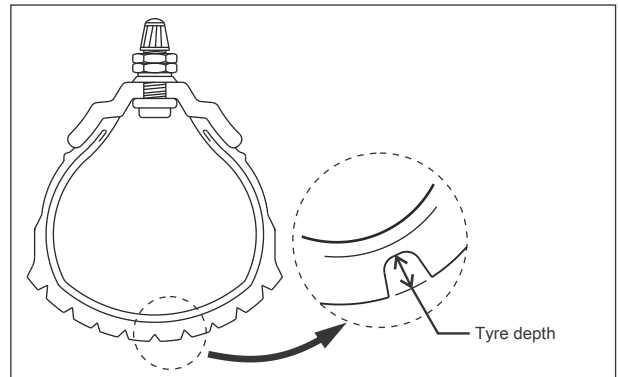


Fig. 2.117



Fig. 2.118

Tyre rotation direction

- While reassembling the tyre, after removing from the wheel rim, ensure that the arrow mark (A) provided on the tyre facing the direction of wheel rotation. (Fig. 2.119)



Fig. 2.119

Tyre pressure:

- Under inflated tyres wear faster, affect stability and smooth cornering. Over inflated tyres decrease area of tyre contact with ground causing skid or loss of control. (Fig. 2.120)
- Maintain proper tyre pressure for good road stability and longer tyre life. Inflate tyres in cold condition to the pressure as given below:

Tyre pressure gauge

Tyre pressure Front	Rear	
	Kg/cm ² (psi)	Kg/cm ² (psi)
Solo riding	1.75 (25)	2.00 (28)
Dual riding	1.75 (25)	2.25 (32)

Note:

Low tyre pressure consumes more fuel.



Fig. 2.120

IDLING CO%

Inspect and adjust at initial 500 - 750 km and every 12000 km thereafter.

- When the engine performance is generally good, tuning of carburettor assembly by adjusting mixture control screw and idling screw will help to control the CO level in exhaust gases.
- Refer chapter "Fuel, lubrication and exhaust system" page no. 4-17 for CO checking and setting procedure.

BALL JOINT GEAR SHIFT LEVER

Lubricate every 6000 km using grease

- ▮ Lubricate the ball joint gear shift lever using grease every 6000 km for easy operation of lever and smooth gear shifting. (Fig. 2.121)

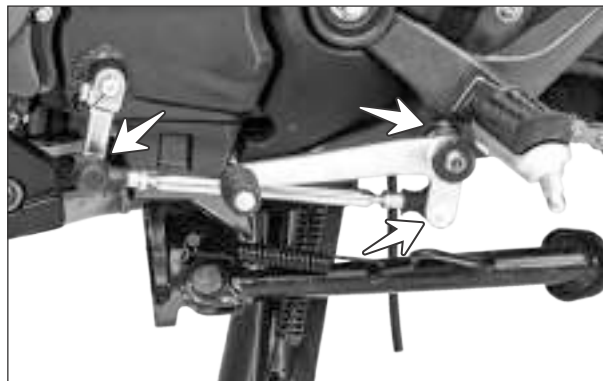


Fig. 2.121

CENTER AND SIDE STAND PIVOT

Lubricate at initial 500 - 750 km and every 3000 km thereafter.

- ▮ Lubricate the pivots of center stand and side stand using TRU4 oil for smooth operation. (Fig. 2.122)

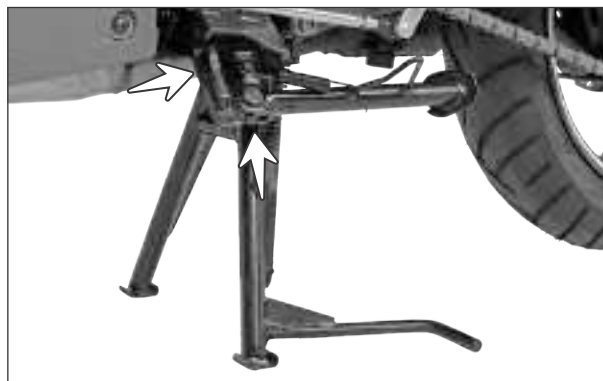


Fig. 2.122

SWING ARM BEARINGS

Lubricate using grease every two years.

- ▮ Loosen hexagonal screw (M6x20 - 1 no) from the arm gear shifter lever mounting and dislocate the gear shift lever from the shaft assembly gear shift. (Fig. 2.123)

10 mm spanner

Tightening torque

10 ± 2 Nm

- ▮ Remove the swing arm axle 'U' nut (M12) along with punched washer. Fig. 2.124

17 mm spanner

Tightening torque

50 ± 5 Nm

- ▮ Also, remove the hexagonal socket head cap screw (M10x25 - 1 no.) along with punched washer from the rider foot rest assembly LH and take out the foot rest assembly. (Fig. 2.124)

8 mm allen key

Tightening torque

18 ± 2 Nm



Fig. 2.123

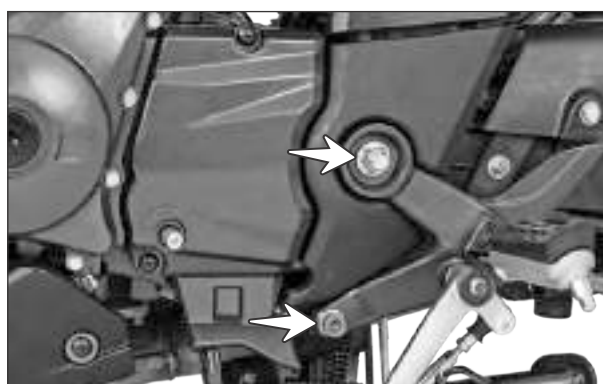


Fig. 2.124

- Disconnect the spring of stop lamp switch from the rear brake pedal. (Fig. 2.125)

Nose plier

Note:

Ensure to reconnect the spring during reassembly for proper working of brake lamp.



Fig. 2.125

- Remove the hexagonal socket head cap screw (M10x25 - 1 no.) along with punched washer from the rider foot rest assembly RH. (Fig. 2.126)

8 mm allen key

Tightening torque

18 ± 2 Nm



Fig. 2.126

- Remove the CRR pan head screw (M6x16 - 1 no.) from the rider foot rest assembly RH top mounting. (Fig. 2.127)

Phillips head screw driver

Tightening torque

10 ± 2 Nm

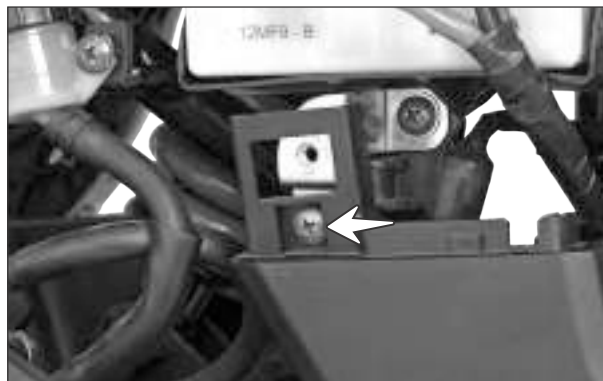


Fig. 2.127

- Draw out shaft complete swing arm by gently tapping at the other side. (Fig. 2.128)

Nylon hammer

Note:

Use a suitable guide in place of shaft complete swing arm to prevent the swing arm declining from its position.

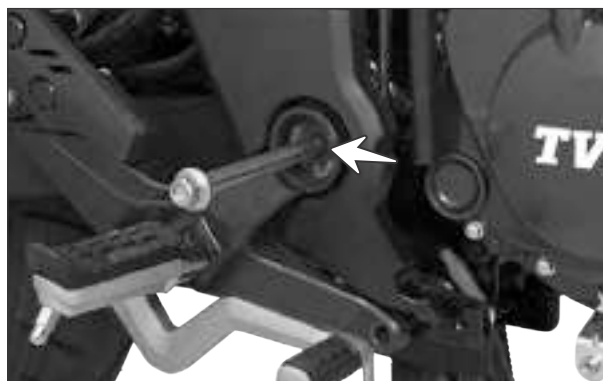


Fig. 2.128

- Take out the foot rest assembly RH along with rear master cylinder assembly and brake pedal assembly and hang it carefully.

Caution:

Care should be taken not to stretch / damage brake hose during the removal foot rest assembly.

- Take out the dust seal swinging arm and sleeve swing arm from the RH side of the swing arm assembly. (Fig. 2.129)

Combination plier

- Clean the sleeve, dust seal, swing arm needle bearing and the swing arm shaft using a clean cloth and lubricate them with **Bechem premium grade 3 grease**.

- Assemble back the foot rest assembly RH while ensuring the proper routing of brake hoses and tighten the mounting bolts.

- Insert the shaft complete swing arm from the RH side while carefully removing the guide (inserted earlier) from the other side.

Note:

Insert the swing arm shaft in such a way that the LH side dust seal swing arm and sleeve can be removed easily and the needle bearing can be accessed for lubrication.

- Now, take out the dust seal swinging arm and sleeve swing arm from the LH side of the swing arm assembly. (Fig. 2.130)
- Clean the sleeve, dust seal and swing arm needle bearing using a clean cloth and lubricate them with **Bechem premium grade 3 grease**.
- Reassemble the foot rest assembly LH and tighten the mounting bolts.
- Assemble the shaft swing arm's 'U' nut and tighten it to the specified torque.
- Reconnect the gear shift lever to the shaft gear shifting and tighten the mounting bolt.

- Reconnect the spring stop lamp switch and ensure the proper working of brake lamp while applying the rear brake.

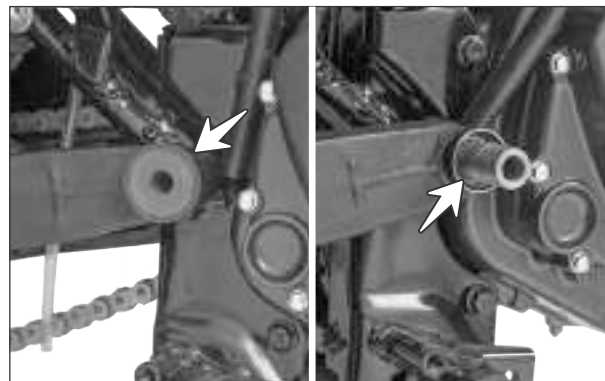


Fig. 2.129

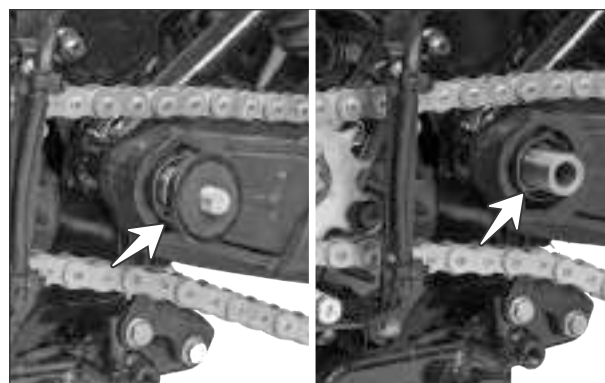


Fig. 2.130

WHEEL BALANCING

Wheel balancing to be done every 1 year or every 12000 km. In addition, after every tyre puncture repair or tyre replacement, wheel balancing to be done.

The Inspection of wheel balance and balancing of unbalanced wheels may be done by the manual procedure or by using an automatic wheel balancing machine as detailed below.

Inspection of wheel balance and balancing the wheel (manual method)

1. Remove front or rear wheel assembly which needs to be checked for unbalance from the vehicle.

2. Support the wheel as shown in figure using a fixture (A) and an axle. (Fig. 2.131)

Note:

Ensure that the wheel is rotating freely on the fixture without any obstruction.

Ensure the axle is in horizontal position and the wheel is not having any axial movement on the fixture.

3. Rotate the wheel by hand and mark (Q) at the top as shown in the figure when the wheel stops rotating (comes to a halt). (Fig. 2.131)

4. Rotate the wheel five times.

5. If the 'Q' marked on the wheel stops randomly at different positions on each of the five rotations, then the wheel is considered as balanced sufficiently.

6. Else, if the 'Q' marked on the wheel stops at one position on each of the five rotation, then the wheel is unbalanced and it need to be balanced again.

Follow the procedure given below for balancing the wheel manually.

1. Clean the exposed surface (A) of the wheel rim with IP 80% solution (cleaning agent) at the position 'Q' marked. (Fig. 2.132)

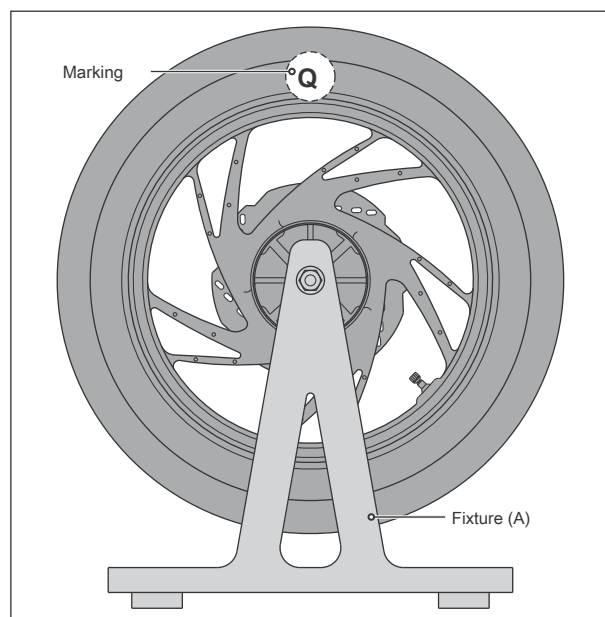


Fig. 2.131

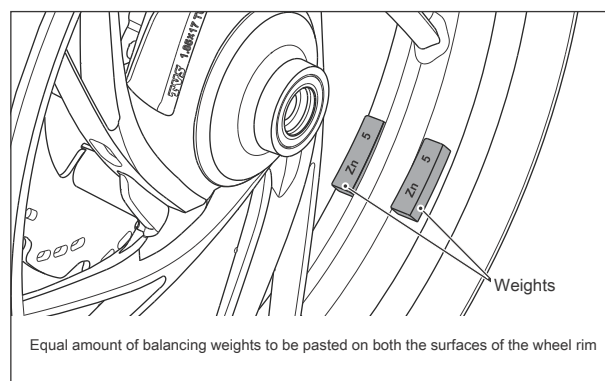


Fig. 2.132

2. Temporarily fix a 10 gram (5 gram each on both the side) balancing weight on the wheel rim near the 'Q' marked area, using a temporary adhesive tape (without removing the protective cover on the balancing weight).
3. Hold the wheel by hand and rotate it $\frac{1}{4}$ turn downwards (angle 'L' indicated in the figure) and leave. (Fig. 2.133)
When the wheel is left, if the wheel does not rotate further ('up' or 'down'), it may be concluded that the wheel is balanced. If the wheel rotates 'up' or 'down', then the wheel needs to be balanced further.
4. If the wheel rotates and the weight goes up, replace the weight with next heavier size by referring Table 1. Further, if the wheel rotates and the weight goes down, replace the weight with the next lighter size from the Table 1.
5. Repeat the steps 3 & 4 till the wheel remains at rest after being rotated $\frac{1}{4}$ turn.
6. For final confirmation, rotate the wheel further $\frac{1}{4}$ turn (by hand) and yet again another $\frac{1}{4}$ turn. In both the cases, if the wheel comes to a rest after $\frac{1}{4}$ turn rotation, it may be concluded that the wheel is balanced.

After final confirmation, the balancing weight must be fixed permanently at the locations decided earlier. Follow the procedure given below for fixing the weight permanently.

1. Remove the temporarily fixed balancing weights and clean the wheel rim surface with IP 80% solution (cleaning agent) at the designated location where the balancing weight needs to be fixed again.
2. Remove (peel off) the protective cover on the back side of the balancing weight as shown. (Fig. 2.134)
3. Stick the balancing weight at the cleaned location on the wheel rim with a minimum pressure of 1 kg/cm and hold for 3 Sec (min).

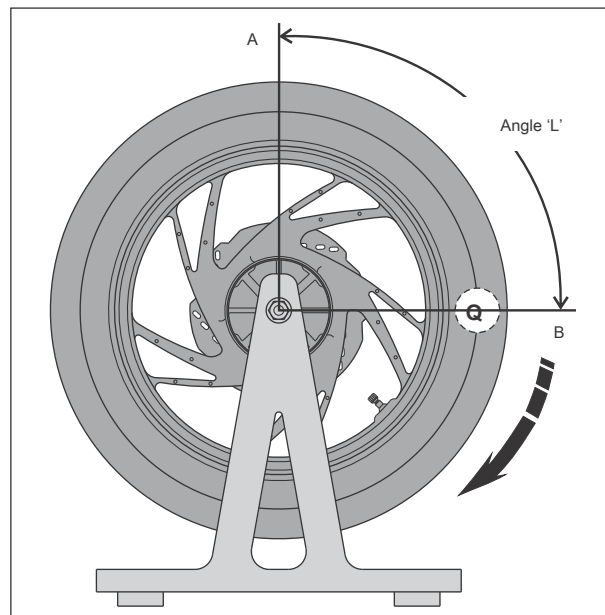


Fig. 2.133

Table 1		
SL.No.	Part No.	Weight
1	N732 016 0	5 g
2	N732 017 0	10 g
3	N732 018 0	15 g
4	N732 019 0	20 g
5	N732 020 0	25 g
6	N732 021 0	30 g

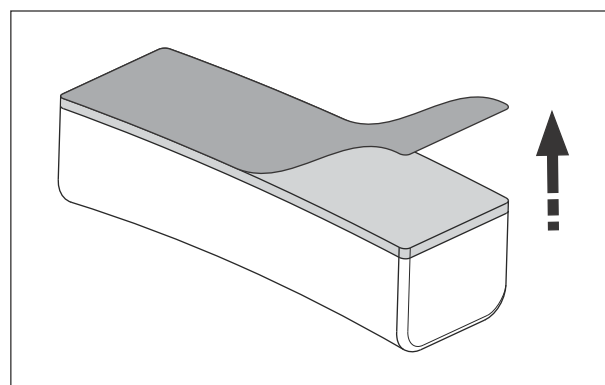


Fig. 2.134

Inspection of wheel balance and balancing the wheel (using automatic wheel balancing machine)

- Alternatively, in lieu of the manual procedure, the unbalance in the wheel may be checked and balancing of the wheel may be done using an automatic wheel balancing machine. For instructions, please refer to the User's manual of the automatic wheel balancing machine.
- After checking, fix the balancing weights permanently to the wheel rim by referring the procedure given in the previous page.
- After the balancing procedure is completed using an automatic wheel balancing machine, the wheel may be deemed to be balanced if the permissible residual unbalance (U_{per}) in the wheel assembly is less than 2122 g-mm (in front wheel) and 2117 g-mm (in rear wheel), for balance quality grade G40 as per the method of unbalance measurement specified in ISO 1940-1:2003.

Note:

The sum total of all balancing weights fixed on a single wheel rim shall not exceed 60 g in front wheel and 70 g in rear wheel, irrespective of the procedure used for balancing (manual or automatic).

Use genuine TVS-M approved Balancing weights only (refer Table 1).

Removal (uninstallation) of balancing weight from wheel rim:

- As the balancing weight is of "Stick-on" type, it may be removed from the wheel rim by application of sufficient force by hand. Do not use sharp objects to remove the balancing weight, as it may damage the wheel rim surface. After removal, clean the location on the wheel rim from where the balancing weight was removed, with IP 80% solution (cleaning agent) before fixing any more balancing weights.

Caution:

Vehicle with unbalanced wheels are unsafe to ride. Ensure that the balancing weights are not loosely fixed on the wheels.

LUBRICATION POINTS

Note:

Lubricate the exposed parts which are subject to rust, with either engine oil or grease as mentioned in the schedule or whenever the vehicle has been operated under wet or rainy conditions.

Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.

Dotted line indicates RH side lubricating points Lubricate all cable ends using grease

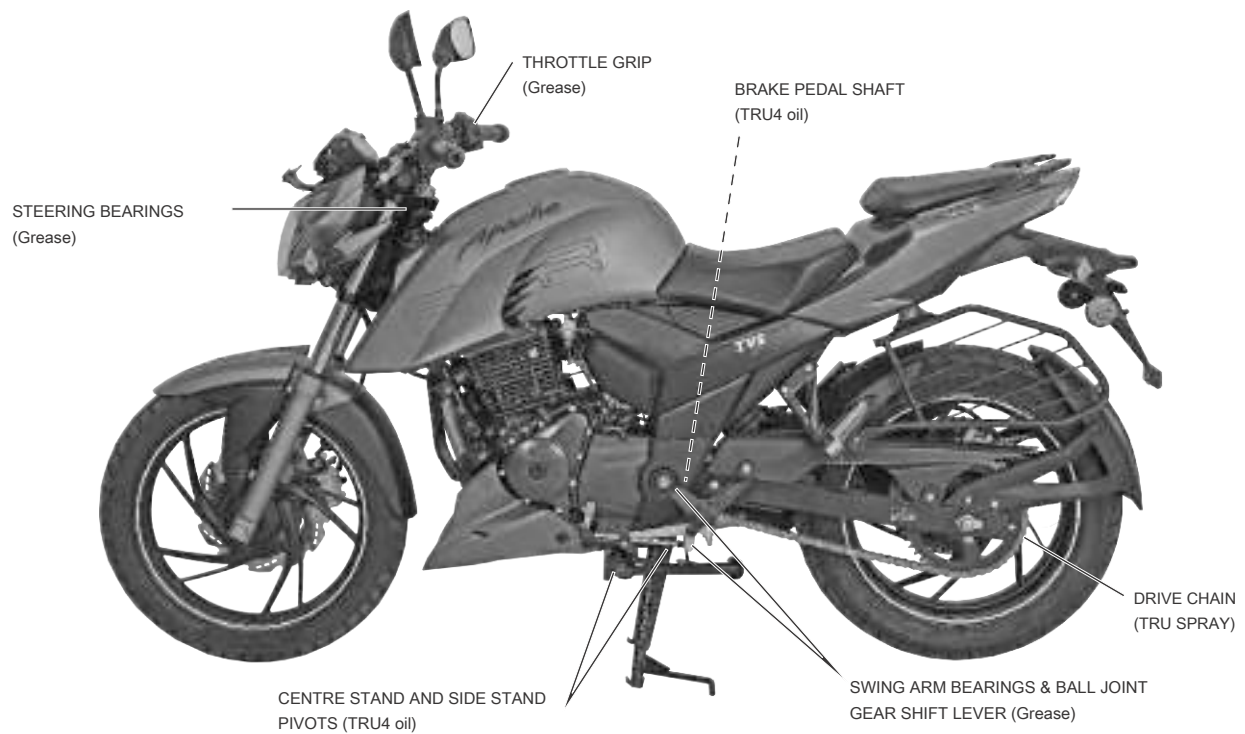


Fig. 2.135

SERVICE REMINDER RESET PROCEDURE

If the service reminder (R) is glowing, reset it after carrying out periodic services.

Turn 'ON' the ignition and wait till the completion of speedometer's self test cycle (till the 'RACE ON' message appears on the speedometer dial).

Press the 'Mode' button (A) till the display changes to 'HIGH SPEED' mode ().
(Fig. 2.136)

Note:

Please remember that the service reminder indicator of speedometer can be reset only in 'HIGH SPEED' mode.

Now, press and hold both 'Mode' and 'Set' buttons (A & B) till the service reminder indicator disappears. (Fig. 2.137)

Turn 'OFF' and turn 'ON' the ignition and once again confirm that the indicator is reset (not appearing again).

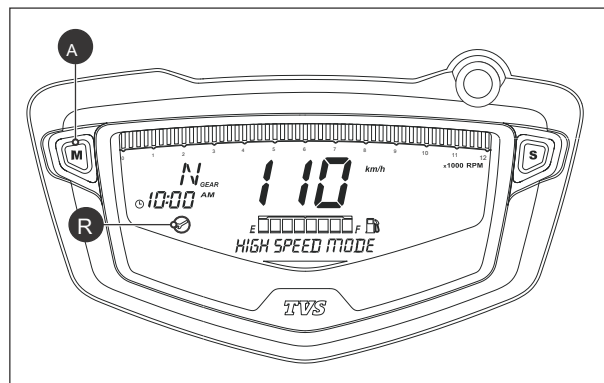


Fig. 2.136

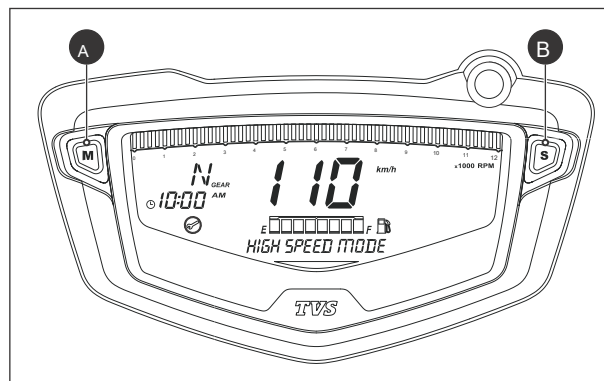


Fig. 2.137

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ENGINE OVERHAUL

Before beginning engine overhaul, observe engine conditions for the following:

- Cleanliness
- Compression pressure
- Any abnormal noise
- Oil leak, seepage if any

To overhaul the gears, balancer shaft, shaft complete counter, shaft complete drive and crankshaft assembly, the crank cases need to be separated.

COMPRESSION PRESSURE

1 Warm-up the engine to normal operating temperature before checking the compression pressure.

1 Stop the engine and remove the spark plug.

Plug spanner

1 Mount the compression gauge adaptor to the plug hole, taking care to make the connection leak proof. (Fig. 3.1)

Compression gauge and special adaptor

Caution :

Before mounting the gauge, ensure that the gauge is calibrated. Similarly, after mounting the gauge ensure that there is no leakage in the line.

1 With the fuel cock knob in 'OFF' position, switch 'OFF' the ignition, open the throttle fully and crank the engine five to six times with the electric starter, until the maximum reading achieved in the compression gauge.

Standard	6.3 ~ 8.4 kg/cm (90 ² ~ 120 psi)
Service limit	

1 If the compression pressure is high, it indicates that high carbon deposit on the combustion chamber and the piston crown.



Fig. 3.1

! If the compression pressure is low, pour 3 to 5 cc of clean engine oil into the cylinder through the sparkplug hole and re-check the compression pressure. If the compression pressure increases from the previous value, then check the following.

- Leaking cylinder head gasket.
- Worn piston rings.
- Worn cylinder and piston.
- Piston ring stuck in the grooves.

! If the compression pressure is the same as the previous value, check the valves for leakage and carburettor piston valve opening.

CLUTCH - SERVICING

REMOVAL

Clutch assembly can be serviced with the engine mounted on the vehicle itself. Normally clutch is serviced for:

- Loss of power / low pickup
- Jerking of vehicle
- Any abnormal noise from clutch
- Kick slip

! Drain engine cum transmission oil as explained in chapter "Periodic maintenance" page no. 2-12.

! After draining always measure the oil quantity using a measuring jar.

! Remove filter complete engine oil as explained in chapter "Periodic maintenance" page no. 2 - 13 .

! Loosen lock nut (A) and adjusting nut (B) from the cable assembly clutch mounting. (Fig. 3.2)

12 mm spanner

! Using 20 mm open end spanner rotate the arm clutch release towards front, in such a way that cable assembly clutch can be dislocated from the arm clutch release. (Fig. 3.3)

20 mm spanner

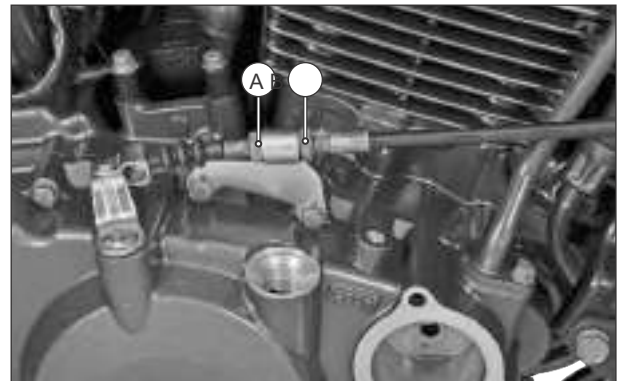


Fig. 3.2



Fig. 3.3

- Dislocate the cable assembly clutch from the bracket clutch cable. (Fig. 3.4)
- Place a plastic tray under the engine to collect the remaining oil in the engine while removing the cover clutch.

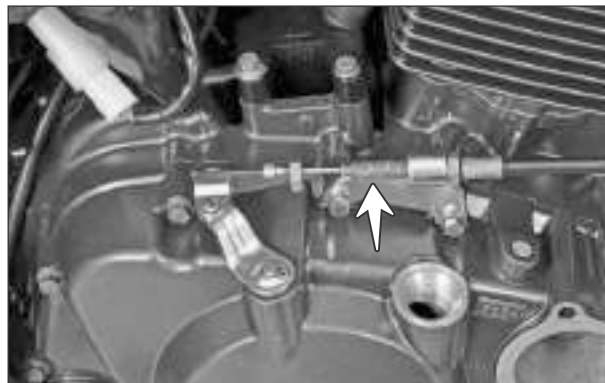


Fig. 3.4

- Remove the hexagonal flange bolt (M6x25 - 1 no.) from the pipe complete outlet of engine oil cooler and dislocate the pipe from the cover clutch casting. (Fig. 3.5)

8 mm spanner

Tightening torque

10 ± 2 Nm



Fig. 3.5

- Remove the hexagonal socket head cap screw (M6x16 - 1 no.) from the cover clutch mounting. (Fig. 3.6)

4 mm allen key

Tightening torque

10 ± 2 Nm

Caution:
While reassembling, ensure to assemble the hexagonal socket head cap screw without fail to avoid leakage of oil.



Fig. 3.6

- Remove the hexagonal flange bolts (M6x35 - 11 nos.) from the cover clutch mounting. (Fig. 3.7)

8 mm spanner

Tightening torque

10 ± 2 Nm

- Take out cover clutch by gently tapping at the ends using nylon hammer.

Nylon hammer

- Take out gasket cover clutch and dowel pin clutch cover (2 nos).

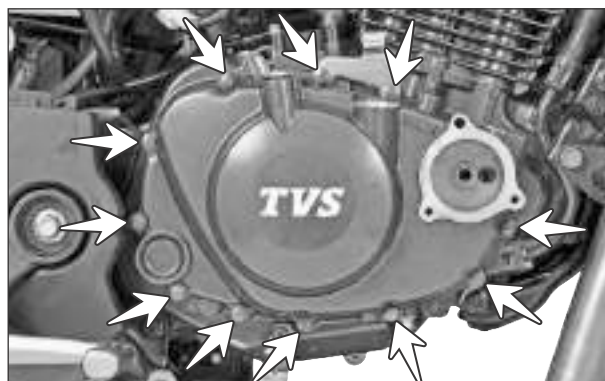


Fig. 3.7

- Take out adopter pin clutch release from the clutch assembly along with a ball (dia. 3/16). (Fig. 3.8)

Caution:

While reassembling ensure to assemble the ball without fail.



Fig. 3.8

- Remove the hexagonal flange head bolts (M6x25 - 4 nos.) from the plate clutch release mounting. (Fig. 3.9)

10 mm spanner

Tightening torque

10 ± 2 Nm

Note:

Please follow the uniform loosening and tightening of plate clutch release bolts to avoid uneven loading of plate.

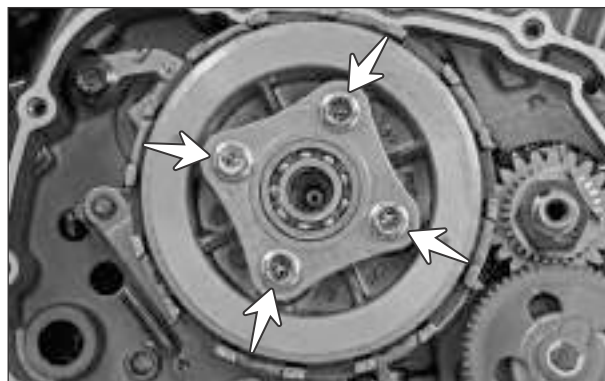


Fig. 3.9

- Take out plate clutch release.

- Take out the spring clutch (4 nos.). (Fig. 3.10)

Caution:

While reassembling, ensure all the four clutch springs are having same colour grade.

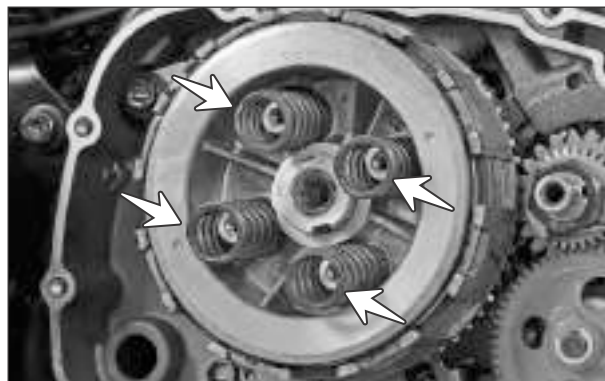


Fig. 3.10

- Using special tool hold the disc clutch pressure and remove nut clutch shaft (slotted nut). (Fig. 3.11)

N231 001 0

Clutch holding tool

N231 002 0

Clutch nut tightening tool

27 mm spanner

Tightening torque

60 ± 10 Nm

Caution:

Assemble all the four bolts of plate clutch release with the clutch holding special tool. Do not experiment with two bolts mounted diagonally as it may damage the disc clutch pressure.



Fig. 3.11

- Take out the spring disc from clutch shaft.

(Fig. 3.12)

Note:

While reassembling, locate the spring disc in such a way that the concave face diameter of washer faces towards outside.

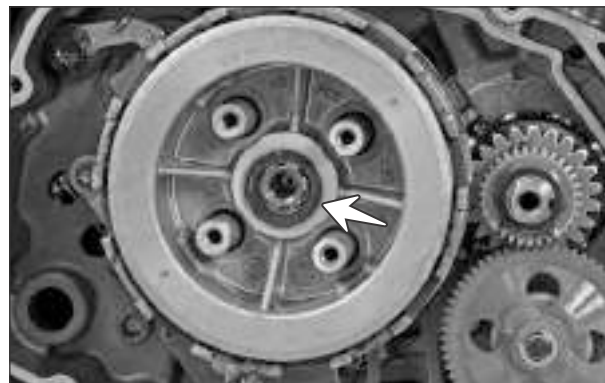


Fig. 3.12

- Pull out disc clutch pressure along with the hub clutch, plate clutch driven (5 nos.) and plate clutch drive (4 nos.) as a set. (Fig. 3.13)

Caution:

Please note that, one plate clutch drive (the top one) is seated in next groove of the clutch housing as shown. Care should be taken to reassemble the top drive plate in the same position.

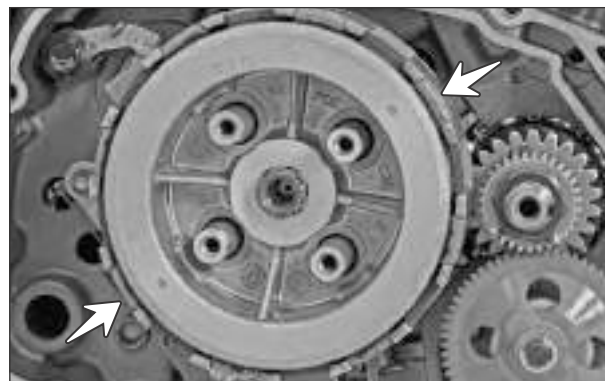


Fig. 3.13

- Separate the hub clutch, plate clutch driven (5 nos.), plate clutch drive (4 nos.) and disc clutch pressure. (Fig. 3.14)

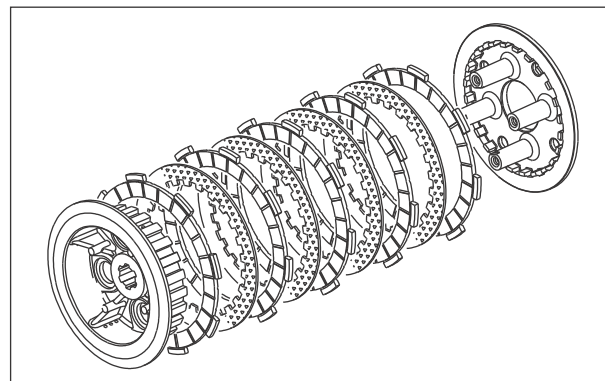


Fig. 3.14

- Remove thrust washer clutch hub from the shaft complete counter. (Fig. 3.15A)

- Pull out gear assembly primary driven along with a clip primary driven gear from gear complete kick starter. (Fig. 3.15B)

Note:

While reassembling, ensure the clip in the gear assembly primary driven.

Also ensure to locate and lock the gear assembly primary driven with gear complete kick starter driven.

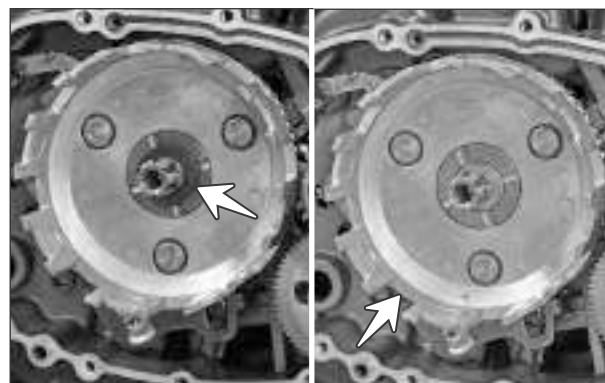


Fig. 3.15A

Fig. 3.15B

INSPECTION

Plate clutch drive

- Inspect the thickness of plate clutch drive using a vernier caliper. If the thickness is less than the service limit, change the plate clutch drive as a set. (Fig. 3.16)

Vernier caliper

Service limit	2.600 mm (min)
---------------	----------------

- Similarly, inspect the claw width of plate clutch drive using a vernier caliper. (Fig. 3.17). If the claw width is less than the service limit, change the plate clutch drive as a set.

Vernier caliper

Service limit	15.300 mm (min)
---------------	-----------------

- Check the plates for burning due to excessive friction / contaminated or low oil level. Inspect plate clutch drive claws for indents (cut marks) due to regular thrust from the housing clutch. Found if any, replace the plates as a set.

Plate clutch driven

- Inspect the distortion of plate clutch driven using a feeler gauge as shown. (Fig. 3.18)
- Check every individual plates. Hold the plates with three fingers and insert the feeler gauge between the surface plate and driven plate at 3 to 4 locations to determine the distortion. If the distortion is more than the service limit, change the plate clutch driven as a set.

Service limit	0.100 mm (max)
---------------	----------------

Spring clutch

- Check the free length of springs clutch using a vernier caliper. If the springs reaches service limit, replace all the spring as a set. (Fig. 3.19)

Service limit	28.8 mm
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Caution:

Clutch springs are graded and identified with different colour codes. While reassembling ensure the springs of same colour codes are assembled.

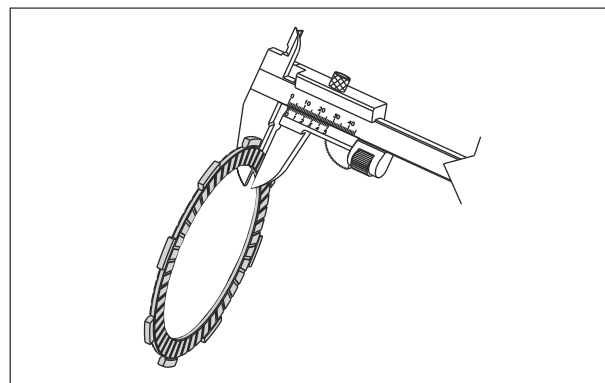


Fig. 3.16

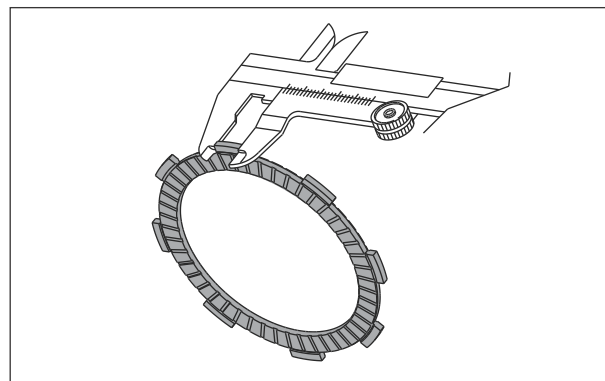


Fig. 3.17

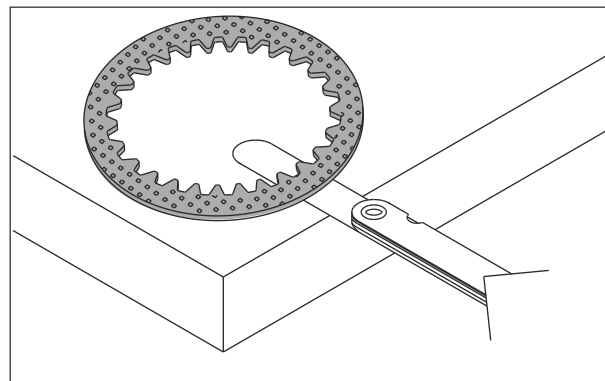


Fig. 3.18

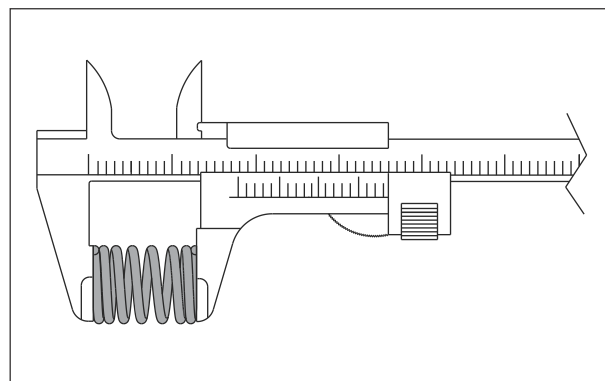


Fig. 3.19

Gear assembly primary driven (housing clutch)

- Inspect housing clutch for the indents / cuts created by the plate clutch drive. (Fig. 3.20)

Note :

Check the primary drive gear play by rotating the gear portion. The play should be lesser than 6° with respect to the housing clutch (aluminum body). If it is found more, replace the primary driven gear assembly with a new.



Fig. 3.20

Hub clutch

- Inspect the hub clutch for wear. If any ridges or cuts formed in the hub clutch by the clutch plates, replace with a new one. Also check the lubrication holes for any blockage. (Fig. 3.21)



Fig. 3.21

REASSEMBLY

- Reassemble parts in the reverse order of disassembly.
- Before reassembling, inspect the bearing clutch release plate for any abnormal noise and smooth rotation. Replace bearing with a new one if found defective.
- Ensure the clutch plates are held firmly together by checking the play between the drive plates after tightening the plate clutch release bolts. (Fig. 3.22)
- Before reassembling cover clutch, ensure the assembly of a ball and pin clutch release inside the adopter clutch release.
- Replace the gasket cover clutch with a new one.
- Reconnect the clutch cable and adjust clutch play. Refer chapter "Periodic maintenance" page no. 2-25 for clutch adjustment procedure.
- Refill the engine cum transmission oil. Refer chapter "Periodic maintenance" page no. 2-12 for oil filling procedure.



Fig. 3.22

CYLINDER HEAD ASSEMBLY - SERVICING

REMOVAL

Remove the cover frame R and L as explained in the chapter "Periodic maintenance" page no. 2-4.

Remove the fuel tank complete as explained in the chapter "Periodical maintenance" page no. 2-5.

Disconnect the HT card from the spark plug and remove the spark plug. (Fig. 3.23)

Plug spanner

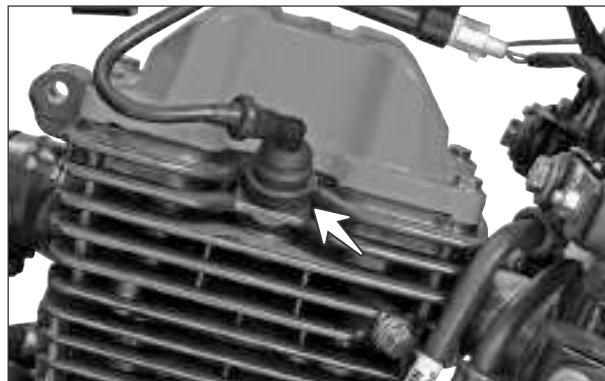


Fig. 3.23

Loosen the hose clip (A) of tube air cleaner outlet and hose clip (B) of pipe intake complete. (Fig. 3.24)

Phillips head screw driver

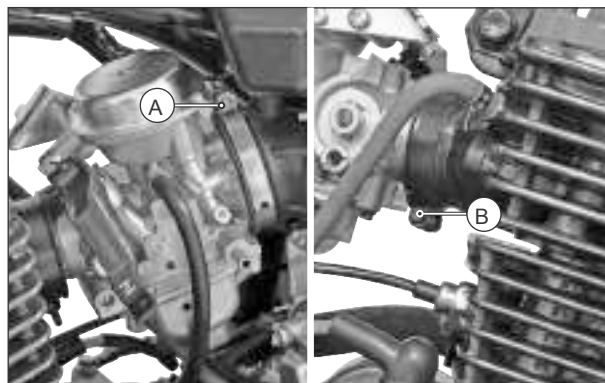


Fig. 3.24

Remove the plug (A) using small flat screw driver from the adjuster assembly. (Fig. 3.25A)

Using a small flat screw driver, lock the adjuster plunger by rotating it in clockwise direction. (Fig. 3.25B)

Small flat screw driver

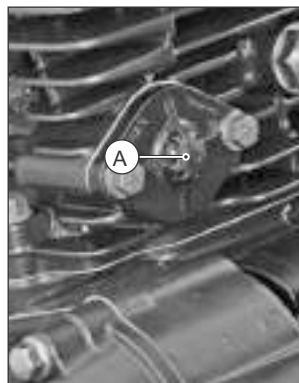


Fig. 3.25A



Fig. 3.25B

- Remove the hexagonal flange bolts (M6x16 - 2 nos.) from the adjuster assembly mounting and take out the adjuster assembly along with a gasket. (Fig. 3.26)

8 mm spanner

Tightening torque

10 ± 2 Nm

- Remove the hose air cut valve of secondary air injection assembly by dislocating the hose clip. (Fig. 3.27)

Nose plier

- Remove the hexagonal bolt (M6x16 - 1 no.) along with wave spring washer from the mounting of pipe complete SAI (at cylinder block). (Fig. 3.28A)

- Remove the hexagonal bolt (M6x16 - 1no.) from the mounting of pipe complete SAI (at magneto cover) and dislocate the pipe complete SAI. (Fig. 3.28B)

8 mm spanner

Tightening torque

5.5 ± 0.5 Nm

- Disconnect the wiring socket (A) of ignition coil from the wiring harness. (Fig. 3.29)

- Remove the hexagonal flange bolt (M6x20 - 2 nos.) from the mounting of ignition coil assembly and take out the ignition coil. (Fig. 3.29)

10 mm spanner

Tightening torque

5.5 ± 1 Nm

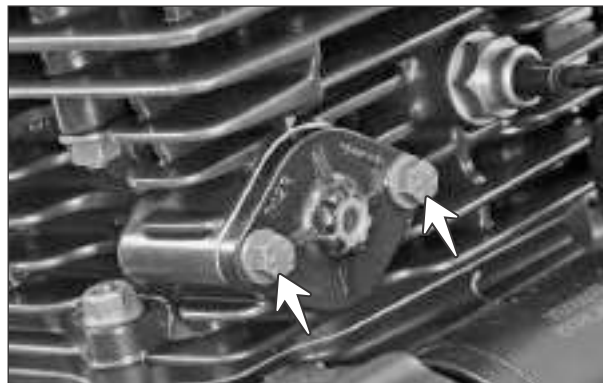


Fig. 3.26

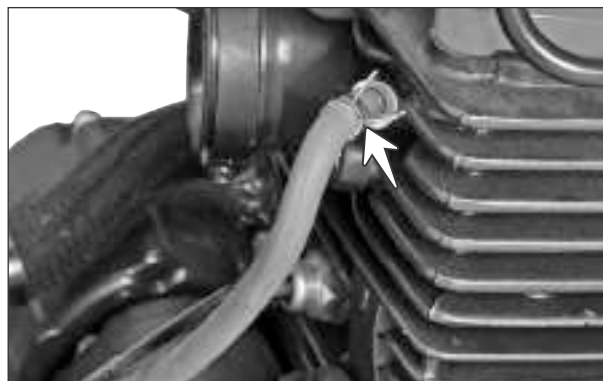


Fig. 3.27

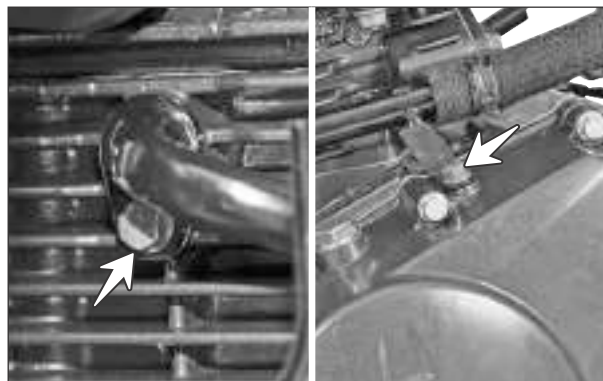


Fig. 3.28A

Fig. 3.28B

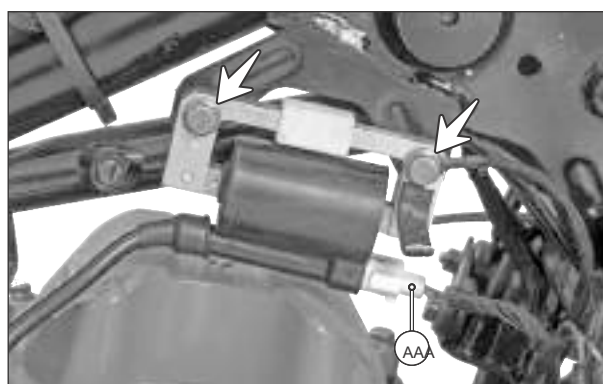


Fig. 3.29

- In-order to remove the muffler assembly, the engine guard need to be removed.

- Remove the CRR pan head screw (M6x20 - 1 no.) along with plain washer from the top mounting of engine guard. (Fig. 3.30)

Phillips head screw driver

Tightening torque	4.5 ± 1.5 Nm
-------------------	--------------

- Remove the CRR pan head screw (M6x20 - 2 nos.) along with plain washers from the LH and RH mounting of engine guard. (Fig. 3.31)

Phillips head screw driver

Tightening torque	4.5 ± 1.5 Nm
-------------------	--------------

- Gently takeout the engine guard as an assembly.

- Remove the hexagonal socket head cap screw (M8x30 - 2 nos.) from the muffler assembly front mounting. (Fig. 3.32A)

- Remove the hexagonal socket head cap screw (M8x25 - 1 no.) from the center mounting of muffler assembly with punched washer. (Fig. 3.32B)

6 mm allen key

Tightening torque	18.1 ± 1.3 Nm
-------------------	---------------

- Remove the hexagonal bolt (M8x60 - 1 no.) from the muffler assembly rear mounting along with punched washer and 'U' nut. (Fig. 3.33)

12 mm spanner

Tightening torque	19.6 ± 2 Nm
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- Take out muffler assembly by dislocating form the cylinder head assembly.



Fig. 3.30

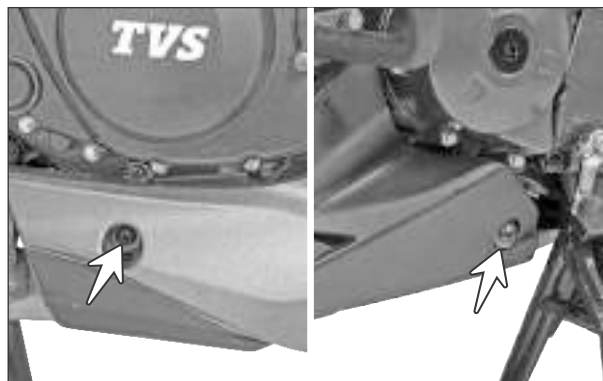


Fig. 3.31

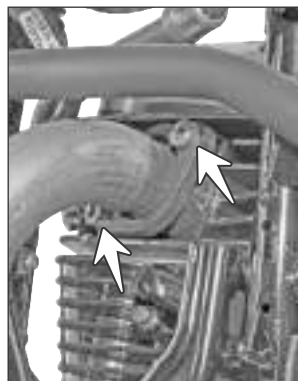


Fig. 3.32A

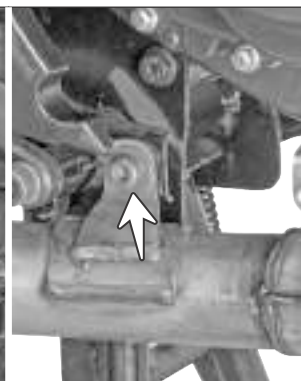


Fig. 3.32B

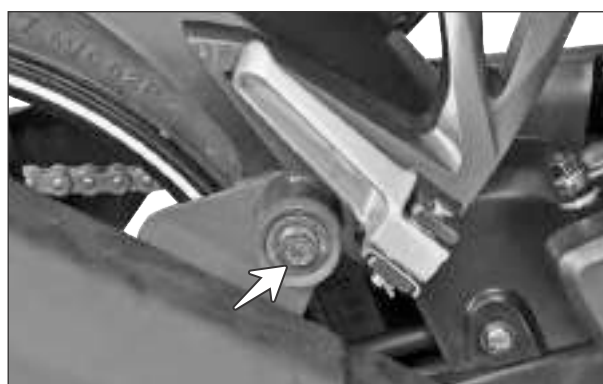


Fig. 3.33

- Remove the hexagonal flange nuts (2 nos.) fastening the cylinder head assembly with the cylinder block. (Fig. 3.34)

10 mm spanner

Tightening torque

7 ± 1 Nm

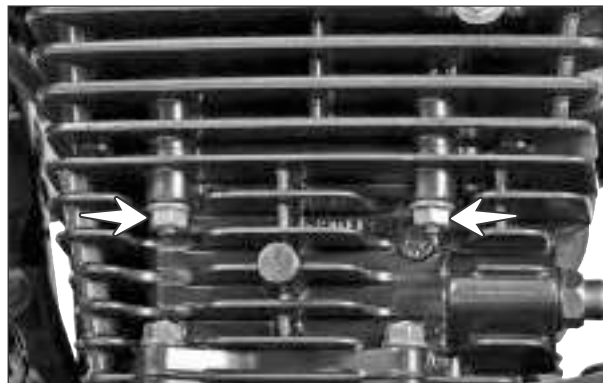


Fig. 3.34

- Remove the hexagonal flange bolt (M16x25 - 4 nos.) from the cover cylinder head mounting. (Fig. 3.35)

10 mm spanner

Tightening torque

10 ± 2 Nm

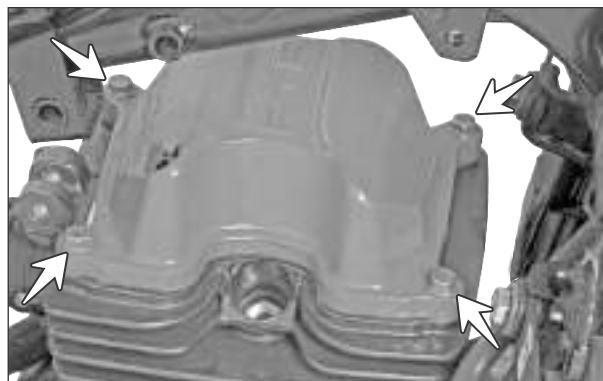


Fig. 3.35

- Take out the packing seal cover cylinder head. (Fig. 3.36)

Note:

While reassembling inspect the condition of the packing seal. If any distortion / damage is found, replace the packing with a new one.

- Slowly rotate the rear wheel and engage first gear.
- Now, remove the hexagonal flange bolt (M8x1.25 LH) from the cam shaft assembly. (Fig. 3.37)

10 mm spanner

Tightening torque

18 ± 2 Nm

Caution:

Since left hand type thread is used in the bolt, it should be loosened in the opposite direction.

Note:

Apply ANABOND 112 thread locker during reassembly of the bolt.

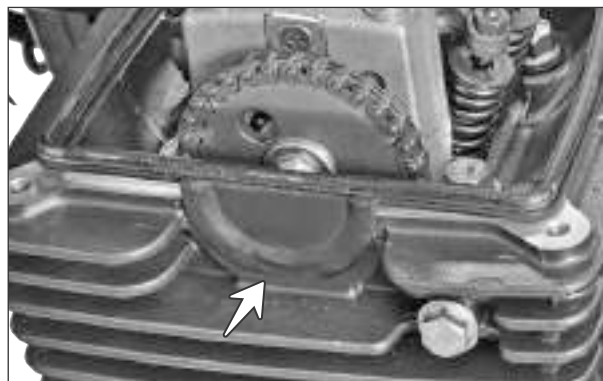


Fig. 3.36

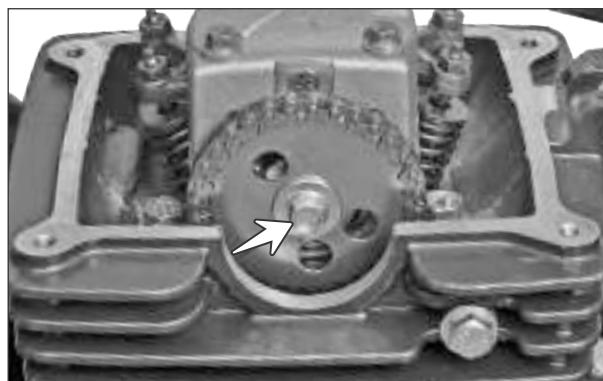


Fig. 3.37

- 1 Gently pull out the sprocket cam shaft using nose plier and dislocate the cam chain from cam sprocket. (Fig. 3.38)

Caution:

Care should be taken not to drop the cam chain inside the crankcase assembly while dislocating.

- 1 Hold the cam chain using a good quality copper wire to prevent the chain from falling into the crankcase assembly and hang it on the head assembly itself.

- 1 Take out the washer camshaft sprocket from the camshaft. (Fig. 3.39)

Nose plier



Fig. 3.38

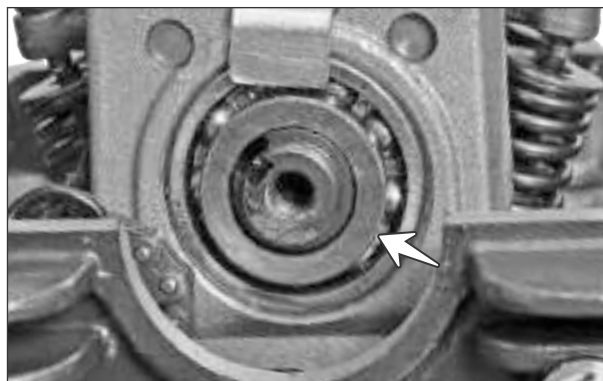


Fig. 3.39

- 1 Take out the cam chain tensioner by removing the bolt cam chain tensioner along with washer cam chain tensioner. (Fig. 3.40)

12 mm spanner

Tightening torque

12 ± 2 Nm

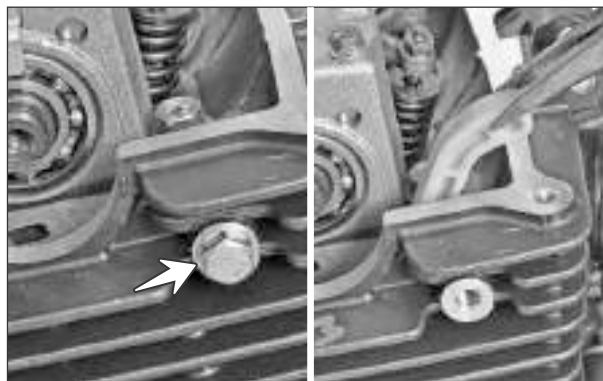


Fig. 3.40

- 1 Remove the bolt cylinder head (4 nos.) from the mounting of cylinder head complete. (Fig. 3.41)

12 mm spanner

Tightening torque

24.5 ± 2.5 Nm

Note:

While reassembling, always tighten the cylinder head assembly bolts in criss-cross pattern to have uniform seating.

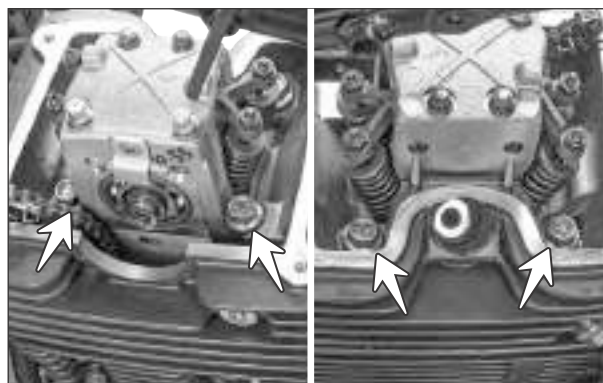


Fig. 3.41

- Remove punched washers (3 nos.) and a copper washer (A) from the mounting surface of bolt cylinder head. (Fig. 3.42)

Caution:

While reassembling the bolt cylinder head at the right hand front side of the cylinder head assembly, always use copper washer to avoid oil leak.

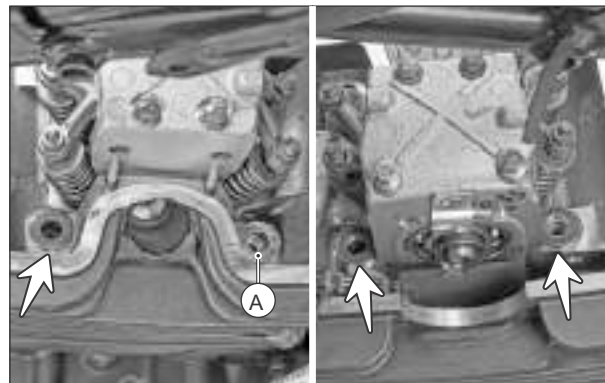


Fig. 3.42

- Holding the cam chain, gently lift and take out the cylinder head as an assembly. (Fig. 3.43)



Fig. 3.43

- Take out the tubular dowels (A) either from cylinder head assembly or from cylinder block. (Fig. 3.44)

- Take out the gasket cylinder head (B). (Fig. 3.44)

Note:

While reassembling, check the gasket for any damage, scoring, deformation or leakage marks. If found replace the gasket with a new one.

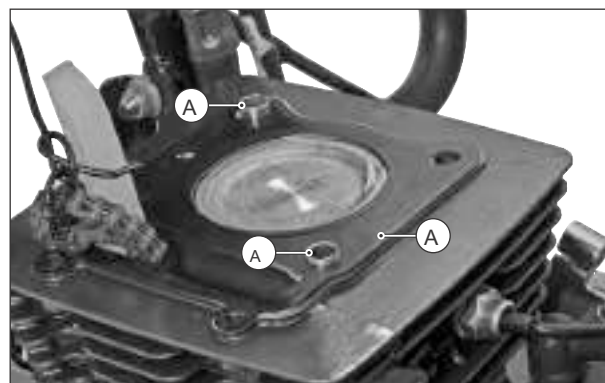


Fig. 3.44

CYLINDER HEAD ASSEMBLY

DISASSEMBLY

- Remove the REC CSK head screw (M6x16 - 2 nos.) from the pipe intake complete mounting and take out the pipe intake along with a 'O' ring. (Fig. 3.45)

Phillips head screw driver

Tightening torque

10 ± 2 Nm

Note:

While reassembling replace the 'O' ring with new one.

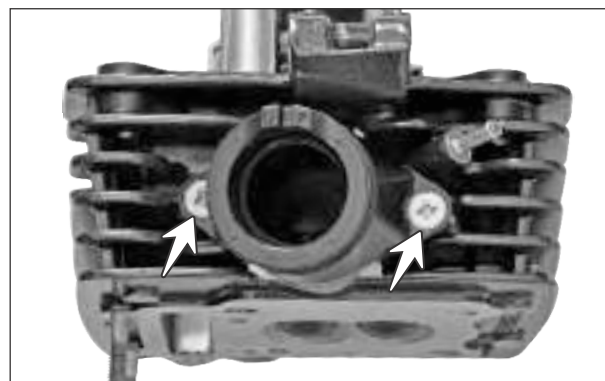


Fig. 3.45

- Remove hexagonal flange bolt (A) (M6x25 - 4 nos.) from the mounting of cylinder head assembly. (Fig.3.46)

8 mm spanner

Tightening torque

7 ± 1 Nm

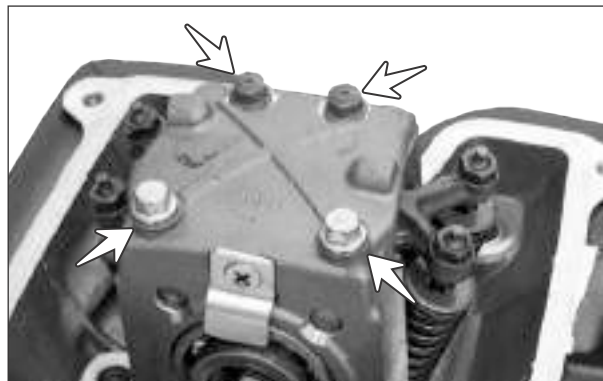


Fig. 3.46

- Remove the REC CSK head screw (M5x15 - 1 no.) from the stopper camshaft and dislocate and take out the stopper camshaft. (Fig. 3.47)

Phillips head screw driver

Tightening torque

4 ± 1 Nm

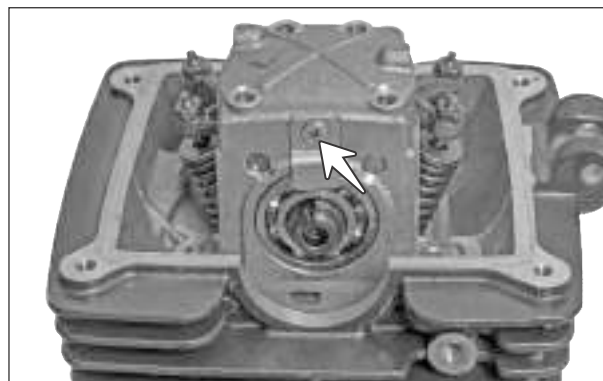


Fig. 3.47

- Take out the camshaft complete from the cylinder head complete.
- Using a flat screw driver, gently push out both the shaft rocker arms. (Fig. 3.48)

Caution :

While removing the shaft rocker arm, the needle bearing pins assembled inside the rocker arm may fall inside the cylinder head. Ensure to re-collect all the pins and fix it into the rocker arm without fail.

- Take out both intake and exhaust rocker arm assemblies from the cylinder head assembly.
- Locate the special tool to remove the inlet valve as the movable jaw of the tool rests on the retainer valve spring (Fig. 3.49A) and the other end (fixed jaw) to rest at the center of the valve face. (Fig. 3.49B)

- Slowly tighten the special tool to compress the valve springs.

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Extractor assembly, inlet and exhaust valve

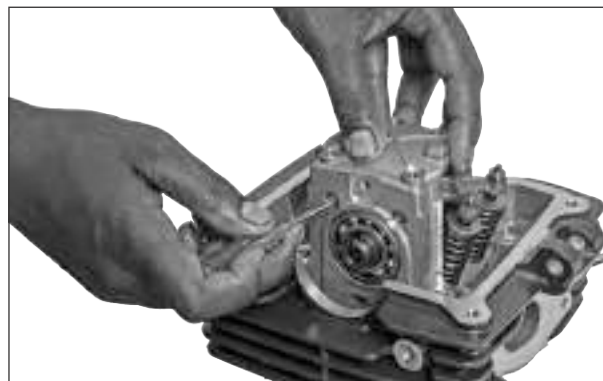


Fig. 3.48

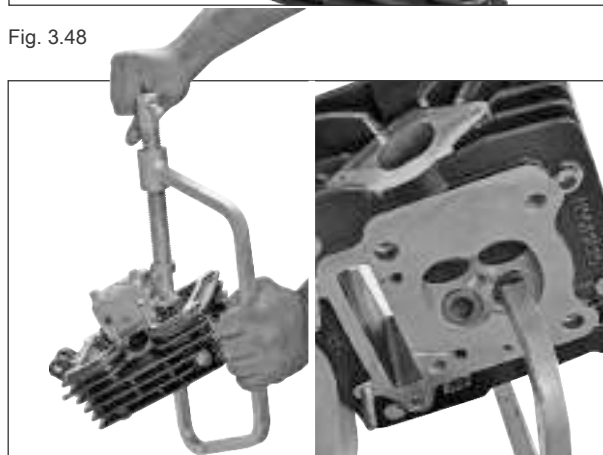


Fig. 3.49A

Fig. 3.49B

Caution:

Do not compress the spring more than required to prevent the spring from loss of tension.

- Remove the cotter valves (2 nos.) from the valve stem. (Fig. 3.50)

Nose plier

- Loosen and take out the special tool.
- Remove the cotteners of other inlet valve in similar manner.

- Remove the retainer valve springs and spring valves. (Fig. 3.51)



Fig. 3.50

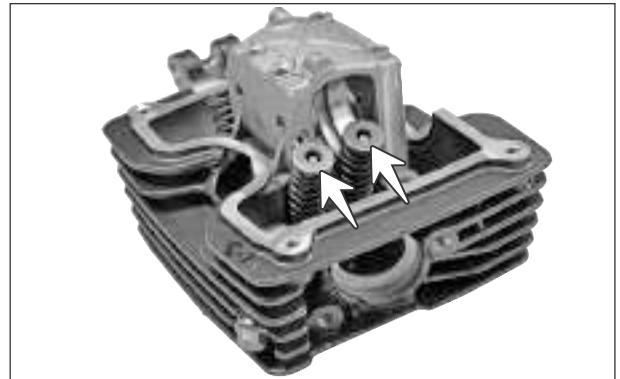


Fig. 3.51

- Gently push down the valves from the top and remove it from the combustion chamber side. (Fig. 3.52)

Note:

While removing the valve, check for the free movement of the valve. If there is no free movement, check the valve for bend and runout. Replace the valve incase of bend or runout.



Fig. 3.52

- Remove the seal valve stem oil from the valve guides. (Fig. 3.53)

Nose plier

Note:

While reassembling, replace the seals valve stem oil with a new one. Always use non metal cladding seal valve stem oil.

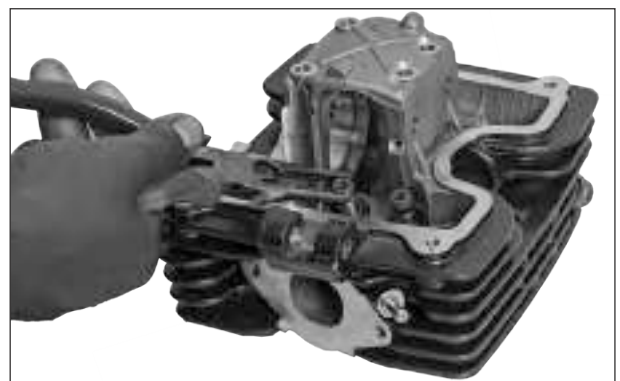


Fig. 3.53

- Remove seat valve spring. (Fig. 3.54)

Nose plier

- Repeat the same procedure for removing the other side valves.

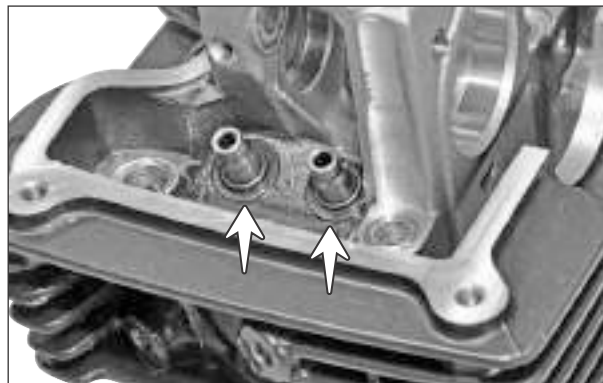


Fig. 3.54

- Using M6 nuts, remove stud bolt cylinder head (2 nos.) from cylinder head complete. (Fig. 3.55)

10 mm spanner

Tightening torque

7 ± 1 Nm

Note:

Remove the stud bolts only if necessary. Else it may get spoiled.

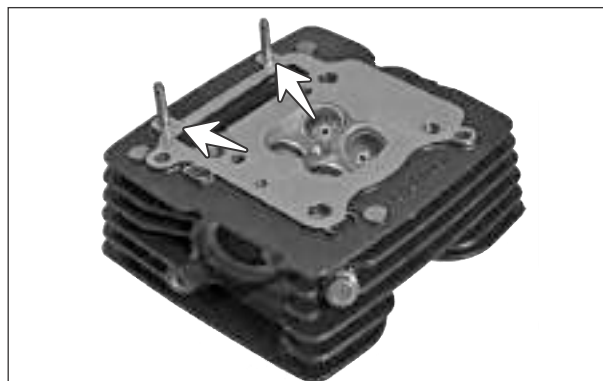


Fig. 3.55

DECARBONISING

Cylinder head complete

- Carbon deposits on the combustion chamber of the cylinder head complete will increase the compression ratio which will result in pre-ignition and overheating. Carbon deposited at the exhaust manifold will prevent smooth flow of exhaust, thereby reducing the engine power output.

- Decarbonise the combustion chamber of cylinder head complete using suitable decarbonising spray. (Fig. 3.56)

Note:

Decarbonise the head complete cylinder combustion chamber after removing both the valves. Use suitable cleaning solvent.

Caution:

Care should be taken not to damage the surface of the combustion chamber while decarbonising.



Fig. 3.56

Seat valve

- Carbon deposition on valve seating will cause valves not to seat properly thereby causing leakage and affects idling, pickup and mileage. Also leads to erratic running and starting trouble.

Valve and valve guide

- Carbon deposits on the valve stem rubs continuously on guide valve and results in increased clearance between the stem and guide valve. Clean the valve stem with suitable cleaning solvent. (Fig. 3.57)
- Clean the guide valve to remove any carbon buildup by using carbon removers. Clean other parts of head complete cylinder thoroughly with suitable cleaning solvent.

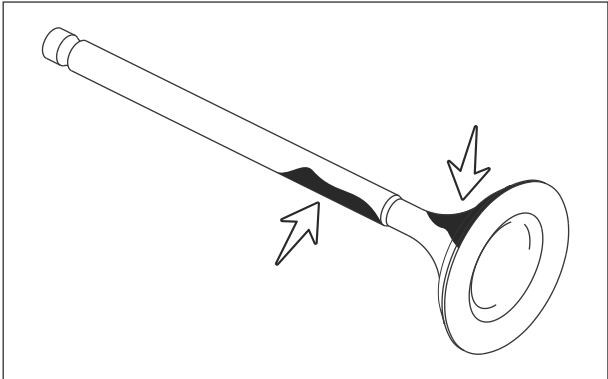


Fig. 3.57

INSPECTION

Head complete cylinder

- After cleaning the liquid gasket from the surface of the cylinder head complete, inspect the surface for any scratches, high and low spots. If noticed, remove them using a fine emery paper (400 grade) placed over the surface plate. (Fig. 3.58)

Surface plate



Fig. 3.58

- Using a feeler gauge, check for the distortion of surfaces of the cylinder head complete. If the reading exceeds the limit, replace the head complete cylinder with a new one. (Fig. 3.59)

Feeler gauge

Surface plate

Service limit

0.050 mm (max)

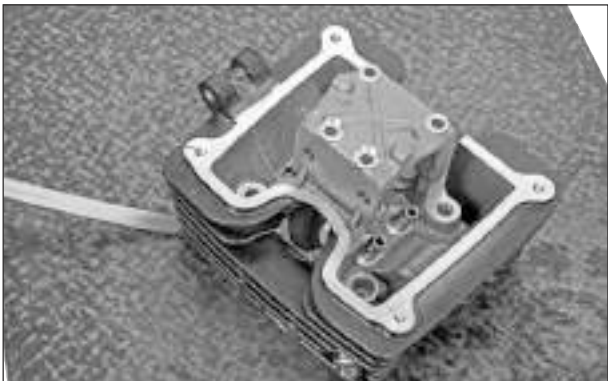


Fig. 3.59

Shaft valve rocker arm

- Inspect the shaft valve rocker arm for any damage. Measure the outer diameter (OD) of shaft valve rocker arm. If the OD is less than the service limit, replace the shaft. (Fig. 3.60)

Outside micrometer

Service limit

8.000 ~ 7.991

Note:

The OD should be checked at the arm complete valve rocker seating area.

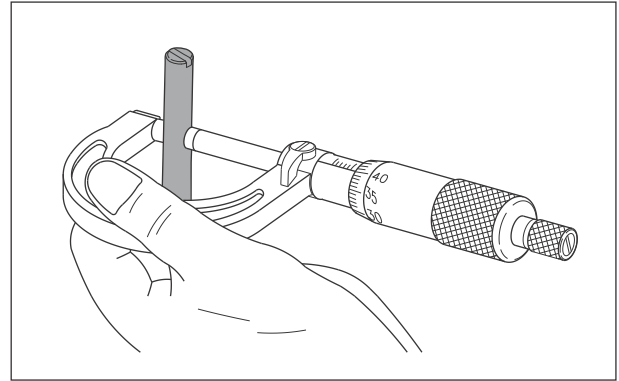


Fig. 3.60

Arm complete valve rocker

- The arm complete valve rocker has a roller follower. The roller follower is a steel roller housed with a needle bearing. This has been provided to decrease the load exerted by the valve train on engine by reducing the friction. (Fig. 3.61)
- Inspect this roller for its free rotation and for any physical damage on its surface. Found if any replace the arm.
- There are needle bearings assembled on both the side of the arm at shaft seating area. Inspect these bearings for any abnormality. Replace the arm if found any abnormality.

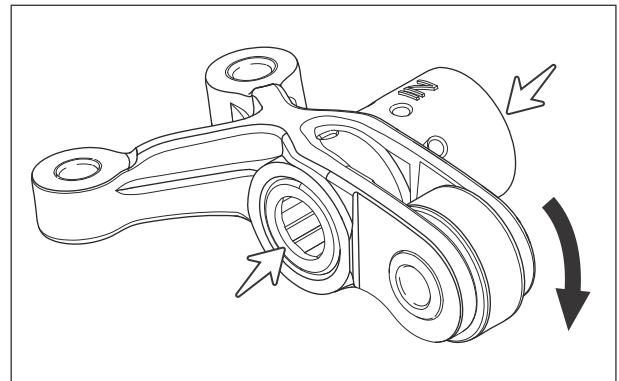


Fig. 3.61

Caution:

Each needle bearing of arm complete valve rocker has 20 needles in it. Ensure the availability of all the needles before reassembling the arm as the needles may fall during removal of the arm from the cylinder head assembly.

An additional care should be taken during reassembly of the arm into the cylinder head because the rollers may fall during reassembly also.

Camshaft assembly

- Check the camshaft assembly for runout, wear of cam lobes and journals. Any of these could cause the engine to produce abnormal noise, vibration or lack of power output.

- Measure the cam lobe height. If the lobe height is less than the service limit, replace the camshaft complete with a new one. (Fig. 3.62)

Outside micrometer

Service limit	
Inlet	33.35 mm (min)
Exhaust	33.20 mm (min)

- Inspect the ball bearings of camshaft for abnormal play, shake or pitting.

- Measure the runout of the camshaft with a dial gauge. Replace the camshaft with a new one if the runout exceeds the limit. (Fig. 3.63)

V-block set (4"x3"x3")

Dial gauge (1/100 mm) / Magnetic stand

Service limit	0.080 mm (max)
---------------	----------------

Valve intake and valve exhaust

- Inspect each valve for trueness, burning, scratches, abnormal wear or bend. Measure the outside diameter of valve stem on the operational area. (Fig. 3.64)

Outside micrometer

Service limit	
Inlet	4.470 ~ 4.455 mm (min)
Exhaust	4.485 ~ 4.470 mm (min)

- Using the special tools, measure the runout on valve stem and valve head. Replace the valve with new one if runout exceeds the service limit. (Fig. 3.65)

V-Block set (4"x3"x3")

Dial gauge (1/100 mm) / Magnetic stand

Service limit	
Runout on stem	0.050 mm (max)
Runout on head	0.075 mm (max)

- Check the valve for smooth movement in the guide valve.

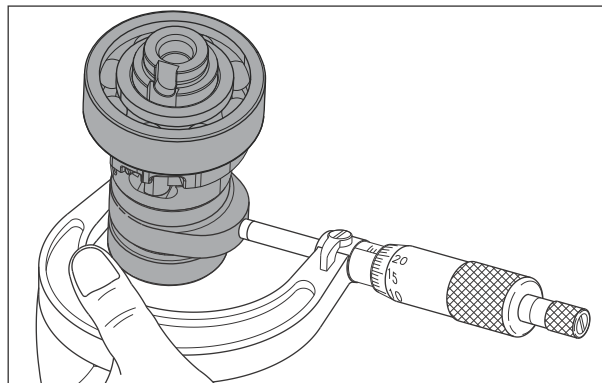


Fig. 3.62

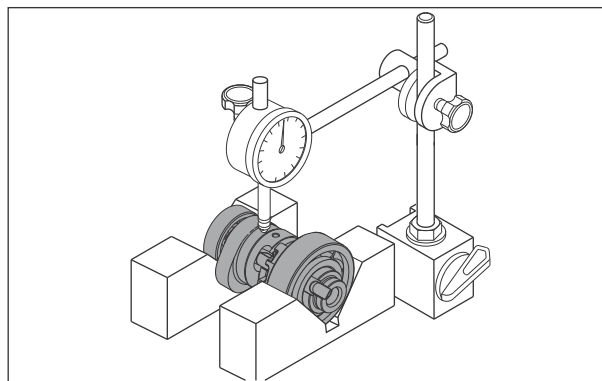


Fig. 3.63

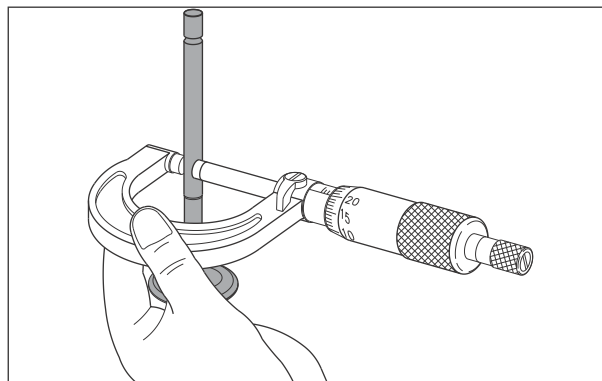


Fig. 3.64

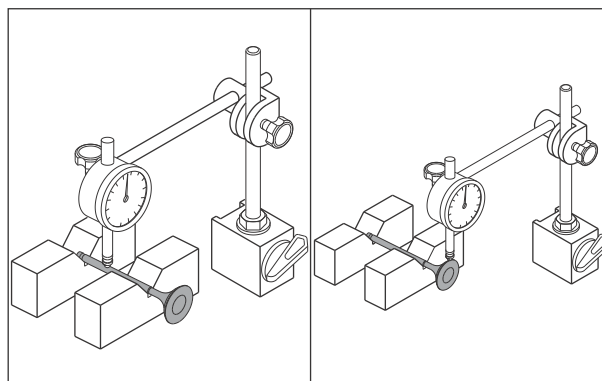


Fig. 3.65

- Measure the thickness of valve head. If the thickness is less than the service limit, replace the valve with a new one. (Fig. 3.66)

Vernier caliper

Service limit

Inlet and exhaust	0.500 mm (min)
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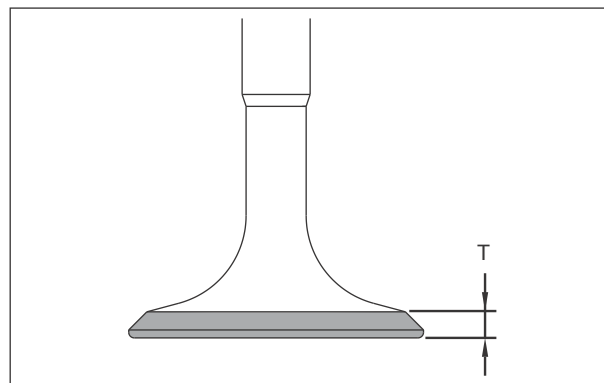


Fig. 3.66

Valve stem condition

- Inspect the valve stem end face (A) for pitting and wear. If pitting or wear noticed, replace the valve with a new one. (Fig. 3.67)

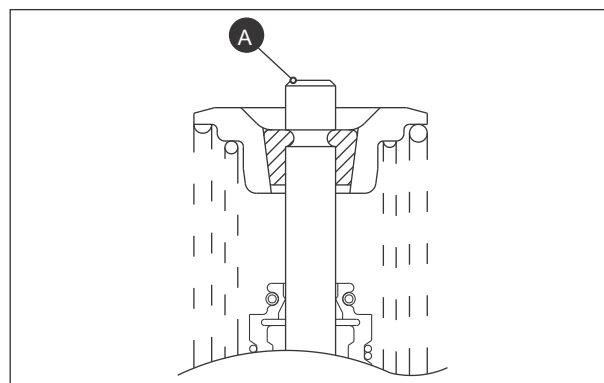


Fig. 3.67

Spring valve

- Measure the free length of the valve springs. If the length is smaller than the service limit, replace the springs. (Fig. 3.68)

Vernier caliper

Service limit

Spring length (inner)	38.75 mm (min)
Spring length (outer)	38.75 mm (min)

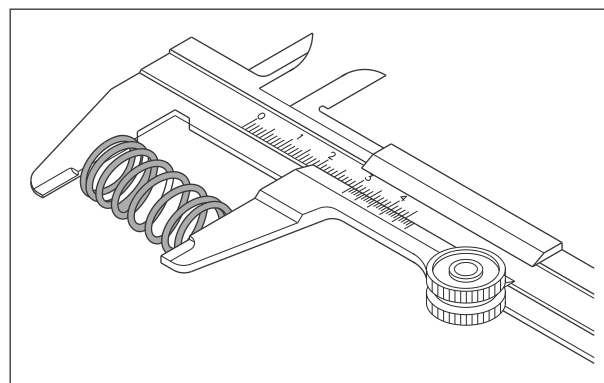


Fig. 3.68

Tensioner cam chain

- Inspect the tensioner cam chain for any distortion / damage, cuts or crack. If found any of the above, replace the tensioner with new one. (Fig. 3.69)
- After assembling the tensioner cam chain, make sure it moves freely in the cylinder head assembly.

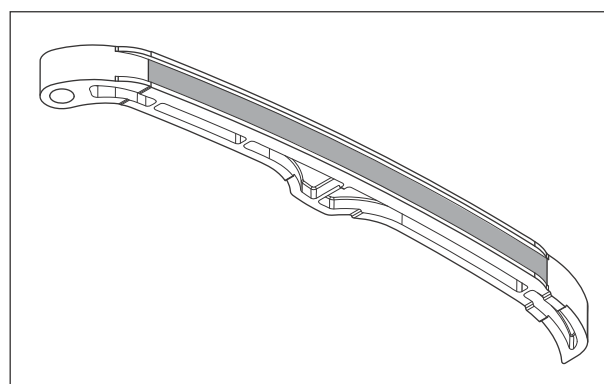


Fig. 3.69

Cam chain

- Visually inspect the cam chain for loose pins, twist / seized links etc. If found any replace the cam chain with a new one.
- Count 21 pins on the cam chain and measure the distance between 20 pitch. (Fig. 3.70) If the distance measured exceeds the service limit, replace the cam chain with a new.

Vernier caliper

Service limit

128.20 mm (max)

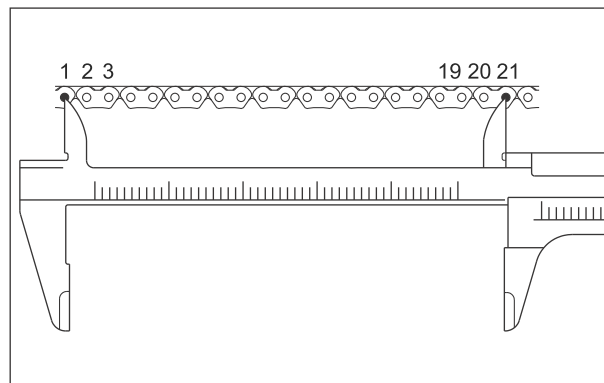


Fig. 3.70

REASSEMBLY

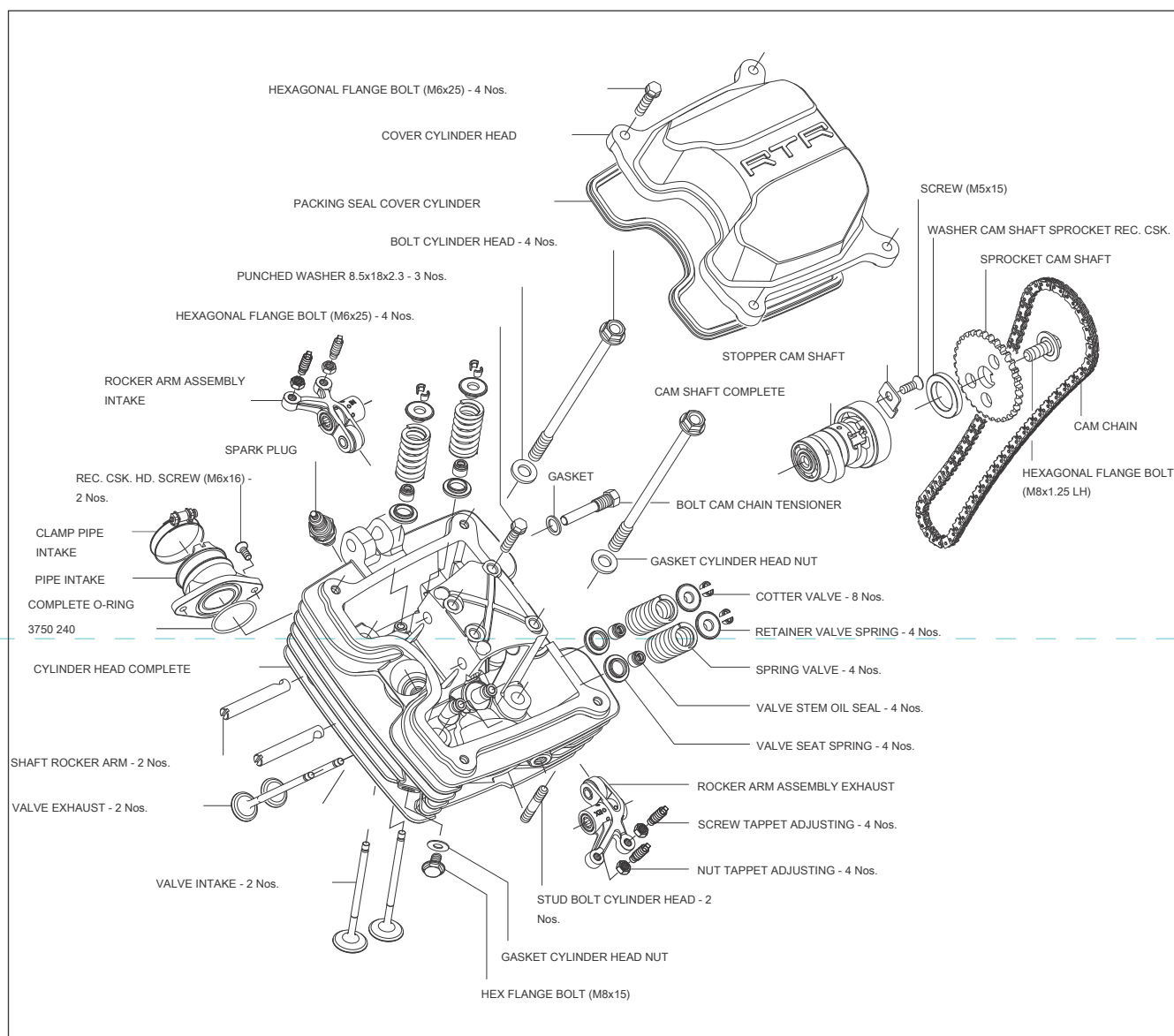


Fig. 3.71

Head complete cylinder

- For reassembly, reverse the disassembly procedure while taking care of the following instructions. Refer exploded view of cylinder head assembly for assembly details. (Fig. 3.71)

Note:

Use only new 'O' rings and oilseals. Do not use old ones.

- Assemble the seat valve spring and a new seal valve stem oil.
- While assembling the valves, insert smoothly into the guide to avoid the damage to the seal valve stem oil.
- Assemble the spring valve in such a way that the smaller pitch of the spring valve facing downwards. (Fig. 3.72)
- Assemble the retainer valve spring.
- Using the special tool compress the spring and assemble the cotter valves.

Note:

The diameter of intake valves are larger than the diameter of exhaust valves. Lubricate the valve stems before installing.

Ensure proper seating of the cotter valves in its groove by gently tapping on retainer valve spring. (Fig. 3.73)

- After assembling the valves, pour petrol into the intake port and look for leakage of the petrol around valve intake seating. (Fig. 3.74)
- Similarly check the exhaust valves also.
- If any leakage noticed, replace the defective parts (valves or cylinder head assembly).

Note:

While checking the exhaust valves, close the secondary air injection port opening to avoid petrol leakage.

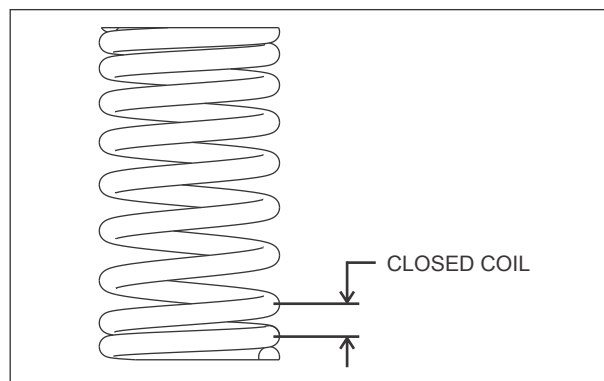


Fig. 3.72



Fig. 3.73

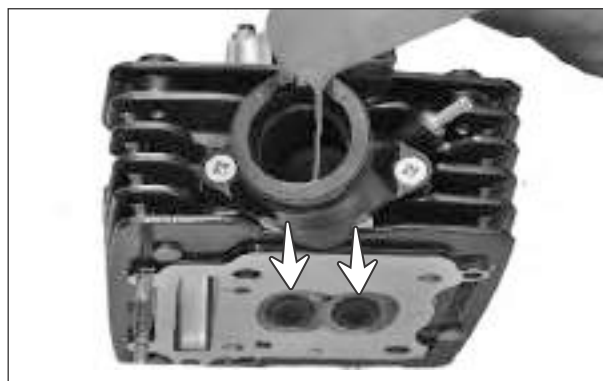


Fig. 3.74

CYLINDER HEAD ASSEMBLY - RE-FIXING

- Reassemble the parts carefully in the reverse order of removal.

- Remove plug TDC (A) along with the gasket. (Fig. 3.75)

17 mm spanner

Tightening torque	27.5 ± 2.5 Nm
-------------------	-------------------

- Remove plug crankshaft hole (B). (Fig. 3.75)

10 mm allen key

Tightening torque	10 ± 2 Nm
-------------------	---------------

- Ensure that the transmission is in neutral and align the TDC mark (A) on rotor assembly with center of the inspection hole provided in the cover magneto by rotating the rotor assembly. (Fig. 3.76)

17 mm tubular spanner

- Assemble the sprocket camshaft along with the cam chain in the camshaft complete while aligning the sprocket camshaft mark (A) with the cylinder head surface (B) towards exhaust side. (Fig. 3.77)

- Apply Anabond 112 thread locker to the sprocket cam shaft mounting bolt and then assemble and tighten the mounting bolt.

10 mm spanner

Tightening torque	18 ± 2 Nm
-------------------	---------------

Caution:

Since left hand type thread is used in the bolt, it should be tightened in the opposite direction.

- Set the tappet clearance as explained in chapter "Periodic maintenance" page no. 2-20.

- Reassemble the cover cylinder head, muffler assembly, ignition coil assembly and carburettor assembly.

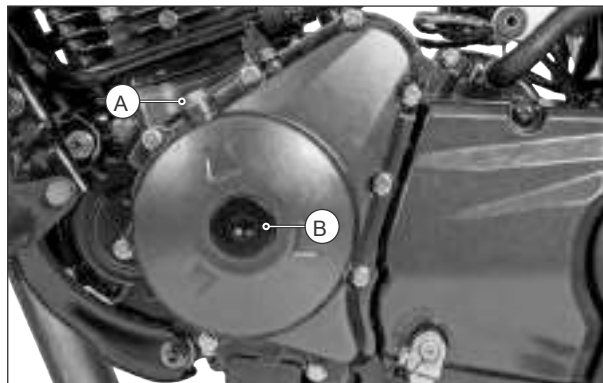


Fig. 3.75

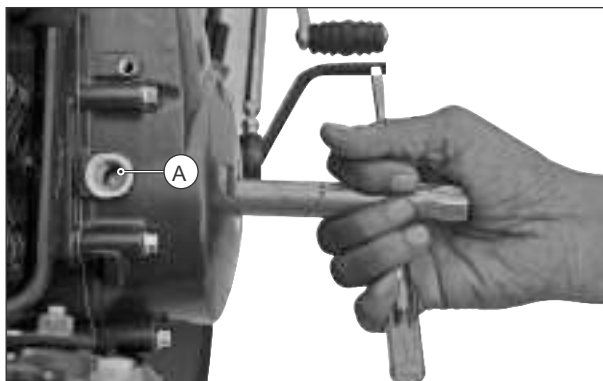


Fig. 3.76

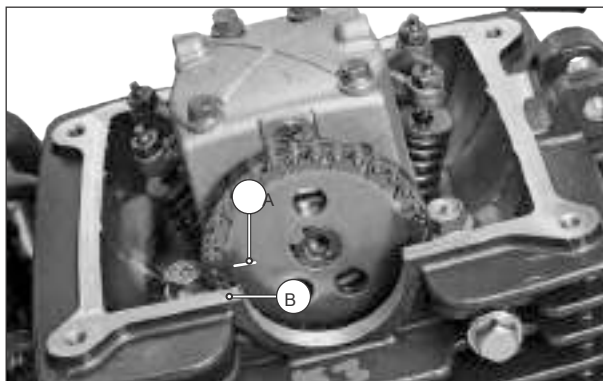


Fig. 3.77

- | Assemble the spark plug and connect the suppressor cap.
- | Reconnect the pipe complete SAI to the cylinder head assembly.
- | Refill the engine cum transmission oil as explained in chapter "Periodic maintenance" page no. 2-12 and ensure its level.

CYLINDER BLOCK, PISTON AND RINGS PISTON - SERVICING

REMOVAL

- | Remove the cylinder head assembly as explained earlier.
- | Disconnect the thermal sensor wiring socket from the main wiring harness. (Fig. 3.78)

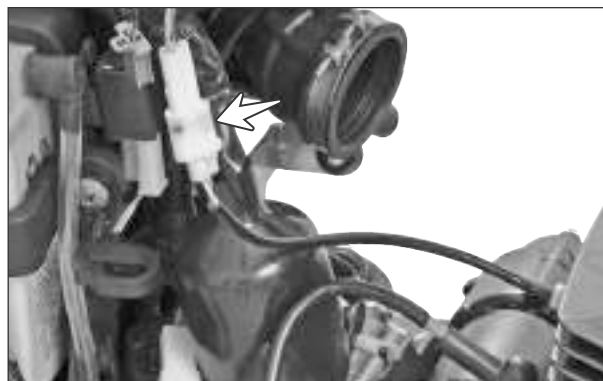


Fig. 3.78

- | Pull out the guide cam chain (A) from the cylinder block. (Fig. 3.79)



Fig. 3.79

- | Remove the hexagonal flange nut (M6 - 2 nos.) from the mounting cylinder block with the crankcase. (Fig. 3.80)

10 mm spanner

Tightening torque

7 ± 1 Nm

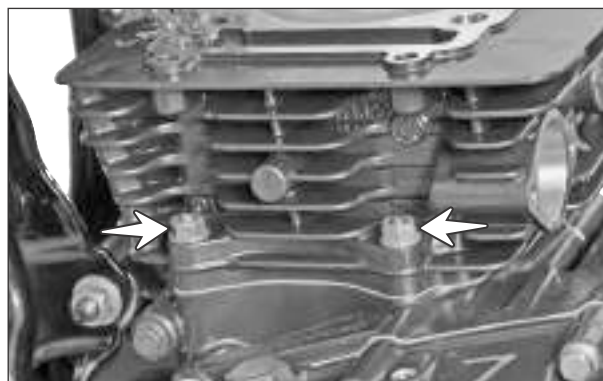


Fig. 3.80

- Gently pull out the cylinder block holding the connecting rod by hand to avoid any damage to the piston assembly and crankcase. (Fig. 3.81)



Fig. 3.81

- Remove the gasket cylinder (A) and tubular dowel (B) (2 nos). (Fig. 3.82)

Nose plier

- Place a clean cloth in the crankcase assembly bore to prevent the circlip pin piston from falling inside the crankcase while removing.

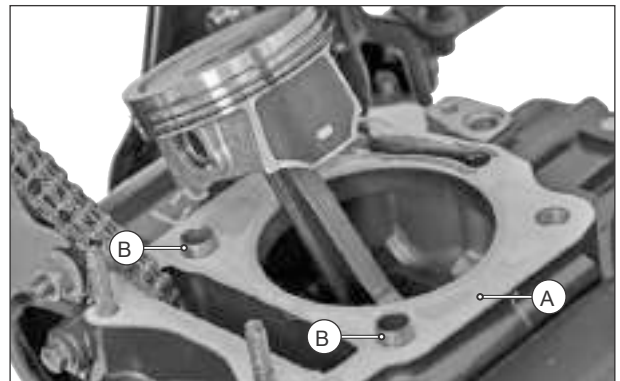


Fig. 3.82

- Remove the circlip pin piston from any one side of the piston. (Fig. 3.83)

Nose plier

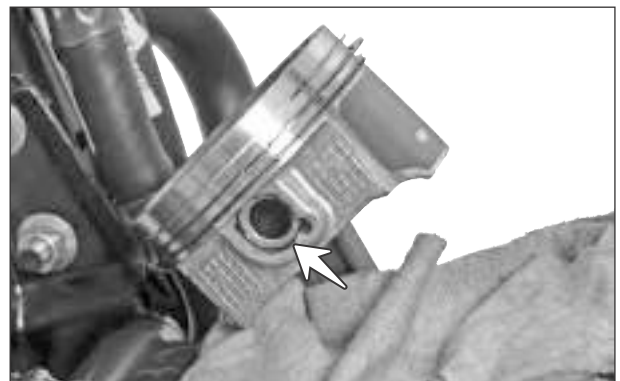


Fig. 3.83

- Gently push and take out the piston pin from the piston and then take out the piston along with the rings. (Fig. 3.84)



Fig. 3.84

INSPECTION

Guide cam chain

- Inspect the guide cam chain for any distortion / damage, cuts or crack. If found any of the above, replace the guide with new one. (Fig. 3.85)

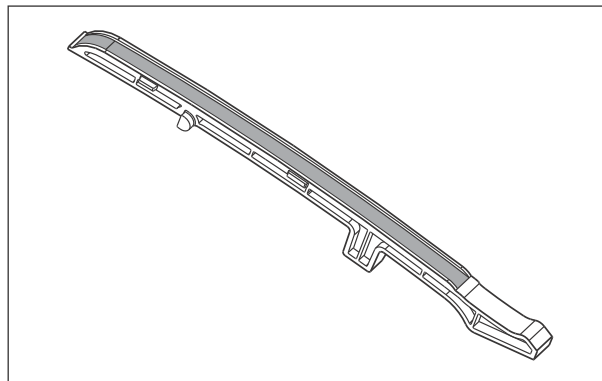


Fig. 3.85

Cylinder block

- Clean the gasket cylinder and adjuster tensioner gasket seating areas if any gasket material is stuck. Do not scrape the surfaces.
- Measure the cylinder block ID (bore) using the bore gauge. Cylinder bore should be checked in two axis with reference to the cylinder axis at three locations as shown in the figure. (Fig. 3.86 & Fig. 3.87)

Bore gauge

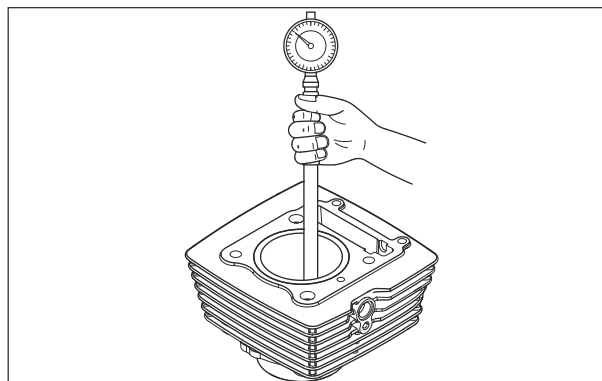


Fig. 3.86

- If the wear exceeds the service limit, replace the cylinder block or rework the cylinder to next oversize by using a boring machine. The cylinder must be honed after boring.
- The cylinder blocks are manufactured with slightly increasing diameters which are all identified with their respective colour and codes as below:

Size Grade	Standard Service Limit (in mm)	(in mm)
–	A 66.000 ~ 66.005	66.
–	B 66.005 ~ 66.010	
–	C 66.010 ~ 66.015	
1st OS PINK	66.256	–
2nd OS WHITE	66.506	–

Note:

Minor surface flaws on the cylinder wall due to seizure or similar abnormalities may be corrected by using fine emery paper (400 grade). If the flaws are deep grooves, the cylinder must be reworked to the next oversize or replaced.

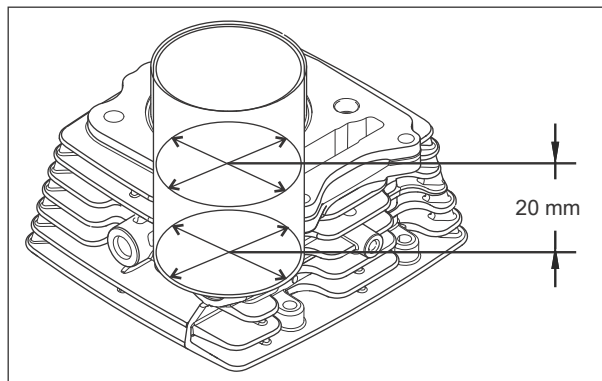


Fig. 3.87

Piston

- Remove the ring piston top (1st) (A), piston ring 2nd (B) and oil rings (C) along with separator oil ring (D). (Fig. 3.88)

Caution:

Do not expand the rings more, it may lose it's mechanical properties.

- Decarbonise the piston and piston ring grooves. After cleaning the grooves, fit the rings and rotate them in their respective grooves to make sure that they rotate freely. (Fig. 3.89)

- Carbon in the grooves is liable to cause the rings piston to stuck in the grooves, and this will lead to reduced engine power output.

Note:

While cleaning the ring grooves of the piston, take care not to damage the grooves. Use an old broken ring to clean the grooves.

- If a piston sliding surface is badly scored or scuffed due to overheating, it must be replaced. Shallow grooves or minor scuff can be removed by smoothening with a fine emery paper (400 grade). (Fig. 3.90) Inspect the piston for damage or crack. Replace if required.
- Measure the diameter at the right angle to the pin piston and at a point which is 10 mm from the bottom to check wear. If the diameter is lower than the service limit, replace the piston. (Fig. 3.91)

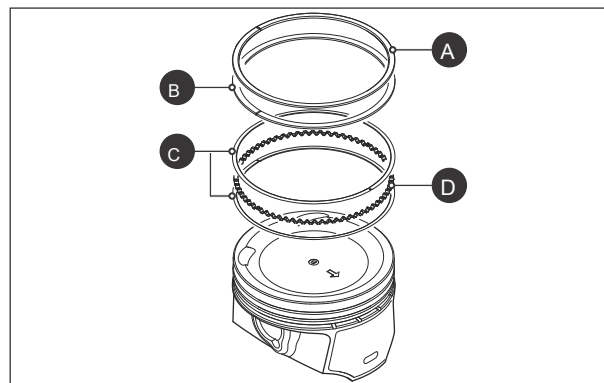


Fig. 3.88

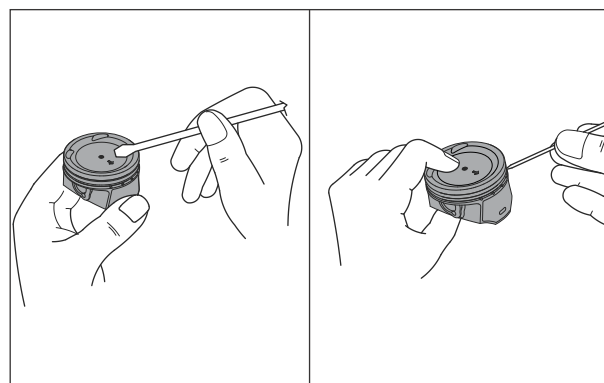


Fig. 3.89

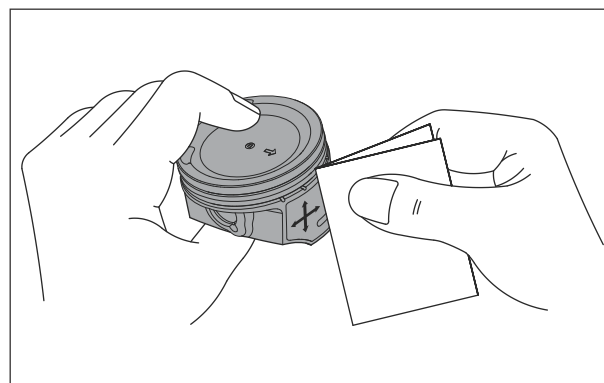


Fig. 3.90

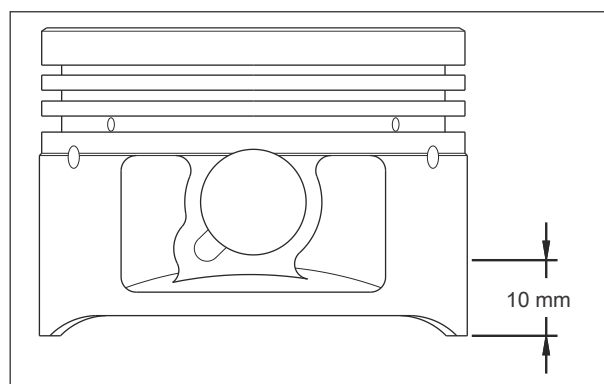


Fig. 3.91

Outside micrometer

Size Grade	Standard Service Limit (in mm)	(in mm)
–	A 65.960 ~ 65.965	65.00
–	B 65.965 ~ 65.970	
–	C 65.970 ~ 65.975	
1st OS PINK 66.215 ~ 66.220		–
2nd OS WHITE 66.465 ~ 66.470		–

- Cylinder to piston clearance is the difference between piston diameter and bore diameter.

- Check the pin piston bore ID of piston for wear.
(Fig. 3.92)

Inside micrometer

Service limit	15.030 mm (max)
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- If the ID is more than the service limit, replace the piston with a new.

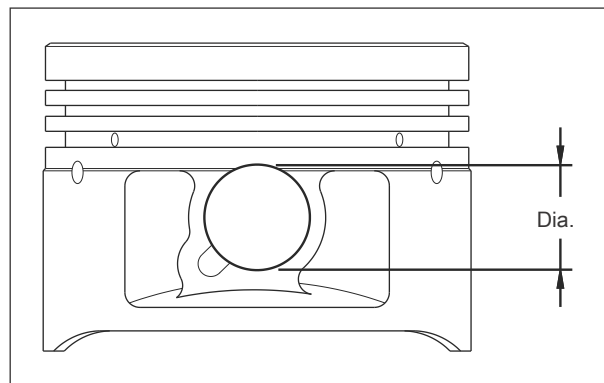


Fig. 3.92

Piston pin

- Check the piston pin OD using a micrometer.
(Fig. 3.93) If the reading exceeds the service limit replace the pin piston. Other wise the pin may create unwanted noise.

Outside micrometer

Service limit	14.992 mm (min)
---------------	-----------------

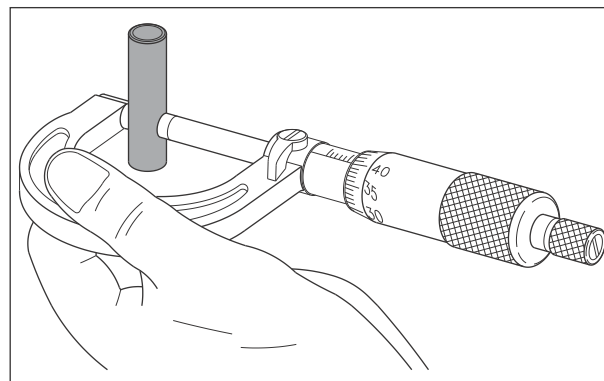


Fig. 3.93

Rings piston

- Inspect the piston rings for distortion, it will cause the rings to stick or roll in the grooves. Replace the distorted rings.
- As the rings wear out, its end gap increases resulting in reduced engine power output.
- The rings (Top and 2nd) closed end gap should be checked to assess the serviceability of the ring piston.
- Install the ring in the cylinder block, using the piston, push the ring into the cylinder block bore at 20 mm from the bottom. This will make the ring to seat squarely in the cylinder block. Using a feeler gauge measure the close end gap. (Fig. 3.94)
- If the gap exceeds the limit, replace rings with new ones.

Feeler gauge

Service limit	0.700 mm (max)
---------------	----------------

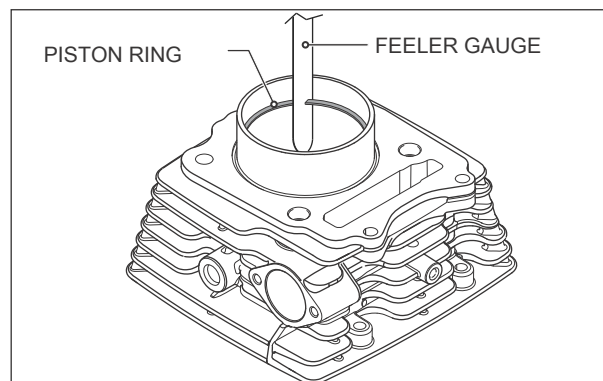


Fig. 3.94

- To know the service condition of the ring check the free end gap using a vernier caliper. (Fig. 3.95)

Vernier caliper

Service limit	
Ring piston top	5.700 (max)
Ring piston 2nd	4.400 (max)

REASSEMBLY

- Assemble the separator oil ring (3rd ring) locating its end gap towards exhaust side (aero marked) of the piston at 45 degree to the left from the center. (Fig. 3.96)

Note:

Assemble the separator oil ring in such away that its triangle shaped end (Fig. 3.97) facing upward (triangle facing towards piston top).

- Assemble the oil ring (bottom - 5th ring) locating its end gap towards exhaust side of the piston at 45 degree to the right from the center. (Fig. 3.96)

- Assemble the oil ring (top - 4th ring) locating its end gap towards exhaust side of the piston at 45 degree to the left from the center. (Fig. 3.96)

- Assemble the ring piston 2nd, locating its end gap towards the inlet side of the piston at 60 degree to the right from the center. (Fig. 3.98)

- Assemble the ring piston top, locating its end gap towards inlet side of the piston 60 degree to the left from the center. (Fig. 3.98)

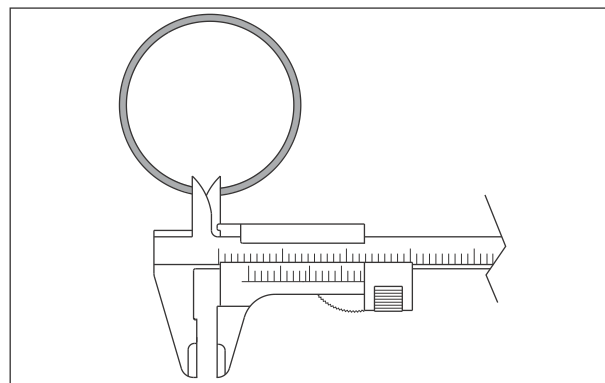


Fig. 3.95

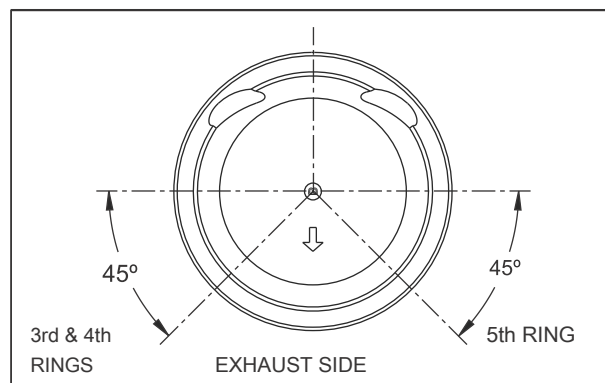


Fig. 3.96

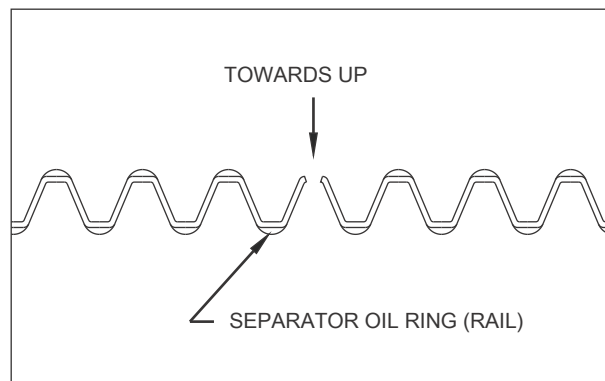


Fig. 3.97

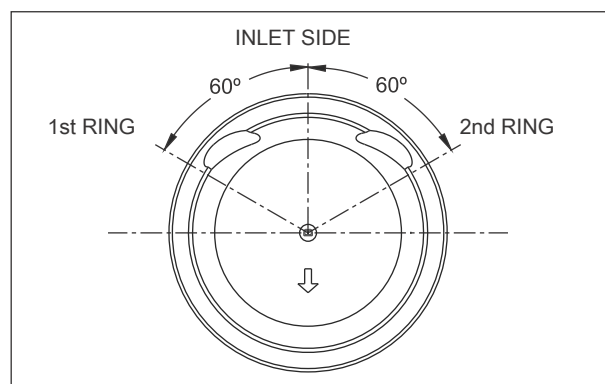


Fig. 3.98

Note:

Avoid damage to the piston skirt surface and rings piston during installation.

Before installing the piston, the rings should rotate freely in their respective grooves.

Install the ring piston 1st and ring piston 2nd with the marking on the ring 'TOP1' and 'TOP2' (Fig. 3.99) facing up (mark facing towards piston top).

Caution:

Always assemble the scrapper ring first. Because this will accommodate the oil rails.

- ▮ Assemble the piston in such a way that the arrow mark indicated in the piston crown should face towards the exhaust port of the cylinder. (Fig. 3.100)

Note:

Carefully install the circlip pin piston in its groove. Else it may come out from piston during engine running and damage the cylinder block and piston assembly.

- ▮ While installing the cylinder block slightly lubricate inner wall of the cylinder with fresh 4T oil.
- ▮ Reassemble the parts carefully in the reverse order of removal.
- ▮ Align the TDC mark on the rotor assembly with the crankcase mark by rotating the rotor assembly (refer page no. 3-23).
- ▮ Set the tappet clearance as explained in chapter "Periodic maintenance" page no. 2-20.
- ▮ Reassemble the cover cylinder head, muffler assembly, ignition coil assembly and carburettor assembly. Assemble the spark plug and connect the suppressor cap.
- ▮ Reconnect the pipe complete SAI to the cylinder head assembly.
- ▮ Refill the engine cum transmission oil as explained in chapter "Periodic maintenance" page no. 2-12 and ensure its level.

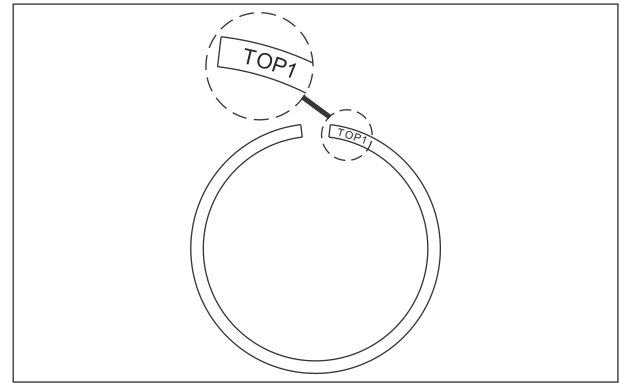


Fig. 3.99

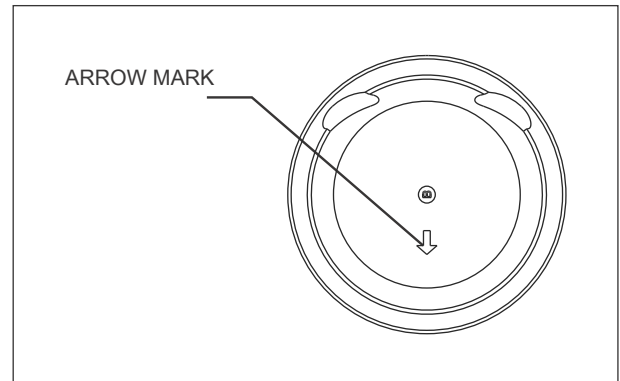


Fig. 3.100

GEAR BOX ASSEMBLY, CRANK SHAFT ASSEMBLY AND BALANCER SHAFT ASSEMBLY- SERVICING

- ! Only to repair or replace gears, clutch shaft assembly, drive shaft assembly, crankshaft assembly and the balancer shaft assembly, the crankcases need to be separated.
- ! Remove the clutch assembly as explained earlier (refer page no. 3-2 for removal procedure).
- ! Remove the cylinder head assembly, cylinder block and piston as explained earlier (refer page. 3-8 & 3-24 for removal procedure).
- ! Refer chapter "Fuel lubrication and exhaust system" page no. 4-16 for SAI unit removal procedure.

REMOVAL OF ENGINE ASSEMBLY FROM THE VEHICLE

- ! Remove hexagonal screw (M6x20 - 1 no.) from the arm gear shift lever mounting. (Fig. 3.101)

10 mm spanner

Tightening torque

10 ± 2 Nm

- ! Gently pull out the gear shift lever from the shaft assembly gear shift.
- ! Remove CRR pan head screw (M6x20 - 2 nos.) from the cover engine sprocket and take out cover engine sprocket. (Fig. 3.102)

Philips head screw driver

Tightening torque

10 ± 2 Nm

- ! Remove hexagonal screw (M5x10 - 2 nos.) from the lock plate engine sprocket mounting. (Fig. 3.103)

8 mm spanner

Tightening torque

8 ± 1 Nm

- ! Take out the lock plate sprocket by rotating and dislocating it from the shaft complete drive grooves.

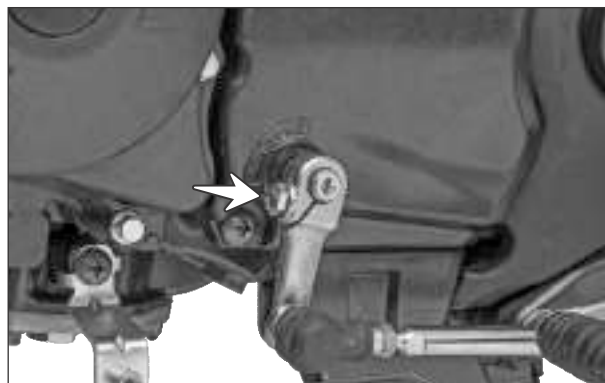


Fig. 3.101

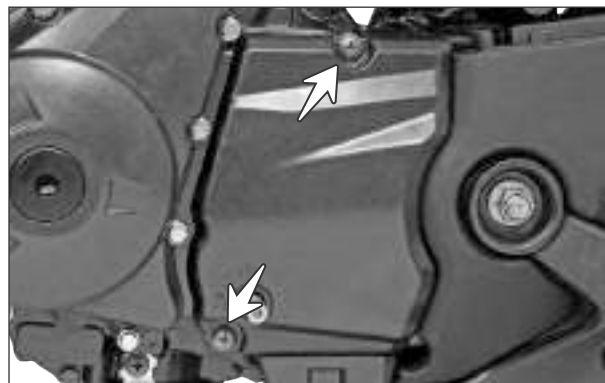


Fig. 3.102

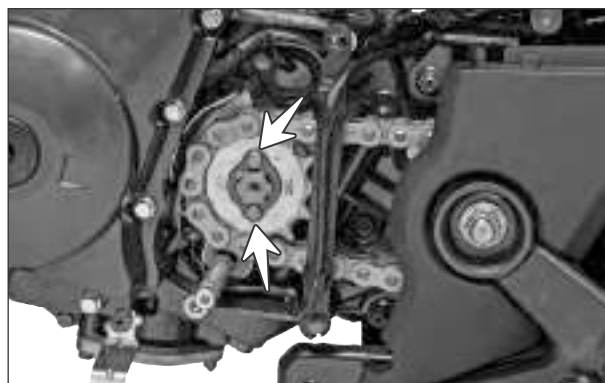


Fig. 3.103

- 1 Pull out the sprocket engine along with drive chain assembly from shaft drive. (Fig. 3.104)
- 1 Dislocate sprocket from the drive chain. Hang the drive chain in the frame itself.

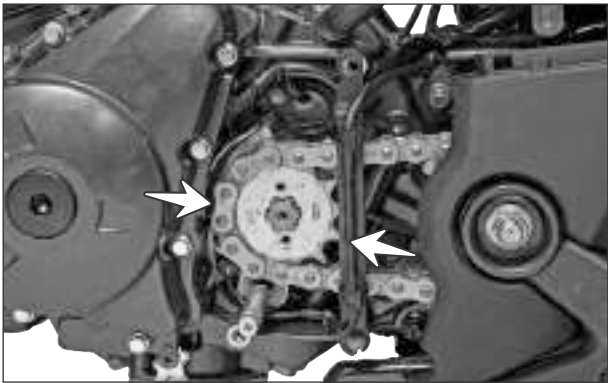


Fig. 3.104

- 1 Disconnect the speed sensor wiring socket from the main wiring harness. (Fig. 3.105)

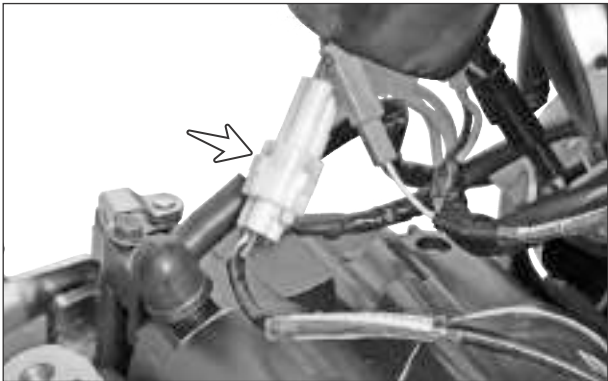


Fig. 3.105

- 1 Remove hexagonal bolt (A) (M6x16 - 1 no.) and dislocate the guide speed sensor (B). (Fig. 3.106A)
- 1 Remove the hexagonal bolt (C) (M6x16 - 2 nos.) from the retainer oil seal drive shaft and take out the retainer (D). (Fig. 3.106B)

8 mm spanner	
Tightening torque	10 ± 2 Nm

- 1 Gently pull out the speed sensor (E) along with guide speed sensor. (Fig. 3.106B)

Nose plier	
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- 1 Remove the hexagonal flange bolt (M6x16 - 2 nos.) and take out the switch gear position (A). (Fig. 3.107)

8 mm spanner	
Tightening torque	10 ± 2 Nm

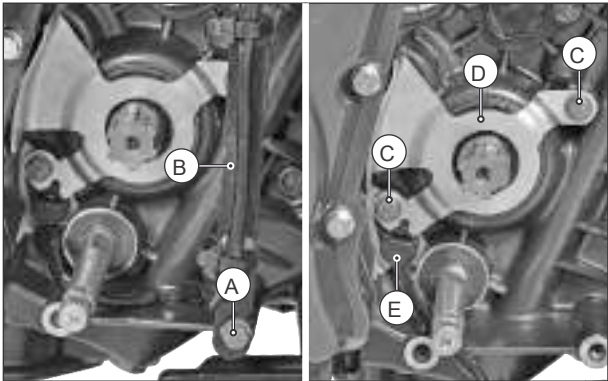


Fig. 3.106A

Fig. 3.106B

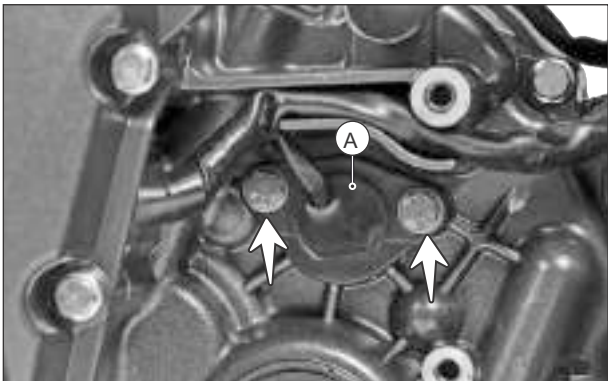


Fig. 3.107

- Remove the hexagonal bolt (M6x16 - 1 no.) (A) and take out contact complete gear shift switch (B). (Fig. 3.108)

8 mm spanner

Tightening torque

4 ± 1 Nm

Note:

While reassembling contact complete gear shift, locate the projection of contact into the groove on shaft for proper indication of gear positions.

- Remove the circlip (12x1) from shaft complete gear shift and take out the shim (12x26x1). (Fig. 3.109)

Snap ring plier - external

- Disconnect all the wiring sockets from magneto assembly connected to wiring harness. (Fig. 3.110)

- Remove the hexagonal flange bolts (M6x40 - 9 nos.) from the cover magneto mounting. (Fig. 3.111)

8 mm spanner

Tightening torque

10 ± 2 Nm

- Take out the cover magneto by gently tapping with the nylon hammer along with starter assembly.

Nylon hammer

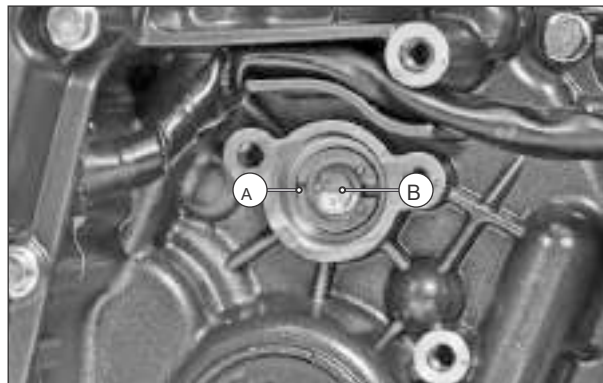


Fig. 3.108



Fig. 3.109

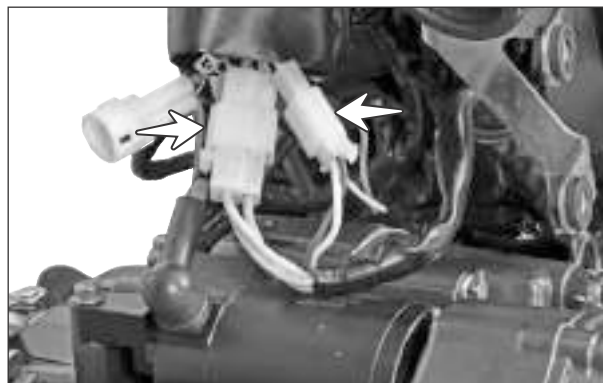


Fig. 3.110

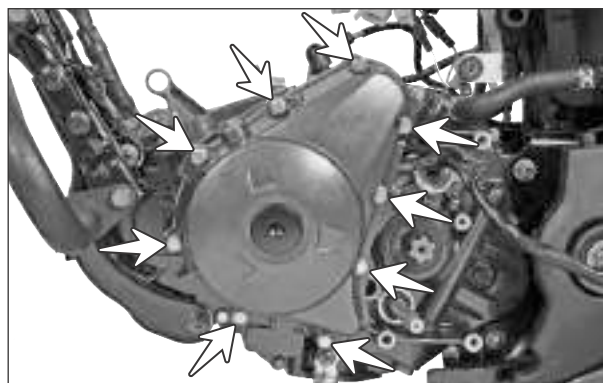


Fig. 3.111

- Take out gasket magneto cover and dowel pin (A) (2 nos.). (Fig. 3.112)

Nose plier

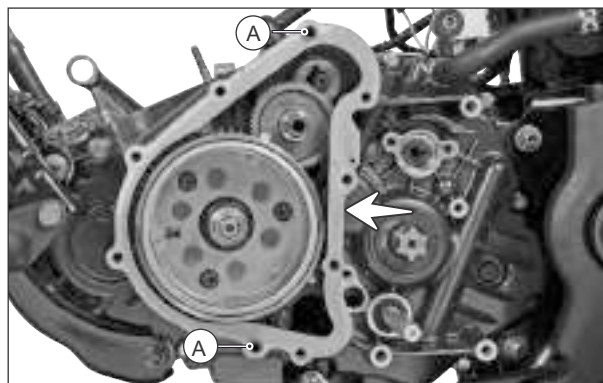


Fig. 3.112

- Take out the spacer starter idle gear (A), pin magneto cover (B) and gear starter idle (C) either from the crankcase or from the cover magneto. (Fig. 3.113A)

Nose plier

- Remove the stopper starter gear (D). (Fig. 3.113B)

Note:

While reassembling the gear starter idle ensure to assemble the stopper starter gear (D). (Fig. 3.113B)

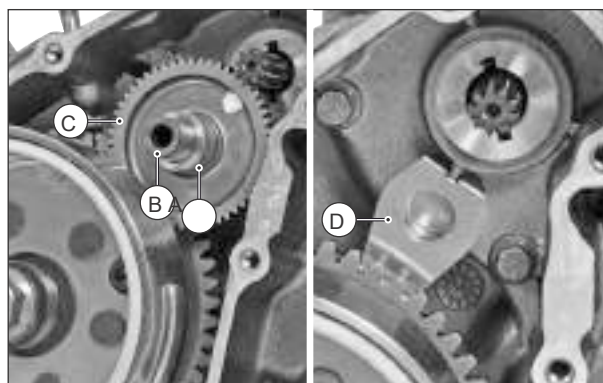


Fig. 3.113A

Fig. 3.113B

- Remove bolt gear shift cam stopper and take out stopper complete gear shift along with spring gear shift cam stopper and shim. (Fig. 3.114)

10 mm spanner

Tightening torque

6 ± 1 Nm

Note:

While reassembling, ensure that shim is located properly under the stopper complete gear shift, before tightening the bolt gear shift cam stopper. After tightening check cam stopper for free movement.



Fig. 3.114

- Remove recessed CSK head screw (M6x20 - 1 no.) from the index star mounting and take out the index star. (Fig. 3.115)

Philips head screw driver

Tightening torque

8 ± 2 Nm

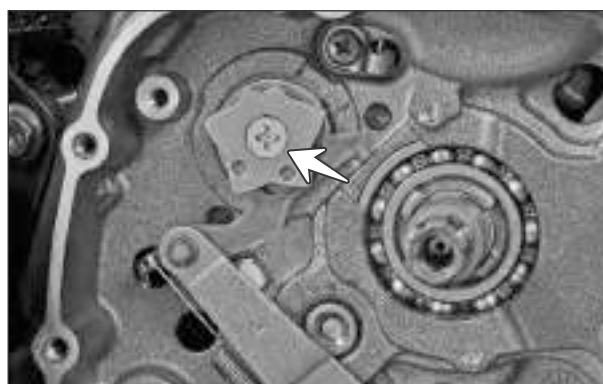


Fig. 3.115

- Carefully pull out the shaft complete gear shift.
(Fig. 3.116)

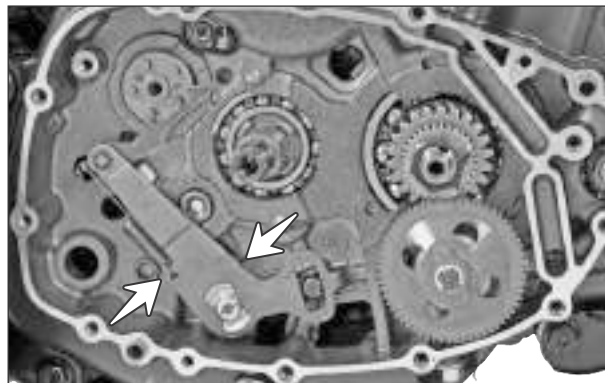


Fig. 3.116

- Take out the pin holder complete from the cam gear shift. (Fig. 3.117)

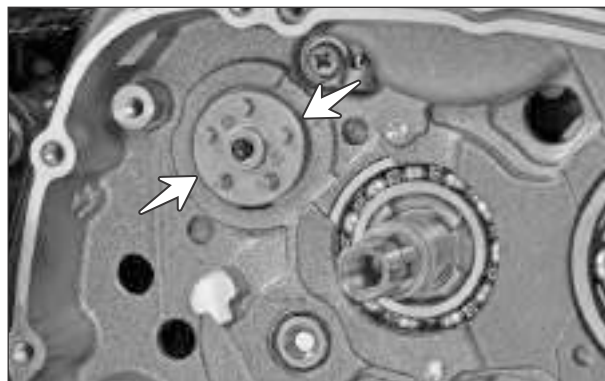


Fig. 3.117

- Remove the E-ring from the oil pump shaft and take out gear oil pump driven. (Fig. 3.118)

Small flat screw driver

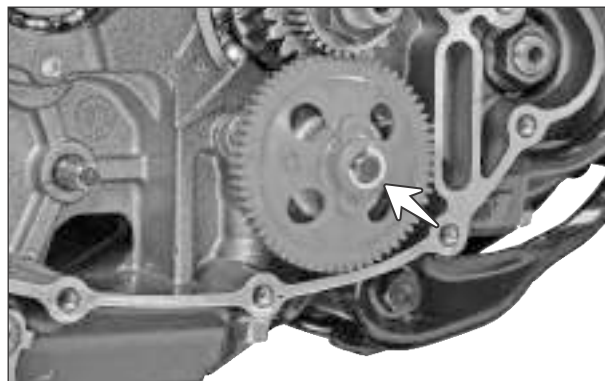


Fig. 3.118

- Remove the pin oil pump driven gear (A).
(Fig. 3.119)

Nose plier

- Remove hexagonal flange bolt (3 nos.) from the pump assembly oil and pull out pump assembly. (Fig. 3.119)

8 mm spanner

Tightening torque

8 ± 2 Nm

Note:

While reassembling the oil pump ensure the presence of pin oil pump.

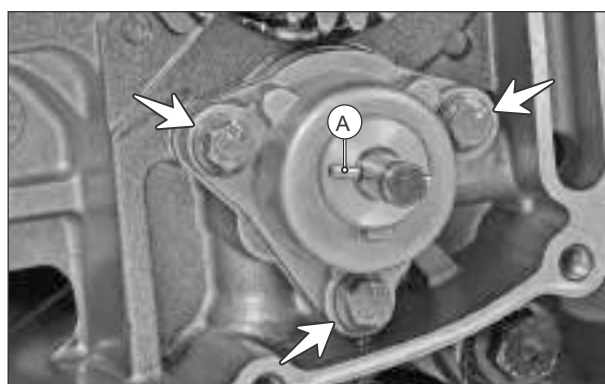


Fig. 3.119

- Disconnect both the thermal from the battery assembly. (Fig. 3.120)

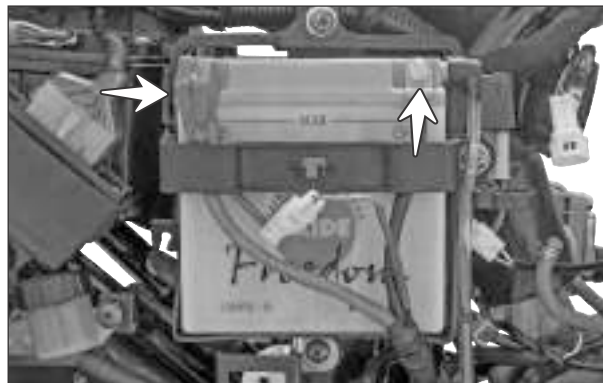


Fig. 3.120

- Dislocate the boot (A) from the starter motor terminal. (Fig. 3.121A)
- Remove the special screw (B) along with washer from the starter motor positive terminal and disconnect positive terminal. (Fig. 3.121B)

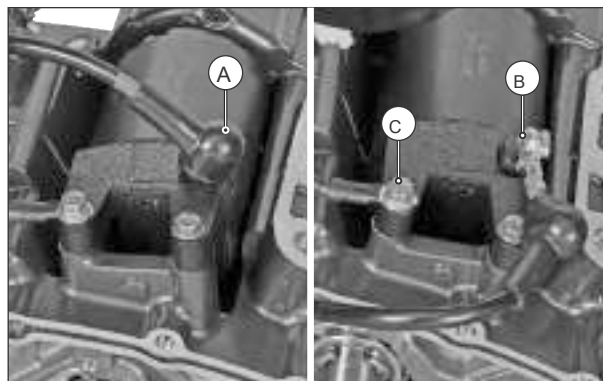


Fig. 3.121A

Fig. 3.121B

- Remove the hexagonal flange bolt (M6x25 - 1 no.) (C) from the starter motor mounting and remove the negative terminal from the starter motor. (Fig. 3.121B)

8 mm spanner

Tightening torque

10 ± 2 Nm

8 mm spanner

Tightening torque

10 ± 2 Nm

- Dislocate the hose clip (A) and disconnect the hose breather PCV (B) from the engine assembly. (Fig. 3.122)

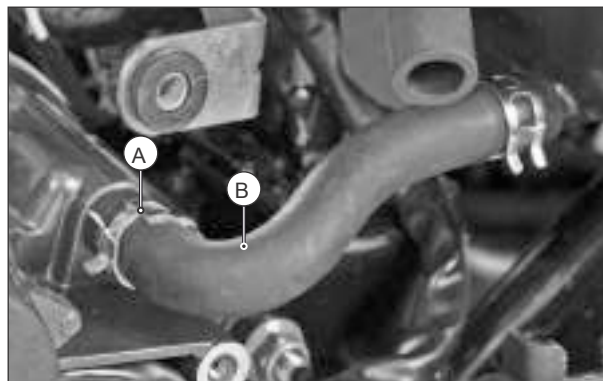


Fig. 3.122

- Remove the hexagonal flange bolt (M6x25 - 1 no.) from pipe complete inlet of engine oil cooler and dislocate the pipe complete inlet from the crank case assembly R. (Fig. 3.123)

8 mm spanner

Tightening torque

10 ± 2 Nm

Note:

An 'O' ring is fitted on the pipe complete inlet end. Ensure the condition and availability of 'O' ring during reassembly.



Fig. 3.123

- Remove the hexagonal flange bolt (M6x25 - 1 no.) from the starter motor and remove the motor assembly starter along with a 'O' ring. (Fig. 3.124)

8 mm spanner

Tightening torque

10 ± 2 Nm

Note:

While reassembling the motor assembly starter, make sure the presence of 'O' ring.

- Unfold washer primary driven gear. (Fig. 3.125)

Chisel / metal hammer

- Using the special tool, hold the rotor assembly and remove hexagonal nut (M16 LH). (Fig. 3.126A & B)

N931 017 0 Magneto tool assembly

22 mm spanner

Tightening torque

60 ± 5 Nm

- Take out washer primary drive gear.

Note:

While reassembling, replace the washer with a new one.

- Remove gear oil pump drive (A). (Fig. 3.127)

- Remove gear primary drive (B). (Fig. 3.127)

Note:

While reassembling the primary drive gear, assemble the primary gear in such a way that its stepped side is facing towards crankshaft bearing.



Fig. 3.124



Fig. 3.125



Fig. 3.126A

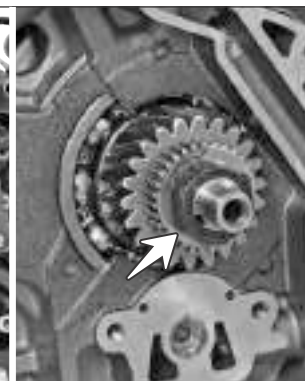


Fig. 3.126B

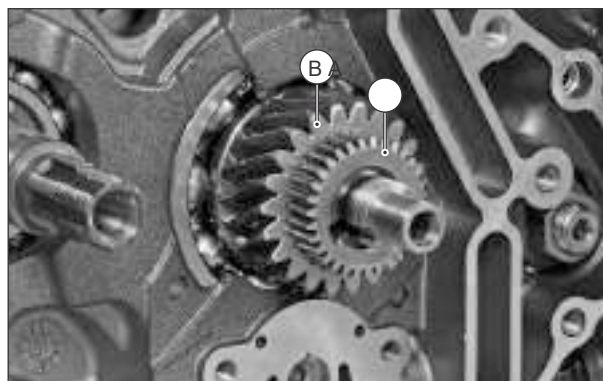


Fig. 3.127

Take out key (4x4x15) from the crankshaft assembly. (Fig. 3.128)

Nose plier

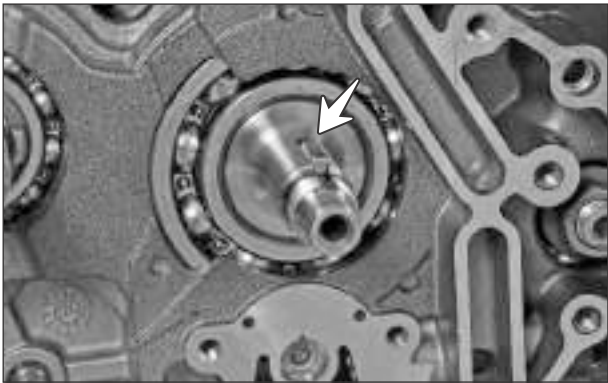


Fig. 3.128

Using the special tool, hold the rotor assembly as explained earlier and remove the hexagonal flange nut (M12x1.25) from the balancer shaft assembly. (Fig. 3.129)

17 mm spanner

Tightening torque

30 ± 5 Nm

Note:
Apply ANABOND 112 thread locker during reassembly of the nut.

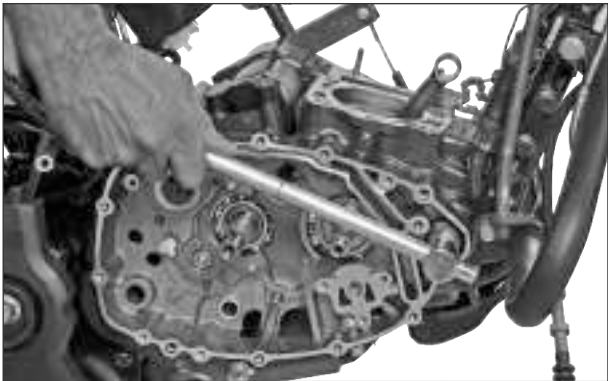


Fig. 3.129

Using the special tool, hold the rotor assembly and remove the rotor assembly mounting hexagonal flange nut (M12x1.25). (Fig. 3.130)

N931 017 0 Magneto tool assembly

17 mm spanner

Tightening torque

80 ± 5 Nm

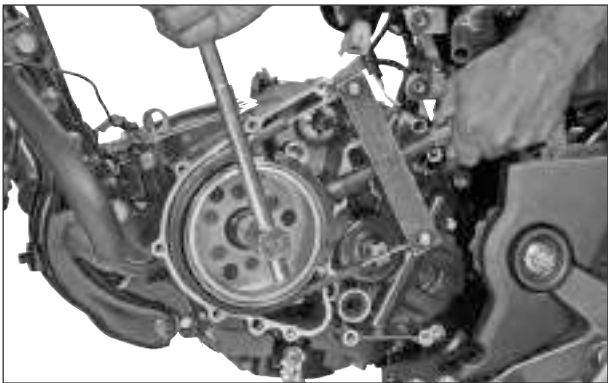


Fig. 3.130

Using the special tool, remove the rotor assembly along with gear complete starter clutch. (Fig. 3.131)

M131 002 0

Puller assembly rotor

Note:
Always keep rotor assembly on a non metallic surface with open side facing upwards.

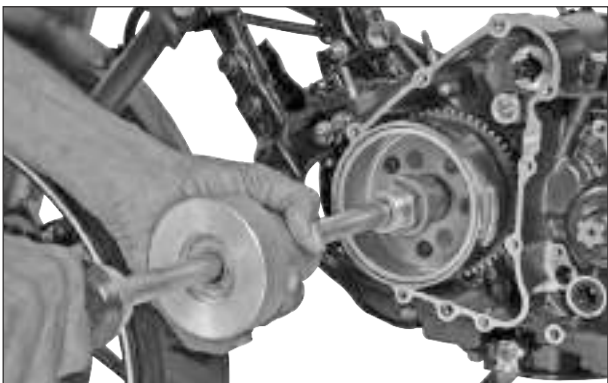


Fig. 3.131

- If required, separate the gear complete starter clutch and remove the one way clutch from rotor assembly by removing the hexagonal socket head cap screw (M6x16 - 3 nos.) along with punched washers. (Fig. 3.132)

5 mm allen key

Tightening torque

12 ± 1 Nm

Note:

Do not separate the gear complete starter clutch from one way clutch until it is necessary, to avoid falling of rollers from one way clutch. Always keep them in assembled condition.

- Take out the cam chain (A) and woodruff key (B) from the crankshaft complete. (Fig. 3.133)

Nose plier

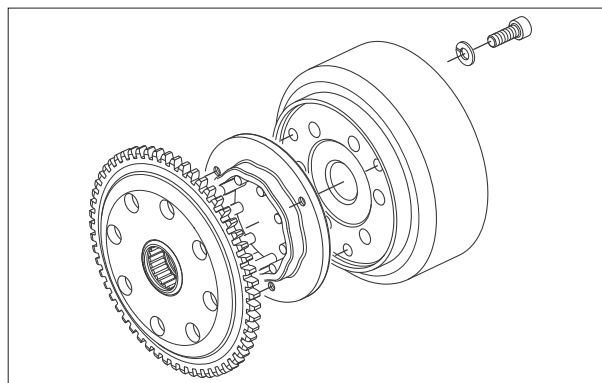


Fig. 3.132

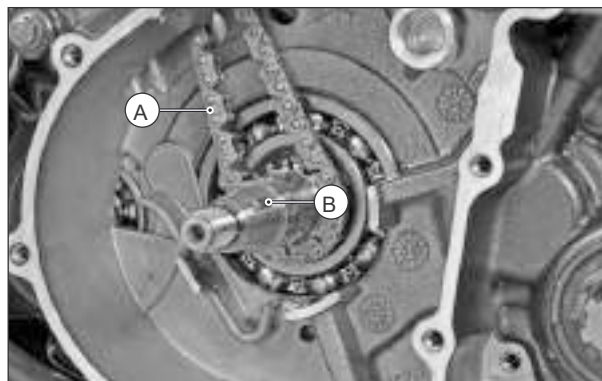


Fig. 3.133

- Remove the hexagonal flange bolt (A) (M8x25 - 2 nos.) along with spring washer from LH side top and bottom mounting of crash guard. (Fig. 3.134)
- Remove the hexagonal flange bolt (B) (M8x25 - 1 no.) along with spring washer from RH side top mounting of crash guard and dislocate the cable guide (C). (Fig. 3.134)
- Remove the hexagonal flange bolt (D) (M8x25 - 1 no.) along with spring washer from RH side bottom mounting of crash guard and take out the crash guard. (Fig. 3.134)

12 mm spanner

Tightening torque

27 ± 3 Nm

- Remove the hexagonal flange bolt (M8x55 - 2 nos.) from the mounting of bracket crash guard RH and take out the bracket. (Fig. 3.135) 12 mm spanner

Tightening torque

27 ± 3 Nm

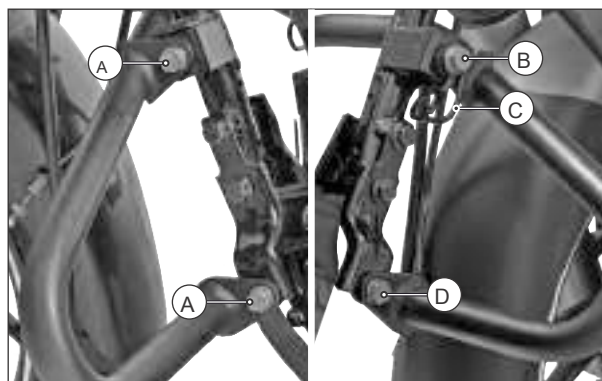


Fig. 3.134

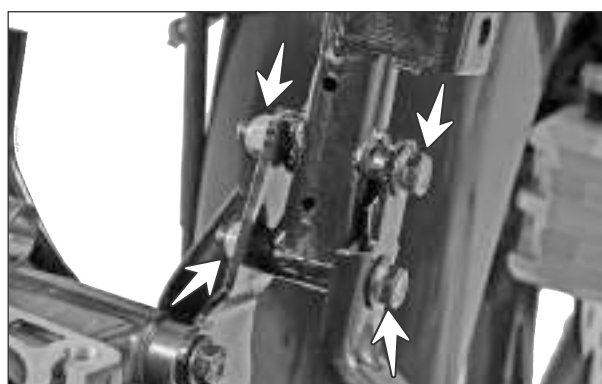


Fig. 3.135

- Remove the hexagonal flange bolt (M8x100 - 1 no.) and (M8x120 - 1 no.) from the mounting of bracket engine mounting RH and take out the bracket. (Fig. 3.136)

12 mm spanner

Tightening torque	27 ± 3 Nm
-------------------	-----------

- Remove the hexagonal flange bolt (M18x100 - 1 no.) and (M8x120 - 1 no.) from the rear mounting of the engine assembly. (Fig. 3.137)

12 mm spanner

Tightening torque	27 ± 3 Nm
-------------------	-----------

Note:

While removing mounting bolts, always remove the bottom bolt first.

Once the 'U' nuts are removed from its mounting, it should be replaced with a new one.

- Gently lift the engine assembly with both the hands and take out from the right hand side of the vehicle. Place the engine assembly on a engine rest.

ENGINE - DISASSEMBLY

- Remove the CRR pan head screw (M6x12 - 1 no.) from the retainer guide T/M oil and remove the guide T/M oil. (Fig. 3.138)

Phillip head screw driver

Tightening torque	8 ± 2 Nm
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- Remove the hexagonal flange bolt (M6x55 - 1 no.) from the crankcase assembly mounting (RH side). (Fig. 3.139)

8 mm spanner

Tightening torque	10 ± 2 Nm
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- Turn the engine to the other side (magneto side).

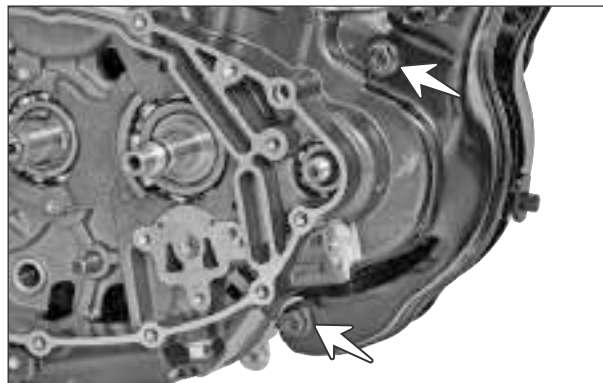


Fig. 3.136

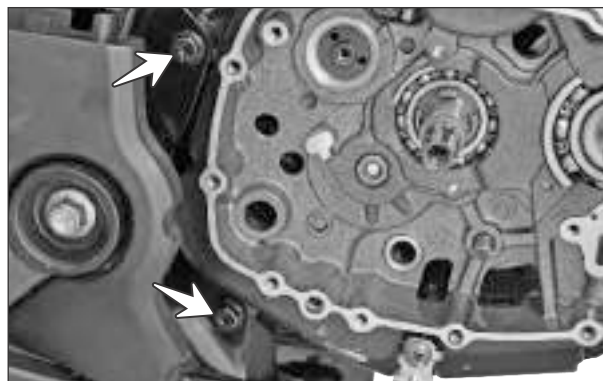


Fig. 3.137

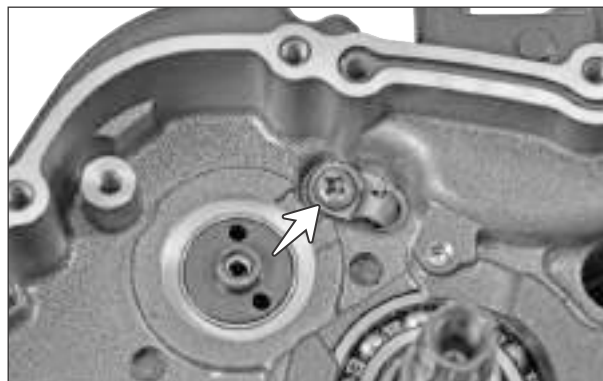


Fig. 3.138



Fig. 3.139

- Remove hexagonal flange bolts (M6x55 - 5 nos. (A), M6x40 - 4 nos. (B), M6x75 - 4 nos (C) and M6x95 - 1 no. (D) from the crankcase mounting. (Fig. 3.140)

8 mm spanner

Tightening torque

10 ± 2 Nm

Note:

While reassembling, insert all the bolts first and check equal height of bolts from their respective seating surfaces.

- Using special tool, separate the crankcase assemblies by pulling the crankcase complete L. (Fig. 3.141)

M131 011 0

Puller assembly

17 mm spanner

8 mm spanner

- Take out the tubular dowel (2 nos.).

- Take out shim (15x27x0.5) (A) and retainer spring (B) from the balancer shaft. (Fig. 3.142)

- Take out the thrust washer (A) from the drive shaft assembly. (Fig. 3.143)

- Take out the bearing kick starter driven gear (B) along with thrust washer and shim from the counter (clutch) shaft assembly. (Fig. 3.143)

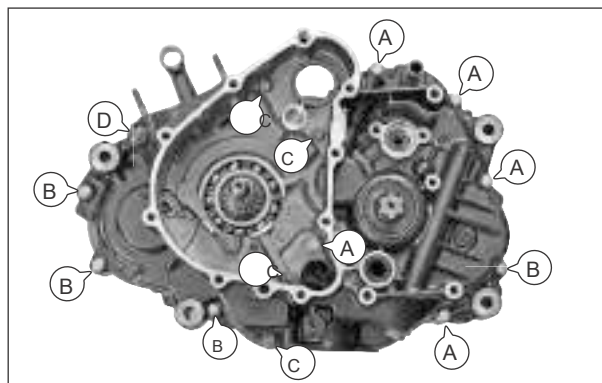


Fig. 3.140

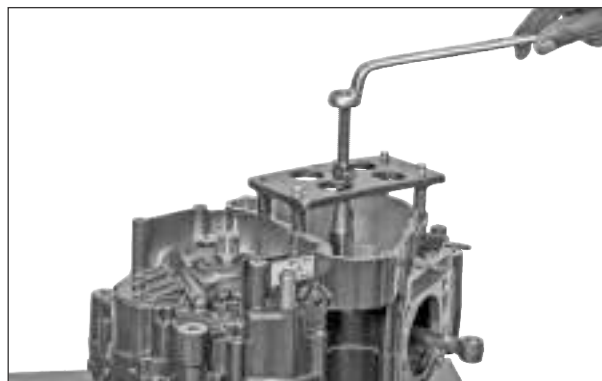


Fig. 3.141

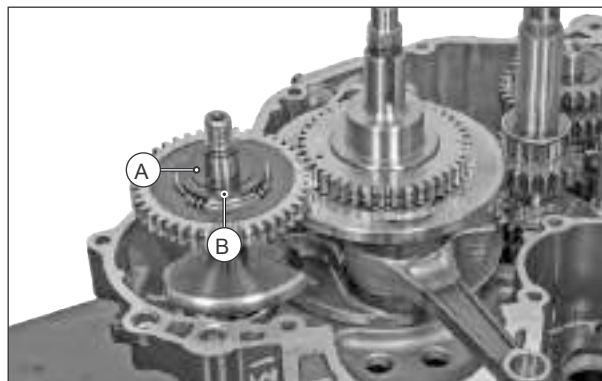


Fig. 3.142

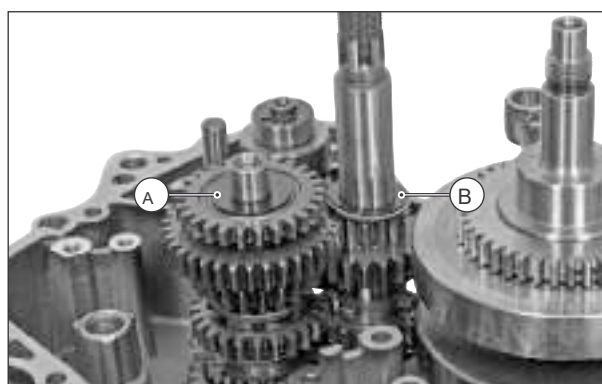


Fig. 3.143

- Take out gear assembly balancer shaft driven from the balancer shaft. (Fig. 3.144)

Caution:

While reassembling the gear assembly balancer shaft driven, align the balancer drive and driven gears to match the dot / punch marks in one line as shown in the illustration without fail to avoid costly damages to the engine. (Fig. 3.145)



Fig. 3.144

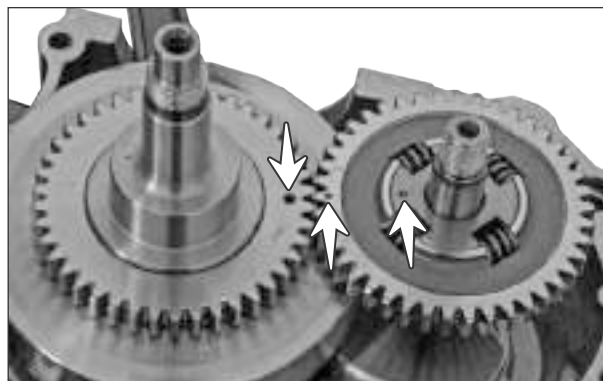


Fig. 3.145

- Remove the wood ruff key (A) from the balancer shaft assembly. (Fig. 3.146)

Nose plier

- Take out the retainer spring (B) from the balancer shaft assembly. (Fig. 3.146)

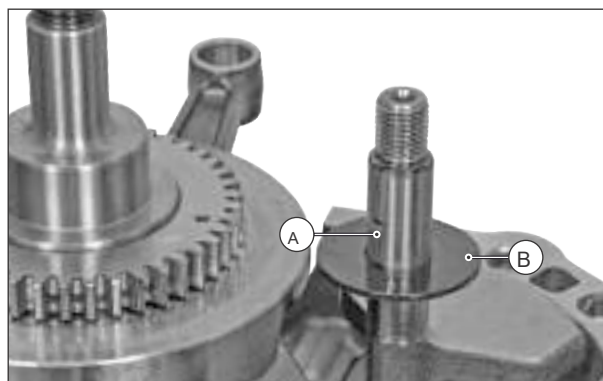


Fig. 3.146

- Pull out both the shaft shift forks from the fork gear shifts. (Fig. 3.147)

Nose plier

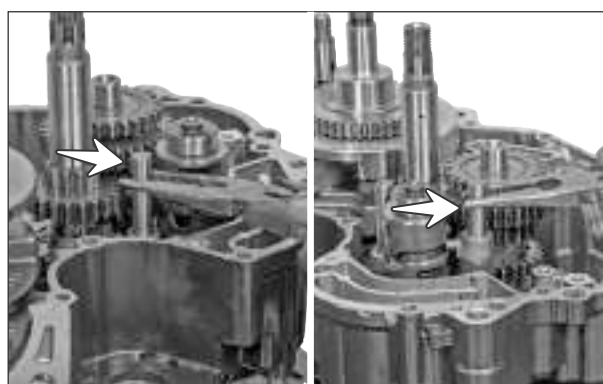


Fig. 3.147

- Dislocate the fork gear shift no.1, fork gear shift no. 2 and fork gear shift high speed from cam gear shift and take out the cam gear shift (A). (Fig. 3.148)

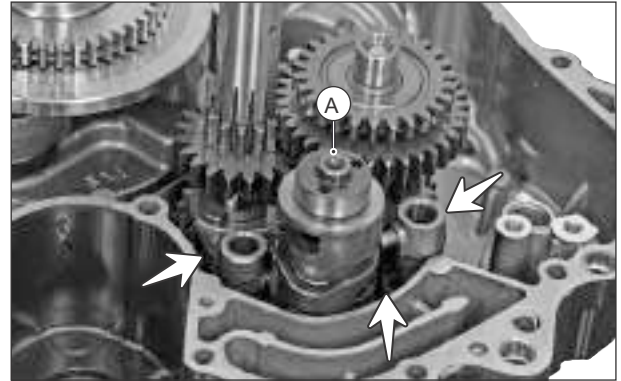


Fig. 3.148

- Take out fork gear shift no.1, fork gear shift no. 2 and fork gear shift high speed from gears. (Fig. 3.149)

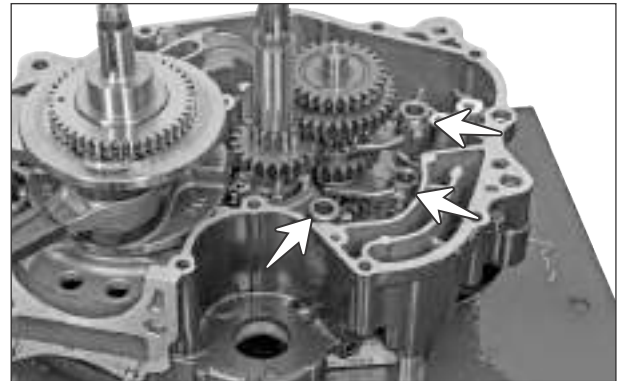


Fig. 3.149

- Take out drive shaft assembly and the counter (clutch) shaft assembly along with the gears as a set. (Fig. 3.150)

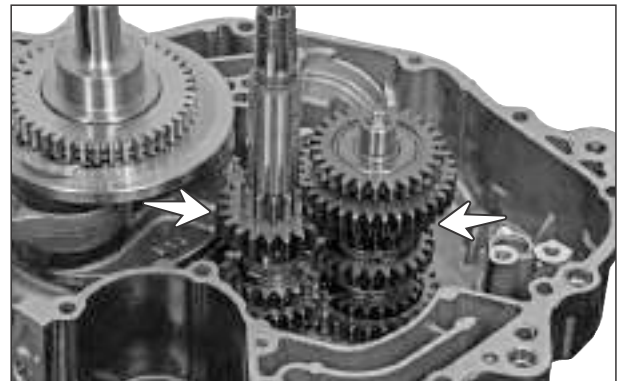


Fig. 3.150

- Take out the gear 2nd driven. (Fig. 3.151)

Note:

Since the gear idler (speed sensor gear) locks the 2nd driven gear, it will not come along with the drive shaft assembly during the shaft removal. Hence the gear has to be taken separately.



Fig. 3.151

- Take out thrust washer from the drive shaft assembly gear 2nd driven seating area. (Fig. 3.152)

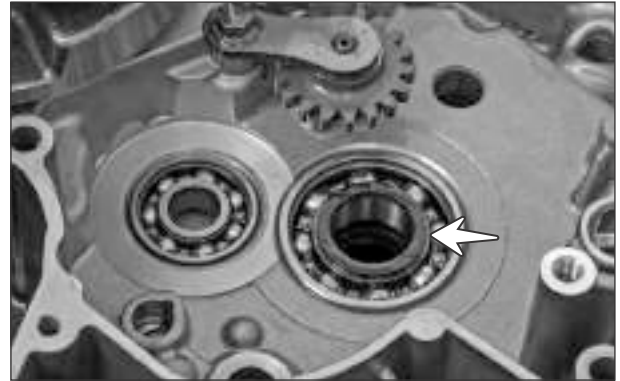


Fig. 3.152

- Pull out crankshaft assembly from the crankcase assembly LH by gently tapping it from the other side. (Fig. 3.153)

Note:

While removing the crankshaft assembly, ensure that the balancer shaft is rotated to the other side and not obstructing the crankshaft.

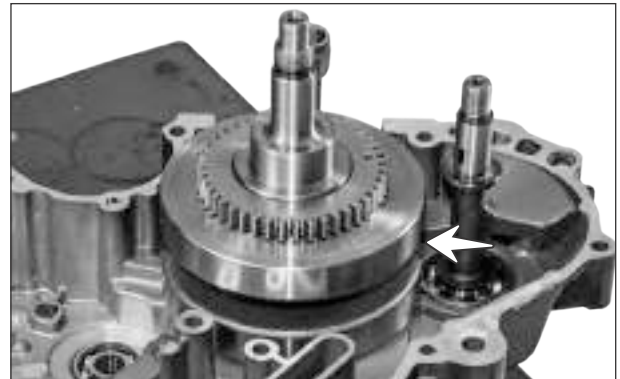


Fig. 3.153

- Take out the balancer shaft complete as an assembly. (Fig. 3.154)



Fig. 3.154

- Remove hexagonal bolt (M6x16 - 1 no.) from the bracket idler gear mounting and dislocate the bracket idle gear. (Fig. 3.155)

8 mm spanner

Tightening torque

10 ± 2 Nm

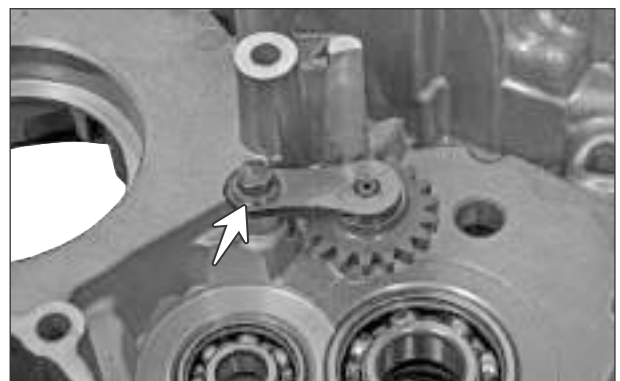


Fig. 3.155

- Take out the idler gear along with shims
(11.2x18.5x1 - 2 nos.). (Fig. 3.156)

Note:

While reassembling the idler gear ensure the presence of shims on both side.

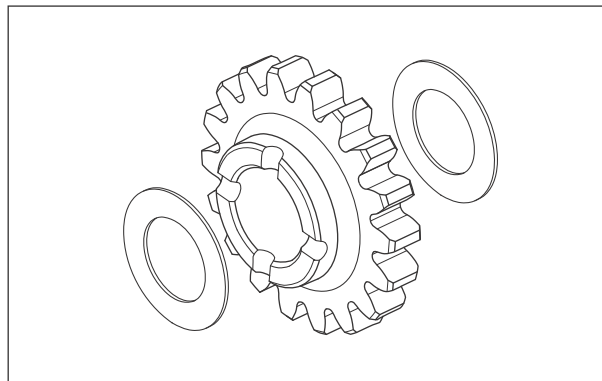


Fig. 3.156

- Using the special tool, remove the ball bearing
(6207) from the crankshaft assembly (in case if the bearing comes with crankshaft). (Fig. 3.157)

S131 111 0

Extractor main bearing

17 mm spanner



Fig. 3.157

- Using the special tool (bearings installer set),
bearings and oil seals can be removed and reassembled.
(Fig. 3.158)

S131 050 0

Bearing installer set

Metal hammer

Note:

Remove the bearings, only if they need to be replaced. Unnecessary removal of bearings should be avoided, otherwise can damage the bearings and can cause deterioration to the interference fit. It is sufficient to clean and lubricate the bearings in assembled condition.

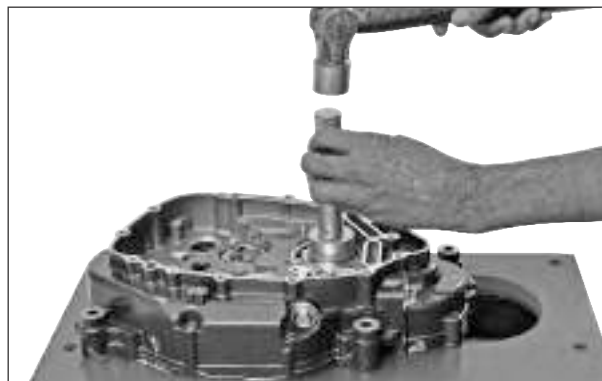


Fig. 3.158

- Using the special tool (universal oil seal remover), the oil seals can be removed. (Fig. 3.159)

031 240 1

Universal oil seal remover



Fig. 3.159

GEAR ASSEMBLY BALANCER SHAFT DRIVEN

- Gear balancer shaft driven can be separated from the race balancer gear driven by pushing it out.

Note:

While reassembling the gear balancer shaft ensure that the dots (A) on the race balancer gear driven and gear balancer driven should be aligned and the pin balancer shaft driven (B) should be placed opposite to each other. (Fig. 3.160)

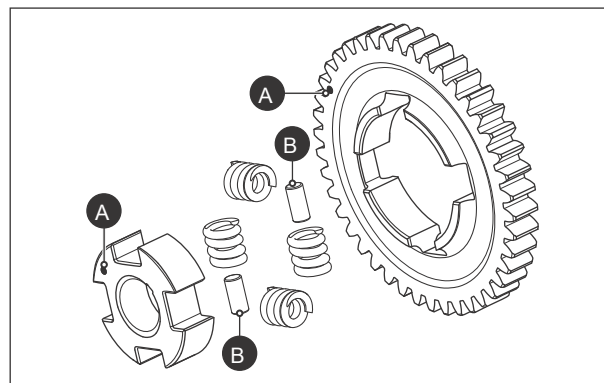


Fig. 3.160

SHAFT COMPLETE DRIVE - DISASSEMBLY

- Take out the gear 4th driven. (Fig. 3.161)

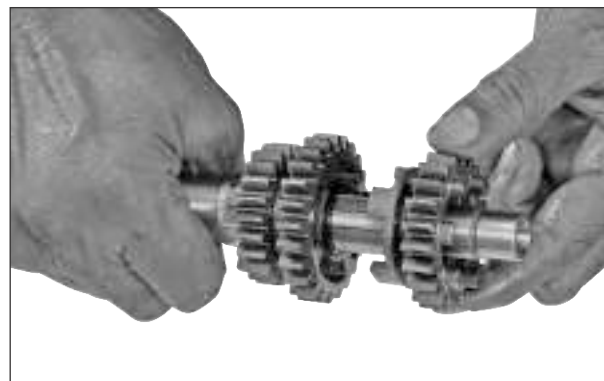


Fig. 3.161

- Remove the circlip (20x1.2). (Fig. 3.162)

Snap ring plier - External



Fig. 3.162

- Take out the shim (A). (Fig. 3.163)
- Take out the gear 3rd driven (B). (Fig. 3.163)

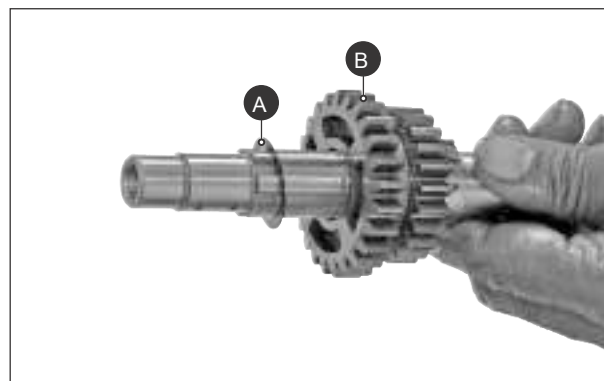


Fig. 3.163

Take out the star bush. (Fig. 3.164)



Fig. 3.164

Take out the gear 5th driven. (Fig. 3.165)



Fig. 3.165

INSPECTION

Shaft complete drive / shaft complete counter (assembly) / cam gear shift / drive gears and driven gears.

Before inspection, clean all the components thoroughly with cleaning solvent.

Carefully inspect all the parts for any scoring marks, breakage, wear of splined surfaces of shafts / gear teeth. Replace damaged parts with the new ones.

Using a feeler gauge, check the clearance between fork gear shift and its seating groove on the gear. (Fig. 3.166)

If the measured clearance exceeds the service limit, determine whether the gear or the fork gear shift should be replaced with a new one.

Feeler gauge	
Description	Service limit
Fork gear shift to groove clearance	0.300 mm (max)

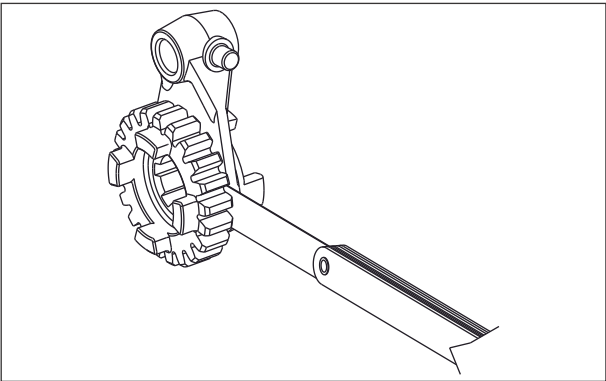


Fig. 3.166

REASSEMBLY

- Reverse the removal procedure of gears for re-assembly.
- While reassembling the gears, attention must be given to the locations and positions of washers and circlips.

Caution:

Never reuse circlips after removing from the shaft.

While installing a new circlip, care should be taken not to expand the end gap larger than the required to slip over the shaft.

After installing a new circlip, always ensure that it is completely seated in its groove and securely being locked. The flat surface of the circlip should always face towards the component being locked.

- The exploded view will serve as a reference for correct mounting of the gears, washers and circlips. (Fig. 3.167)

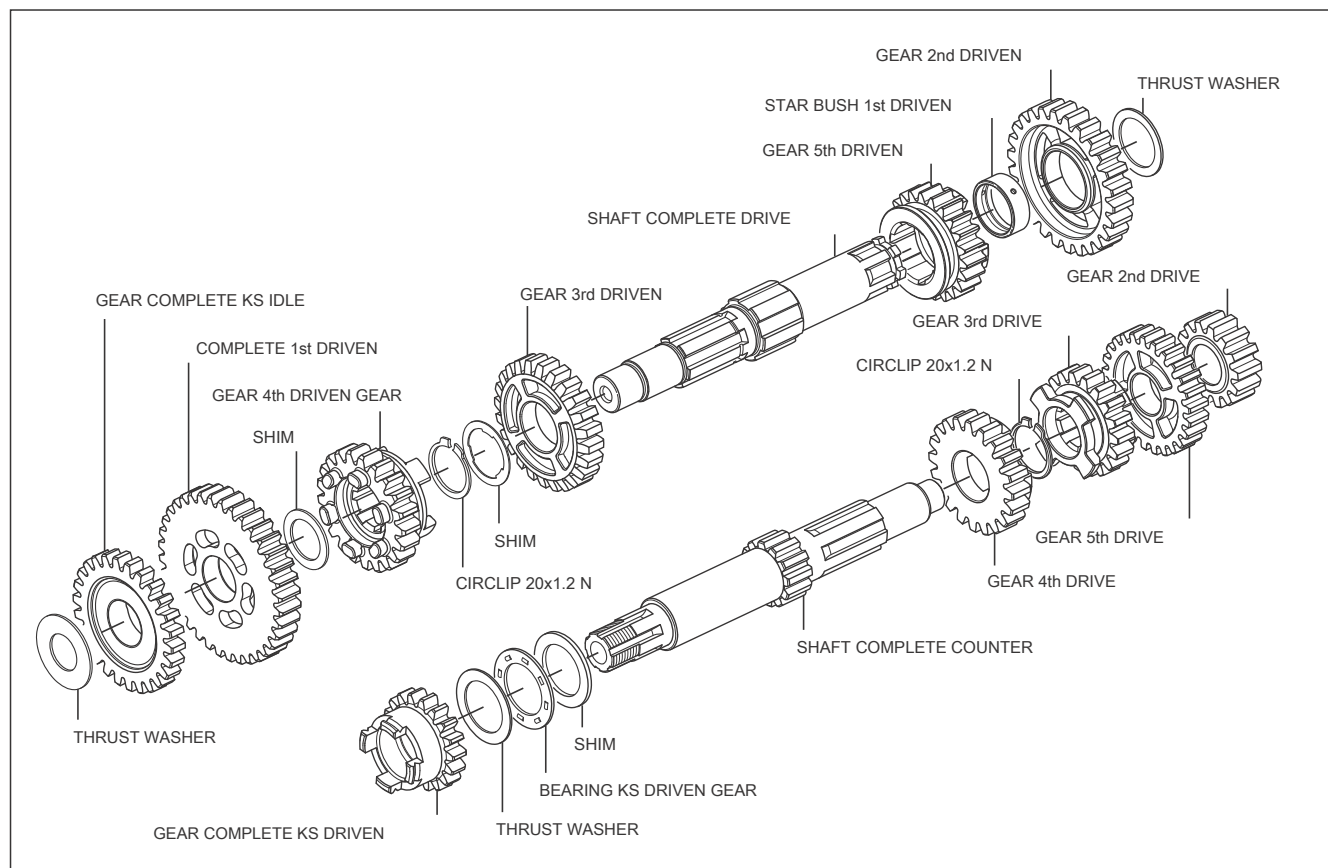


Fig. 3.167

ENGINE COMPONENTS - INSPECTION

Bearings

- Wash bearings with a cleaning solvent and lubricate them with engine oil before inspecting.
- Inspect the play of each bearing before fixing it.
Hold inner race and rotate the outer race by hand and observe for any abnormal noise and smooth rotation.
Replace bearing with a new one if found defective. (Fig. 3.168)

Note:

Do not use compressed air to clean the bearings.

Oilseal

- Damage to the oil seal lip (A) may result in leakage of oil. Inspect the oilseals for the damage of lip and always replace oilseals with the new ones during reassembly. (Fig. 3.169)

Crankshaft assembly - runout

- Support crankshaft assembly with 'V' blocks or anvil. Mount the dial indicator at positions shown to read the runout. Runout should be within the service limit. (Fig. 3.170)
- Excessive runout of crankshaft assembly causes abnormal engine vibration and bearing noises. Such vibration shortens the engine life.

V - block set (4"x3"x3") Dial

gauge (1/100 mm) Magnetic

stand

Service limit

0.100 mm (max)

Condition of the big end bearing - crankshaft assembly

- Measure big end wear of connecting rod by the deflection of small end. If deflection exceeds the limit, replace the crankshaft assembly with a new one. (Fig. 3.171)

Service limit

3 mm (max)

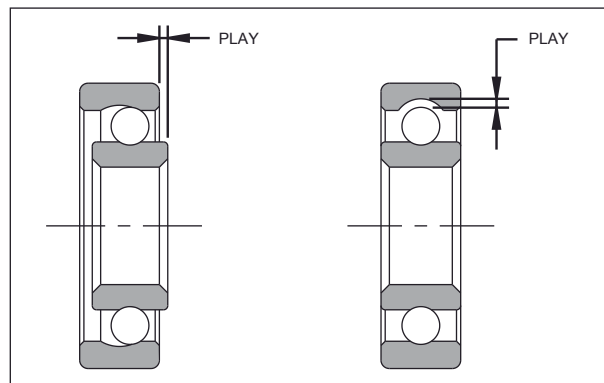


Fig. 3.168

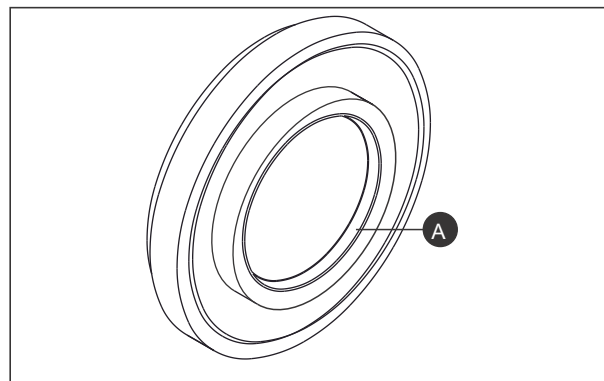


Fig. 3.169

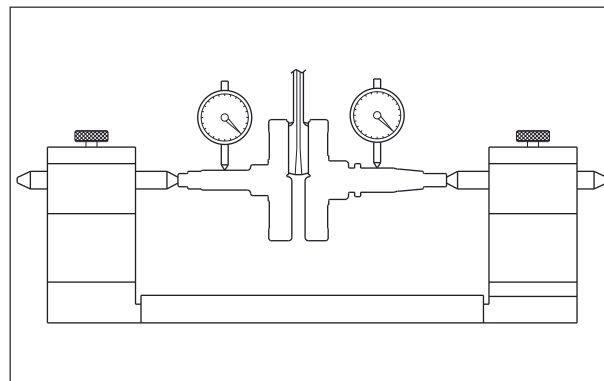


Fig. 3.170

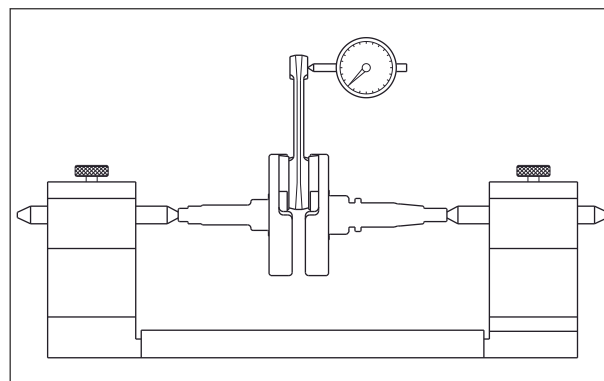


Fig. 3.171

- Hold the crankshaft assembly in hand, shake the connecting rod to find out the radial play. If any play is noticed, then replace the crankshaft assembly with a new one. (Fig. 3.172)

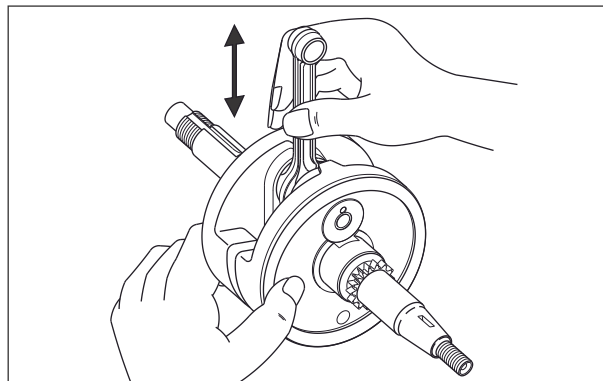


Fig. 3.172

- Measure connecting rod big end side clearance with a feeler gauge. If the clearance exceeds the service limit, replace the crankshaft assembly with a new one. (Fig. 3.173)

Feeler gauge	
Service limit	0.650 mm (max)

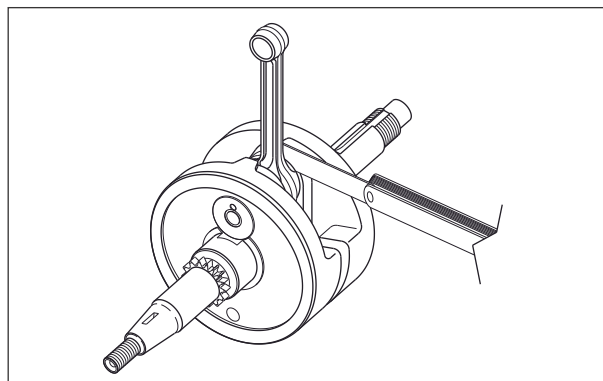


Fig. 3.173

Connecting rod small end diameter

- Measure internal diameter (ID) of the connecting rod small end. If ID is more than the service limit, replace the crankshaft assembly with a new one. (Fig. 3.174)

Service limit	15.040 mm (max)
---------------	-----------------

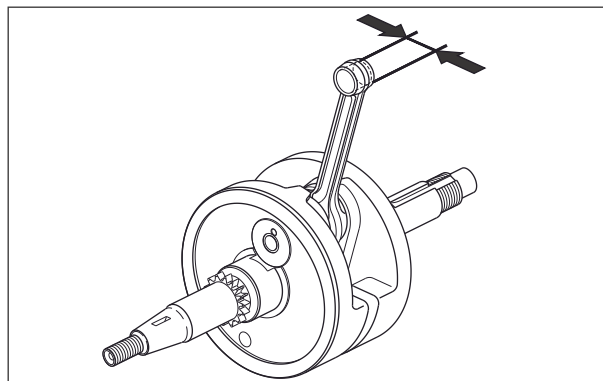


Fig. 3.174

Balancer shaft - Inspection

- Inspect the balancer shaft for any twist or bend. If found any replace the balancer shaft assembly.
- Inspect the balancer shaft bearing for free rotation and any abnormal noise. If found any replace the bearing. (Fig. 3.175)

Note:

Replace both LH & RH bearings together (one bearing is assembled on the shaft and the other one is on the RH side crankcase).

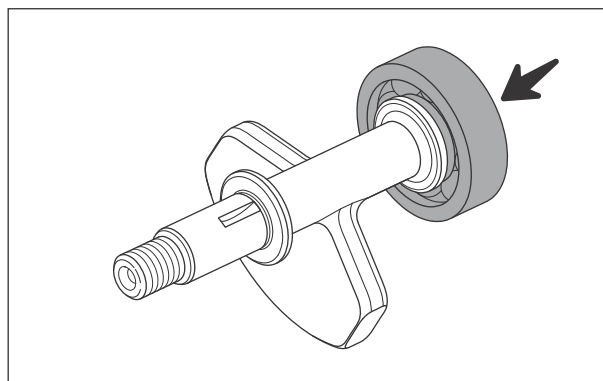


Fig. 3.175

- Support the balancer shaft with 'V' blocks or anvil. Mount the dial indicator at the position shown to read the runout. Runout should be within the limit. (Fig. 3.176)

- Excessive runout of balancer shaft causes abnormal engine vibration and bearing noises. Such vibration shortens engine life.

V - block set (4"x3"x3") Dial	
gauge (1/100 mm) Magnetic	
stand	
Service limit	0.100 mm (max)

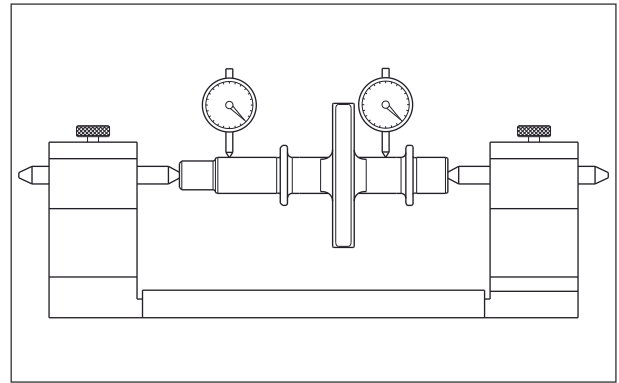


Fig. 3.176

ENGINE ASSEMBLY - REASSEMBLY

- Refer engine exploded view for assembly details. (Fig. 3.177)
- Reassemble parts carefully in the reverse order of disassembly.
- Never reuse gaskets, circlips, 'O' rings and oilseals when the engine is overhauled.
- After installing a circlip, ensure that it is seated properly in its groove by rotating it.
- Always use recommended special tools.

Bearings

For reassembling bearings use a special tool.

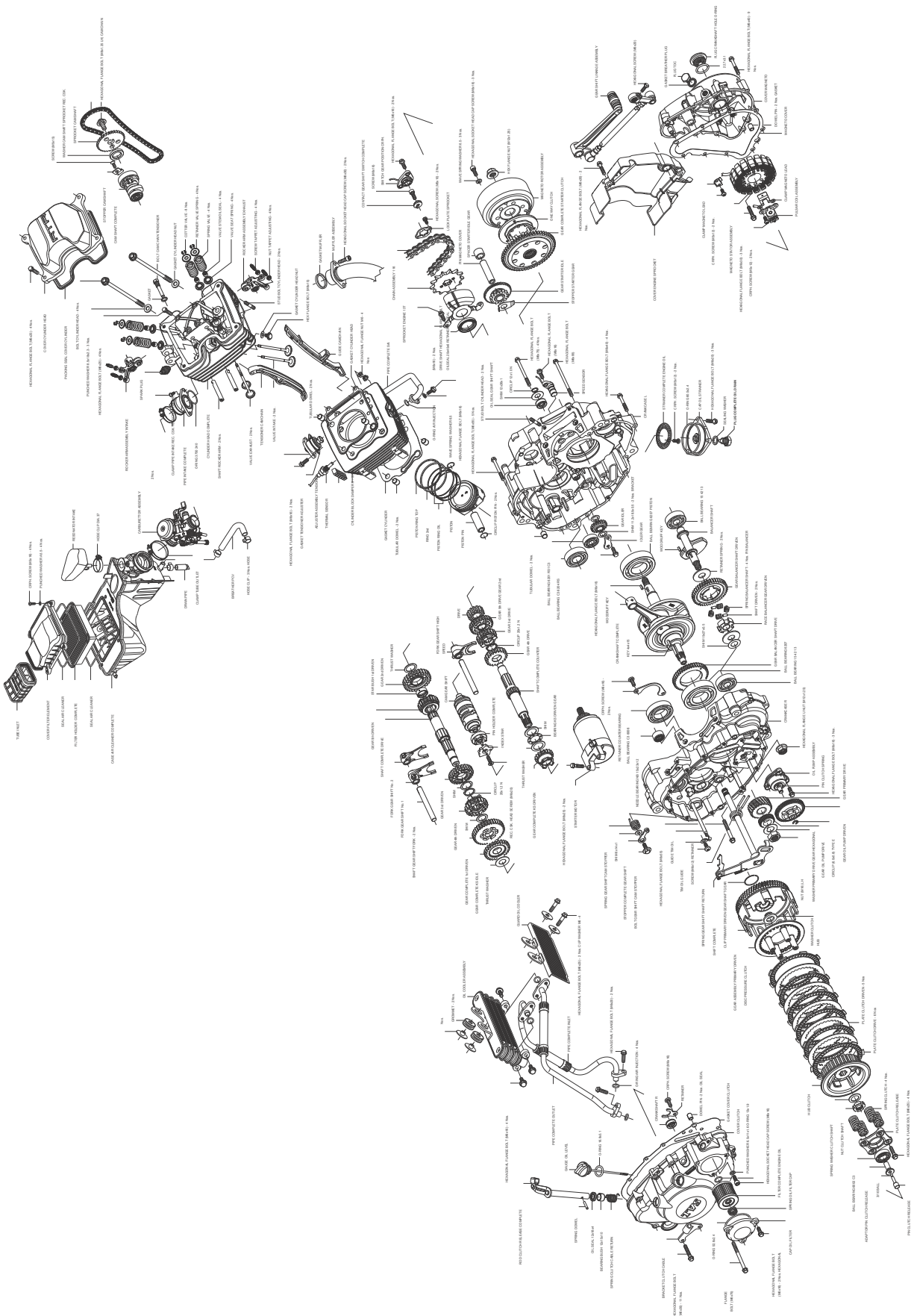
Note:

Whenever bearings are replaced it is recommended that both LH & RH bearings are replaced as a set to have better results. Make sure that the bearings are not misaligned with the fitting.

Oil seals

While assembling the oilseals to the crankcase follow the procedure given below:

- Apply grease to the lip of oilseal.
- Use only specified special tool for assembling the oilseals.



¡ Cuando se fija el los retenes sobre el cheque eje
que los asientos de labios sobre el eje perfectamente todo
alrededor de la circunferencia sin ninguna distorsión.

¡ Aplique aceite de motor en cada corriendo y arrastrando
parte antes de instalarlos durante el montaje.

Los sujetadores

¡ Apriete todos los tornillos con el par especificado
utilizando una llave de torsión (consulte el cuadro de apriete en la página no.
7-8 y 7-9 para la especificación de par).

CARTER ASAMBLEA LH & RH - MONTAJE

¡ Retire el material de la junta en el apareamiento
superficies de montaje de cárter L & R y completamente eliminar
manchas de aceite.

¡ Montar el engranaje intermedio en el cárter
conjunto de LH y seguro que con el engranaje loco soporte
con el perno de brida hexagonal (M6x16) y apriete con el par
especificado. (Fig. 3.178)

8 mm llave

par de apriete

10 ± 2 Nm

¡ Montar el eje equilibrador completa como una
ensamblado en la LH conjunto de cárter. (Fig. 3.179)

¡ Girar el eje equilibrador a otro lado como
se muestra y montar el conjunto de cigüeñal en el LH
conjunto de cárter. (Fig. 3.180)

Nota:

*Mientras que el montaje del cigüeñal tener un cuidado especial
para no causar ninguna abolladura, daños y arañazos en las
superficies mecanizadas.*

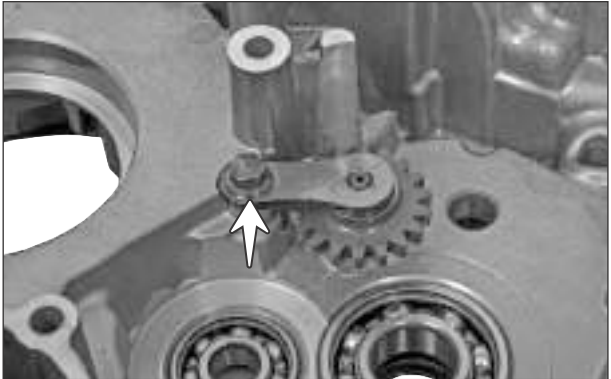


Fig. 3.178



Fig. 3.179



Fig. 3.180

- Montar el clip de retención en el equilibrador
eje y fijarlo con la tecla Ruff madera. (Fig. 3.181)

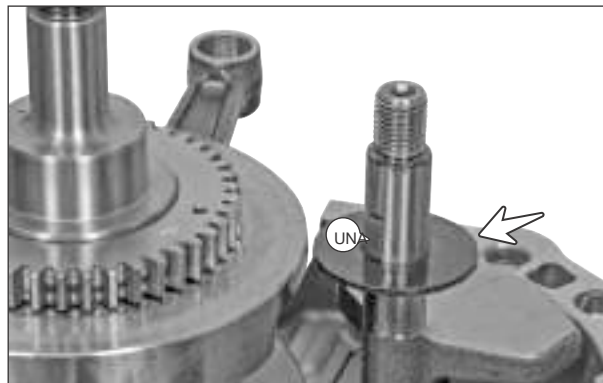


Fig. 3.181

- Montar el eje del engranaje de equilibrado, movido
montaje en el eje equilibrador. (Fig. 3.182)

Precaución:

Mientras que volver a montar, alinear de accionamiento de equilibrador y engranajes accionados para que coincida con marcas de puntos / de perforación (A) en una línea como se muestra en la figura.



Fig. 3.182

- Montar el muelle de retención (A) y la cuña
(B) en el eje equilibrador. (Fig. 3.183)

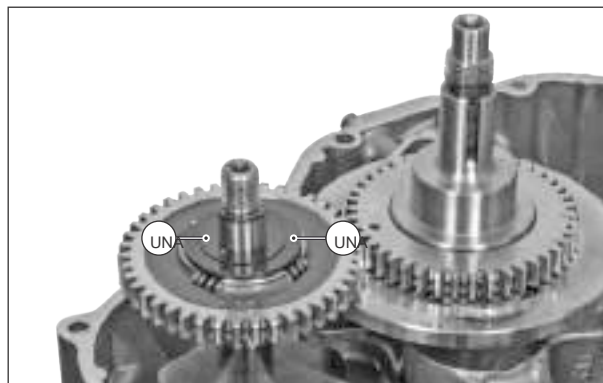


Fig. 3.183

- Coloque una arandela de empuje en el cárter

LH montaje en el eje completa zona de estar de accionamiento (por encima del cojinete de bolas). (Fig. 3.183A)

- Coloque el segundo engranaje impulsado en el cárter

LH montaje en el eje completa zona de estar de accionamiento (por encima de la arandela de empuje). (Fig. 3.183B)

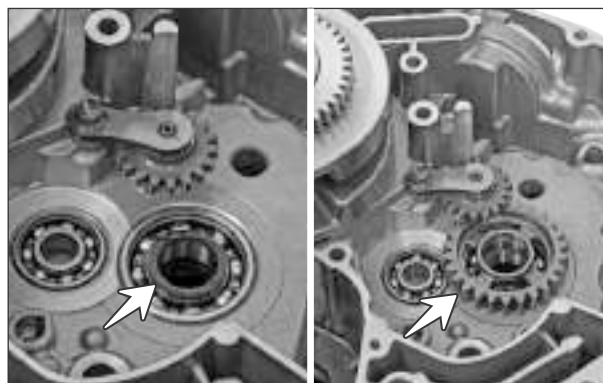


Fig. 3.183A

Fig. 3.183B

- Montar el conjunto de eje secundario (embrague eje) y el eje de accionamiento de montaje tal como se establece en LH conjunto de cárter. (Fig. 3.184)

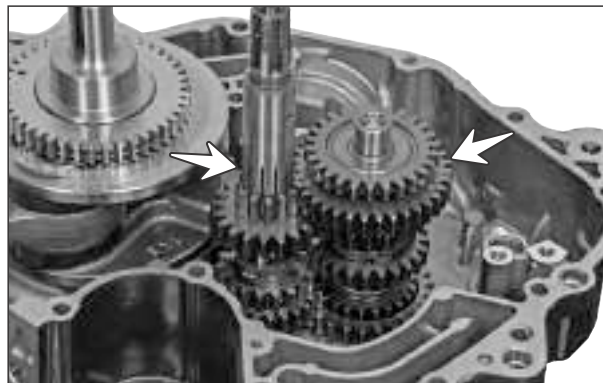


Fig. 3.184

- Montar el cambio de engranajes no.1 tenedor, tenedor de engranajes cambiar ninguna. 2 y el engranaje tenedor de conversión a elevada velocidad en su respectiva posición. (Fig. 3.185)

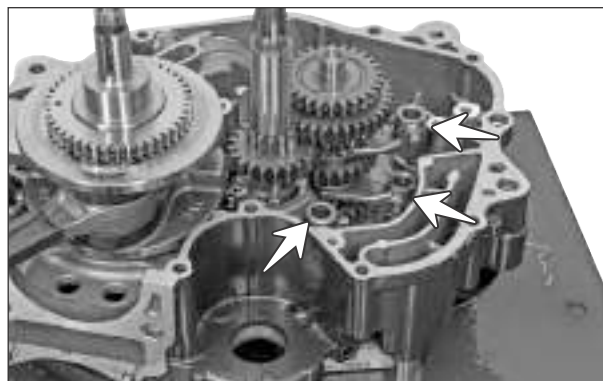


Fig. 3.185

- Montar la leva de cambio de marchas (A) en el cárter montaje. (Fig. 3.186) y localizar tanto los cambios de marcha de la horquilla en sus respectivas ranuras en el cambio de velocidad completa de la leva.



Fig. 3.186

- Ensamble ambas las horquillas de cambio en el eje de cárter LH montaje a través de cambios de marcha de la horquilla. (Fig. 3.187)

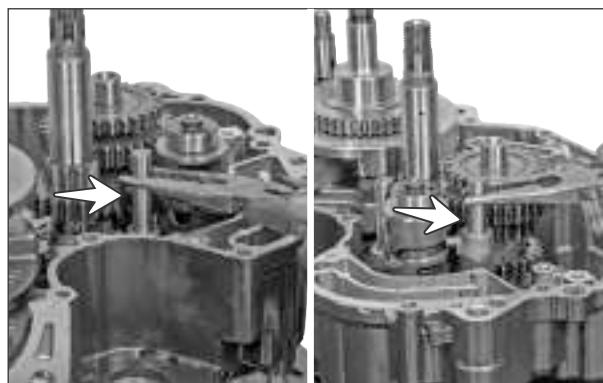


Fig. 3.187

Montar la cuña (A) en el eje completa

conducir. (Fig. 3.188)

- Montar teniendo engranaje de arranque accionado por arrancador junto con cuña y la arandela de empuje (B) en el eje completo mostrador. (Fig. 3.188)

Nota:

Mientras que el montaje de la cuña y la arandela de empuje, montar la cuña por debajo del engranaje accionado saque de cojinete de arranque y la arandela de empuje en la parte superior.

- Montar espiga tubular (2 nos) en el cárter LH montaje y el cárter fix junta.

Nota:

Aplicar poco de grasa en el cárter junta para un mejor asiento.

- Montar el conjunto de cárter a la RH

Montaje del cárter LH golpeando suavemente. (Fig. 3.189)

martillo de nylon

- Montar y apretar pernos de la brida hexagonales (M6x55 -. 5 nos, M6x40 -. 4 nos, M6x75 - 4 NOS y M6x95 -. 1 no.) En el cárter completa LH. (Fig. 3.190)

8 mm llave

par de apriete

10 ± 2 Nm

Nota:

Apriete los tornillos en forma cruzada.

- Ensamble y apriete el perno de brida hexagonal

(M6x55 - 1 no.) En el cárter completa RH. (Fig. 3.191)

8 mm llave

par de apriete

10 ± 2 Nm

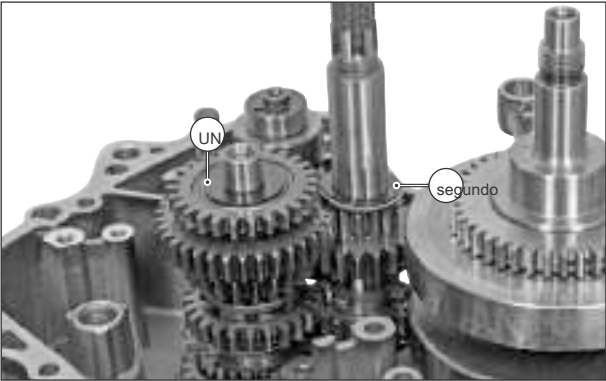


Fig. 3.188

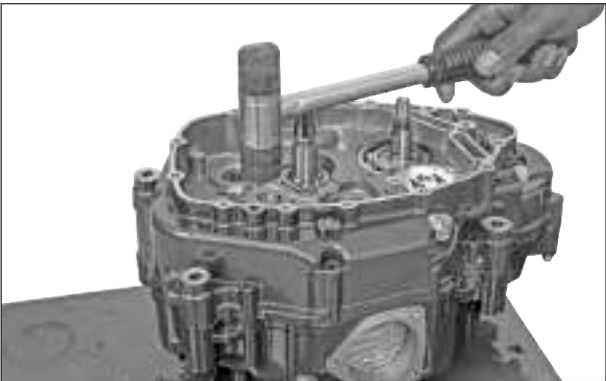


Fig. 3.189

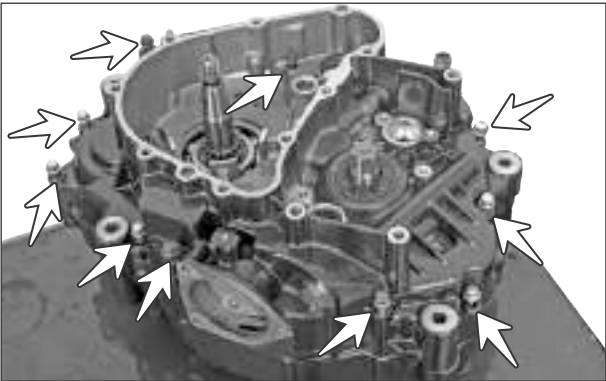


Fig. 3.190



Fig. 3.192

Nota:

Después de apretar los pernos del cárter, la verificación de la rotación libre del árbol de accionamiento completo, y de eje secundario completa y el conjunto de cigüeñal.

Si se siente gran resistencia, golpee suavemente en la unidad completa del eje y el eje de los conjuntos de contador completos con martillo de nylon.

EMBRAGUE

Antes de montar la cubierta del embrague, garantizar que la liberación de embrague adopta por y la bola son assembl ed en el cl Ly UTCH assemb. (Fig. 3.192A)

También asegúrese de que la liberación de embrague pin es montado en la cubierta del embrague. (Fig. 3.192B)

CALADO DE LA DISTRIBUCIÓN huelgos de válvulas y

de tiempo de válvula

Mientras que volver a montar la rueda dentada del árbol de levas, seguir los procedimientos dados a continuación:

Girar conjunto de rotor y que coincida con el TDC marca (A) en el conjunto de rotor y la marca (B) en LH conjunto de cárter. (Fig. 3.193A)

En esta posición, asegurar que la marca (C) en eje de la rueda dentada de leva coincide con el borde de la superficie de la cabeza completa inder cilindros (D). (Fig. 3.193B)

el juego de válvulas

Ajustar la holgura de válvula para el límite especificado (Véase capítulo página "mantenimiento periódico" no. 2-19 para el procedimiento y la especificación)

Antes de arrancar el vehículo, se llenan cum motor aceite de la transmisión y llevar a cabo todos los otros ajustes. Ajustar el motor según lo prescrito en el capítulo página "Mantenimiento periódico" no. 2-18.

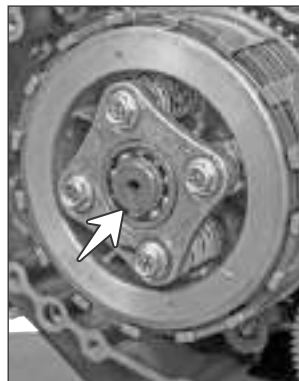


Fig. 3.192A

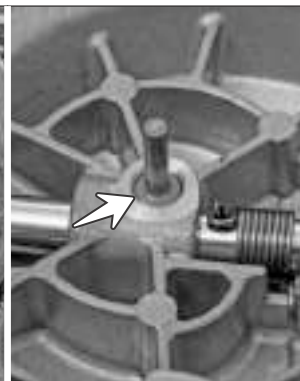


Fig. 3.192B

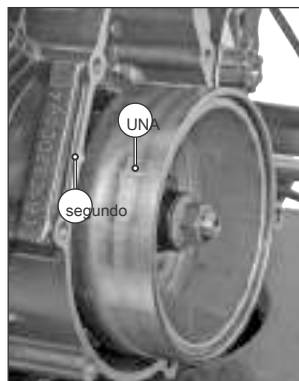


Fig. 3.193A

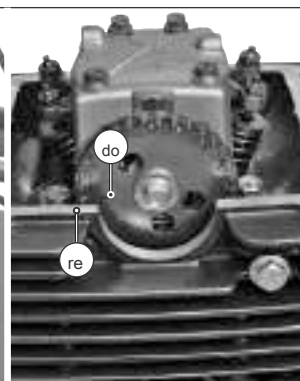


Fig. 3.193B

RODAJE Después de reacondicionamiento

¡ El / motor reparado reconstruido debe someterse
rodaje.

¡ No sobrecargue el motor inmediatamente después
revisión, ya que puede resultar en un desgaste rápido de los componentes
debido a sobreesfuerzo, sobrecalentamiento y sobrecarga.

¡ Esto tendrá un impacto a través de la vida de
los componentes reconstruidos que resulta en un rendimiento bajo
de vehículo.

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SISTEMA DE COMBUSTIBLE

COMPLETO DEL DEPÓSITO DE COMBUSTIBLE

La completa del depósito de combustible se encuentra en el bastidor tubo cerca del pivote de dirección con un depósito de conjunto de tapa con cierre de combustible (A) y el conjunto de llave de combustible de accionamiento manual (B) en el lado inferior izquierdo del depósito. (Fig. 4.1)

El depósito de combustible conjunto de tapa se puede abrir con la llave de encendido.

Una unidad de emisor de combustible está montado en la parte inferior lado del tanque de combustible. (Fig. 4.2)

Capacidad del tanque	
Principal	12 litros
reserva	2,5 litros

Limpiar el depósito de combustible completo periódicamente. Inspeccionar el tanque para cualquier fuga. Si se observa alguna fuga, sustituir el depósito de combustible con una nueva.

ELIMINACIÓN

- Drenar la gasolina por completo.
- Retire el conjunto del depósito de combustible como se explica en capítulo página "Mantenimiento periódico" no. 2-5.
- Quitar los tornillos de brida hexagonales (M6x16 - 2 núms.), Junto con las juntas de la montaje del conjunto de grifo de combustible y sacar el conjunto de llave de combustible. (Fig. 4.3)

10 mm llave	
par de apriete	7 ± 1 Nm

Nota:
Mientras que volver a montar la llave de combustible, asegurar la presencia de embalaje articulación en el cuerpo del grifo de gasolina y la junta en pernos hexagonales.

Precaución:
Cambie la empaquetadura conjunta con uno nuevo, mientras que volver a montar si se encuentran daños.

Se debe tener cuidado de no dañar las superficies pintadas del conjunto de depósito de combustible durante la retirada, limpieza y nuevo montaje.



Fig. 4.1

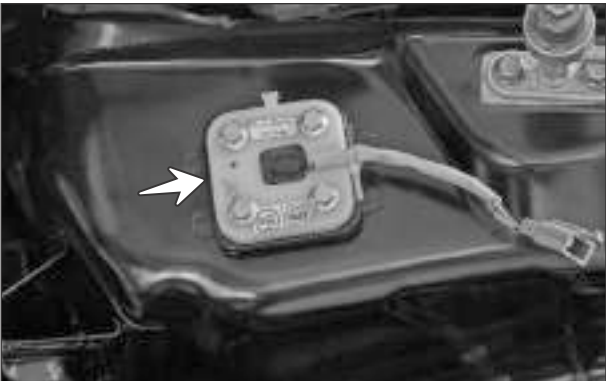


Fig. 4.2

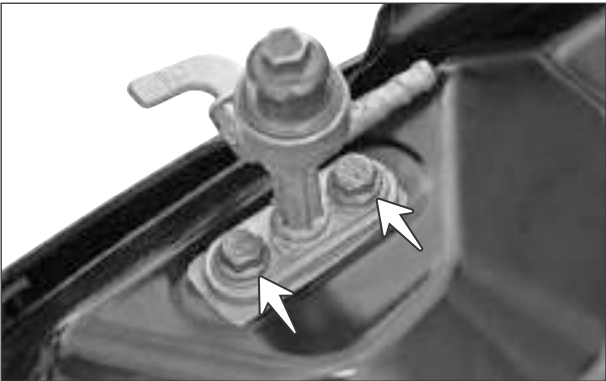


Fig. 4.3

- Dislocar la abrazadera de la manguera y desconecte el Manguera de drenaje desde el conjunto de depósito de combustible. (Fig. 4.4)

alicate de nariz

- Retire el perno de brida hexagonal (M5x14 - 4 núms.) De la unidad de montaje emisor de combustible. (Fig. 4.5)

8 mm llave

par de apriete	2,5 ± 0,5 Nm
----------------	--------------

- Retire cuidadosamente el sensor de nivel a lo largo de con la junta.

Precaución:

Se debe tener cuidado de no dañar la uni emisor de combustible t du rante la eliminación / reensamblado. De lo contrario puede provocar un mal funcionamiento del indicador de combustible.



Fig. 4.4



Fig. 4.5

LIMPIEZA

- Limpiar el conjunto del depósito de combustible a fondo con una disolvente de limpieza adecuado.

Nota:

Antes de volver a montar el depósito de combustible completo, el disolvente utilizado para la limpieza debe ser limpiado y secado completamente.

el montaje del grifo de gasolina

- Un filtro de lápiz (A) se fija a la llave de combustible montaje y se inserta en el interior del depósito de combustible. La llave de combustible también tiene un filtro dentro de la cubeta de sedimentos llave de combustible (B). (Fig. 4.6)
- En general las impurezas se consiguen recogidos en la gasolina. Filtro lápiz ayuda a filtrar las impurezas finas en la gasolina antes de entrar en la assembly del grifo de gasolina.

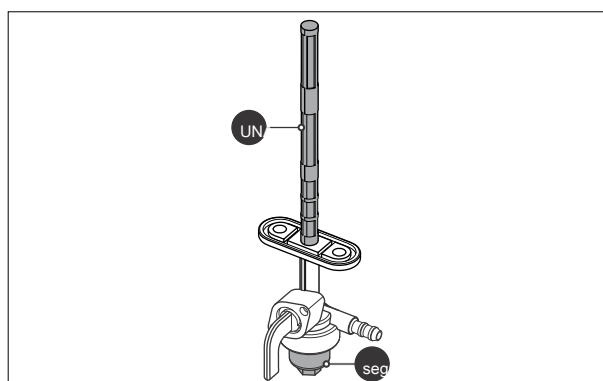


Fig. 4.6

Limpiar el filtro periódicamente lápiz. Visualmente inspeccionar los daños. Incase cualquier anomalía se encuentra el filtro, el conjunto de llave de combustible debe ser reemplazado por uno nuevo.

- Los sedimentos filtrados por el filtro en el interior del combustible vaso de decantación pene conseguirá depositado en el bol. Por lo tanto el recipiente y el filtro interior del recipiente deben ser retirados y limpiados periódicamente para evitar la entrada de polvo en el conjunto del carburador. (Fig. 4.7)

10 mm llave

Precaución:

Reemplazar el anillo 'O' con uno nuevo, mientras que volver a montar. (Fig. 4.7)

- Use aire comprimido para limpiar cualquier obstrucción en el paso del conjunto de llave de combustible. Volver a montar los componentes en el orden inverso de desmontaje.

MANGUERA DE COMBUSTIBLE

- inspeccionar visualmente la manguera para combustible grieta o fugas en sus puntos de montaje. Si alguna grieta o fuga notaron reemplazar el combustible manguera con una nueva.

MONTAJE CARBURADOR

La eliminación del vehículo

- El mantenimiento del conjunto de carburador requiere una limpieza periódica con el fin de evitar el bloqueo de chorros, pasajes y el establecimiento de CO ralentí% recomendados por el fabricante.

Nota:

Sé proa Remov i ng el conjunto tor carburet, gire el mando del grifo de gasolina a la posición 'OFF' y desconecte la manguera de combustible desde el conjunto de carburador.

- Retire el asiento y el marco embellecedor L y R por refiriéndose la página del capítulo "Mantenimiento periódico" no. 2-3 y 2-4.

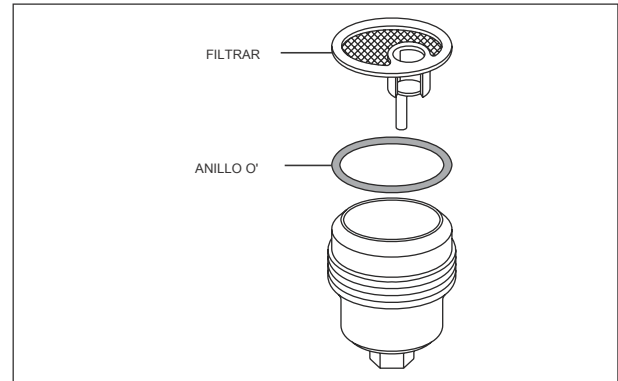


Fig. 4.7

Descripción especificaciones del	
carburador	Especificación
tipo de carburador	Keihin CV 30VE
surtidor principal	112
difusor de la aguja	N / A
aguja Jet	NUQA
posición del anillo E-	N / A
Piloto de jet	38
Válvula de pistón	N / A
MCS tornillo vueltas	1 ~ 4 vueltas
rpm al ralentí	1500 ± 100
Ralentí CO% (con SAI)	1 ~ 3%

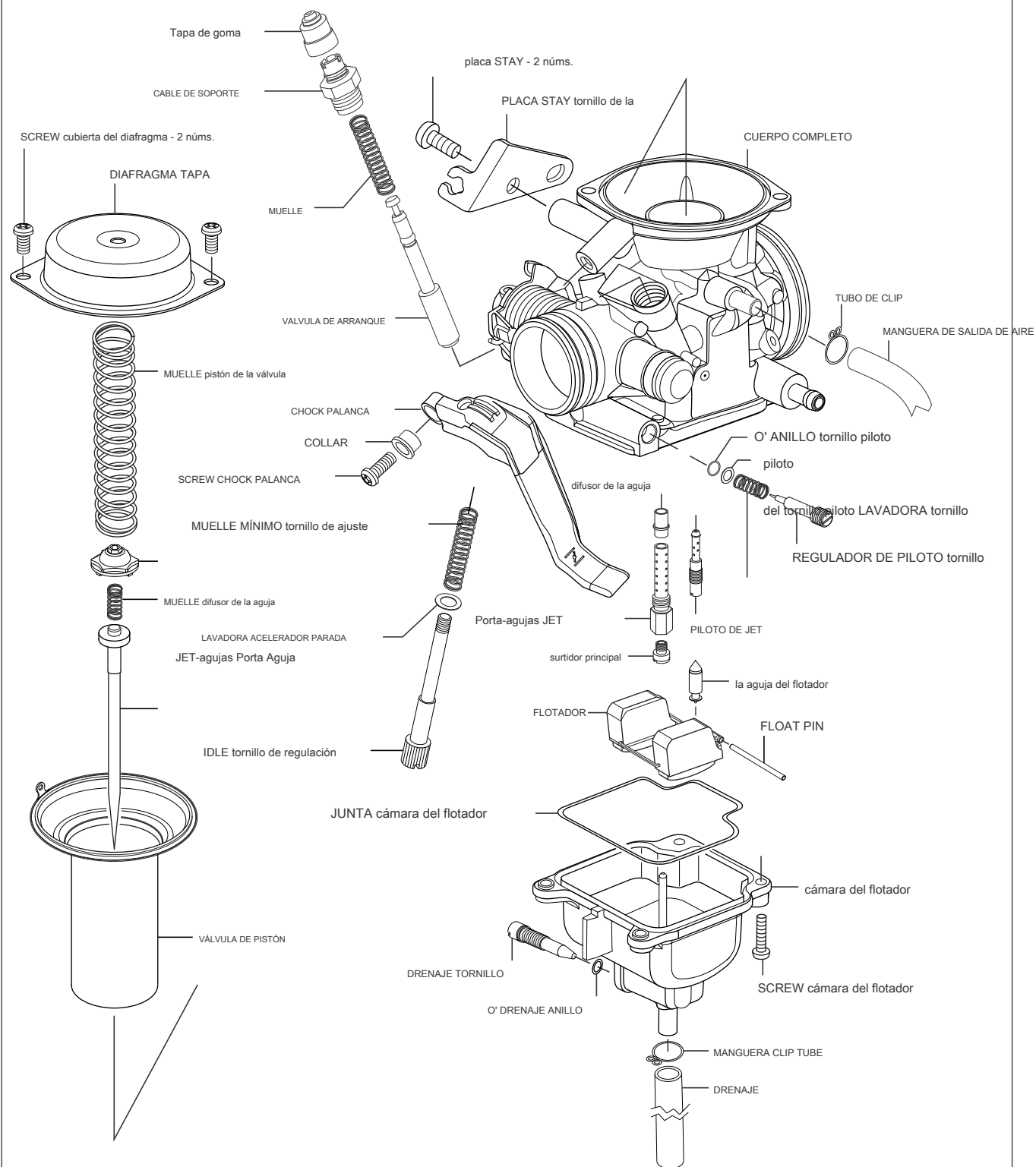


Fig. 4.8

¡Afloje completamente la tuerca de fijación del cable del acelerador (A) mientras sosteniendo el ajustador (B). (Fig. 4.9)

10 mm llave

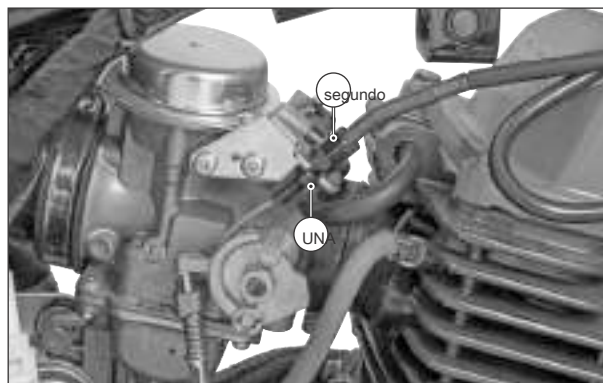


Fig. 4.9

¡Dislocar la abrazadera de la manguera y tire de la salida de aire manguera del conjunto del cabezal del cilindro. (Fig. 4.10)

alicate de nariz

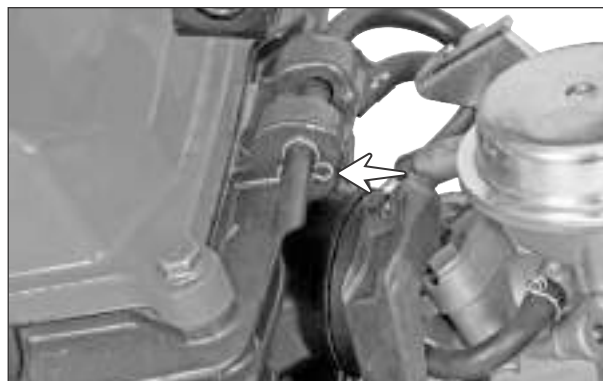


Fig. 4.10

¡Aflojar el tubo de salida de la abrazadera y dislocar la tubo de salida del tubo de filtro de aire desde el conjunto de carburador. (Fig. 4.11a)

destornillador de cabeza Phillips

par de apriete

$1,75 \pm 0,25 \text{ Nm}$

¡Del mismo modo, afloje el tubo de admisión abrazadera y tire suavemente a cabo el montaje del carburador del tubo de admisión. (Fig. 4.11B)

par de apriete

$2,25 \pm 0,25 \text{ Nm}$

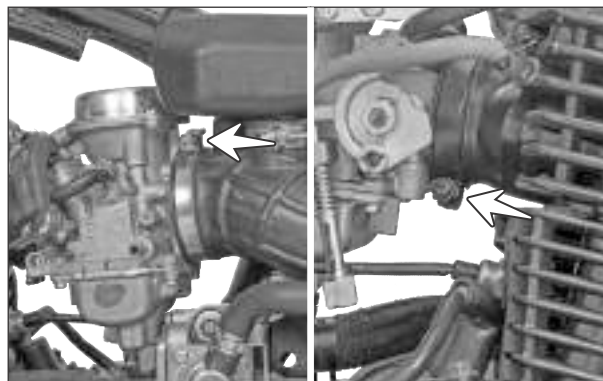


Fig. 4.11a

Fig. 4.11a

¡Retire la CRR. tornillo de cabeza troncocónica de la ahogar montaje palanca y sacar la palanca junto con un collar dislocando suavemente desde el arranque de la válvula (émbolo cuña). (Fig. 4.12a)

destornillador de cabeza Phillips

¡Aflojar el soporte del cable (A) de la cuerpo del carburador y sacar el motor de arranque de la válvula como un conjunto (conjunto de émbolo estrangulador). (Fig. 4.12b)

13 mm llave

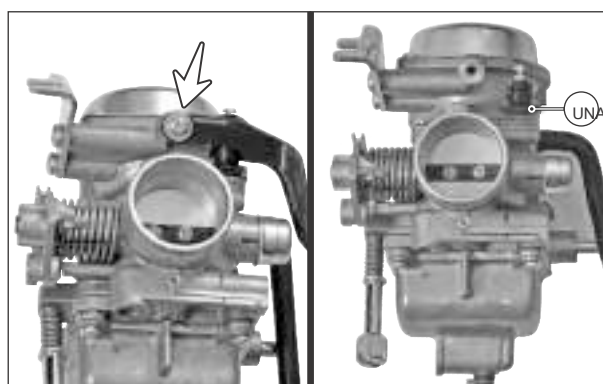


Fig. 4.12a

Fig. 4.12b

DESMONTAJE

- ¡ Tire de la salida de aire de la manguera (A) y la manguera de drenaje (B) dislocando los clips. (Fig. 4.13)

alicate de nariz

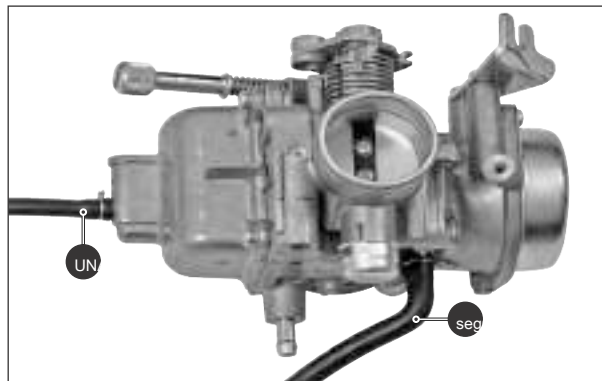


Fig. 4.13

- ¡ Retire CRR. tornillos de cabeza plana (2 nn.) y llevar a cabo el diafragma cubierta. (Fig. 4.14)

destornillador de cabeza Phillips

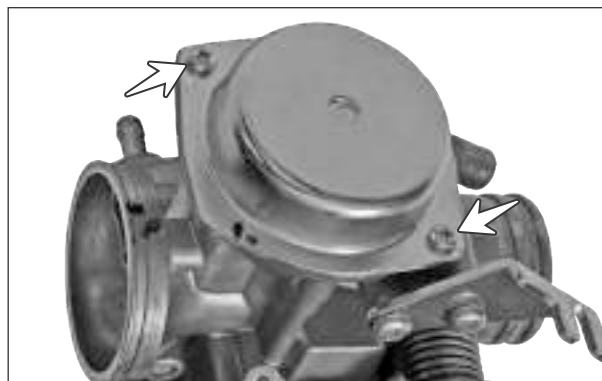


Fig. 4.14

- ¡ Sacar la válvula de pistón de resorte. (Fig. 4.15A)
- ¡ Retire el conjunto de válvula de pistón junto con el diafragma. (Fig. 4.15b)

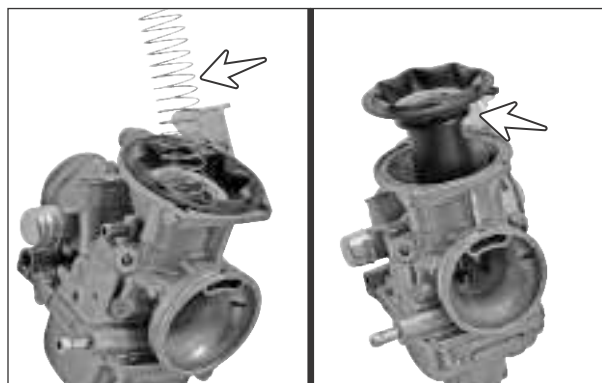


Fig. 4.15A

Fig. 4.15b

- ¡ Retire el tornillo piloto ajustador (mezcla tornillo de control) (A) a lo largo con el resorte, la arandela y el anillo 'O'. (Fig. 4.16A)

pequeño destornillador plano

- ¡ Aflojar y quitar el tornillo de ajuste de ralentí (B) junto con el resorte y la arandela. (Fig. 4.16B)

Nota:

Mientras que volver a montar el tornillo piloto garantizar para reemplazar el anillo 'O' con una nueva.

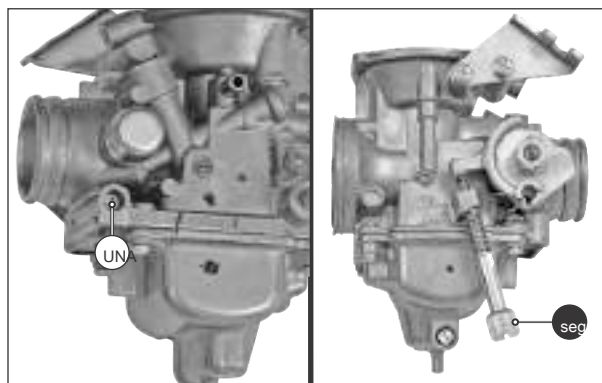


Fig. 4.16A

Fig. 4.16B

- Retire la CRR. tornillos de cabeza plana (4) nn.
desde el montaje cámara del flotador y sacar la cámara de
flotador junto con la junta. (Fig. 4.17)

destornillador de cabeza Phillips

Nota:

*Mientras que volver a montar la cámara del flotador,
inspeccionar el estado de la cámara de flotador junta y
sustituir en caso necesario.*

- Retire el flotador alfiler. (Fig. 4.18)

alicate de nariz

- Sacar el flotador junto con la aguja del flotador
(Conjunto de válvula de aguja).

- Usando un pequeño destornillador plano, con cuidado
eliminar jet piloto. (Fig. 4.19)

destornillador plano (pequeño)

Precaución:

*Durante el montaje del surtidor auxiliar no apriete más
de lo necesario, ya que puede dañar la superficie de
asiento.*

- Eliminar chorro principal (A) mientras mantiene jet titular
aguja. (Fig. 4.20)

Destornillador plano

- Eliminar chorro de soporte de aguja (B) y sacar
jet aguja.

7 mm llave

Nota:

*El chorro de soporte de aguja y el chorro de aguja necesitan ser
eliminado sólo si es necesario.*

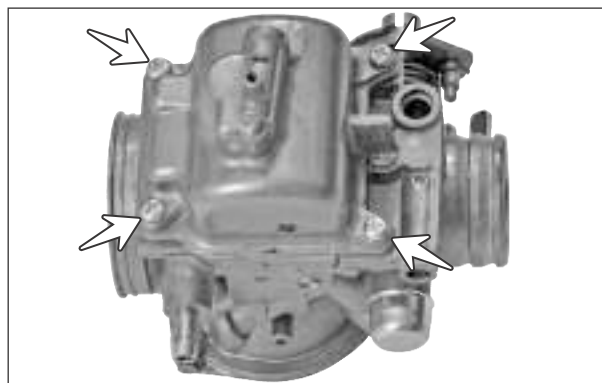


Fig. 4.17

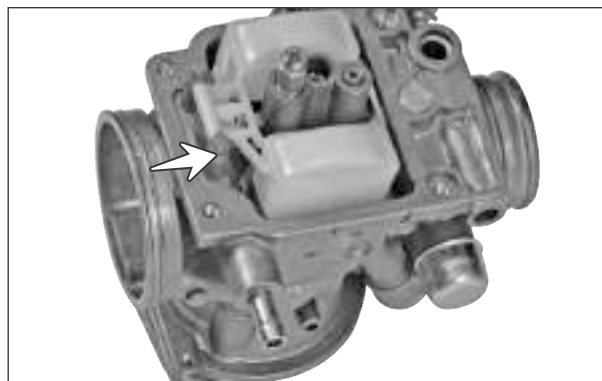


Fig. 4.18

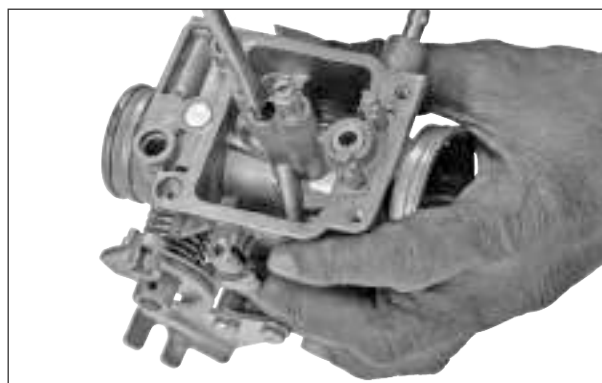


Fig. 4.19

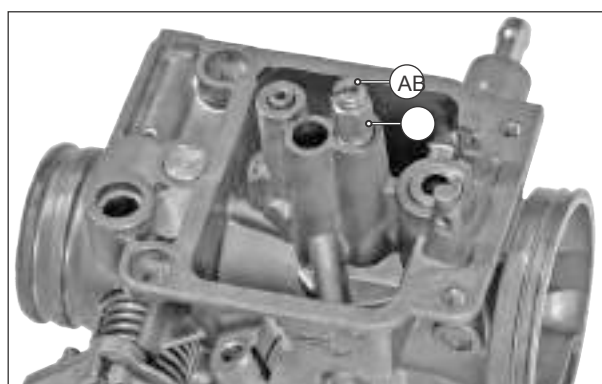


Fig. 4.20

válvula de pistón - desmontaje

- Retire la aguja del surtidor soporte utilizando una llave Allen y sacar la aguja de inyección titular junto con un resorte. (Fig. 4.21)

llave allen 4 mm

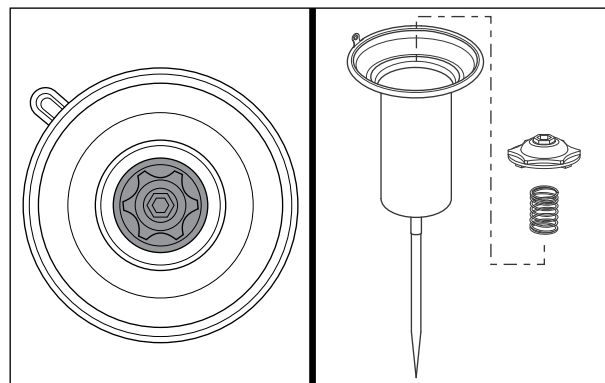


Fig. 4.21

- Empuje aguja de inyección desde la parte inferior y quitar la aguja de inyección. (Fig. 4.22)
- Inspeccionar la aguja de inyección, el conjunto de válvula de pistón por cualquier daño / deformación. Encontrado si cualquier reemplazar las partes respectivas con una nueva.
- Volver a montar la aguja de inyección en el orden inverso de la eliminación.
- Tras el montaje, asegúrese de que el chorro la aguja se mueve hacia arriba y hacia abajo en formas lado por la fuerza de gran suavidad.

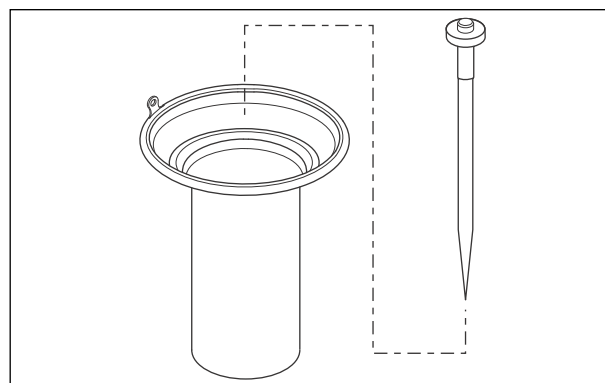


Fig. 4.22

MANTENIMIENTO

- El mantenimiento de un nivel completo de combustible en el tanque de combustible no deje que se oxida y también reduce la deposición de óxido en el montaje del carburador.
- Mientras que la palanca del obturador está en la posición 'ON', hacer No abra el acelerador de lo contrario puede causar inundaciones del carburador.
- Limpiar el filtro de aire completa filtro con regularidad, desde el filtro de aire bloqueado o dañado tendrá efecto adverso sobre el montaje del carburador y los resultados en el rendimiento del motor reducida.

LIMPIEZA

- Pulverizar el limpiador de carburador en todos los pasajes de el cuerpo del carburador (Fig. 4.23) para asegurar que no bloqueo debido a polvo, suciedad, goma o depósito de carbono.



Fig. 4.23

- Después de limpiar las páginas del carburador correctamente usando el limpiador, soplar el aire comprimido para limpiar los pasajes a fondo. (Fig. 4.24)

Precaución:

No utilice cables de limpiar los chorros.

Eliminar Al partes I de goma de la Asamblea carburador antes de limpiarlo con una solución de limpieza. Esto evitará daños o el deterioro de las piezas de goma.

No utilice comprimido a i r en un carburador montado que puede causar daño al sistema de flotador.

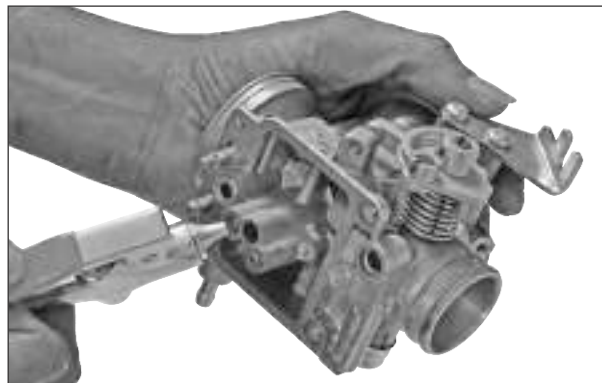


Fig. 4.24

INSPECCIÓN

conjunto de válvula de aguja

- Cualquier partícula extraña sobre la aguja del flotador (aguja conjunto de la válvula) y su asiento pueden causar sellado inadecuada resultante en más de flujo de gasolina. el mismo tipo de problema también ocurre en el caso de la aguja del flotador y su zona de estar desgastado.

- Por el contrario si los pinchazos de aguja flotador, la gasolina no fluye en la cámara de flotador.

- Si la aguja del flotador está completamente gastada como se muestra (Fig. 4.25) reemplazarla con una nueva.

- Inspeccionar la válvula de pistón, jet de la aguja, aguja de inyección, jet piloto, chorro principal, tornillo piloto y juntas tóricas para cualquier desgaste o daño anormal. Si se observa cualquier daño, reemplazar las piezas dañadas por otras nuevas.

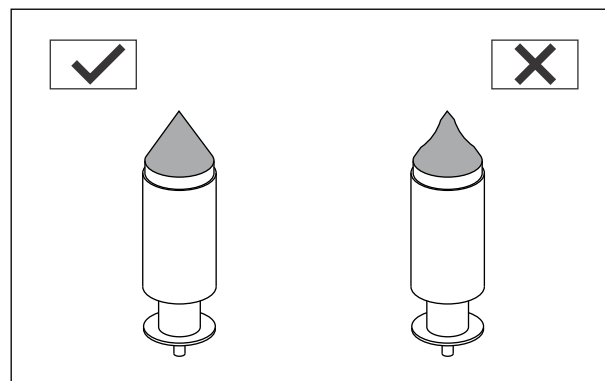


Fig. 4.25

REENSAMBLAJE

- Volver a montar las piezas en el orden inverso de desmontaje procedimiento garantizando al mismo tiempo la siguiente.

- Consulte montaje carburador explotó vista en página NO. 4-4 para los detalles de montaje.

Nota:

Asegúrese de que el chorro de piloto no se aprieta demasiado, ya que esto puede causar daños a su cabeza. Eliminación del cuerpo de mezcla se vuelve muy difícil.

¡ Si bien volver a montar el carburador siempre

utilizar nuevos anillos 'O' y los anillos de sellado.

¡ Montar la válvula de pistón de tal manera que la

gancho como proyección de diafragma coincide con la ranura del cuerpo de carburador. (Fig. 4.26)

¡ montaje del carburador Vuelva a montar en el vehículo

en el orden inverso de la extracción.

Nota:

Mientras que volver a montar, comprobar el movimiento suave de la palanca del estrangulador y la válvula de pistón en el cuerpo del carburador.

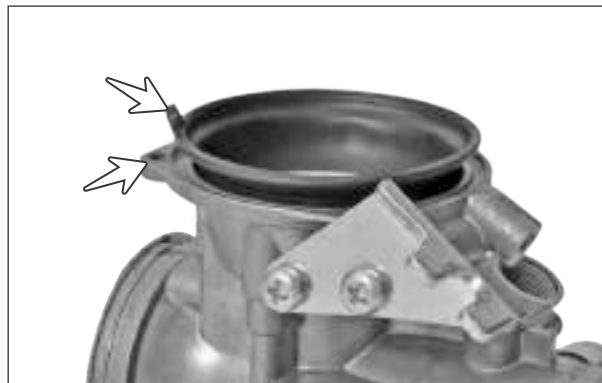


Fig. 4.26

¡ Después de volver a montar el carburador de montaje en

el vehículo, encaminar adecuadamente la salida de aire de la manguera de drenaje y la manguera.

¡ Comprobar el funcionamiento suave del puño del acelerador y

ahogo. Comprobar y ajustar el acelerador jugar si es necesario (referchapter página "Pe mantenimiento periodicas" no. 2-26).

AJUSTE DEL RALENTI

¡ Después de volver a montar el carburador de montaje en

el vehículo, ajustar el carburador como se explica en detalle en el capítulo de la página "Mantenimiento periódico" no. 2-18.

SISTEMA DE LUBRICACIÓN

¡ sistema de lubricación es muy importante para cualquier

motor que ayudan a que el motor se realice bien, incluso a mayor velocidad y temperatura. Por ello, mantener el sistema de lubricación es esencial para proteger el motor.

¡ En esta moto, el sistema de lubricación se llama como

sistema de lubricación positiva. Contiene una bomba de aceite trocoidal que suministra aceite al circuito de lubricación del sumidero.

¡ Tiene un filtro de aceite en el lado de entrada de la bomba.

También tiene filtro de papel a la salida de la bomba de aceite. El aceite viaja a través de varios sistemas del motor se enfríe.

¡ El circuito de aceite se muestra en la ilustración. (Fig. 4.27)

¡ Siempre limpiar los conductos de aceite siempre que sea

el servicio o en el cárter de apertura.

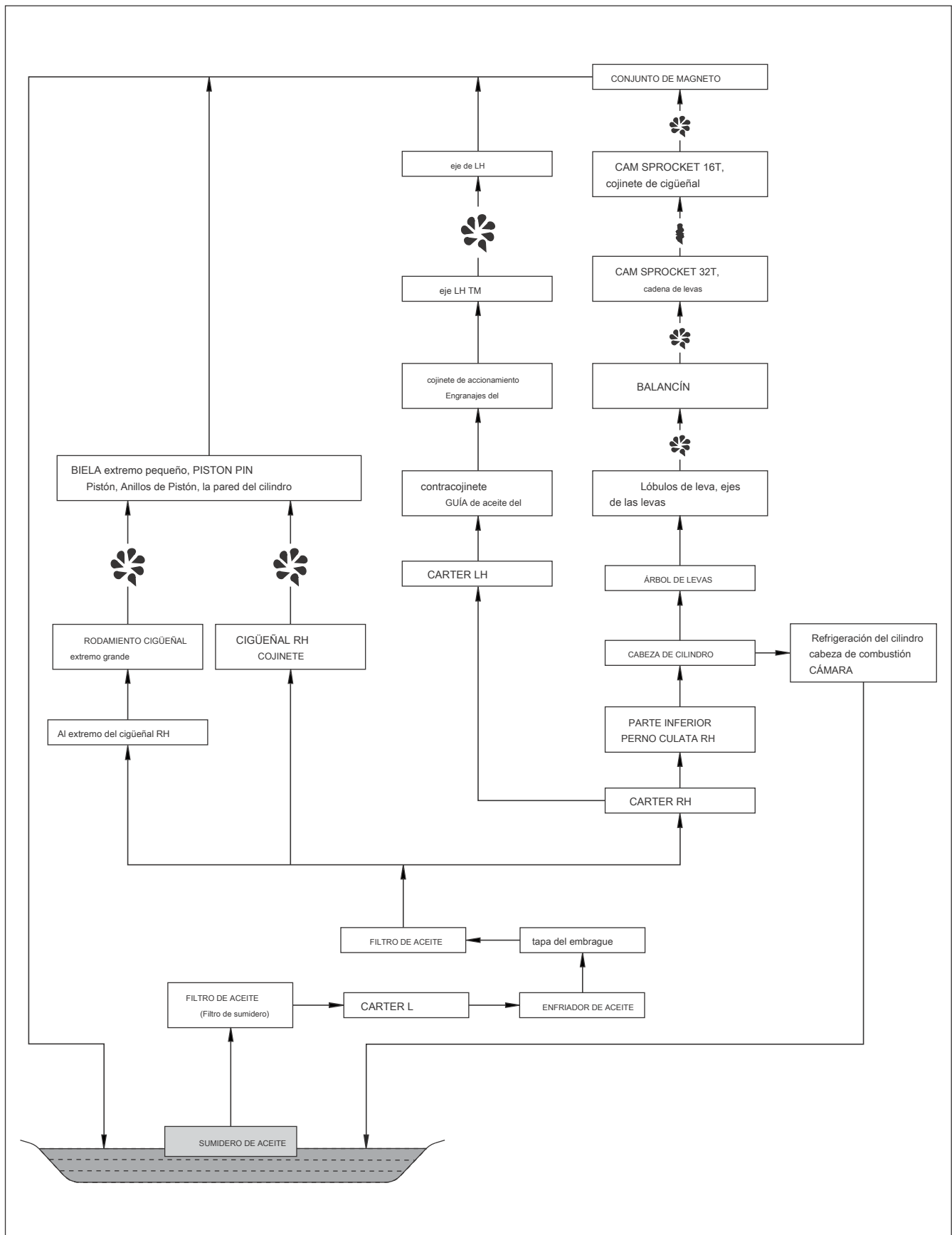


Fig. 4.27

- Reemplazar o reponer el aceite lubricante según el programa de mantenimiento periódico.

Filtro de aceite (depurador)

- El filtro de aceite es suministrado a la derecha del cárter lado en la parte inferior dentro de la alcachofa de aceite tapa. (Fig. 4.28)
- Limpiar el filtro de aceite como se especifica en el periódico programa de mantenimiento (véase capítulo "mantenimiento periódico" página no. 2-12 para la eliminación y el procedimiento de limpieza).

La bomba de aceite

- El aceite conjunto de bomba está montado en la derecha cárter lateral, justo debajo de la unidad principal de engranajes. (Fig. 4.29)
- La bomba de aceite es el miembro de primera que ofrece aceite al sistema de lubricación del cárter. Es impulsado por un engranaje separado (engranaje de accionamiento de bomba de aceite) a través de un engranaje de plástico. Inspeccionar el engranaje accionado la bomba de aceite y la superficie de la bomba de aceite de cualquier daño. Apretar la bomba de aceite tornillos de montaje con el par IED f especi while volver a montar.

par de apriete	8 ± 2 Nm
----------------	--------------

- Para garantizar el suministro del aceite a la culata de cilindros componentes, el flujo de aceite se pueden verificar en la cabeza del cilindro siguiendo el procedimiento dado a continuación:

- Arranque el motor y una duración de pocos segundos.

- aflojar lentamente el perno de brida hexagonal (M8x15 - 1 no.) Junto con la junta de cobre y buscar el flujo de petróleo. (Fig. 4.30)

14 mm llave	
-------------	--

par de apriete	12 ± 2 Nm
----------------	---------------

Nota:

No abrir el cerrojo de repente ya que el aceite puede salpicar a través del agujero.

No mantener el agujero de la inspección del aceite abierta durante más tiempo, ya que puede conducir a una mayor cantidad de drenaje de aceite.

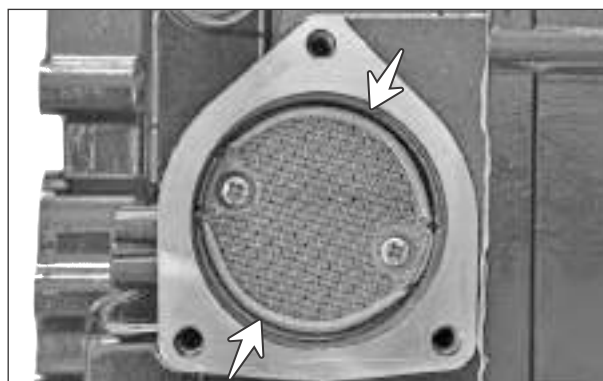


Fig. 4.28

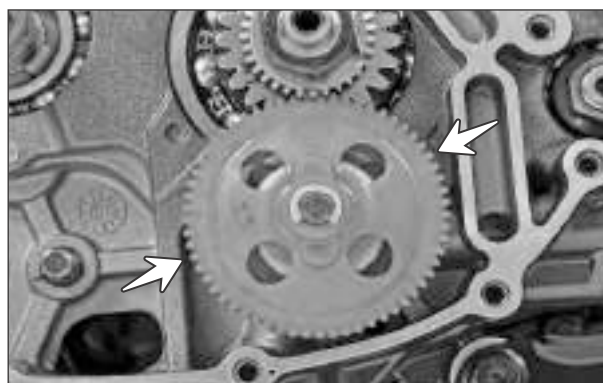


Fig. 4.29

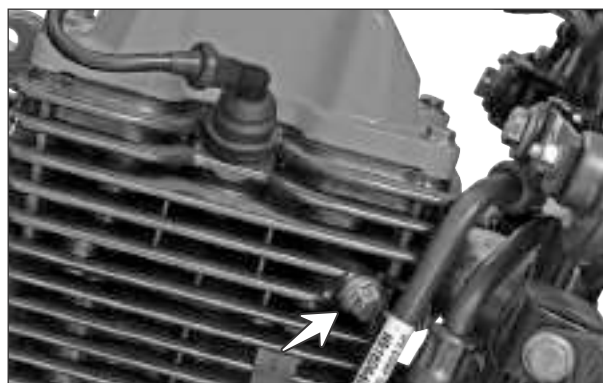


Fig. 4.30

Si no hay flujo de aceite a través de la inspección

agujero, comprobar el buen funcionamiento de la bomba de aceite, filtro de aceite obstruido y para cualquier bloque en los pasos de flujo de aceite.

MONTAJE ENFRIADOR DE ACEITE

El conjunto de radiador de aceite está montado en el

marco bramido el depósito de combustible cerca de la columna de dirección. (Fig. 4.31)

El aceite del motor se bombea a través de la

enfriador de aceite de montaje y se enfría de nuevo y enviar de vuelta al motor.

una inspección visual de las aletas del enfriador de aceite para cualquier bloqueo. Si algún, limpiarlos usando una pequeña herramienta de mezcla y aire comprimido.

Inspeccionar aletas del enfriador de aceite para cualquier deformación.

Si es así, enderezarlas con un destornillador delgado, de cabeza plana.

inspeccionar visualmente la entrada de conjunto del enfriador y

tubos de salida para cualquier crack, fugas, daños o deformaciones. Si algún sustituirlos por unos nuevos.

Consulte el capítulo página "Mantenimiento periódico"

no. 2-21 para la eliminación, inspeccione procedimiento de iones y rectificación de refrigerador de aceite de montaje.

FILTRO DE ACEITE DE MOTOR COMPLETO

El aceite filtro completo del motor debe estar

por iodical Ly inspeccionado y cambiado si es necesario con una nueva. (Fig 4.32)

Nota:

Siempre que se sustituya el filtro de aceite completo del motor, se recomienda que el aceite de motor es también ser reemplazado.

Th procedimiento e para el cambio de aceite y filtro de aceite de motor completo se explica en detalle en el capítulo página "Mantenimiento periódico" no. 2-12 y 2-13 .



Fig. 4.31



Fig. 4.32

CONTROL DE ESCAPE DE EMISIÓN

Los contaminantes emitidos por los gases de escape

sistema son perjudiciales para el medio ambiente. Si la combustión es absolutamente completa, no habría ningún tipo de contaminación atmosférica del sistema de escape.

Agua y dióxido de carbono son los productos de la combustión perfecta y completa. Sin embargo, la combustión completa es difícil de lograr en motores de combustión interna.

Hay tres principales contaminantes en los gases de escape emisión. Son:-

1. hidrocarburos no quemados (HC)
2. El monóxido de carbono (CO)
3. Los óxidos de nitrógeno (NO) x

¿Por qué el GASOLINA FALLO para quemar completamente?

Hay varias razones para la combustión incompleta. Algunos de ellos son:-

1. Chispa débil
2. proporción de la mezcla de aire-combustible incorrecto
3. gasolina adulterada
4. tiempo de encendido incorrecto
5. Compresión baja
6. Válvula excesiva sobre el regazo
7. ralentí incorrecto
8. sistema de escape incorrecta

CONTROL DE POLUCIÓN

Con la aplicación de diversos vehículos de motor

reglas, se han establecido normas para el porcentaje permisible de CO emitido desde los gases de escape tal como se muestra a continuación:

En masa	Por debajo de 0,83 g / km
Por volumen	Por debajo de 3,0%

SISTEMA DE ESCAPE

El sistema de escape consisten en partes derecha desde la válvula de escape para silenciador de montaje a través de la cual pasa el gas de escape.

Normalmente en vehículo de cuatro tiempos, el silenciador No estar sucio como dos vehículos Stoke menos que el sistema está dañado debido al petróleo u otra cosa la mezcla con gasolina sin saberlo. Pero cada vez que el silenciador se retira del motor, la junta de escape debe ser reemplazado para evitar fugas.

SECUNDARIA válvula de inyección AIRE

la válvula de inyección de aire secundario está montado en el bastidor debajo del depósito de combustible cerca del conjunto del filtro de aire. (Fig. 4.33)

PRINCIPIO DE FUNCIONAMIENTO

Esta es la unidad que se utiliza en las emisiones de escape sistema de control. El sistema de inyección de aire secundario induce aire filtrado en el colector de escape. Siempre que hay impulsos de presión negativa en el sistema de escape, se tomará el aire fresco en el tubo de escape. Esta carga de aire fresco diluye considerable cantidad de hidrocarburos (HC) y monóxido de carbono (CO) en los gases de escape en dióxido de carbono (CO) y agua (HO). (Fig. 4.34)

2

2

Hay una válvula de lámina que actúa como un cheque válvula, evita que el flujo de aire inverso de escape. Sólo se permite aire fresco en el colector de escape.

También hay un conjunto de diafragma en este válvula. Bajo cierre repentino de la válvula reguladora, de alto vacío se genera en el colector de admisión. Debido a este alto vacío, el conjunto de diafragma se tira hacia arriba y la entrada de aire fresco en el escape se corta.

Bajo la condición de aceleración repentina cerrado, una cierta cantidad de los gases no quemados de alta densidad se han agotado. Estos gases no quemados cuando entran en contacto con el aire fresco en el calor de escape, que se encienden y crean un sonido de estallido (después de la quemadura).

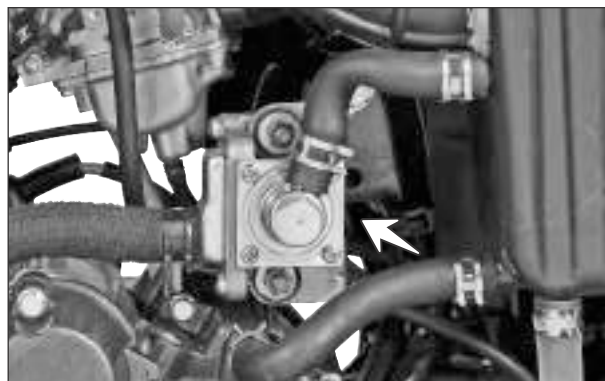
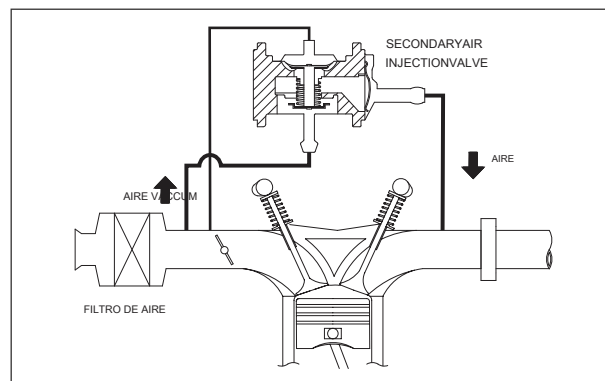


Fig 4.33



. La Fig. 4.34

Debido a esto tras la grabación, alta temperatura es creado en este sistema y esta alta temperatura hace que la pre-ignición en la cámara de combustión. Debido a esto la pre-ignición, el efecto de golpeteo es creado y por lo tanto se reduce la eficiencia del motor. El aire fresco cortado en la condición cerrada del acelerador, ayudará a evitar la quemadura después.

FUNCIÓN

El aire limpio desde el conjunto de filtro de aire es pasado a través del orificio de entrada (A). La salida (B) que tiene una válvula de láminas conectado a colector de escape. Otra línea de colector de admisión está conectado a la cámara (C). El puerto (D) tiene un pequeño orificio que los otros puertos. El aire fresco y filtrado pasa desde el puerto (A) al puerto (B) a través de este orificio. Cuando hay una succión en la cámara (C) el diafragma es pul llevó hacia arriba, el cierre de la válvula en el puerto (D). El flujo de aire desde el puerto (A) a (B) se detiene. Dependiendo de la cantidad de vacío creado en el colector de admisión, se controla la cantidad de flujo de aire desde por t (A) a (B). (Fig. 4.35)

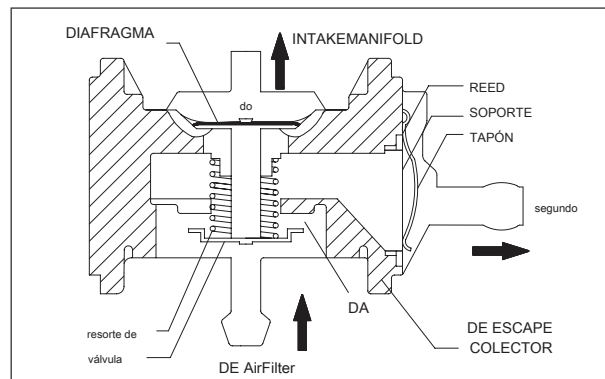


Fig. 4.35

ELIMINACIÓN

- Dislocar la abrazadera de la manguera (A) de entrada de aire de la manguera y desconectar la manguera de la válvula de inyección de aire secundario. (Fig. 4.36)
- Del mismo modo, dislocar la abrazadera de la manguera (B) de la manguera salida de aire y desconecte la manguera de la válvula de inyección de aire secundario. (Fig. 4.36)

alicate de nariz

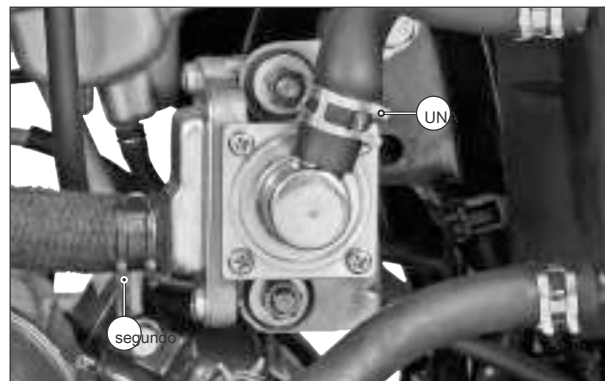


Fig. 4.36

- Retire el perno hexagonal (M6x30 -. 2 nos) de montaje de la válvula de inyección de aire secundario y sacar la válvula junto con las arandelas perforadas (2 nos.). (Fig. 4.37)

10 mm llave

par de apriete

7.5 ± 1 Nm

Nota:

Si bien volver a montar asegurar la disponibilidad de los amortiguadores y separadores en el lugar de montaje de la válvula.

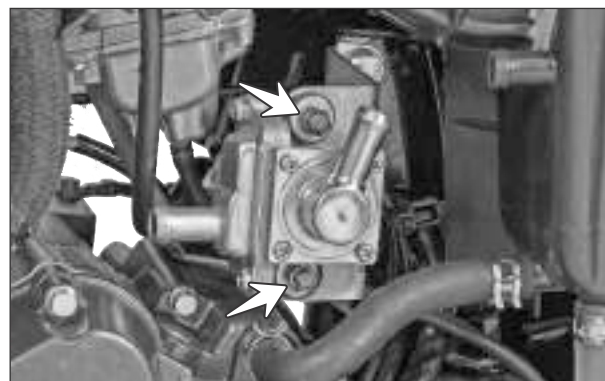


Fig. 4.37

- Dislocar el clip (A) de la válvula de corte de aire manguera y desconectar la manguera de la válvula de inyección de aire secundario. (Fig. 4.38)

alicate de nariz

- Para el montaje, invertir la eliminación secuencia.

MANTENIMIENTO PREVENTIVO (emisión)

- Mientras que todos los vehículos nuevos de salir de fábrica es certificada y está cumpliendo con las normas de emisiones de escape, el nivel de CO en los gases de escape puede quedar alterado dependiendo de la altitud y también durante un periodo de tiempo dependiendo del uso o la falta de mantenimiento. Por tanto, es necesario cada vez que es atendida vehículo, inspeccionar el nivel de CO y afinar el motor para mantener las normas de emisión.

Precaución:

Aumento del nivel de CO en los gases de escape no sólo contamina el aire mal, pero también afecta el rendimiento del motor.

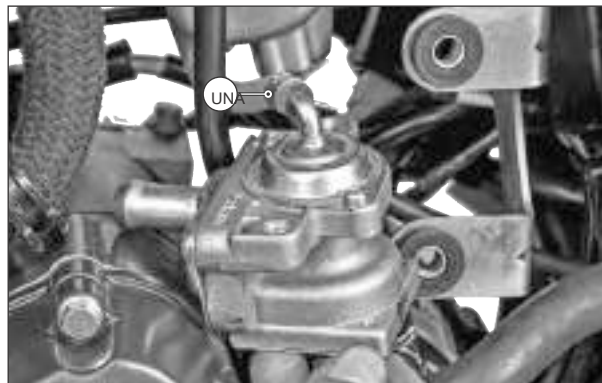


Fig. 4.38

MEDICIÓN DE CO NIVEL EN emisiones de escape

- Cuando el rendimiento del motor es generalmente buena, la sintonización de montaje del carburador mediante el ajuste del tornillo piloto (tornillo control de la mezcla) y el tornillo de ralentí ayudará a controlar el nivel de CO en los gases de escape. Muchos equipos están disponibles para medir el nivel de CO en los gases de escape. Antes de medir la emisión, es importante entender el proceso de medición, controles y aspectos mantenimiento de los aparatos al referirse al manual del fabricante individual.

Comprobar y ajustar los co: -

- Utilice el kit de tuning de emisión (K310440)

suministrada por TVS-M y seguir las directrices que figuran a continuación: -

- Consulte manual de procedimiento operativo estándar, que se suministra con la parte de kit de prueba de kilometraje no. K310520. También el mismo procedimiento se puede hacer referencia en la página "Manual de TVS Scooty Pep" capítulo "de combustible, lubricación y sistema de escape" no. 4-20).

directrices:

1. Calentar el vehículo haciendo funcionar el motor en régimen de ralentí durante 5 - 8 minutos o ejecutar el vehículo durante 3 a 4 kms en 40 velocidad kmph.
2. Compruebe el número de revoluciones al ralentí con la ayuda del tacómetro. Si es necesario ajustar ralentí rpm según la especificación (véase capítulo página "mantenimiento periódico" no. 2-18 para más detalles).
3. Funda de errático ralentí (variación más allá spec.), Situado justo la misma antes de proceder para el ajuste del CO.
4. Fijar la extensión de tubo en el silenciador. Apriete las abrazaderas para evitar cualquier fuga.
5. Inserte la sonda de analizador de gases de escape en el tubo de extensión para la extensión de 30 a 60 cms.

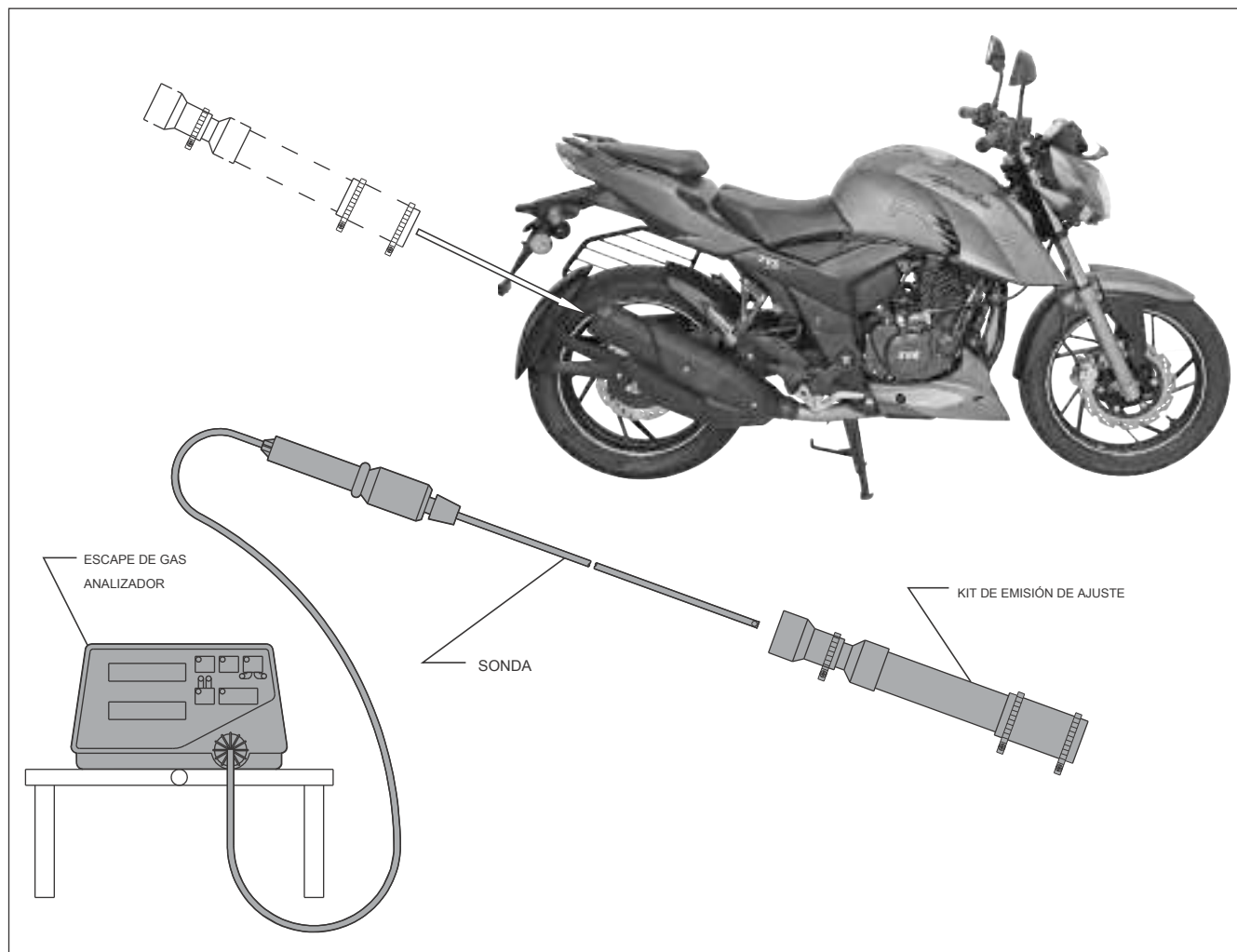


Fig. 4.36

6. Pulsar la tecla 'M' para Horiba o 'Enter Key' para analizador de gases de escape Hermann para medir la emisión de CO.
7. Espere unos segundos hasta que se establezca la lectura en la pantalla.
8. Nota las lecturas de CO y HC se muestran en la pantalla.

Nota:

Al término de comprobación de CO, mantener el analizador en 'modo de medición' durante aproximadamente 30 minutos para la circulación de aire fresco y después conecte la alimentación 'OFF' la máquina.

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COLOR CABLE código de índice

S.No.	CÓDIGO	COLOR CABLE
01	segundo	NEGRO
02	BW	NEGRO CON BLANCO TRACER
03	BBr	NEGRO CON BROWN TRACER
04	POR	NEGRO CON MARCAS AMARILLO
05	BI	AZUL
06	BABERO	AZUL CON NEGRO TRACER
07	BLG	AZUL CON MARCAS VERDE
08	BLR	ROJO AZUL CON TRAZADOR
09	blw	AZUL CON BLANCO TRACER
10	br	MARRÓN
11	BrBI	BROWN CON AZUL TRACER
12	sol	VERDE
13	GB	VERDE CON NEGRO TRACER
14	GRAMO	VERDE CON ROJO TRACER
15	GW	VERDE CON BLANCO TRACER
dieciséis	GY	VERDE CON AMARILLO TRACER
17	Gramo	GRIS
18	GrR	GRIS CON ROJO TRACER
19	LBI	AZUL CLARO
20	lg	VERDE CLARO
21	O	NARANJA
22	Orbe	NARANJA CON NEGRO TRACER
23	OrGr	NARANJA VERDE CON TRAZADOR
24	PAG	ROSADO
25	R	ROJO
26	RB	ROJO CON NEGRO TRACER
27	RW	ROJO CON BLANCO TRACER
28	RY	ROJO CON AMARILLO TRACER
29	V	VIOLETA
30	W	BLANCO
31	WR	BLANCO CON ROJO TRACER
32	WG	BLANCO CON MARCAS VERDE
33	WB	BLANCO CON NEGRO TRACER
34	Y	AMARILLO
35	YBI	AMARILLO CON TRAZADOR AZUL
36	YB	AMARILLO CON NEGRO TRACER
37	Yor	AMARILLO CON NARANJA TRACER
38	YR	AMARILLO CON ROJO TRACER
39	YW	AMARILLO CON MARCAS BLANCO

PRECAUCIÓN

CONECTOR

¡ Al conectar un conector, asegúrese de empujar en hasta sentir un clic. (Fig. 5.1)

¡ Me nspectconnectorforcorro-, la contaminación y la rotura en su cubierta.

ACOPLADOR

¡ Con un acoplador tipo de bloqueo, asegúrese de liberar el bloquee antes de desconectarlo y empújelo completamente hasta que consigue bloquear con un clic del tacto. (Fig 5.2A)

¡ Al desconectar un acoplador, asegúrese de sujetar el acoplador de sí mismo y no tire de los cables conductores.

¡ Inspeccionar cada terminal en el acoplador por ser suelto o doblada. Inspeccionar cada terminal para la corrosión y la contaminación.

¡ acopladores a prueba de agua se proporcionan en el conexiones importantes. (Fig. 5.2B) asegurar la presencia de juntas a prueba de agua en los acopladores antes de volver a conectar ellos.

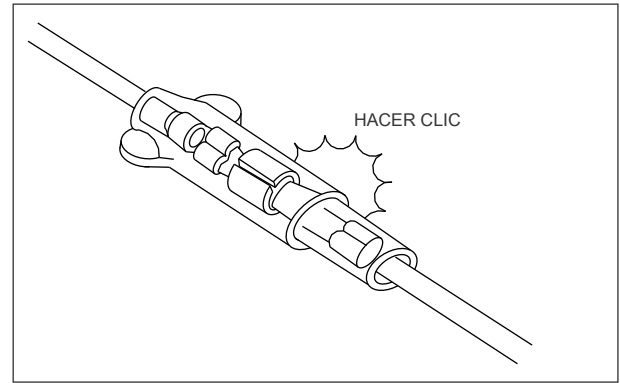


Fig. 5.1

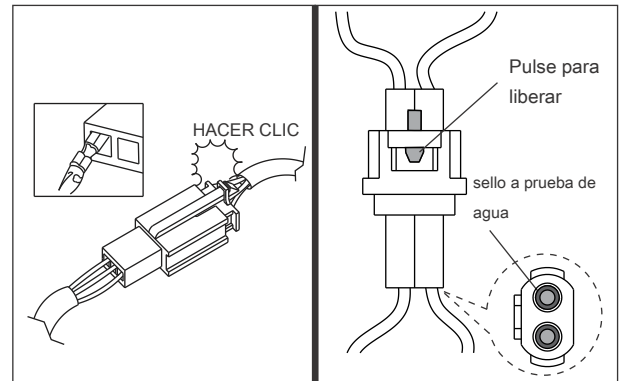


Fig. 5.2A

Fig. 5.2B

FUSIBLE

¡ Cuando un fusible se funde, siempre investigar la causa, corregirlo y luego vuelva a colocar el fusible. (Fig 5.3)

¡ No utilice un fusible con una capacidad diferente. No haga usar alambre o cualquier otro sustituto para el fusible o puede provocar la fusión / ardor de cables.

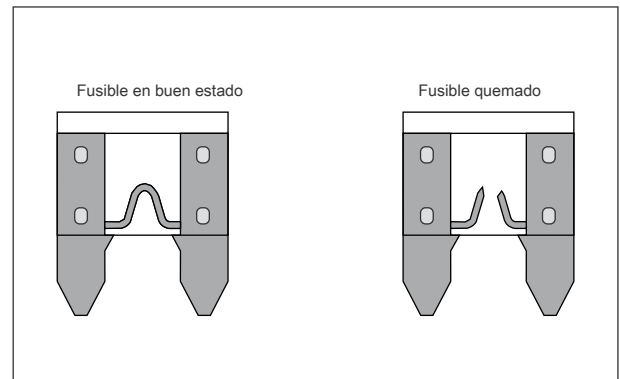


Fig. 5.3

SEMICONDUCTOR EQUIPADA PARTE

¡ Tenga cuidado de no dejar caer las piezas con una semiconductor construido en tal como la unidad TCI, regulador rectificador cum y otros. (Fig. 5.4)

¡ Al inspeccionar estas piezas, siga el instrucción de inspección estricta. Despreciando el procedimiento adecuado puede causar daño a estas partes.

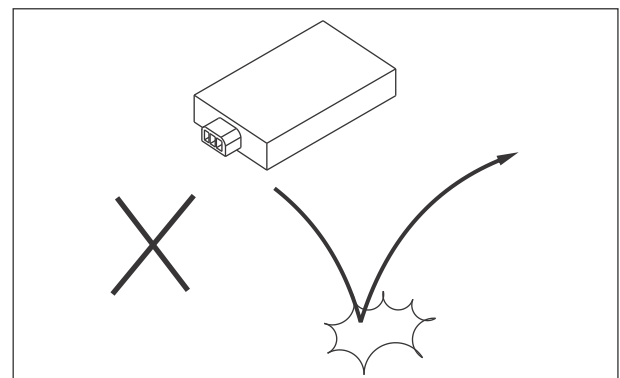


Fig. 5.4

conexión de la batería

- Para el desmontaje de la batería o el mantenimiento, asegúrese para desconectar el terminal negativo. Cuando se conecta a los terminales de la batería, conecte el terminal negativo al final.
- Si se encuentra que corroe cualquier terminal de la batería, extraer la batería, se vierte agua caliente sobre ella y limpio, con cepillo de alambre.
- Aplicar vaselina en los terminales después de finalización de la conexión y cubre el terminal positivo con la bota. (Fig. 5.5)

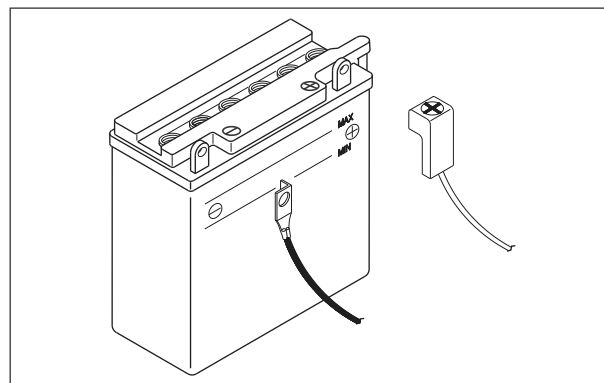


Fig. 5.5

TVS Apache RTR 200 sistema eléctrico se divide en cuatro sistemas básicos (circuitos) con nombre:

1. circuito de encendido
2. circuito de iluminación
3. circuito de carga
4. circuito de arranque eléctrico

SISTEMA DE ENCENDIDO

El sistema de encendido de Apache RTR 200 consta de montaje magneto, el regulador de unidad cum rectificador (unidad RR), 15A fusible, la batería, la cerradura de encendido, el interruptor de apagado del motor, la unidad de TCI, bobina de encendido y una bujía de encendido. (Fig. 5.6)

La salida de la bobina de pulsos de montaje magneto es directamente conectado a la unidad de TCI. La salida de corriente continua de la batería está conectado al interruptor de parada del motor a través de un fusible de 15 amperios ya través de la cerradura de encendido. La salida del interruptor de parada del motor está conectado a la unidad TCI, bobina de encendido, arranque del relé y el interruptor de auto arranque.

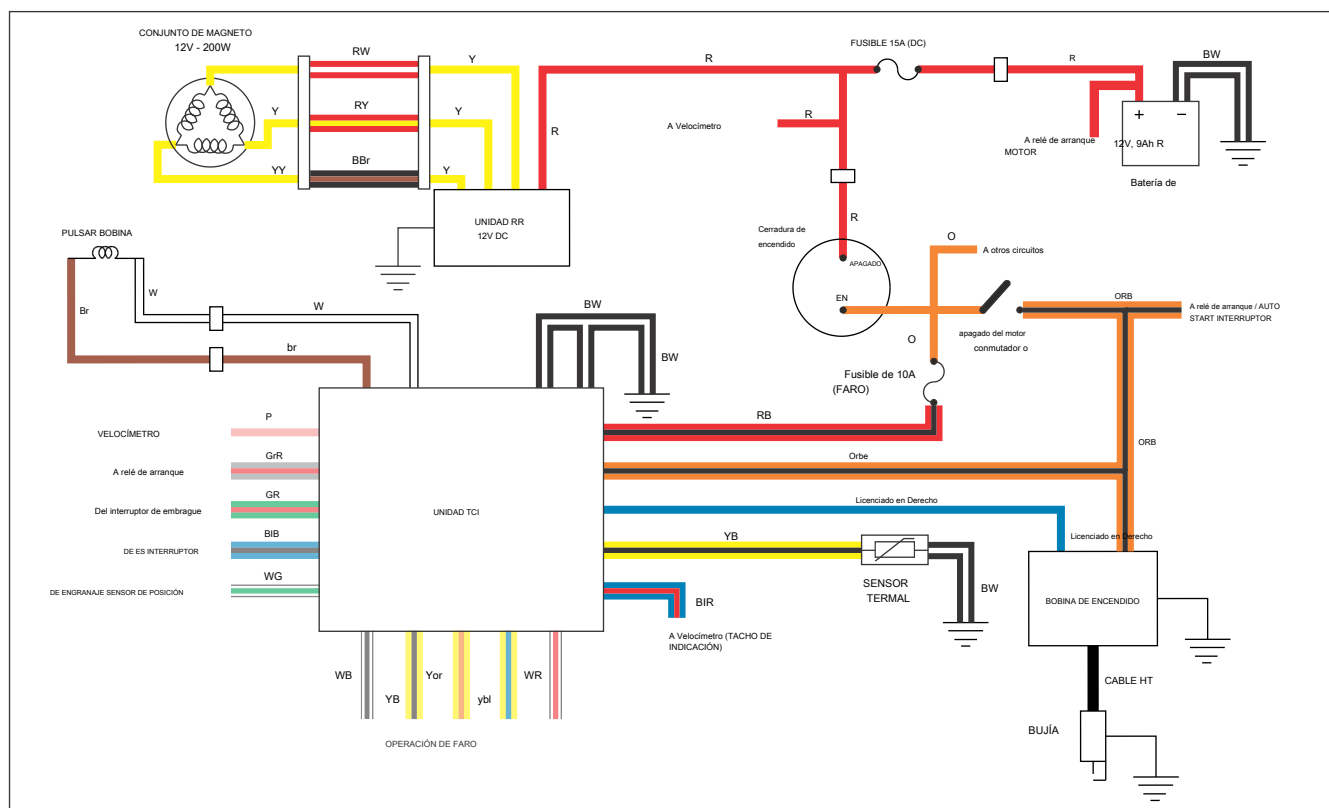


Fig. 5.6

La bobina de pulsos produce las señales de voltaje cada vez que el PIP en la periferia magneto pasa más cerca de él. Sobre la base de estas señales, el microcontrolador equipado en la unidad de TCI colapsa la tensión de devanado primario de la bobina de encendido en la fracción de segundo. Esto a su vez desarrolla un alto voltaje a través del devanado de la bobina de encendido secundario debido a la inducción mutua. Esta alta tensión se da a través de cable de la bujía HT.

Cuando la cerradura de encendido se encuentra en estado 'OFF' o el interruptor de parada del motor está encendido 'OFF' habrá que no haya ningún flujo de corriente a la unidad y la bobina de encendido TCI por lo tanto el motor no arranca.

Cerradura de encendido

El interruptor de bloqueo de encendido se encuentra en el conjunto de velocímetro. (Fig. 5.7)

Desconectar el acoplador de bloqueo de encendido de mazo de cables principal y de bloqueo para inspeccionar la continuidad con el probador de bolsillo (multímetro).

probador de bolsillo		
posición LOCK	R	O
APAGADO		
EN	O	O

Vuelva a colocar la cerradura de encendido si no hay continuidad se encuentra .

El interruptor del motor MATANZA

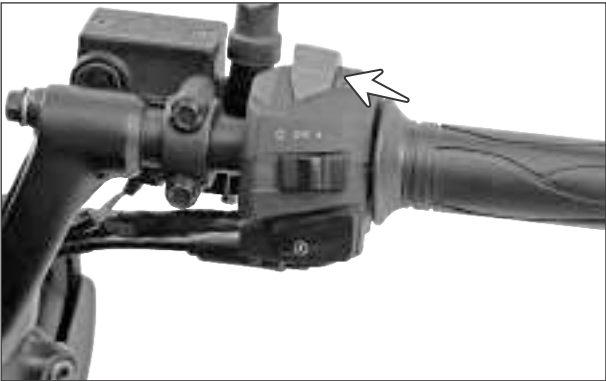
El interruptor de apagado del motor se encuentra en el lado derecho de manejar el conjunto de barra en la RH manilla del conjunto del interruptor. (Fig. 5.8)

Desconectar el mango conjunto de interruptor de RH acoplador de cableado principal e inspeccione el interruptor de continuidad con el probador de bolsillo.

probador de bolsillo		
posición LOCK	R	O
PULSE ARRIBA ()		
Pulse hacia abajo ()	O	O



Fig 5.7



La Fig. 5.8

COMPROBACIÓN DE LA BOBINA PULSAR CON probador de bolsillo (MULTÍMETRO)

probador de bolsillo

- ▮ probador de bolsillo fijado en la posición 2.000 ohmios.
- ▮ Desconectar la bobina de pulsar forma socket cableado aprovechar.
- ▮ Conecte probador de bolsillo " + ve conducir al marrón alambre (Br) de la bobina de pulsar y '-ve' conducen a cable blanco (W) de la bobina de pulsar. (Fig. 5.9)

- ▮ Medir la resistencia. Si la resistencia medido no está dentro del límite especificado, sustituir la bobina de pulsos con una nueva.

bobina Pulsar (Br - W)	360 ~ 440 ohmios
------------------------	------------------

CONTROL DE LA conjunto del estator CON probador de bolsillo

- ▮ Dado que no hay un conjunto de magneto 3 fase es utilizado en este vehículo, el procedimiento de comprobación conjunto de estator es completamente diferente a otros vehículos de formulario. (Fig. 5.10) La resistencia del conjunto de estator va a ser comprobado entre todas las tres caras. Siga el procedimiento dado a continuación:
- ▮ Desconectar la forma socket conjunto de estator mazo de cables principal.
- ▮ Ajuste el mando probador de bolsillo a 200 ohmios posición .

probador de bolsillo

- ▮ Hay tres cables amarillo (Y) que salen de el conjunto de estator. Conectar el probador de bolsillo (+ ve) conducen a la primera cable amarillo (Y) y (-ve) conducen a segundo cable amarillo (Y) y medir la resistencia. (Fig. 5.10)
- ▮ Del mismo modo, comprobando la resistencia entre cables amarillo segunda y tercera. También el tercer y primer cables amarillo. Si cualquier resistencia de una fase no está dentro del límite, sustituir el conjunto de magneto estator con una nueva.

resistencia a través cualquier dos fases	0,2 ~ 1,2 ohms
--	----------------

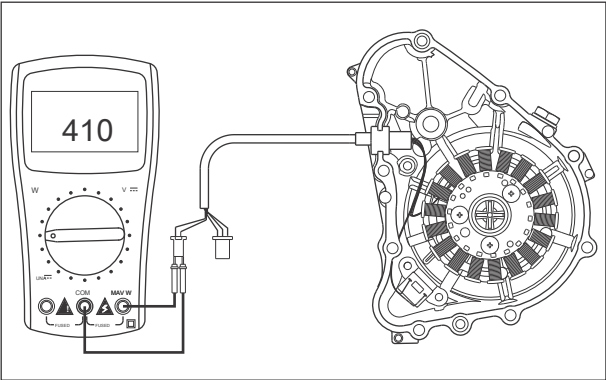


Fig. 5.9

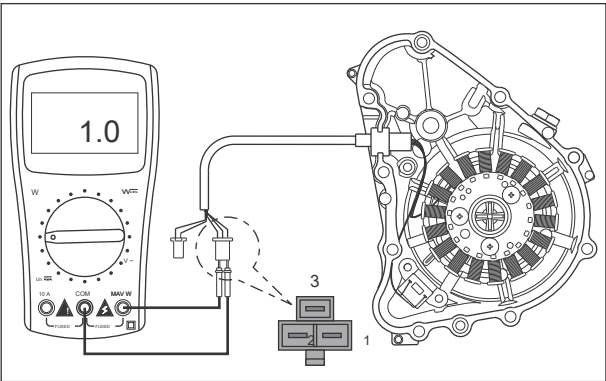


Fig. 5.10

INSPECCIÓN DEL CONJUNTO CON bobina de encendido probador de bolsillo

- La bobina de encendido está montado en el lado derecho de el bastidor debajo del conjunto de depósito de combustible, cerca del conjunto de cabeza de cilindro. (Fig. 5.11)
- Desconectar la toma de cableado de conexión TCI unidad y la bobina de encendido. Asimismo, desconecte el cable de encendido de la bujía.

probador de bolsillo

- Probador de bolsillo fijado en la posición 200 ohmios.
- Conecte el probador de bolsillo '+ ve' y '-ve' conducir a los terminales del acoplador de la bobina de encendido como se muestra para medir la resistencia del devanado primario. (Fig. 5.12) Si la resistencia no está dentro del límite especificado, sustituir el conjunto de bobina de encendido con una nueva.

La resistencia primaria	4.05 ~ 4.95 ohmios
-------------------------	--------------------

- Si la resistencia del devanado primario está bien, a continuación, comprobar la resistencia del devanado secundario.
- probador de bolsillo fijado en la posición 20 k ohmios.

- Retire la tapa de la tarjeta supresor de HT. Conectar el probador de bolsillo '+ ve' conducir al cable de HT y '-ve' conducir a cualquier terminal de la I acoplador de encendido coi y medir la resistencia. (Fig. 5.13)

resistencia secundaria	10.8 ~ 12.32 k ohmios
------------------------	-----------------------

- Si la resistencia de los devanados no están dentro del limitar, reemplace el conjunto de bobina de encendido con una nueva.

BUJÍA

- El descuido de la bujía conduce a una mala rendimiento del motor. Si se utiliza la bujía para un período más largo, el electrodo se quema poco a poco y el carbono se acumula a lo largo del i ns i de par te (véase el capítulo "Per i OD mantenimiento ic" página sin . 2-14 para la limpieza y mantenimiento de la bujía).

Precaución:
Siempre use maquillaje recomendada y el tipo de bujía única.

Bujía	BOSCH UR4KE
-------	-------------

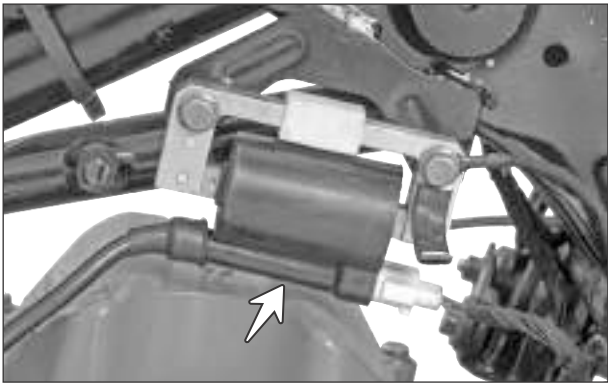


Fig. 5.11

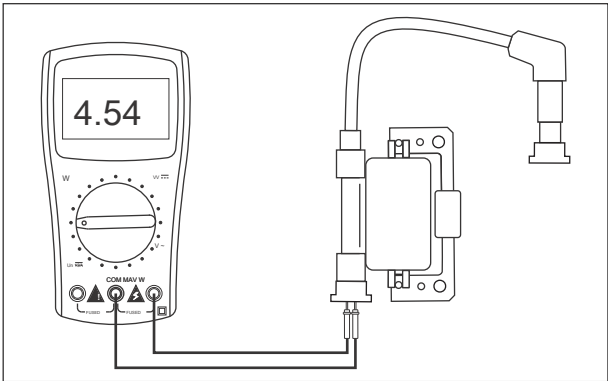


Fig. 5.12

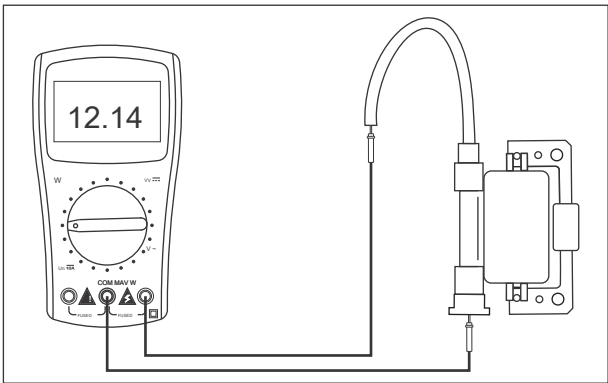


Fig. 5.13

UNIDAD TCI

¡ TCI (unidad de control de transistor) unidad se coloca debajo el montaje del depósito de combustible cerca de la batería. unidad de TCI se puede comprobar haciendo un buen (o) mal análisis (en sustitución existente por uno nuevo). (Fig.5.14)

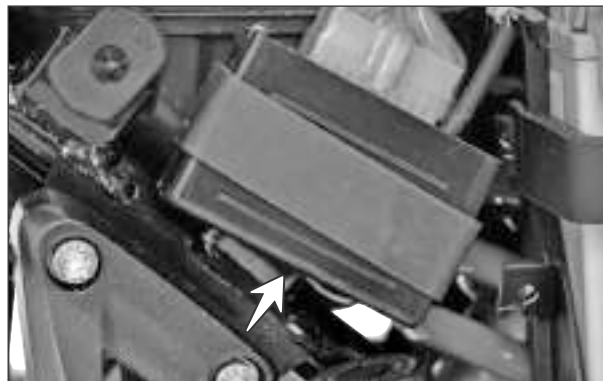


Fig. 5.14

SENSOR TERMAL

¡ Un sensor térmico fijada en el bloque de cilindros para detectar la temperatura del motor y dar entrada a la unidad TCI en forma de resistencia. (Fig. 5.15) Verificar la resistencia del sensor térmico de la siguiente manera:

¡ Establecer el probador de bolsillo en la posición 20 k ohmios.

probador de bolsillo



Fig. 5.15

¡ Desconectar el acoplador del sensor térmico de mazo de cables principal. Conectar han + 'alambre del probador de bolsillo conducir al rojo amarillo (YR) y '-ve' conducir al rojo blanco (WR) del acoplador sensor térmico y medir la resistencia cuando el motor en frío. (Fig. 5.16)

Resistencia

3.0 ~ 14 k ohmios



Fig. 5.16

¡ Si la resistencia medida no está dentro del límite especificado, sustituir el sensor térmico con una nueva.

SISTEMA DE ILUMINACIÓN

El sistema de iluminación se compone de montaje magneto, el regulador de unidad cum rectificador (unidad RR), la batería, la cerradura de encendido, 10A fusible (lámpara de cabeza), la unidad de TCI y los interruptores de control. El funcionamiento del sistema de iluminación de la TVS Apache RTR 200 4V son como sigue. (Fig. 5.17)

Una salida de CC desde la batería está conectada a un fusible 10A (lámpara de cabeza) a través de la cerradura de encendido. La salida del fusible 10A está conectado a la unidad de TCI. Cuando el bloqueo de encendido en la posición 'ON', uno más de salida de CC de la cerradura se suministra a la unidad de TCI, iluminación interruptor, control del haz del interruptor y el paso de los switch.

Cuando el mando de iluminación interruptor se desplaza a la posición 'PO', la corriente continua de salida del interruptor se suministra a las luces de posición y la lámpara de cola.

Similarly, when the switch lighting knob is slid to the 'HL' (head lamp 'ON') position, the output DC current from the switch is supplied to the TCI unit along with the position lamps and the tail lamp. Upon receiving the input from the switch lighting the TCI unit checks for the input from the pulsar coil to determine the engine running condition (head lamp works only for 10 seconds when the engine is in 'OFF' condition) and the switch beam control to determine the head lamp beam ('High' or 'Low').

If the beam control switch is in 'High' position, the TCI unit will not get any input signal from switch beam control and supplies the power to the head lamp 'High beam' and the head lamp high beam glows. If the beam control switch is in 'Low' position, the TCI gets an input signal from the switch and supplies power to the head lamp 'Low beam' and the head lamp low beam glows.

When the pass-by switch is pressed, a DC signal is sent to the TCI unit. Now, the TCI unit checks for the input from the switch lighting to determine the head lamp condition ('ON' or 'OFF'). If the head lamp is in 'OFF' condition the TCI unit supplies the power to the head lamp 'high beam' and makes it to glow. If the head lamp is in 'ON' and glowing in 'low beam', the TCI unit cuts 'OFF' the power supply to the 'low beam' and supplies to the 'high beam' (toggles). If the head lamp is glowing in 'high beam' the TCI unit does it in vice-versa. If the pass-by switch is pressed when the engine is not running, the head lamp glows only with 50% illumination.

If the head lamp is turned 'ON', when the engine is not running, the TCI unit checks for the input from switch beam control to determine the head lamp beam ('High' or 'Low'). Based on the switch beam controls position the head lamp glows for 10 seconds with only 50% intensity. If the self start switch is pressed within this 10 seconds the head lamp goes 'OFF' and gets 'ON' after the engine starting with 100% intensity. If the vehicle is kept in engine idling condition for more than 20 seconds with the head lamp 'ON', the head lamp reduces the illumination by 50% and gains it back to 100% once the vehicle is moved or the throttle is opened.

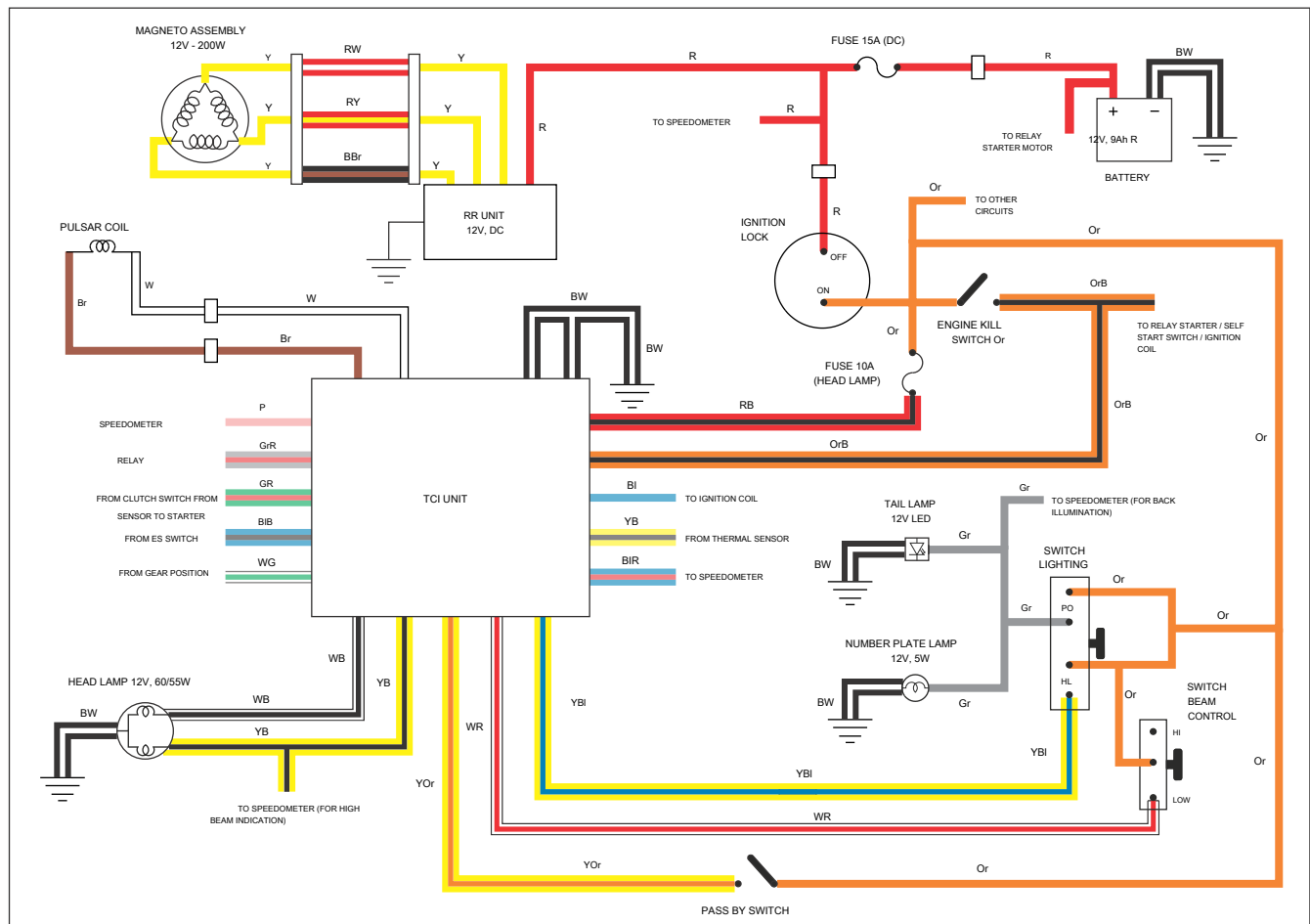


Fig. 5.17

SWITCH LIGHTING

Switch lighting is provided on the switch assembly RH at the right hand side of the handle bar. (Fig. 5.18)

Check the switch for continuity with the pocket tester.

Pocket tester

SWITCH POSITION	Or	Gr
OFF (●)		
PO ()		

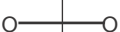
SWITCH POSITION	Or	YBI
OFF (●)		
ON ()		



Fig. 5.18

SWITCH BEAM CONTROL

Switch beam control is provided on the switch assembly LH at the left hand side of the handle bar. (Fig. 5.19)

Check the switch for continuity with the pocket tester.

Pocket tester

SWITCH POSITION	Or	WR
PRESS UP () - HIGH		
PRESS DOWN () - LOW		

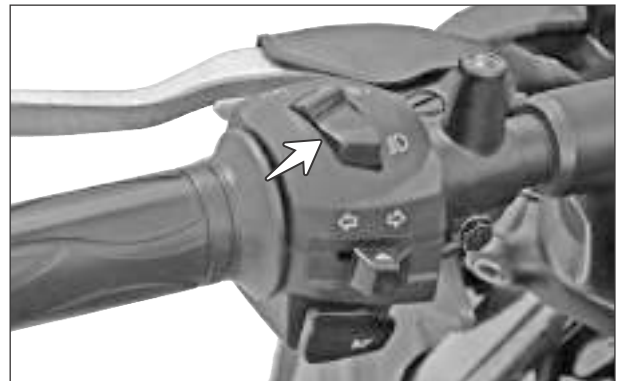


Fig. 5.19

PASS-BY SWITCH

Pass-by switch is provided on the switch assembly handle LH at the left side of the handle bar. (Fig. 5.20)

Check the switch for continuity with the pocket tester.

Pocket tester

SWITCH POSITION	YW	YBI
PRESS - ON		
RELEASE - OFF		

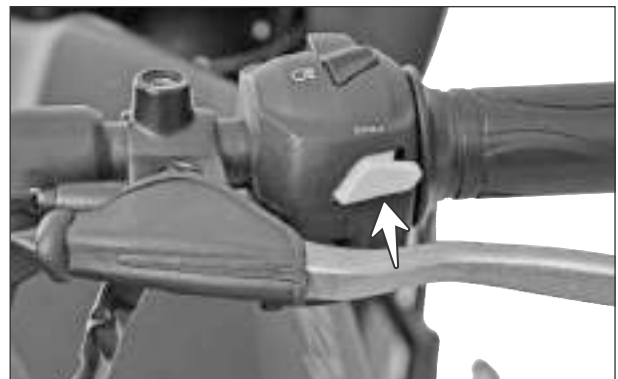


Fig. 5.20

12V REGULATION SYSTEM

REGULATOR CUM RECTIFIER (RR UNIT)

- The RR unit (regulator cum rectifier) is fitted below the rear seat assembly near the tail lamp assembly. (Fig. 5.21)
- The RR unit consists as the name implies, regulator which regulates the voltage between 12V to 14V constantly, and rectifier used for converting AC current to DC for charging and other purpose.

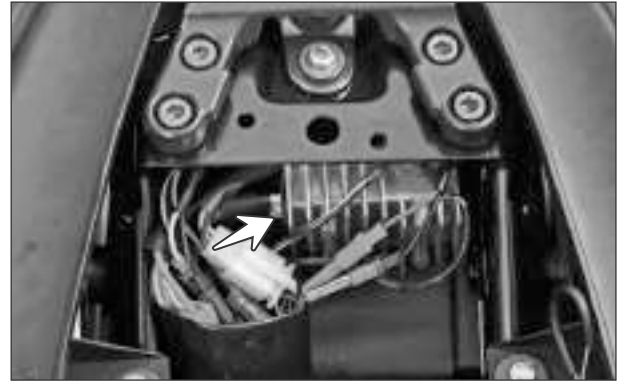


Fig. 5.21

CHARGING AND DC SYSTEM

The DC system consists of magneto assembly, regulator cum rectifier unit (RR unit), battery, ignition lock, fuse 15A (main fuse) and the control switches. A DC output from the battery is directly connected to the speedometer through a 15A fuse for the memory and other functions of speedometer. Another DC output from the battery is connected to the ignition lock through the same 15A fuse. When the ignition lock is turned 'ON' the DC output from the ignition lock is supplied to the position lamps, smart phone charger, brake lamp switches front and rear, horns, speedometer assembly and other DC operated components. (Fig. 5.22)

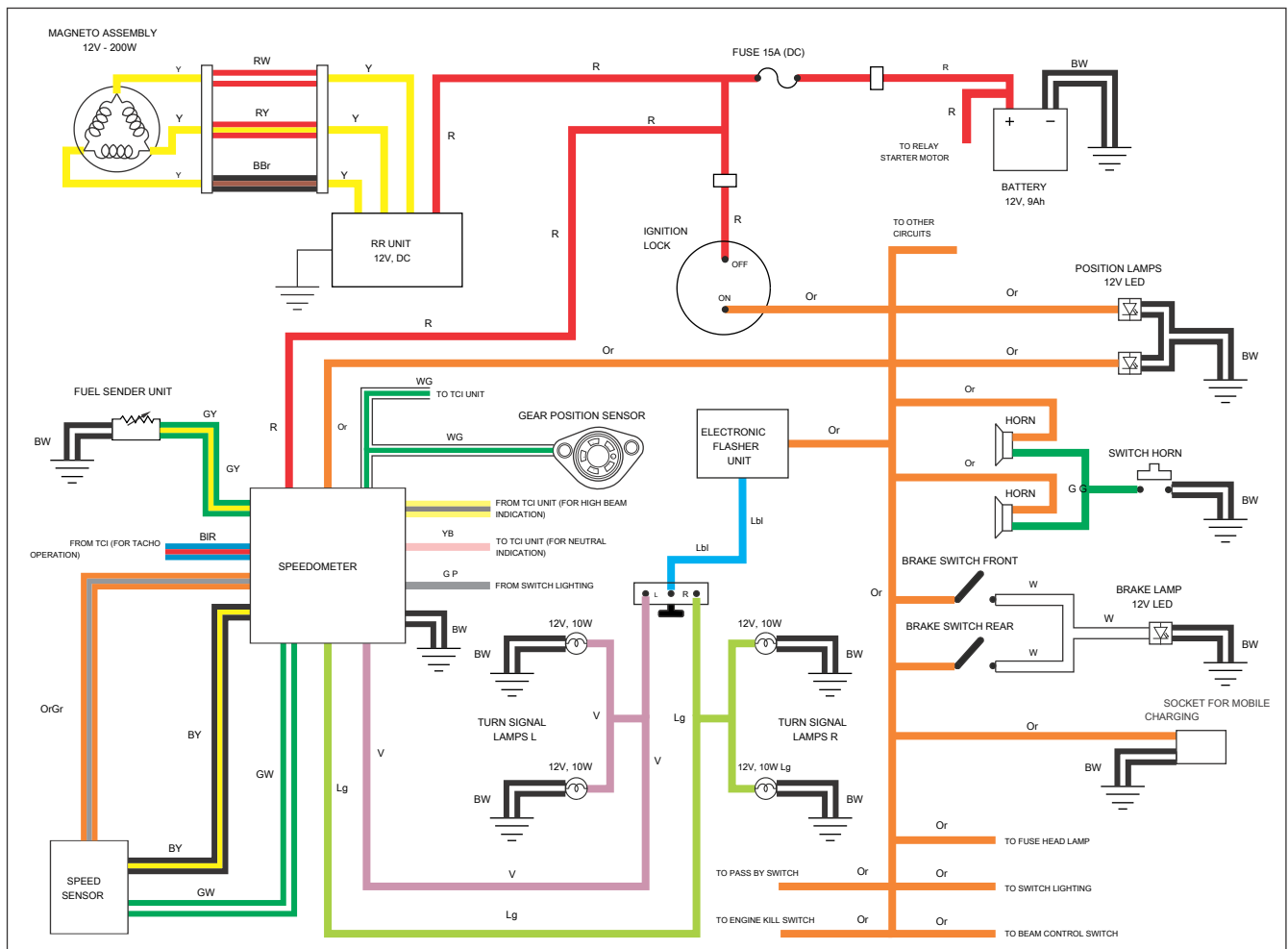


Fig. 5.22

A negative input from the common earth junction is directly connected to the position lamps. On switching 'ON' the ignition lock the lamps glows directly. Similarly, the smart phone charger also gets the negative input from the common earth junction and it will be ready for charging the smart phones.

When the brake lamp switch front or rear is operated (brake applied), the DC current from either of the switch is supplied to the brake lamp. A negative earth connection from the common earth junction is connected to the lamp and hence the lamp glows. Similarly, when the horn button is pressed, the negative input from the common junction is connected to the horns. Since the horns are connected to the ignition lock's DC output directly, on pressing the switch the horns blows.

A DC output from the ignition lock is connected to the speedometer assembly for its operation. A input signal from the gear position sensor is connected to the speedometer and the TCI unit for gear position sensing. A neutral indication signal is connected to the TCI unit from the speedometer for electric start operation. The fuel level indicator in the speedometer gets an input signal in the from of variable resistance from the fuel sender unit. Based on these signals the fuel level indicator shows the fuel level indication.

An input voltage and a negative supply are given to the speed sensor from the speedometer. The output signal from the speed sensor is connected to the speedometer. Based on these signals the speed indication is shown. Speedometer shows engine rpm based on the engine speed signal received from the TCI unit.

A DC output from the ignition lock is connected to the electronic flasher unit. The output from the flasher unit is connected to the switch turn signal. When the switch is slid to the 'right' or 'left' the respective front and rear turn signal lamps glows along with the turn signal indicator on the speedometer .

HORNS (12V DC)

- ▮ The horns are mounted on the frame at the front side of the vehicle below the fuel tank. (Fig. 5.23)
- ▮ The DC output orange wire (Or) from the ignition lock is connected to the horns directly and the negative green wire (G) from the horns is connected to earth through the horn switch.

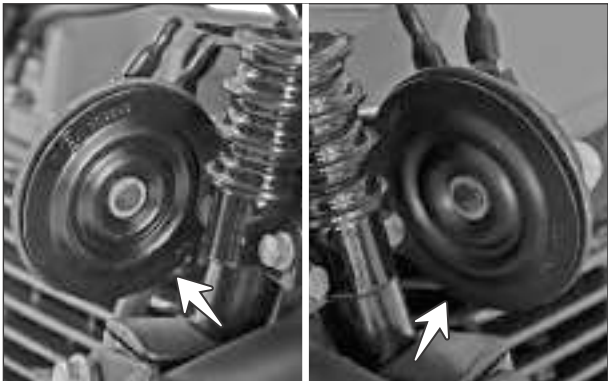


Fig. 5.23

- ▮ The horn switch is located on the switch assembly handle LH. (Fig. 5.24)
- ▮ Check the switch for continuity with the pocket tester.

Pocket tester		
SWITCH POSITION	G	BW
PRESS - ON	O	— O
RELEASE - OFF		

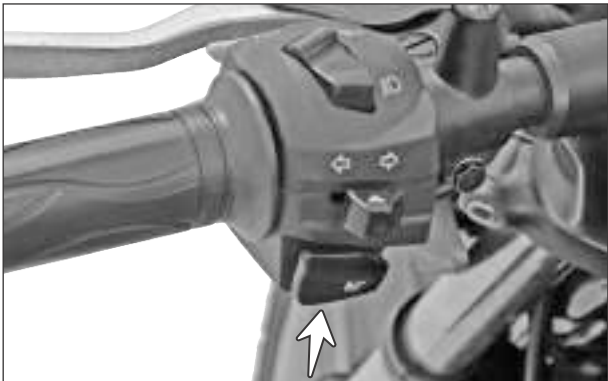


Fig. 5.24

TURN SIGNAL LAMPS FRONT AND REAR

- ▮ The DC output from the ignition lock is connected to the switch turn signal through a electronic flasher unit mounted below the seat assembly near the battery. (Fig. 5.25)
- ▮ The DC output wire orange (Or) from the ignition lock is connected to the flasher unit and the output from the flasher unit is connected to the switch turn signal through a light blue wire (Lbl).
- ▮ The switch turn signal is located on the switch assembly handle LH. (Fig. 5.26)
- ▮ Inspect the switch for continuity with the pocket tester.

Pocket tester			
SWITCH POSITION	V	Lbl	Lg
TO LEFT (←)	O — O		
PRESS RELEASE		O	
TO RIGHT(→)		O — O	

GEAR POSITION SENSOR

- ▮ The gear position sensor is mounted on the crankcase assembly LH below the cover engine sprocket. (Fig. 5.27)
 - ▮ Gear position sensor senses the exact position of the gear and generates the resistance accordingly. These resistance are sent to the digital speedometer and the TCI unit through a white green wire (WG). To measure the resistance level of gear position sensor at various position follow the procedure given below:
 - ▮ Set the pocket tester at 20k ohms position.
- | |
|---------------|
| Pocket tester |
|---------------|
- ▮ Disconnect the gear position sensor's socket form wiring harness.
 - ▮ Connect pocket tester's '+ve' lead to the green white wire (GW) of gear position sensor and '-ve' lead to body earth. (Fig. 5.28)



Fig. 5.25

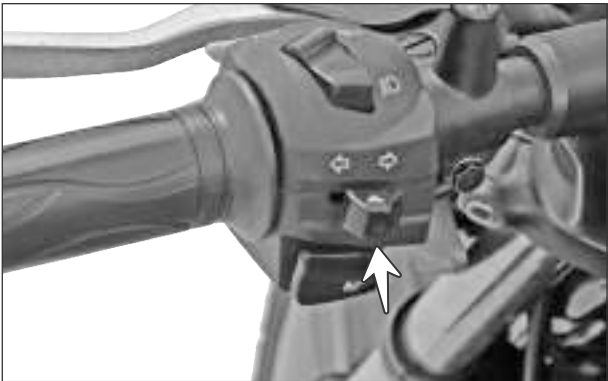


Fig. 5.26

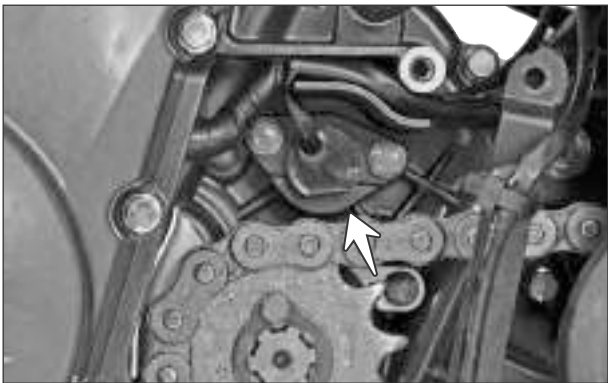


Fig. 5.27



Fig. 5.28

! The resistance of gear position sensor at various position are as follows:

GEAR POSITION	RESISTANCE
First gear	0.3 kilo ohms
Neutral	0.75 kilo ohms
Second gear	1.5 kilo ohms
Third gear	2.7 kilo ohms
Fourth gear	5.6 kilo ohms
Fifth gear	15 kilo ohms

SWITCH ASSEMBLY STOP LAMP FRONT AND REAR (BRAKE SWITCHES)

! The DC output from ignition lock is connected to the stop lamp through switch assembly stop lamp front and rear. Stop lamp switch front is fitted on the lever bracket assembly RH. (Fig. 5.29)

! Switch assembly stop lamp rear is fitted on the frame below the battery assembly near the mounting of the swing arm complete and operated by the brake pedal. (Fig. 5.30)

! Inspect the switch for continuity with the pocket tester.

Pocket tester		
SWITCH POSITION	G	BW
APPLY BRAKE - ON	O	O
RELEASE - OFF		

FUEL LEVEL INDICATOR

! Fuel level indicator and fuel warning lamp are provided in the digital speedometer.

! Fuel level indicator and the warning lamp works based on the variable resistance signal received from the fuel sender unit. Fuel sender unit resistance alters the resistance in accordance with the amount of fuel available in the fuel tank.

! The fuel sender unit is fitted on the bottom of the fuel tank. (Fig. 5.31)

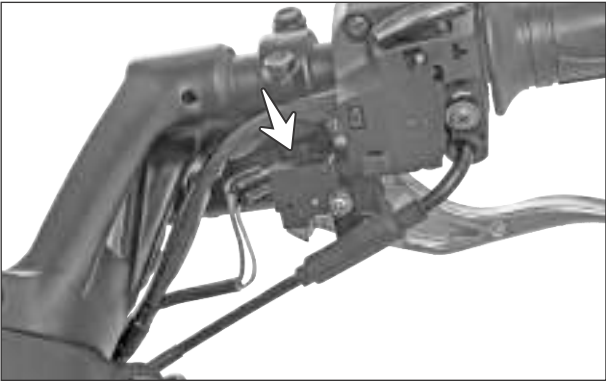


Fig. 5.29



Fig. 5.30



Fig. 5.31

† To inspect the fuel sender unit, fuel tank complete must be removed (refer chapter "Fuel, lubrication and exhaust system" page no. 4-1 for removal procedure).

† Inspect the fuel sender unit for continuity with pocket tester by connecting '+ve' lead of pocket tester to green yellow wire (GY) and '-ve' lead to the black white wire (BW).

Pocket tester

† Set pocket tester at 200 ohms position and check the resistance of fuel sender unit. If the resistance value is not within the specified limit, replace the sender unit with new one. (Fig. 5.

32)

Resistance	Full	4 ~ 6 ohms
	Empty	108 ~ 112 ohms

SPEED SENSOR

† Speed sensor is mounted on the crank case LH near engine sprocket. (Fig. 5.33)

To check the speed sensor:

† Set pocket tester at DC 20 V range.

Pocket tester

† Check and ensure the battery voltage is within the specifications.

Battery voltage	12.9 volts
-----------------	------------

† If the battery voltage is found less than the specified voltage, recharge the battery as explained in page no. 5-26.

† Disconnect the speed sensor coupler from the main wiring harness. (Fig. 5.34)

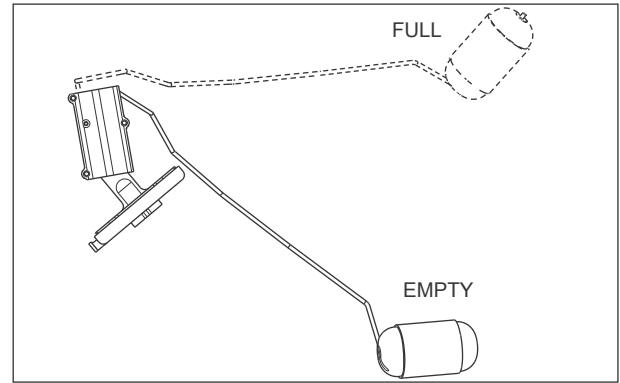


Fig. 5.32



Fig. 5.33



Fig. 5.34

- Turn 'ON' the ignition.
- Connect the pocket tester's '+ve' lead to the orange grey wire (OrGr) of speed sensor coupler at the wiring harness side and '-ve' lead to the black yellow wire (BY) of speed sensor coupler at the wiring harness side and measure the voltage. (Fig. 5.35)

The voltage should be:

Voltage	9 ± 1 Volt
---------	----------------

- Then connect the pocket tester's '+ve' lead to the white green wire (WG) of speed sensor coupler at the wiring harness side and '-ve' lead to the black yellow wire (BY) of speed sensor coupler at the wiring harness side and measure the voltage. (Fig. 5.36)

The voltage should be:

Voltage	5 ± 1 Volt
---------	----------------

- If there is no voltage output found in the speed sensor coupler. Then check the continuity of wiring harness between speed sensor coupler and speedometer coupler .

WIRE COLOUR	SPEEDO COUPLER	SPEED SENSOR COUPLER
OrGr	O ————	————— O
BY	O ————	————— O
GW	O ————	————— O

- If there is no continuity in the wiring harness, replace the wiring harness and check for speed indication in the speedometer.
- If the continuity is found OK, replace the speedometer and check for speed indication in the speedometer.
- If the voltage is found OK while checking with the pocket tester, then check speed sensor in the following manner:
- Reconnect the speed sensor coupler.
- Set pocket tester knob at DC 20 V range.



Fig. 5.35



Fig. 5.36

- Connect the pocket tester's '+ve' lead to the orange grey wire (OrGr) and '-ve' lead to the black yellow wire (BY) of speed sensor coupler and measure the voltage. (Fig. 5.37)

The voltage should be:

Voltage	9 ± 1 Volt
---------	----------------

- Then connect pocket tester's '+ve' lead to the white green wire (WG) and '-ve' lead to the black yellow wire (BY) of speed sensor coupler and measure the voltage. (Fig. 5.38)

The voltage should be either level A or level B.

LEVEL	VOLTAGE LEVEL
A	5 ± 0.5 Volt
B	0.1 ± 0.5 Volt

- Now slowly rotate the rear wheel. If the voltage indicated in the pocket tester is at **level A** then it should change to **level B** or vice versa.

- Now rotate the rear wheel little faster. If the voltage indicated in the pocket tester is not as per the specification. Then replace the speed sensor and check the speedometer for proper speed indication.

Voltage	2.5 ± 0.5 Volt
---------	--------------------



Fig. 5.37



Fig. 5.38

CHARGING PERFORMANCE CHECK

- Set the pocket tester at DC 200 V range.
- Remove the cover frame RH (refer chapter "Periodic maintenance" page no. 2.4 for removal procedure).
- Connect the pocket tester's '+ve' lead of pocket tester to positive terminal of the battery and '-ve' lead of pocket tester to the negative terminal of the battery. (Fig. 5.39)
- Start and warm up the engine. Switch on the head lamp high beam.



Fig. 5.39

- Gradually increase the throttle while observing the rpm indicator of speedometer. Once the rpm reaches 4000, check the pocket tester reading. The reading should be

Charging performance above	$14.5 \pm 0.3V$ at 2500 rpm and
-------------------------------	---------------------------------

Note:

While checking the charging current, switch on the head lamp high beam to know the correct reading.

- If the reading measured is not within the limit, check the stator coil resistance as explained in page no. 5-5
- If the stator coil resistance found OK, then replace the RR unit with a new and re-check.
- Reassemble the cover frame RH.

ELECTRIC STARTER SYSTEM

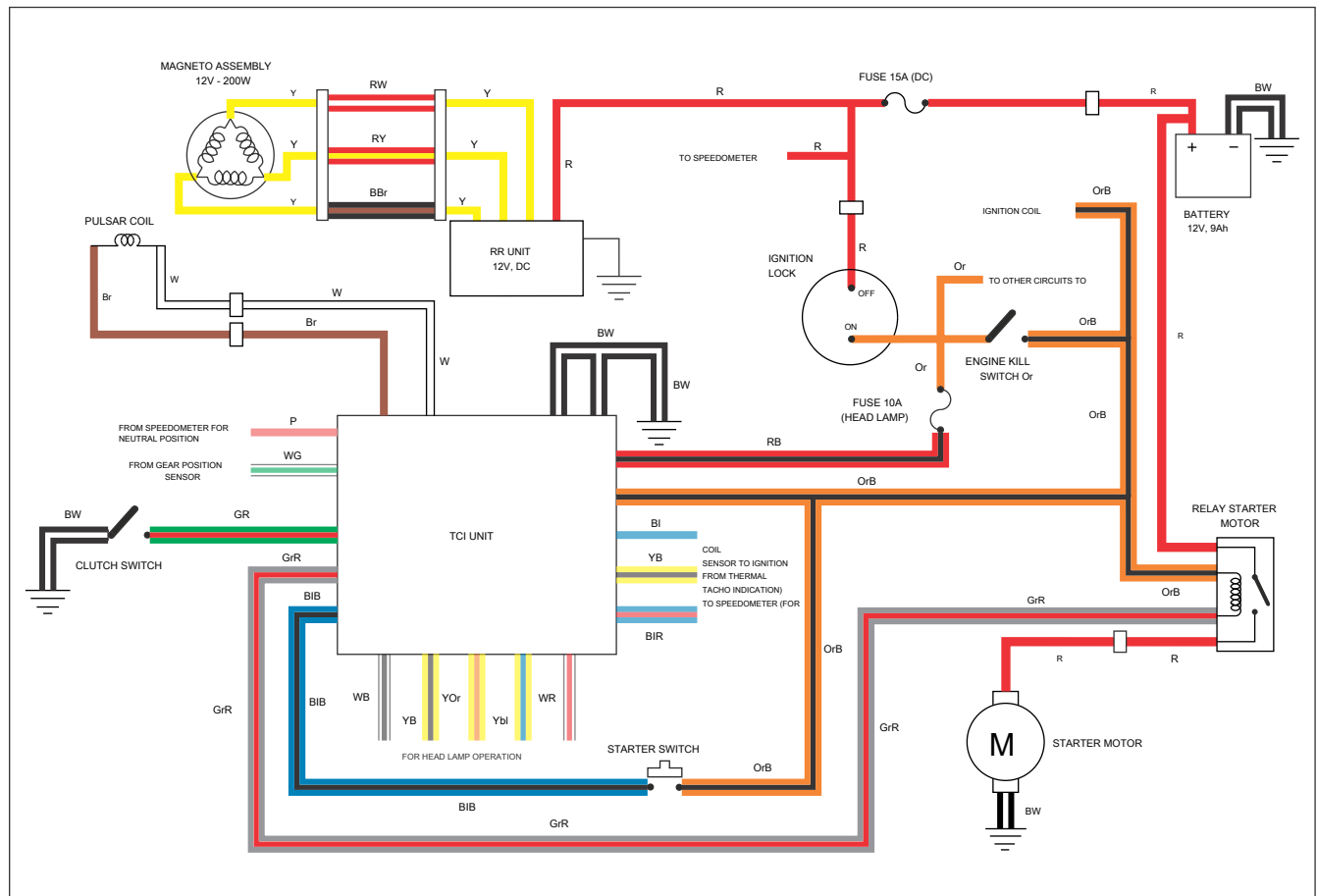


Fig. 5.40

Electric starter system consists of battery, ignition lock, engine kill switch, electric starter switch, neutral switch, clutch switch, speedometer assembly, TCI unit, relay starter motor and the starter motor assembly. (Fig. 5.40)

A DC output from the battery is connected to the ignition lock through a 15A fuse. When the ignition lock is turned 'ON', this DC output is connected to the TCI unit, electric starter switch and relay starter motor through the engine kill switch.

A DC output from the battery is directly connected to the relay starter motor and the output of the relay is connected to the starter motor through thick wires. A negative is connected to the starter motor from the common earth junction. When the relay energizes, the battery output is supplied to the starter motor and the motor works.

Based on the resistance input from the gear position sensor, the neutral position is sensed by the speedometer and the speedometer supplies a negative input to the TCI unit for activating the electric start circuit. A negative output from the clutch switch is supplied to the TCI unit when the switch is operated. In the absence of neutral indication from the speedometer, this negative input is taken by the TCI unit for activating the self start circuit.

While pressing the electric starter switch, the DC supply from the electric starter switch flows to the TCI unit. On receipt of this DC input signal, the TCI unit checks the availability of negative input either from the speedometer or from the clutch switch. If any one of these input is available, the TCI unit connects a negative supply to the relay starter motor and energizes the relay. Even though all the above conditions are met by the TCI unit, if the engine is in running condition (if there is a pulsar coil input to the TCI unit), the TCI unit cuts 'OFF' the negative supply to the starter relay to avoid the cranking of motor during engine running condition and protects the motor from damage.

If the electric start switch is pressed continuously either in neutral or in clutch applied condition, the TCI unit energizes the starter relay for 3 seconds and switches 'OFF' it automatically and energizes again after 3 seconds for battery saving.

ELECTRIC STARTER SWITCH

Electric starter switch is located at the bottom side of switch assembly RH on the right hand side of the handle bar. (Fig. 5.41)

Inspect switch for continuity using pocket tester with the engine kill switch is in 'ON'.

SWITCH POSITION	Or	BIB
PRESS - ON		
RELEASE - OFF		

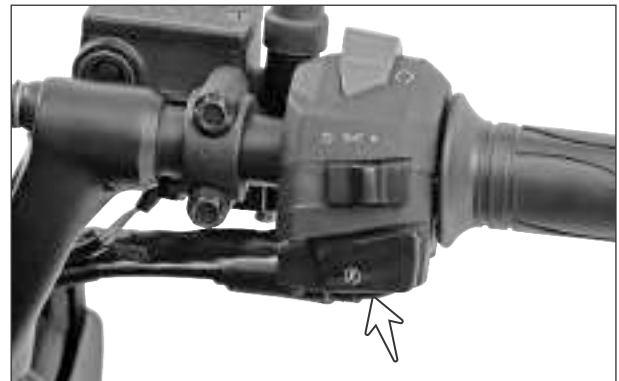


Fig. 5.41

SWITCH ASSEMBLY CLUTCH

Switch assembly clutch is located at the bracket clutch lever which is mounted in handle bar LH. (Fig. 5.42)

Inspect the switch for continuity with the pocket tester.

SWITCH POSITION	GR	BIB
PRESS - ON		
RELEASE - OFF		



Fig. 5.42

RELAY SELF STARTER (STARTER RELAY)

Relay self starter is located on the right side of the vehicle on top of the air cleaner assembly. (Fig. 5.43)

Inspect relay by checking the continuity using pocket tester.

RELAY CONDITION	Gr	R
NOT ENERGIZED		
ENERGIZED	O — O	O — O

(To energise the starter relay keep the vehicle in neutral condition, press and hold the starter switch with the ignition lock and engine kill switch 'ON' condition.)

If there is no continuity found, replace the starter relay and once again check for continuity. Again problem persists, then replace the TCI unit and check.



Fig. 5.43

BULBS REPLACEMENT**LAMP ASSEMBLY TURN SIGNAL - BULB**

Remove the self tapping screw from turn signal lamp housing and take off lens along with the holder assembly and bulb. (Fig. 5.44)

Phillips head screw driver

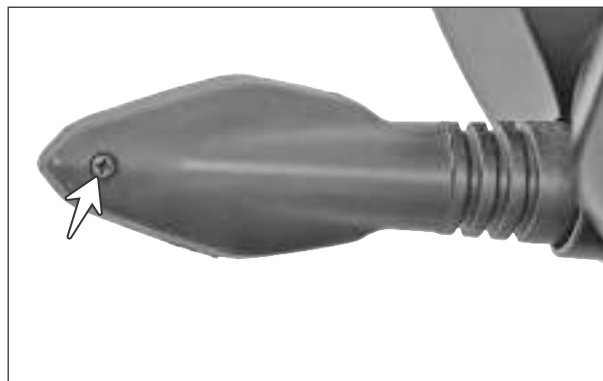


Fig. 5.44

Rotate and pullout the bulb holder from the housing and replace the bulb with a new one. (Fig. 5.45)

Turn signal lamp

12V, 10W

Reassemble the parts and tighten the self tapping screw.

Same procedure can be followed for replacing the turn signal lamps bulbs.

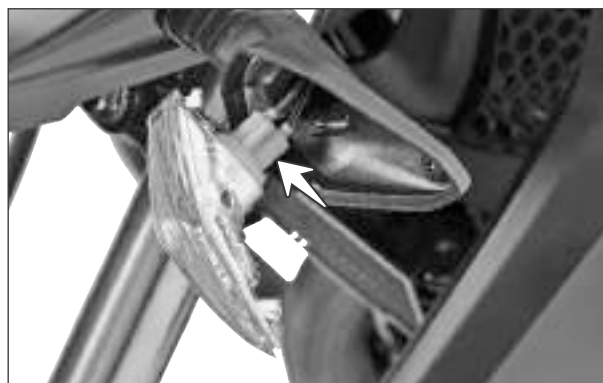


Fig. 5.45

HEAD LAMP ASSEMBLY - BULB

Remove the CRR pan head screw (M5x16 - 2 nos.) from the housing speedometer rear mounting and remove the housing speedometer rear. (Fig. 5.46)

Phillips head screw driver	
Tightening torque	3 ± 1 Nm

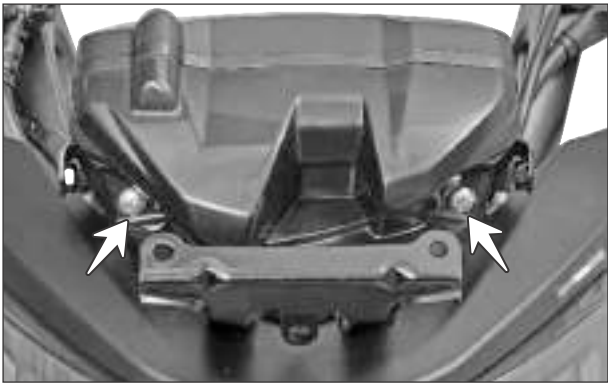


Fig. 5.46

Remove the CRR pan head screw (M6x25 - 2 nos.) housing head lamp front top mounting. (Fig. 5.47)

Phillips head screw driver	
Tightening torque	3 ± 1 Nm



Fig. 5.47

Loosen the hexagonal flange bolt (M6x16 - 2 nos.) from the bottom mounting housing head lamp (both LH and RH) and tilt the housing head lamp forward. (Fig. 5.48)

10 mm spanner	
Tightening torque	3 ± 1 Nm



Fig. 5.48

Pullout the socket head lamp (A) from head lamp bulb and dislocate the dust cap (B) of head lamp assembly. (Fig. 5.49)

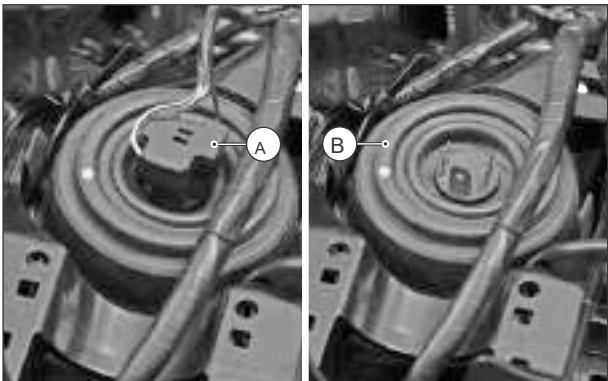


Fig. 5.49

- Take out head lamp bulb by snapping out the clip (A) and replace with a new one. (Fig 5.50)

Head lamp bulb	12V, 60/55W H4
----------------	----------------

- Reassemble the parts in the reverse order of removal.

Note:

After reassembling head lamp, readjust the head lamp beam as explained in chapter "Periodic maintenance" page 2-38)

Do not touch the halogen bulb as it will reduce its life and performance.

POSITION LAMPS - REPLACEMENT

- Remove the housing head lamp mounting bolts and tilt the housing head lamp as explained in the previous page.
- Remove the hexagonal nuts (M6 - 4 nos.) from the bracket housing head lamp along with the punched washer. (Fig. 5.51)

10 mm spanner

Tightening torque	3 ± 1 Nm
-------------------	--------------

- Remove the CRR pan head tap screw (M6x16 - 2 nos.) from the bracket housing head lamp. (Fig. 5.52)

Phillips head screw driver

Tightening torque	1.5 ± 0.5 Nm
-------------------	------------------

- Gently pull out the turn signal lamp by dislocating it from the lugs and separate the housing head lamp front and rear.
- Disconnect the position lamp assembly connector. (Fig. 5.53)



Fig. 5.50

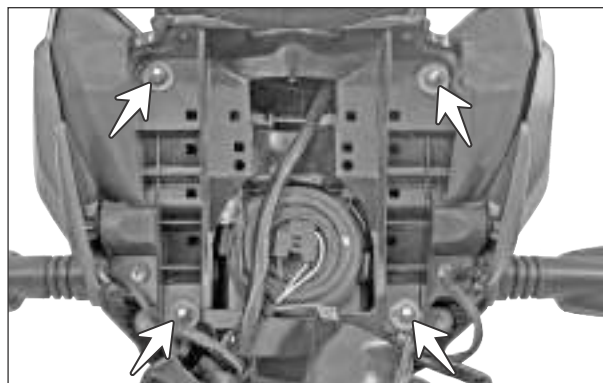


Fig. 5.51

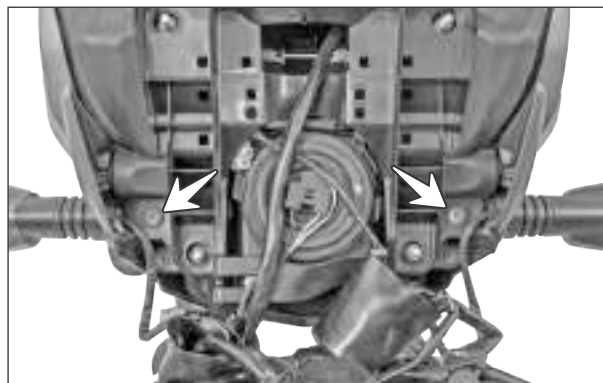


Fig. 5.52



Fig. 5.53

- Remove the CRR flanged pan head tap screw (ST4.2x13 - 3 nos.) and takeout the position lamp assembly LH. (Fig. 5.54)

Phillips head screw driver	
Tightening torque	1 ± 0.2 Nm
Position lamp	LED lamp (2W)

- Replace the position lamp with a new one and reassemble housing lamp front.
- In similar manner the position lamp RH can be removed and replaced.
- Reassemble the parts in the reverse order of removal.

Note:
After reassembling head lamp assembly, readjust the head lamp beam as explained in chapter “Periodic maintenance” page 2-38).

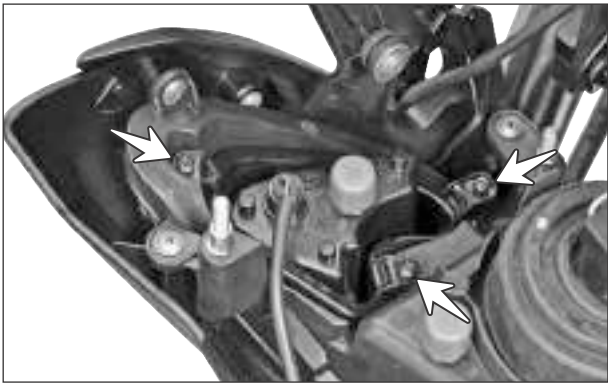


Fig. 5.54

DIGITAL SPEEDOMETER ASSEMBLY

Since the digital speedometer is provided with LED indicators, it is not possible to replace them individually. Recommended to replace the entire speedometer assembly, incase of any failure.

REMOVAL

- Remove the CRR pan head screw (M5x16 - 2 nos.) from the mounting of housing speedometer rear and take out the housing speedometer. (Fig. 5.55)

Phillips head screw driver	
Tightening torque	3 ± 1 Nm

- Remove the hexagonal nut (M6 - 3 nos.) along with plain washers from the mounting of speedometer assembly. (Fig. 5.56)

10 mm spanner	
Tightening torque	3 ± 1 Nm

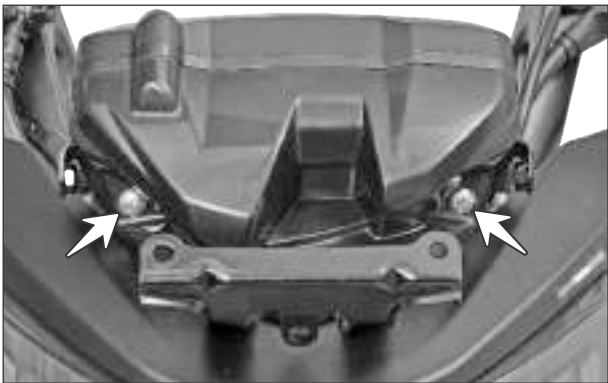


Fig. 5.55

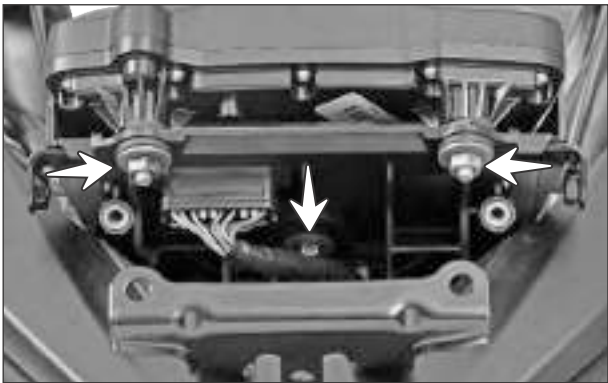


Fig. 5.56

- ▮ Disconnect coupler from the speedometer assembly by gently pressing the lock and take out the digital speedometer. (Fig. 5.57)
- ▮ Replace the new speedometer.
- ▮ Reassemble the parts in the reverse order of removal procedure.

Note:

After reassembling the head lamp, readjust the head lamp beam as explained in chapter "Periodic maintenance" page 2-38).

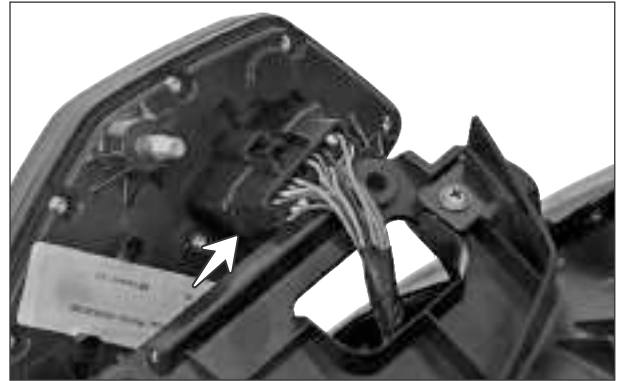


Fig. 5.57

TAIL LAMP ASSEMBLY

- ▮ Refer the chapter "Periodic maintenance" page 2-10 for tail cover assembly removal procedure.
- ▮ Remove the hexagonal flange nut (M6 - 2 nos.). (Fig. 5.58)

10 mm spanner

Tightening torque	2.5 ± 0.5 Nm
-------------------	------------------

- ▮ Remove the CRR pan head screw (M6x16 - 2 nos.) from the tail assembly mounting. (Fig. 5.59)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	--------------

- ▮ Replace lamp assembly with new one.
- ▮ Reassemble the parts in the reverse order of dismantling.

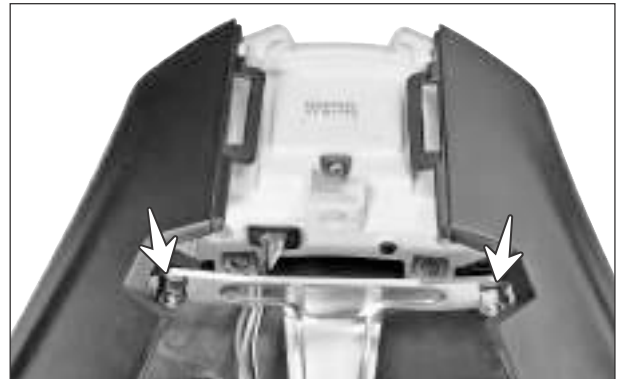


Fig. 5.58

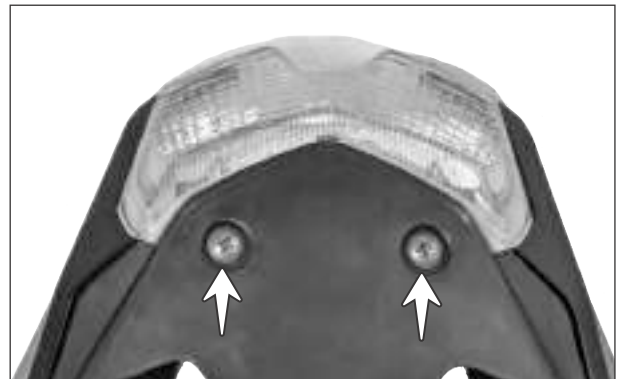


Fig. 5.59

NUMBER PLATE ILLUMINATOR - BULB

- ▮ Remove the rear seat assembly.
- ▮ Disconnect the number plate lamp couplers from the main wiring harness. (Fig. 5.60)

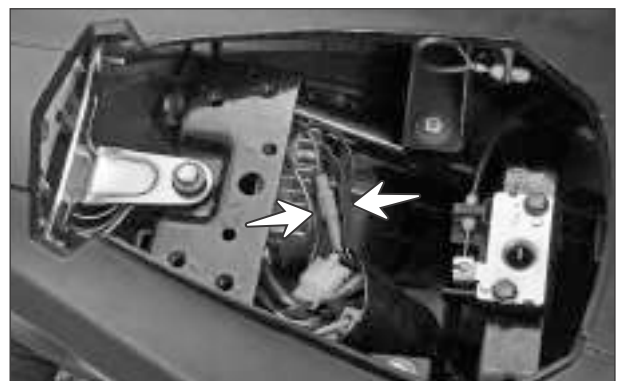


Fig. 5.60

- Remove mounting nuts (M6 - 2 nos.) and take out the number plate illuminator as an assembly and pull out the rubber grommet. (Fig. 5.61A)

10 mm spanner

Tightening torque

3 ± 1 Nm

- Pull out bulb holder along with the bulb. (Fig. 5.61B)

- Remove bulb from the holder and replace with a new one.

Note:

While reassembling ensure that the presence of the grommet in the tail cover.



Fig. 5.61A

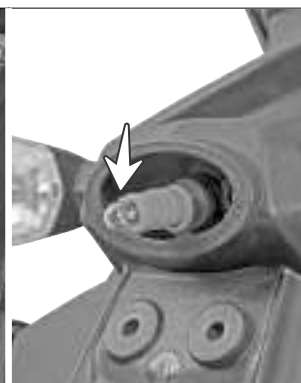


Fig. 5.61B

ADJUSTMENTS

HEAD LAMP BEAM ADJUSTMENT

- Adjust the head lamp beam as per the specification by referring procedure given in chapter "Periodic maintenance" page no. 2-38 for the adjustment procedures.

SWITCH ASSEMBLY STOP LAMP - REAR

- The switch assembly stop lamp rear can be adjusted by turning the adjuster nut (A) in or out, so that the brake lamp glows when the rear brake is applied. (Fig. 5.62)

Note :

While adjusting the switch assembly, do not turn the body switch assembly (B) holding the adjuster nut (A).

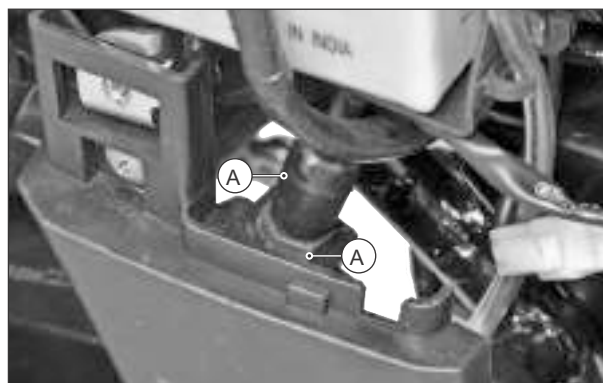


Fig. 5.62

BATTERY

- Remove the cover frame RH (refer chapter "Periodic maintenance" page no. 2-4)
- Disconnect the battery's negative terminal (A) first and then positive terminal (B). (Fig. 5.63)

10 mm spanner

Tightening torque

3 ± 1 Nm



Fig. 5.63

- Remove the clamp by removal of the CRR pan head screw (M6x16 - 1 no.) (A) and take out the battery assembly. (Fig. 5.64)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	----------

- Remove the battery from the vehicle and clean it thoroughly.
- Visually inspect the surface of the battery assembly for any sign of cracking or electrolyte leakage. If any sign of cracking or electrolyte leakage from side walls of the battery is noticed, replace the battery with a new one.

- Measure the open circuit voltage of battery using pocket tester. (Fig. 5.65)

Open circuit voltage	12.9 Volts
----------------------	------------

- If the voltage measured is less than 12 volts, then charge the battery using constant current battery charger as explained below:
- If the battery lead terminals are rusty or an acidic white powdery substance, then clean them with sand paper / warm water.
- The electrolyte level must be between the minimum level and maximum level mark provided on the battery case. (Fig. 5.66)

- Add distilled water as necessary, to ensure the electrolyte is above the minimum level line but not above the maximum level line. (Fig. 5.66)

Caution:
Add only distilled water for topping up the electrolyte level.

- Check the electrolyte specific gravity reading using the hydrometer. (Fig. 5.67) If the reading is not within the specified limit, it indicates that the battery needs charging.

Hydrometer

Electrolyte specific gravity at 20 C

Battery type Normal	Under charged	
12V, 9.0 Ah	1.28	1.25



Fig. 5.64



Fig. 5.65

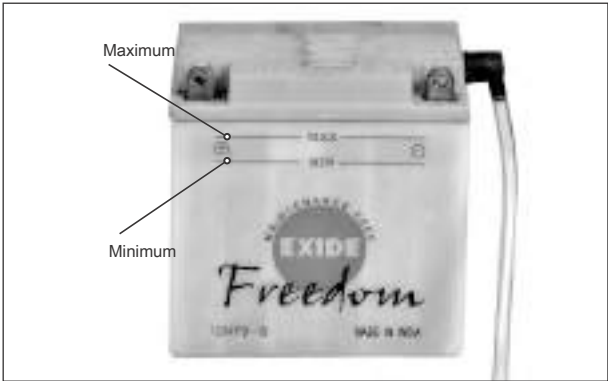


Fig. 5.66

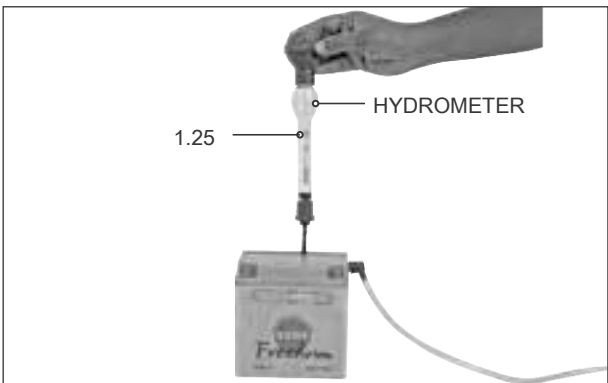


Fig. 5.67

Note:

To read the specific gravity on the hydrometer, bring the electrolyte in the hydrometer to eye level (Fig. 5.68) and read the graduations on the float scale bordering on the lower meniscus.

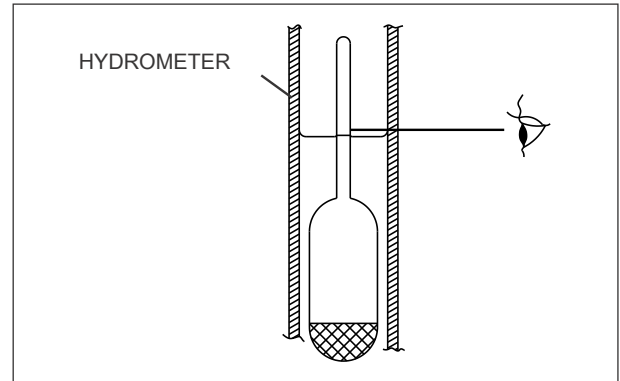


Fig. 5.68

BATTERY CHARGING

- Constant current battery charger having the current output of 0.9 amps must be used for charging the 12V, 9 AH battery.

Caution:

Use only constant current battery charger. Do not use constant voltage battery charger.

- If the battery charger has multiple battery charging facility (0.25A/0.5A/0.9A), then select the output current according to the battery connected for charging at each bay.

Charging procedure

- Remove the filler cover strip of battery and connect the positive lead of the battery charger (red colour) to the positive terminal (+) of the battery and the negative lead of the charger (black colour) to the negative terminal (-) of the battery as shown in the figure. (Fig. 5.69)

Caution:

Care should be taken not to connect the battery charger in reverse order ie. positive lead to negative terminal and vice versa.

Incase, if the battery is connected in the reverse order, the reverse polarity indicator of the charger (if available in the charger) glows and the protection fuse (if available in the charger) blows.

Correct the connection and replace the fuse before charging. Otherwise the battery may not get charged.



Fig. 5.69

- Turn the selector knob (A) of the charger to the 0.9 amps position incase of multiple battery charger. (Fig. 5.70)

Caution:

Ensure to select the charging current based the battery amphere only. If more or less current is selected the battery may get damaged.

- Connect the battery charger to the power supply and switch on the power.

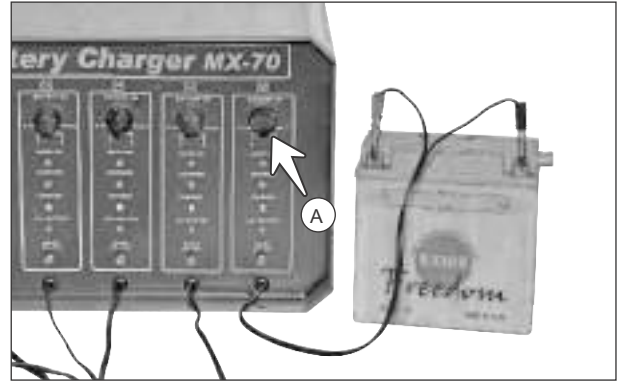


Fig. 5.70

- Switch on the 'MAINS ON-OFF' switch (A) and ensure that the 'MAINS-ON' LED indicator (B) is glowing. (Fig. 5.71) If this indicator is not glowing, then check the main fuse of the charger and replace the fuse if required.

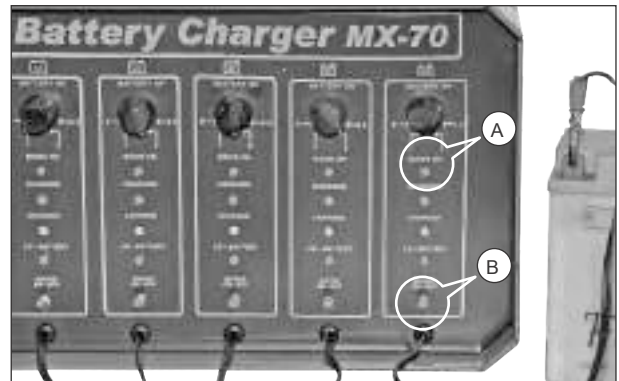


Fig. 5.71

- Now, the 'CHARGING' LED indicator (A) glows and indicates the battery is getting charged. If this indicator is not glowing, check whether 'LO-BATTERY' LED indicator (B) is glowing. (Fig. 5.72)
- If the 'LO-BATTERY' LED indicator is glowing, it indicates that the battery voltage is very less and it can't be charged further. Replace the battery with a new one.



Fig. 5.72

- After charging the battery for few hours (time may vary based on the battery voltage and capacity) 'CHARGED' LED indicator (A) of charger glows and indicates that the battery is charged. (Fig. 5.73)



Fig. 5.73

Indication of full charge

- | The following are the indication of full charge.
- | Battery can be considered to be fully charged when three consecutive specific gravity (SG) readings taken at intervals of 30 minutes each, indicating a reading of 1.28. (Fig. 5.74)
- | Free gassing of electrolyte.

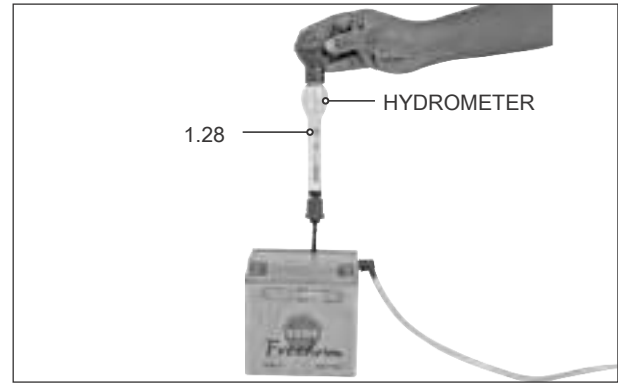


Fig. 5.74

- | The stable consecutive readings showing 12.8 volt or more with 30 minutes of interval. (Fig. 5.75)

Note:

If the battery voltage is less than 11 volt, irrespective of correct specific gravity reading, then the battery needs to be replaced with a new one.

- | After charging re-fix the battery assembly and connect the positive terminal first followed by the negative terminal.
- | Apply petroleum jelly to the terminals to avoid corrosion.
- | Reassemble the parts in the reverse order of removal.



Fig. 5.75

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WHEEL ASSEMBLY FRONT

REMOVAL

Support the motorcycle by center stand and place a jack or block to keep the front wheel off the ground.

Remove the front wheel axle nut along with punched washer. (Fig. 6.1)

22 mm spanner

Tightening torque	76 ± 18 Nm
-------------------	------------

Draw out the axle front along with punched washer. (Fig. 6.2)

Take out the wheel assembly front along with disc plate and spacer complete LH.

Note:

While taking out the front wheel keep some cushion in between the brake pads, to avoid binding.

Disc replacement

Remove special screw (M8 - 6 nos.) from the disc plate mounting and take out disc plate from the alloy wheel front. (Fig. 6.3)

6 mm allen key

Tightening torque	31 ± 3 Nm
-------------------	-----------

Remove oil seal (A) using the special tool.

031 240 1

Universal oil seal remover

Note:

While reassembling the mounting bolts apply thread locker without fail.

Removal of bearings

Warning:

Bearings should be removed only in case of replacement.

Heat the wheel assembly front upto 125° C by placing the wheel on a hot plate. (Fig. 6.4)

Hot plate



Fig. 6.1



Fig. 6.2

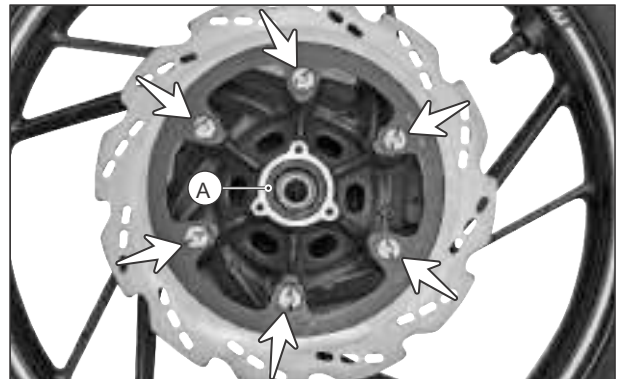


Fig. 6.3



Fig. 6.4

- ▮ Gently tap out bearing left and right and spacer complete front hub with a suitable mandrel. (Fig. 6.5)

Nylon hammer

Drift

INSPECTION

Before inspection, clean all necessary components with suitable cleaning solvent and lubricate them.

Wheel bearings

- ▮ Inspect the wheel bearings inner race for play by hand while fixing it in the hub complete front wheel. (Fig. 6.6)
- ▮ Rotate the inner race by hand to inspect whether abnormal noise occurs or rotating smoothly. Replace bearing if found defective.

Axle front

- ▮ Using the special tools, check the axle front for run out (straightness) and replace the axle with a new one if run out exceeds the limit. (Fig. 6.7)

Dial gauge (0.01mm)

Magnetic stand

V - block - 4"x3"x3"

Service limit

0.25 / 100 mm

Warning:

Do not attempt to straighten a bent axle.

Alloy wheel front

- ▮ Using the special tools, measure the alloy wheel front's run-out. Excessive run-out is usually due to a bent alloy wheel. (Fig. 6.8)

Dial gauge (0.01mm)

Magnetic stand

Service limit

0.6 mm

- ▮ Replace the alloy wheel if found defective.

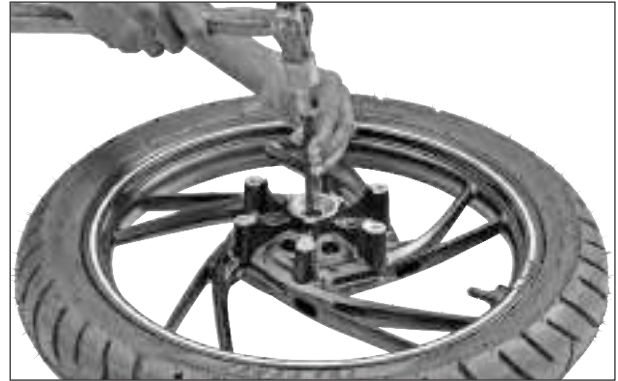


Fig. 6.5

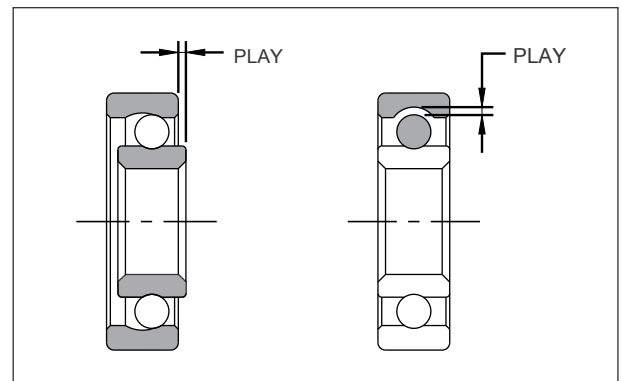


Fig. 6.6

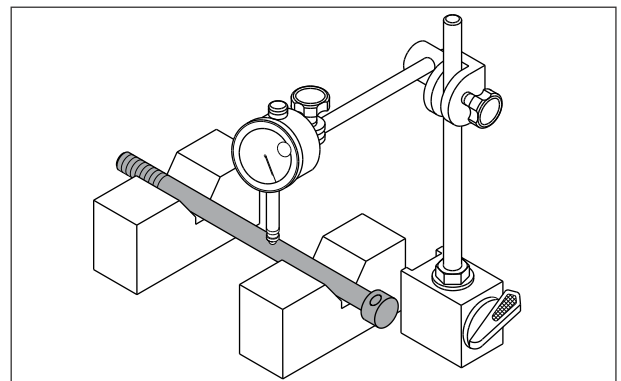


Fig. 6.7



Fig. 6.8

Tyre front

- Using the vehicle with excessively worn tyres will decrease riding stability and consequently invite a dangerous situation due to loss of control. It is highly recommended to replace the tyre with a new one when the groove depth of tyre from tread surface reaches the following specifications: (Fig. 6.9)

Tyre depth gauge / Vernier caliper

Service limit

1.5 mm

Note:

Tyre depth can also be checked by tyre wear indicator (TWI). (Fig. 6.10)

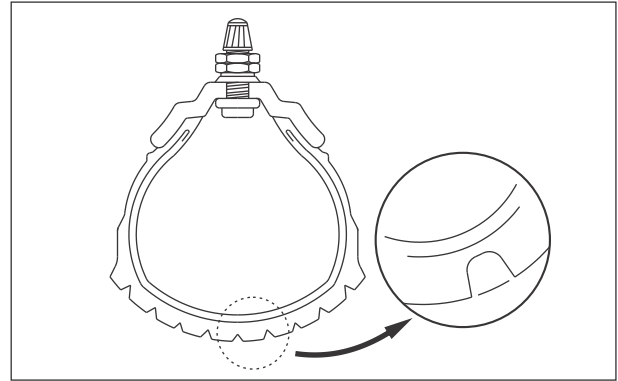


Fig. 6.9



Fig. 6.10

Tyre inflation pressure

- Inflation pressure affects the tyre life to a greater extent. So it is necessary to maintain proper inflation pressure. (Fig. 6.11)

Tyre pressure gauge

Pressure:

Single and dual

1.75 kg/cm² (25 PSI)

Note:

Tyre pressure should be checked when the tyre is cold.



Fig. 6.11

Tubeless tyre

- Refer [page no 6-34 for puncture](#) repairing procedure and replacement of valve tubeless tyre.

REASSEMBLY

- Reassemble the wheel assembly front in the reverse order of disassembly and removal. Before assembling front wheel assembly, lubricate the axle front and bearings.

Before tightening axle nut, stroke the fork assembly front several times to check for proper fork action. Tighten the axle nut only after ensuring the fork action.

Note:

While remounting front wheel assembly locate the disc in between the brake pads after removing cushion.

Refer the explode view for details. (Fig. 6.12)

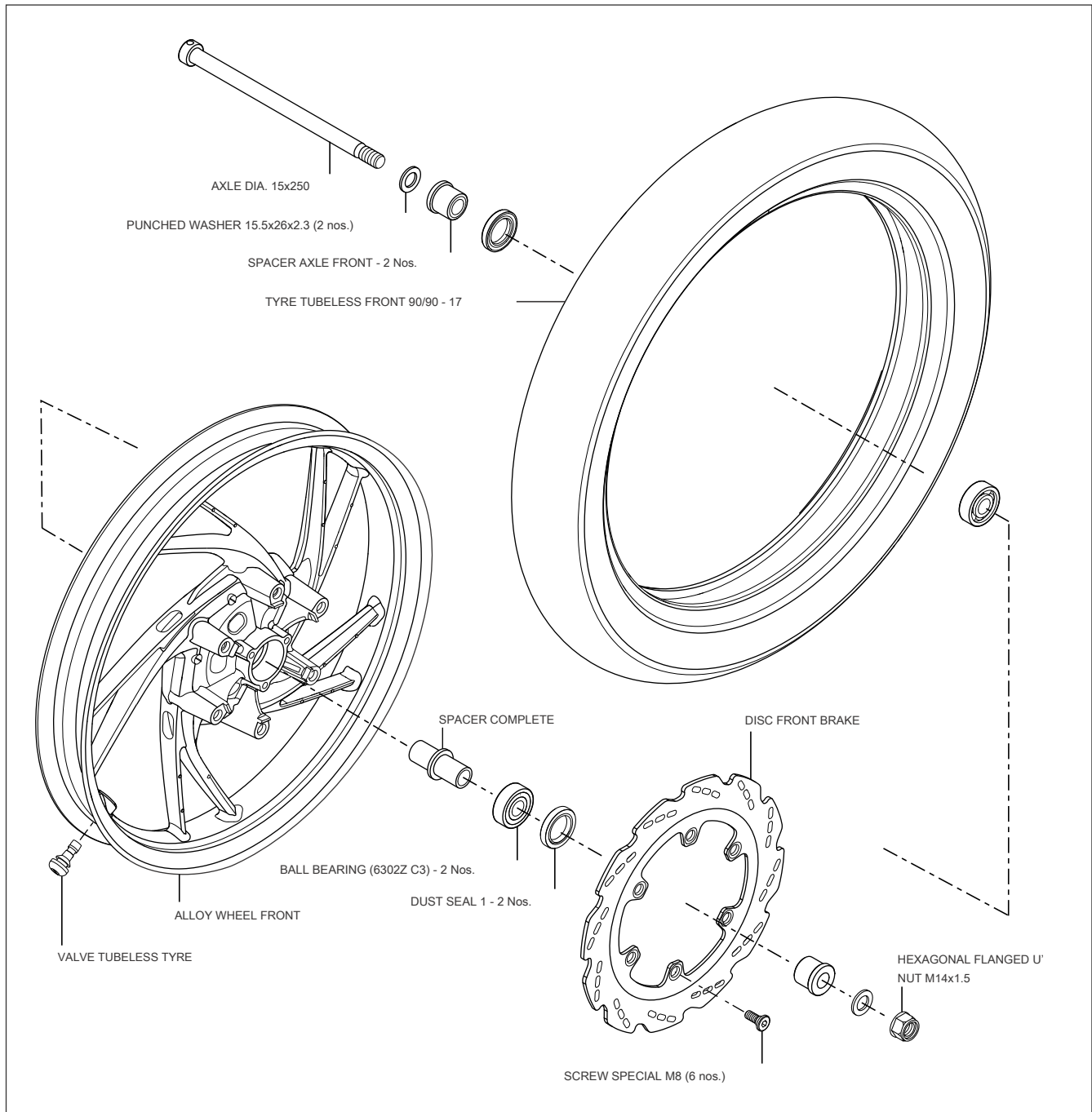


Fig. 6.12

DISC BRAKE SYSTEM - FRONT

BRAKE PADS

- Take out lever RH (front brake lever) by removing the mounting bolt and flange nut. (Fig. 6.13)

10 mm spanner

Tightening torque	$11 \pm 0.5 \text{ Nm}$
-------------------	-------------------------

- Remove the caliper assembly mounting bolts (M8x27 - 2 nos.) and take off the caliper assembly. (Fig. 6.14)

12 mm spanner

Tightening torque	$23 \pm 5 \text{ Nm}$
-------------------	-----------------------

Note:

Wash mud and dust off around the front wheel assembly and caliper assembly before dismantling them.

- Remove the plug pin (2 nos.) from the caliper body. (Fig. 6.15)

Flat head screw driver

Tightening torque	$2.5 \pm 0.5 \text{ Nm}$
-------------------	--------------------------

- Remove pin hanger (2 nos.). (Fig. 6.16)

5 mm allen key

Tightening torque	$17.5 \pm 2.5 \text{ Nm}$
-------------------	---------------------------



Fig. 6.13

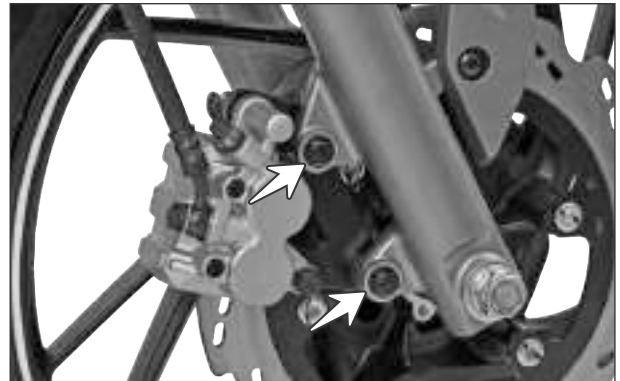


Fig. 6.14

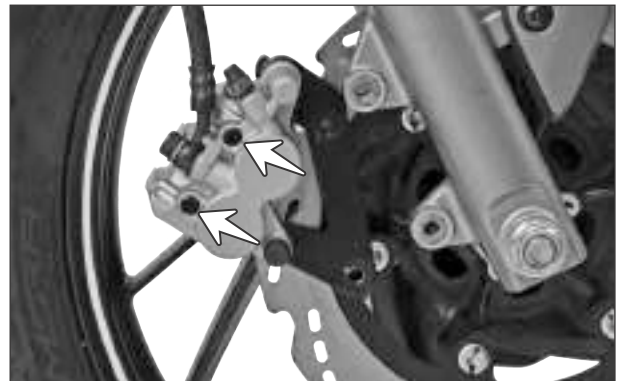


Fig. 6.15

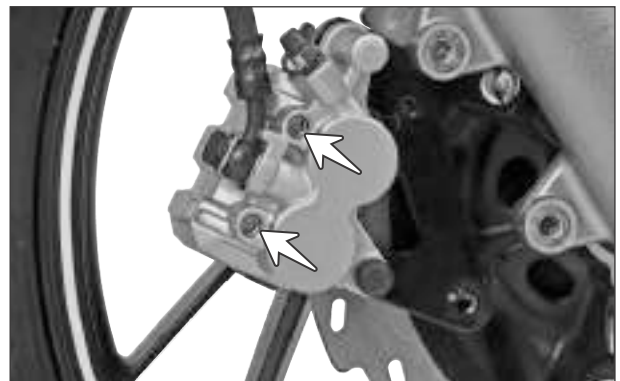


Fig. 6.16

- Pull out the pad complete inner and pad complete outer by hand. (Fig. 6.17)



Fig. 6.17

Inspection of brake pads

- Observe the wear limit line marked on the pad and check the wear condition of brake pads. (Fig. 6.18)
When the wear exceeds the limit line, replace the pad with new ones .

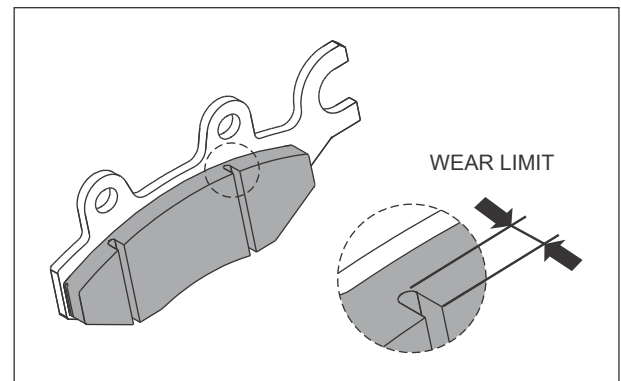


Fig. 6.18

BRAKE FLUID AND ITS HANDLING

Inspecting brake fluid level

- Before inspecting the brake fluid level, place your motorcycle firmly on the centre stand with the handlebar kept straight.
- Inspect the brake fluid level in the reservoir, If the oil level is found to be lower than the 'Lower level' mark provided on the reservoir, replenish the reservoir with the brake fluid graded below. (Fig. 6.19)

TVS Grilling DOT 3 or DOT 4

Caution:

Since the brake system of this motorcycle has glycol based brake fluid, do not use or mix different types of brake fluid such as silicon based and petroleum-based fluid for refilling the system, otherwise damage sustained will be serious.

Do not use any brake fluid taken from old or used or unsealed containers.

Do not squeeze the brake lever while the reservoir cap is removed. Otherwise brake fluid will sometimes spout out.



Fig. 6.19

Caution:

Do not place the removed reservoir cap on the speedometer or on any other painted surfaces. Brake fluid will damage the instrument cluster lenses and painted parts.

Ensure no water enters the brake fluid container. Because brake fluid has hygroscopic property, and its boiling point falls excessively if water is mixed with it.

Check the brake hose for cracks and hose joints for leakage. If found any, replace the hose.

Air bleeding from the brake system

If the front brake lever travel becomes more or if any soft or spongy feel is observed in the lever, you must carry out the air bleeding from the brake system. Follow the procedure given below for bleeding the air:

Note:

It is best, if two persons perform air bleeding. Keep the fluid level in the reservoir just above the 'Lower level' mark during the bleeding procedure.

1. Dislocate the bleeder cap and attach a bleeder tube to the bleeder screw as shown in figure (Fig. 6.20). A transparent tube is useful in finding air bubble expelled from the system. The tube must be submerged in a clean container partially filled with brake fluid.
2. Fill the reservoir with the brake fluid. Fix back the reservoir cap to prevent a spout of brake fluid and entry of dust.
3. Allow the pressure in the hydraulic system by stroking the brake lever rapidly several times and then hold the lever tight.
4. Unscrew (open) the bleeder by half a turn and depress the lever all the way down. Do not release the lever until the bleeder valve is screwed in (tighten) again. (Fig. 6.21)

10 mm spanner

5. Repeat steps 5 and 6 until air bubbles disappear from the bleeder tube or container. Tighten the bleeder securely.

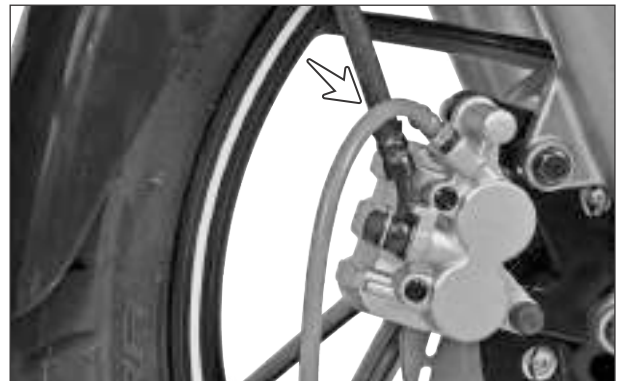


Fig. 6.20



Fig. 6.21

6. Remove the bleeder tube and install the cap bleeder.
7. After completing the bleeding operation, check the fluid level in the reservoir and replenish if necessary.

Caution:

Do not reuse the brake fluid drained from the system.

Brake fluid replacement

- | Boiling point of brake fluid falls considerably with absorption of moisture which may take place during a long period of use. Therefore, it is recommended to replace old brake fluid with new one periodically.

Replace brake fluid every 21000 km

- | On changing brake fluid, extreme attention should be paid so as not to mix any foreign materials because they would block the return port of the master cylinder resulting in the brake dragging or squeaking.

Perform the following procedure to change the brake fluid:

1. Attach a bleeder tube to the bleeder. Drain out the old brake fluid by squeezing the brake lever with bleeder opened until the brake fluid disappears in the bleeder tube.
2. After old brake fluid is drained out from the system completely, carry out the same procedure as described in 'air bleeding' from the brake system.

HOSE COMPLETE BRAKE (BRAKE HOSE)

- | Inspect the hose complete brake for any crack or leakage. If leakages found, replace the hose as below:
- | Flush the brake fluid out by opening the bleeder at caliper assembly with a tube on the bleeder head to a clean container (refer brake bleeding).

- Remove the banjo bolt (2 nos.) along with gaskets (2 nos. on each side) from both the ends of the hose complete brake. (Fig. 6.22)

12 mm spanner

Tightening torque

30 ± 2 Nm

Note:

Ensure the reassembly of new gaskets while reconnecting the hose without fail to avoid leakage.

- Dislocate the hose complete brake from the clamp hose under bracket (Fig. 6.23A) and clamp brake hose. (Fig. 6.23B)
- Dislocate and take out the brake hose from the vehicle.

Caution:

Immediately and completely wipe off any brake fluid contacting any part of the motorcycle. The fluid reacts chemically with paint, plastics, rubber materials etc., and will damage them severely.

- Reassemble the new brake hose in the reverse order of dismantling.

- Assemble and tighten the banjo bolts at both the ends of the hose along with gaskets.

Caution:

Assemble only new gaskets with the banjo bolts during reassembly. Do not use old ones.

- Bleed the air from the brake circuit after reassembly of brake hose (refer air bleeding procedure on page no. 6-7).

Replace brake hose every 3 year

CALIPER ASSEMBLY - REMOVAL AND DISASSEMBLY

- Remove banjo bolt along with gaskets and take off the hose from the caliper assembly. (Fig. 6.24)

12 mm spanner

Tightening torque

30 ± 2 Nm

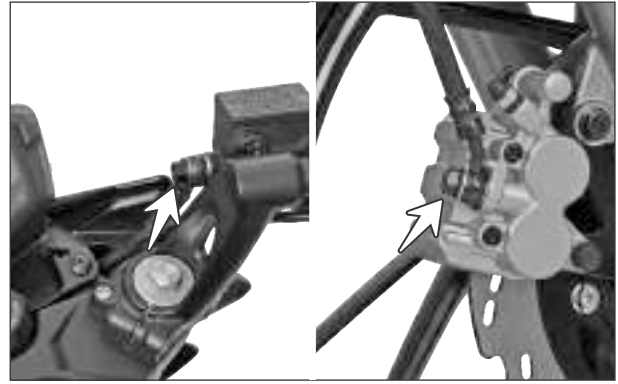


Fig. 6.22



Fig. 6.23A

Fig. 6.23B

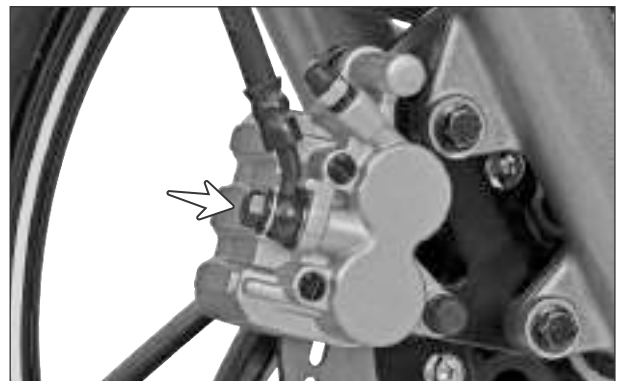


Fig. 6.24

Remove caliper assembly mounting bolts and brake pads as explained in page no. 6-5.

Remove the spring pad from the caliper housing. (Fig. 6.25)

Nose plier

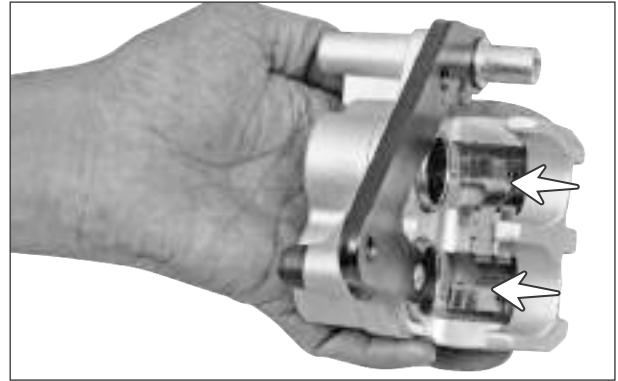


Fig. 6.25

Dislocating the boot-B and bush boot pin from the pin grooves and slide out the bracket complete front. (Fig. 6.26)



Fig. 6.26

Carefully pull out the boots from the caliper assembly housing. (Fig. 6.27)

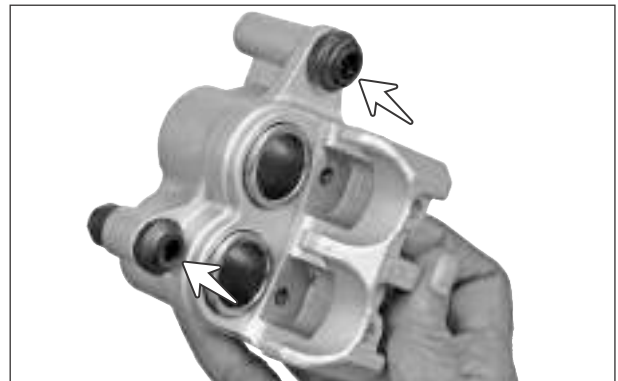


Fig. 6.27

Insert a spacer in between the piston caliper and the caliper body (at pad position) and then apply compressed air through inlet port of the caliper to slide both the pistons out. (Fig. 6.28)

Caution:

Be careful while applying compressed air as it pushes the pistons forcefully. Do not use high pressure air which may damage to pistons.

Note:

Do not try to pull out single piston as the compressed air cannot push the second piston.

Do not use nose plier to pull out the pistons as it damages the piston.

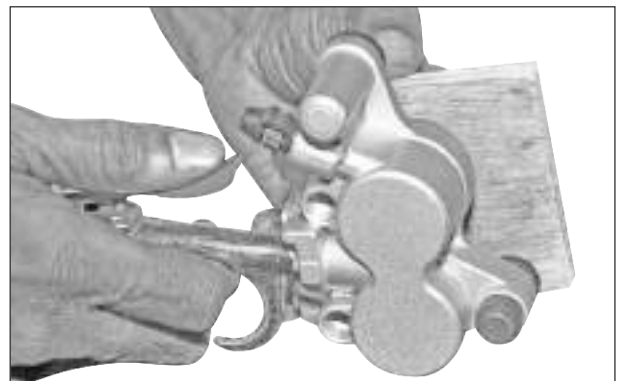


Fig. 6.28

- Remove the dust seals 1 and 2 with a bent plastic / brass tool to avoid scratches in the caliper bore. (Fig. 6.29)

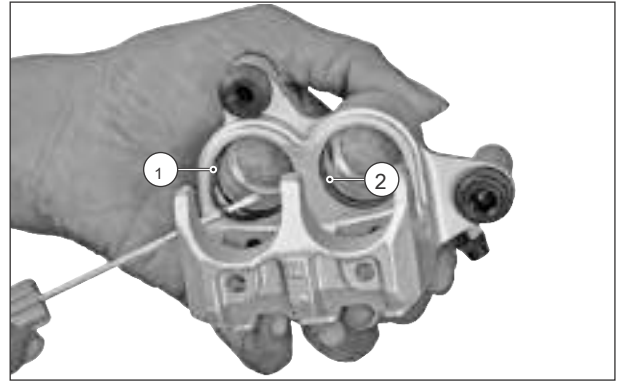


Fig. 6.29

- Remove the bleeder screw. (Fig. 6.30)

10 mm spanner

Tightening torque	$5.5 \pm 1.5 \text{ Nm}$
-------------------	--------------------------

- Clean parts thoroughly with the fresh brake fluid.

Caution:

Never use kerosene, petrol or other solvents for cleaning the brake system. Otherwise rubber parts will be damaged. Do not wash the pads and also take care that brake fluid is not splashed on pads.

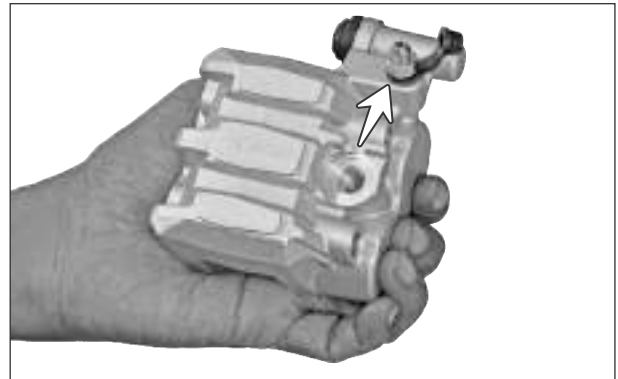


Fig. 6.30

Caliper assembly inspection

Inspect the following parts:

- Pin hangers for any bend.
- Bracket complete front for loose lugs.
- Piston and caliper bore for any scratches.
- Piston and dust seals for any damage.

- Replace the defective parts after necessary repair.

Caliper assembly - reassembly

- Install the dust seals and ensure perfect

seating without any twist (refer exploded view on page no. 6-16 for assembly details).

- For the piston and slowly insert into the

bore of caliper body without tapering. Ensure the piston is sliding easily into the bore.

- ▮ Assemble the spring pad in the caliper body and fix back the boot-B and bush boot pin.
- ▮ Apply little grease on the pin bolts of bracket complete front and assemble the bracket into the caliper body while ensuring the proper seating of both boots in the pin bolt grooves.
- ▮ Assemble the pad inner and pad outer. Locate the pin hangers properly into the holes of pad inner and pad outer and assemble it. Fix back plug pin and bleeder screw.
- ▮ Remount the caliper assembly into the fork leg and reconnect the brake hose along with gaskets. Bleed the system thoroughly.

DISC PLATE SERVICING

Inspection (with disc mounted on wheels)

- ▮ Face out of the disc plate should not be more than the limit specified below. Measure disc plate face out on the largest periphery of the disc plate with a dial indicator. (Fig. 6.31)
- ▮ If the face out exceeds the limits, check whether the cause lies in the front wheel bearing or the disc plate itself. Replace defective parts.

Magnetic stand

Dial gauge (0.01)

Standard	0.05 mm
Service limit	0.10 mm

Note:

Wipe out disc plate surface with a dry soft cloth before inspection.

- ▮ Measure thickness of the disc plate at the worn-out portion as shown. (Fig. 6.32)
- ▮ If the thickness measured is less than the limits, replace the disc plate (refer page no. 6-1 for disc plate removal procedure).

Micrometer

Standard	4.5 mm
Service limit	4.0 mm



Fig. 6.31



Fig. 6.32

MASTER CYLINDER - REMOVAL AND DISASSEMBLY

- Dislocate the dust cap (A) and loosen the lock nut of rear view mirror. Now, remove the rear view mirror gently. (Fig. 6.33)

14 mm spanner

Tightening torque	28.5 ± 6.5 Nm
-------------------	---------------

Caution:

While reassembling the mirror care should be taken not to damage the mounting threads of the master cylinder.

- Bleed out brake system completely as explained earlier.
- Remove the banjo bolt and brake hose from the master cylinder assembly along with the gaskets (2 nos.). (Fig. 6.34)

14 mm spanner

Tightening torque	30 ± 2 Nm
-------------------	-----------

- Disconnect the wiring harness of the stop lamp switch from the switch terminal. (Fig. 6.35)

- Take out the lever RH (front brake lever) by removing the mounting bolt and flange nut. (Fig. 6.36)

10 mm spanner

Tightening torque	30 ± 2 Nm
-------------------	-----------

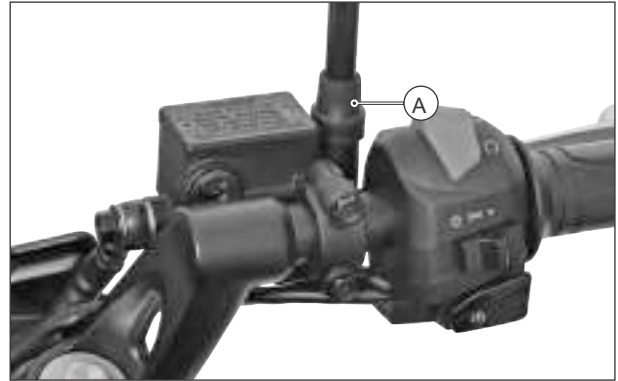


Fig. 6.33

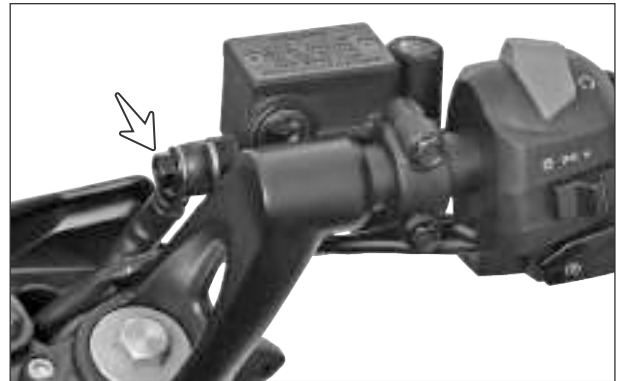


Fig. 6.34



Fig. 6.35

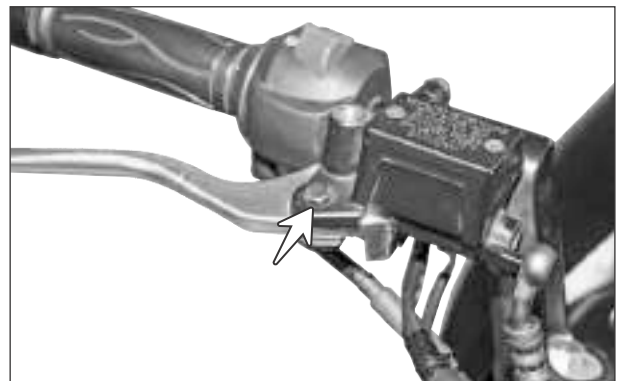


Fig. 6.36

- Remove the master cylinder fluid reservoir cap by unscrewing screws (2 nos.). (Fig. 6.37)

Phillips head screw driver

Tightening torque	1.5 ± 0.5 Nm
-------------------	------------------

- Take out plate diaphragm and diaphragm from the reservoir.



Fig. 6.37

- Take out the master cylinder by unscrewing the mounting bolts (2 nos.) of holder master cylinder. (Fig. 6.38)

10 mm spanner

Tightening torque	10 ± 2 Nm
-------------------	---------------

Note:

Hold the master cylinder while removing the holder mounting bolts in-order to avoid falling.

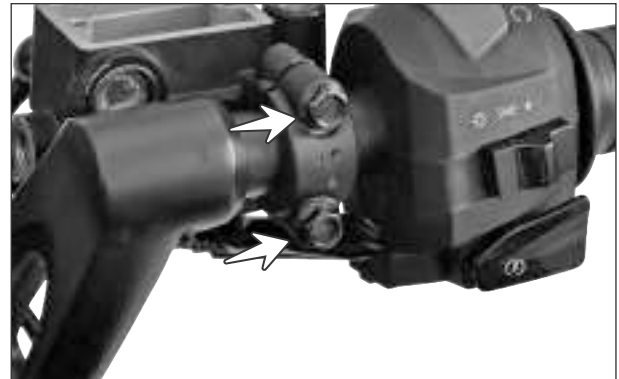


Fig. 6.38

- Remove the mounting screw of stop lamp switch and take out the stop lamp switch. (Fig. 6.39)

Phillips screw driver



Fig. 6.39

- Remove the dust boot from the master cylinder using a blunt tool. (Fig. 6.40)

Note:

While removing boot, care must be taken not to damage it.

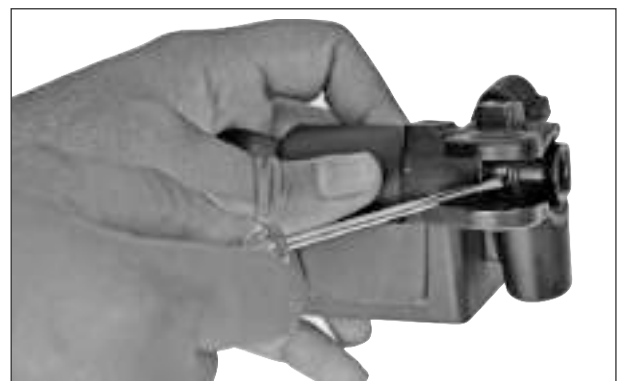


Fig. 6.40

- 1 Holding the master cylinder by hand slightly press the piston with thumb finger and remove the circlip from the master cylinder using a circlip plier without damaging the piston and cylinder. (Fig. 6.41)

Circlip plier

Note:

Ensure that the circlip is seated properly in its position after installation.



Fig. 6.41

- 1 Slowly pull out the piston along with the P - cup, S - cup and spring. (Fig. 6.42) Clean the system thoroughly using fresh brake fluid.

Caution:

Never use kerosene, petrol or other solvents for cleaning the brake system. Otherwise rubber parts will get damaged.

Do not wash the brake pads. Ensure that the brake fluid is not in contact with the pads surface.



Fig. 6.42

Inspection of master cylinder

Inspect the following parts:

- Master cylinder for any scratches or any other damages.
- Piston and cup surface for scratches or other damages.
- Piston boot and other components for wear and damages.
- Master cylinder recuperation and feed port for any blockage, if so clear the block using compressed air.

- 1 After the inspection, if any defect found replace the respective parts.

REASSEMBLY

- 1 Reassemble the master cylinder in the reverse order of dismantling. **Refer Fig. 6.43 for assembly details.**

Caution:

Apply the brake fluid to the cylinder bore and all internal parts before inserting piston assembly into the bore.

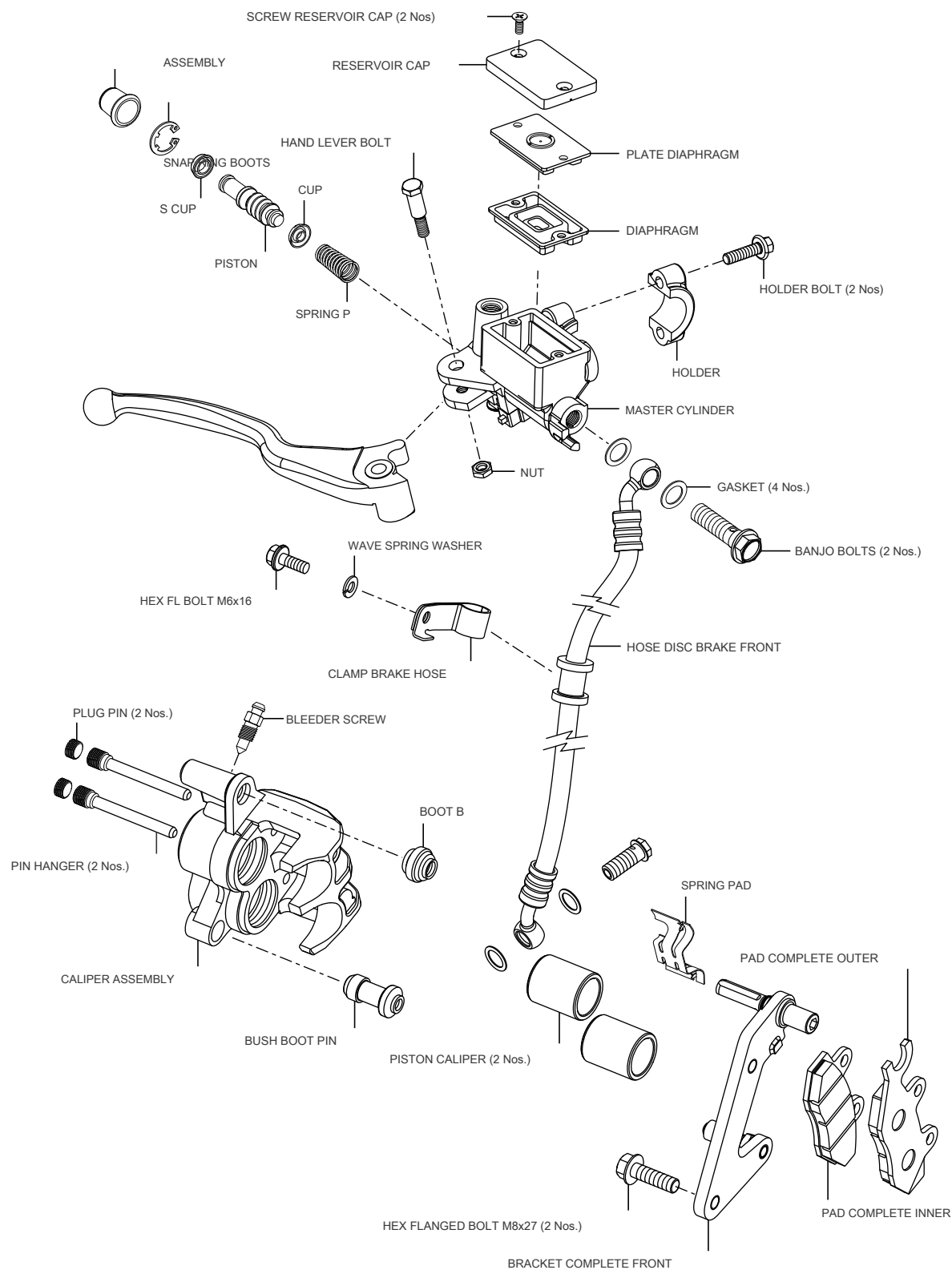


Fig. 6.43

- Remount the master cylinder to the handle bar and fix the holder in 'UP' direction. (Fig. 6.44)

10 mm spanner

Tightening torque

10 ± 2 Nm

Note:

Always tighten the top bolt first and then the bottom one.

Mount master cylinder to the handle bar such that reservoir becomes horizontal when the bike is placed on centre stand and steering is kept straight.

- Fix the brake hose to the master cylinder outlet port along with the banjo bolt and gaskets.
- Fill the reservoir with fresh TVS Girling DOT3 or DOT4 brake fluid above the level 'LOWER' mark on the reservoir and bleed the system thoroughly. (Fig. 6.45)

- Fix the reservoir cap along with diaphragm and plate diaphragm and tighten screws. Connect the wiring harness to the brake light switch.

- Replace the following parts every 21,000 km

- Piston along with P-cup, S-cup, spring and boot.
- Reservoir cap and diaphragm.
- Caliper dust seal - 1 and dust seal - 2.



Fig. 6.44



Fig. 6.45

FORK ASSEMBLY FRONT

OIL CHANGE

- Dismantle the wheel assembly front (refer page no 6-1 for dismantling procedure).
- Remove caliper assembly along with hose complete brake. Keep some cushion in between the brake pads, to avoid binding.
- Remove the CRR pan head screws (M6x16 - 2 nos.) from the fender front L & R.(Fig. 6.46)

Phillips screw driver

Tightening torque

3 ± 1 Nm

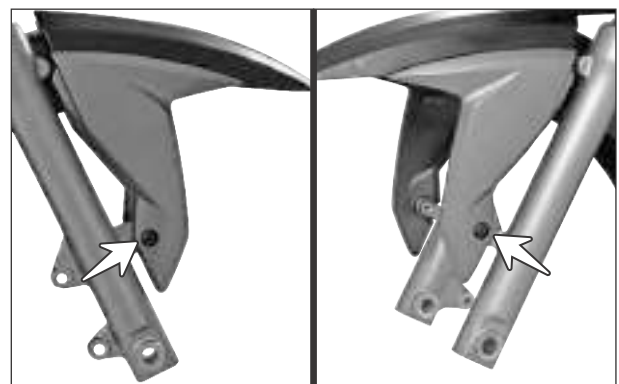


Fig. 6.46

- Remove hexagonal screws (M8x20 - 4 nos.) along with wave spring washer (4 nos) from the fender front mounting. (Fig. 6.47)

13 mm spanner

Tightening torque

18 ± 3 Nm

- Take out brace front fender along with spacer front fender (4 nos.).

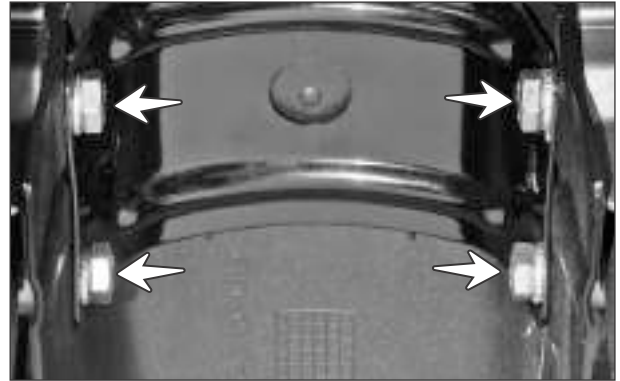


Fig. 6.47

- Loosen hexagonal socket head screws (A) (M8x30 - 2 nos.) from the handle bar assembly mounting. (Fig. 6.48)

6 mm allen key

Tightening torque

16 ± 2 Nm

- Loosen hexagonal socket head screws (B) (M8x45 - 2 nos.) from the upper bracket complete mounting (fork upper mounting). (Fig. 6.48)

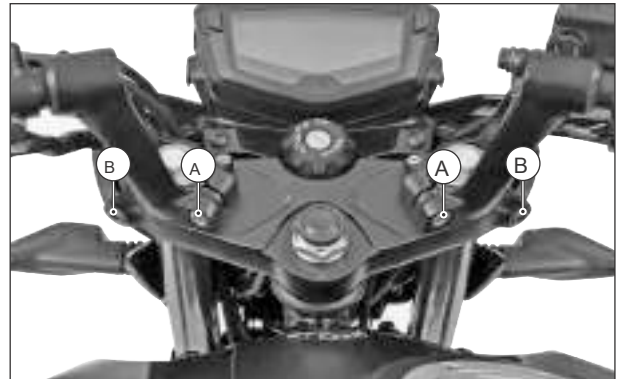


Fig. 6.48

- Loosen the hexagonal screws (M10x40 - 2 nos.) of lower bracket complete (fork lower mounting). (Fig. 6.49)

14 mm spanner

Tightening torque

36 ± 4 Nm

Note:

Hold the fork leg assembly while loosening the bottom mounting bolts. Else it may fall.



Fig. 6.49

the lower bracket till the top of the leg assembly is accessible.

and tighten the lower bracket hexagonal bolt again. (Fig. 6.50A)

Caution:

Do not over tight the lower mounting screw, as it may damage the inner tube assembly of fork leg.

of front fork leg assembly to facilitate the lock nut

dismantling of fork leg. (Fig. 6.50B)

17 mm spanner

Tightening torque

24 ± 2 Nm

the screw and pull again the fork leg assembly. (Fig. 6.51)

the leg assembly from fork (Fig. 6.51) ring from

Caution:

Remove the lock nut with constant handgrip on nut. The nut is subject to spring load and may jump out incase of loose handling.

fork leg assembly. 1. remove and dismantle the

Take out the washer, spacer front fork, washer spring seat and spring front fork. (Fig. 6.52)

Turn the leg assembly front fork upside down, holding outer tube by hand, pump inner tube 'in' and 'out' to drain the oil completely. (Fig. 6.53)

Note:

Hold the leg assembly front fork inverted for few minutes to drain the oil completely.

Clean leg assembly front fork with kerosene and drain completely.

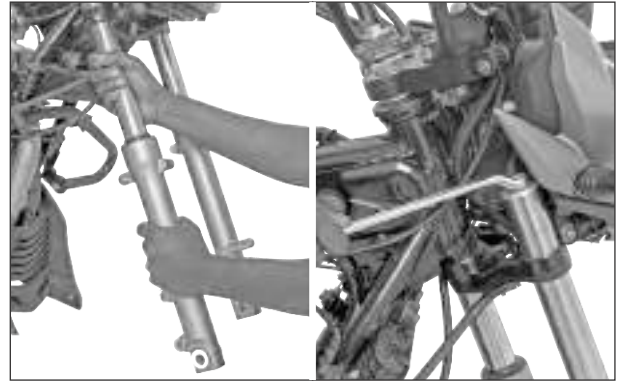


Fig. 6.50A

Fig. 6.50B



Fig. 6.51

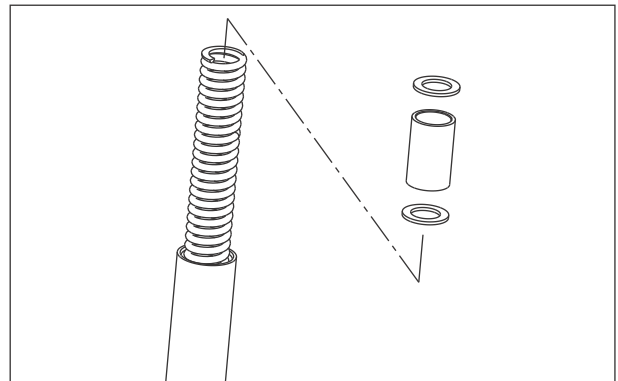


Fig. 6.52



Fig. 6.53

- Fill little more than the specified amount of fresh fork oil . (Fig. 6.54)

Oil quantity	325 ± 2 cc per leg
Oil specification	KYB G10



Fig. 6.54

- Adjust the special tool (oil level gauge) to the specified height. Hold the front fork vertically and take out the excess oil from the front fork using the special tool as shown. (Fig. 6.55)

Note :
When adjusting the oil level, Compress the inner tube fully.

031 180 0	Fork oil level gauge
Oil level	114 mm

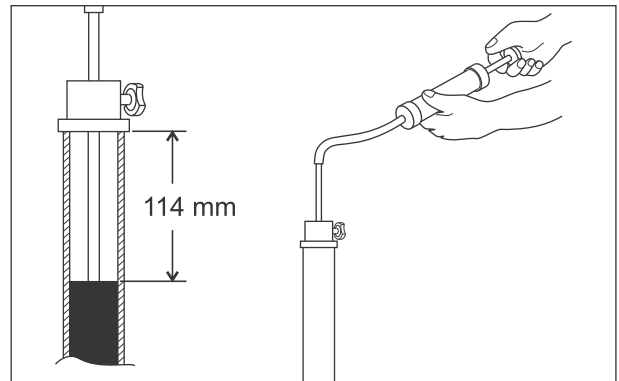


Fig. 6.55

- Check spring front fork length (refer page no. 6-22 for checking procedure).
- Install spring front fork with its smaller pitch end facing upward. (Fig. 6.56)
- Assemble washer spring seat, spacer front fork and washer.
- Before installing cap nut front fork, lightly apply grease to the 'O' ring. Remount for leg assembly LH & RH.

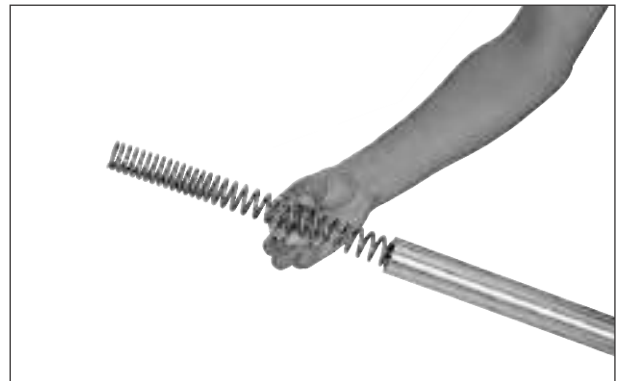


Fig. 6.56

- Tighten top mounting screws (for k upper mounting) to the specified torque (refer chapter "Service information page no. 7-9 for torque sheet).
- Tighten hexagonal bolts of lower bracket (fork bottom mounting) to the specified torque (refer chapter "Service information page no. 7-9 for torque sheet)..
- Reassemble front fender and front wheel assembly in the reverse order of removal.
- Re-fix the caliper assembly front fork and ensure the proper working of brake.

LEG ASSEMBLY FRONT FORK- DISASSEMBLY

- 1 Remove both the leg assembly front fork LH and RH (refer page no. 6-17).
- 2 Drain out the front fork oil as explained earlier.
- 3 Remove the seal dust front fork (dust seal) from the outer tube while ensuring no damage to the dust seal, inner surface of outer tube and outer surface of inner tube. (Fig. 6.57A)
- 4 Remove the snap ring from the outer tube while ensuring no damage to the inner surface of outer tube and outer surface of inner tube. (Fig. 6.57B)

Flat screw driver

Caution:

While reassembling, replace the dust seal incase found damaged.

- 5 Using the special tool, holding the piston, remove hexagonal allen screw connecting fork outer tube and inner tube. (Fig. 6.58)

N931 011 0

Tool front cylinder holder

8mm allen key

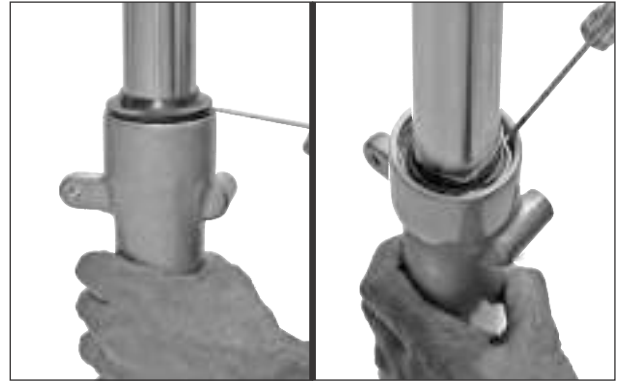
Tightening torque

23 ± 3 Nm

Note:

Please remember to replace the gasket with a new one reassembling.

- 6 Hold the inner and outer tube using both the hands. Pull out the tube inner (inner tube) from the tube outer (outer tube) along with cylinder front fork (piston front fork), DU bush and oil seal.
- 7 Remove spindle taper from the bottom of the piston front fork. If it does not come out with piston, remove it from the fork outer tube. (Fig. 6.59)
- 8 Remove piston front fork and spring front fork from the inner tube assembly. (Fig. 6.60)



6.57A

Fig. 6.57B

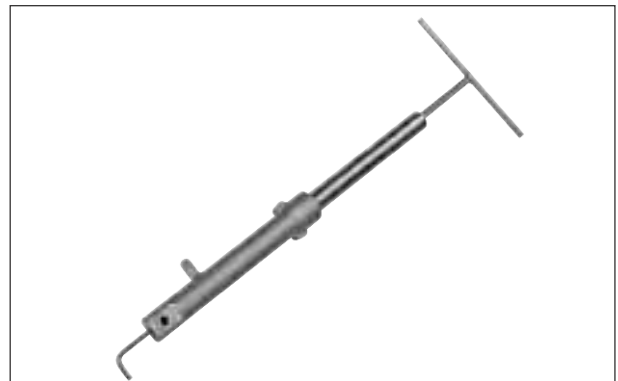


Fig. 6.58

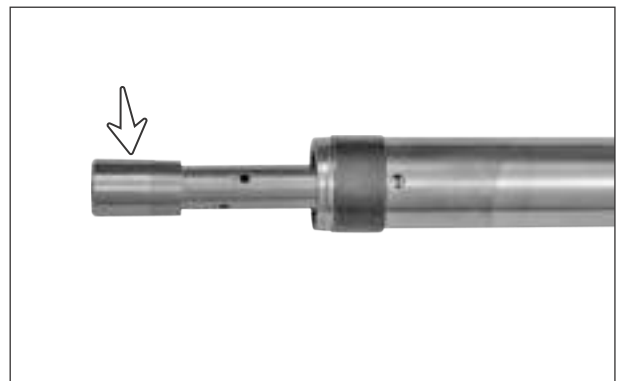


Fig. 6.59

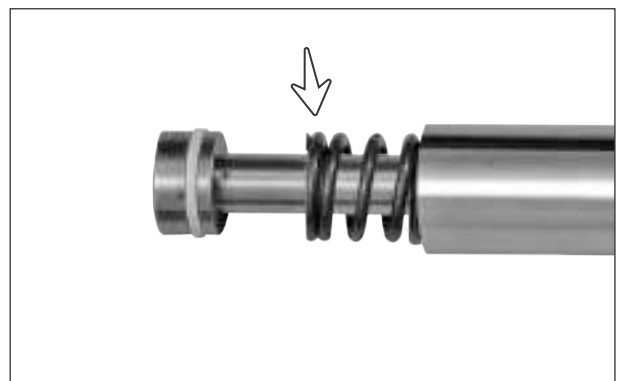


Fig. 6.60 Fig.

INSPECTION

- ▮ Before inspection clean all the components with a cleaning solvent.
- ▮ Inspect piston front fork and ring damper piston for wear and any damage. (Fig.6.61) Replace with new one if any damage is noticed.

- ▮ Sliding surface (inner surface) of outer tube and

any scuffing, scratches, dents, plating peel off etc..
Replace the inner tube or outer tube if it has surface defects / flaws. If the inner tube has damage / dent on surface, replace the oil seal and inner tube together.

- ▮ or wear. Replace if the DU bush for any damage

Spring front fork

- ▮ Measure the free length (A) of the spring front fork. If the length is shorter than service limit or deformation of spring, replace it with a new one. (Fig. 6.62)

Service limit length (A)	428 mm
--------------------------	--------

REASSEMBLY

Reassemble and remount the leg assemblies front fork in the reverse order of disassembly while carrying out the following steps.

- ▮ Refer leg assembly front fork exploded view (Fig. 6.63) for assembly details.
- ▮ Make sure all components are clean.
Lubricate the inner surface of the outer tube and outer surface of the inner tube.
- ▮ Insert the fork piston along with the rebound spring slowly, so that it slides down into the tube inner and protrudes from the bottom.
- ▮ Assemble spindle taper in the piston. now insert the outer tube in the inner tube along with DU bush.
- ▮ Apply thread lock to the allen screw of the piston before assembly.

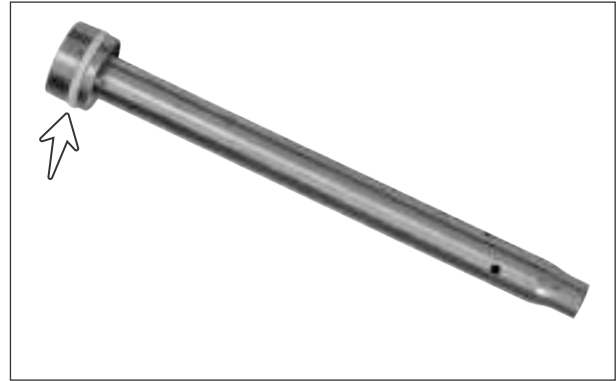


Fig. 6.61

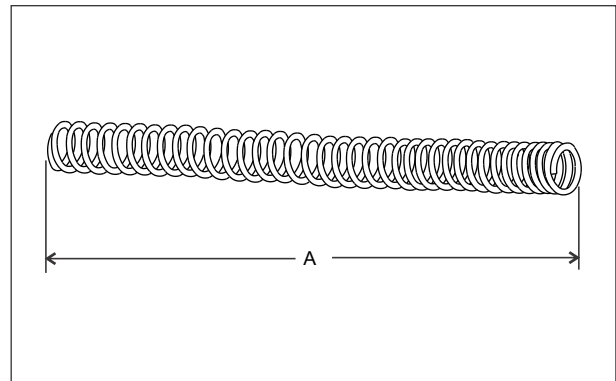


Fig. 6.62

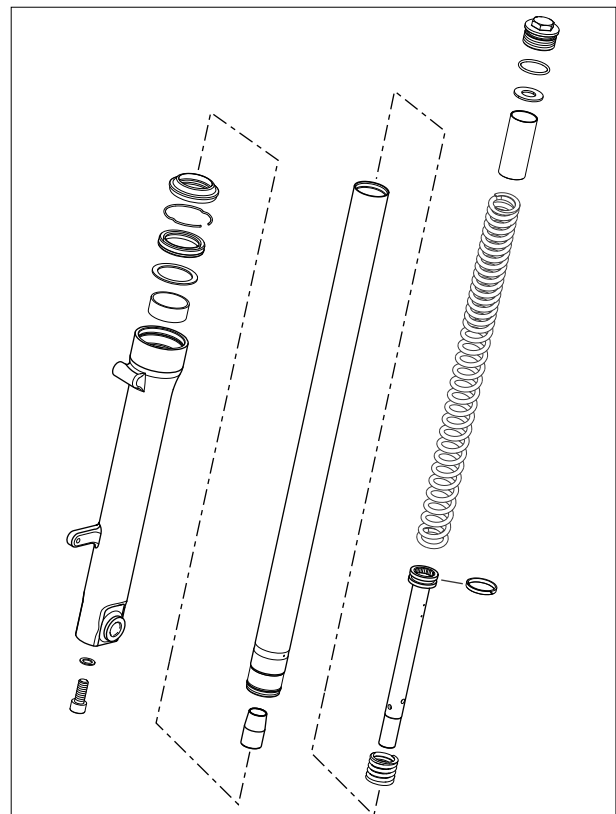


Fig. 6.63

- Assemble the washer spring seat, spacer front fork and washer.

- (Fig. 6.64A) Install new oil seal using the special tool.

N931 009 0	Tool fork oil seal
------------	--------------------

Note:

Before installing the oil seal, apply little grease (MOS) on the lip of oil seal.

- Reassemble the snap ring.

- (Fig. 6.64B) Reassemble the dust seal using special tool.

N931 009 0	Tool fork oil seal
------------	--------------------

- Fill up the fork oil as per specification.

Note:

After filling up, slowly pump the leg assembly front fork up and down to remove air lock / gaps. Install the spring with its smaller pitch up-ward. Before installing the lock nut, apply grease to the 'O' ring.

- Remount the front fork assembly.

LOWER BRACKET COMPLETE (STEERING STEM) - DISASSEMBLY

- Remove the CRR pan head screw (M5x16 - 2 nos.) from the housing speedometer rear mounting and remove the housing speedometer rear. (Fig. 6.65)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	--------------

- Disconnect wiring socket from the speedometer assembly.

- Remove the CRR pan head screw (M6x25 - 2 nos.) housing head lamp front top mounting. (Fig. 6.66)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
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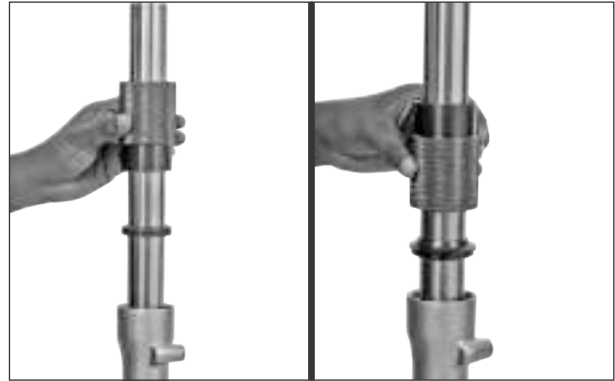


Fig. 6.64A

Fig. 6.64B

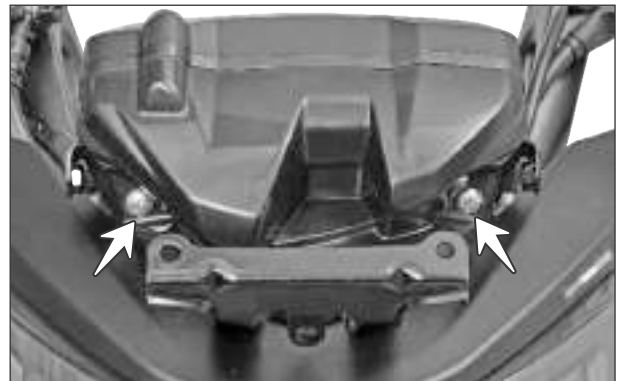


Fig. 6.65



Fig. 6.66

- Remove the hexagonal flange bolt (M6x16 - 2 nos.) from the bottom mounting housing head lamp (both LH and RH) while holding the housing by one hand. (Fig. 6.67)

10 mm spanner

Tightening torque	3 ± 1 Nm
-------------------	--------------

- Take out the housing head lamp by gently disconnecting and dislocating the wiring sockets of main wiring harness.

- Remove both the leg assembly front fork (refer page no. 6-17).

- Take out cap lock nut (A) and remove lock nut steering along with the special washer. (Fig. 6.68)

32 mm spanner

Tightening torque	80 ± 20 Nm
-------------------	----------------

- Gently lift the handle bar assembly, support and hang it at the side of the fuel tank complete while taking care of painted surface of the tank.

Note:

Ensure that the control cables are not stretched too much or bent.

- Unlock the lock washer arrester steering using a blunt tool. (Fig. 6.69A)
- Remove the arrester steering stem top using a special tool. (Fig. 6.69B)

N931 014 0

Tool steering nut

- Take out the lock washer arrester steering. (Fig. 6.70A)

- Remove the arrester steering stem using the special tool while holding the lower bracket complete and draw out bracket. (Fig. 6.70B)

N931 014 0

Tool steering nut

Note:

Steering balls tend to fall during bracket removal, hence they should be collected carefully.

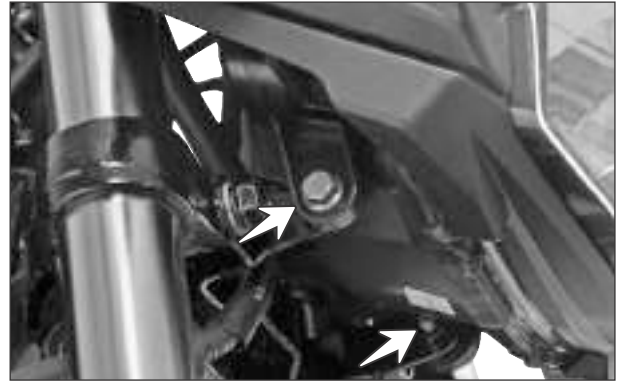


Fig. 6.67

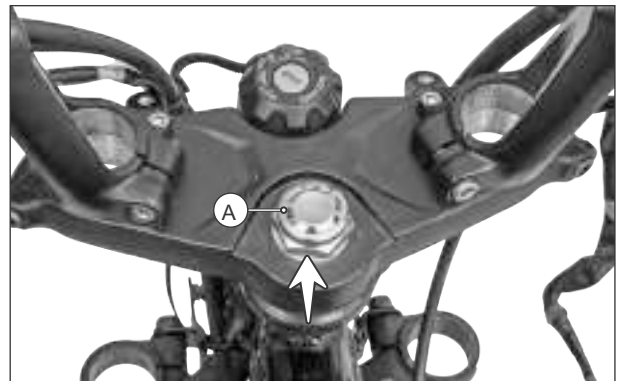


Fig. 6.68

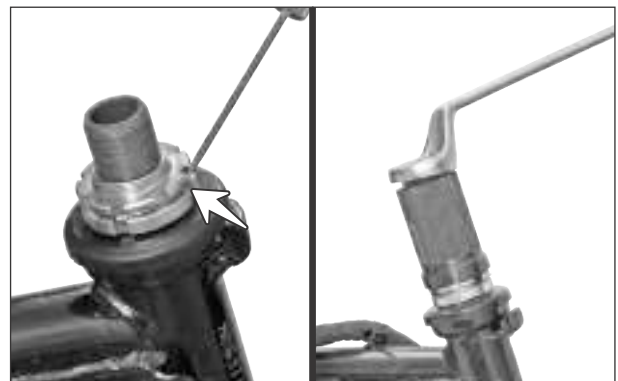


Fig. 6.69A

Fig. 6.69B

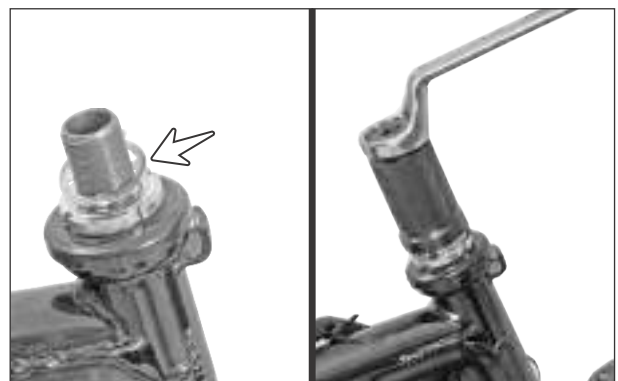


Fig. 6.70A

Fig. 6.70B

Remove the dust seal steering upper.
(Fig. 6.71A)

Remove cone top. (Fig. 6.71B)

Remove upper and lower steering balls.

Position	Qty	Size
Upper	18 nos	6.35 mm
Lower	18 nos	6.35 mm



Fig. 6.71A

Fig. 6.71B

Assembly the special tool on the frame and slowly draw out cup top from the steering pivot pipe (frame).
(Fig. 6.72)

M931 016 0	Remover steering cup
------------	----------------------

Note:

While fixing the special tool, ensure that the tool is seated properly on the steering pivot tube and the lock plate of the tool is locked with the steering stopper properly.



Fig. 6.72

In similar manner, remove the cup bottom from the frame.

Remove the cone bottom and dust seal steering lower fitted on the lower bracket complete. (Fig. 6.73)

Chisel / metal hammer

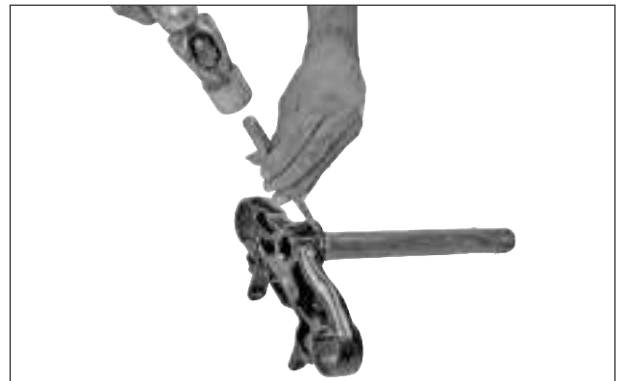


Fig. 6.73

INSPECTION

Before inspection clean all the components with kerosene. Inspect the removed parts for the following abnormalities and replace the defective with new.

- Handle bar distortion.
- Races and cones for wear, pitting, rusting and indentation. (Fig. 6.74)
- Worn or damaged steel balls / ball cage and rusting. (Fig. 6.74)

Note:

Always replace cup, cone and races as a set only.

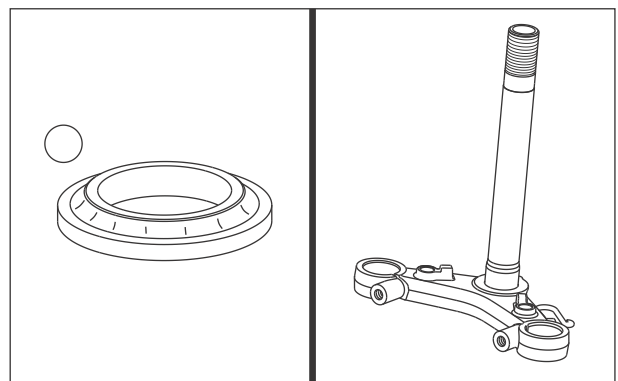


Fig. 6.74

REASSEMBLY

Reassemble the lower bracket complete, leg assembly front fork LH & RH, handle bar assembly and wheel assembly front in the reverse order of disassembly while carrying out the following steps:

Refer lower bracket complete exploded view (Fig. 6.75) for assembly details.

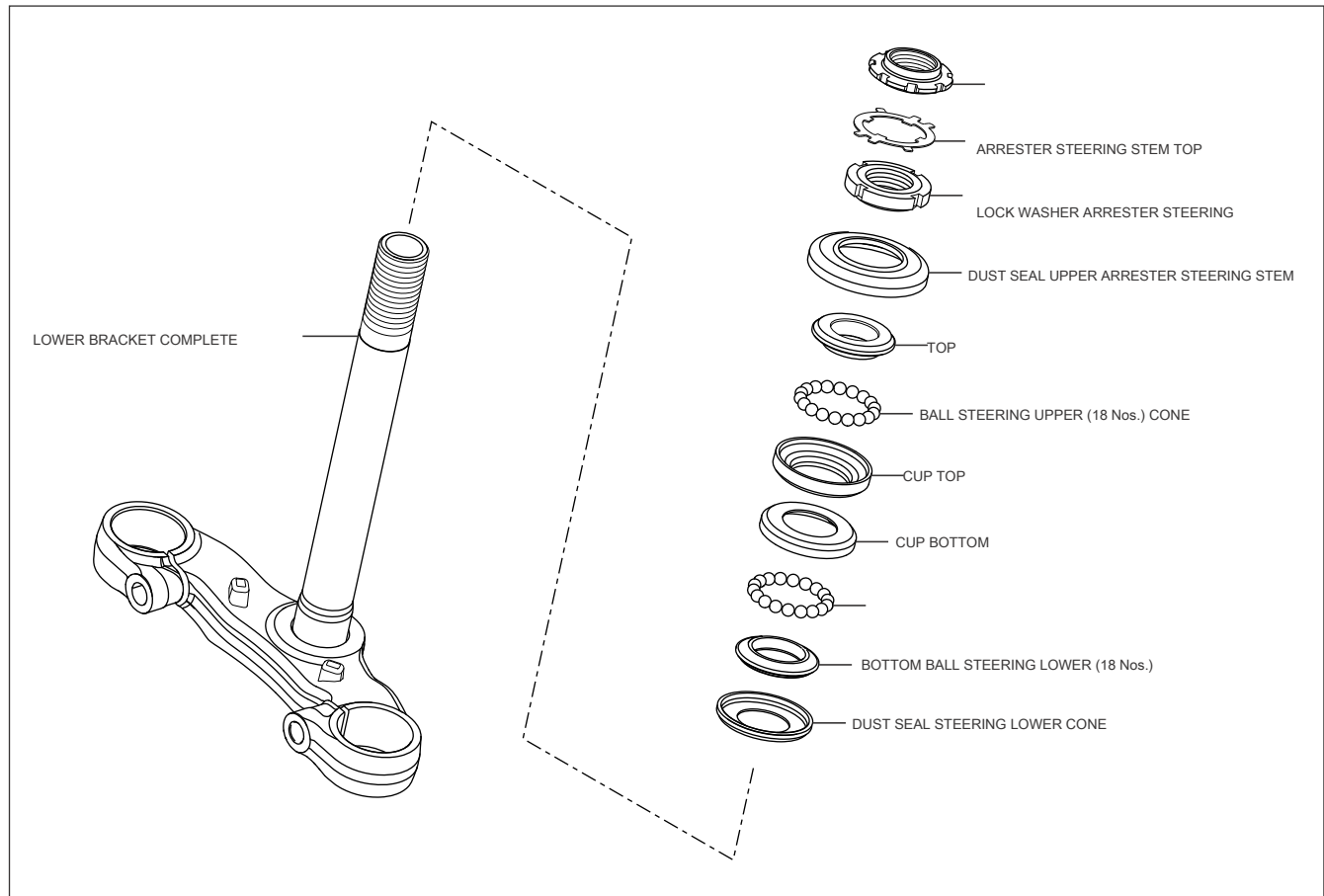


Fig. 6.75

Cup bottom and cup top

Assemble cup bottom and cup top by using a special tool. (Fig. 6.76)

NB31 004 0

Sleeve steering cup

Note:

Always replace the cup, cone and races as a set.

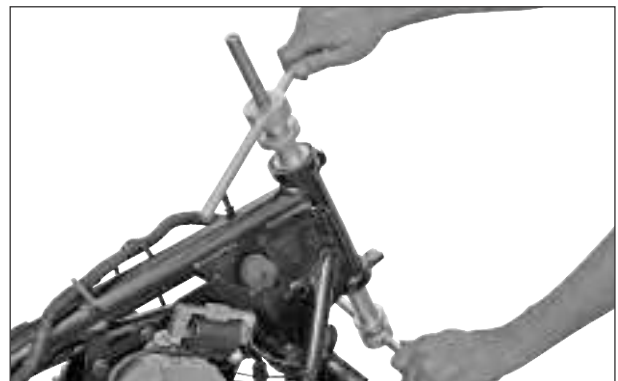


Fig. 6.76

Steering balls

- Apply grease to the cup top and cup bottom.
(Fig. 6.77)

Bechem premium grade 3

- Install specified quantity of steering balls at cup top and cup bottom (refer page no. 6-25 for the specified quantity).



Fig. 6.77 A

Fig. 6.77 B

Cone bottom

- Install cone bottom to the lower bracket complete (steering stem) by using the special tool and apply grease. (Fig. 6.78)

N931 013 0	Tool cone bottom installer
------------	----------------------------

- Reverse the lower bracket to the reverse order of disassembly. Assemble and tighten the arrester steering stem to 30 ~ 35 Nm.



Fig. 6.78

N931 014 0	Tool steering nut
------------	-------------------

- Loosen and re-tighten steering nut to 0 Nm (fully loose) and then tighten to 6 ~ 8 Nm.
- Then, the order to complete seating of steering ball (Fig. 6.79) and re-tight the arrester to 6 ~ 8 Nm torque again.
- Align and Assemble the steering arrester top and tighten it till it touches lock washer.
- Now, it is matching with the exp. tab. the lock washer.
- Fit the groove with the arrester steering top patch.
- Assembly it. Finally, tighten the lock nut steering to the specified torque (60 ~ 100 Nm).

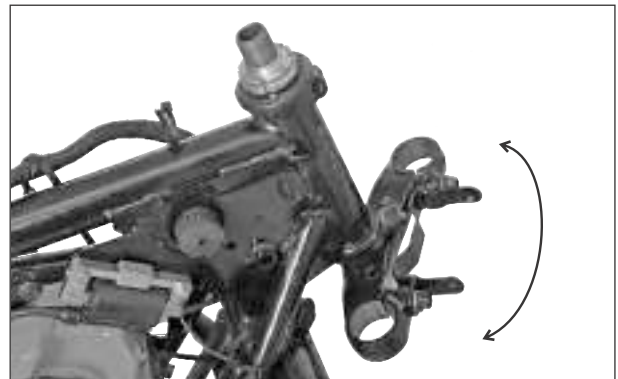


Fig. 6.79

Warning:

Steering should be adjusted correctly for smooth movement of handlebar and safe riding. Stiff steering prevents smooth movement of handlebar resulting in poor directional stability and too loose steering will cause vibration and damage to the steering races .

Note:

After adjustment, ensure the handlebar moves smoothly without any jerk or sticky. When slowly moved by hand it moves freely from center position to either left or right with its own weight.

WHEEL ASSEMBLY REAR - REMOVAL

1 Remove the chain (refer chapter "Periodic maintenance" page no. 2-32 for chain removal procedure).

2 Loosen the chain adjusting screw from chain adjuster complete LH and RH. (Fig. 6.80)

12 mm spanner

3 Remove 'U' nut (M14x1.50) from the axle complete rear along with washer. (Fig. 6.81A)

22 mm spanner

Tightening torque

78 ± 18 Nm

4 Pull out the axle complete rear by gently tapping at other end. (Fig. 6.81B)

5 Dislocate the caliper assembly from the slot provided on swing arm complete by pulling it towards rear side.

6 Take out wheel assembly rear.

7 Remove the sprocket drum assembly along with spacer rear axle LH from the alloy wheel rear.

DISC REPLACEMENT

1 Remove spacer rear axle R. (Fig. 6.82)

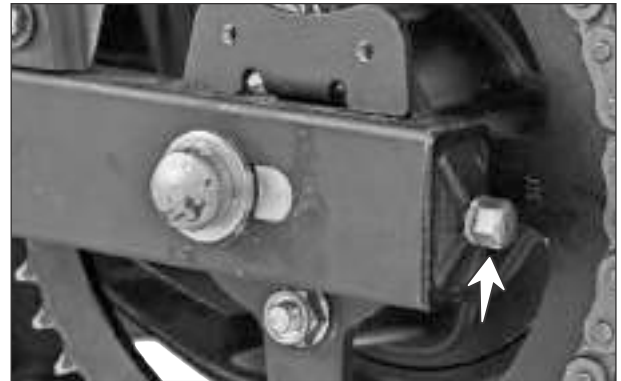


Fig. 6.80

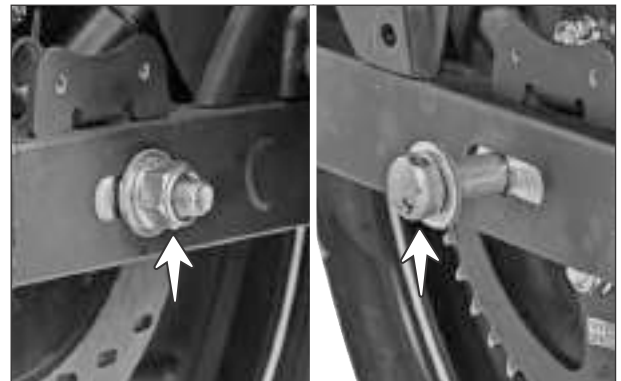


Fig. 6.81A

Fig. 6.81B

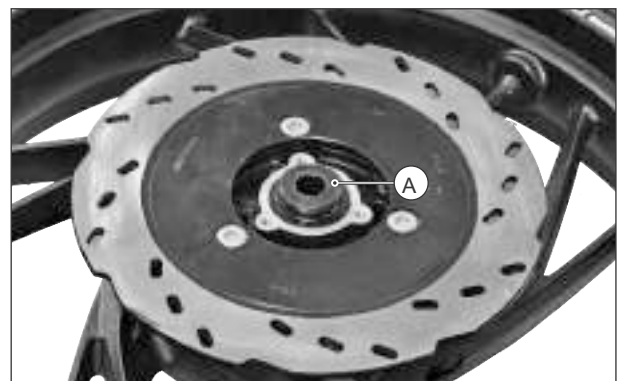


Fig. 6.82

- Remove the screw special (M8 - 3 nos) from the disc plate mounting and take out disc plate from the alloy wheel rear. (Fig. 6.83)

6 mm allen key

Tightening torque

31 ± 3 Nm

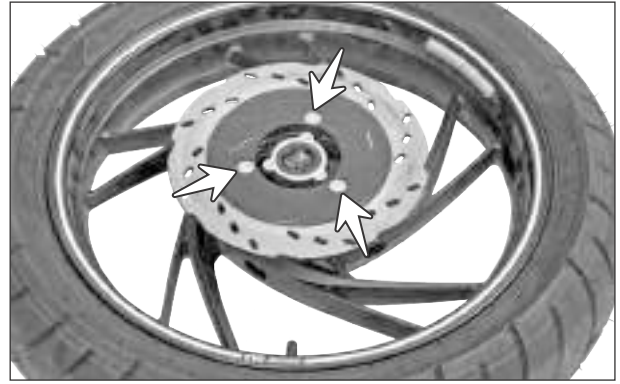


Fig. 6.83

Wheel bearing removal

Warning:

It is recommended to remove the bearings only in case of replacement.

Note:

Before heating the wheel assembly rear it is recommended to remove the absorber rear wheel hub shock. (Fig. 6.84)

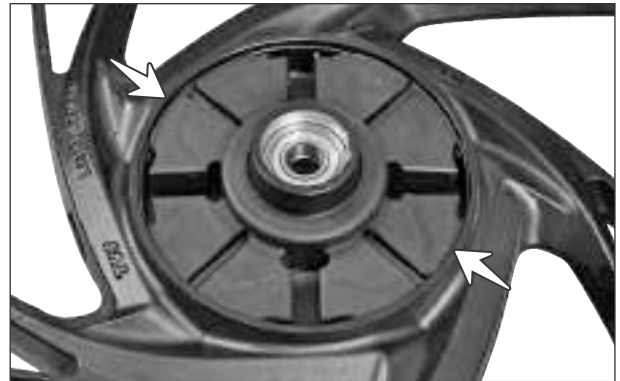


Fig. 6.84

- Remove oil seal using the special tool. (Fig. 6.85)

031 240 1

Universal oil seal remover



Fig. 6.85

- Place the wheel assembly rear (brake drum) on a hot plate and heat to approximately 125°C. (Fig. 6.86)

Hot plate



Fig. 6.86

- ↓ Draw out the bearing from the wheel assembly rear. (Fig. 6.87)

Drift

Nylon hammer



Fig. 6.87

SPROCKET DRUM ASSEMBLY - DISASSEMBLY

- ↓ Take out the spacer rear axle LH from the sprocket drum assembly. (Fig. 6.88)



Fig. 6.88

- ↓ Remove the dust seal using special tool. (Fig. 6.89)

031 240 1	Universal oil seal remover
-----------	----------------------------



Fig. 6.89

- ↓ Remove the 'U' nut flanged (M10 - 4 nos.). (Fig. 6.90)

12 mm spanner

Tightening torque	48 ± 2 Nm
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- ↓ Take out the sprocket rear and bolt rear sprocket (4 nos.).

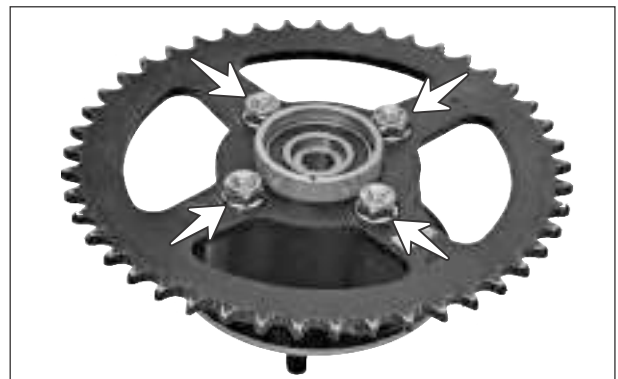


Fig. 6.90

- Heat the drum rear sprocket on a hot plate to approximately 125° C. (Fig. 6.91A)

Hot plate

- Draw out ball bearing, from drum rear sprocket along with the shaft rear sprocket. (Fig. 6.91B)

Drift

Nylon hammer

INSPECTION

Before inspection, clean all the components with kerosene and lubricate the bearings immediately after cleaning.

- Inspect wheel bearings, axle complete rear and alloy wheel rear (refer page no. 6-2 for checking procedure).
- Clean and inspect the drive chain as explained in chapter "Periodic maintenance" page 2-32.

Sprocket rear

- Inspect sprocket rear teeth for wear. If they are worn-out as illustrated (Fig. 6.92), replace the sprocket with a new one.

Absorber rear wheel hub shock

- Inspect the absorber rear wheel hub shock for wear, deformation or damage and replace with new if required. (Fig. 6.93)

Tyre inflation pressure

- Tyre inflation pressure affects the tyre life to a great extent. So it is necessary to maintain the proper tyre pressure. (Fig. 6.94)

Tyre pressure gauge

Tyre pressure

Solo riding	2.00 kg/cm (28 ² PSI)
Dual riding	2.25 kg/cm (32 ² PSI)

Note:

Tyre pressure should be checked when the tyre is cold. Low tyre pressure consumes more fuel.

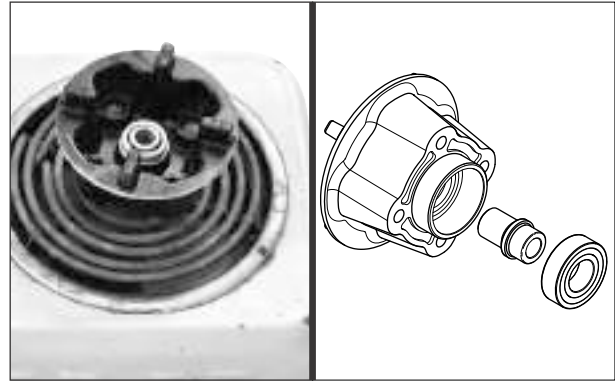


Fig. 6.91A

Fig. 6.91B

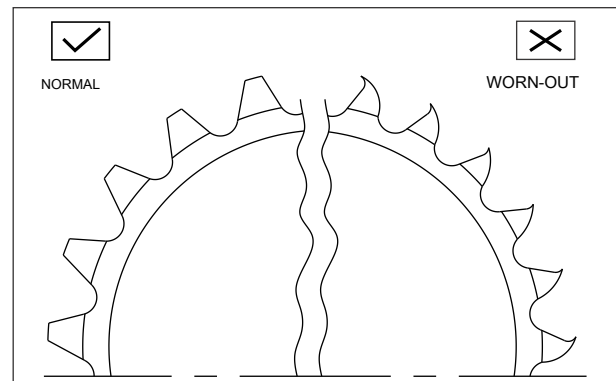


Fig. 6.92

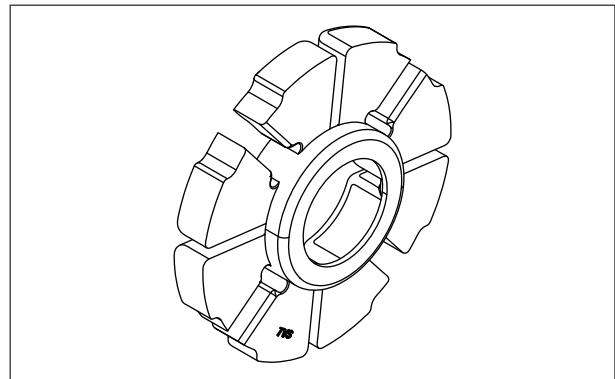


Fig. 6.93



Fig. 6.94

REASSEMBLY

Reassemble and remount the wheel assembly

rear in the reverse order of disassembly. Also carry out the following steps. Refer wheel assembly exploded view (Fig. 6.95) for assembly details.

Before assembling rear wheel assembly,

lubricate the axle rear and bearings.

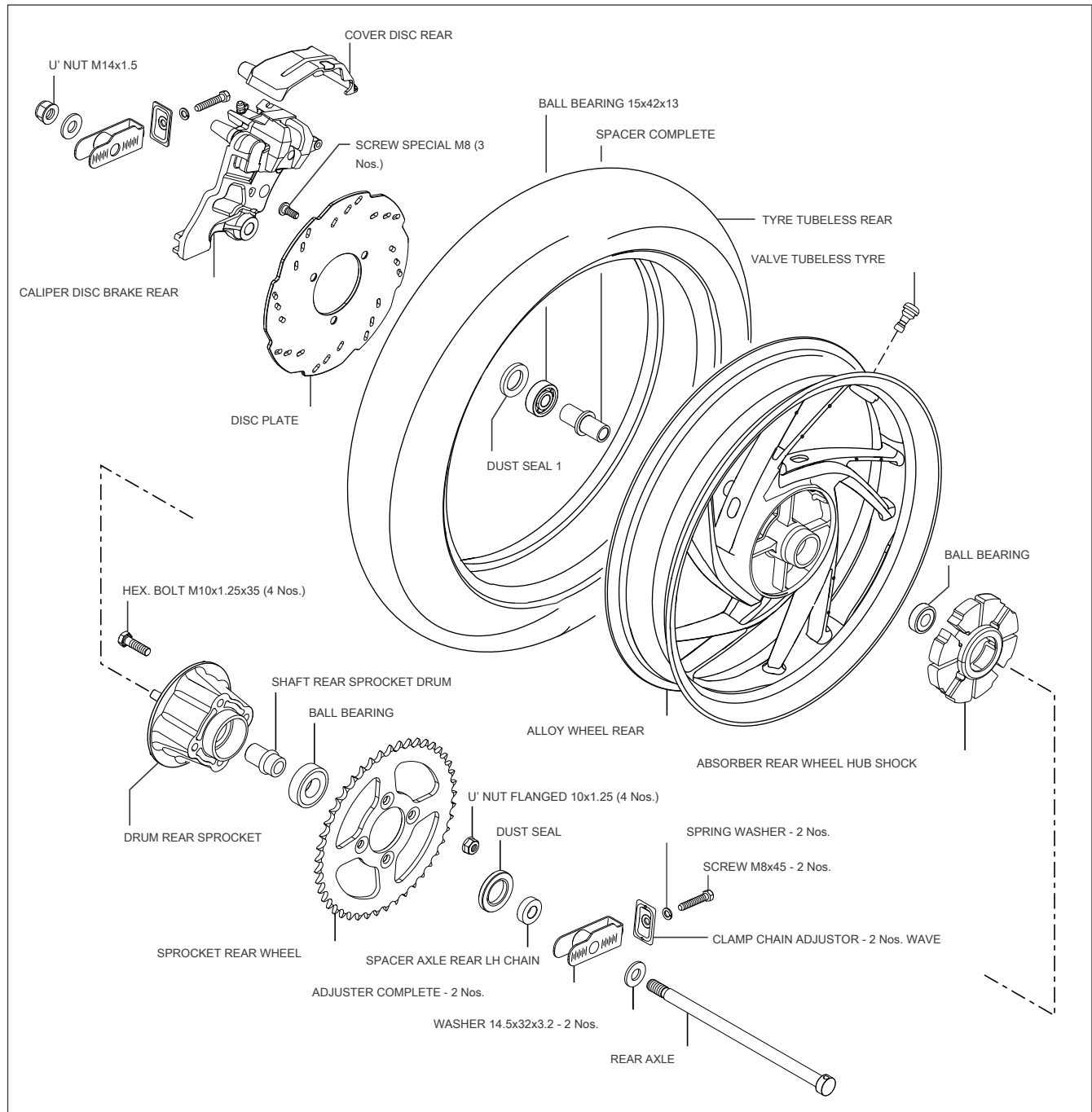


Fig. 6.95

- Make sure that the slot (A) in the bracket complete caliper assembly fits over the stopper (B) on the swing arm assembly. (Fig. 6.96)

Note:

While reassembling the disc plate apply specified thread lock to the disc plate mounting bolts.

After remounting the wheel assembly rear, readjust the chain slackness (refer chapter "Periodic maintenance" page no. 2-32).

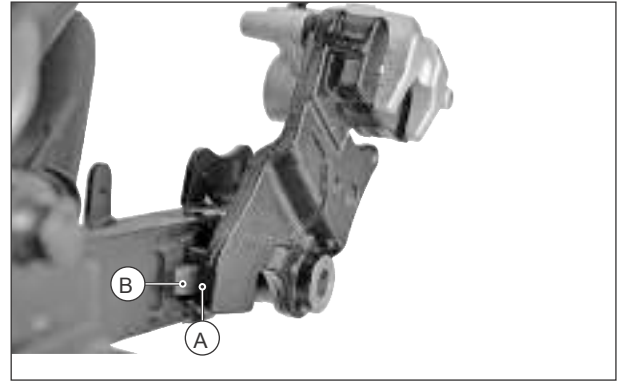


Fig. 6.96

TUBELESS TYRE

PUNCTURE REPAIR

Tubeless tyre provides the benefit of easy repairing the punctured tyre without removing the wheel assembly. Hence repairing can be performed in vehicle stand still condition and repairing procedure is as follows:

- Keep the bike firmly on center stand.
- Identify the punctured location and make a visible mark. (Fig. 6.97A)
- Pull out nail or puncture causing object from the tyre using a combination plier. (Fig. 6.97B)

Combination plier

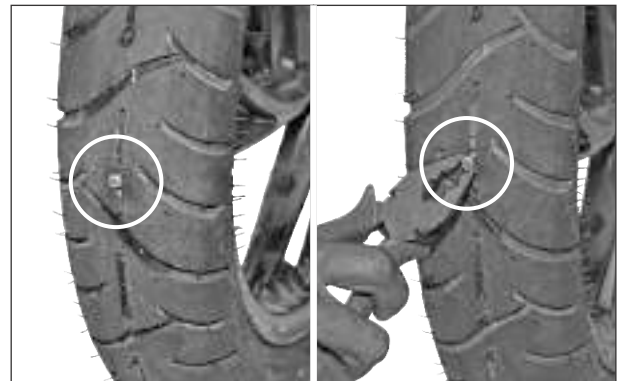


Fig. 6.97A

Fig. 6.97B

- Insert the reaming tool exactly into the punctured point and carefully ream the punctured hole. (Fig. 6.98)

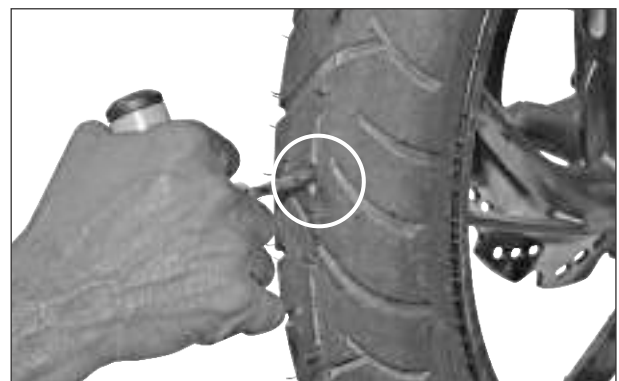


Fig. 6.98

- Take a cold mending strip and insert it between the strip holding jaws of strip inserting tool. (Fig. 6.99)

Note:

After inserting the strip, ensure that strip is held at the middle point of strip length. (Fig. 6.99)

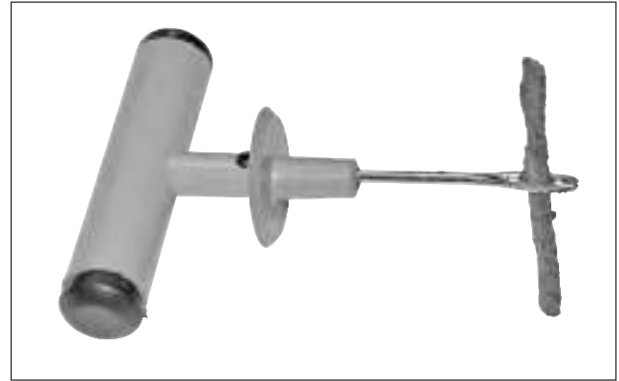


Fig. 6.99

- Insert the strip inserting tool along with strip into the reamed hole till the strip goes inside at least more than half of its folded length. (Fig. 6.100)

- Leaving the strip in that position, gently pull out the strip inserting tool.

Note:

While pulling out the strip inserting tool, ensure that the strip does not come out along with the tool.



Fig. 6.100

- Take out the tool completely and cut remaining strip leaving 5 mm from surface of tyre. (Fig. 6.101)

- Fill air to the specified limit and checkout for any leakage.

Caution:

Ensure, the wheel assembly is checked for proper balancing after every tyre puncture repair or tyre replacement for better vehicle stability (refer chapter "Periodic maintenance" page no. 2-48 for detailed procedure of wheel balancing).



Fig. 6.101

REPLACEMENT OF VALVE TUBELESS TYRE

Valve tubeless tyre in RTR 200 alloy wheel can be replaced by following below given procedure:

- Remove wheel assembly from the vehicle (refer page no. 6-1 & 6-28 for wheel assembly removal procedure)

- Remove the tyre from the alloy wheel.

Caution:

Use of normal tyre levers for removal of tubeless tyre by any puncture repair shop may cause severe damage to the tyre seating area of alloy wheel, which leads to improper sealing and loss of air. Hence it is recommended that removal of tubeless tyre is performed by using a tyre removal machine.

- Keep the alloy wheel on a level surface.
- Applying gentle load on valve tail, cut the valve tubeless tyre at the alloy wheel neck area and take out separated piece . (Fig. 6.102A)

Hand knife

- Push out remaining part of valve from the alloy wheel using a suitable tool. (Fig. 6.102B)
- Locate and seat new valve tubeless tyre to the valve mounting hole from outer periphery of alloy wheel. (Fig. 6.103A)
- Using a suitable mandrel, gently tap the valve head and ensure that valve is seated properly. (Fig.6.103B)
- Reassemble parts in reverse order of disassembly.

Note:

While reassembling the tyre, ensure that the arrow mark (A) on the tyre faces the direction of wheel rotation. (Fig. 6.104)

It is recommended to apply a little amount of soap solution over the alloy wheel at the tyre seating area for ease of tyre assembly.

Caution:

Ensure, the wheel assembly is checked for proper balancing after every tyre puncture repair or tyre replacement for better vehicle stability (refer chapter "Periodic maintenance" page no. 2-48 for detailed procedure of wheel balancing).



Fig. 6.102A



Fig. 6.102B



Fig. 6.103A



Fig. 6.103B



Fig. 6.104

DISC BRAKE SYSTEM REAR**BRAKE PADS**

1 Remove wheel assy rear along with the disc plate (refer page no. 6-28 for wheel assy rear removal procedure).

1 Take out the bracket complete along with the caliper assembly and take out the caliper cover.

1 Remove the plug pin from the caliper housing. (Fig. 6.105)

Flat head screw driver

Tightening torque	$2.5 \pm 5 \text{ Nm}$
-------------------	------------------------

1 Remove the pin hanger. (Fig.6.106)

5 mm spanner

Tightening torque	$17.5 \pm 2.5 \text{ Nm}$
-------------------	---------------------------

1 Take out the pad complete inner and pad complete outer. (Fig. 6.107)

Inspection of brake pads

1 Observe the wear limit line marked on the pad and check the wear condition of brake pads. (Fig. 6.108)
When the wear exceeds the limit line, replace the pad with new ones.



Fig. 6.105



Fig. 6.106



Fig. 6.107

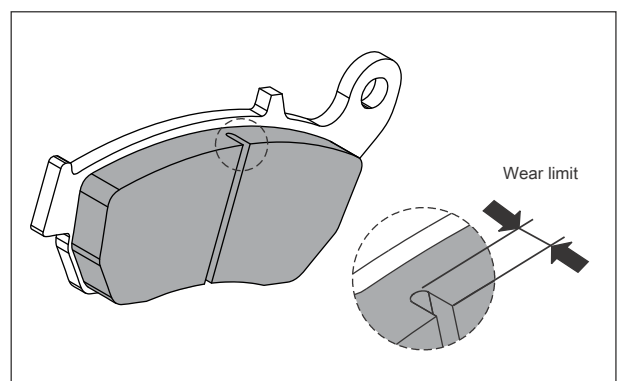


Fig. 6.108

BRAKE FLUID**Inspection of brake fluid level**

Remove cover frame R (refer chapter "Periodic maintenance" page 2-4 for removal procedure). Place the vehicle in center stand. Inspect the brake fluid level in the reservoir.

The brake fluid level in the reservoir should be at the maximum mark provided in the reservoir. Fig. 6.109)

If the level is below lower level mark, replenish the level up to the maximum level.

Remove the cap and take out the diaphragm and fill fresh brake fluid of recommended grade. (Fig. 6.110)

Brake fluid	TVS Grilling DOT3 / DOT4
-------------	--------------------------

Air bleeding

If the rear brake pedal travel becomes more or if any soft or spongy feel is observed in the lever, you must carry out the air bleeding from the brake system.

Brake fluid replacement

Boiling point of brake fluid falls considerably with absorption of moisture which may take place during a long period of use. Therefore, it is recommended to replace old brake fluid with new one periodically.

Replace brake fluid every 21000 km

Refer page 6-6, 6-7 & 6-8 for brake fluid handling, air bleeding from the brake system and brake fluid replacement procedure.

HOSE COMPLETE BRAKE REAR

Inspect the hose complete brake for any crack or leakage. If leakages found, replace the hose as described below:

Flush the brake fluid out by opening the bleeder at caliper assembly with a tube on the bleeder head to a clean container (refer brake bleeding).

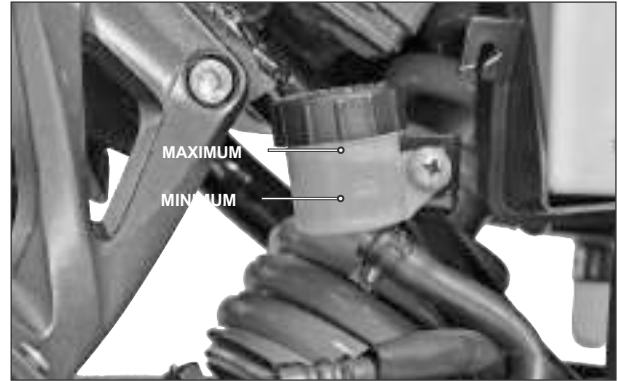


Fig. 6.109

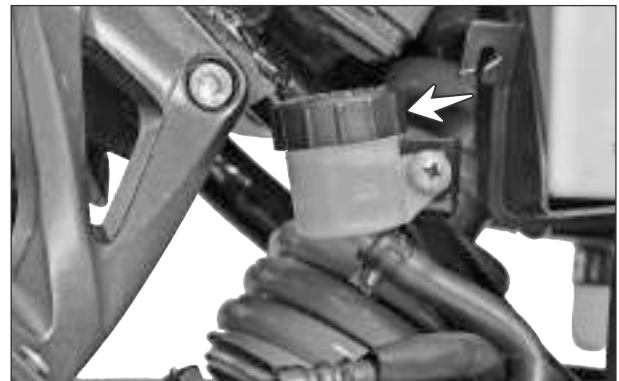


Fig. 6.110

- Remove the banjo bolt (2 nos.) along with gaskets (2 nos. on each side) from both the ends of the hose complete brake. (Fig. 6.111)

12 mm spanner

Tightening torque

33 ± 5 Nm

Note:

Ensure the reassembly of new gaskets while reconnecting the hose without fail to avoid leakage.

- Dislocate the hose complete brake rear from the clamps of swing arm assembly and care fully take out.

Caution:

Immediately and completely wipe off any brake fluid contacting any part of the motorcycle. The fluid reacts chemically with paint, plastics, rubber materials etc., and will damage them severely.

- Reassemble the new brake hose in the reverse order of dismantling.

- Assemble and tighten the banjo bolts at both the ends of the hose along with gaskets.

Caution:

Assemble only new gaskets with the banjo bolts during reassembly. Do not use old ones.

- Bleed the air from the brake circuit after reassembly of brake hose (refer air bleeding procedure on page no. 6-7).

Replace brake hose every 3 year

CALIPER ASSEMBLY - REMOVAL AND DISASSEMBLY

- Bleed out brake fluid from the brake system.
- Remove banjo bolt and take out the gaskets. (Fig. 6.112)

12 mm spanner

Tightening torque

30 ± 2 Nm

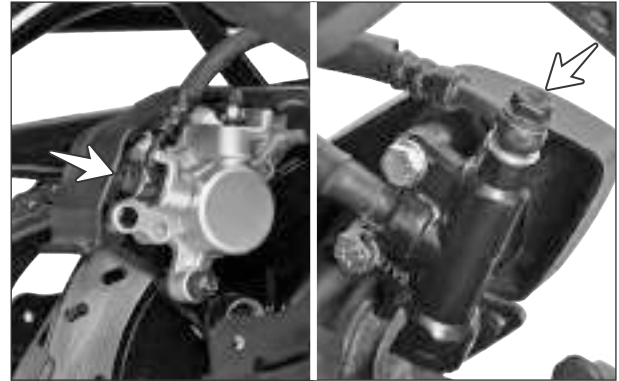


Fig. 6.111

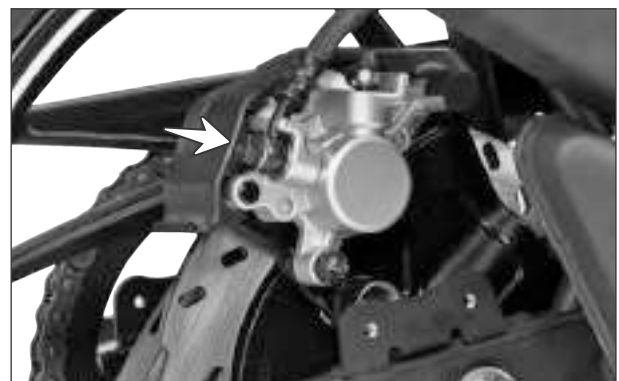


Fig. 6.112

Remove wheel assy rear along with the disc plate (refer page no. 6-28 for wheel assy rear removal).

Take out bracket complete along with the caliper assembly.

Remove plug pin from the caliper housing.
(Fig. 6.113)

Flat head screw driver

Tightening torque	2.5 ± 5 Nm
-------------------	----------------

Remove the pin hanger. (Fig.6.114)

5 mm spanner

Tightening torque	17.5 ± 2.5 Nm
-------------------	-------------------

Take out the pad complete inner and pad complete outer. (Fig. 6.115)

Remove spring pad from the caliper housing.
(Fig. 6.116)

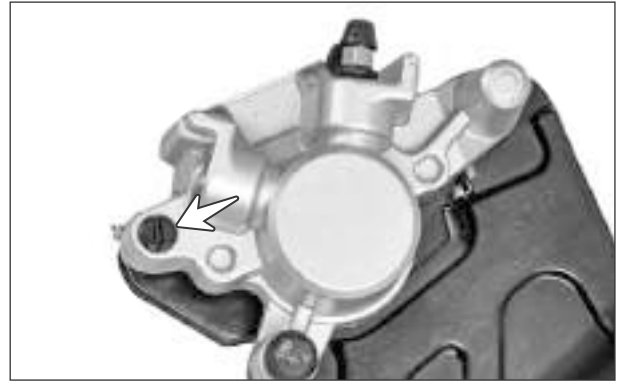


Fig. 6.113

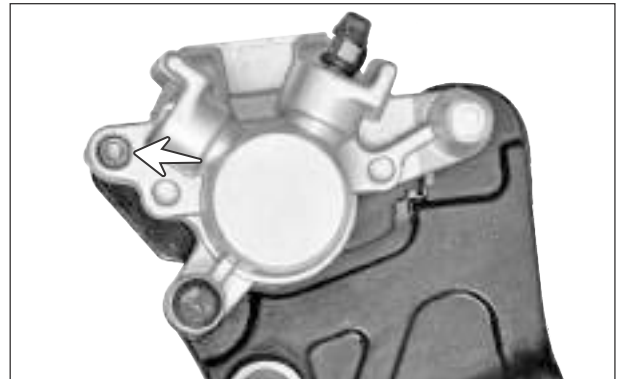


Fig. 6.114



Fig. 6.115

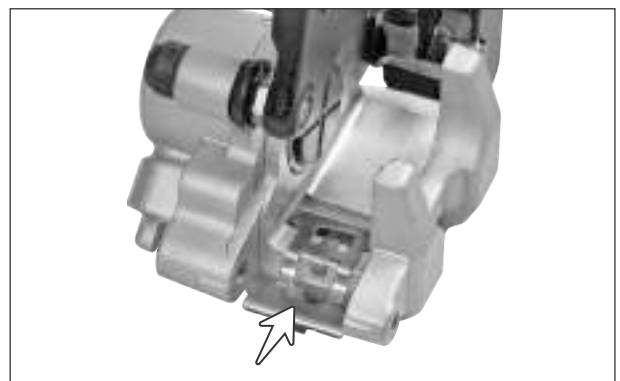


Fig. 6.116

- Remove the bracket complete rear caliper by sliding out after dislocating boot-B and bush boot pin from the pin grooves. (Fig. 6.117)

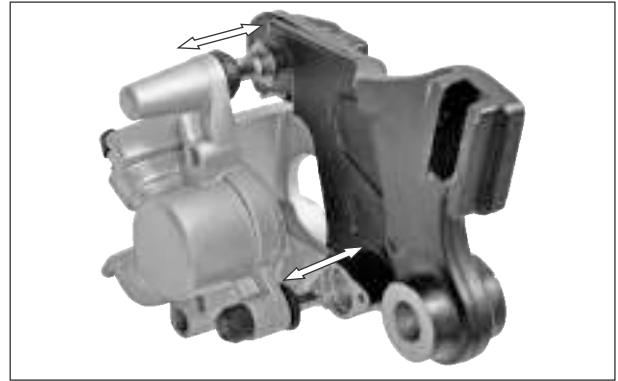


Fig. 6.117

- Carefully pull out the cap piston (A) and boots (B) from the caliper assembly housing. (Fig. 6.118)

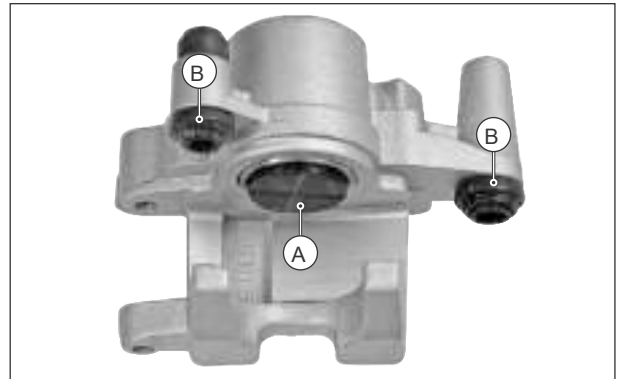


Fig. 6.118

- Insert a spacer between piston caliper and the caliper housing (at pad position) and then apply compressed air through the inlet port of the caliper to slide pistons out. (Fig. 6.119)

Caution:

Be careful while applying compressed air as it will shoot the piston forcefully. Do not use high pressure air to prevent damage to the piston.

Do not use nose plier to pull out the piston as it may cause scratches.



Fig. 6.119

- Remove the dust seals with a bent plastic / brass tool to avoid scratches on the caliper bore. (Fig. 6.120)



Fig. 6.120

- Unplug cap bleeder and remove bleeder screw. (Fig. 6.121)

8 mm spanner

Tightening torque

5.5 ± 1.5 Nm

- Clean the parts thoroughly with fresh brake fluid.

Caution:

Never use kerosene, petrol or other solvents for cleaning the brake system. Otherwise rubber parts will be damaged. Do not wash the pads and also take care that brake fluid is not splashed on pads.

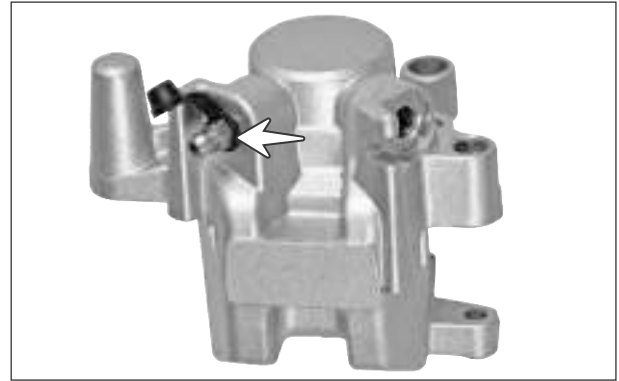


Fig. 6.121

Caliper assembly inspection

Inspect the following parts:

- Pin hangers for any bend.
- Bracket complete front for loose lugs.
- Piston and caliper bore for any scratches.
- Piston and dust seals for any damage.

- After completion of above inspection, replace the defective parts as required.

Caliper assembly - reassembly

- Insert the dust seals in the caliper housing grooves and ensure perfect seating without any twist of the seals (refer exploded view on [page no. 6-43](#) for details).

- For DOT 4 brake fluid and slowly inserting the

bore of caliper body without tapering. Ensure the piston is sliding easily into the bore.

- Assemble the spring pad in the caliper housing.

- Assemble boot-B and bush boot pin in the caliper housing.

- Apply little grease to the pin bolts of bracket complete caliper and assemble the bracket by ensuring proper seating of both the boots in their respective grooves.

- Assemble pad inner and pad outer.

- ▮ Assemble the pin hangers by locating it properly in the holes of the pad inner and outer.
- ▮ Fix the plug pin, bleeder screw and cap bleeder.
- ▮ Remount wheel assembly rear along with spacer RH.
- ▮ Remount caliper assembly rear by locating the slot provided on bracket comp caliper with the stopper provided on swing arm complete. Assemble the axle and tighten 'U' nut of rear axle.
- ▮ Remount brake hose along with gaskets and bleed the system by referring the procedure explained on page no. 6-7.

DISC PLATE - SERVICING

Inspection (with disc mounted on wheels)

- ▮ Inspect the disc plate as explained in front disc plate servicing (refer page 6-12 for disc plate inspection).

Disc plate replacement

- ▮ Replace the disc plate if found to be defective (refer page no. 6-28 for removal procedure).

MASTER CYLINDER REAR (REAR DISC BRAKE) - REMOVAL AND DISASSEMBLY

- ▮ Remove the cover frame RH (refer chapter "Periodic maintenance" page no 2-4 for cover frame R removal procedure).
- ▮ Bleed the brake system completely.
- ▮ Remove the banjo bolt along with gasket (2 nos. on each side) from the master cylinder rear. (Fig. 6.122)

12 mm spanner

Tightening torque

30 ± 2 Nm

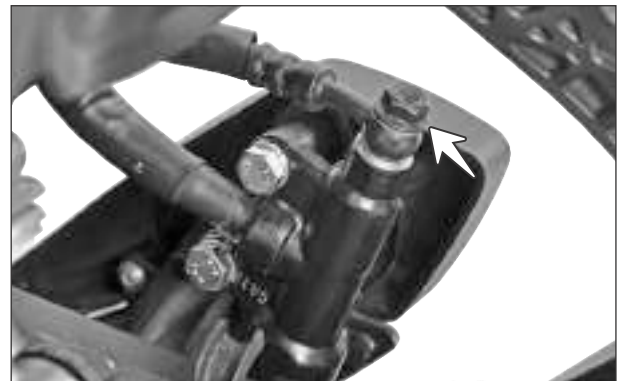


Fig. 6.112

- Remove the split pin and take out cotter pin from the rear master cylinder. (Fig. 6.123)

Nose plier



Fig. 6.123

- Remove clip hose (A) and take out hose oil (B). (Fig. 6.124)

Nose plier

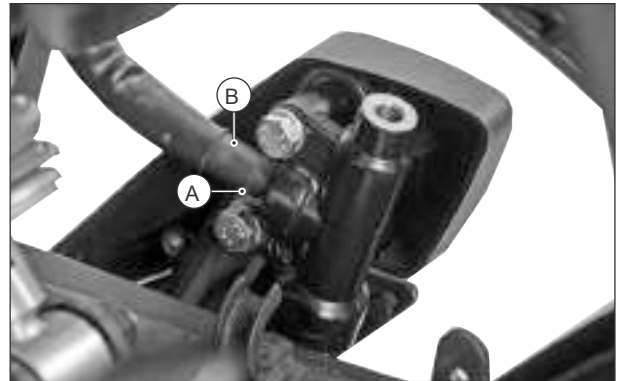


Fig. 6.124

- Remove the hexagonal screws (M6x40 - 2 nos.) along with punched washers. (Fig. 6.125)

13 mm spanner

Tightening torque

30 ± 2 Nm

- Take out master cylinder assembly from the pillion footrest assembly RH.

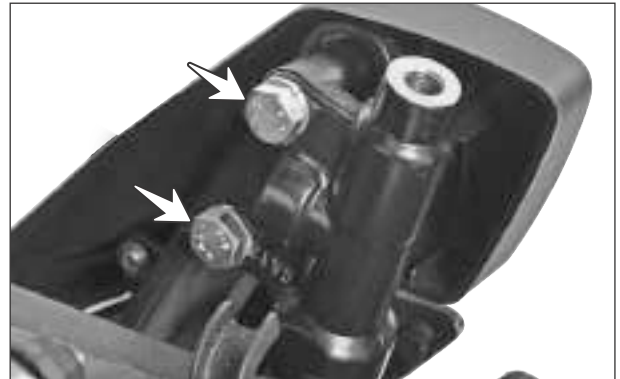


Fig. 6.125

- By firmly holding master cylinder housing, remove the circlip (A) by using circlip plier. (Fig. 6.126)

Circlip plier

- Take out insert (B) from the master cylinder assembly. (Fig. 6.126)

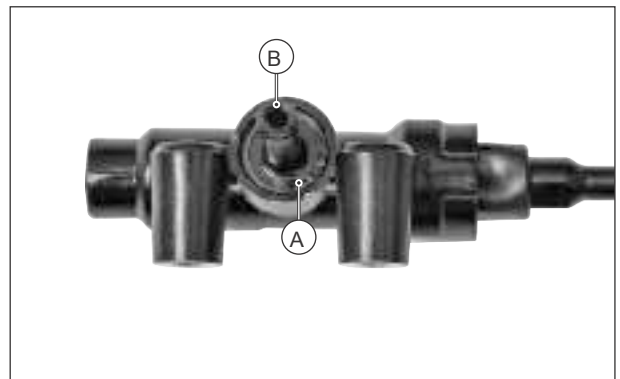


Fig. 6.126

- Take out the 'O' ring from the master cylinder assembly. (Fig. 6.127)

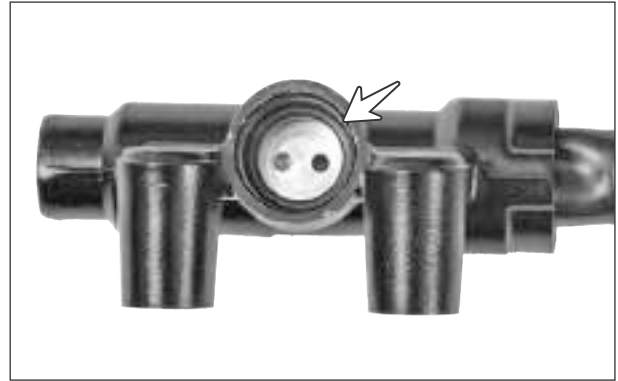


Fig. 6.127

- Carefully lift the boot from the cylinder by using a blunt tool. (Fig. 6.128A)

Note:

While removing the boot care should be taken not to damage it.

- By firmly holding the master cylinder by hand slightly press the push rod and remove circlip from the master cylinder by using circlip plier without damaging the cylinder. (Fig. 6.128B)

Circlip plier



Fig. 6.128A

Fig. 6.128B

- Slowly pull out piston along with P - cup, S - cup and spring. (Fig. 6.129)
- Clean the system thoroughly using fresh brake fluid.

Caution:

Never use kerosene, petrol or other solvents for cleaning the brake system. Otherwise rubber parts get damaged.

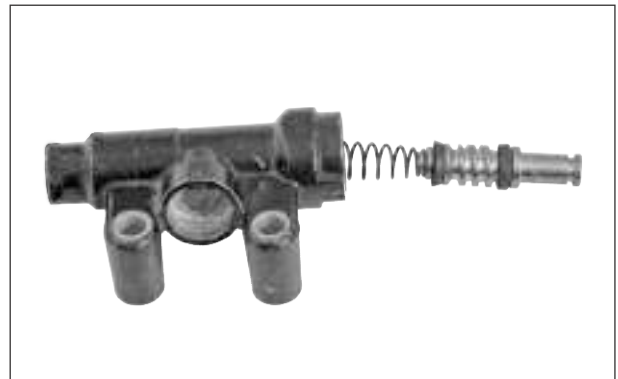


Fig. 6.129

INSPECTION

Inspect the following parts:

- Master cylinder for any scratches or other damage.
- Piston and cup surface for scratches or other damage.
- Piston boot and other components for wear and damage.
- Master cylinder recuperation and feed port for any blockage, if so clear the blockage using compressed air.

- After completion of above inspection, replace defective parts as required.

REASSEMBLY

Reassemble master cylinder in the reverse order of dismantling. Refer exploded view for assembly details. (Fig. 6.130)

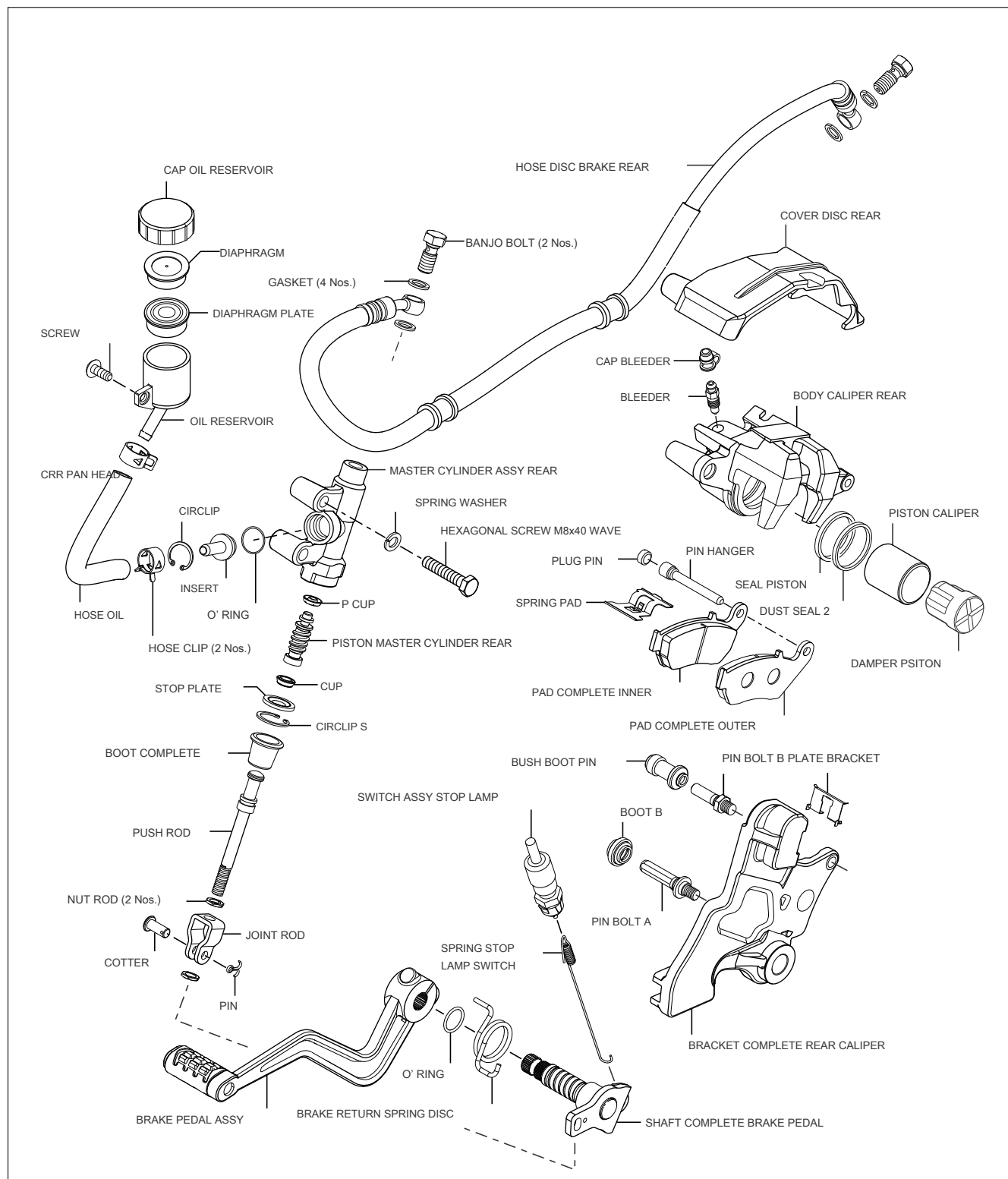


Fig. 6.130

Caution:

Apply brake fluid to the cylinder bore and all internal parts before inserting the piston into the bore.

- ! Fix the hose complete brake rear to the master cylinder outlet port along with the banjo bolt and gaskets.
- ! Fill the reservoir with DOT3 or DOT4 brake fluid upto the level 'MAXIMUM' marked on the reservoir.
- ! Fix the reservoir cap along with plate diaphragm and diaphragm.
- ! Bleed the system thoroughly by referring the bleeding procedure on page no. 6-7.
- ! Once again inspect and if required top-up the brake fluid and tighten reservoir mounting screw.

Replace following parts at every 21,000 km.

- Piston along with P-cup, S-cup, spring and boot assembly.
- Diaphragm plate and diaphragm.
- Caliper seal piston and dust seal-2.

REAR SHOCK ABSORBER - REMOVAL

- ! Remove the rear wheel assembly as explained in page no. 6-28.
- ! Dislocate the starter relay from the air filter assembly. (Fig. 6.131)
- ! Loosen the clamp tube outlet screw and dislocate the tube outlet from the carburettor assembly. (Fig. 6.132)

Philips head screw driver

- ! Remove hose clip (A) from hose air inlet and pull out the hose from air cleaner assembly. (Fig. 6.132)
- ! Remove hose clip (B) from hose engine breather and pull out the hose from air filter cleaner assembly. (Fig. 6.132)

Nose plier

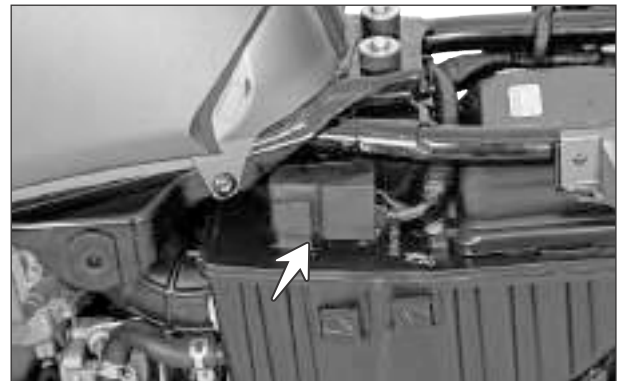


Fig. 6.131



Fig. 6.132

- Remove the CRR pan head screw (M6x16 - 2 nos.) along with the punched washers and take out the air cleaner assembly. (Fig. 6.133)

Philips head screw driver

Tightening torque

5 ± 1 Nm



Fig. 6.133

- Remove the hexagonal bolts (M6x20 - 4 nos.) along with the washers from the chain guard assembly and gently dislocate the chain guard. (Fig. 6.134 & 6.135)

10 mm spanner

Tightening torque

8 ± 2 Nm

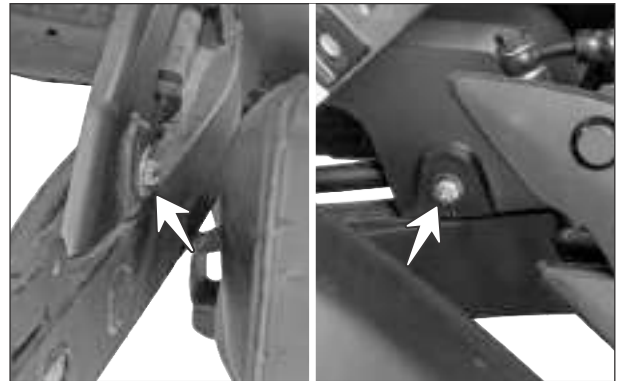


Fig. 6.134



Fig. 6.135

- Remove the hexagonal bolt (M12x55) from the shock absorber mounting top along with the punched washer. (Fig. 6.136)

17 mm spanner

Tightening torque

40 ± 4 Nm



Fig. 6.136

- Remove the hexagonal bolt (M12x55) along with punched washer from the bottom mounting of shockabsorber rear shock absorber. (Fig. 6.137)

- Dislocate and take out the rear shock absorber.

17mm spanner

Tightening torque	40 ± 4 Nm
-------------------	-----------

- Reassemble the rear shock absorber and other parts in the reverse order of removal.

SWING ARM COMPLETE

REMOVAL

- Remove the rear wheel assembly along with disc plate and dislocate the caliper assembly rear. Refer page no. 6-28.

- Remove the CRR pan head screw from the reservoir mounting and take out the reservoir. (Fig. 6.138)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	----------

- Remove CRR pan head screw from the rider foot rest disc assembly RH and dislocate the rider foot rest disc assembly RH. (Fig. 6.139)

Phillips head screw driver

Tightening torque	3 ± 1 Nm
-------------------	----------

- Loosen the shock absorber rear top mounting hexagonal bolt (M12x55). (Fig. 6.140)

17 mm spanner

Tightening torque	40 ± 4 Nm
-------------------	-----------

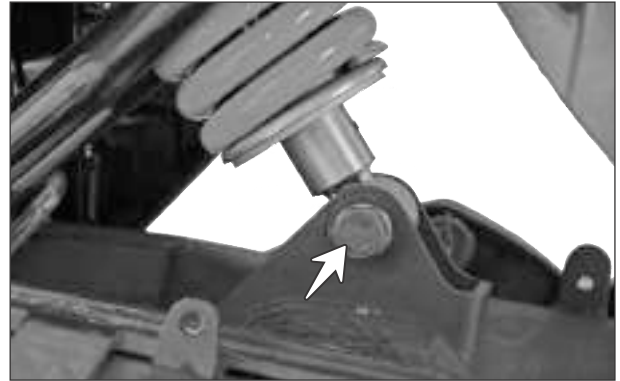


Fig. 6.137

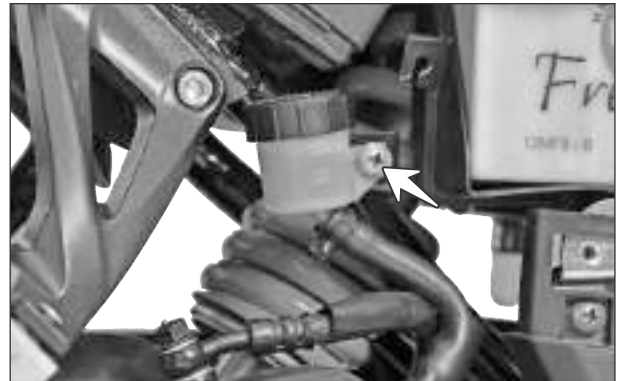


Fig. 6.138



Fig. 6.139



Fig. 6.140

- Remove hexagonal flange bolt (M12x55 - 1 no.) of shock absorber rear lower mounting from swing arm complete. (Fig. 6.141)

17 mm spanner

Tightening torque	40 ± 4 Nm
-------------------	---------------

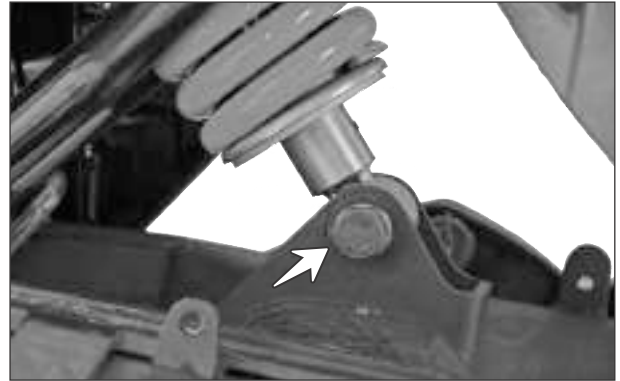


Fig. 6.141

- Remove 'U' nut (M12) rear swing arm pivot mounting. (Fig. 6.142)

17 mm spanner

Tightening torque	40 ± 4 Nm
-------------------	---------------

- Take out nut and the punched washer.



Fig. 6.142

- Draw out the shaft complete swing arm along with punched washer by gently tapping at the other side. (Fig. 6.143)

Nylon hammer

- Dislocate the brake hose from the swing arm complete.

- Take out swing arm complete from the frame assembly.



Fig. 6.143

- Remove CRR pan head screw (M6x16 - 1 no.) (A) along with punched washer and take out buffer chain (B) from the swing arm assembly. (Fig. 6.144)

- Draw out both the bush swinging arm (Fig. 6.144) and check the needle bearing for any damage or abnormality. If found any replace the needle bearing as set. Follow the below procedure described below:

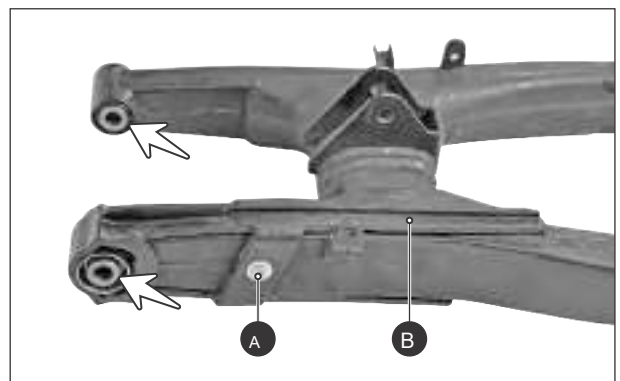


Fig. 6.144

- Remove the dust seal (2 nos.) from swing arm assembly. (Fig. 6.145)

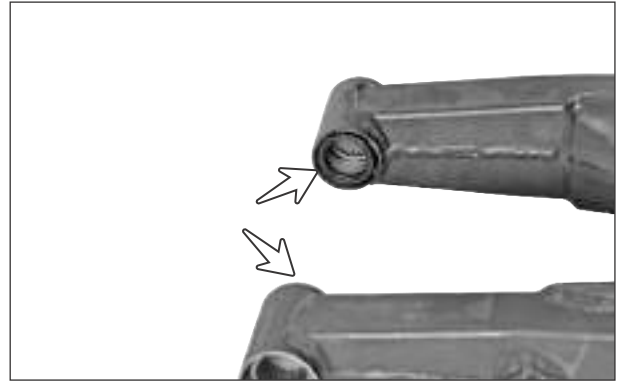


Fig. 6.145

- Using the special tool remove the needle bearing (2 nos.) from the swing arm assembly. (Fig. 6.146)

N931 015 0

Tool swing arm service

Note:

Swing arm needle bearing should be removed only in case of replacement.

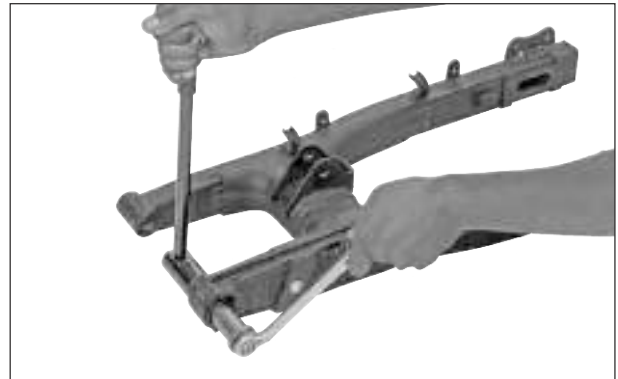


Fig. 6.146

- Reassemble the needle bearing using the special tool. (Fig. 6.147)

N931 015 0

Tool swing arm service



Fig. 6.147

INSPECTION**Shaft complete swing arm**

- Using the special tools, check shaft complete swing arm for run-out and replace it with a new one if run-out exceeds the limit. (Fig. 6.148)

Dial gauge (0.01mm)

Magnetic stand

V - block

Service limit

0.06 mm

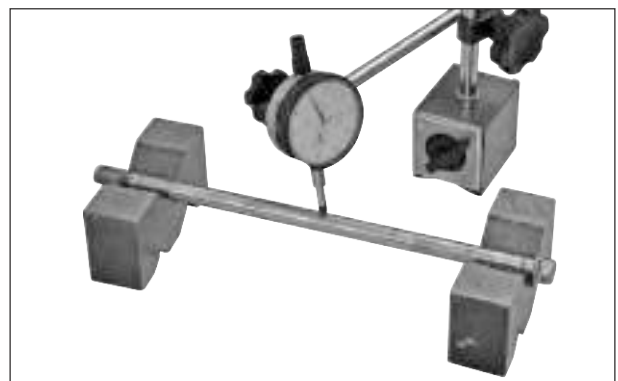


Fig. 6.148

REASSEMBLY

- Reassemble and remount swing arm complete in the reverse order of removal. Refer exploded view for assembly details. (Fig. 6.149)

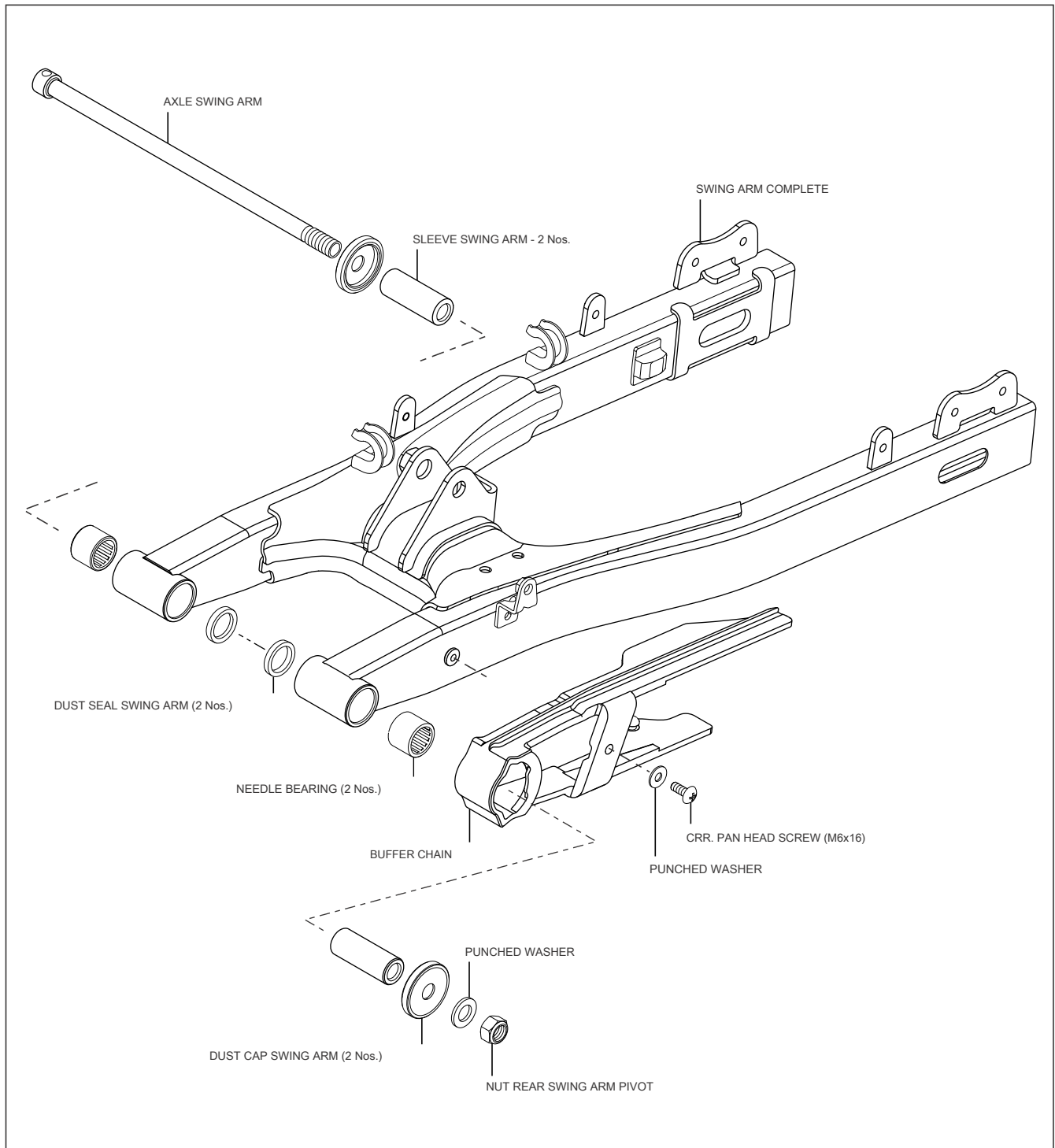


Fig. 6.149

DESCRIPTION	PAGE NO.	Chapter 7
SERVICE DATA	1	
VALVE AND VALVE GUIDE	1	
CAM SHAFT COMPLETE & HEAD COMPLETE CYLINDER	1	
CYLINDER, PISTON AND RINGS PISTON	2	
CRANKSHAFT COMPLETE AND BALANCER SHAFT	2	
CLUTCH	3	
TRANSMISSION SPECIFICATION	3	
TRANSMISSION	3	
SUSPENSION	3	
BEARING SPECIFICATION	4	
CARBURETTOR ASSEMBLY	5	
ELECTRICAL	6	
BRAKE AND WHEEL ASSEMBLY	7	
TIGHTENING TORQUE - ENGINE	8	
TIGHTENING TORQUE - CHASSIS	9	
SPECIAL MATERIAL REQUIRED FOR MAINTENANCE	10	
FUEL	10	
TROUBLE SHOOTING	11	
STARTING TROUBLE	11	
POOR PICK-UP	12	
GEAR SHIFTING RELATED	13	
SMOKY EXHAUST (WHITE SMOKE)	13	
SMOKY EXHAUST (BLACK SMOKE)	14	
ENGINE OVER HEATING	14	
HIGH FUEL CONSUMPTION	14	
EXCESSIVE CO	15	
JERKY MOVEMENT / ABNORMALITY OF ENGINE RPM	15	
HEAD LAMP NOT WORKING	15	
HORN NOT WORKING	15	

SERVICE DATA

VALVE AND VALVE GUIDE

Unit : mm

S.No.	DESCRIPTION		STANDARD	SERVICE LIMIT
1	Valve diameter	Inlet Exhaust	24.900 19.300	–
2	Valve clearance	Inlet Exhaust	0.06 0.08	–
3	Valve stem (OD)	Inlet Exhaust	4.470 ~ 4.455 4.485 ~ 4.470	–
4	Guide valve (ID)	Inlet Exhaust	4.500 ~ 4.512	–
5	Guide valve to valve stem clearance	Inlet Exhaust	0.045 ~ 0.057 0.027 ~ 0.042	0.050 0.080
6	Valve stem runout	Inlet Exhaust	–	0.050
7	Valve head thickness	Inlet Exhaust	–	0.500 (min)
8	Valve head radial runout	Inlet Exhaust	0.030	0.075
9	Spring valve free length	Inner Outer	39.75	< 38.75

CAM SHAFT COMPLETE & HEAD COMPLETE CYLINDER (CYLINDER HEAD)

Unit : mm

S.No.	DESCRIPTION		STANDARD	SERVICE LIMIT
1	Cam lobe height	Inlet Exhaust	33.402 ~ 33.422 33.251 ~ 33.271	33.35 33.20
2	Cam shaft complete runout	–	–	0.080
3	Shaft valve rocker arm (OD)	Inlet Exhaust	8.000 ~ 7.991	–
4	Cam chain elongation (20 pitch)	–	–	128.20
5	Head complete cylinder distortion	–	–	0.050

CYLINDER, PISTON AND RINGS PISTON

Unit : mm

S.No.	DESCRIPTION		STANDARD	SERVICE LIMIT
1	Compression pressure	–	90 ~ 120 psi @ 640 RPM (6.3 ~ 8.4 kg/cm ²)	–
2	Cylinder to piston clearance	–	0.040 ~ 0.045	0.120
3	Cylinder bore diameter	–	66.000 ~ 66.015	–
4	Piston dia. (measure 10 mm from skirt end)	–	65.960 ~ 65.970	–
5	Cylinder complete distortion	–	–	0.050
6	Ring piston free end gap	Top 2nd	7.200 5.800	5.700 4.400
7	Ring piston closed end gap	Top 2nd	0.150 ~ 0.300 0.350 ~ 0.500	0.700 0.700
8	Ring to groove clearance	Top 2nd	0.025 ~ 0.065 0.015 ~ 0.055	0.120 0.100
9	Ring piston groove width	Top 2nd Oil Ring	0.8005 ~ 0.8025 0.8005 ~ 0.8025 1.5050 ~ 1.5200	–
10	Ring piston thickness	Top & 2nd	0.775 ~ 0.790	–
11	Piston pin hole (ID)	–	15.002 ~ 15.008	15.030
12	Pin piston (OD)	–	14.996 ~ 15.000	14.992

CRANKSHAFT COMPLETE AND BALANCER SHAFT

Unit : mm

S.No.	DESCRIPTION	STANDARD	SERVICE LIMIT
1	Connecting rod small end (ID)	15.003 ~ 15.009	15.040
2	Connecting rod deflection	–	3.0
3	Connecting rod big end side clearance	0.150 ~ 0.400	0.650
4	Connecting rod big end width	16.950 ~ 17.000	–
5	Crank web to web width	53 ± 0.2	–
6	Crankshaft complete runout	0.040	0.100
7	Balancer shaft runout	–	0.100

CLUTCH

Unit : mm

S.No.	DESCRIPTION	STANDARD	SERVICE LIMIT
1	Cable clutch free play at lever end (in engine cold condition)	8 ~ 15	–
2	Plate clutch drive thickness	2.920 ~ 3.080	2.600
3	Plate clutch drive claw thickness	15.750 ~ 15.850	15.300
4	Plate clutch driven distortion	0.05	0.100
5	Spring clutch free length	25.9	28.8

TRANSMISSION SPECIFICATION

S.No.	DESCRIPTION	SPECIFICATION
1	Primary reduction ratio	2.818 (62/22)
2	Final reduction ratio	3.461 (45/13)
3	Gear ratio	First gear 2.917 (35/12) Second gear 1.857 (26/14) Third gear 1.333 (24/18) Fourth gear 1.050 (21/20) Fifth gear 0.880 (22/25)

TRANSMISSION

Unit : mm

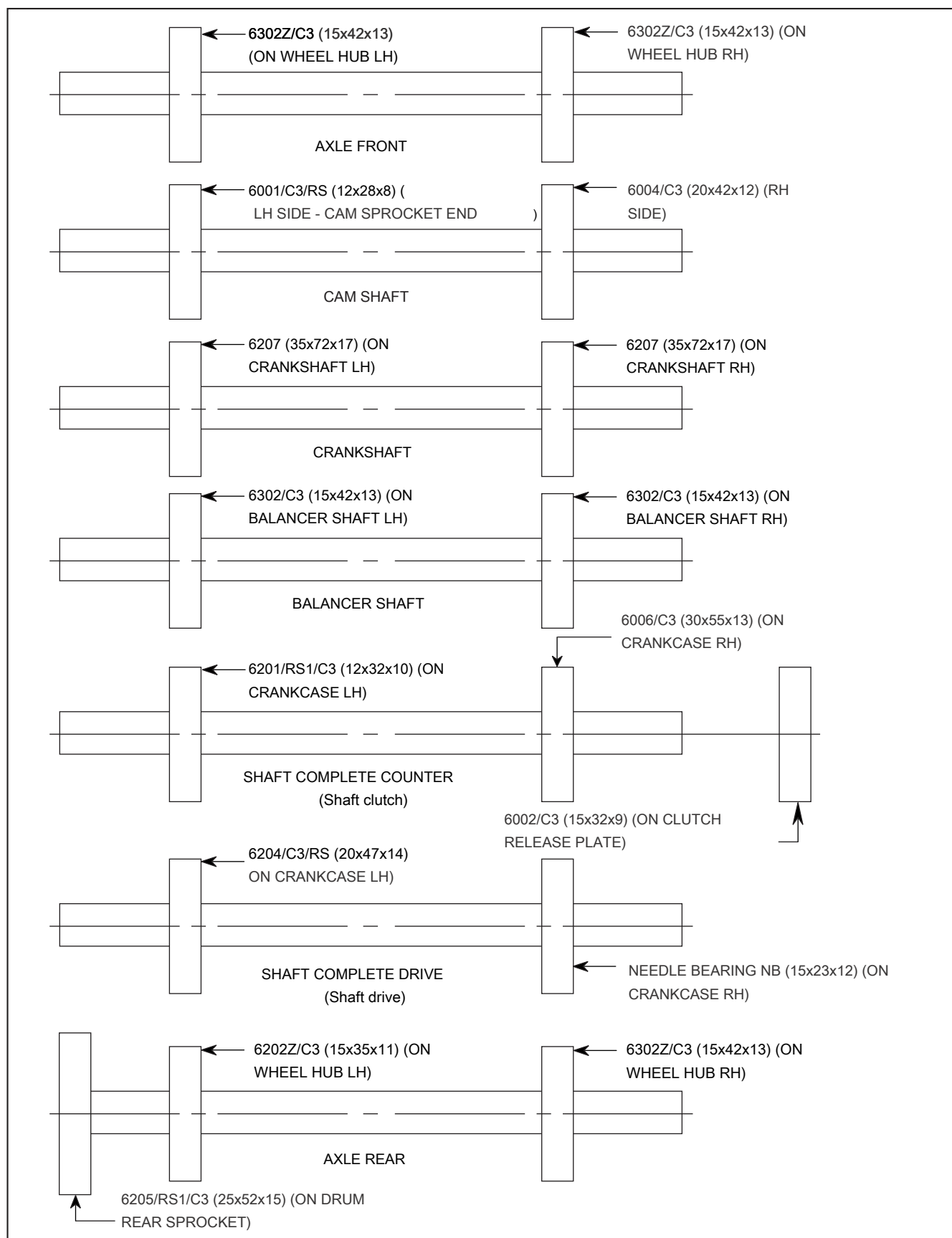
S.No.	DESCRIPTION		STANDARD	SERVICE LIMIT
1	Shift fork to groove clearance	Fork low speed Fork high speed	–	0.300
2	Drive chain - 20 pitch length		259.4	256
3	Drive chain slack		20 ~ 25	–

SUSPENSION

Unit : mm

S.No.	DESCRIPTION	STANDARD	SERVICE LIMIT
1	Front fork stroke length	130	–
2	Front fork spring length	438	428
3	Front fork oil grade	KYB G10 oil	
4	Front fork oil capacity (each leg)	325 ± 2 cc	

BEARING SPECIFICATION



CARBURETTOR ASSEMBLY

S.No.	DESCRIPTION	SPECIFICATION
1	Carburettor type	KEIHIN CV 30VE
2	Carburettor identification number	
3	Main Jet	112
4	Needle jet	NA
5	Jet needle	NUQA
6	E - Ring position	NA
7	Pilot Jet	38
8	Piston valve	NA
9	Air screw turns	1~ 4 turns
10	Idling rpm	1500 ± 100
11	Idling CO % (with SAI and CAT)	1.0 ~ 3.0 % by volume
12	Cable assembly throttle free play	1 ~ 2 mm

ELECTRICAL

S.No.	DESCRIPTION		SPECIFICATION
1	Ignition timing		5° ± 2° BTDC @ 1400 rpm & 37° ± 5° BTDC @ 5500 ± 200 rpm
2	Spark plug type		BOSCH UR4KE
3	Spark plug gap		0.7 mm
4	Pulsar coil resistance		360 ~ 440 ohms
5	Ignition coil resistance	Primary winding Secondary winding	4.05 ~ 4.95 ohms 10.8 ~ 12.32 k ohms
6	Stator coil resistance		0.2 ~ 1.2 ohms
7	Thermal sensor		3 ~ 14 k ohms
8	Gear Position sensor	Neutral First gear Second gear Third gear Fourth gear Fifth gear	0.75 kilo ohms 0.3 kilo ohms 1.5 kilo ohms 2.7 kilo ohms 5.6 kilo ohms 15 kilo ohms
9	Charging performance		14.5 ± 0.3V @ 2500 rpm and above
10	Battery (Type / Amp.)		12V, 9 Ah
11	Battery open circuit voltage	Full charge Needs charging	12.9 Volts 12 Volts
12	Battery electrolyte specific gravity	Full charge Needs charging	1.28 1.25
13	Fuel sender unit resistance	Full Empty	4 ~ 6 ohms 108 ~ 112 ohms
14	Generator		12V, 200 W
15	Head lamp - high / low beam		12V, H4 60/55W H4
16	Position lamps		LED lamp (2W), 2 nos.
17	Tail lamp / brake lamp		LED indicator (1W max. / 2.5W max.)
18	Turn signal lamp		12V, 10W x 4 nos
19	Instrument panel		LCD / LED indicators
20	Horn		12V, DC x 2
21	Fuse		12V 15A and 10A each one (blade type)

BRAKE AND WHEEL ASSEMBLY

Unit : mm

S.No.	DESCRIPTION		STANDARD	SERVICE LIMIT
1	Disc plate face out		0.05	0.10
2	Disc plate thickness		4.5	4.0
3	Disc pad thickness		6.2	—
4	Alloy wheel runout (front and rear)	Axial Radial	0.6 0.6	— —
5	Axle runout	Front Rear	0.25 / 100 mm	—
6	Tyre size	Front Rear	90/90 x 17" 130/70 x 17"	— —
7	Tyre tread depth	Front Rear	— —	1.5 1.5
8	Tyre pressure - Front	Solo Dual	1.75 kg/cm ² (25 psi)	—
9	Tyre pressure - Rear	Solo Dual	2.00 kg/cm ² (25 psi) 2.25 kg/cm ² (32 psi)	— —
10	Swing arm axle runout		0.6	—
11	Front fork oil level (height)		114 mm	—

Note:

Any part in use is subject to wear and tear. The maximum amount of acceptable wear is called "Service Limit". Any part which is within the service limit is expected to provide a satisfactory period of service life.

TIGHTENING TORQUE

ENGINE

S.No.	DESCRIPTION	QUANTITY	TORQUE IN Nm
1	Bolt, cover cylinder head mounting	4	10 ± 2
2	Bolt, cylinder head mounting	2	24.5 ± 2.5
3	Bolt, cam chain tensioner	4	12 ± 2
4	Nut, cylinder head mounting (at side)	2	7 ± 1
5	Bolt, camshaft sprocket mounting	1	18 ± 2
6	CRR csk head screw, camshaft holder	1	4 ± 1
7	CRR csk head screw, pipe intake	2	10 ± 2
8	Bolt, cylinder head	4	7 ± 1
9	Nut, cylinder mounting (at side)	2	7 ± 1
10	Hexagonal flange bolt, cover clutch mounting	11	10 ± 2
11	Hexagonal socket head cap screw, Cover clutch	1	10 ± 2
12	Hexagonal bolt, plate clutch release	4	10 ± 2
13	Nut, clutch shaft mounting	1	60 ± 10
14	Bolt, oil pump mounting	3	8 ± 2
15	Hexagonal bolt, gear shift cam stopper	1	6 ± 1
16	CRR csk head screw, index star	1	8 ± 2
17	Nut, gear primary drive mounting	1	60 ± 5
18	Nut, balancer shaft	1	30 ± 5
19	Hexagonal flange nut, magneto rotor mounting	1	80 ± 5
20	Hexagonal flange bolt, crankcase mounting	15	10 ± 2
21	Hexagonal flange bolt, stator coil mounting	3	10 ± 2
22	Hexagonal screw, sprocket engine mounting	2	8 ± 1
23	Hexagonal flange bolt, cover magneto mounting	9	10 ± 2
24	Plug comp oil drain	1	22.5 ± 2.5
25	Bolt, lever assembly gear shift	1	10 ± 2
26	Hexagonal socket head cap screw, muffler complete front mounting	2	18.1 ± 1.3
27	U nut, engine mounting	4	27 ± 3
28	Spark plug	1	12.5 ± 2.5

TIGHTENING TORQUE

CHASSIS

S.No.	DESCRIPTION	QUANTITY	TORQUE IN Nm
1	U nut, axle front	1	76 ± 18
2	Special screw, Disc plate (Front wheel)	6	31 ± 3
3	Hexagonal socket head cap screw, front fork upper mounting (upper bracket)	2	19 ± 2
4	Bolt, front fork lower mounting (under bracket complete)	2	36 ± 4
5	Lock nut, steering	1	80 ± 20
6	Hexagonal socket head cap screw, handle bar assembly	2	16 ± 2
7	Hexagonal socket head cap screw, handle bar adjuster	2	10 ± 2
8	Hexagonal socket head cap screw, pillion handle mounting	4	18 ± 2
9	Nut, swing arm assembly mounting	1	40 ± 4
10	Bolt, shockabsorber mounting	2	40 ± 4
11	Nut, axle complete rear	1	78 ± 18
12	Bolt, saree guard mounting (at frame)	4	27 ± 3
13	Bolt, chain case complete mounting	4	8 ± 2
14	Nut, side stand mounting	1	37 ± 3
15	Bolt, Center stand mounting	2	37 ± 3
16	Bolt, front fender mounting	4	18 ± 3
17	CRR screw, front fender mounting	2	3 ± 1
18	Bolt, Master cylinder mounting (front)	2	10 ± 2
19	CRR screw, Reservoir rear	1	3 ± 1
20	Bolt, Master cylinder mounting (rear)	2	30 ± 2
21	Banjo bolt, Master cylinder and caliper mounting (front & rear)	4	30 ± 2
22	Nut, muffler assembly mounting (at rear)	1	19.6 ± 2
23	Hexagonal socket head cap screw, Muffler mounting (at front)	2	18.1 ± 1.3
24	Hexagonal socket head cap screw, Muffler mounting (at frame)	1	18.1 ± 1.3
25	Bolt, bracket crash guard	4	27 ± 3

SPECIAL MATERIAL REQUIRED FOR MAINTENANCE

The following recommended materials are required for maintenance work on the TVS Apache RTR 200 4V and should be kept in hand for ready use.

S.No.	APPLICATION	MATERIAL
LUBRICANTS		
1	Front fork oil seal lip	Kluber Centoplex 2 or equivalent
2	Swingarm assembly pivot, throttle grip, speedo cable, brake cams and control levers	BP MP Grease No.3, Servo Gem (IOC) No.3 and Bechem premium grade 3
3	Steering races, steering cup and steering cone	Bechem premium grade 3
4	Centre stand / side stand pivot and kick starter pedal pivot 5	TVS TRU4 FULLY SYNTHETIC oil
	Engine cum transmission oil	TVS TRU4 FULLY SYNTHETIC oil (SAE10W30 SL-JASO MA2)
6	Front fork oil	KYB G10 oil
7	Drive chain lubricant	TVS TRU SPRAY
ADHESIVES		
1	Liquid gasket	Threebond TB1104
2	Packing seal cover cylinder head	Loctite 5205
3	Fastening nuts adhesion	Anabond thread locker
4	Fastening rubber, plastics and ceramic	Anabond (Eng) Cyanoacrylate adhesive 202 and 201 Dendrite adhesive
5	Bearing fitment adhesive	Specfit
CLEANING SOLVENTS		
1	Crankcase, shafts, gears and filter air cleaner	Inflammable solvent like kerosene
2	Piston and rings	Carbon tetra chloride and Acetone carbon chloride
3	Carburettor	Carbon tetra chloride
BRAKE FLUID		
1	TVS Girling	DOT 3 / DOT 4

USE OF GENUINE TVS MOTOR COMPANY PARTS

When replacing any part of the machine, always use TVS-M genuine parts only. Non genuine parts will reduce the performance of TVS Apache RTR 200 4V and cause failures.

FUEL

ITEM	SPECIFICATION
Fuel type	Unleaded Petrol
Fuel tank capacity including reserve	12 litres
Reserve	2.5 litres

TROUBLE SHOOTING

A. STARTING TROUBLE

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
A1	Self starter not working	Battery voltage is less	Charge the battery / replace
		Loose connection	Tighten
		Defective starter motor	Replace
		Defective starter relay	Replace
		Defective starter switch	Replace
		Defective gear position sensor	Replace
		Defective TCI	Replace
		Defective speedometer	Replace
		No continuity of wiring in harness	Replace
A2	No fuel flow to carburettor No fuel in fuel tank		Fill petrol
		Clogged fuel cock filter / sediment filter	Clean
		Blockage of vent hole in cap fuel tank	Clear vent hole
A3	No spark / weak spark / intermittent spark	Battery dead	Replace
		Incorrect spark plug gap	Replace
		Dirty spark plug	Clean
		Bridging of electrodes	Replace
		Loose suppressor cap	Correct / fix properly
		Water entry between suppressor cap and spark plug	Clean
		Oily sparkplug	Check oil leakages through rings, valves into combustion chamber and correct
		Defective engine kill switch	Correct / Replace
		Defective ignition coil	Replace
		Defective ignition switch	Replace
		Defective TCI	Replace
		Defective pulsar coil	Replace
A4	Incorrect valve timing	Valve timing marks not matching	Correct valve timing
		Improper valve tappet clearance	Adjust tappets
A5	Induction leakage	Loose carburettor mounting	Tighten
		Damaged intake pipe and gasket	Replace

TROUBLE SHOOTING

A. STARTING TROUBLE (Contd.)

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
A6	Improper carburation	Sticky / worn out float needle	Clean / replace
		Loose main jet / pilot jet	Tighten
		Blocked passages	Clean the passages
		Incorrect MCS adjustment	Tune up correctly
		Excessive CO	Tune up correctly
		Incorrect jet size	Replace with specified size
		Incorrect float height	Correct
		Blockage of air filter inlet	Correct
A7	Poor compression	Leakage through head gasket	Tighten nuts / replace gasket
		Incorrect valve clearances	Adjust to specification
		Worn out piston rings	Replace
		Worn out cylinder and piston	Replace
		Leakage through valve	Do lapping and correct

B. POOR PICK-UP

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
B1	No free movement of vehicle	Brake binding	Adjust both brakes
		Low tyre pressure	Inflate to specification
		Jammed wheel bearings	Replace / lubricate
		Tight chain	Adjust free play
		Tight drive shaft	Check and correct circlip seating
B2	Improper ignition	Refer complaint No. A3 Refer complaint No. A4	
B3	Improper carburation	Refer complaint No. A6	
B4	Clutch slippage	Incorrect free play	Adjust as per specification
		Burnt drive, driven plates	Check and replace
B5	Poor compression	Refer complaint No. A7	
B6	Poor engine response on acceleration	Block at air cleaner inlet below the cover frame	Remove blockage
B7	Jerking at particular RPM	Blockage of carburettor breather hose and improper routing	Clean / correct

TROUBLE SHOOTING

C. GEAR SHIFTING RELATED

STEP REASON	POSSIBLE CAUSE	COUNTER MEASURE
C1 Gear shifting hard	Improper free play in clutch lever	Adjust free play to specification
	Gear shift lever fouling with foot rest	Inspect and correct
	Poor engine oil quality	Replace
	Improper drive chain slackness	Inspect and adjust
C2 Neutral lamp not working Contact gear shift switch defective		Correct / Replace
	Gear position sensor defective	Replace
	Loose connection	Correct
	No continuity in wiring harness	Replace
	Neutral lamp LED not working	Replace speedometer

D. SMOKY EXHAUST (WHITE SMOKE)

STEP REASON	POSSIBLE CAUSE	COUNTER MEASURE
D1 Burning of oil in combustion chamber	Oil mixed in fuel	Replace fuel in tank and clean
	Adulterated fuel	Replace fuel in tank and clean
	Improper routing / clogged breather pipe	Correct routing / clean
	Damaged seal valve stem oil / valve stem	Replace
	Incorrect fitment of 2nd and Oil rings	Fit properly
	Worn out piston rings	Replace Rings
	Worn out cylinder and piston	Replace cylinder and piston
	Engine oil level exceeded maximum limit	Fill to the specified level

E. SMOKY EXHAUST (BLACK SMOKE)

STEP REASON	POSSIBLE CAUSE	COUNTER MEASURE
E1 Very rich mixture	Sticky / worn out float needle	Correct / replace
	Worn out jets	Replace
	Clogged air filter	Clean / replace
	Punctured float	Replace
	Choke plunger stuck	Correct

TROUBLE SHOOTING

F. ENGINE OVER HEATING

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
F1	Poor cooling	Cooling fins covered with mud	Clean
F2	No free movement of vehicle	Refer complaint No. B1 F3	
	Incorrect ignition	Refer complaint No. A3	
F4	Poor lubrication	Incorrect type of oil	Use recommended oil
		Low quantity / poor quality	Top up / replace as specified
		Oil filter clogged	Clean / replace
		Defective oil pump	Replace
		Blocked oil passages	Clean / Correct
F5	Clutch slippage	Refer complaint No. B4	
F6	High compression pressure	Excessive carbon deposition	Decarbonise engine & muffler
F7	Incorrect valve timing	Improper valve clearance	Check and adjust
F8	Incorrect sparkplug	Wrong heat range of sparkplug	Replace

G. HIGH FUEL CONSUMPTION

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
G1		Refer complaint Nos. B1, 2, 3, 4, 5, 6 & 7	
G2	Fuel leakages	Leakage through fuel tank, fuel hose, Correct leakages fuel cock and carburettor	

H. EXCESSIVE CO

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
H1	Improper carburation	Refer complaint No. A6	
H2	Malfunctioning of exhaust gas analyser	Wrongly selected settings / accessories	Correct
H3	Rich mixture	Refer complaint No. E1	

TROUBLE SHOOTING

I. JERKY MOVEMENT / ABNORMALITY OF ENGINE RPM

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
I1	Excessive CO	Improper idling rpm	Adjust idling

J. HEAD LAMP NOT WORKING

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
J1	Bulb fused	Defective bulb	Replace
J2	No power supply to bulb	Loose contact in bulb holder/switch	Correct contacts
		Loose contact in wiring couplers	Correct contacts
		Defective TCI	Replace TCI
		Wiring cut	Replace wiring harness
		No power supply from stator coil	Check stator coil resistance
		Defective RR unit	Replace

K. HORN NOT WORKING

STEP	REASON	POSSIBLE CAUSE	COUNTER MEASURE
K1	No sound	Blown fuse	Replace
		No / discharged battery	Fix / recharge
		Defective horn	Replace
		Defective horn button	Correct / replace
		Wiring cut / disconnected terminal	Replace / connect
K2	Weak / irregular sound	Loose connection	Correct
		Discharged battery	Recharge
		Incorrect tuning of horn	Tune properly (lock the nut after tuning)
K3	Rippling noise	Defective connections	Check each terminal
		Defective horn	Replace
		Loose clamp	Correct

