TECHNICAL TRAINING HANDBOOK

DAWN 100

(VERSION - CAST WHEEL)

GLOBAL LEARNING CENTRE

Hero

IMPORTANT SAFETY NOTICE

⚠ WARNING

Indicate a strong possibility of severe personal injury if instructions are not followed.

CAUTION

Indicate a possibility of personal injury or equipment damage if instructions are not followed.

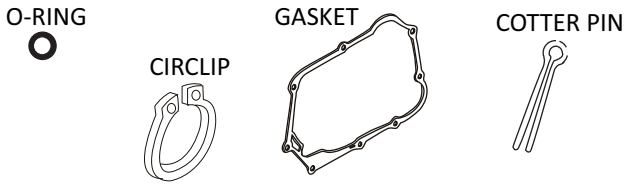
NOTE

Gives helpful information.

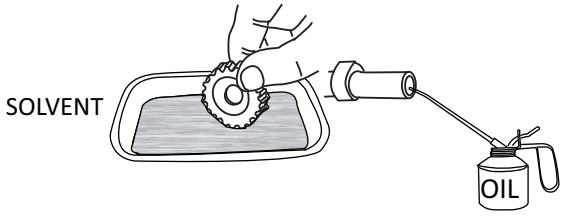
CONTENTS PAGE NO

GENERAL SERVICE PRECAUTION

Always replace gaskets, o-rings, circlips and cotter pins with new ones.

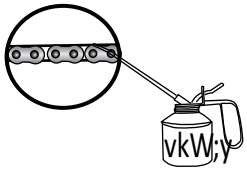


When engine and final drive components are disassembled and inspected, coat the mating surface with a lubricant to prevent corrosion.

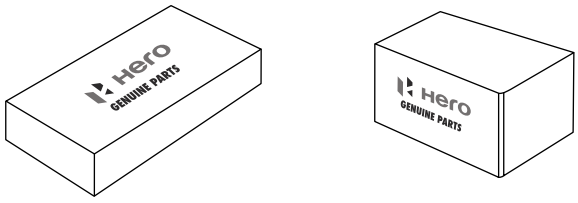


When tightening nuts and bolts, start first with the larger or centre ones.Tighten these to the specified torque using a criss-cross pattern.

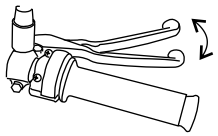
While assembling components, use proper assembly lubricants.



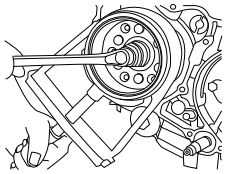
Use only genuine Hero MotoCorp parts and recommended lubricants & sealants.



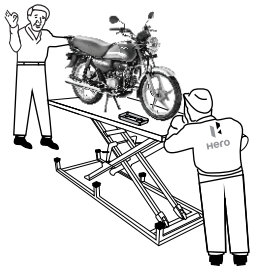
After assembling, check every part for proper installation, movement and operation.



Use specified special and common tools only.



Always ensure mutual safety when working with a partner.



GENERAL SERVICE RULES

Special tools - Use special tools wherever applicable. Special tools are designed to dismantle or assemble a specific part or assemblies without damage.

Cleaning of parts - Clean the outside of a part or assembly before removing it from the motorcycle or opening its cover for service. Dirt, which has accumulated on the outside, may fall into the engine or brake system and cause damage. Clean parts with a high flash point solvent and dry it with compressed air.

Control cables - Never bend or distort control cables. This will lead to stiff operation and premature cable failure.

Rubber parts - Beware of parts containing O-rings or oil seals, since these are adversely affected by most of the cleaning solvents.

Loosening a part with multiple fasteners - Loosening a part with multiple fasteners should be done from the outside to inside in a criss-cross pattern by loosening the small fasteners first. Loosening the big fasteners first will exert an excessive force on the smaller fasteners.

Reassembly Position of critical parts - Care should be taken to note the position of the unidirectional parts while dismantling the engine. This will ensure dimensions (depth, distance or position) to be correctly fitted while reassembling.

Non - reusable parts - Always replace gaskets, O - rings, oil seals, metal sealing washers, circlip and cotter pins while re assembling the engine.

Greasing or oiling of parts before assembly - It is important to apply recommended lubricant while assembling the engine parts to ensure better bedding in and preventing rapid wear out.

Torque of multiple and different sized fasteners - First hand tighten all fasteners. Then torque big fasteners first followed by torque of smaller fasteners in a criss - cross pattern from inner to outer to avoid any distortion in the assembly parts.

Oil seals - New oil seals to be installed with multi purpose grease packed into the cavity. When installing seals always check that the shaft over which the seal fits is smooth and free of burrs, which could damage the seal.

Old gasket & sealants removal - Old gasket and sealant material should be completely removed before re-assembly

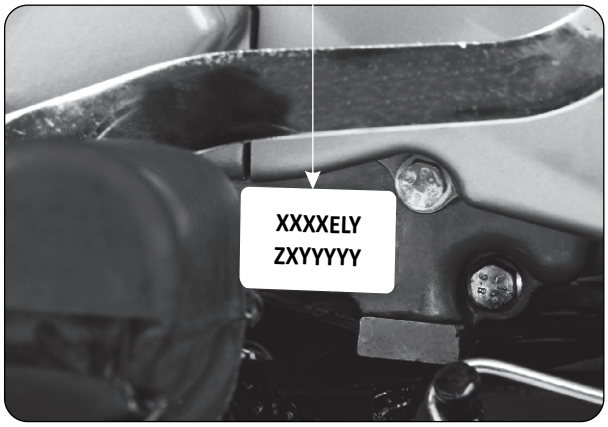
Rubber tubes - Fuel or vacuum tube should be installed so that end is bottomed into its fitting which would ensure adequate area for the tube clip to grip the hose beneath the flared end of the fitting.

MODEL IDENTIFICATION

FRAME SERIAL NUMBER

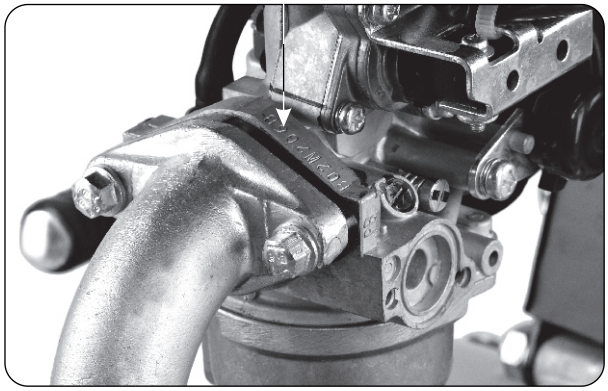
1. FRAME SERIAL NUMBER
Punched on right side of the steering head pipe.

ENGINE SERIAL NUMBER



2. ENGINE SERIAL NUMBER
Punched on left side of the crankcase.

CARBURETOR IDENTIFICATION NUMBER



3. CARBURETOR IDENTIFICATION NUMBER
Punched on top side of the carburetor body.

SPECIFICATION

DIMENSIONS

Overall Length	1965 mm
Overall Width	720 mm
Overall Height	1045 mm
Wheel Base	1235 mm
Saddle Height	820 mm
Ground Clearance	165 mm

WEIGHT

Kerb Weight	113 Kg

ENGINE

Type		Air Cooled, Four Stroke, OHC
Displacement		97.2 cc
Cylinder Arrangement		Single Cylinder, inclined at 80 degree from vertical
Maximum Power		5.74 kW (7.8 PS) @ 7500 rpm
Maximum Torque		0.82 kgf-m @ 4500 rpm
Bore x Stroke		50.0 mm x 49.5 mm
Compression Ratio		9.0: 1
Cylinder Compression		12 ± 1.2 kgf/cm^2 @ 1000 rpm
Carburetor		Side draft, variable venturi type with TCIS
Fuel Tank Capacity		10.5 litres (Minimum)
Fuel Tank Reserve		1.8 litre (Usable)
Valve Train		Over Head Camshaft (OHC), Poppet Valve
Valve Clearance	Inlet	0.10 mm
	Exhaust	0.10 mm
Starting		Kick & Electric starter
Idle Speed		1400 ± 100 rpm
Ignition		DC Digital CDI
Ignition Timing	"F" mark	10° BTDC @ 1400 rpm
	Full Advance	30° BTDC @ 4000 rpm

LUBRICATION

Oil Pump Type	Trochoid
Oil Filter	Wire Mesh & Centrifugal Filter
Air Filter	Dry paper pleated type filter
Engine Oil Capacity	1.05 Litres at disassembly, 0.85 Litre at oil change
Engine Oil Grade	SAE 10 W 30, SJ Grade (JASO MA)
Engine Oil Make	Hero 4T Plus

SPECIFICATION

TRANSMISSION

Clutch		Multiplate wet type
Primary Reduction		3.722 (67/18)
Final Reduction		3.143 (44/14)
Gear Box		4 Speed Constant Mesh
Gear Ratio	1st	3.182 (35/11)
	2nd	1.706 (29/17)
	3rd	1.238 (26/21)
	4th	0.958 (23/24)

CHASIS

Type	Tubular Double Cradle Type

SUSPENSION

Front	Telescopic Hydraulic Shock Absorbers
Rear	Swingarm with 2 step adjustable hydraulic shock absorbers
Caster Angle	26°
Trail Length	89 mm
Front Fork Oil Capacity	163 ml

BRAKES

Front	Drum Type - Dia. 130 mm (Internal expanding shoe type)
Rear	Drum Type - Dia. 130 mm (Internal expanding shoe type)

WHEELS & TYRES

Tyre Size (Front)	2.75 X 18 - 4 PR / 42 P
Tyre Size (Rear)	2.75 X 18 - 6 PR / 48 P

COLD TYRE PRESSURE

Front (Rider only/Rider & pillion)	1.75 Kgf/cm^2 or 25 psi / 1.75 Kgf/cm^2 or 25 psi
Rear (Rider only/Rider & pillion)	2.00 Kgf/cm^2 or 28 psi / 2.80 Kgf/cm^2 or 40 psi

ELECTRICALS

Battery	**MF Battery, 12V-3Ah ETZ4
Alternator	115W
Spark Plug	NGK-CR7HSA, BOSCH-UR4AC, Champion-P-RZ9HC (Federal Mogul)
Spark Plug Gap	0.6 - 0.7 mm
Headlamp (high/low)	12V-35/35W Halogen Bulb, MFR*
Tail/stop lamp	2V-5/21W, MFR*
Turn signal lamp	12V-10W x 4 nos, MFR*
Fuse	10 A, 15 A

*** MFR stands for Multi-Focal Reflector**

**** MF stands for Maintenance-Free**

GENERAL TORQUE VALUES

FASTENER TYPE	TORQUE (N-m)	TORQUE (kgf-m)
5 mm bolt and nut	4.4~6.0	0.45~0.6
6 mm bolt and nut	8.0~12	0.8~1.2
8 mm bolt and nut	18~25	1.8~2.5
10mm bolt and nut	29~39	3.0~4.0
12mm bolt and nut	49~59	5.0~6.0
5 mm screw	3.4~5.0	0.35~0.5
6 mm screw	7.0~11	0.7~1.1
6 mm flange bolt (SH type)	8.0~12	0.8~1.2
6 mm flange bolt and nut	10~14	1.0~1.4
8 mm flange bolt and nut	24~29	2.4~3.0
10 mm flange bolt and nut	34~44	3.5~4.5

NOTE

- *Torque specifications listed on the next page are for important fasteners.*
- *Others should be tightened to standard torque values listed above.*
- *Apply engine oil 10 W 30 SJ Grade, (JASO MA).*
- *Center Values in PR value shall be used for service procedures.*
- *Factor for conversion of torque value SI unit (N.m).*
- *Factor for conversion of torque value SI unit (N.m) from customary unit (kgf-m) shall be 9.81 in this table.*

ENGINE TORQUE VALUES

SR. NO.	ITEM	THREAD SIZE & TYPE	TORQUE		PR VALUES N-m	REMARKS
			N-m	kgf-m		
RIGHT CRANKCASE						
1	Drum stopper arm	6 mm	8.0~12	0.8~1.2	10	
2	Shift return spring pin	8 mm	25~34	2.5~3.5	30	
3	Drain bolt	12 mm	20~29	2.0~3.0	24	
4	Oil pump pan screw	6 mm	6.0~9.0	0.6~0.9	8	3 places
5	Oil pump pan screw	5 mm	3.4~6.0	0.35~0.6	5	3 places
6	Rotor oil filter cover flat screw	5 mm	4.0~5.0	0.4~0.5	4	4 places
7	Clutch lifter plate hex bolt	6 mm	8.0~12	0.8~1.2	10	4 places
8	Mainshaft lock nut	14 mm	40~45	4.1~4.6	43	
9	Left crankshaft flange nut	10 mm	37~44	3.8~4.5	40	
10	Right crankshaft lock nut	14 mm	69~78	7.0~8.0	74	
11	Drum stopper plate	6 mm KB	14~20	1.4~2.0	17	
LEFT CRANKCASE						
1	Sealing bolt	14 mm	20~25	2.0~2.5	22	
2	Tensioner pivot	8 mm	13~18	1.3~1.8	16	
3	Shift drum hex bolt	6 mm	8.0~15	0.8~1.5	12	
4	Drive sprocket fixing bolt	6 mm	8.0~15	0.8~1.5	12	2 places
CYLINDER & CYLINDER HEAD						
1	Cylinder head cover cap nut	7 mm	12~16	1.2~1.6	14	4 places
2	Cylinder head right cover	6 mm FB	8.0~12	0.8~1.2	10	
3	Guide roller pin	8 mm	8.0~12	0.8~1.2	10	
4	Cam sprocket	5 mm KB	7.0~11	0.7~1.1	9	2 places
5	Tappet adjusting nut	5 mm	7.0~11	0.7~1.1	9	2 places
6	Spark plug	10 mm	14~18	1.4~1.8	16	

FB: FLANGE BOLT
KB: KNOCK BOLT

FRAME TORQUE VALUES

SR. NO.	ITEM	THREAD SIZE & TYPE	TORQUE		PR VALUES N-m	REMARKS
			N-m	kgf-m		
FRAME						
1	Engine hanger bolt upper	M 8x1.25	26~31	2.6~3.2	29	
2	Engine hanger bolt lower	M 8x1.25	26~31	2.6~3.2	29	
3	Gear change pedal	M 6x1.0	8.0~14	0.8~1.4	11	
4	Handle upper holder	M 6x1.0	10~14	1.0~1.4	12	Socket bolt
5	Front reflex reflector	M 6x1.0	1.5~2.0	0.15~0.2	1.8	
6	Left lever pivot bolt	M 6x1.0	2.0~4.0	0.2~0.4	3.0	
7	Left lever pivot nut	M 6x1.0	4.9~6.9	0.5~0.7	5.9	
STEERING						
1	Steering stem nut	M 22x1.0	59~88	6.0~9.0	74	
2	Thread comp. head top	M 22x1.0	2.9~3.9	0.3~0.4	3.4	
3	Front fork socket bolt	M 8x1.25	15~25	1.5~2.5	20	
4	Front fork bolt	M 26x1.0	15~30	1.5~3.0	22	
5	Front fork bottom bridge bolt	M 8x1.25	28~34	2.9~3.5	31	
6	Front fork top bridge bolt	M 10x1.25	38~44	3.9~4.5	41	
7	Handle holder under nut	M 10x1.25	34~44	3.5~4.5	39	
WHEEL						
1	Front axle nut	M 12x1.25	49~59	5.0~6.0	54	
2	Rear axle nut	M 12x1.25	49~59	5.0~6.0	54	
3	Rear axle sleeve nut	M 17x1.0	39~49	4.0~5.0	44	
4	Driven sprocket nut	M 8x1.25	29~35	3.0~3.6	32	
BRAKE						
1	Rear brake stopper front	M 8x1.25	18~25	1.8~2.5	22	
2	Rear brake stopper rear	M 8x1.25	18~25	1.8~2.5	22	
3	Rear brake arm nut	M 6x1.0	8.0~12	0.8~1.2	9.9	
4	Front stop switch	M 4x0.7	0.8~1.5	0.08~0.15	1.2	Screw
5	Front brake arm nut	M 6x1.0	7.8~12	0.8~1.2	9.9	
6	R lever pivot nut	M 6x1.0	4.9~6.9	0.5~0.7	5.9	
7	R lever pivot bolt	M 6x1.0	2.0~4.0	0.2~0.4	3.0	

FRAME TORQUE VALUES

SR. NO.	ITEM	THREAD SIZE & TYPE	TORQUE		PR VALUES N-m	REMARKS
			N- m	kgf-m		
SUSPENSION						
1	Rear cushion upper nut	M 10x1.25	29~39	3.0~4.0	34	
2	Rear cushion under nut	M 10x1.25	29~39	3.0~4.0	34	Cap nut
3	Swingarm pivot bolt	M 12x1.25	49~59	5.0~6.0	54	
OTHERS						
1	Side stand nut	M 10x1.25	34~44	3.5~4.5	39	
2	Side stand bolt	M 10x1.25	5.0~15	0.5~1.5	10	
3	Head lamp case nut	M 8x1.25	12~18	1.2~1.8	15	
4	Gear change pedal	M 6x1.0	9.8~14	1.0~1.4	11	
5	Handle holder under nut	M 10x1.25	34~44	3.5~4.5	39	
6	Handle upper holder	M 6x1.0	6.0~9.0	0.6~0.9	8	
7	Exhaust muffler joint nut	M 6x1.0	8.0~12	0.8~1.2	10	
8	Exhaust muffler mounting bolt	M 8x1.25	18~25	1.8~2.5	22	

NOTE

- *Factor for conversion of torque value SI unit (N-m) from customary unit (kgf-m) shall be 9.81 in this table.*
- *Center values in PR value shall be used for service procedure.*
- *Engine oil to be used SAE 10W 30 SJ Grade (JASO MA) without molybdenum.*

LUBRICATION & SEAL POINTS

ENGINE

LOCATION	MATERIAL	REMARKS
Cylinder, inner surface of cylinder sleeve Tappet hole cap threaded portion Crankshaft inner surface of connecting rod small end Piston pin hole ring groove, sliding area Piston pin outer surface Piston ring whole surface Valve inlet/exhaust outer surface of stem, stem end Cam chain whole surface Cam chain guide roller inner surface Rocker arm inner surface of boss, slipper surface Tensioner push rod inside Oil pump inside of rotor Clutch outer tooth flank, rotating area Friction disc whole surface Clutch lever rotating area Primary drive gear tooth flank Transmission gear rotating and sliding area, tooth flank, groove of shift fork Main shaft rotating and sliding area, tooth flank Counter shaft rotating and sliding area Shift drum outer surface, sliding area Kick spindle rotating and sliding area Other rotating and sliding portion applicable area Oil seal lip area Ball/needle bearing rolling contact area O-ring whole surface Other rotating and sliding portions.	Engine oil 	Each bearing (1ml-min.)
Camshaft whole cam surface M2, M4 gear inner surface all around C1, C3 gear inner surface all around C1 gear bush inner surface and outer surface all around	Engine oil with Molybdenum oil solution 	Mixture of engine oil and molybdenum disulfide in ratio of 1: 1
Bolt washer 6x16 for tightening of drum threaded portion Flange bolt for tightening of rachet guide plate threaded portion	TB # 1322N or # 648 or equiv. TB# 2415 or DL- 200 or equiv.	
Crankshaft tapered area ACG flywheel tapered area	 Degreasing	Degreasing

NOTE

Engine oil for applying will be Hero 4T Plus, GRADE:SAE 10W 30 SJ Grade (JASO MA) engine oil without molybdenum.

FRAME

LOCATION	MATERIAL	REMARKS
Air cleaner connection tube case connecting area Air cleaner duct case connecting area Left handle grip inside of grip	# 540 cemedine or equivalent	
Throttle cable inside of boot Clutch cable inside of boot Front brake cable inside of cap boot	Multipurpose grease	Silicon grease (PSG 3251) Or equivalent
Rear brake pivot sliding portion Side stand sliding portion of pivot Throttle pipe sliding area and rolled up portion Driven flange dust seal lip surface Rear wheel hub O-ring all around Rear brake cam and shaft Rear brake panel anchor shaft Front wheel oil seal lip area Front wheel gear box seal lip surface	HES D 2012- 2- 1- 2 Grease	Spreading no grease on lining surface allowed
Clutch lever pivot sliding portion	Grease	Spreading
Driven flange stud bolt threaded portion	TB-1305N (Three bond) or 638 n(Locktite) or equivalent	Spreading
Driven sprocket tightening nut threaded portion Rear brake cam dust seal all around Front brake cam dust seal all around	IDEMITSU Mechanic 44 or equiv IDEMITSU Auto lube 30 or Mechanic 44	Spreading
Speedometer cable assembly outside of inner cable	DAPHNE XLA-2 or equivalent	
Speedometer gear box, inside gear box Speedometer gear inner dia and teeth Speedometer pinion shaft Front brake panel oil seal lip area	IDEMITSU DAPHNE EPONEX No.0	Injecting spreading
Front brake cable inner cable surface spreading	TSG 3203 or Molybdenum alloy oil M- AO or equivalent	HES A 1029 before delivery
Front fork assembly inside	(Bharat SS- No.8)	
Front fork oil seal lip	LIQUID O- ring # 400 or equiv.	
Front fork socket bolt threaded portion	Thread lock CEMEDINE # 575 or equivalent	Spreading
Top/bottom cone race rolling contact surface Steering ball race rolling contact surface Steering dust seal lip surface	SHELL Alvania EP2 or Excelite EP2 (Kyodo Yushi Co. Ltd.) or equiv	Filling 0.3g.(mm)

LIST OF SPECIAL TOOLS

SL. NO.	DESCRIPTION	APPLICATION	PART NUMBER
1	Flywheel puller	To remove the flywheel from crankshaft.	070HHKTC004
2	Socket wrench	To remove lock nut from clutch assembly and rotor filter.	070HH198002
3	Universal holder	To hold the flywheel while removing flywheel nut.	070HH198003
4	Clutch centre holder	To hold the centre clutch while removing the lock nut.	070HH198004
5	Valve spring compressor	To compress the valve spring and remove the cotters and valve.	070HH198005
6	Tappet adjuster with socket, 9 mm	To adjust valve clearance.	070HH198006
7	Ball race driver	To remove and install ball races from head pipe.	070HH198007
8	Bottom cone race punch (Driver stem bearing)	To insert bottom cone race in steering stem.	070HH198008
9	Universal bearing puller	To remove crankshaft bearing.	070HH198009
10	Valve guide remover	To remove valve guide from cylinder head.	070HH198010
11	Tappet cover wrench	To open and tighten the tappet cover.	070HH198011
12	Socket, 17.5 mm	To be used with pneumatic gun-clutch lock nut.	070HH198012
13	Aluminum plug	To block fuel pipe hose while removing from carburetor.	070HH198014
14	Average testing bottle with fixture	To measure fuel average.	070HH198015
15	Plastic oil seal guide kit, 5 pcs.	To install stator plate oil seal.	070HH198016
16	GPD holder	To provide gear locking between GPD and clutch outer.	070HH198017
17	Front fork oil seal driver body	To drive in new oil seal.	070HH198018
18	Front fork dismantling tool	To hold fork tube seat while opening the bottom allen key bolt.	070HH198020
19	Compressor rear shock absorber	To compress spring for dismantling rear shock absorber.	070HH198021
20	Oil pump spindle holder	To remove and lock the oil pump spindle.	070HH198023
21	Swing arm pivot nut socket, 17 mm	To open and lock pivot nut.	070HH198024
22	Collet bearing remover, 12 mm	To remove bearing from crankcase.	070HH198026
23	Piston slide base	To secure piston while assembling cylinder.	070HH198027
24	Race steering cone inserter	To insert ball race in steering pipe.	070HH198028
25	Socket rotor filter nut (Pneumatic, 24 mm)	To be used with pneumatic gun-rotor filter nut.	070HH198029
26	Ratchet spring inserter	To insert kick shaft ratchet spring.	070HH198030
27	Driver, 40x46 mm	To seat on outer race surface and drive out/in the bearing.	070HH198031
28	Pilot, 17 mm	To seat in the inner race and drive out/in the bearing.	070HH198033
29	Cap, Muffler (100 CD series)	To restrict water entry during washing.	070HH198035
30	Brake pad hanger pin remover	To remove brake pad hanger pin from caliper assembly.	070HH198036
31	Main/side stand spring installer	To install main and side stand spring.	070HH198037

LIST OF SPECIAL TOOLS

SL. NO.	DESCRIPTION	APPLICATION	PART NUMBER
32	Socket steering stem nut, 32 mm	To remove and tightening the steering stem nut.	070HHGBG004
33	Front fork oil seal driver attachment dia, 30 mm	To drive in new oil seal.	070HHKCC001
34	Tappet adjuster with socket, 10 mm	To adjust valve clearance.	070HHKFN001
35	Flywheel puller (CBZ)	To remove the flywheel from crankshaft.	070HHKFN002
36	Pierer's plier	To remove snap ring from master cylinder and driven face bearing.	070HHKFN003
37	Front fork oil seal driver attachment dia, 31 mm	To drive in new oil seal.	070HHKFN004
38	Crankcase bearing remover collect, 15 mm	To remove bearing from crankcase.	070HHKFN005
39	Crankcase bearing remover shaft	To remove bearing from crankcase.	070HHKFN006
40	Crankcase bearing remover weight	To remove bearing from crankcase.	070HHKFN007
41	Handle bearing driver	To hold pilot and driver outer to remove/insert bearing.	070HHKFN008
42	Driver outer, 42x47	To seat on outer race surface and drive out/in the bearing.	070HHKFN011
43	Pilot driver, 12 mm	To seat in the inner race and drive out/in the bearing.	070HHKFN012
44	Pilot driver, 15 mm	To seat in the inner race and drive out/in the bearing.	070HHKFN013
45	Pilot driver, 21 mm	To seat in the inner race and drive out/in the bearing.	070HHKFN014
46	Pilot driver, 28 mm	To seat in the inner race and drive out/in the bearing.	070HHKFN015
47	Remover head, 12 mm	To remove wheel bearing from wheel hub.	070HHKFN017
48	Steering bearing adjuster nut socket	To adjust/remove the steering bearing adjuster nut.	070HHKFN018
49	Driver, 24x27mm	To seat on outer race surface and drive out/in the bearing.	070HHKFN021
50	TPS test connector	To reset throttle position sensor.	070HHKRY001
51	Flywheel puller	To remove the flywheel from crankshaft.	070HHKRYH001
52	Flywheel puller holder	To hold the flywheel puller.	070HHKRYH002
53	Crankshaft pilot	To avoid the damage of crankshaft threads during removal of flywheel.	070HHKRYH003
54	Magnet holder (Clamp type)	To hold magnet while removing the lock nut.	070HHKRYH004
55	Oil cooler holder cover	To be used for protecting oil cooler fins during water wash.	070HHKRYH005
56	Hose pipe plier	To pinch the fuel hose during fuel tank removal.	070HHKRYH006
57	Pin-out box	For diagnosing the Programmed-FI electrical system.	070HHKRYH007
58	Tester (MF-battery)	To test the condition of a MF-battery.	070HHKRYH008
59	T-stem cone puller	To remove T-stem bottom cone.	070HHKST001
60	Bottom cone race driver	To install T-stem bottom cone.	070HHKST002

LIST OF SPECIAL TOOLS

SL. NO.	DESCRIPTION	APPLICATION	PART NUMBER
61	Upper and bottom cone installer	To install upper and bottom cone race to steering head pipe.	070HHKST003
62	Steering bearing adjusting nut socket, 41mm	To adjust the steering bearings.	070HHKST004
63	Socket wrench (Rotor filter and clutch)	To remove lock nut clutch assembly and rotor filter.	070HHKTC001
64	Socket clutch nut (Pneumatic, 20 mm)	To be used with pneumatic gun-clutch lock nut opening.	070HHKTC002
65	Clutch pressure plate holder	To hold clutch center while removing lock nut.	070HHKTC003
66	Driver outer, 32x35	To remove/install wheel bearing.	070HHKFN010
67	Crankshaft bearing (RHS) puller cum Inserter	To install/remove (RHS) crankshaft bearing	070HHKTC005
68	T-Stem cone puller	To remove bottom cone race from the T-stem.	070HHKTC006
69	Socket, 19mm	To open and lock pivot nut.	070HHKTC007
70	Cap, Muffler (Super splendor)	To be used for protecting oil cooler fins during water wash.	070HHKTC008
71	Counter shaft oil seal guide	To protect the counter shaft while separating the crankcase.	070HHKTC009
72	Flywheel puller	To remove the flywheel from crankshaft.	070HHKTN001
73	Collet, 17mm	To remove bearing from crankcase.	070HHKTN002
74	Crankshaft bearing (LHS) puller	To remove the bearing from crankshaft.	070HHKTN003
75	Bottom cone race driver	To remove top and bottom cone races from the steering head pipe.	070HHKTN005
76	Pilot, 20mm	To seat in the inner race and drive out/in the bearing.	070HHKTN006
77	Crankshaft bearing (LHS) inserter	To install crankshaft (LHS) bearing.	070HHKTN007
78	Counter shaft oil seal guide	To protect the counter shaft while separating the crankcase.	070HHKTN009
79	Rear engine foundation bush remover, 8x20	To remove/install the rear engine foundation bush.	070HHKTP01
80	Front engine foundation bush remover, 10x27	To remove/install the front engine foundation bush.	070HHKTP02
81	Drive shaft installer extension	To install the drive shaft into the left crankcase.	070HHKTP03
82	Drive shaft bearing remover with sleeve	To remove the drive shaft bearing.	070HHKTP04
83	Drive face holder	To hold the drive face for removal/installation.	070HHKTP05
84	Driven face nut socket	To remove/install driven face nut.	070HHKTP06
85	Centrifugal clutch spring remover	To remove/install the centrifugal clutch spring.	070HHKTP08
86	Driven face bearing remover & installer	To remove/install the driven face bearing.	070HHKTP09
87	Flywheel puller	To remove flywheel.	070HHKTP10
88	Flywheel holder	To hold the flywheel for removal/installation of flywheel.	070HHKTP11
89	Steering bearing adjuster nut socket, 45.3mm	To adjust/remove/install the bearing adjustment nut.	070HHKTP12

LIST OF SPECIAL TOOLS

SL. NO.	DESCRIPTION	APPLICATION	PART NUMBER
90	Upper cone race remover	To remove the upper cone race.	070HHKTP13
91	Bottom cone race remover head	To remove the bottom ball race from the steering head.	070HHKTP14
92	Bottom cone race remover shaft	To remove the bottom cone race.	070HHKTP15
93	Bottom cone race remover weight	To remove the bottom cone race.	070HHKTP16
94	Upper & bottom cone installer	To install upper and bottom cone race.	070HHKTP17
95	Clutch lever spring pin remover/installer	To install and remove clutch lever spring pin.	HMCL0415AABA01
96	T-stem cone installer	To install the T-stem cone race.	070HHKTP18
97	Shock absorber extractor	To compress spring for dismantling front/rear shock absorber.	070HHKTP19
98	Washing kit (Pleasure)	To restrict water entry during washing.	070HHKTP20
99	Cap, Muffler (Glamour)	To restrict water entry during washing.	070HHKTR001
100	DLC short connector	To read and erase the data from ECU.	070HHKTRF001
101	Fuel pressure gauge	To check the fuel pressure in fuel delivery system.	070HHKTRF003
102	Multimeter probe	To check the wiring in Programmed-FI connectors.	070HHKTRF004
103	Fuel pressure gauge adaptor	To check the fuel pressure in fuel delivery system.	070HHKTRF005
104	Remover head, 15 mm	To remove wheel bearing from wheel hub.	070HHKVN001
105	Swingarm bearing remover/installer	To remove and install the swingarm bearing.	070HHKVN003
106	TPS test connector	To reset throttle position sensor.	070HHKVN004
107	T-stem cone remover	To remove T-stem bottom cone.	070HHKZJ001
108	Steering race remover	To remove upper/bottom steering race.	070HHKZJ002
109	Steering race installer	To install the bottom/upper steering races.	070HHKZJ003
110	Steering adjuster nut socket	To remove/adjust the steering adjusting nut.	070HHKZJ004
111	Swingarm bearing remover	To remove the swingarm bearing.	070HHKZJ005
112	Swingarm bearing installer	To Install the swingarm bearing.	070HHKZJ006
113	Mono-shock bearing remover & installer	To remove/install the rear mono shock needle bearing.	070HHKZJ007
114	Wheel bearing remover head, 17 mm	To remove wheel bearing from wheel hub.	070HHKZJ008
115	Wheel bearing remover shaft	To remove the wheel bearing.	070HHKZJ009
116	TPS test harness	To reset throttle position sensor.	070HHKZJ010
117	Swingarm stand	To raise the rear wheel off the ground and motorcycle in upright position.	070HHKZJ011
118	Frame stand	To support the motorcycle while doing major repairs.	070HHKZJ012
119	Drive shaft installer extension	To install drive shaft into the crankcase.	070HHKZN001
120	Driven face spring compressor	To compress the driven face spring for removal/ installation.	070HHKZN002
121	Collet, 20 mm	To remove driven face needle bearing.	070HHKZN003
122	Top cone race holder	To hold the steering stem lock nut.	070HHKZN004
123	Washing kit (Maestro)	To restrict water entry during washing.	070HHKZN005

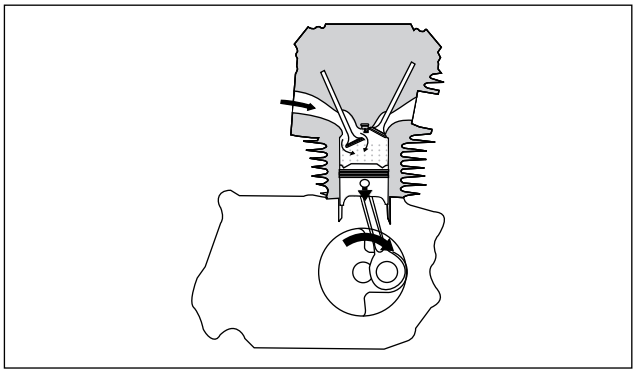
LIST OF SPECIAL TOOLS

SL. NO.	DESCRIPTION	APPLICATION	PART NUMBER
124	Timing sprocket remover	To remove the timing sprocket from the crankshaft.	070HHK06001
125	Timing sprocket installer	To install the timing sprocket on the crankshaft.	070HHK06002
126	Crankshaft bearing driver	To install the crankcase bearing.	070HHK06003
127	Crankshaft bearing collar	To install crankshaft bearing and timing sprocket.	070HHKZA001
128	Driver (RHS) crankshaft bearing	To install the crankshaft bearing in (RHS) crankcase.	070HHKZA002
129	Crankshaft installer adapter	To install the crankshaft in the (RHS) crankcase.	070HHKZA003
130	Muffler plug (Big)	To restrict water entry during washing.	070HHKZA004
131	Muffler plug (Small)	To restrict water entry during washing.	070HHK06004
132	Hero integrate diagnostic instrument	For immobilizer diagnosis & key registration.	HMCL0214AABA01
133	HIDI wire harness	For sync between instrument & bike wire harness.	HMCL0214AABA02
134	TPS test harness	To reset throttle position sensor.	HMCL1214AABA04
135	Service stand	To park the splendor pro classic in upright position.	HMCL0415AADF01
136	Cam sprocket driver	To rotate the cam sprocket for TDC position.	HMCL041519801
137	Left crankshaft oil seal guide	To remove crankshaft oil seal guide.	HMCL1014AALB01
138	Left crankshaft oil seal installer	To install crankshaft oil seal guide.	HMCL1014AALB02
139	Right crankshaft oil seal installer	To install crankshaft oil seal guide.	HMCL1014AALB03
140	Flywheel puller	To remove the flywheel from crankshaft (splendor+).	070HH198001
141	Washing kit duet/maestro edge	To avoid water entry during water wash.	MCL0815AAWA01
142	T-stem cone remover	To remove bottom cone race from T-stem.	HMCL0815AAWA02
143	Front fork spring spacer compressor	To depress front fork bolt and remove the inner circlip.	HMCL0815AAWA03

FOUR-STROKE ENGINE

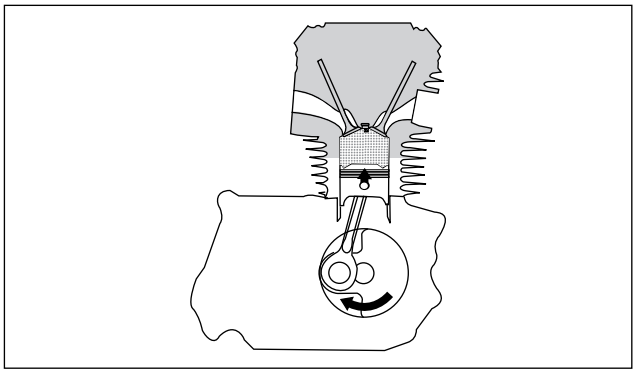
SUCTION

The piston moves from TDC to BDC and the intake valve opens. Air fuel mixture is sucked into the cylinder.



COMPRESSION

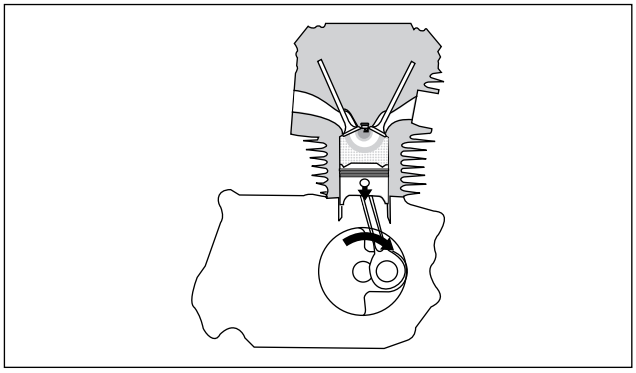
The piston moves from BDC to TDC compressing the air fuel mixture. During this stroke both valves remain closed.



POWER

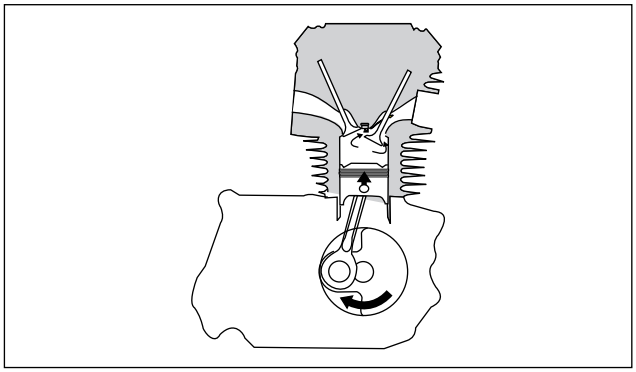
The spark plug ignites the mixture gas.

The gas burns and expands, forcing the piston down from TDC to BDC. During this stroke both valves remain closed.

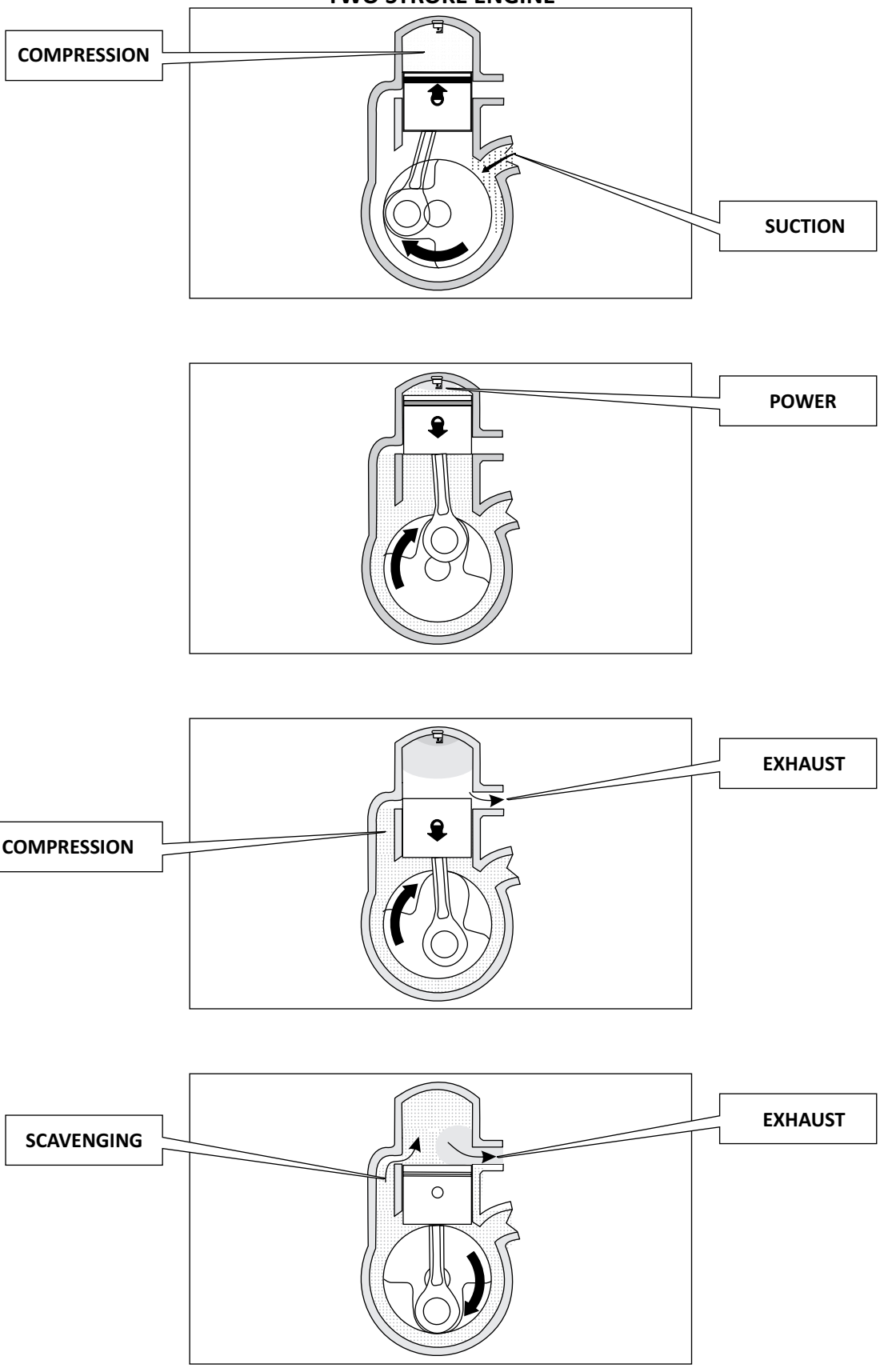


EXHAUST

The piston moves from BDC to TDC, the exhaust valve opens and burned gas is forced out of the cylinder.

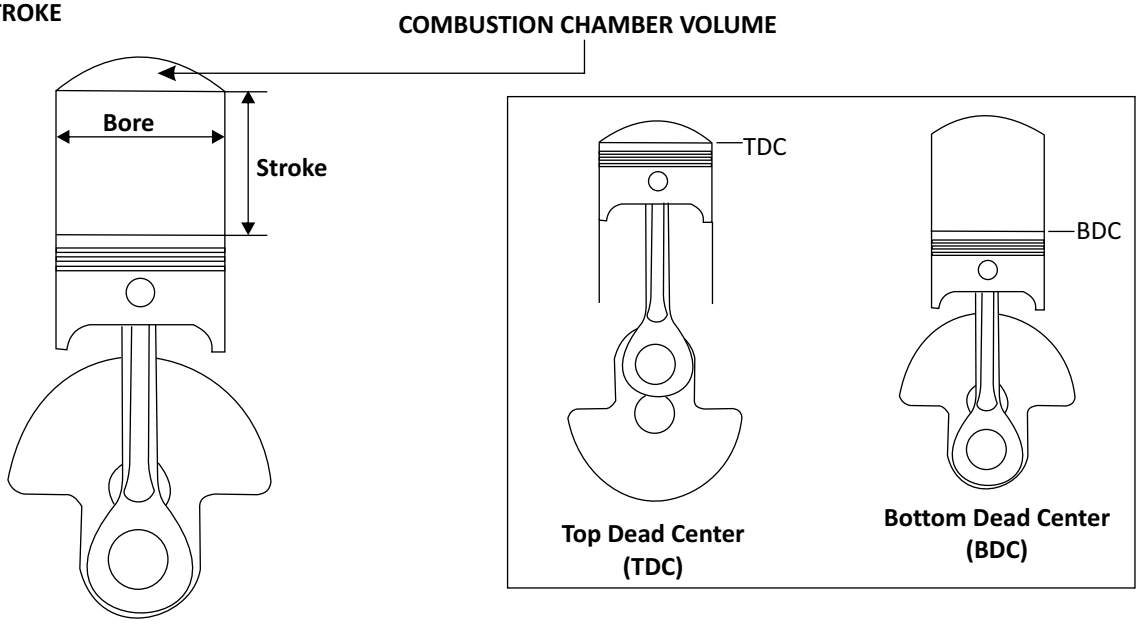


TWO STROKE ENGINE

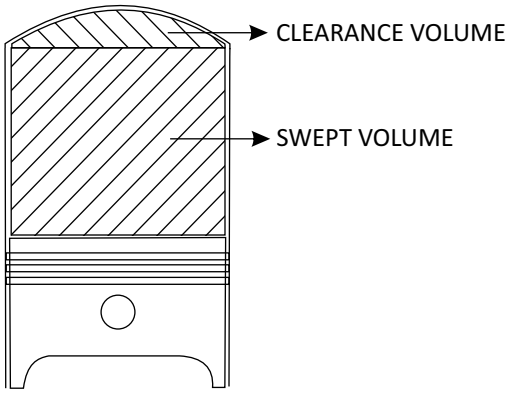


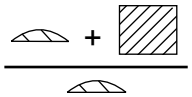
SPECIFICATION

1. BORE, STROKE

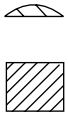


2. COMPRESSION RATIO

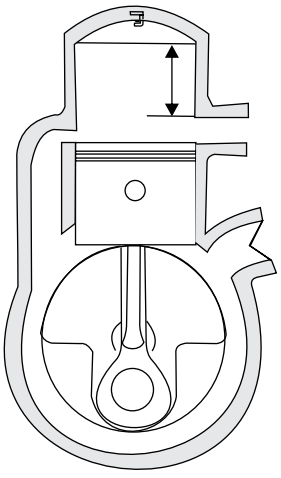




EXAMPLE

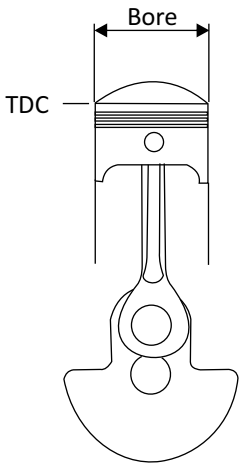


$\frac{1+9}{1} = 10$

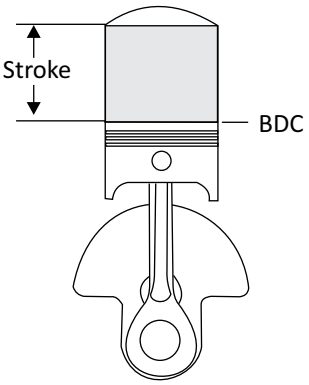


For two stroke engines, the compression ratio is calculated from the point at which the exhaust port closes

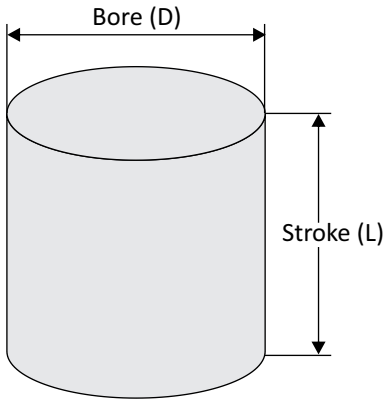
3. PISTON DISPLACEMENT



Top Dead Centre (TDC)



Bottom Dead Centre (BDC)



Piston Displacement = Cylinder area x stroke

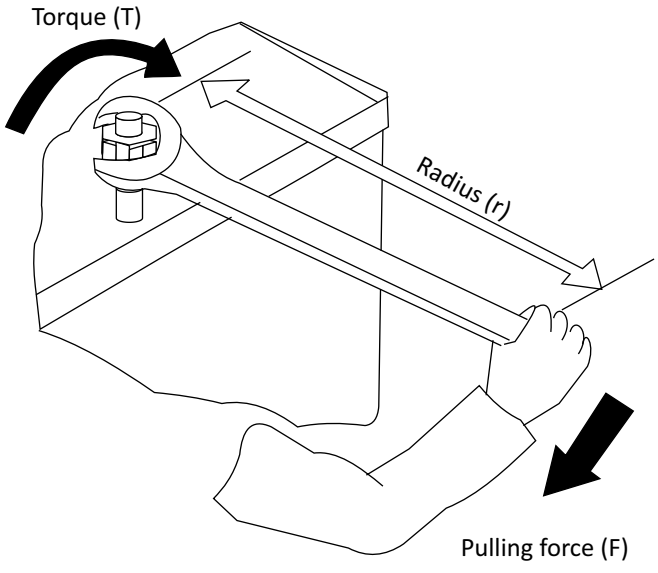
$$V = \frac{\pi}{4} D^2 x L$$

Example : D = 5.24 cm (52.4 mm), L= 5.78 cm (57.8 mm)

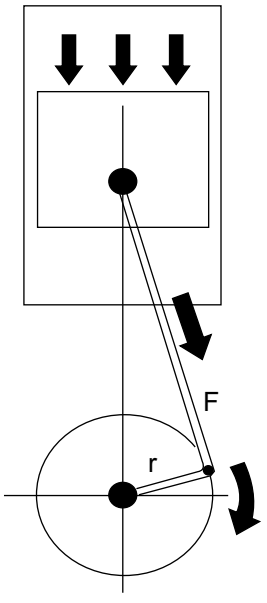
$$V = \frac{\pi}{4} (5.24)^2 x 57.8$$

$$= 124.7 \text{ cc}$$

4. TORQUE



Torque (T) = Force (F) x Radius (r)

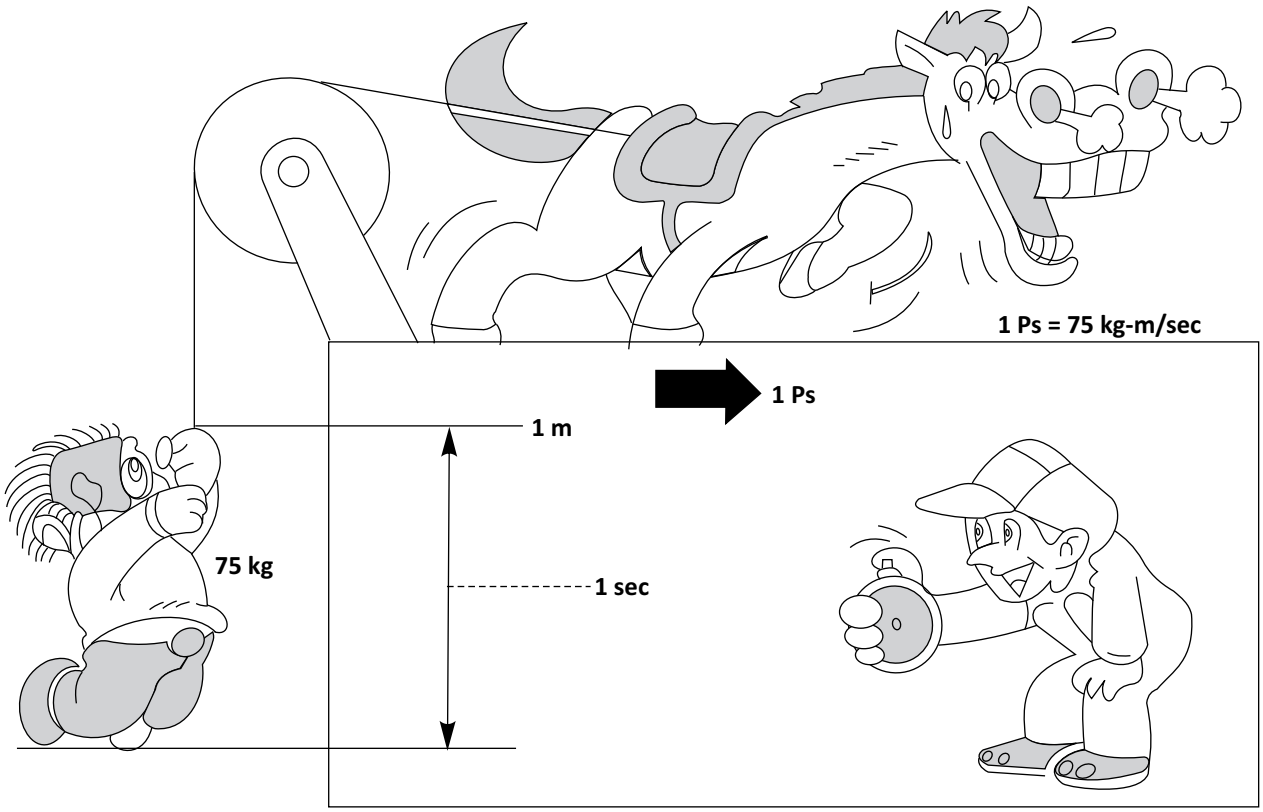


Example : F = 30.0 kg, r = 0.035 m

T = 30 x 0.035

= 1.05 Kgf-m

5.HORSE POWER



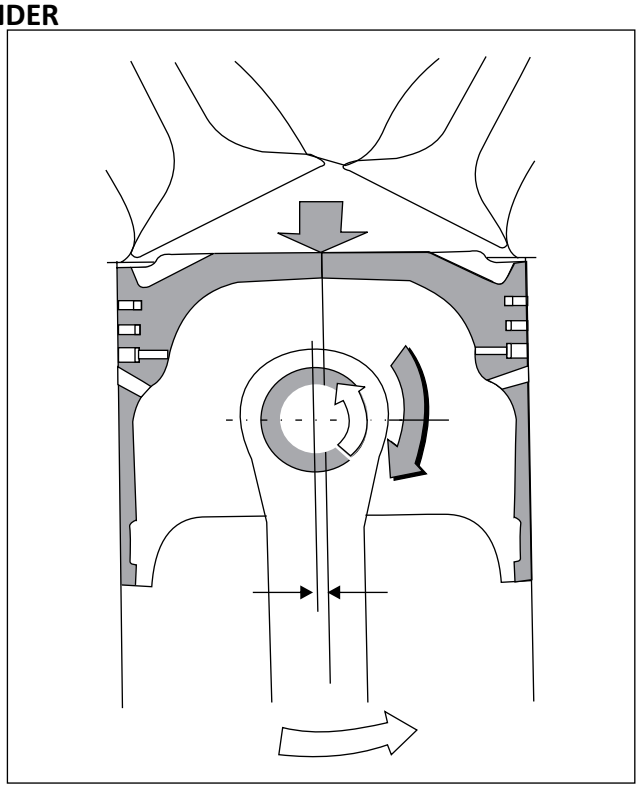
1 metric Horse power is the work exerted to lift a body of 75 kg to a height of 1 m in 1 second. Metric horse power is represented by the symbol Ps.

1 Ps = 0.9858 HP = 0.735 kw
(Ps = Pferde stärke, HP = Horse power, kw = kilowatt)

PISTON/CYLINDER

1.PISTON

The piston moves at very high speed in the cylinder and is exposed to the extreme temperature of the burning gas. Hero MotoCorp pistons are made of a specially forged aluminum alloy which is not only light in weight but also resistant to thermal expansion.



The reciprocating motion of the piston is converted into the rotary motion of the crankshaft via the connecting rod. To smoothen this motion conversion, the piston pin's hole slightly offset against the center of the piston.

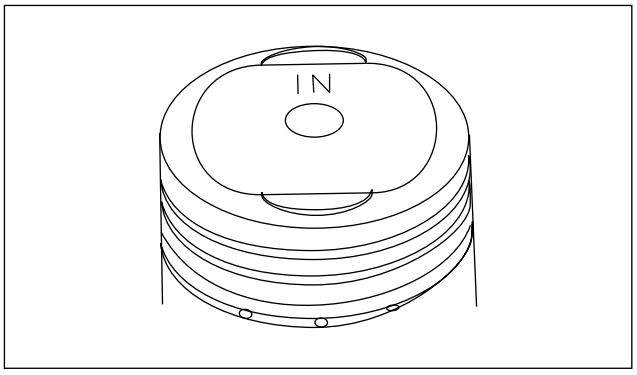
Most piston used on four-stroke engines are provided with valve recesses in the piston head to prevent contact between the valves and the piston.

Because of the "offset" and the "valve recess", the direction of the piston installation is specified.
Refer to the mark on the piston head.

“IN" or " NI " - intake side

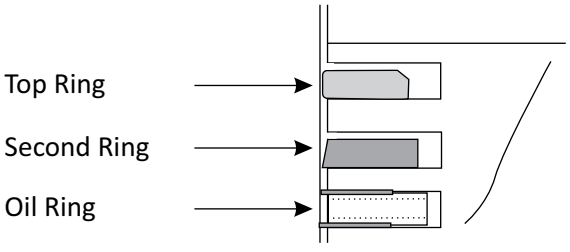
2. PISTON RINGS

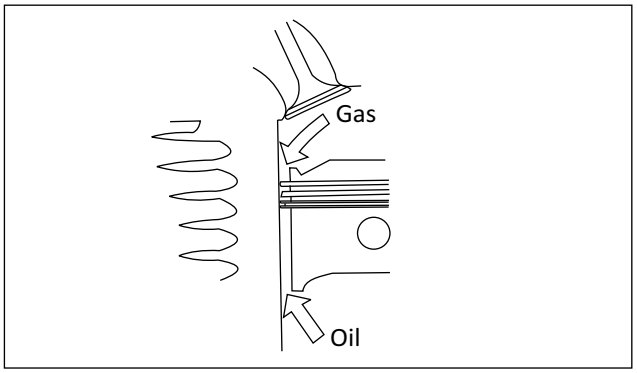
There is some clearance between the piston and the cylinder wall. Piston rings are fitted to prevent gas and oil to leak through this clearance.



The cylinder wall is coated with oil. If not sealed, the oil will leak into the cylinder and burn thus depleting the oil.

Three rings top, second and oil ring are installed on the piston.

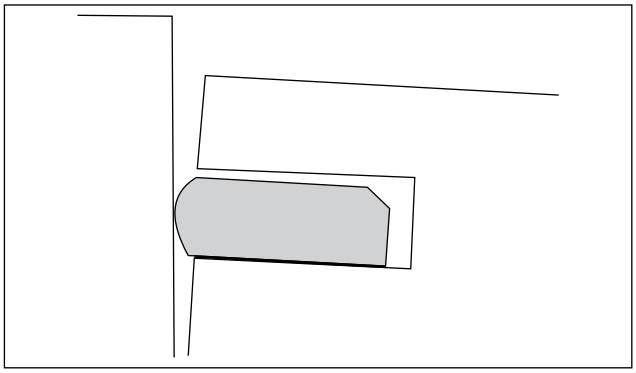




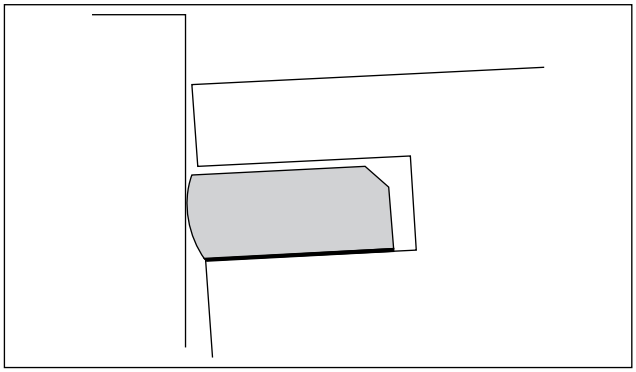
TOP RING

The top ring seals gas in the combustion chamber. It has a "barrel-face" section in order to maintain sealing even when the piston is inclined.

Most top rings are chrome-plated or gas nitreted to maximize wear resistance.



This ring is unidirectional. 'Top 1' mark on the ring indicates upward direction.

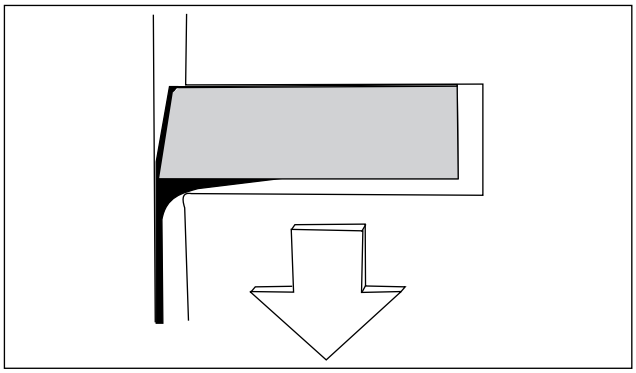


SECOND RING

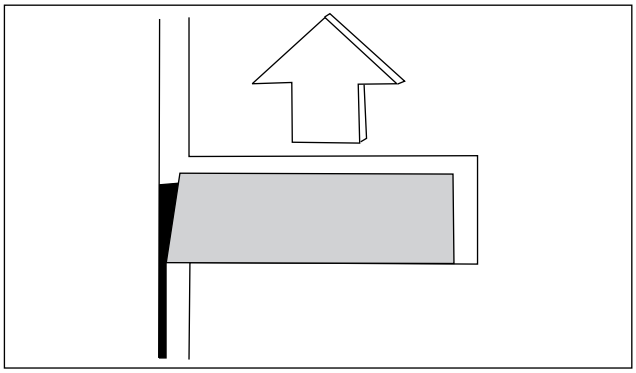
The second ring has a beveled edge.

The second ring functions to:

- Seals gas.
- Scrape off oil on the cylinder wall when moving downward.
- Coat the cylinder wall with oil when moving upward.

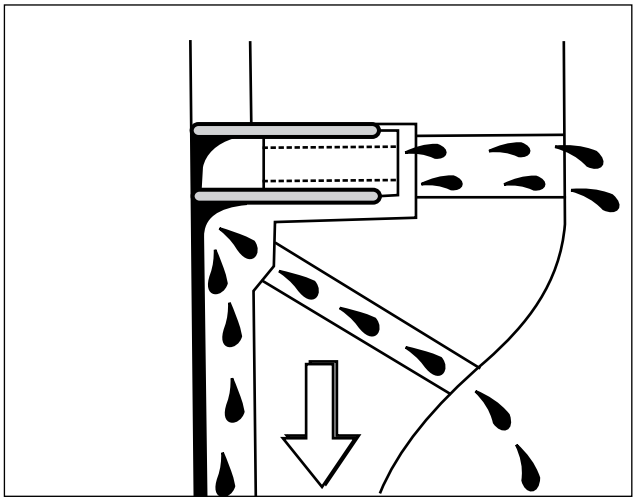


This ring is unidirectional. 'Top 2' mark on the ring indicates upward direction.

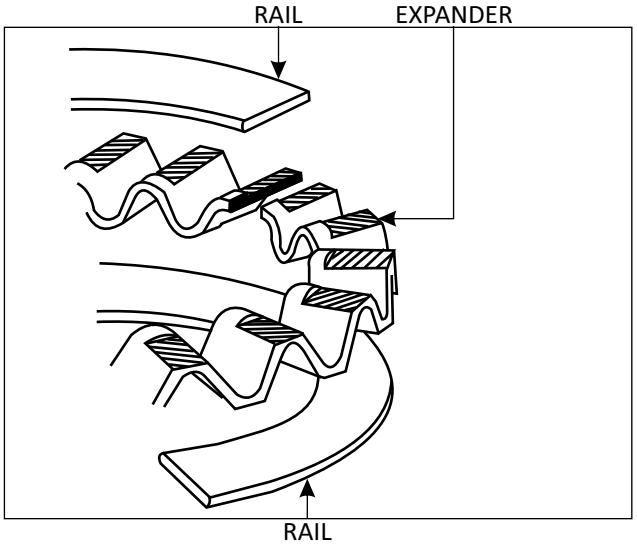


OIL RING

The oil ring scrapes off excess oil on the cylinder wall as it moves downward. The scraped off oil is drained through holes in the piston.



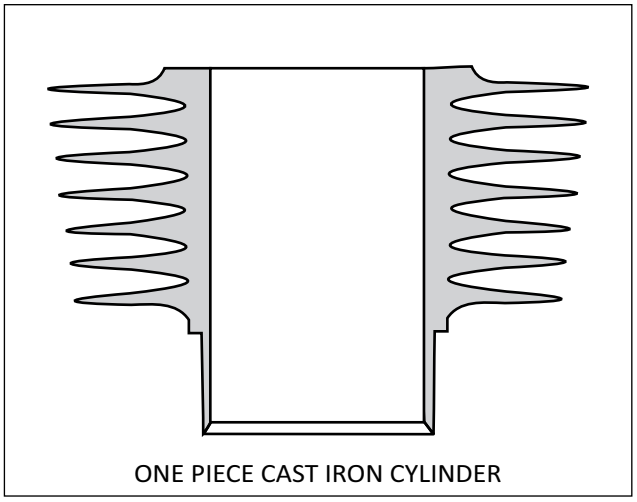
The oil ring is composed of two steel rails and an expander ring.



CYLINDER

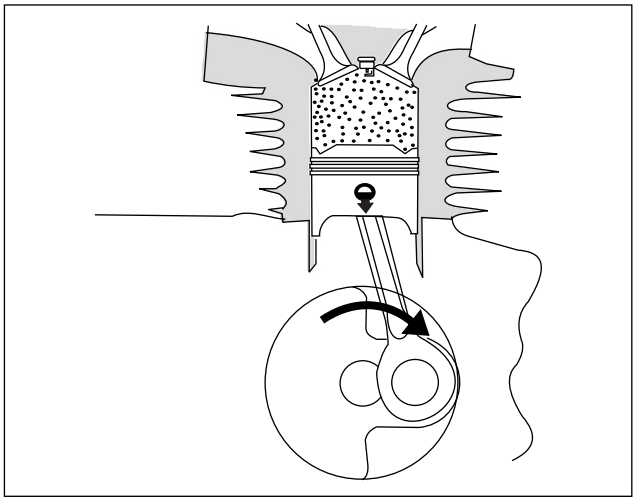
As the cylinder is exposed to extreme heat of the burning gas, it needs cooling. On air-cooled engines, the cylinder is provided with cooling fins.

A one-piece cast iron cylinder is used on small engines.



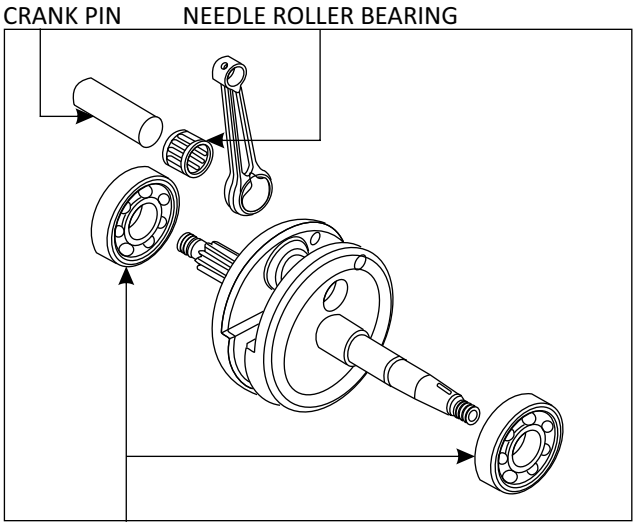
CRANKSHAFT

The crankshaft changes the reciprocating motion of the piston into rotary motion via the connecting rod. The crankshaft web functions as a counter weight to balance the reciprocating mass of the piston and connecting rod.

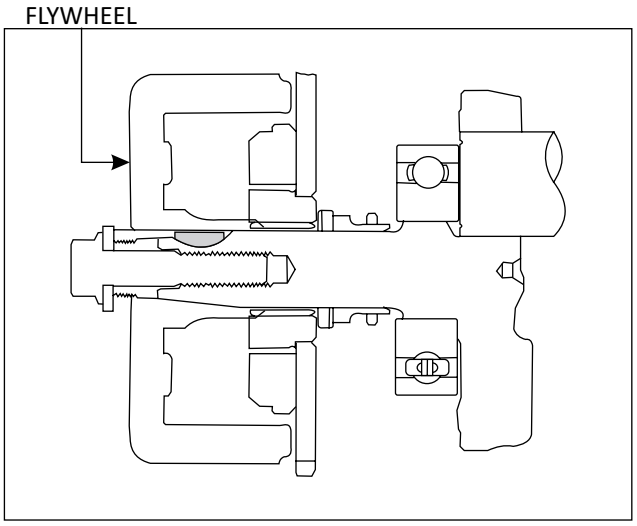


Crankshafts used on single cylinder engines are so called assembly type, with the right and left crank halves connected via a press-fitted crank pin. A needle roller bearing is installed at the big end of the connecting rod.

The crankshaft is supported by radial ball bearing at both sides.



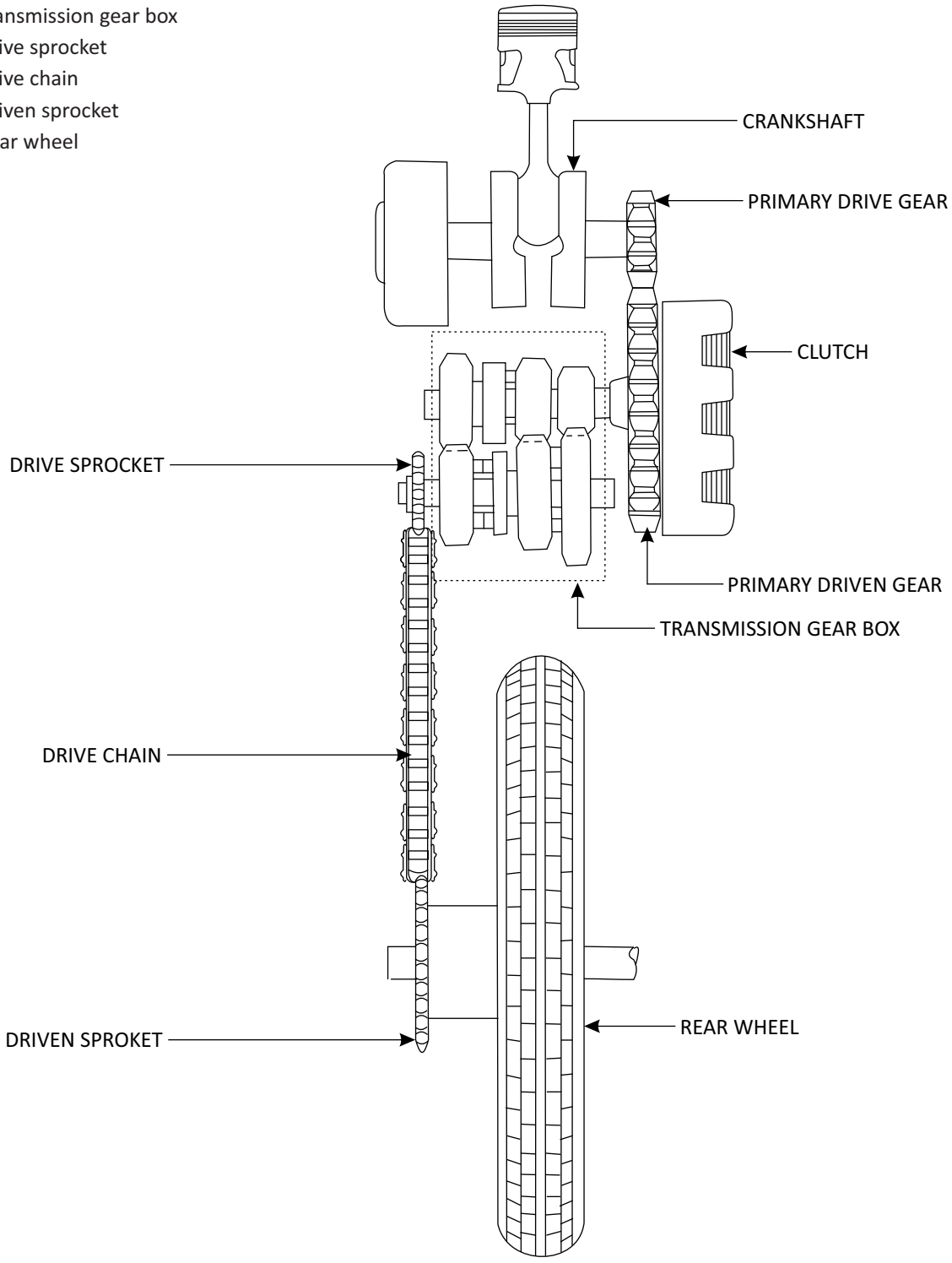
To smooth crankshaft rotation, a flywheel is installed. This also functions as part of the alternator.



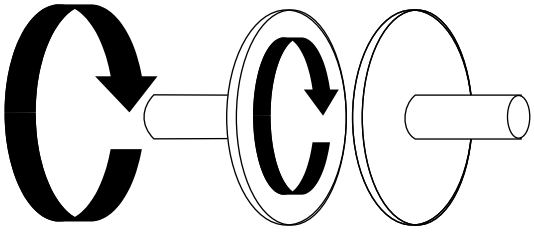
POWER TRAIN

Power is transmitted to rear wheel in the following sequence:

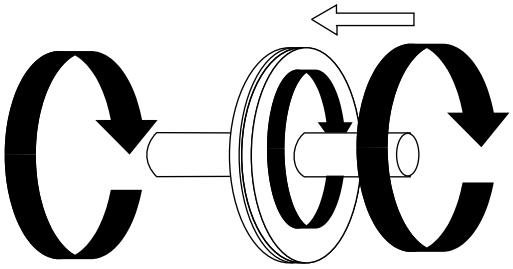
1. Crankshaft
2. Primary drive gear
3. Clutch: Primary driven gear
4. Transmission gear box
5. Drive sprocket
6. Drive chain
7. Driven sprocket
8. Rear wheel



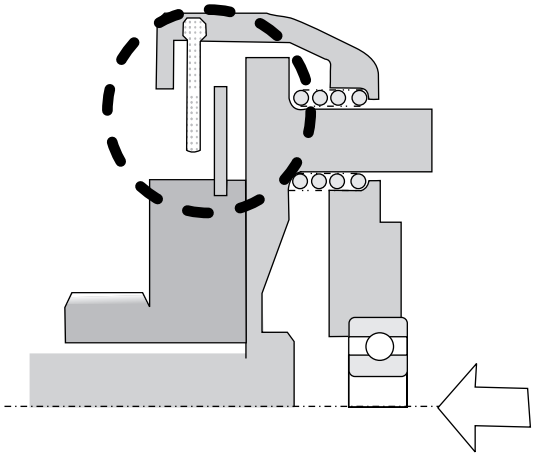
CLUTCH

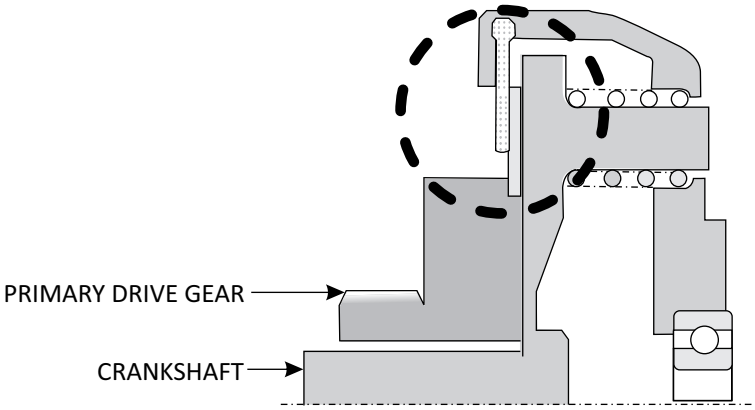


DISENGAGED

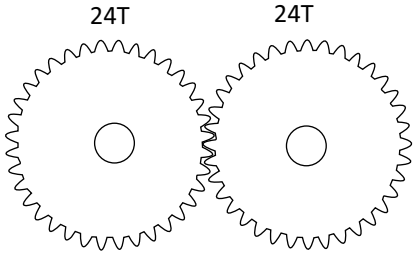


ENGAGED

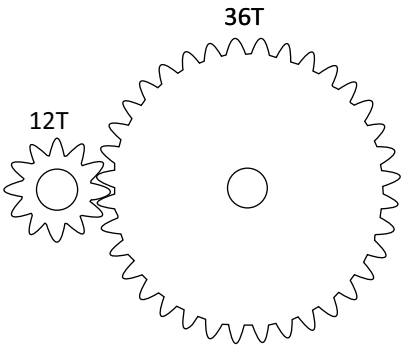




TRANSMISSION



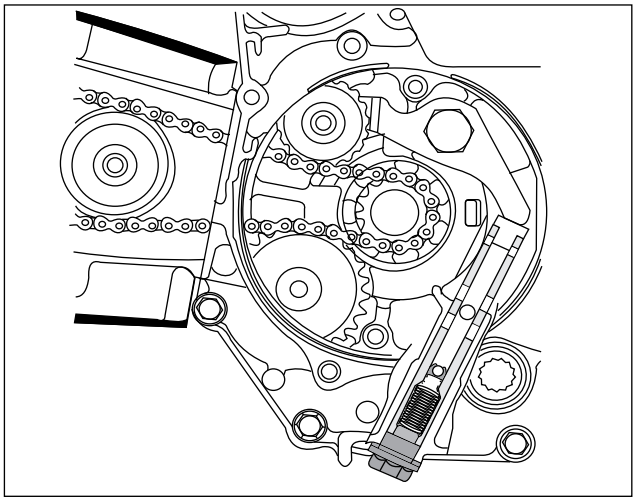
REDUCTION RATIO: 1



REDUCTION RATIO: 3

CAM CHAIN TENSIONER

The cam chain tensioner takes up slack in the cam chain, most cam chain tensioners used today adjust cam chain slack automatically.



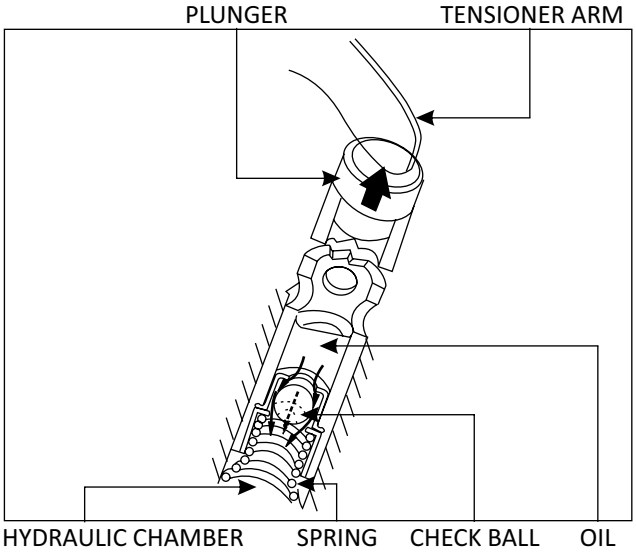
HYDRAULIC TYPE TENSIONER

The plunger is forced upward by the spring .The hydraulic chamber is filled with engine oil. In the plunger, on top of the hydraulic chamber there is a one-way valve provided, which is composed with a steel ball and its seat.

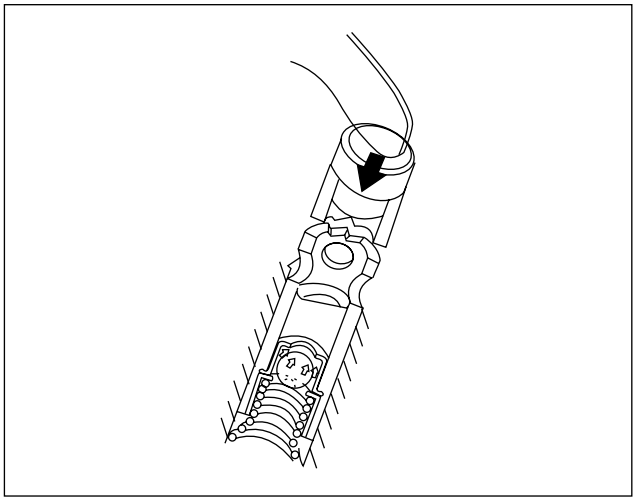
OPERATION

When there is a slack in the cam chain, the plunger strokes upward to push the tensioner arm to take up the slack.

On this moment oil enters the hydraulic chamber through a clearance opened between the steel ball and its seat.



When the plunger is pushed down, the steel ball seats to close the oil passage. Oil in the hydraulic chamber is then almost like solid, having no way to go out, and does not allow the plunger to be pushed down any further. Thus the cam chain tension is maintained.

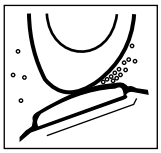


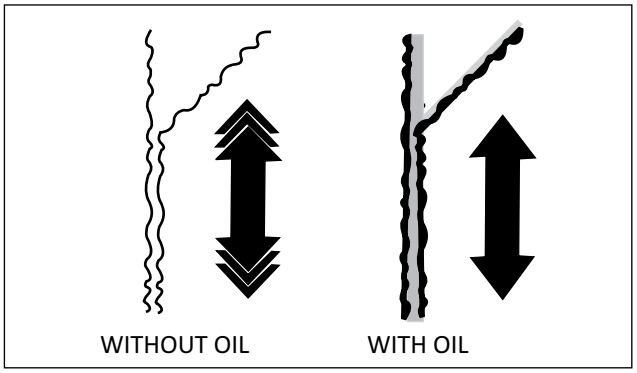
FUNCTION OF ENGINE OIL

REDUCING FRICTION

Without oil, moving metal parts in contact rub against each other. The resulting friction causes the metal parts to wear and heat builds up.

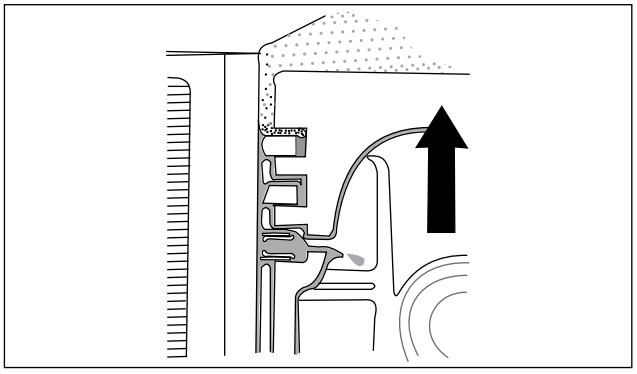
A film of oil between the metal parts prevents friction and wear.





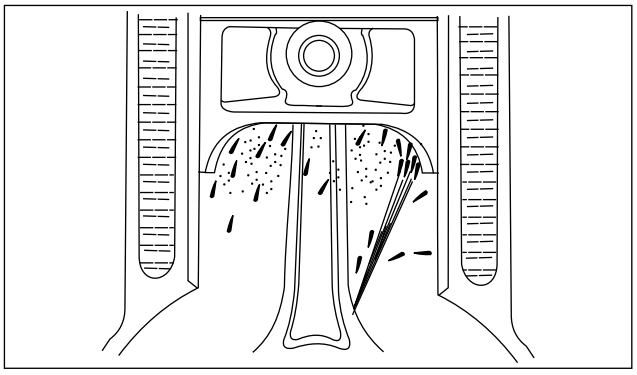
SEALING

Oil helps to seal in the gas. The slight clearance around the piston ring is filled with oil to ensure sealing.



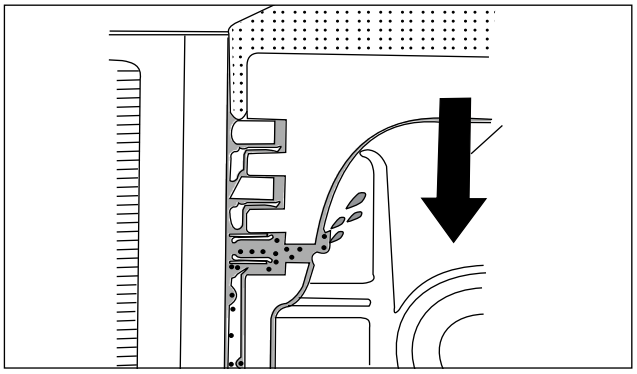
COOLING

Oil cools the piston and the bearings. Oil removes heat from these parts and carries it to the crankcase.



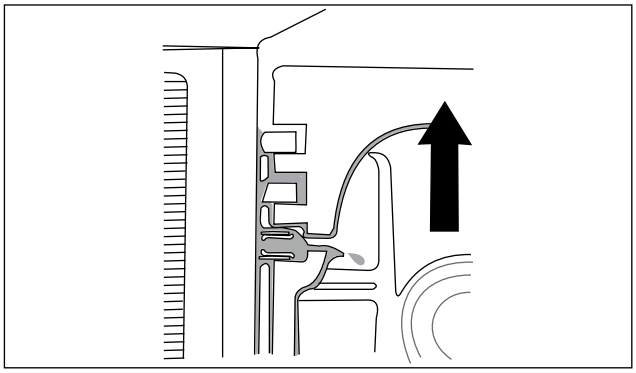
CLEANING

Oil removes sludge, gum and some carbon to help keep the engine clean.



RUST PREVENTION

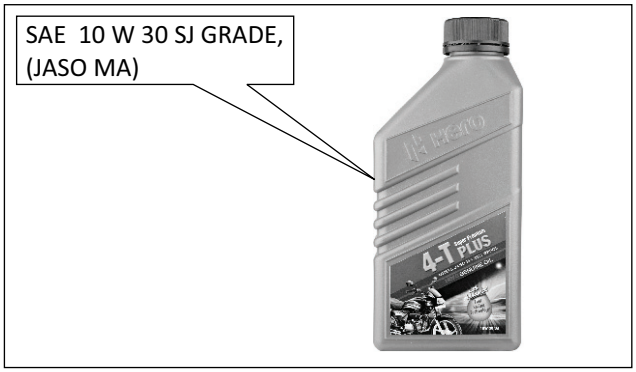
Oil coats the surface of metal parts and prevents rusting.



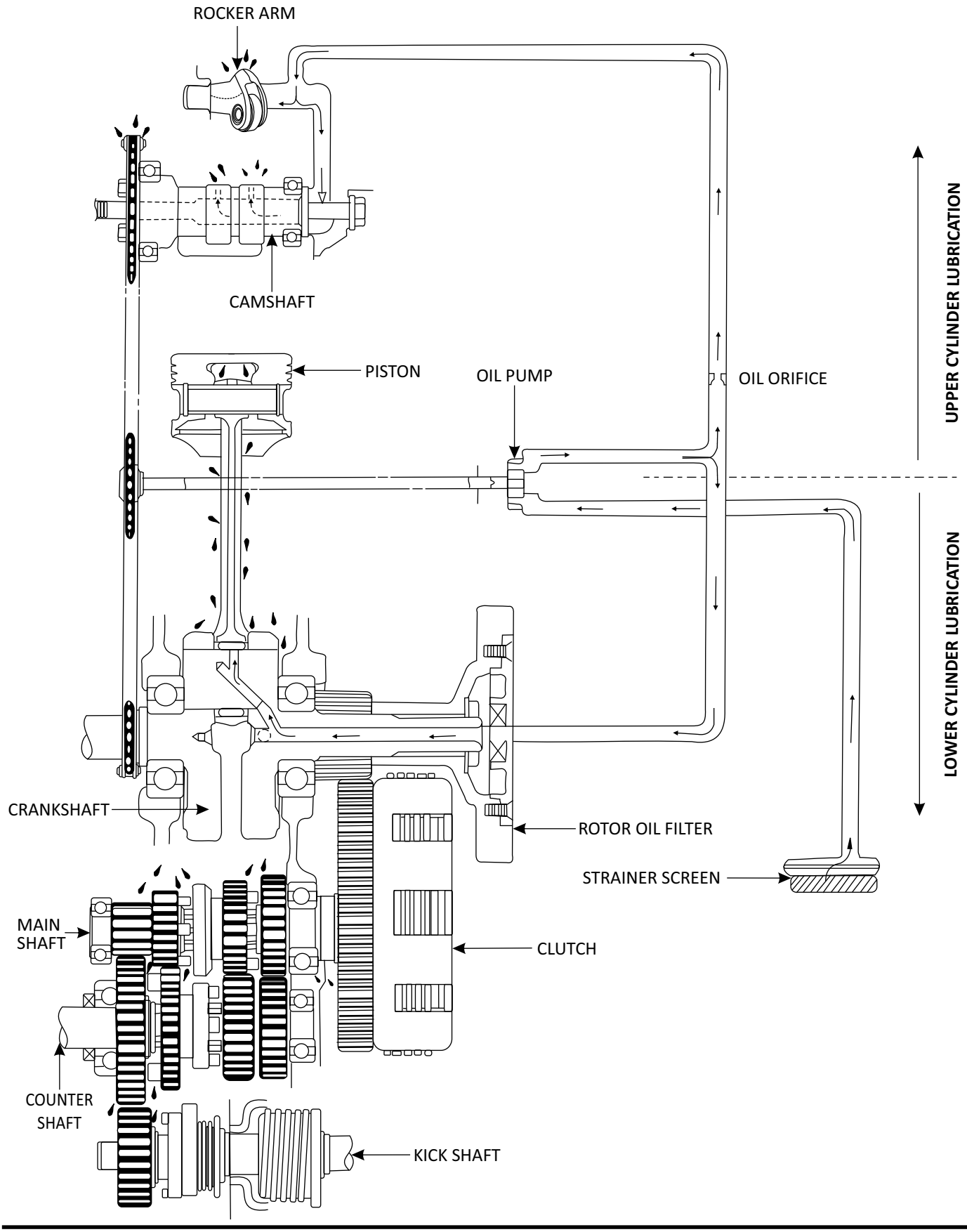
GRADES OF OIL

The API (American Petroleum Institute) service classification is used to identify the quality and service recommendations of oils. The same is prescribed in the owners manual.

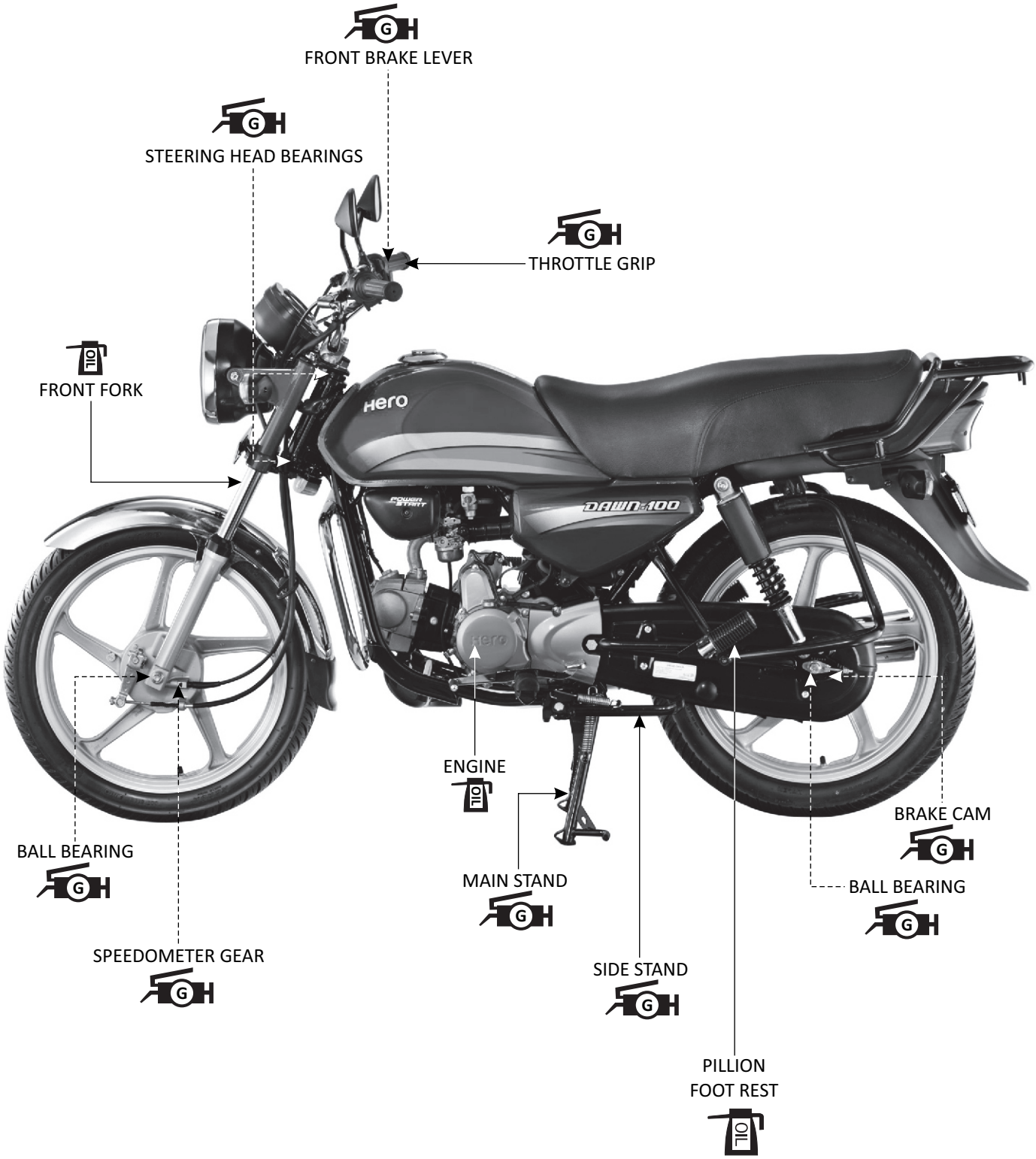
SJ ↑
SG
SF
SE
SD
SC



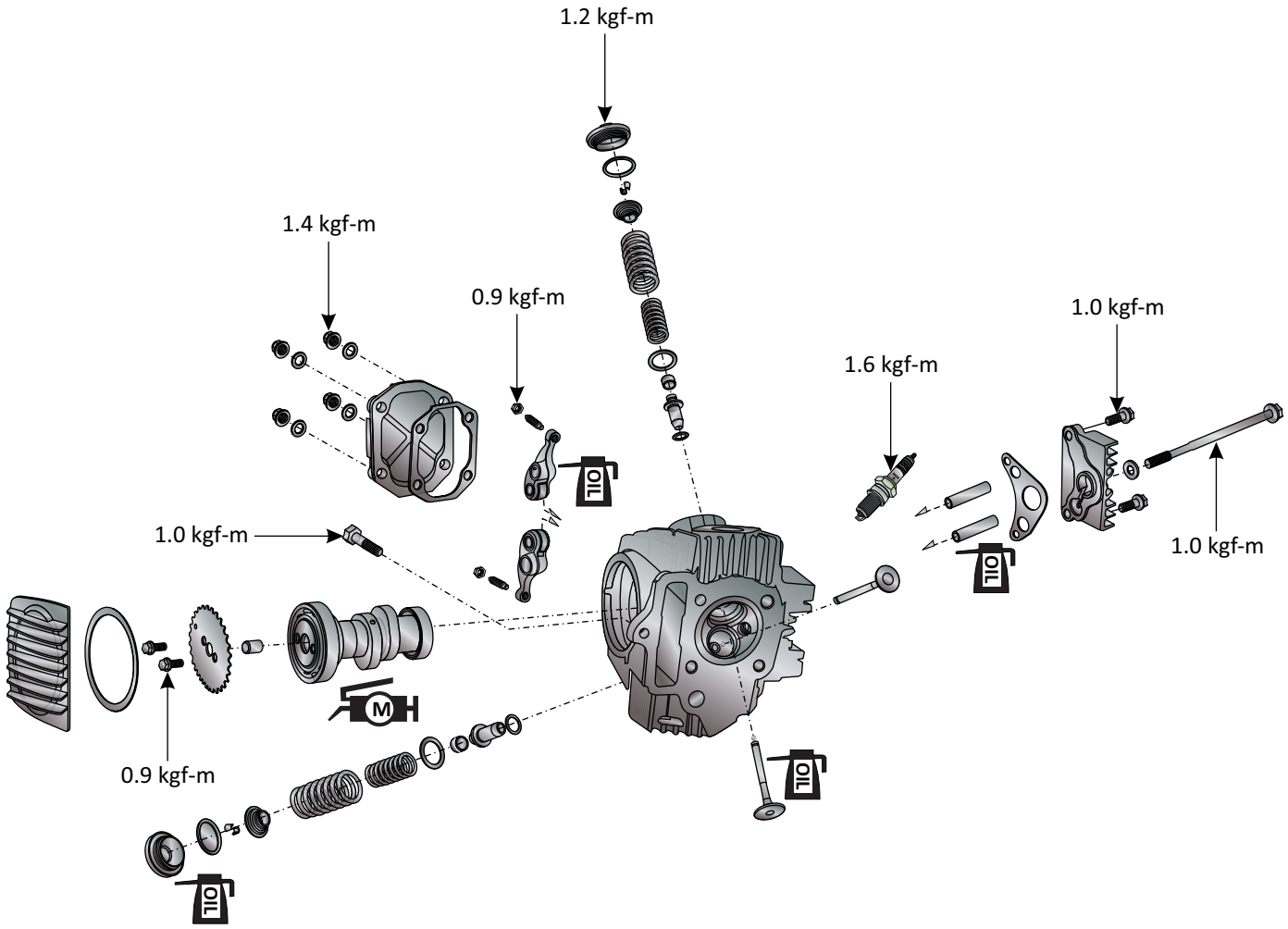
ENGINE LUBRICATION CIRCUIT



MOTORCYCLE LUBRICATION POINTS



CYLINDER HEAD ASSEMBLY



CYLINDER HEAD

REMOVAL

Remove the exhaust muffler.

Loosen the spark plug.

Remove tappet inspection caps.

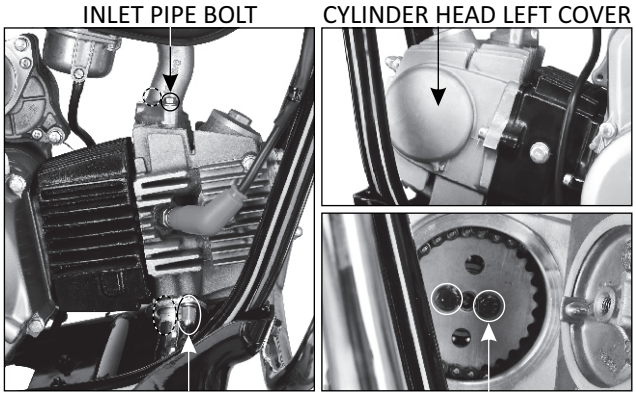
Remove the inlet pipe bolts.

Remove the cylinder head left side cover by removing the bolt from right hand side.

Loosen the right cylinder head cover bolts.

Remove the cam sprocket bolt.

Dismount the cam sprocket from the cam shaft.



NOTE

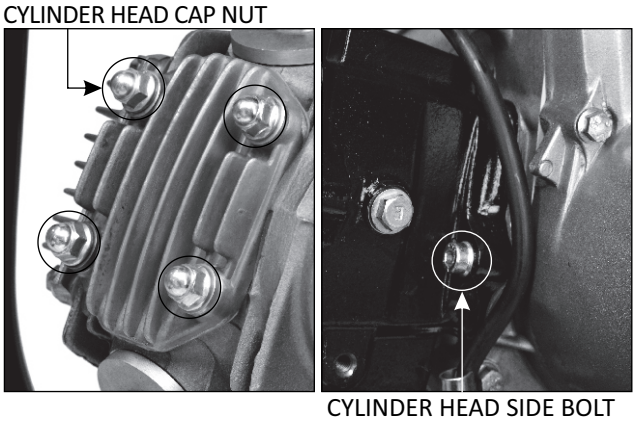
Make sure that the "O" mark on the cam sprocket is aligned with the index mark on the cylinder head.

Remove the side bolt clamping the cylinder head to cylinder. Loosen the side bolt, clamping the

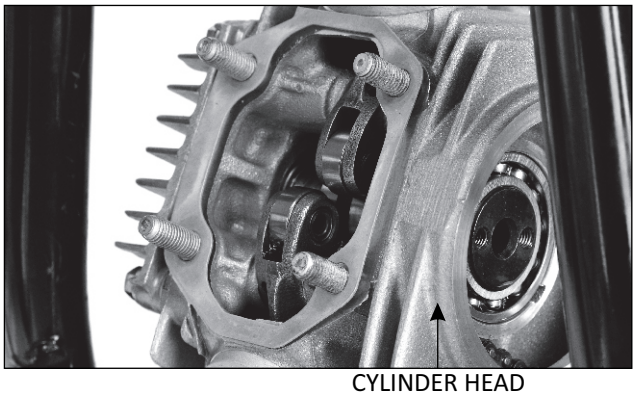
cylinder to crankcase.

Remove the four cylinder head cap nuts.

Remove the cylinder head top cover.



Now remove the cylinder head.

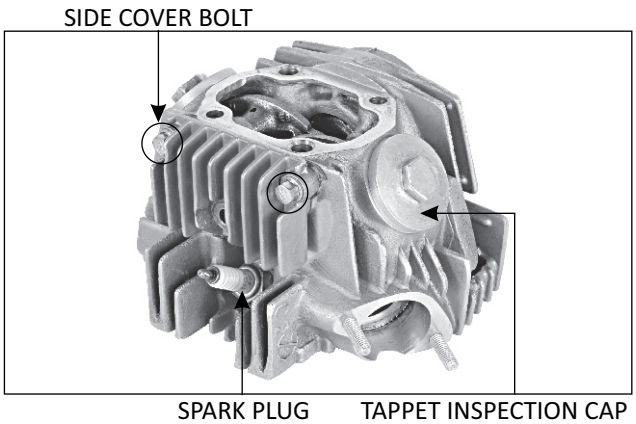


DISASSEMBLY OF CYLINDER HEAD

Remove the cylinder head right side cover by removing the bolts.

Remove the spark plug.

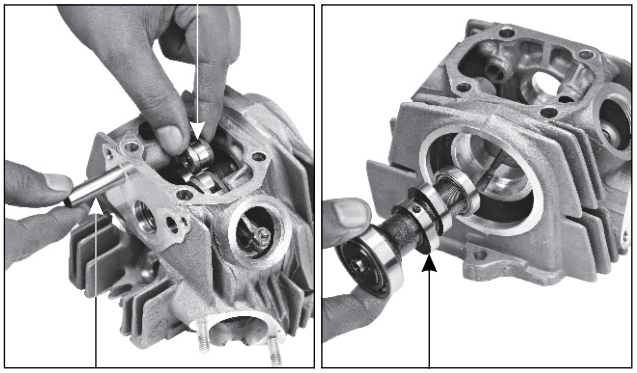
Remove the tappet inspection caps.



Remove the rocker arm shaft with the help of a bolt.

Remove the rocker arm and camshaft.

ROCKER ARM



ROCKER ARM SHAFT CAMSHAFT

Compress the valve springs with valve spring compressor tool.
Remove the valve cotters and valves

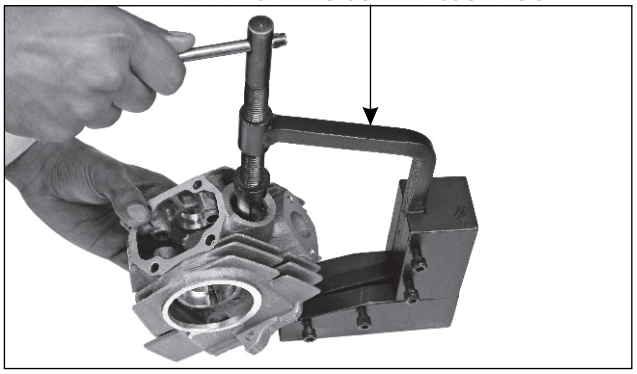
NOTE

To prevent loss of tension, do not compress valve springs more than necessary.

TOOL

VALVE SPRING COMPRESSOR
PART NO: 070 HH 198 005

VALVE SPRING COMPRESSOR TOOL



CYLINDER HEAD OVERHAULING

Remove the carbon deposits from the combustion chamber. Check all parts for wear and damage.

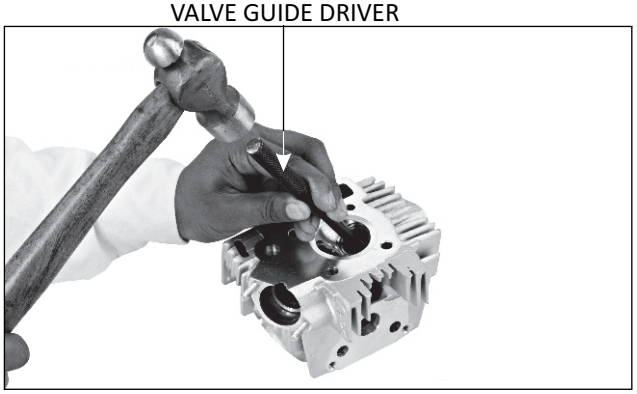
Replacement of valve guides:

Support the cylinder head and drive out the valve guides with the driver from the combustion chamber side.

TOOL

VALVE GUIDE REMOVER
PART NO: 070 HH 198 010

VALVE GUIDE DRIVER



Chill the new valve guides in the freezer section of a refrigerator for about an hour.

Heat the cylinder head to 100-150°C (212-302°F) with a hot plate or oven.

CAUTION

Do not use a torch to heat the cylinder head; it may cause warping.

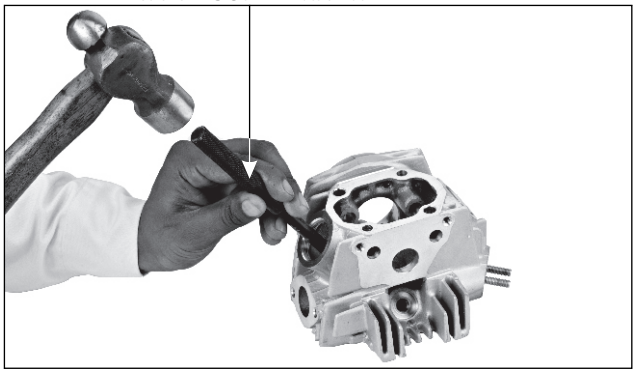
Install new O-ring on the valve guide.

Coat the guide with engine oil.

Drive in the new valve guide from the upper side while the cylinder head is still hot.

Let the cylinder head cool to room temperature.

VALVE GUIDE DRIVER



Inspect the inner surface valve guide.

Ream the valve guide after installation.

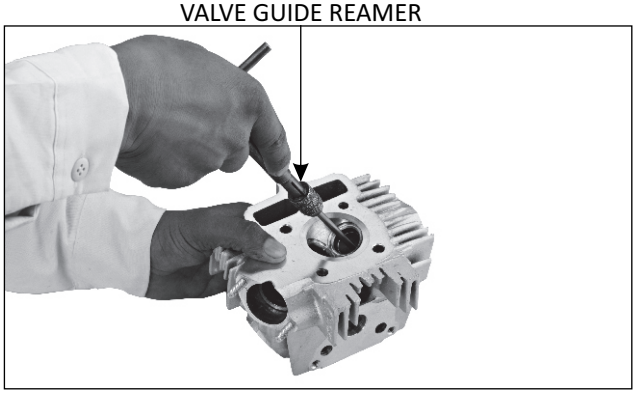
NOTE

- *Take care not to tilt or lean the reamer in the guide while reaming. Otherwise, the valve is installed slanted, that cause oil leaks from the stem seal and improper valve seat contact that cannot be corrected by refacing.*
- *Rotate the reamer clockwise, never rotate counterclockwise when inserting and removing.*

TOOL

VALVE GUIDE REAMER

VALVE GUIDE REAMER



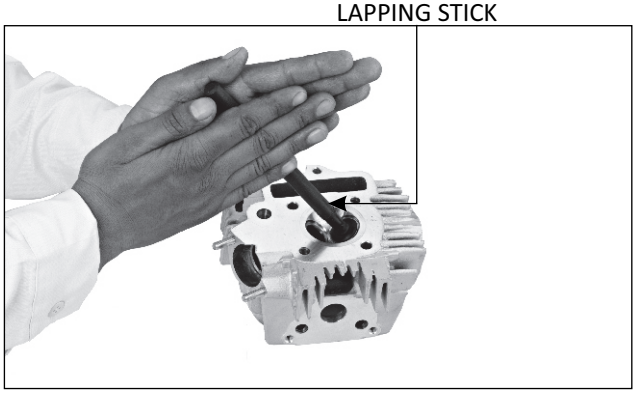
VALVE SEAT LAPPING

Clean inlet and exhaust valves to remove the carbon deposits. Apply a light coat of valve grinding paste to each valve. Lap each valve and seat using lapping stick.

NOTE

For best results, first grind with coarse paste and then with fine paste. Do not hit the valve but give gentle strokes.

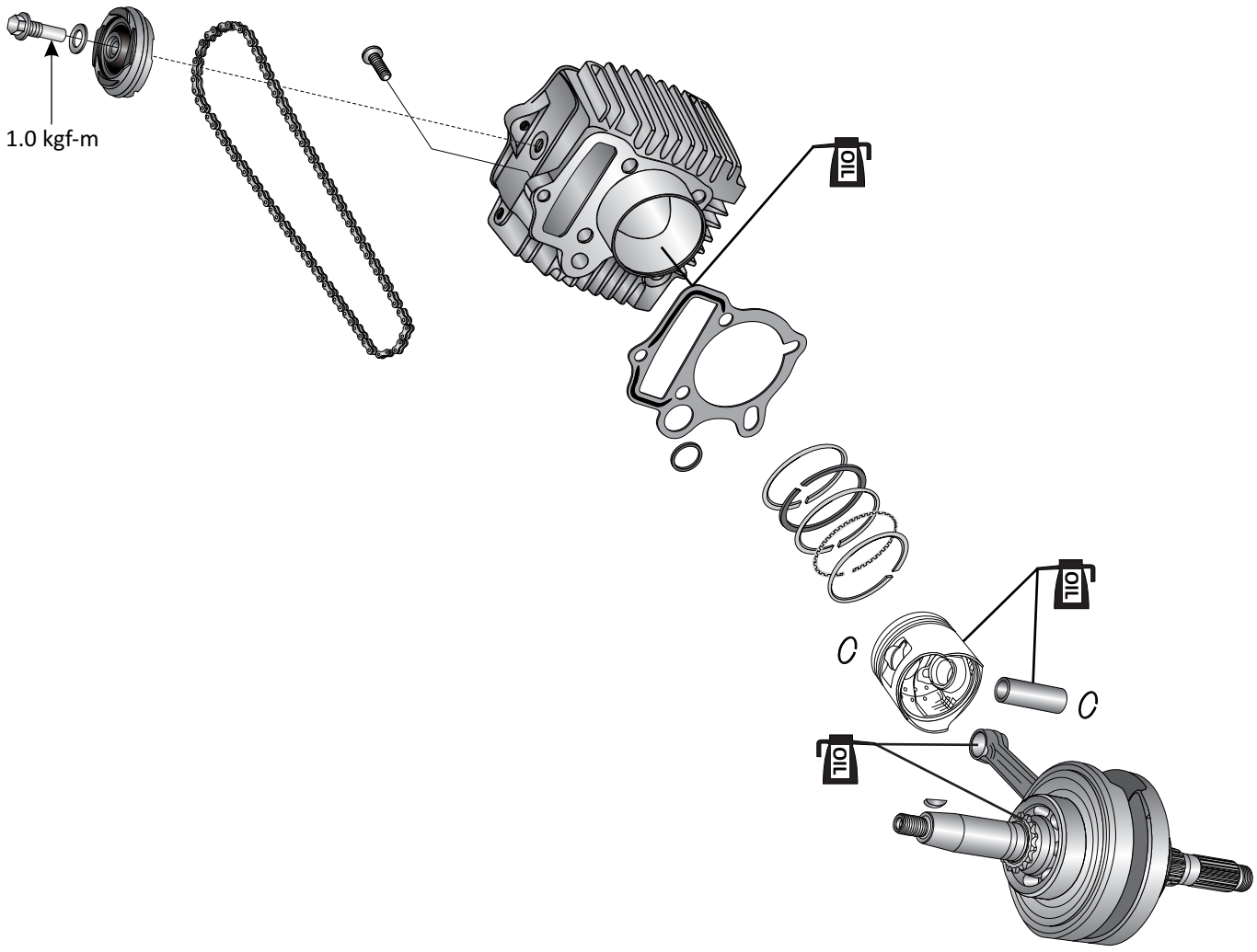
LAPPING STICK



CYLINDER HEAD ASSEMBLY/INSTALLATION

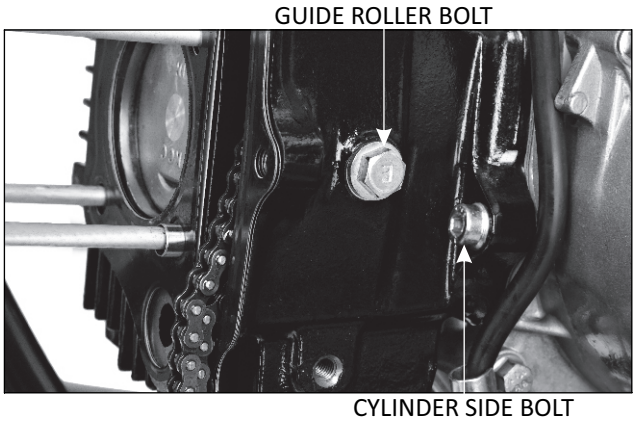
Assembly and installation is in reverse order of disassembly.

CYLINDER/PISTON

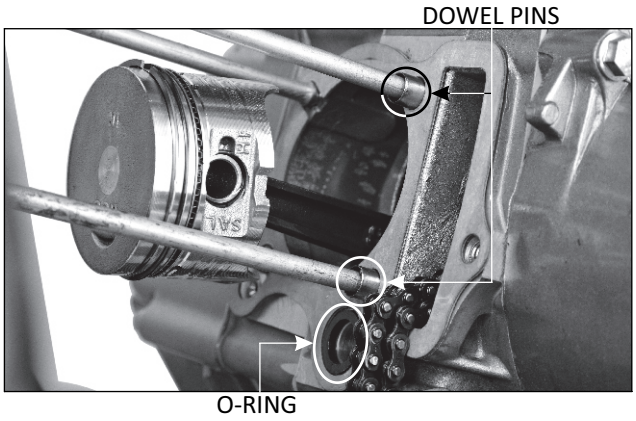


CYLINDER/PISTON

Remove the cylinder head (Refer page no 34) Remove the guide roller bolt and guide roller. Remove the side bolt clamping the cylinder to left crankcase.



Remove the O-ring and dowel pins. Clean off any gasket material from the crankcase and check for any wear.

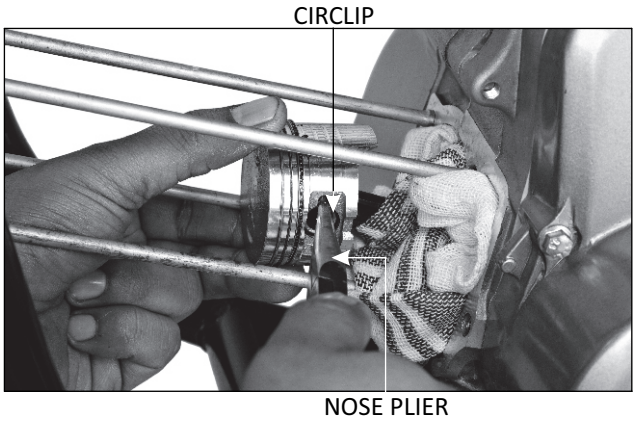


PISTON REMOVAL

Remove the circlip with nose plier and press out piston pin. Remove the piston .

NOTE

Stuff some soft fibre free cloth in the crankcase to prevent any object from falling into it.

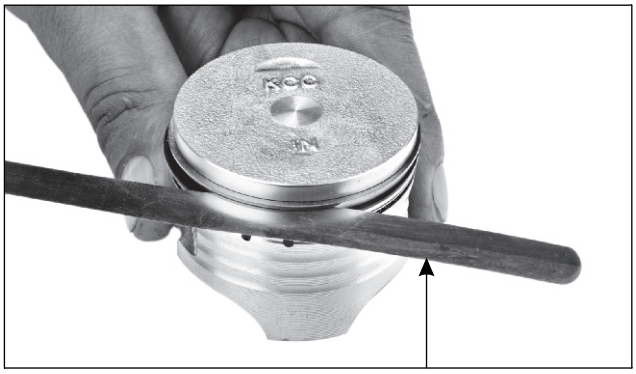


PISTON/PISTON RING INSPECTION

Measure the piston ring to groove clearance.

SERVICE LIMIT

TOP/SECOND: 0.12 mm



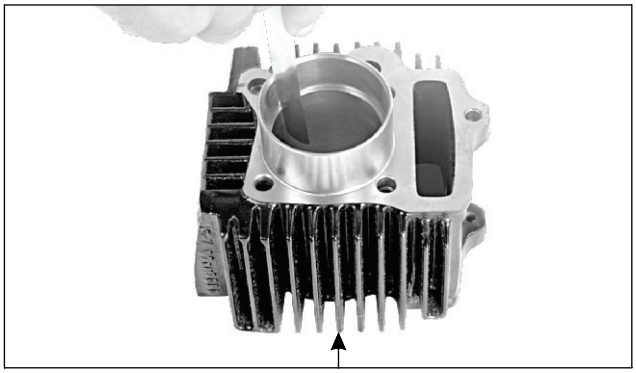
Remove piston rings and measure ring gap.

SERVICE LIMITS

TOP RING:	0.50 mm
SECOND RING:	0.50 mm
OIL RING:	1.10 mm

NOTE

Place ring squarely in cylinder and press it with piston to a depth of 30 mm.



PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly.

Install the piston rings.

Space the piston ring gaps 120° apart.

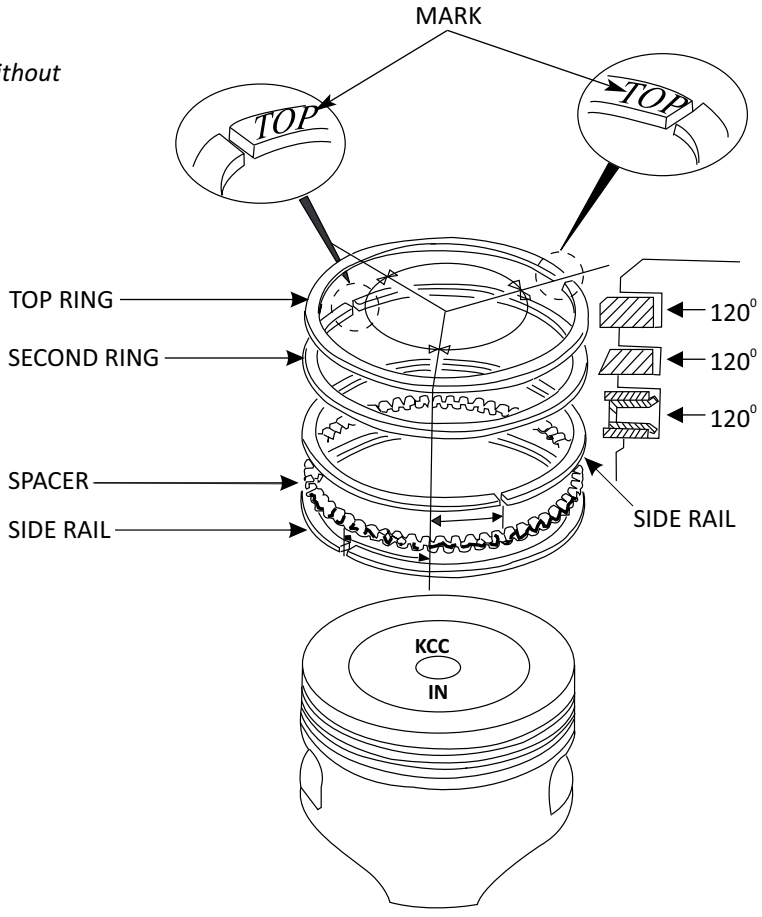
Install the piston rings with the "T" or "Top" mark facing upwards.

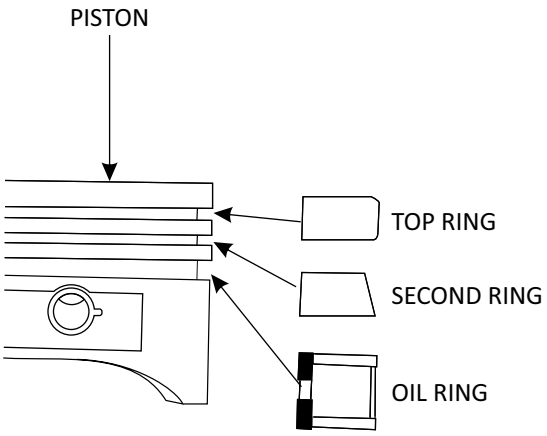
CAUTION

- Do not damage the piston ring by spreading the ends too far.
- Be careful not to damage the piston during the piston ring installation.

NOTE

- *Do not get confuse between the top and second rings.*
- *After installing the rings they should rotate freely, without sticking.*
- *Space the ring end gaps 120° apart.*





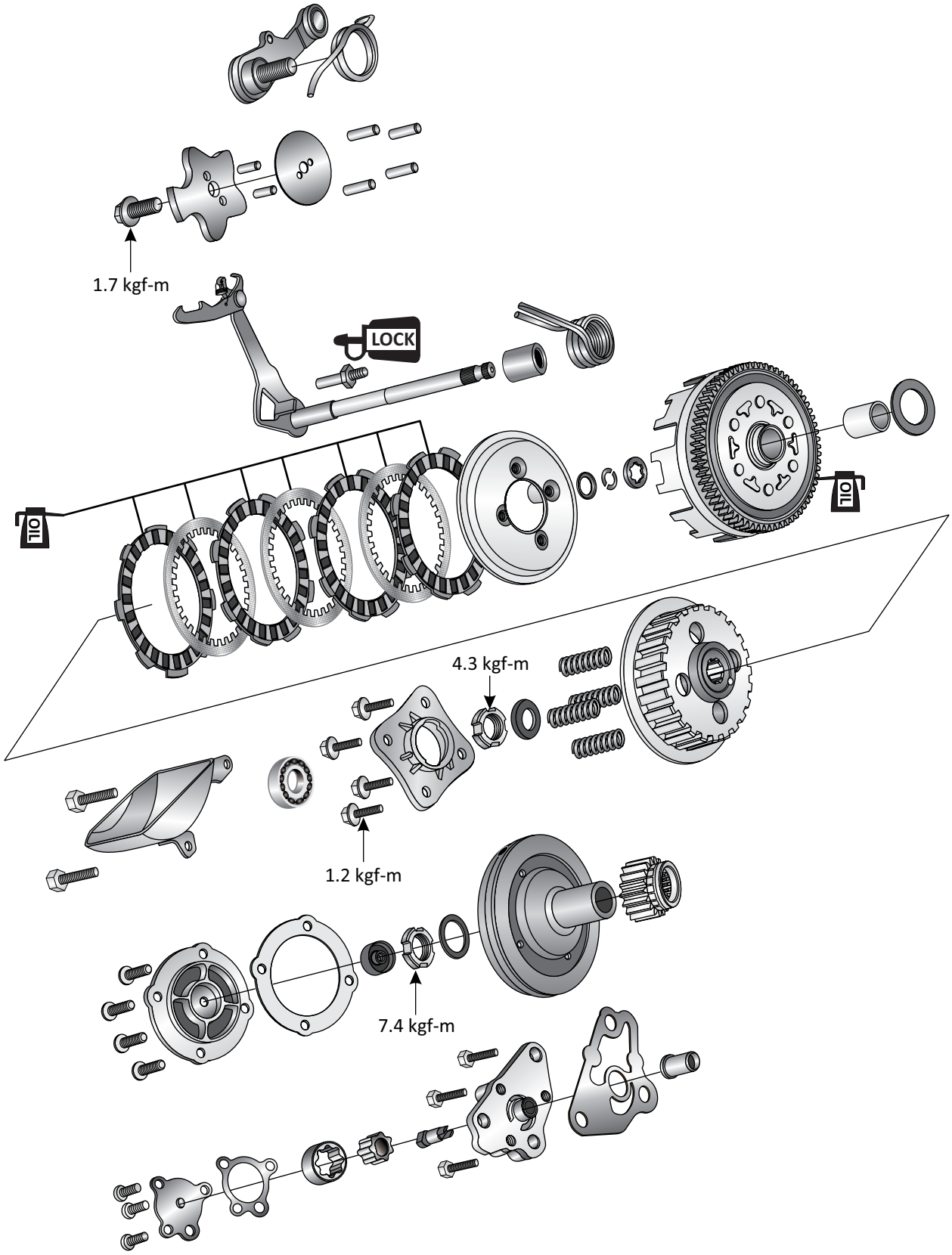
PISTON/CYLINDER INSTALLATION

Install piston and cylinder in reverse order of disassembly.

NOTE

Position the 'IN' mark on piston towards inlet side.

CLUTCH/OIL PUMP/GEARSHIFT LINKAGE



CLUTCH

Remove the oil level dipstick.

Drain the engine oil.

Remove the arm kick starter.

Remove the exhaust muffler.

Disconnect the clutch cable.

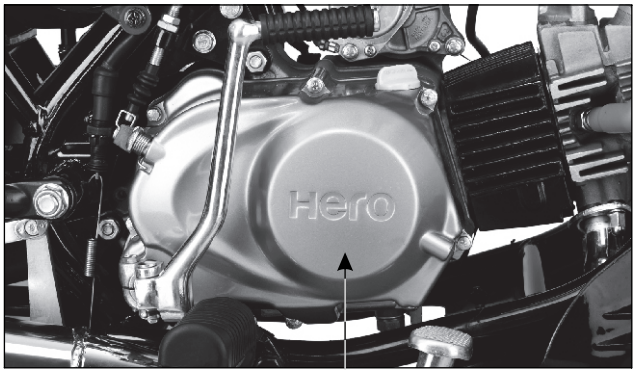
Remove the footrest (depending on the model).

Remove brake pedal spring.

Loosen 8 bolts to remove the clutch cover.

NOTE

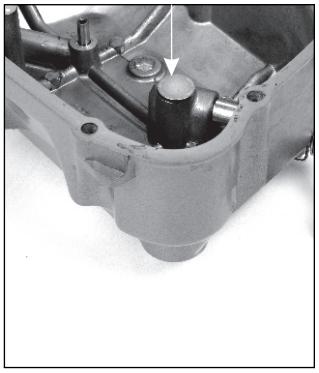
Apply multipurpose grease on the splined portion of the kick spindle before removing the right crankcase cover.



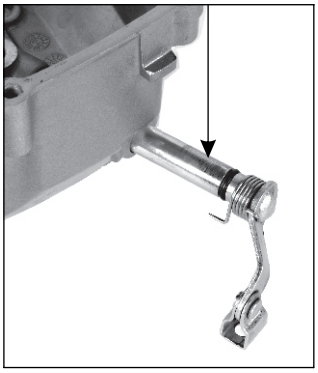
RIGHT CLUTCH COVER

Remove the clutch lifter rod and clutch arm. Check arm for wear or bend.

CLUTCH LIFTER ROD



CLUTCH ARM



REMOVAL OF CLUTCH

Remove clutch cover.

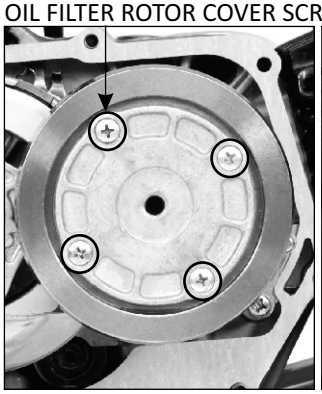
Lock the motion of gear primary drive and driven with the help of GPD holder.

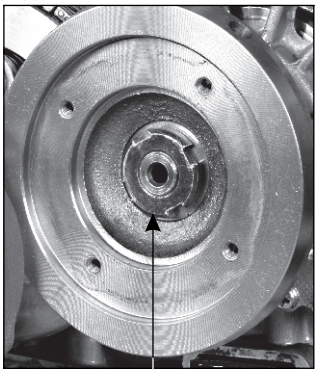
Remove the oil filter rotor screws.

NOTE

Use impact driver to loosen or tighten the rotor oil filter cover screws.

OIL FILTER ROTOR COVER SCREW





LOCK NUT

Lock the motion of gear primary drive and driven with the help of GPD holder.

Remove the oil filter rotor lock nut and washer using socket wrench.

TOOLS

GPD HOLDER

PART No: 070 HH 198 017

SOCKET WRENCH (ROTOR OIL FILTER AND CLUTCH)

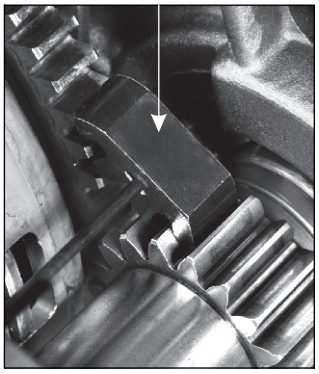
PART No: 070 HH 198 002

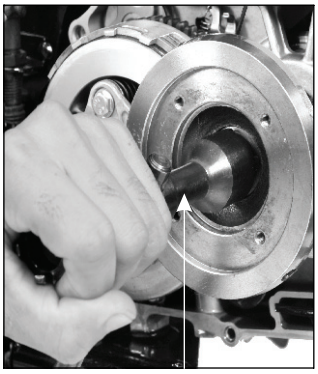
NOTE

Do not engage a screwdriver between the gears as it may damage the profile.

GPD holder to be used only when using manual tools.

GPD HOLDER





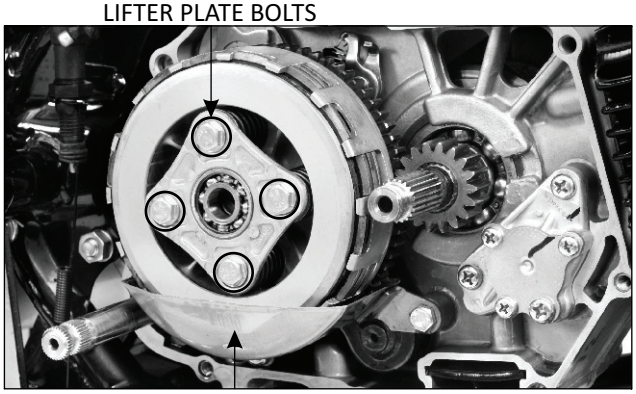
SOCKET WRENCH

Remove oil separator plate.

Lock the motion of gear primary drive and driven with the help of GPD holder.

Remove the bolts on clutch lifter plate.

LIFTER PLATE BOLTS



OIL SEPARATOR PLATE

Hold the clutch using clutch centre holder and loosen the clutch lock nut.

Remove the lock nut.

Remove the lock washer.

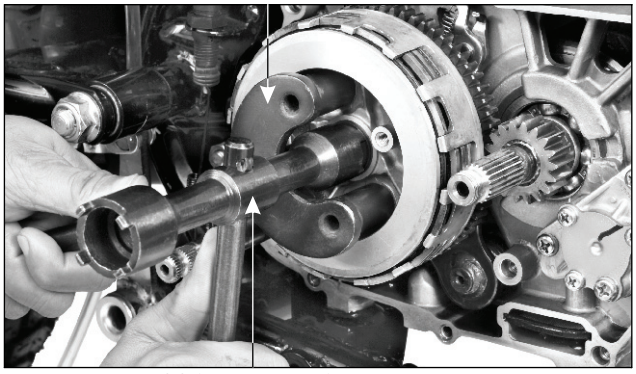
Remove the clutch plates and clutch discs.

TOOLS

CLUTCH CENTER HOLDER
PART NO: 070 HH 198 004

SOCKET WRENCH (ROTOR OIL FILTER AND CLUTCH)
PART NO: 070 HH 198 002

CLUTCH CENTER HOLDER

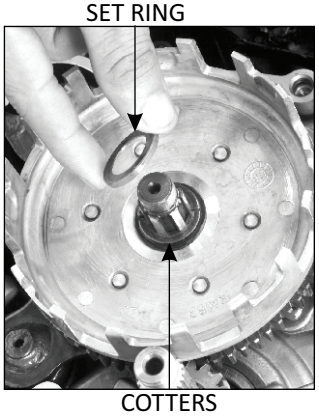


SOCKET WRENCH

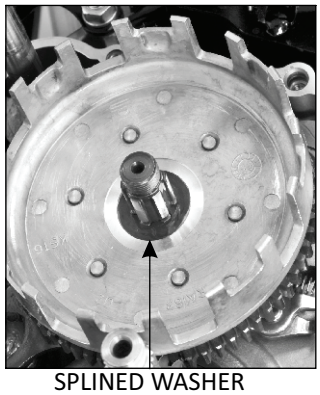
Remove set ring, cotters and splined washer.

Remove the clutch outer.

SET RING



COTTERS



SPLINED WASHER

Remove the collar and thrust washer.

Remove the primary drive gear.

INSTALLATION OF CLUTCH

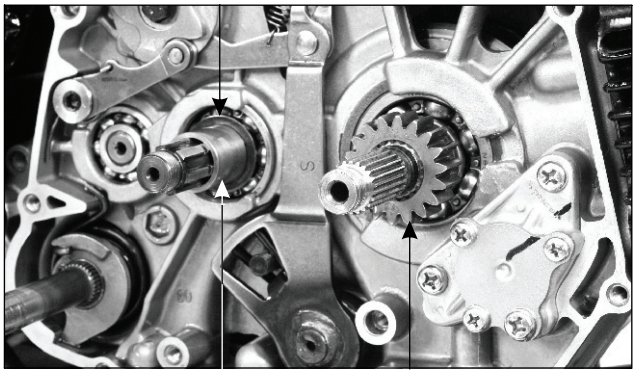
Inspect all parts for wear.

Assembly is in reverse order of disassembly.

NOTE

Install lock washer with the 'O' mark (out side) facing towards you.

THRUST WASHER



COLLAR GEAR PRIMARY DRIVE

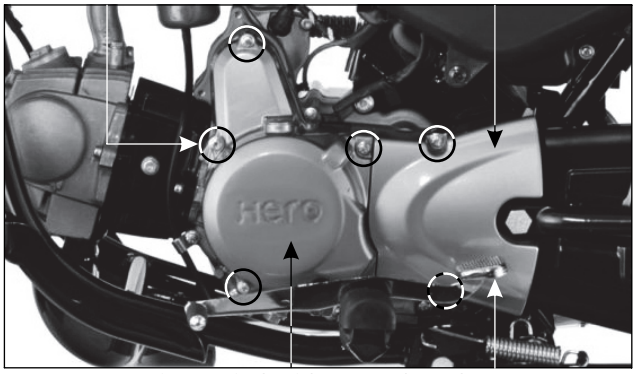
CAM CHAIN/TENSIONER MECHANISM

Disconnect the alternator wire connections.

Remove the gear shift pedal.

Remove the two bolts and left crank case rear cover.

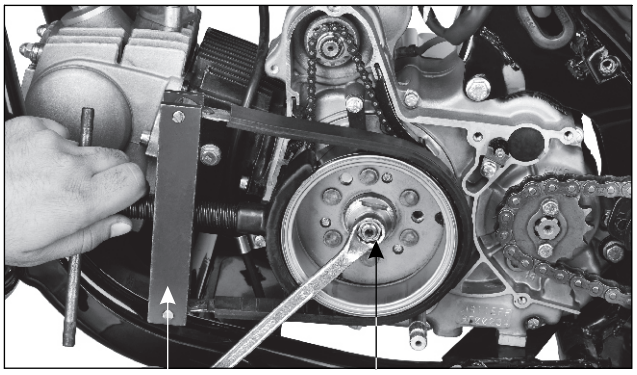
Remove the bolts and left crank case cover.



Hold the flywheel with magnet holder and loosen the flange nut.

TOOL

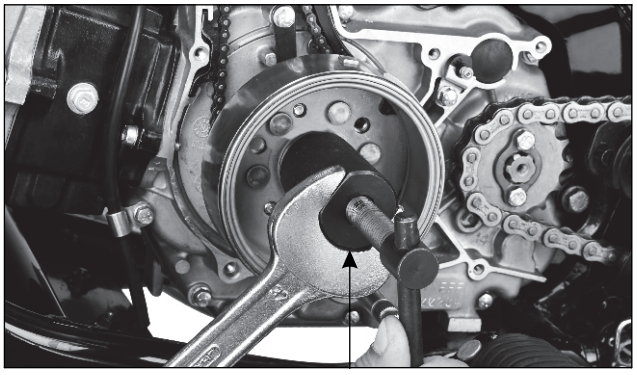
MAGNET HOLDER (CLAMP TYPE)
PART NO: 070 HH KRYH 004



Remove the flywheel using flywheel puller.

TOOL

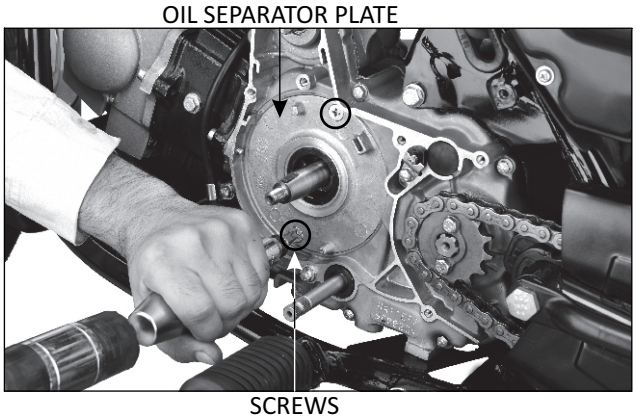
FLYWHEEL PULLER
PART NO: 070 HH KTC 004



Drain the engine oil.

Remove the screws from the oil separator plate.

Pull out the oil separator plate.



PUSH ROD REMOVAL

Remove the tensioner bolt and sealing washer carefully so that spring does not fly out.

Remove the push rod and check the ball valve.

NOTE

To check the valve, suck air through it by mouth. If it allows air in both directions then valve is defective.

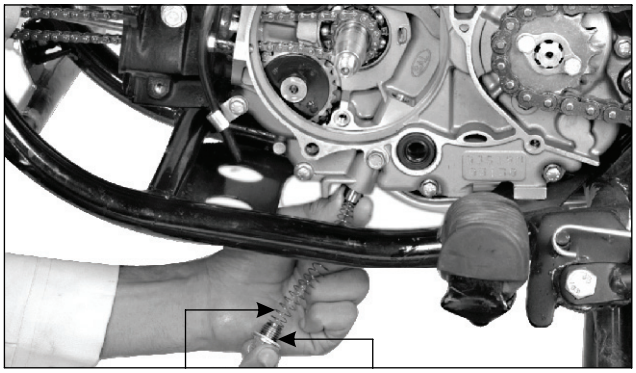
CAM CHAIN REMOVAL

Remove the cylinder head.

Remove guide roller.

Remove the cam chain from the crankshaft sprocket.

Check roller and cam chain for wear.



SPRING TENSIONER BOLT

CAM CHAIN INSTALLATION

Install cam chain on drive sprocket.

Insert the cam chain through the cylinder.

Rail the guide roller on cam chain and tighten guide roller bolt.

Install the oil separator plate.

Install the flywheel.

Install cam sprocket in the cam chain.

Install cylinder head.

Install the left crankcase cover.

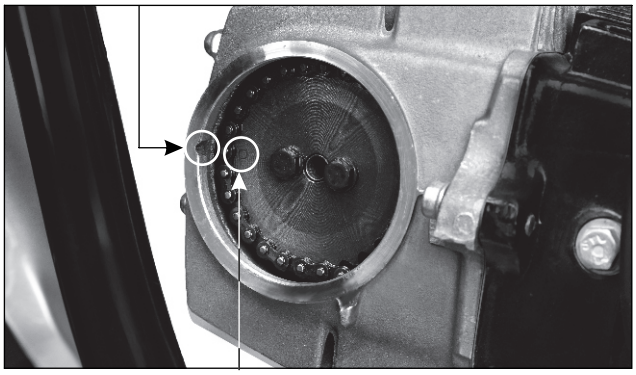
NOTE

Align the 'T' mark on the flywheel with the index mark on left crankcase cover.

Make sure that 'O' mark on cam sprocket is aligned with index mark on cylinder head.

Install the left crankcase rear cover. Connect the alternator wire connections. Install the gear shift pedal.

INDEX MARK



"O" MARK

GEAR SHIFT MECHANISM

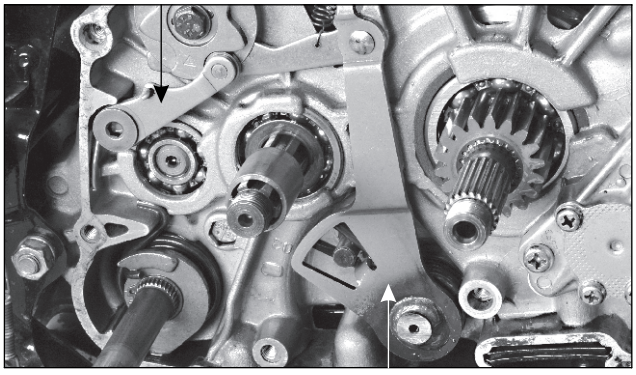
Remove the rotor oil filter.

Remove the clutch assembly.

Remove the stopper plate bolt.

Remove drum stopper plate and side plate.

GEAR SHIFT DRUM STOPPER ARM



GEAR SHIFT SPINDLE

Pull out the gear shift spindle.

Remove drum stopper arm.

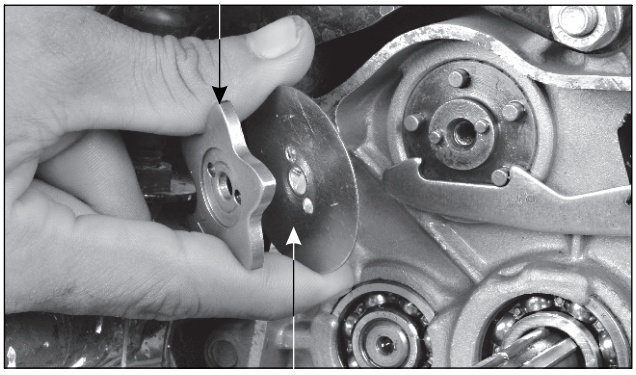
NOTE

Apply multipurpose grease on the serrated area of gear shift spindle before removing.

ASSEMBLY OF GEAR SHIFT MECHANISM

Assemble in reverse order of disassembly.

GEARSHIFT DRUM STOPPER PLATE



GEARSHIFT DRUM SIDE PLATE

Four speed transmissions transmits engine power to the rear wheel.

Rider shifts gear using left foot operated gear pedal. Gear shifting pattern is N-1-2-3-4. The engine speed is transferred from crankshaft to the main shaft through primary gear & clutch outer gears.

The gears fitted on the main and counter shaft can be divided into three types based on the method of fixation on to the shaft.

Sliding gears	Slide along the shaft axis
Fixed gears	Fixed on spline grooves on the shaft
Idling gears	Freely rotate on the shaft

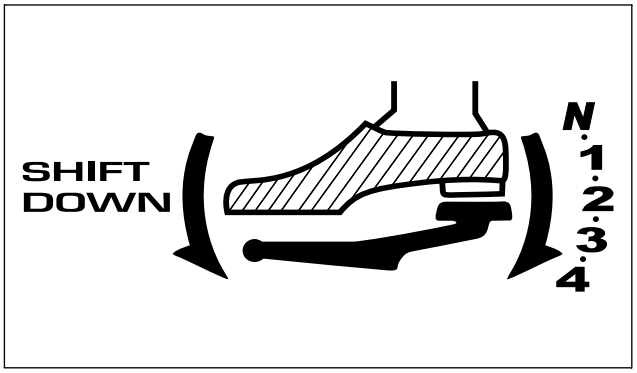
Using combination of these gears, the gear shifting takes place.

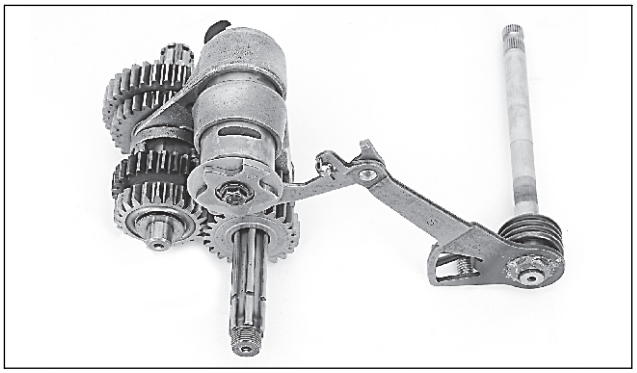
When the clutch is in engaged position, speed is transferred to the main shaft.

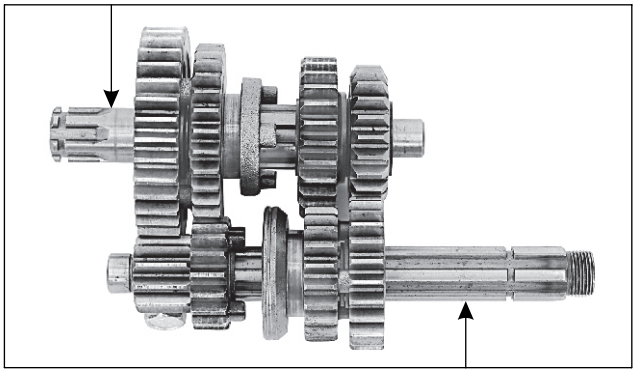
Gear pedal is mounted on gearshift spindle. Up/down motion of the shift pedal turns the shift spindle. This turns drum stopper plate, which rotates the gearshift drum. This slides the shift fork pins and the shift forks.

This moves the sliding gears of the transmission which enables the rider to engage and disengages main shaft gears with the counter shaft gears, varying the torque and speed output from the counter shaft.

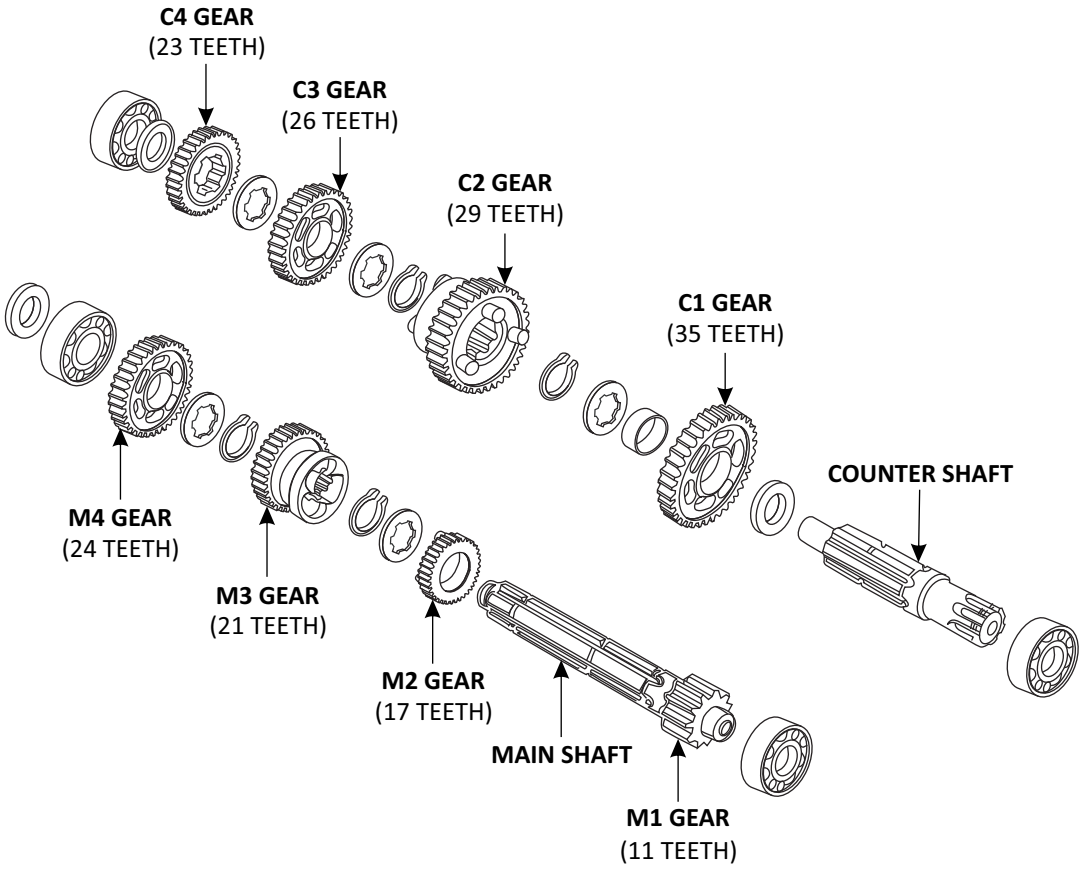
The engine power is transmitted from the coutershaft to the rear wheel through the countershaft drive sprocket, drive chain and rear wheel driven sprocket.



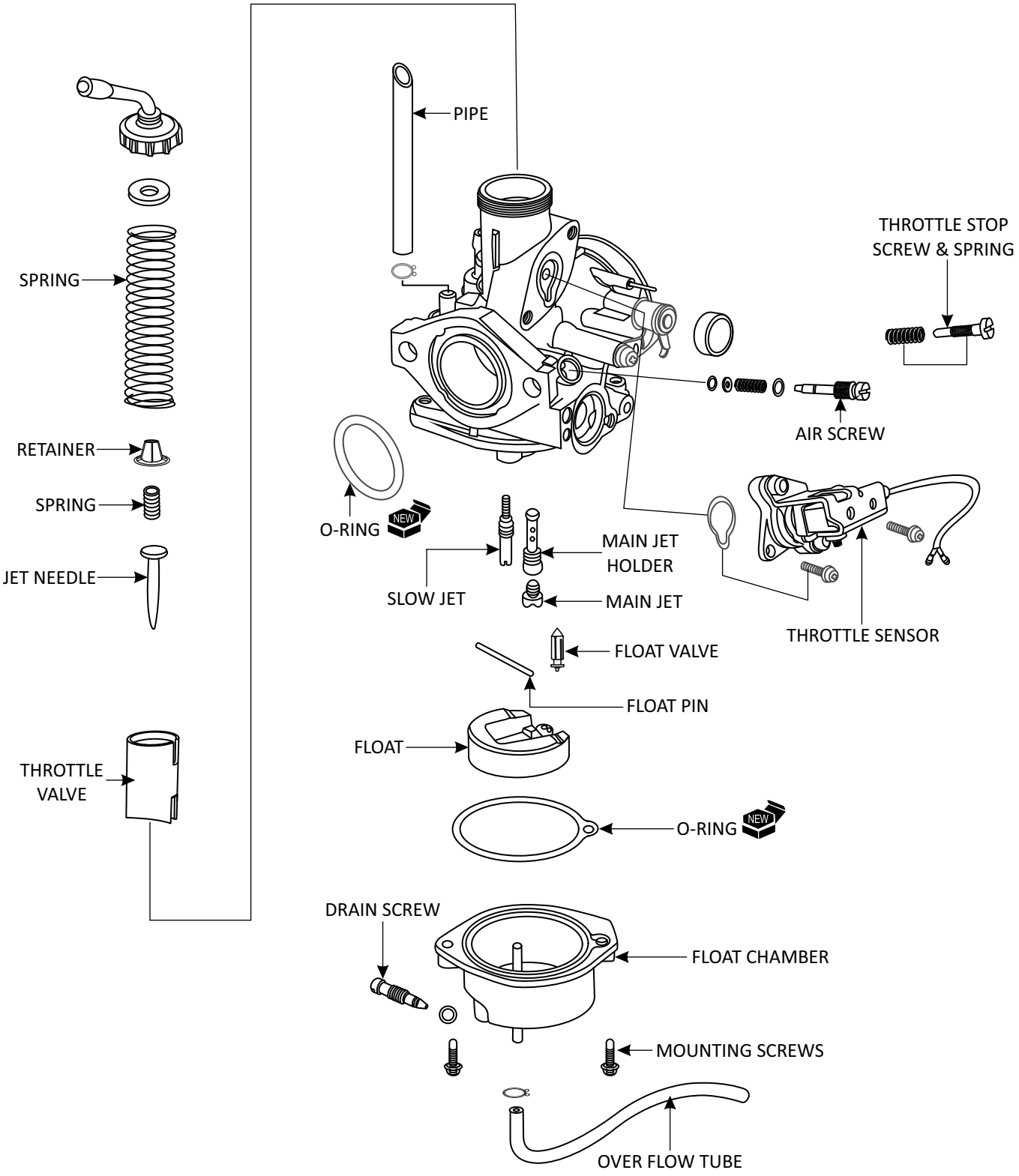




GEAR ASSEMBLY



CARBURETOR


PIPE
THROTTLE STOP
SCREW & SPRING
SPRING
AIR SCREW
RETAINER
SPRING
O-RING
NEW
MAIN JET
HOLDER
JET NEEDLE
SLOW JET
MAIN JET
THROTTLE SENSOR
FLOAT VALVE
FLOAT PIN
FLOAT
THROTTLE
VALVE
O-RING
NEW
DRAIN SCREW
FLOAT CHAMBER
MOUNTING SCREWS
OVER FLOW TUBE

CARBURETOR

ITEM	SPECIFICATIONS
Carburetor type	Side draft, variable venturi type with TCIS
Identification number	PBCC7
Venturi diameter	18 mm
Float level	11.7mm
Air screw initial opening	$2^{1}/_{8} \pm {}^{1}/_{2}$ turns out
Idle speed	1400 ± 100 rpm
Main jet	# 105
Slow jet	# 35
Throttle grip free play	2-6 mm

AIR SCREW ADJUSTMENT

NOTE

The air screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new air screw is installed.

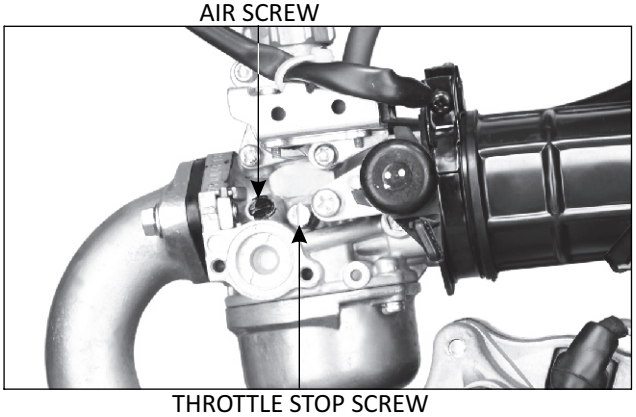
1. Turn the air screw $2^{1}/_{8} \pm {}^{1}/_{2}$ turns out from the seated position.

CAUTION

Damage to the air screw seat will occur if the air screw is tightened against the seat.

2. Warm up the engine to the operating temperature.
3. Connect the tachometer.
4. Adjust the idle speed with the throttle stop screw.
   Idle speed: 1400 ± 100 rpm
5. Turn the air screw to achieve the highest steady rpm.
6. Repeat the idle speed to the specified rpm with the throttle stop screw.

AIR SCREW

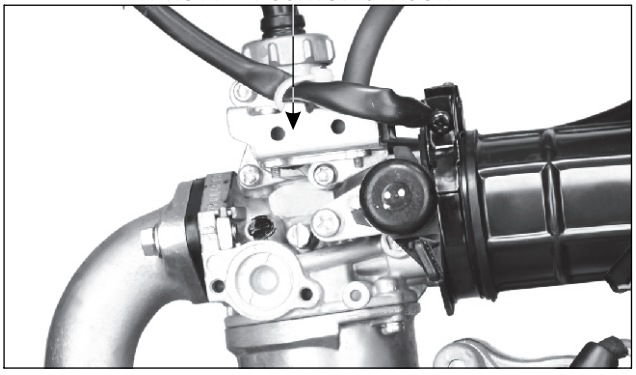


THROTTLE STOP SCREW

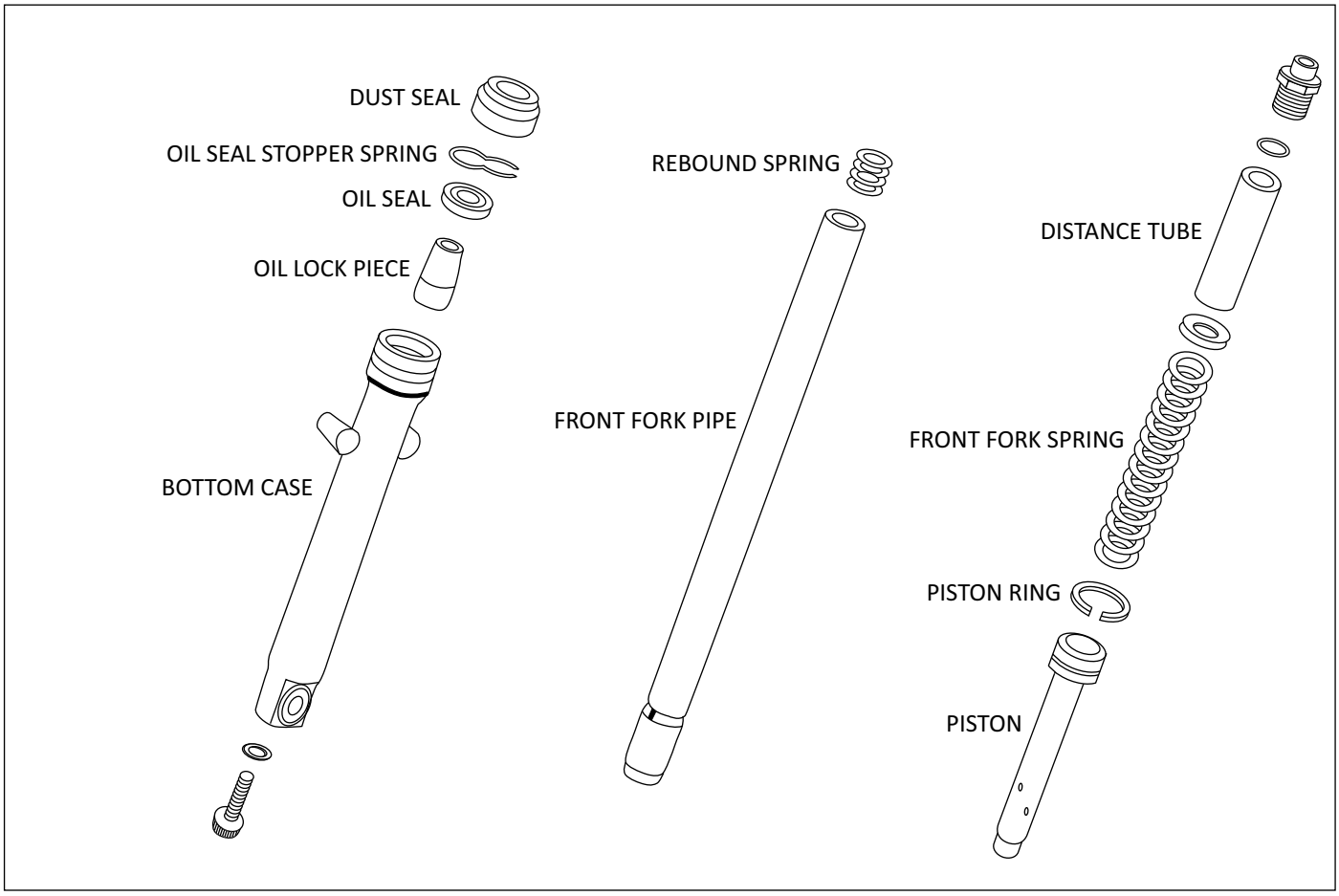
THROTTLE POSITION SENSOR (TPS)

Throttle position sensors are used to register the angle of rotation on the throttle valve and the rate of change. The sensor is used to generate a secondary load signal, which amongst other things, is used as auxiliary information for dynamic functions, as well as for recognition of operating range, from idle, through part, to wide open throttle position.

THROTTLE POSITION SENSOR



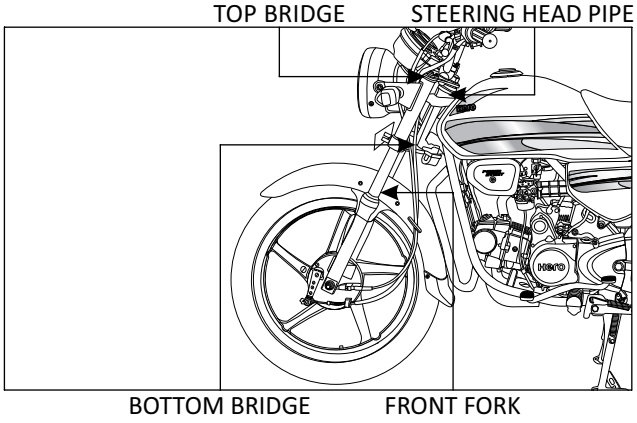
TELESCOPIC FRONT SUSPENSION



TELESCOPIC FRONT SUSPENSION

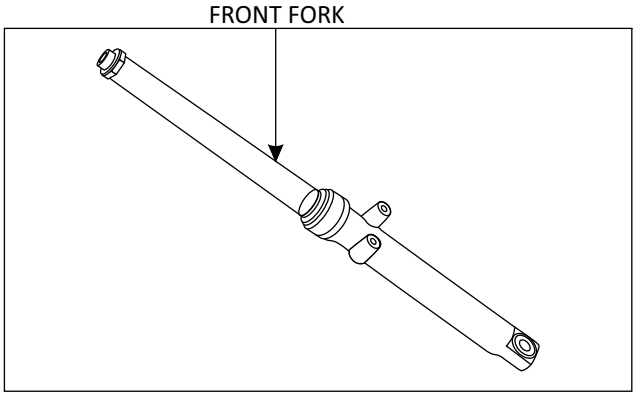
Function of suspension:

1. Link various components.
2. Support the rider.
3. Provide and maintain maneuverability and stability.
4. Absorb vibration and shock.



FEATURES

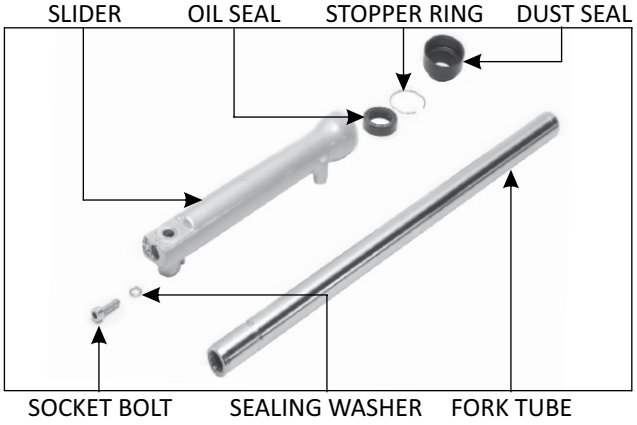
In the telescopic system, the front fork is rigid and strong. Springs and fluid volume inside the fork tube provide cushion and damping effect.



CONSTRUCTION

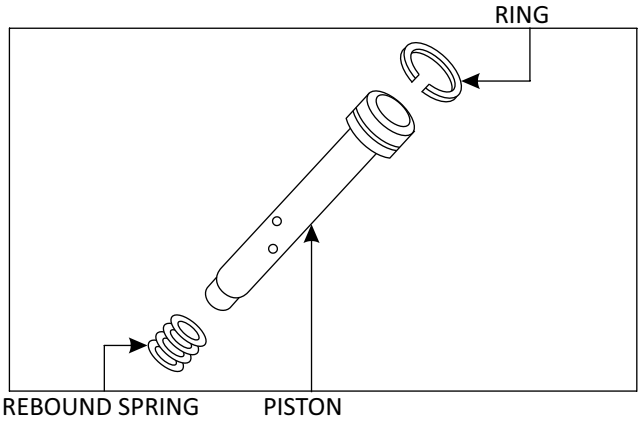
FORK TUBE

Fork tube is a steel pipe coated with material of very high surface finish and high resistance to wear during sliding motion. A valve oil lock piece is fitted at the bottom of the tube.



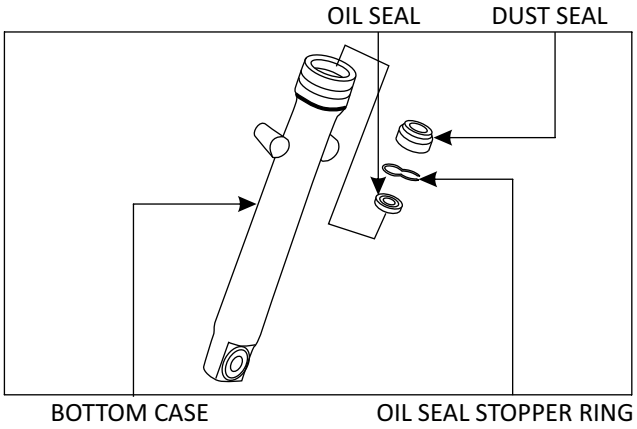
FORK PISTON

Fork piston contains a fork piston ring at the top for sealing the oil escape from the sidewalls of fork tube. This has a through hole at the center and also side holes for oil passage. There is a rebound spring situated on the piston.



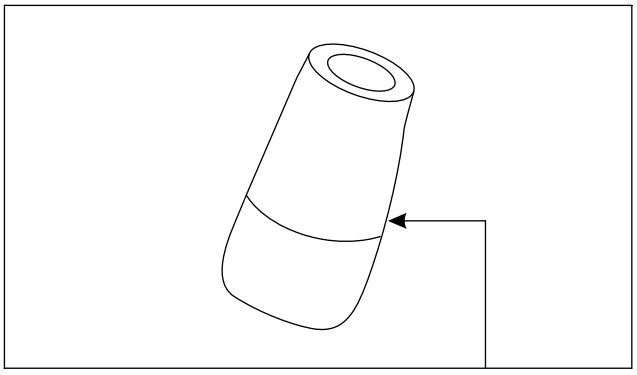
BOTTOM CASE

This is a cast tube, which has a precise machining at the inner surface. This has oil seal and dust seal fitted at the top.



OIL LOCK PIECE

The oil lock piece is made up of steel is fitted at the bottom case. This piece has a taper portion at the top. the oil lock piece is given to reduce the metal to metal contact during the full travel of shock absorber.



SUSPENSION OIL

Suspension oil is developed for it's special use of damping effect. The important factors for damping oil are,

1. Smooth slide movement.
2. It's effect on oil seal material.
3. Oil seal rubber expansion caused by oil temperature.

WHY SUSPENSION OIL IS SPECIAL THAN ENGINE OIL?

1. The oil seal used for suspensions is different from engine oil seal. The suspension oil seal resist the oil leak during the sliding motion between two metals. The additives used in the engine oil will affect the rubber material of the oil seal and damage it, hence the oil leak may occur.

2. Oil seal design for suspension is very delicate. The oil seal is designed considering the rubber expansion caused by oil temperature and material in order to scrape oil by sliding movement. Engine oil cannot control this delicate expansion hence cause oil leakage.

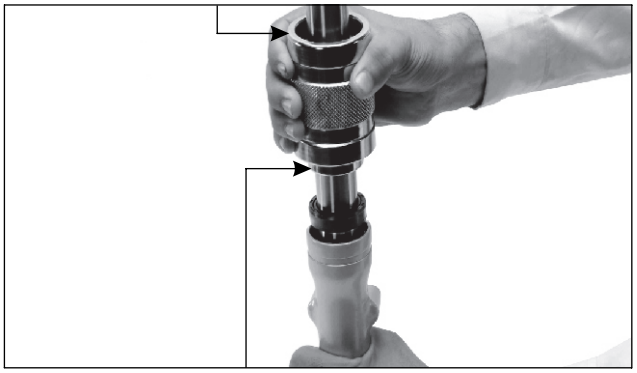
OIL SEAL INSTALLATION

Apply fork fluid to new oil seal lips, then install it into the fork pipe with its marking facing up. Drive the oil seal into the bottom case using the special tool.

TOOL

FRONT FORK OIL SEAL DRIVER BODY
PART NO: 070 HH 198 018
FRONT FORK OIL SEAL DRIVER BODY ATTACHMENT 30 mm
PART NO: 070 HH KCC 001

FORK SEAL DRIVER



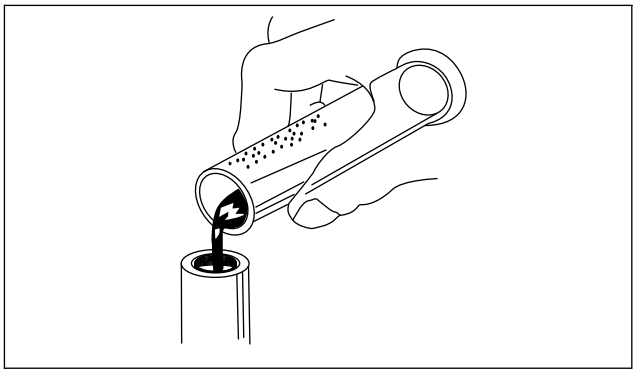
ATTACHMENT

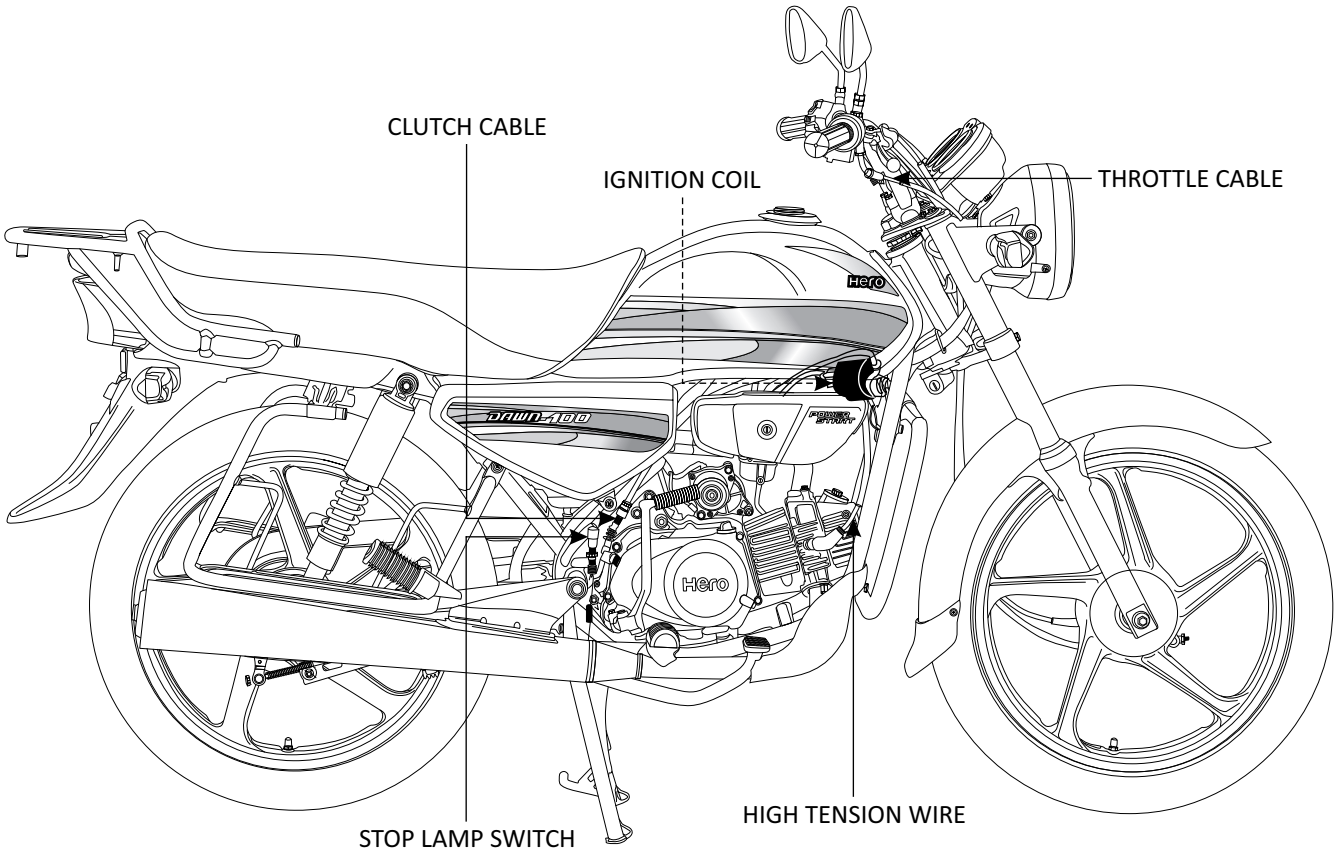
FORK FLUID FILLING

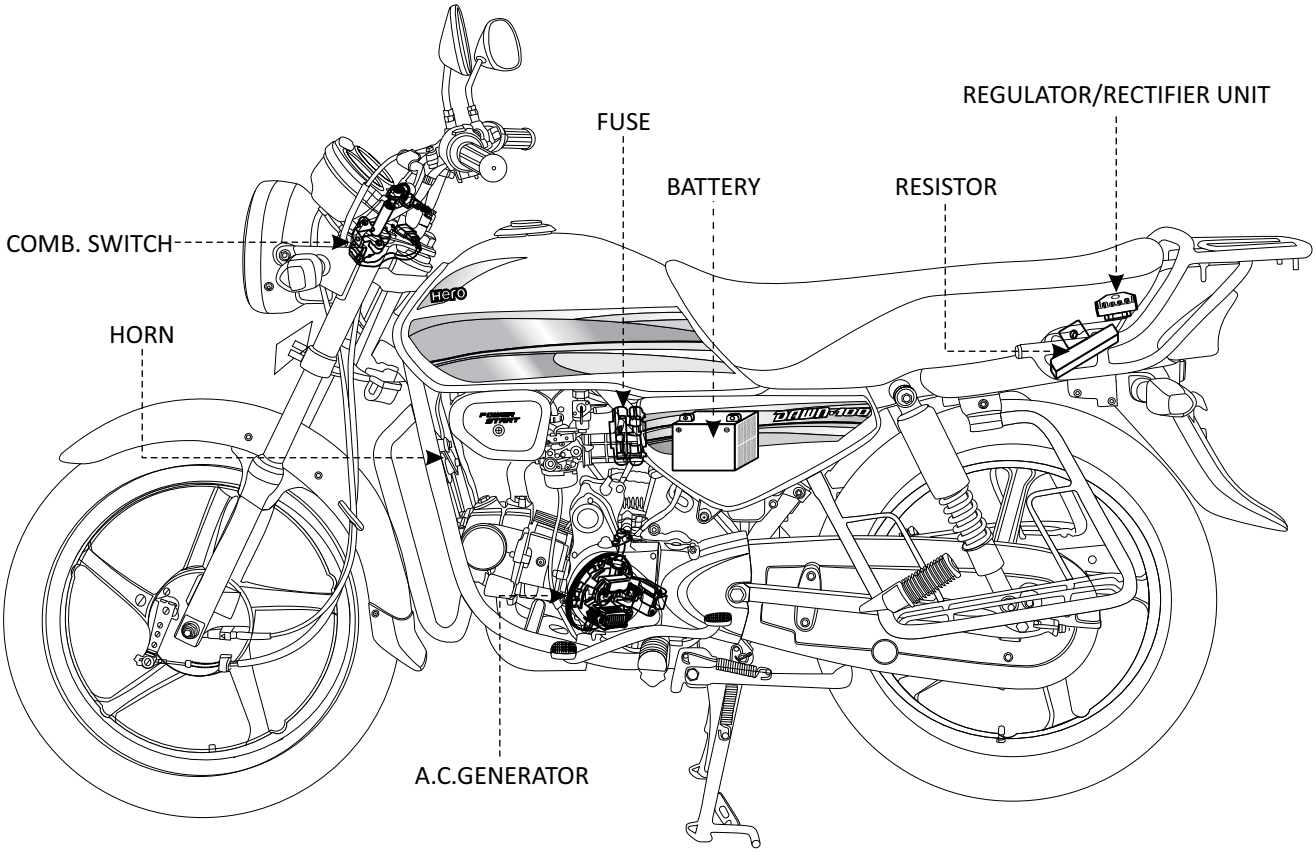
Pour specified amount of recommended fork fluid into the fork pipe by measuring in a glass jar.

Fork fluid capacity = 163 ml

Pump the fork tube several times to remove trapped air from the lower portion of the fork pipe.




CLUTCH CABLE
IGNITION COIL
THROTTLE CABLE
HIGH TENSION WIRE
STOP LAMP SWITCH


REGULATOR/RECTIFIER UNIT
FUSE
BATTERY
RESISTOR
COMB. SWITCH
HORN
A.C.GENERATOR

ELECTRICAL TESTING

TEST COMPONENT	WIRE COLOUR	KNOB POSITION	READING
Ignition Coil-Primary	Black Yellow	200 Ω	0.72 to 0.88 Ω
Ignition Coil-Secondary*	High Tension Lead	20K Ω	12.33 to 15.7 KΩ
Lamp Coil	White Green	200 Ω	0.2 to 1.2 Ω
Pulser Coil	Blue Yellow	2000 Ω	50 to 200 Ω
Pulse generator	Blue Yellow	20 V	1.5 V (minimum)
Ignition coil primary side	Black Yellow	600 V	150 V (minimum)

**Secondary coil resistance without plug cap. Plug cap resistance value is 5.0 ± 1.25 KΩ*

MAINTENANCE SCHEDULE

	ITEMS	SERVICE	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th
		DAYS	1st 60	Next 90	Next 90	Next 90	Next 90	Next 90	Next 90	Next 90	Next 90	Next 90	Next 90
		KM Note-1	500-750	3000-3500	6000-6500	9000-9500	12000-12500	15000-15500	18000-18500	21000-21500	24000-24500	27000-27500	30000-30500
	Fuel Line		I	I	I	I	I	I	I	I	I	I	I
🔧	Throttle Operation		I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A
🔧	Engine Idle Speed/Carburetor		C, A	A	C, A	A	C, A	A	C,A	A	C, A	A	C, A
	Air Cleaner Element*		C	C	C	C	R	C	C	C	R	C	C
	Spark Plug		I, C, A	I, C, A	I, C, A	I, C, A	R	I, C, A	I, C, A	I, C, A	R	I, C, A	I, C, A
✕	Valve Clearance		I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A
	Engine Oil**		O	I, T	O	I, T	O	I, T	O	I, T	O	I, T	O
✕	Engine Oil Strainer Screen		C		C		C		C		C		C
✕	Engine Oil Centrifugal Filter		C		C		C		C		C		C
	Electric Starter		I	I	I	I	I	I	I	I	I	I	I
✕	Electric Starter Chain		L		L		L		L		L		L
	Oil Circulation		I	I	I	I	I	I	I	I	I	I	I
✕	Drive Chain@		I,C,L,A at every 2000 km						I,C,L,A at every 2000 km				
	Battery Voltage		I	I	I	I	I	I	I	I	I	I	I
🔧	Brake System (Brake Cam/Pedal)			C, L		C, L		C, L		C, L		C, L	
🔧	Stop Lamp Switch		I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A
🔧	Headlamp Focus		I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A
	Clutch		I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A	I, A
	Side Stand/Main Stand		L	L	L	L	L	L	L	L	L	L	L
🔧	Nuts, Bolts & Fasteners***		I	I	I	I	I	I	I	I	I	I	I
✕	Wheel Bearings	Note-3	I	I	I	I	I	I	I	I	I	I	I
✕	Wheels/Tyres		I	I	I	I	I	I	I	I	I	I	I
✕	Steering Head Bearings		I	I, A	I	I, A	I, L, A	I	I, A	I	I, L, A	I	I, A
✕	Front Suspension/Oil****	Note-2	I	I	I	I	I	I	I	I	I	I	I
🔧	Rear Suspension	Note-4	I	I	I	I	I	I	I	I	I	I	I
✕	Muffler (Catalytic Converter)•				I, E		I, E		I, E		I, E		I, E

🔧 To be serviced by your Authorised Distributor/Dealer unless the owner has the relevant tools, technical information and is technically qualified.

✕ In the interest of safety, we recommend that these jobs are carried out only by your Authorised Distributor/Dealer.

* More frequent cleaning may be required when riding in dusty areas.

** Replace engine oil once in every 6000 km. Top up once in every 3000 km.

*** Inspect & maintain specified torque.

**** Replace once in every two years or 30000 km, whichever is earlier.

• Check idle CO emission along with idle rpm/idle CO adjustment (if required).

@ Visit Authorised Distributor/Dealer for inspection, cleaning, lubrication and adjustment of drive chain at every 2000 km.

Note-1: At higher odometer readings, repeat the frequency interval established here.

Note-2: Replace front fork oil once in a every 2 years or 30000 km, whichever is earlier.

Note-3: Inspect the bearings free play, replace if necessary.

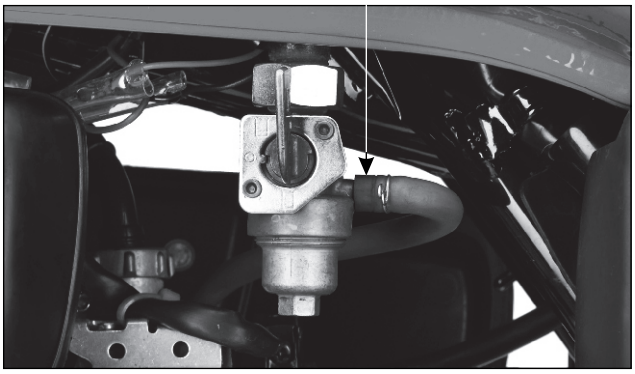
Note-4: Inspect for any play in the mounting bushes, replace if necessary.

I: INSPECT R: REPLACE C: CLEAN L: LUBRICATE A: ADJUST IF REQUIRED O: OIL CHANGE T: TOP UP E: EMISSION CHECK

MAINTENANCE TIPS FUEL LINE

Check the fuel line for deterioration damage or leakage.

Check the control knob for smooth operation.



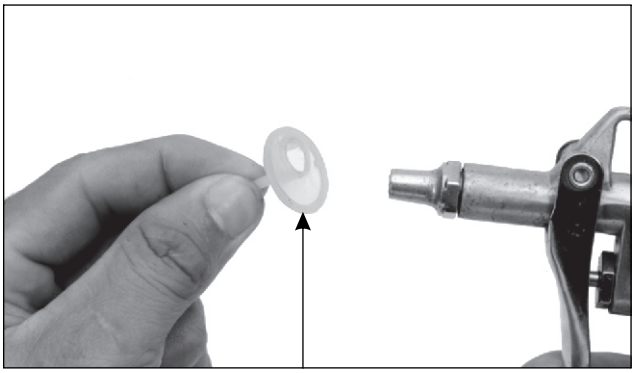
FUEL STRAINER SCREEN

Turn the fuel cock to " OFF" position. Remove the strainer cup and drain the fuel to suitable container.

⚠ WARNING

Gasoline is extremely flammable and is explosive under certain conditions.

- Remove O-ring and strainer screen.
- Clean the fuel strainer screen by blowing pressurized air.
- Reinstall the strainer screen, O-ring and then, tighten the strainer cup.



THROTTLE OPERATION

Check for any deterioration or damage to throttle cable. Check the throttle grip for smooth operation. Check that the throttle opens and automatically closes in all steering operations, If the throttle grip does not return properly, lubricate the throttle cable and its pivot point with a commercially available lubricant or a low viscosity oil. If the throttle grip still does not return properly, replace the throttle cable.

⚠ WARNING

Reusing a damaged or abnormally bent or kinked throttle cable can prevent proper throttle operation and may lead to a loss of throttle control while riding.

With the engine idling, turn the handle bar all the way to the right and left to ensure that the idle speed does not change. If idle speed increases, check the throttle grip free play and throttle cable routing.

THROTTLE GRIP FREE PLAY: 2-6 mm

Throttle grip free play can be adjusted at either end of the throttle cable.

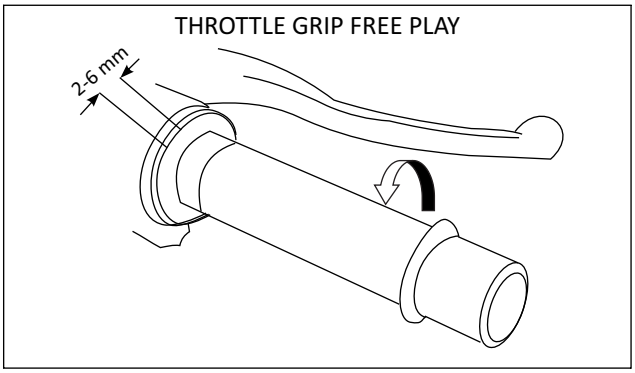
Minor adjustments are made with upper adjuster.

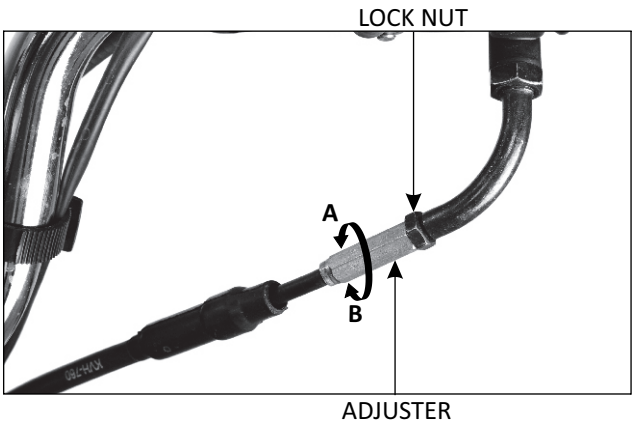
Slide the boot of the upper adjuster.

Loosen the lock nut and turn the adjuster as required.

After adjustment, tighten the lock nut and install the boot over the adjuster properly.

Major adjustments are made with lower adjuster.



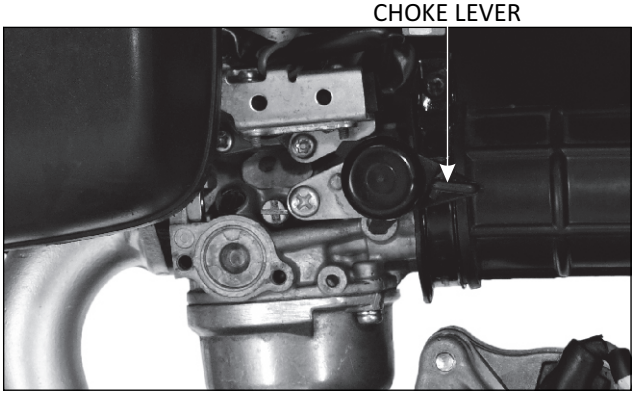


CHOKE

A manual choke is provided in the carburetor.

Check to see if the choke lever can be opened and closed completely.

CHOKE LEVER



DRY TYPE - PAPER PLEATED FILTER

Separate the element holder and air cleaner element.

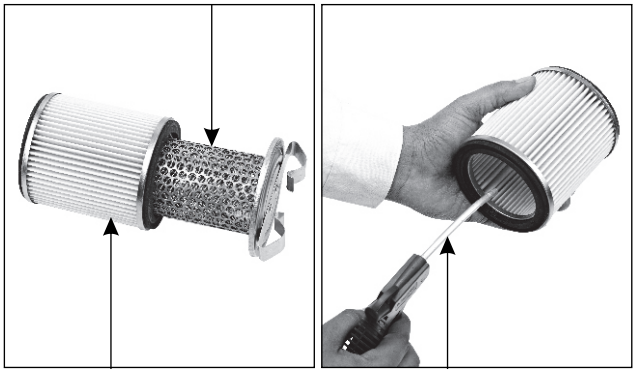
The air cleaner paper filter element should be cleaned by blowing the moisture free pressurized air.

Start cleaning by directing the air nozzle inside the element and cleaning it by rotating the element about its axis.

CAUTION

- Never wash the paper filter. Only blow moisture-free air in the paper filter for cleaning dust, as explained. Replace paper filter element every 12000 km.
- Replace it earlier if it becomes very dirty, damaged on surface or on the sealing area.

ELEMENT HOLDER



AIR CLEANER ELEMENT AIR NOZZLE

SPARK PLUG

Remove the spark plug suppressors cap and clean around the spark plug base.

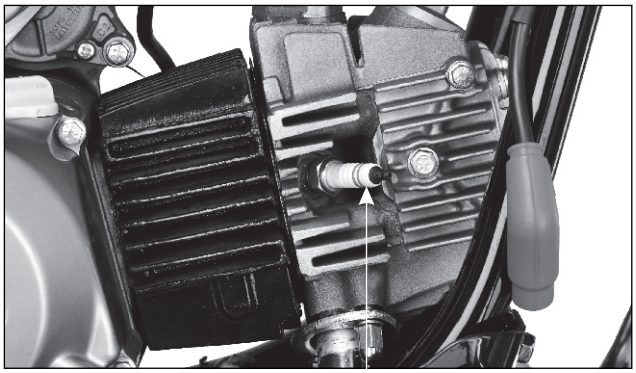
NOTE

- *Clean around the spark plug base with compressed air before removing the plug.*
- *Be careful that no debris is allowed to enter the combustion chamber.*

Check the insulator for cracks or damage and check spark plug electrodes for fouling, damage, discoloration or wear.

If carbon deposits are accumulated on to the spark plug electrode, clean the electrode using wire brush or spark plug cleaner.

Replace spark plug if necessary.



SPARK PLUG

RECOMMENDED SPARK PLUG:

NGK-CR7HSA, BOSCH-UR4AC,

Champion -P-RZ9HC (Federal Mogul)

Measure the spark plug gap between the center and side electrodes with a wire type feeler gauge.

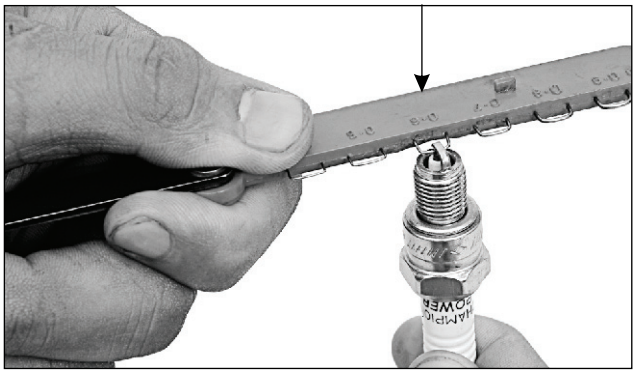
SPARK PLUG GAP: 0.6-0.7mm

If necessary, adjust the gap by carefully bending side electrode. Thread the spark plug in crankcase by hand to prevent cross threading and then tighten it.

TORQUE: 16 N.m (1.6 kgf-m)

Install spark plug suppressor cap.

WIRE TYPE FEELER GAUGE



VALVE CLEARANCE

NOTE

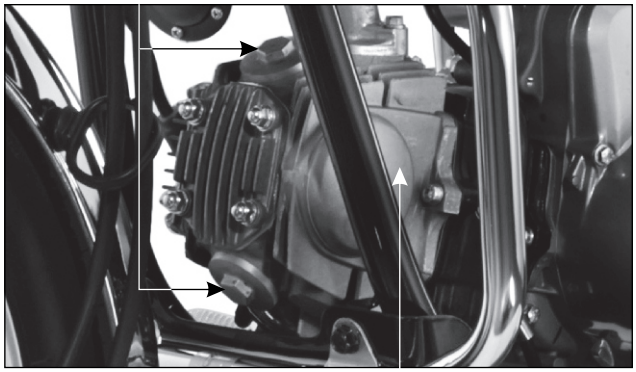
Inspect and adjust the valve clearance when the engine is cold (below 35°C/95°F).The clearance will change as the engine temperature rises.

Remove tappet inspection covers.

Remove the cylinder head side cover (Refer page no 34).

TOOL
TAPPET COVER WRENCH
PART NO: 070 HH 198 011

TAPPET INSPECTION COVER



CYLINDER HEAD SIDE COVER

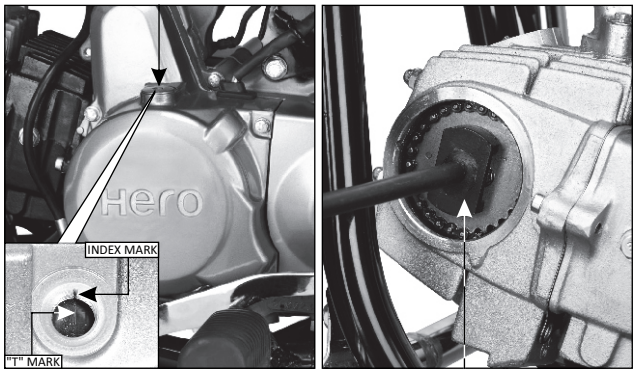
Remove the timing hole cap.

Rotate the crankshaft counterclockwise using the cam sprocket driver and align the "T" mark on the flywheel with the index mark on the left crankcase cover.

TOOL
CAM SPROCKET DRIVER
PART NO: HMCL041519801

Make sure that the piston is at TDC (Top Dead Center) on the compression stroke (The rocker arms should be free in this condition).

TIMING HOLE CAP

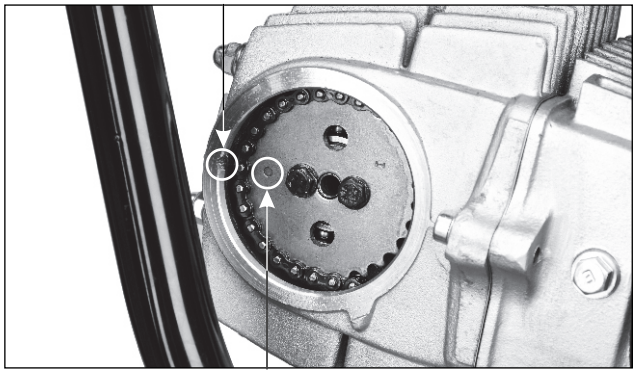


CAM SPROCKET DRIVER

Make sure the “O” mark on the cam sprocket is aligned with the index mark on the cylinder head as shown.

If the rocker arms are not free, it is because the piston is moving through the exhaust stroke to TDC. Rotate the camshaft two full turns using the cam sproket driver and realign the “T” mark with the index mark.

INDEX MARK



“O” MARK

Apply clean engine oil on the feeler gauge.

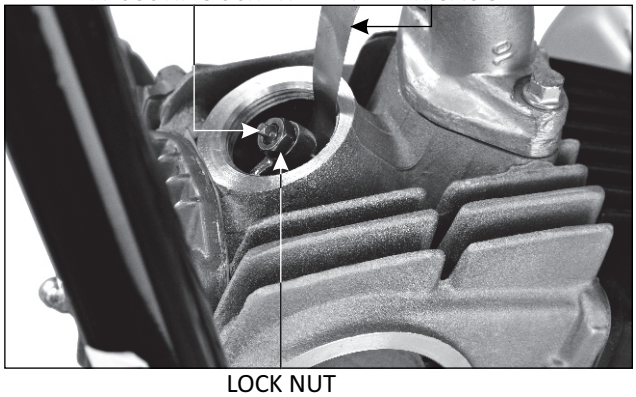
Check the valve clearance by inserting the feeler gauge between the valve adjusting screw and the valve stem.

VALVE CLEARANCE

Intake: 0.10 mm

Exhaust: 0.10 mm

ADJUSTING SCREW FEELER GAUGE



LOCK NUT

Adjust the valve clearance by loosening the lock nut and turning the adjusting screw until there is slight drag on the feeler gauge.

TOOL

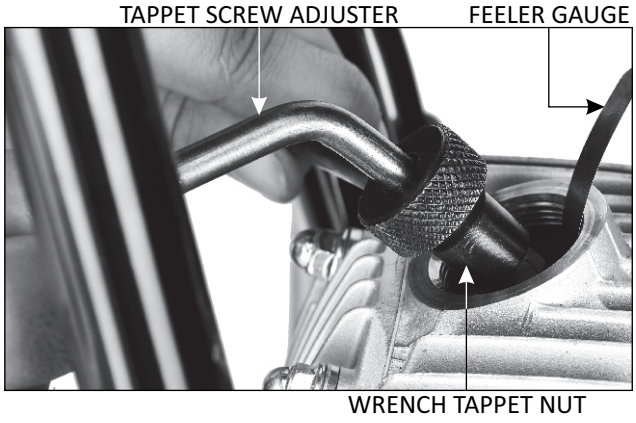
TAPPET ADJUSTER WITH SOCKET (9 mm)

PART NO: 070 HH 198 006

Hold the adjusting screw and tighten the lock nut.

Recheck the valve clearance.

Install the cylinder head side cover and tappet inspection covers along with new gasket and O-ring.

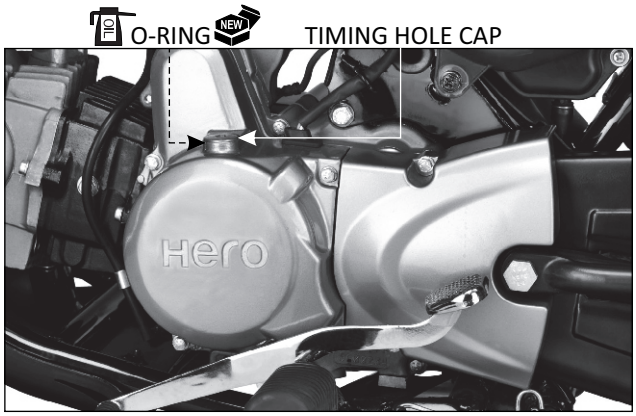


Replace the O-ring on the timing hole cap.

Coat the new O-ring with engine oil, then install and tighten the timing hole cap.

Install the valve adjusting cover.

Install and tighten the valve adjusting cover bolts.



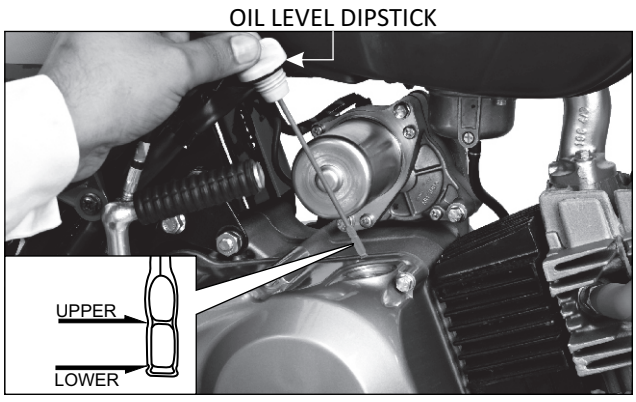
ENGINE OIL LEVEL CHECK

Start the engine, leave it idle for 2-3 minutes and then stop it. Place the motorcycle on its main stand on level ground. Remove the oil filler cap/dipstick, wipe it clean and insert it without screwing it in crankcase. Remove the oil filler cap and check oil level. The oil level should be between the upper and lower level marks on the dipstick. If the oil level is below or near lower level mark, add the recommended engine oil up to the upper level mark.

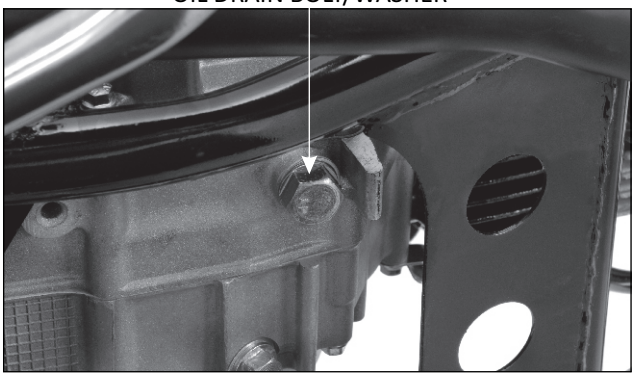
Recommended Engine Oil:

Hero 4T PLUS

Grade : SAE 10 W 30 SJ Grade (JASO MA)



OIL DRAIN BOLT/WASHER



ENGINE OIL REPLACEMENT

NOTE

Drain the engine oil while engine is warm.This ensures complete and rapid draining.

Place the vehicle on main stand. Remove the oil filler cap/ dipstick. Place an oil drain pan under the engine to collect oil and then remove the oil drain bolt.

⚠ WARNING

Used engine oil may cause skin disease, if repeatedly left in contact with skin for prolonged periods. Wash your hands with soap and water as soon as possible after handling used oil.

After draining oil completely, check condition of washer on drain bolt. Replace if sealing washer is not in good condition.

Install and tighten drain bolt.

TORQUE: 24 kgf-m

Fill the crankcase with recommended engine oil.

Engine oil capacity:

0.85 litre at oil change.

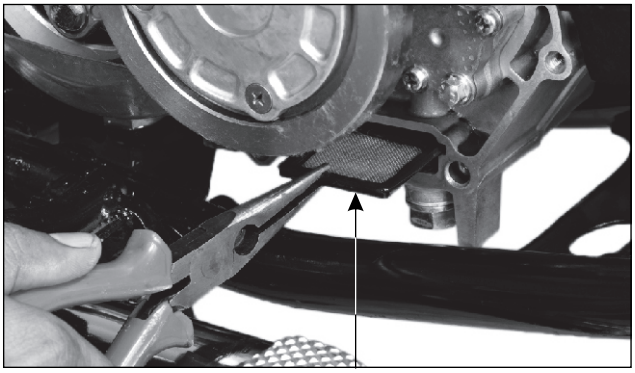
1.05 litre at disassembly.

Install the oil filler cap. Check the oil level.

Make sure that there are no oil leaks.

ENGINE OIL STRAINER SCREEN

Drain engine oil. Remove clutch cable. Disassemble clutch cover. Remove oil strainer screen. Check the screen for damage or deterioration and replace it, if necessary. Clean the oil strainer screen with solvent. Install strainer screen, clutch cover, clutch cable and fill recommended engine oil.

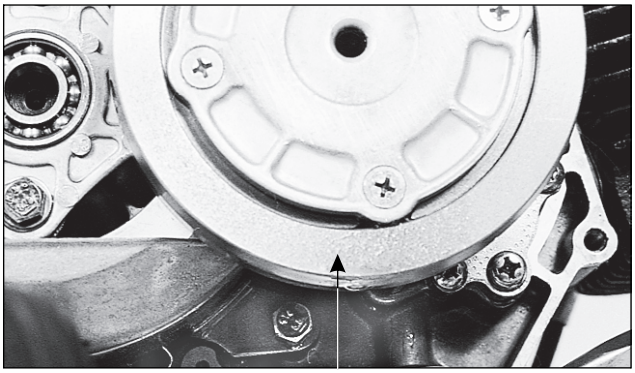


OIL STRAINER SCREEN

ENGINE OIL CENTRIFUGAL FILTER

Drain engine oil. Remove clutch cable. Disassemble clutch cover. Remove rotor oil filter cover, clean with solvent.

Install the cover with new gasket, install clutch cover, clutch cable and fill with recommended engine oil.



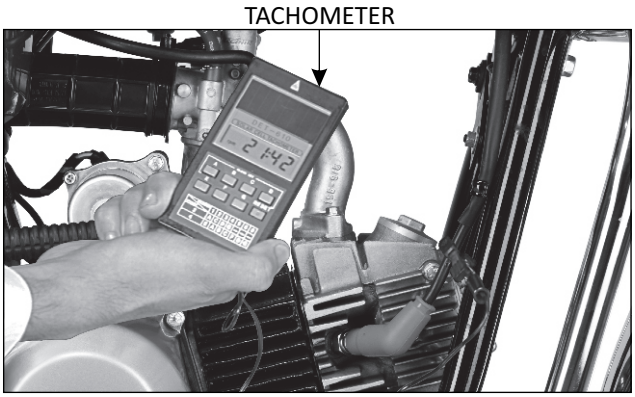
CENTRIFUGAL FILTER

ENGINE IDLE SPEED

Inspect and adjust the speed after all other engine adjustments. The engine must be warm for accurate inspection and adjustment. Warm up the engine to normal operating temperature. Connect tachometer, check the idle speed and adjust by turning the throttle stop screw, if necessary.

NOTE

Idle rpm: 1400 ± 100



DRIVE CHAIN ADJUSTMENT

Adjustment:

Loosen the rear axle nut until the wheel can be moved.

Loosen the sleeve nut, adjuster lock nut , turn the adjuster nut and adjust play.

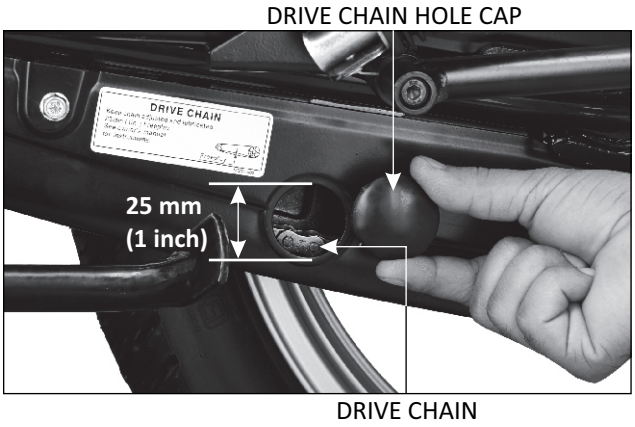
A measuring scale is provided on the adjuster.

Reading on the scale should be same on both sides.

Verify chain slackness with measuring scale.

Slackness limit : 25 mm (1 inch)

Tighten the adjuster lock nut, sleeve nut and rear axle nut.



CLEANING INSPECTION AND LUBRICATION

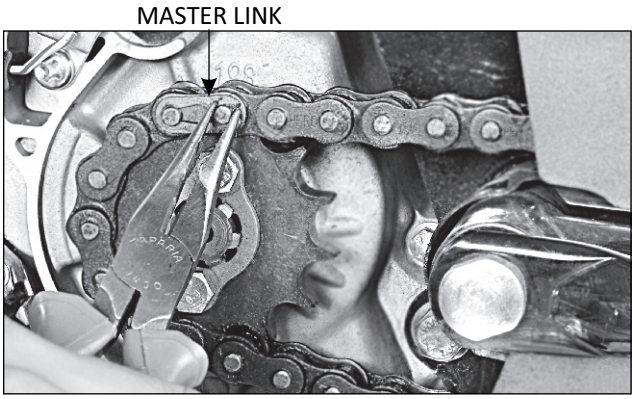
Remove the drive chain by removing the Master link. Clean the chain with non flammable solvent (kerosene) wipe and dry.

Inspect the drive chain for possible wear or damage. Replace chain if necessary.

Lubricate the chain with SAE 90 grade oil.

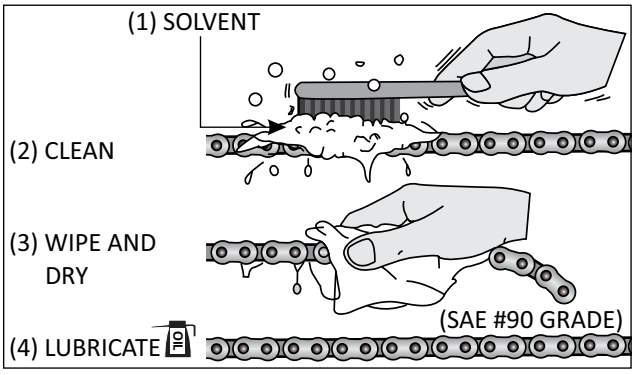
Wipe off excess chain oil to prevent splashing off when in operation.

Install chain with Master link on to the sprockets.



NOTE

Open end of Master link should be in the opposite direction of the rotation of chain.



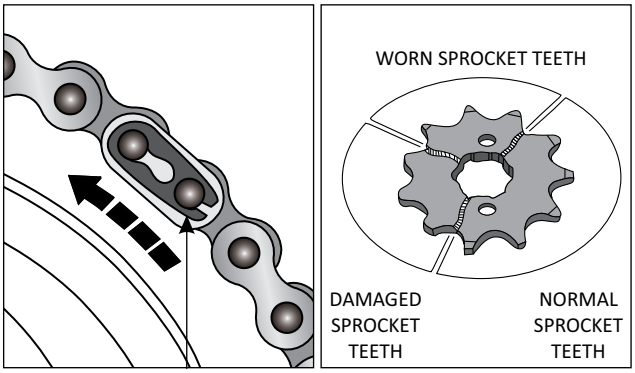
SPROCKETS

Inspect the drive and the driven sprocket teeth for wear or damage.

Replace if necessary.

NOTE

Do not install new chain on badly worn sprocket, as this will cause chain wear.



RETAINING CLIP

BATTERY

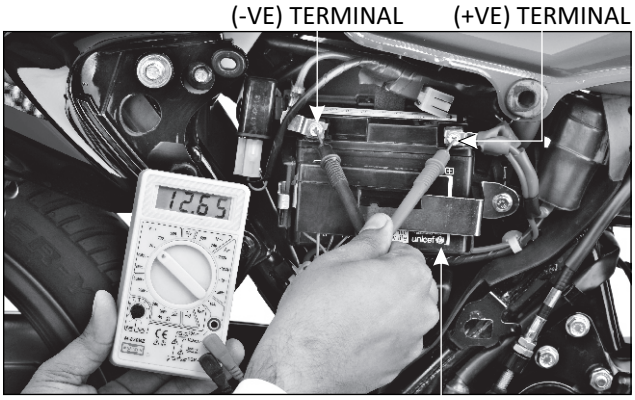
It is not necessary to check the battery electrolyte level or add distilled water as the battery is an Maintenance-Free (sealed) type.

Measure the battery voltage using a MF-Battery Tester.

Under charged : Below 12.4 V

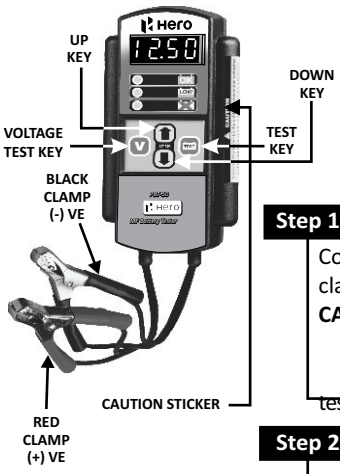
⚠ WARNING

This vehicle is equipped with a MF Battery and can be permanently damage if the cap sealing strip is removed.



MF BATTERY

MF - BATTERY TESTING



- MF Batteries can be tested IN vehicle and “OFF” the vehicle.

IN Vehicle Test: Turn “OFF” the vehicle and all electrical loads.

Caution : Testing with the ignition switch “ON" or vehicle electrical loads “ON” may lead to inaccurate readings.

“OFF” Vehicle Test : Remove the battery from the Motorcycle.

Step 1

Connect the MF- Battery tester clamps to the battery terminals: Red clamp to the positive (+) terminal and Black clamp to negative (-) terminal

CAUTION : Clean both the battery terminals before connecting with the MF- Battery Tester.
: Do not charge the battery before the test, check in "as is" condition.
: If the battery is charged by MF- Battery Charger or on vehicle, wait for minimum 30 minutes before testing.

Step 2

"conn" display

Confirm the indication on display screen

No Display

REF. NO. Display

Loose Connection of MF- Battery Tester clamps with battery

Reconnect the tester clamps to the battery properly

- Reverse connection of MF- Battery Tester clamps on battery terminals

Correct the MF Battery Tester clamps connection
Red Clamp ⇨ + terminal
Black Clamp ⇨ – terminal

- Battery open circuit Voltage less than 8V.
- Battery internal resistance is very high

Full charge the battery with MF- Battery Charger and retest after 30 minutes

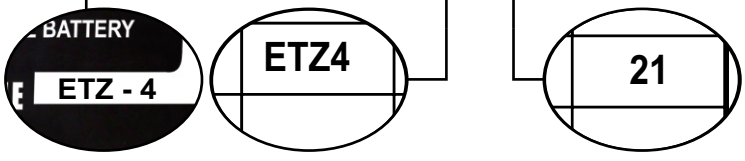
REF NO. LIST IS AT BACK PANEL

TEST INSTRUCTIONS-12V Motorcycle Battery

- Find the battery Ref Number in the table below
- Use the UP/ DOWN ARROWS to scroll to the Ref Number
- Press TEST for the results

Reference number table

Vehicle	Battery		Ref. Number
	Make	Model	
DAWN 100	EXIDE	ETZ4	21



Check and decide the battery reference number as per the battery type and vendor from reference sheet given on rear panel of the tester

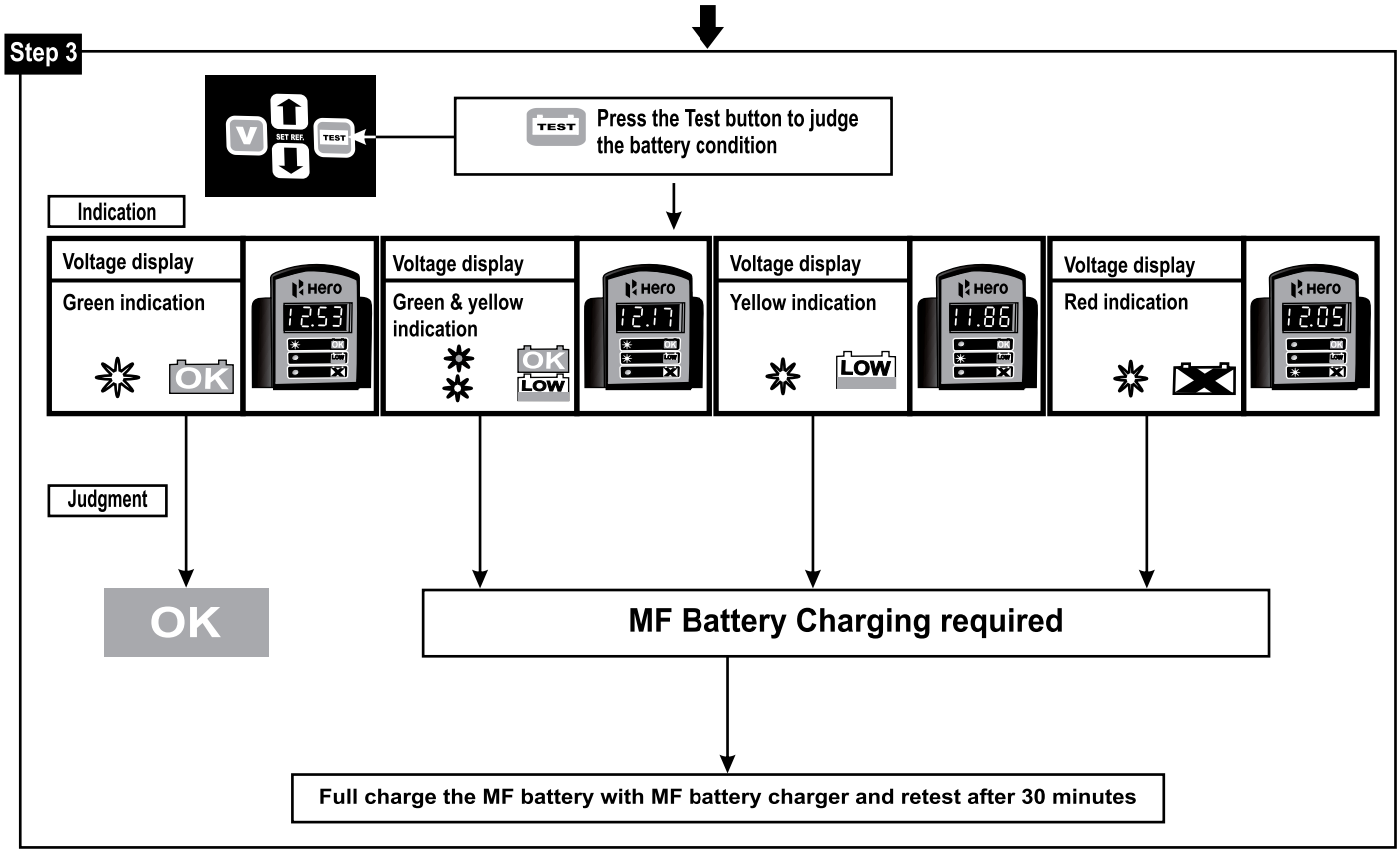
Set the correct battery reference number by using up and down keys

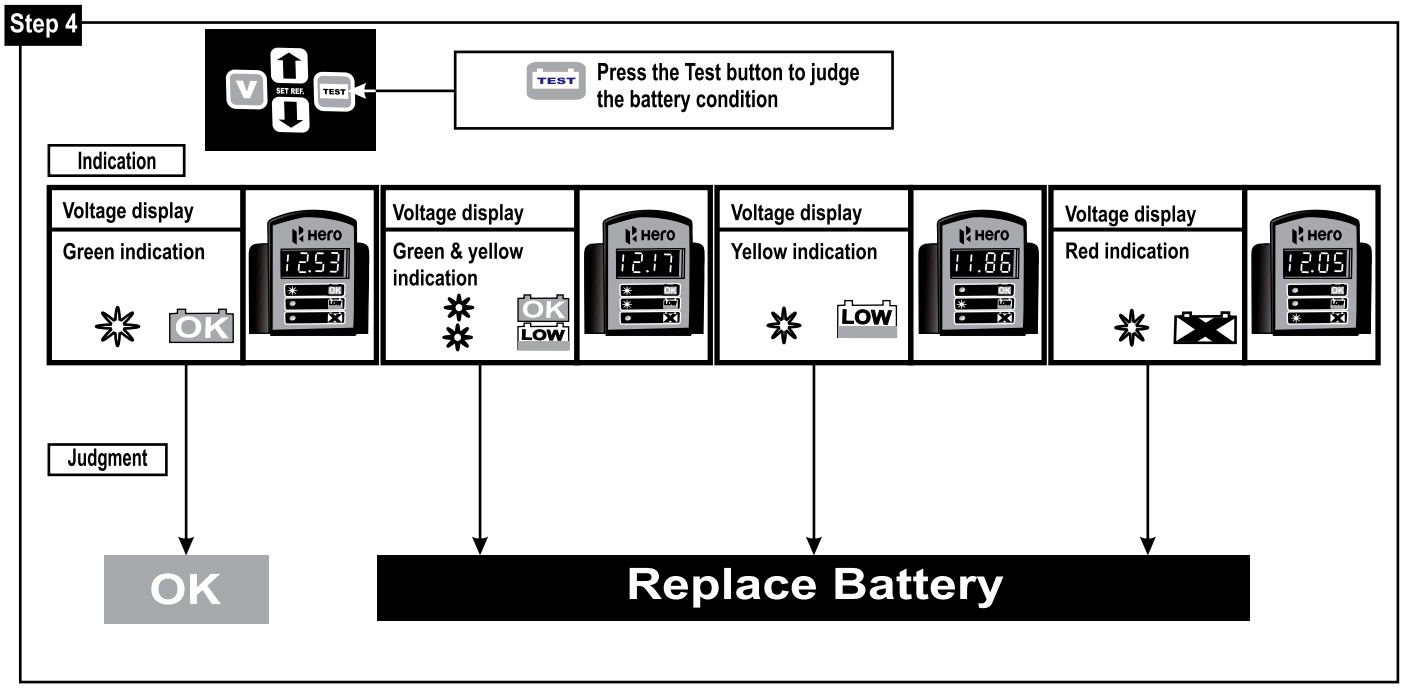
DO'S

- Store MF Batteries in a cool, dry location with minimal temperature change
- Check MF Batteries OCV as per the maintenance schedule. If the battery open circuit voltage is less then 12.4V charge the battery with MF battery charger only.
- Make sure the area around the MF Battery Charger is well ventilated, clear of flammable materials, and away form heat, humidity, water and dust.
- Check the MF Battery with MF Battery tester in "as is" condition. Incase of MF Battery charged with MF Battery Charger or in vehicle, wait for minimum 30 minutes before testing

DONT'S

- Do not store MF Batteries in a place directly exposed to sunlight or at high temperature
- Do not charge the MF battery on conventional battery charger.
- Do not squeeze a battery pack that is draining into a battery.
- Do not reopen the sealing cap from the battery for any reason.
- Do not interchange conventional and Maintenance-Free batteries.
- Do not install a filled, but uncharged (or untested) battery.
- Do not add any type of additives to any Maintenance-Free battery.


Step 3
Press the Test button to judge the battery condition
Indication
Voltage display
Green indication
Voltage display
Green & yellow indication
Voltage display
Yellow indication
Voltage display
Red indication
Judgment
OK
MF Battery Charging required
Full charge the MF battery with MF battery charger and retest after 30 minutes

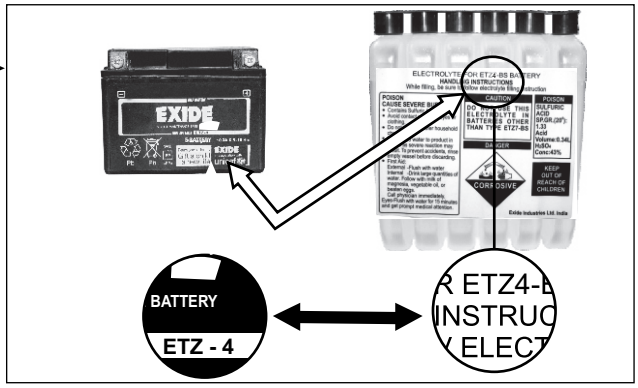

Step 4
Press the Test button to judge the battery condition
Indication
Voltage display
Green indication
Voltage display
Green & yellow indication
Voltage display
Yellow indication
Voltage display
Red indication
Judgment
OK
Replace Battery

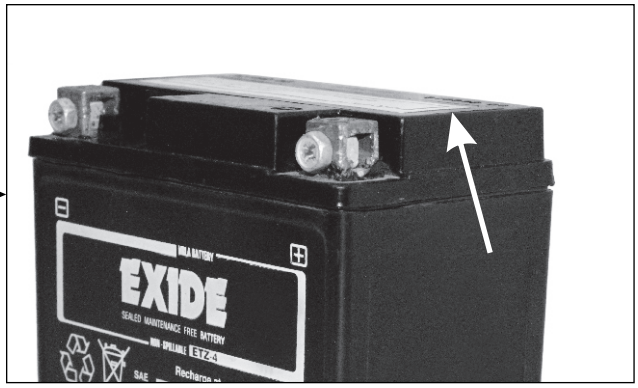
ELECTROLYTE FILLING IN A NEW DRY TYPE BATTERY

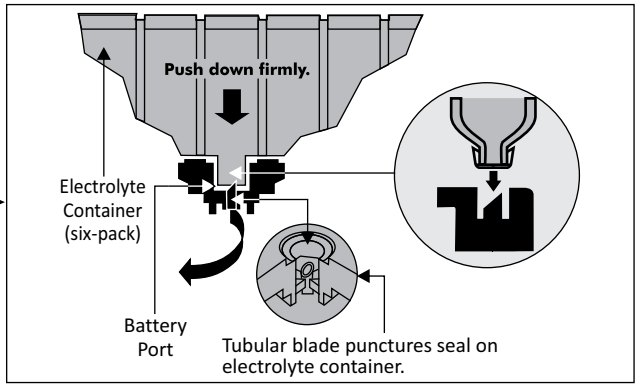
1. Match the electrolyte container to the battery.
2. Peel- off the aluminum sealing tape from the battery.
3. Remove the RUBBER SEALING CAP STRIP from the battery container.
   - Do not damage or remove the electrolyte container aluminum seals.
   - Do not cut or puncture the container.
4. Invert the electrolyte container over the battery ports. Align the container spouts with the battery port and firmly press the container into the ports.

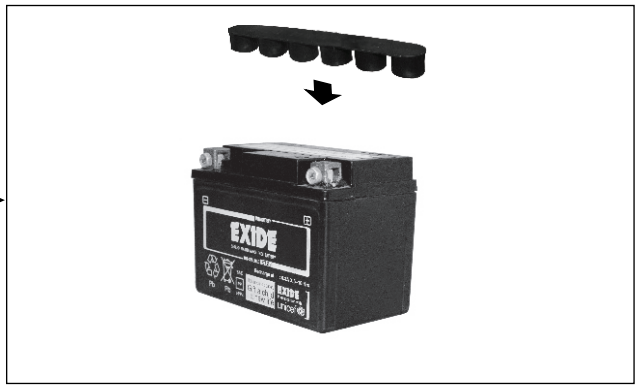
   Once the container seals are punctured, be sure the container remains PERFECTLY UPRIGHT until the electrolyte has COMPLETELY DRAINED.

   Check each container cell to be sure the fluid level is dropping, you may lightly tap the container a few times on the top.
5. Allow the electrolyte to drain COMPLETELY from the container. There MUST BE NO ELECTROLYTE LEFT in the container.
   - Leave the electrolyte container for about 20 minutes.
   - Do not SQUEEZE the electrolyte container.
   - Do not ADD anything else to the battery.
6. Install the RUBBER SEALING CAP STRIP onto the battery port.
7. Allow the battery to idle for 10 minutes after completion of the filling & sealing process to enable the electrolyte to soak into the plates before checking the OPEN CIRCUIT VOLTAGE:
8. If the OPEN CIRCUIT VOLTAGE is 12.4 V and above the battery can be installed and used as it is. If the OPEN CIRCUIT VOLTAGE is less than 12.4 V the battery needs to be charged on MF- Battery Charger on "Initial Mode" before use.
9. Dispose the electrolyte container in an environmentally safe manner.









⚠ WARNING

- Battery acid is highly corrosive.
- Contact with battery acid can damage your eyes, skin, or clothing.
- Wear eye protection and protective clothing when working with battery acid.

CHARGING PROCEDURE

Hero MotoCorp MF-BATTERY CHARGER

Hero MotoCorp MF Battery Charger is designed for vehicles with 12V MF- Batteries only and can be used both for regular charging of service batteries and initial charging of new batteries. LED indicator glows when the battery is fully charged, and automatically switches over to a sustained charging mode.

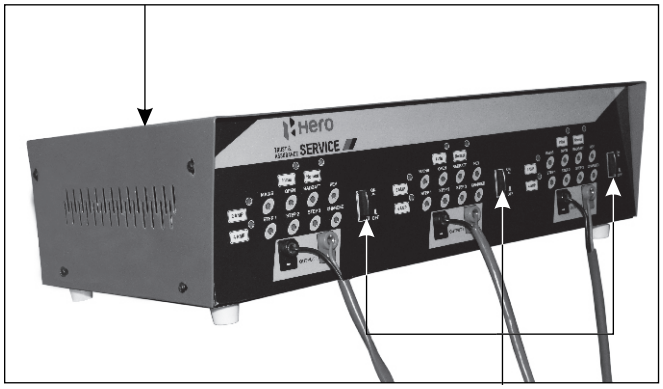
It has a forced recovery function using maximum of 20V/200mA for a deeply discharged battery that cannot be recovered with regular charging. However, not all the deeply discharged batteries can be recovered.

This charger also has a failure inspection function which indicates if the battery cannot be charged properly due to a short- circuit, electrolyte shortage, or sulfation after 30 minutes of inspection time.

NOTE

Make sure the area around the charger is well ventilated, clear off flammable materials, away from heat, humidity, water, and dust.

MF-BATTERY CHARGER



POWER SWITCHES

CHARGING PROCEDURE

1. Connect mains lead to a 220V AC power supply and switch “ON” the main supply.
2. Connect the battery charger leads to battery terminals (Red lead to (+)ve terminal and Black lead to (-)ve terminal) .
3. Switch “ON” the battery charger main switch, a "GREEN" LED will glow on the battery charger.
   - If the battery is not connected to the charger prior to switching “ON”, a open circuit "RED" LED will start blinking to indicate a open circuit.
   - Switch “OFF” the battery charger and connect the battery to the battery charger properly and then switch “ON” the battery charger.
4. Select and press the button for charging mode as "Normal" or Initial.
   Initial – Initially filled Dry type MF Batteries.
   – Select the maximum charging current to 2 AMP for all battery capacity i.e. 3 Ah, 4 Ah, 5 Ah & 6 Ah.
   Normal – Wet type MF Batteries in use in vehicles.
   – Select the maximum charging current to **2 AMP** or **4 AMP** depending upon the battery capacity. For 3Ah & 4Ah batteries select- **2 AMP** and for 5Ah & 6Ah batteries select- **4 AMP**.
5. MF- Battery Charger detects the battery voltage and if the voltage is less than 5V it will switch over to Step 1 (20 V/200mA charging-Forced Recovery Mode).
   - In this step the MF-Battery Charger detects the battery voltage after every 3 minutes continuously. If the battery voltage is more than 5V it switches over to Step 2/Step 3 directly depending on the charging mode ("Normal" or "Initial").
   - Charging duration in this mode is 30 minutes.
   - If the battery voltage is less than 5V after 30 minutes a"RED" LED indicating a "BAD BATTERY" will glow. This indicates that the battery is not suitable for charging.
   - If the MF-Battery Charger switches to Step 2/Step 3 the battery would undergo charge for 5~10Hrs. depending on the battery condition.
6. After Completion of the battery charging a "GREEN" LED will glow to indicate completion of charging and the MF-Battery Charger will switch over to "Sustained Charging Mode".

NOTE

- *All MF Batteries (Dry type/Wet type) indicating an Open Circuit Voltage (OCV) less than 12.4 Volts require a charging using Hero MotoCorp MF-Battery Charger. Ensure to follow the battery charging procedure.*
  - ***Dry type MF Batteries:** Batteries that needs an initial electrolyte filling in workshop (Supplied through spare parts along with electrolyte container).*
  - ***Wet type MF Batteries:** Batteries filled with electrolyte and charged in the factory (Installed in new vehicles).*
- *During charging if the battery is disconnected an AUDIO INDICATOR will beep for 2 minutes with a "RED" LED blinking to indicate a "OPEN CIRCUIT".*
- *OPEN CIRCUIT "RED" LED will continue blinking until the battery is connected properly.*

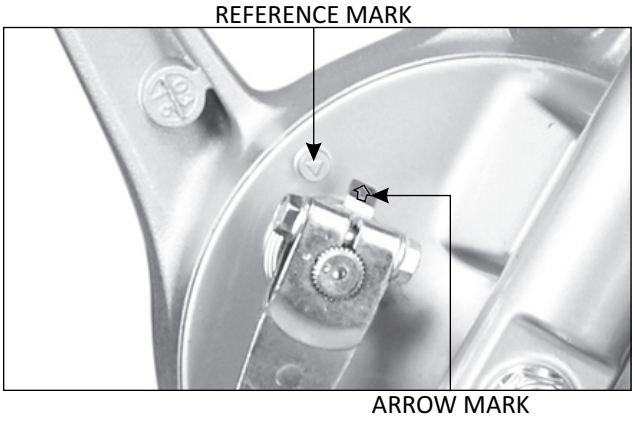
⚠ WARNING

- Charging a battery creates highly explosive hydrogen gas.
- You can be burned or seriously injured if it explodes.
- Do not allow smoking, flames, or sparks in the area where you are charging batteries.

BRAKE SYSTEM

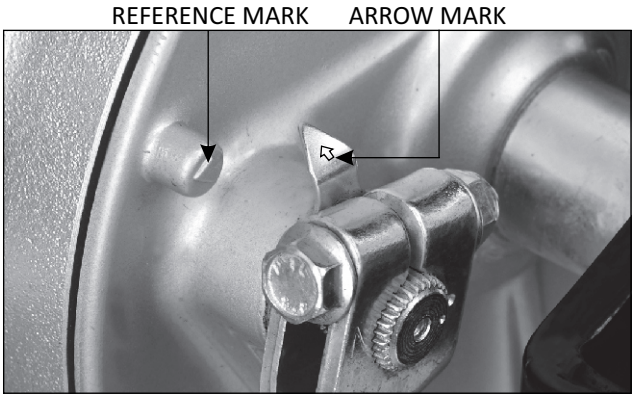
FRONT BRAKE SHOES

Replace the brake shoes if the arrow on the wear indicator plate aligns with the reference mark " ▽ " on the brake panel when the front brake lever is fully depressed.



REAR BRAKE SHOES

Replace the rear brake shoes if the indicator arrow on the brake arm aligns with the indicated mark on the brake panel when rear brake is fully applied, as shown in figure. Inspect brake drum for wear or damage. Replace if necessary.

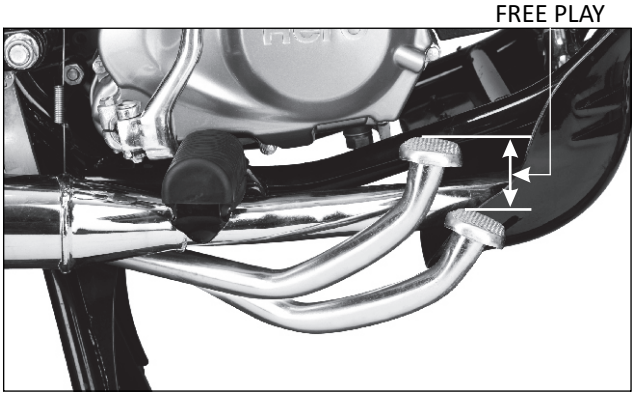


FREE PLAY ADJUSTMENT

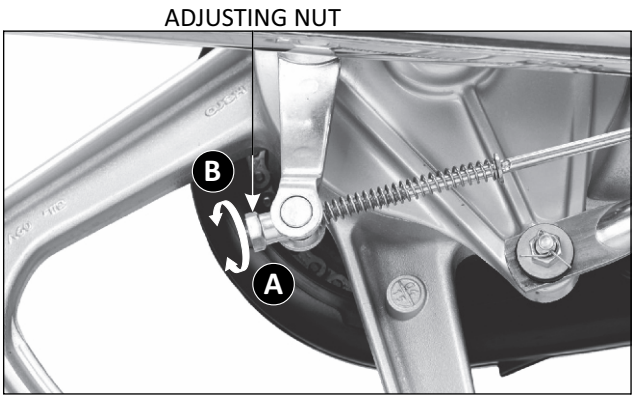
Rear Brake

Measure the rear brake pedal free play as shown in the figure.

Free play : 20-30 mm



If adjustments are necessary, turn the rear brake adjusting nut to set brake pedal free play.



(A) DECREASE FREE PLAY **(B) INCREASE FREE PLAY**

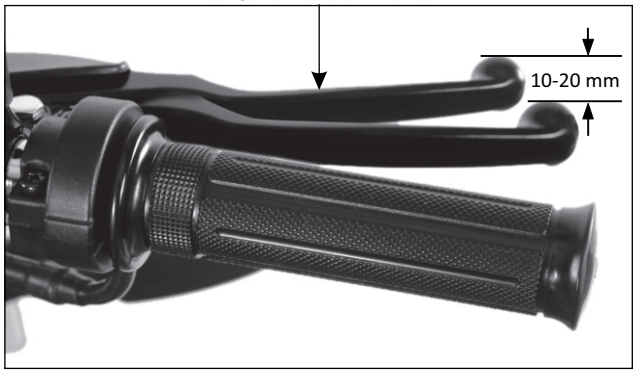
FRONT BRAKE LEVER FREE PLAY

Free play adjustment

Measure the front brake lever free play.

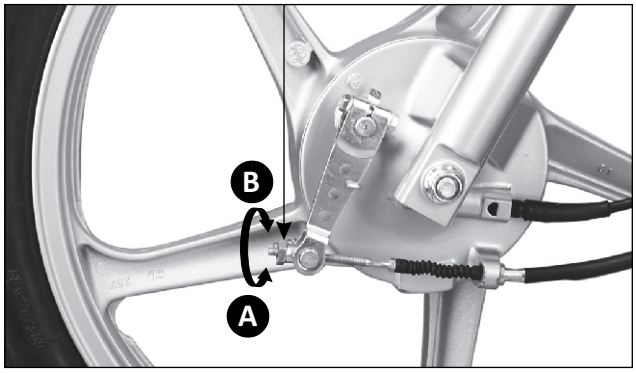
Free play: 10-20 mm

FRONT BRAKE LEVER



If adjustments are necessary, turn the front brake adjusting nut to set brake lever free play.

ADJUSTING NUT



(A) DECREASE FREE PLAY **(B) INCREASE FREE PLAY**

STOP LAMP SWITCH

Check stop lamp switch operation and adjustments by applying brakes.

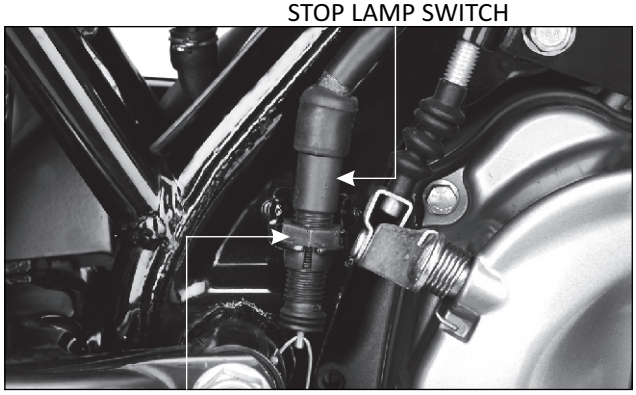
Incase of time lag of stop switch actuation, turn adjusting nut on stop lamp switch.

NOTE

Hold switch body firmly while turning the adjusting nut in order to avoid wire or switch body turning.

After adjustment, recheck for stop lamp operating at proper time

STOP LAMP SWITCH



ADJUSTING NUT

HEADLAMP FOCUSING

⚠ WARNING

An improperly adjusted headlamp may blind oncoming drivers, or it may fail to light the road for safe distance.

Adjust the headlamp beam by turning the adjustment screw on the bottom/side of headlamp.

NOTE

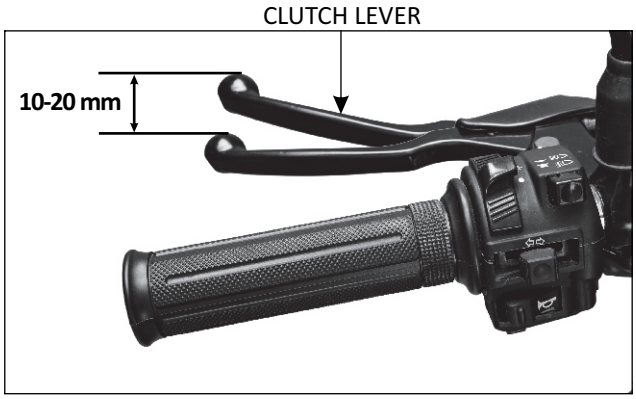
Adjust headlamp beam as per specified regulations.

ADJUSTING BOLTS

CLUTCH SYSTEM

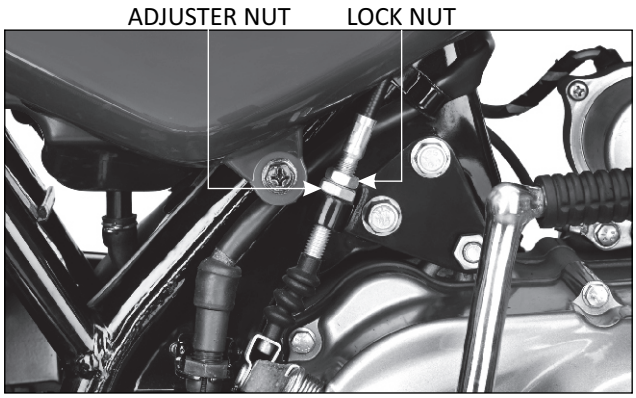
Clutch adjustment may be required if the motorcycle stalls when shifting into gear or tends to creep or if the clutch slips, causing acceleration to lag behind engine speed.

Free play 10-20 mm



Loosen the locknut and turn the adjuster nut to adjust play.

After completing free play adjustment, hold adjuster nut securely while tightening lock nut.



SUSPENSION

⚠ WARNING

Loose, worn or damaged suspension parts impair motorcycle stability and control. Replace all such damaged components before finding in order to avoid accidents and injury.

FRONT

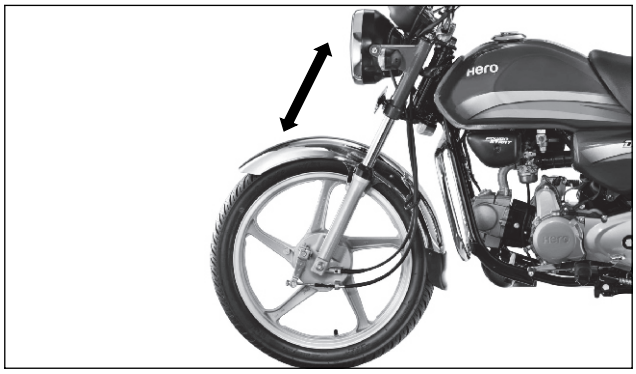
Check the action of front suspension by applying the front brake and compressing the fork tube several times.

Check the entire assembly for signs of damage or loose fasteners.

Replace damaged components which cannot be repaired.

In case of play, check for loose nuts and bolts.

Tighten all nuts and bolts.



REAR

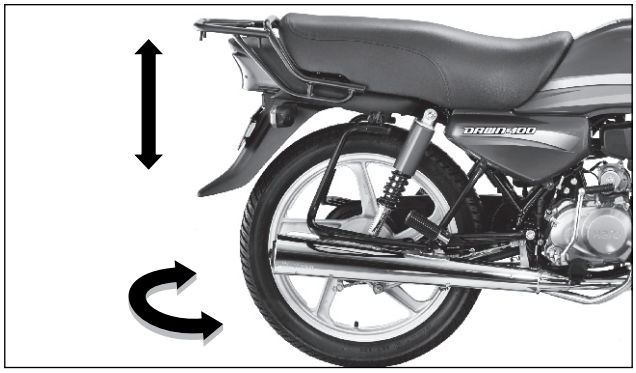
Check action of rear shock absorber by compressing it several times.

check the entire assembly for signs of damage or loose fasteners.

Check for oil leakage around shock absorber piston rod.

Inspect for any scoring marks on piston rod.

Replace if necessary.



FASTENERS

Check all chassis nuts, bolts and screws are tightened to correct torque values.

Check for presence of cotter pins, safety clips, hose clamps and cable stays.

WHEELS/TYRES

Turn the wheel front as well as rear and confirm that it rotates smoothly without generating any unusual noise.

Incase of any noise, check for wheel bearings.

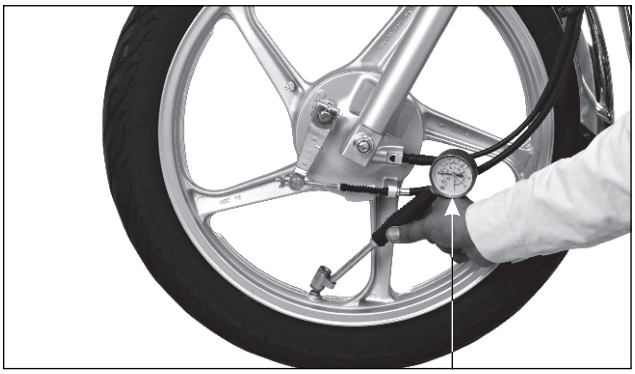
Check the air pressure in each tyre with a pressure gauge.

NOTE

Tyre pressure should be checked when tyres are in cold condition.

Recommended tyre pressure:

As recommended in workshop manual.

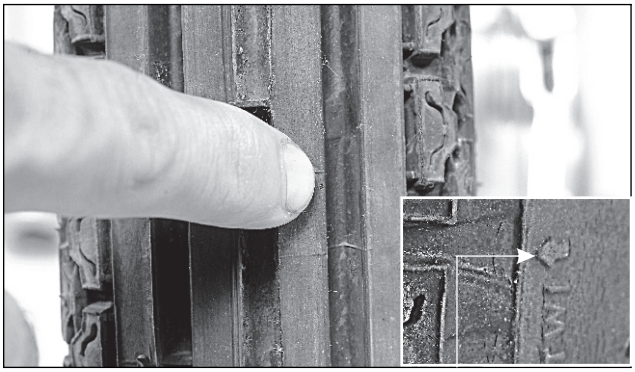


TYRE PRESSURE GAUGE

Check the tyres for cuts, embedded nails or other damage.

Check tyre wear by checking the wear indicator.

In case wear indicator is visible, the tyre should be replaced.



TYRE WEAR INDICATOR

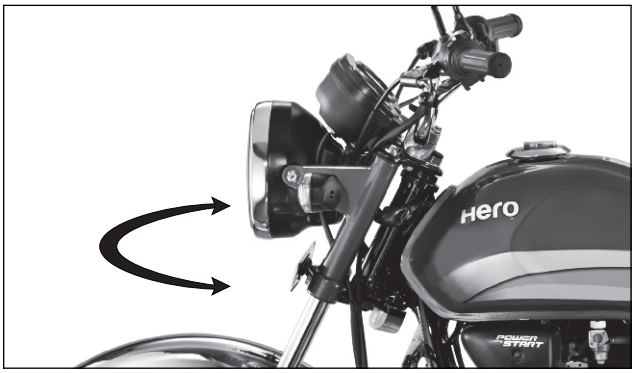
STEERING HEAD BEARINGS

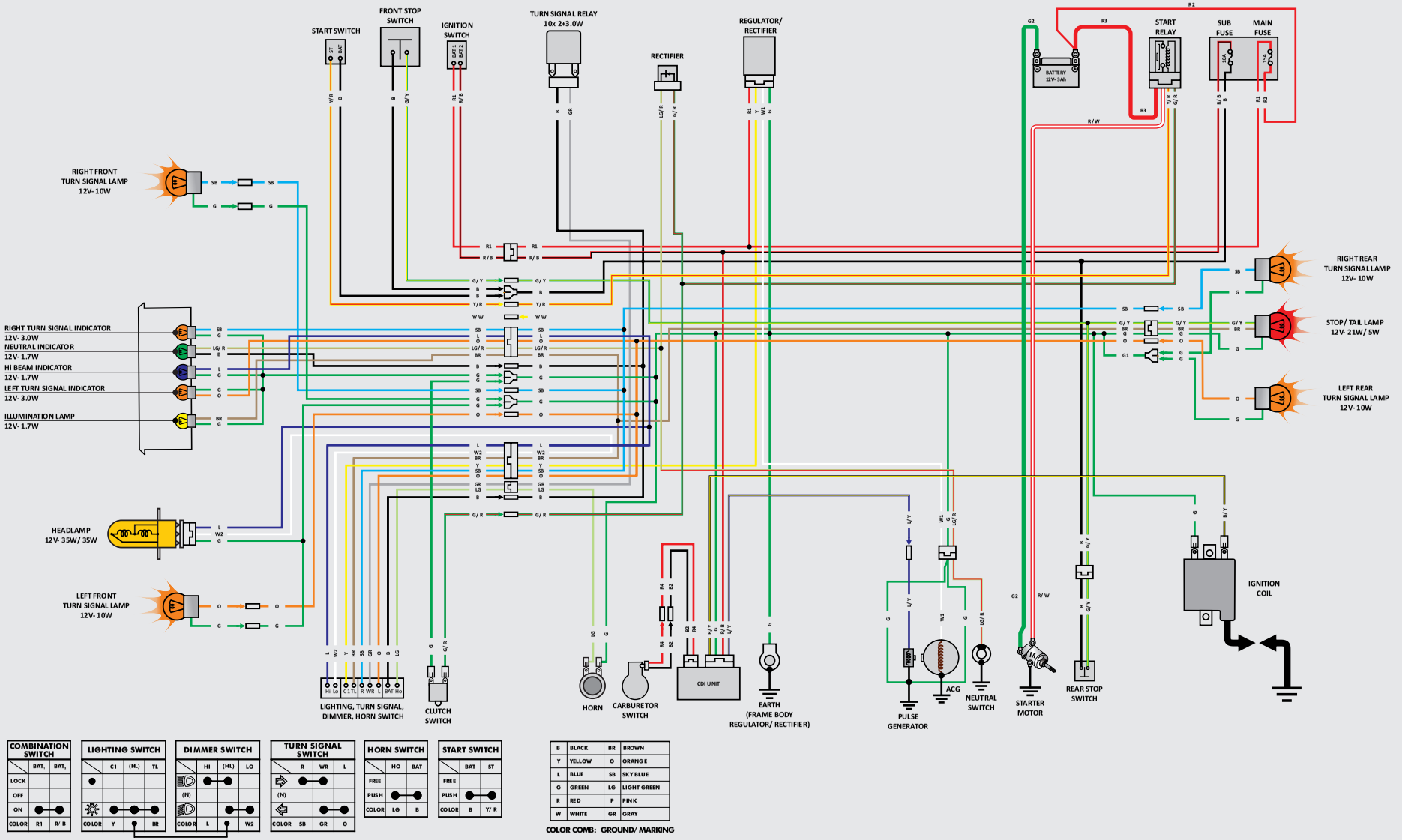
Support the vehicle with front wheel off the ground. Confirm the free movement of handle bar by turning from left to right.

Incase movement is not smooth, check routing of cable wire harness cable.

If routing is correct, check for wear or damage of steering head bearings.

Adjust steering head bearings by turning steering bearing adjustment nut.





COMBINATION SWITCH		
	BAT.	BAT.
LOCK		
OFF		
ON	●	●
COLOR	R1	R/ B

LIGHTING SWITCH			
	C1	(HL)	TL
	●		
		●	●
			●
COLOR	Y		BR

DIMMER SWITCH			
	HI	(HL)	LO
	●		
(N)			
		●	●
COLOR	L		W2

TURN SIGNAL SWITCH			
	R	WR	L
	●		
(N)			
		●	●
COLOR	SB	GR	O

HORN SWITCH		
	HO	BAT
FREE		
PUSH	●	●
COLOR	LG	B

START SWITCH		
	BAT	ST
FREE		
PUSH	●	●
COLOR	B	Y/ R

B	BLACK	BR	BROWN
Y	YELLOW	O	ORANGE
L	BLUE	SB	SKY BLUE
G	GREEN	LG	LIGHT GREEN
R	RED	P	PINK
W	WHITE	GR	GRAY

COLOR COMB: GROUND/ MARKING

MEMO