
YAMAHA

PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service and to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

MAINTENANCE INTERVALS CHARTS

Proper periodic maintenance is important. Especially important are the maintenance services related to emissions control. These controls not only function to ensure cleaner air but are also vital to proper engine operation and maximum performance. In the following maintenance tables, the services related to emissions control are grouped separately.

PERIODIC MAINTENANCE EMISSION CONTROL SYSTEM

No.	Item	Remarks	Initial Break-In		Thereafter Every	
			1,000 km (600 mi.) or 1 month	5,000 km (3,000 mi.) or 7 months	4,000 km 2,500 mi.) or 6 months	8,000 km 5,000 mi.) or 12 months
1*	Valve Clearance	Check and adjust valve clearance when engine is cold	o	o	o	
2	Spark plugs	Check condition; adjust gap/clean; replace after initial 13,000 km (8,000 mi) or 18 months and thereafter every 12,000 km (7,500 mi) or 18 months	o	o		Replace every 12,000 km (7,500 mi) or 18 months
3*	Crankcase ventilation system	Check fuel hose and vacuum pipe for cracks or damage; replace if necessary		o		o
4*	Fuel line	Check fuel hose for cracks or damage; replace if necessary		o		o
5*	Exhaust system	Check for leakage; retighten as necessary; replace gasket(s) if necessary		o	o	
6*	Carburetor synchronization	Adjust synchronization of carburetors		o	o	
7*	Idle speed	Check and adjust engine idle speed; adjust cable free play if necessary		o	o	

*It is recommmended that these items be serviced by a Yamaha dealer or other qualified mechanic.

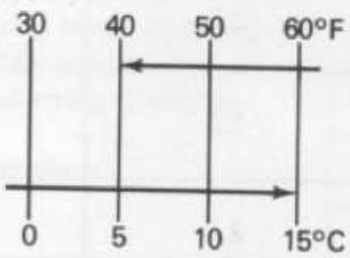
GENERAL MAINTENANCE/LUBRICATION

No.	Item	Remarks	Type	Initial Break-In		Thereafter Every		
				1,000 km (600 mi.) or 1 month	5,000 km (3,000 mi.) or 7 months	4,000 km 2,500 mi.) or 6 months	8,000 km 5,000 mi.) or 12 months	16,000 km 10,000 mi.) or 24 months
1	Engine oil	Warm-up engine before draining	Refer to page 2-6	o	o	o		
2	Oil filter	Replace	—	o	o		o	
3	Final gear oil	Replace	Refer to page 2-9	o			o	
4	Air filter	Clean with compressed air	—		o		o	
5*	Brake system	Adjust free play; Front: Replace pads if necessary; Rear: Replace shoes if necessary	—	o	o	o		
6*	Clutch	Adjust free play	—	o	o	o		
7*	Control and meter cable	Apply chain lube thoroughly	Yamaha chain and cable lube or SAE 10W30 motor oil	o	o	o		
8	Brake/Clutch lever pivot shafts	Apply chain lube lightly	Yamaha chain and cable lube or 10W30 motor oil		o	o		
9	Change/Brake pedal shaft pivots	Apply chain lube lightly	Yamaha chain and cable lube or 10W30 motor oil		o	o		
10	Center and side stand pivots	Apply chain lube lightly	Yamaha chain and cable lube or 10W30 motor oil		o	o		
11*	Front fork oil	Drain completely; refill to specification	Yamaha fork oil 10 wt. or equivalent					o
12*	Steering Ball Bearing and races	Check bearings assembly for looseness; moderately repack every 16,000 km (10,000 mi.)	Medium weight wheel bearing grease		o	o		Repack
13*	Wheel bearings	Check bearings for smooth rotation; replace if necessary	—		o	o		
14	Battery	Check specific gravity; check breather pipe for proper operation	—		o	o		

*It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

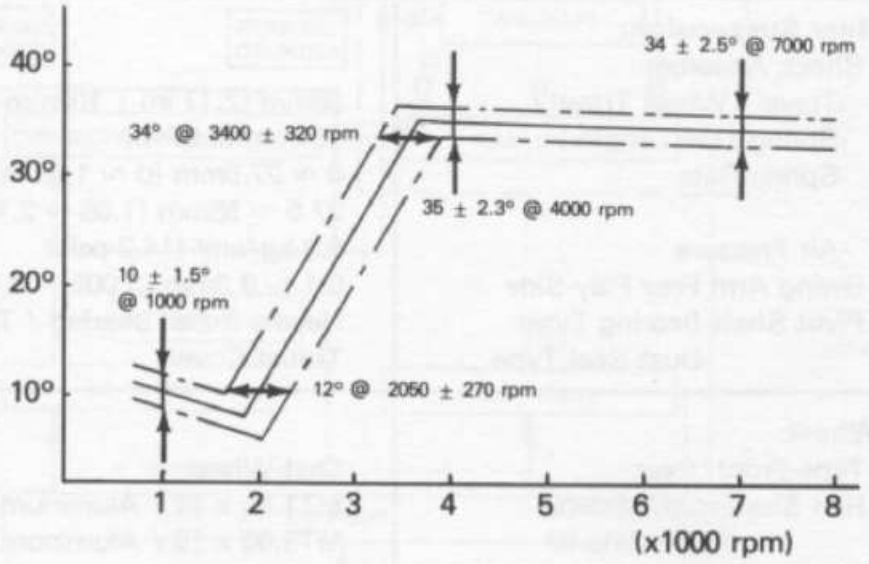
SPECIFICATIONS

GENERAL SPECIFICATIONS

Model IBM Number:	4X7
Engine Starting Number:	4X7-000101
Frame Starting Number:	4X7-000101
Dimension:	
Overall Length	2230mm (87.8 in)
Overall Width	805mm (31.7 in)
Overall Height	1160mm (45.7 in)
Wheelbasre	1520mm (59.8 in)
Minimum Ground Clearance	145mm (5.7 in)
Weight:	
Net Weight	225 kg (496 lb)
Performance:	
Minimum Turning Radius	2600mm (102.4 in)
Engine:	
Type	Air Cooled, 4-Stroke, Gasoline, SOHC
Model	4X7
Cylinder	V-Twin
Displacement	748cc (45.64 cu in)
Bore x Stroke	83.0 x 69.2mm (3.268 x 2.724 in)
Compression Ratio	8.7:1
Starting System	Electric Starter
Ignition System	TCI
Engine Oil:	
Type	 Yamalube 4-cycle oil or SAE 20W40 type SE motor oil (if temperature does not go below 50°C (40°F) SAE 10W30 type SE motor oil (if temperature does not go above 15°C (60°F)
Oil Capacity:	
Total Amount	3.6 Lit (3.81 Qt)
Periodic Oil Change	3.1 Lit (3.28 Qt)
Final Gear Oil:	
Type	SAE80 API GL-4 Hypoid Gear Oil
Oil Capacity:	
Final Gear Case	0.2 Lit (0.32 Qt)
Lubrication System	Wet Sump
Generator System	AC Magneto
Spark Plug	BP7ES (NGK)
Carburetor x Quantity	HSC40 x 2
Air Cleaner Element	Dry Type

Final Gear:	
Gear Back Lash	0.10 ~ 0.20mm (0.0039 ~ 0.0079 in)
Drive Pinion Gear Bearing Type	
-Front	6305RBI
-Rear	Needle 22BTM3018
Ring Gear Bearing Type-Left	Needle NQ37/20D
-Right	16014C_2

C. Electrical

Voltage	12V
Ignition System:	
Ignition Timing (BTDC)	10° at 1000 rpm
-Advance (BTDC)	35° at 3600 rpm
	
Advancer Type	Electrical
Ignition Type	TCI
Pickup Coil Resistance (Color)	155 Ω ± 20% at 20°C (68°F) #1 (Br~Gr), #2 (R~L)
TCI Unit-Model/Manufacturer	J4T00671 / Mitsubishi
Ignition Coil-Model/Manufacturer	F6T423 / Mitsubishi
-Minimum Spark Gap	6mm (0.236 in)
-Primary Winding Resistance	2.7 Ω ± 15% at 20°C (68°F)
-Secondary Winding Resistance	8.5K Ω ± 15% at 20°C (68°F)
Spark Plug Gap/Torque/ Cap Resistance	0.7 ~ 0.8mm (0.028 ~ 0.32 in) / 2.0 m-kg (14.5 ft-lb) / 5K Ω ± 15% @ 20°C (68°F)
Charging System:	
Type	AC Magneto
Model/Manufacturer	F3T414 / Mitsubishi
Output	14V-16A @ 5000 rpm
Armature Coil Resistance (Color)	0.5 Ω ± 10% at 20°C (68°F) (W-W)
Rectifier-Model/Manufacturer	SH238 / Shindengen
-Capacity	16A
Voltage Regulator-Type	IC Type
-Model/Manufacturer	SH238 / Shindengen
-No Load Regulated Voltage	14.5 ± 0.5V
Battery:	
Capacity	12V-16AH
Specific Gravity	1.280

Electric Starter System:	
Type	Constant Mesh
Starter Motor-Model / Manufacturer	SM-224 / Mitsuba
-Output	0.6 kW
-Armature Coil Resistance	0.006 Ω
-Field Coil Resistance	0.003 Ω
-Brush-Overall Length	12.5 ± 0.5mm (0.492 ± 0.020 in)
-Wear Limit	5.5mm (0.217 in)
-Spring Pressure	620 ± 60g (21.82 oz)
-Commutator-Min Diameter	27mm (1.063 in)
-Mic Undercut	0.5mm (0.02 in)
Max Current Draw Underload	330A @ 3.7V
Starter Switch Manufacturer	Honda Lock
-Amperage Rating	150A
-Coil Winding Resistance	3.5 Ω
Horn:	
Type / Quantity	Plane Type / 2
Model / Manufacturer	CF3-12 / Nikko
Maximum Amperage	2.5A
Flasher Relay:	
Type	Condenser Type
Model / Manufacturer	FU257CD / ND
Self-Cancelling Device	Yes
Flasher Frequency	85 ± 10 Cycle / Min
Capacity	12V-27W x 2 + 3.4W
Starting-Circuit Cut-Off Relay:	
Model / Manufacturer	4H7-01 / Omron
Coil Winding Resistance	100 Ω
Color Code	None
Starter Cut-Out Relay:	
Model / Manufacturer	4U8-00 / Omron
Coil Winding Resistance	100 Ω
Color Code	Blue
Headlight Relay:	
Model / Manufacturer	3H5-00 / Omron
Coil Winding Resistance	100 Ω
Color Code	Yellow
Sidestand Relay:	
Model / Manufacturer	4U8-00 / Omron
Coil Winding Resistance	100 Ω
Color Code	Blue
Circuit Breaker:	
Type	Fuse
Rating	Main 20A-1 Headlight 15A-1 Signal 15A-1 Ignition 10A-1 Tail 10A-1

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TIGHTENING TORQUE

Part to be tightened	Part name	Thread size	Qty	Tightening torque		Remarks
				m-kg	ft-lb	
ENGINE:						
Cylinder nut (#1)	Nut	M12 P1.25	4	5.0	36.2	Apply oil
Cylinder nut (#2)	Nut	M12 P1.25	4	6.4	46.3	Apply oil
Cylinder head nut	Nut	M10 P1.25	2	4.0	28.9	
Cylinder head bolt	Bolt	M8 P1.25	4	2.0	14.5	
Spark plug	—	—	2	2.0	14.5	
Cam sprocket cover	Bolt	M6 P1.0	4	1.0	7.2	
Cam sprocket	Bolt	M10 P1.25	2	5.5	39.8	
Camshaft bushing	Bolt	M8 P1.25	2	2.0	14.5	
Rocker arm cover	Bolt	M6 P1.0	8	1.0	7.2	
Rocker arm shaft	Union Bolt	M16 P1.5	2	3.8	27.5	
Rocker armshaft/ oil delivery pipe	Union bolt	M16 P1.5	2	2.0	14.5	
Oil delivery pipe	Union bolt	M10 P1.25	1	2.0	14.5	
Valve adjuster lock nut	Nut	M8 P1.25	4	2.7	19.5	
Cam chain tensioner	Bolt	M6 P1.0	4	1.0	7.2	
Cylinder	Bolt	M6 P1.0	6	1.0	7.2	
Cam chain guide (rear)	Bolt	M8 P1.25	2	0.8	5.8	
Cam chain guide (rear)	Nut	M8 P1.25	2	1.2	8.7	
Starter motor	Flange bolt	M6 P1.0	2	1.0	7.2	
Timing gear shaft stopper plate	Bolt	M6 P1.0	2	1.0	7.2	
Flywheel	Nut	M14 P1.5	1	15.5	112.1	
Primary drive gear	Nut	M20 P1.5	1	▲11.0	▲79.5	Use lock washer
Clutch boss	Nut	M20 P1.5	1	7.0	50.6	Use lock washer
Crankshaft end cover	Bolt	M32 P1.5	1	1.2	8.7	
Oil pump cover	Bolt	M6 P1.0	3	1.0	7.2	
Oil pump sprocket	Bolt	M6 P1.0	1	1.2	8.7	
Oil pump	Bolt	M6 P1.0	3	1.0	7.2	
Neutral switch	—	M10 P1.25	1	2.0	14.5	

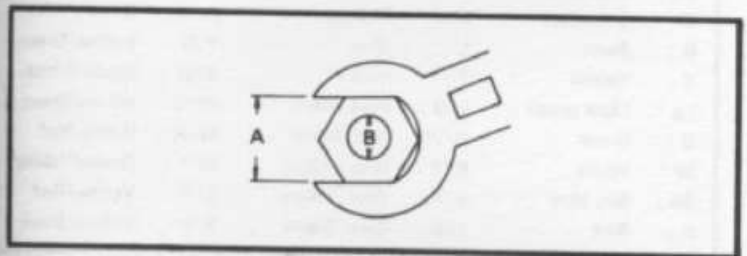
Part to be tightened	Part name	Thread size	Qty	Tightening torque		Remarks
				m-kg	ft-lb	
Shift fork guide bar stopper	Flat head screw	M6 P1.0	2	0.7	5.1	Use Loctite®
Crankcase	Bolt	M10 P1.25	3	3.9	28.2	Apply oil
Crankcase	Bolt	M6 P1.0	16	1.0	7.2	
Middle drive bearing retainer	Nut	M88 P1.5	1	11.0	79.6	Stake
Middle drive shaft nut	Nut	M44 P1.5	1	11.0	79.6	Stake
Connecting rod	Nut	M9 P1.25	4	4.8	34.7	Apply molybdenum disulfide grease
Drain plug	Bolt	M14 P1.5	1	4.3	31.1	
Middle driven gear bearing housing	Flange bolt	M8 P1.25	3	2.5	18.1	
Clutch push screw lock nut	Nut	M8 P1.25	1	1.2	8.7	
Exhaust pipe	Nut	M8 P1.25	4	2.0	14.5	
Exhaust pipe joint	Bolt	M8 P1.25	2	2.0	14.5	
Carburetor joint	Bolt	M6 P1.0	4	1.0	7.2	
Change pedal	Bolt	M6 P1.0	1	1.0	7.2	
Oil level switch	Bolt	M6 P1.0	2	1.0	7.2	

Part to be tightened		Part name	Thread size	Qty	Tightening torque		Remarks
					m-kg	ft-lb	
CHASSIS:							
Engine Mounting	Bracket (front)	Nut	M12 P1.25	4	5.4	39.1	
	Bolt (front)	Bolt/Nut	M10 P1.25	2/2	5.5	39.8	
	Bolt (rear)	Bolt	M10 P1.25	2	5.5	39.8	
	Bolt (rear, upper)	Bolt	M10 P1.25	2	5.5	39.8	
	Bolt (rear, under)	Bolt/Nut	M10 P1.25	1/2	5.5	39.8	
Handle crown & steering stem		Bolt	M14 P1.25	1	5.4	39.1	
		Bolt	M8 P1.25	1	2.0	14.5	
Handle crown & front forks		Bolt/Nut	M8 P1.25	2/2	2.0	14.5	
Under bracket & front forks		Bolt	M8 P1.25	4	2.0	14.5	
Front wheel axle		Nut	M14 P1.5	1	10.7	77.4	
Front wheel axle pinch bolt		Bolt/Nut	M8 P1.25	1/1	2.0	14.5	
Rear arm pivot shaft		Bolt	M16 P1.5	1	7.8	56.4	Use lock washer
Rear wheel axle		Nut	M14 P1.5	1	10.7	77.4	
Rear shock absorber		Bolt	M12 P1.25	1	4.5	32.5	
Foot peg (front)		Nut	M10 P1.25	4	5.5	39.8	
Tension bar & brake plate		Bolt/Nut	M8 P1.25	1/1	2.0	14.5	
Tension bar & rear arm		Bolt/Nut	M8 P1.25	1/1	2.0	14.5	
Rear brake camshaft lever & brake camshaft		Bolt	M6 P1.0	1	0.9	6.5	
Brake disc & hub		Bolt	M8 P1.25	6	2.0	14.5	Use lock plate
Brake master cylinder & brake hose		Union bolt	M10 P1.25	1	2.6	18.8	
Caliper cylinder & brake hose		Union bolt	M10 P1.25	1	2.6	18.8	
Caliper cylinder & front fork		Nut	M8 P1.25	1	2.6	18.8	
Caliper cylinder bleed screw		—	M8 P1.25	1	0.6	4.3	
Front fender		Bolt	M8 P1.25	4	1.0	7.2	
Final gear & rear arm		Bolt/Nut	M10 P1.25	1/5	4.3	31.1	
Main frame & seat rail		Bolt	M10 P1.25	2	5.5	39.8	Use lock washer
Main frame & lower frame		Bolt	M10 P1.25	2	5.5	39.8	
Seat rail & muffler bracket		Bolt/Nut	M10 P1.25	2/2	5.5	39.8	

Part to be tightened		Part name	Thread size	Qty	Tightening torque		Remarks
					m-kg	ft-lb	
Footpeg (rear), muffler bracket & muffler		Bolt	M10 P1.25	2	5.5	39.8	
Sidestand bracket & engine		Nut	M10 P1.25	1	5.5	39.8	
Final gear	Bearing housing	Flange bolt	M10 P1.25	2	2.3	16.6	
	Bearing housing	Nut	M8 P1.25	6	2.3	16.6	
	Oil filler cap	Bolt	M14 P1.5	1	2.3	16.6	
	Drain plug	Bolt	M14 P1.5	1	2.3	16.6	
	Bearing retainer	Nut	M65 P1.5	1	11.0	80.0	Left-hand threads
	Drive Shaft	Nut	M14 P1.5	1	11.0	80.0	

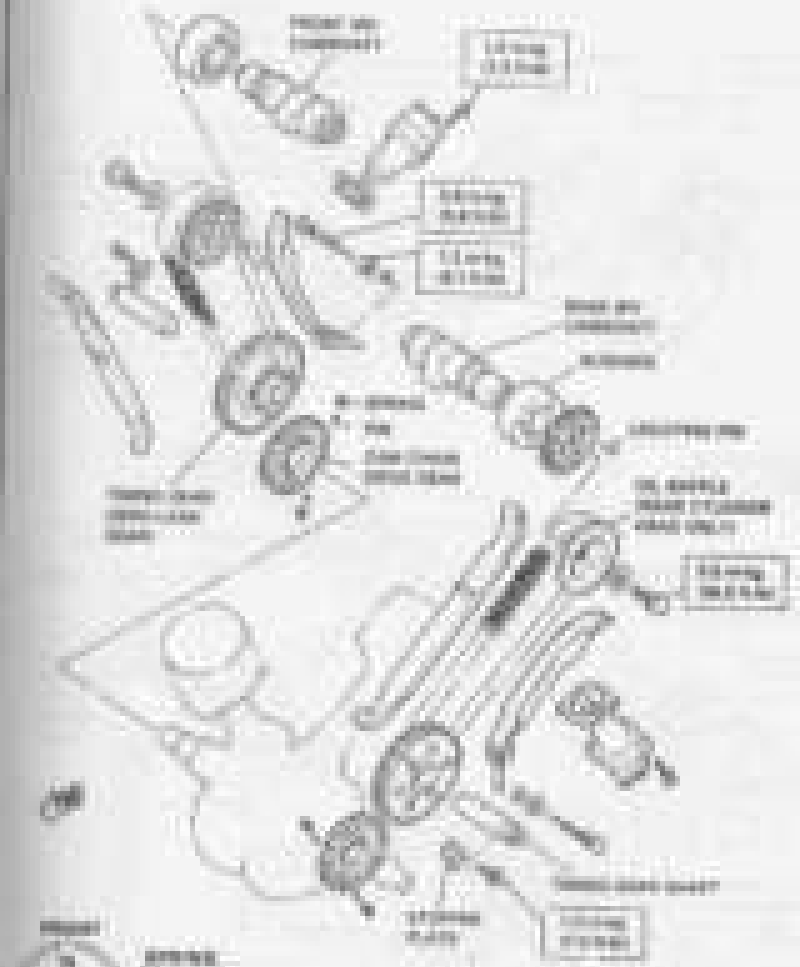
GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.



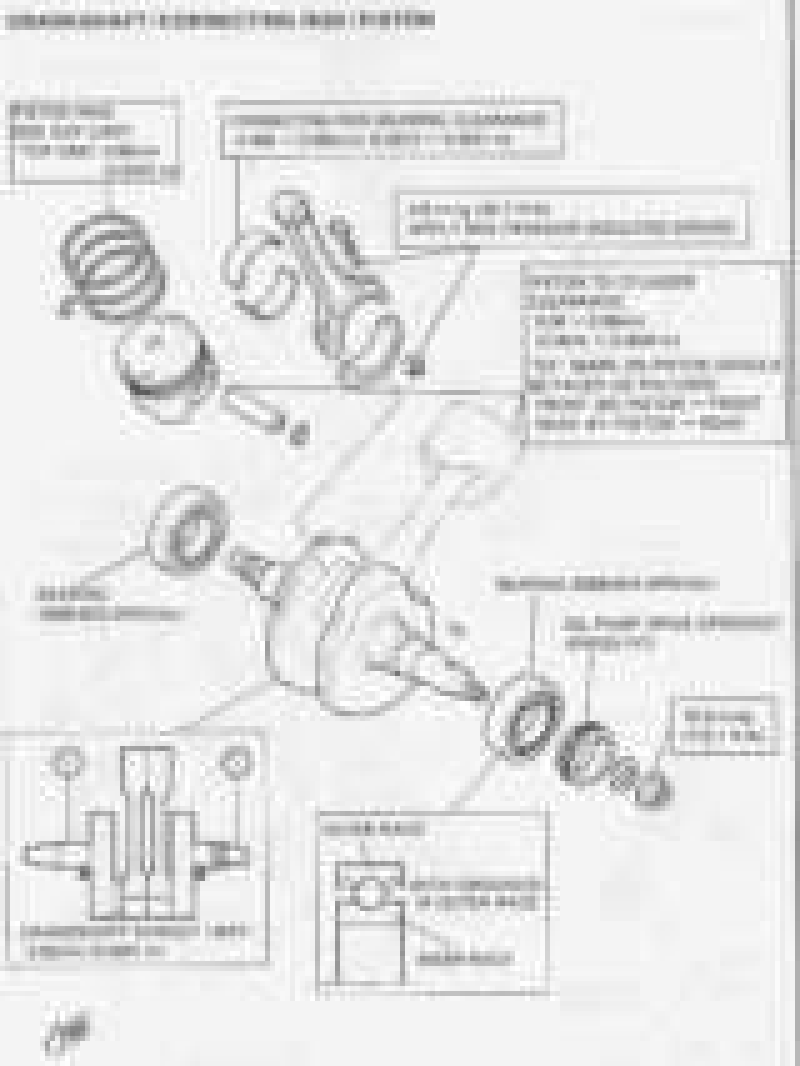
A (Nut)	B (Bolt)	General torque specifications	
		m-kg	ft-lb
10mm	6mm	0.6	4.5
12mm	8mm	1.5	11
14mm	10mm	3.0	22
17mm	12mm	5.5	40
19mm	14mm	8.5	51
22mm	16mm	13.0	94

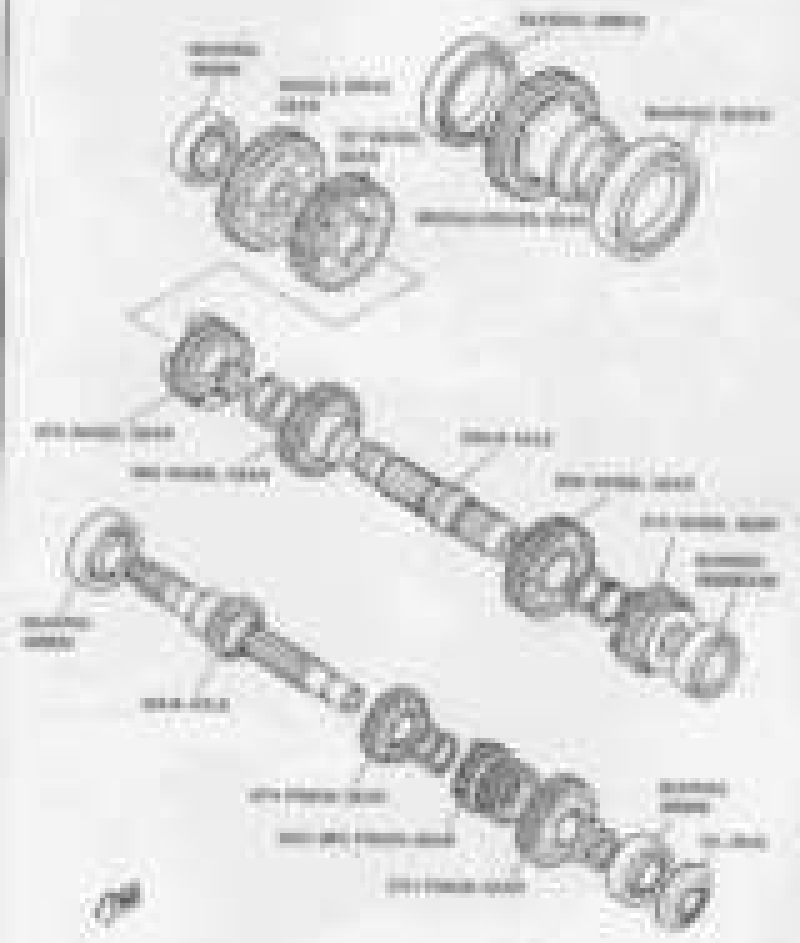


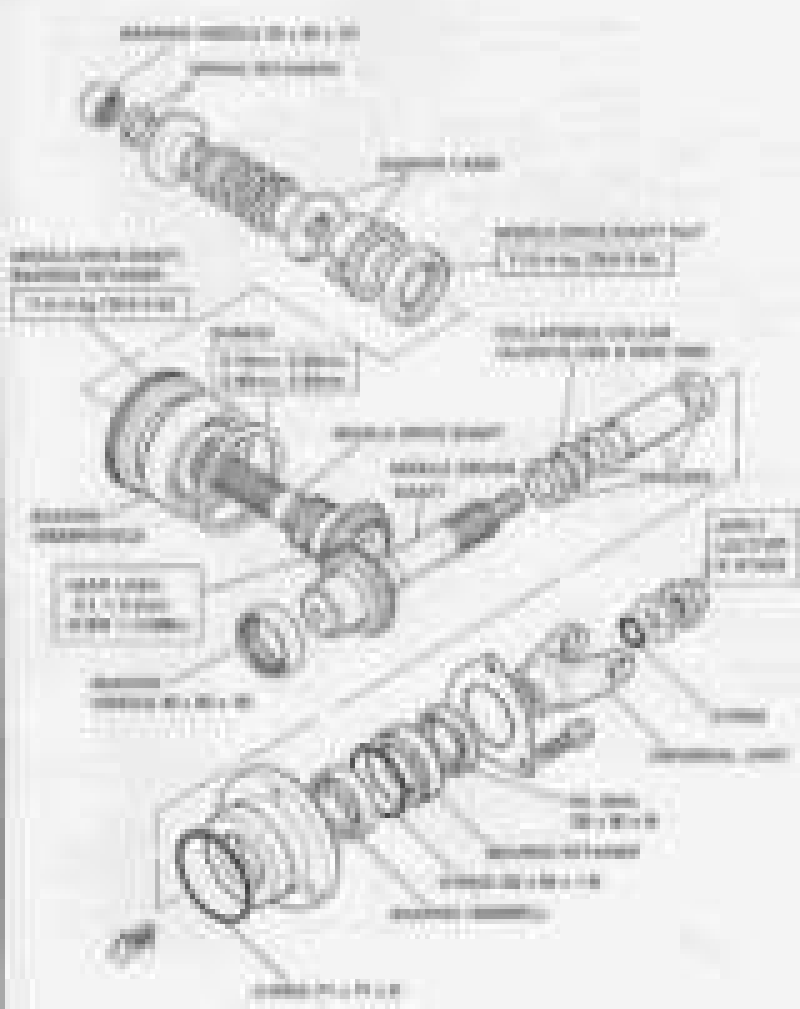


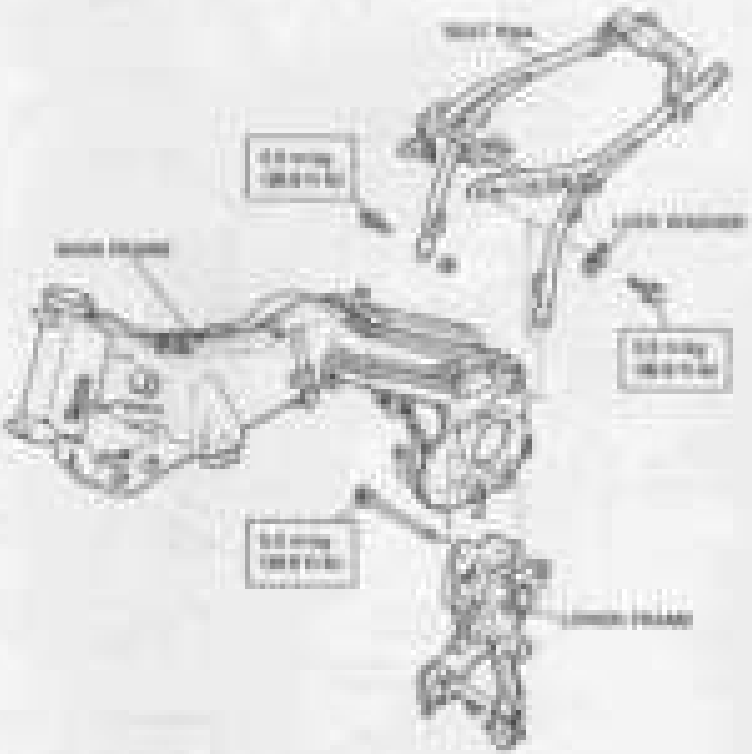
NOTE:
The front and rear cylinder timing gears are not identical. The gears can be identified by the direction in which the timing chisel-holes on the side of the gears.

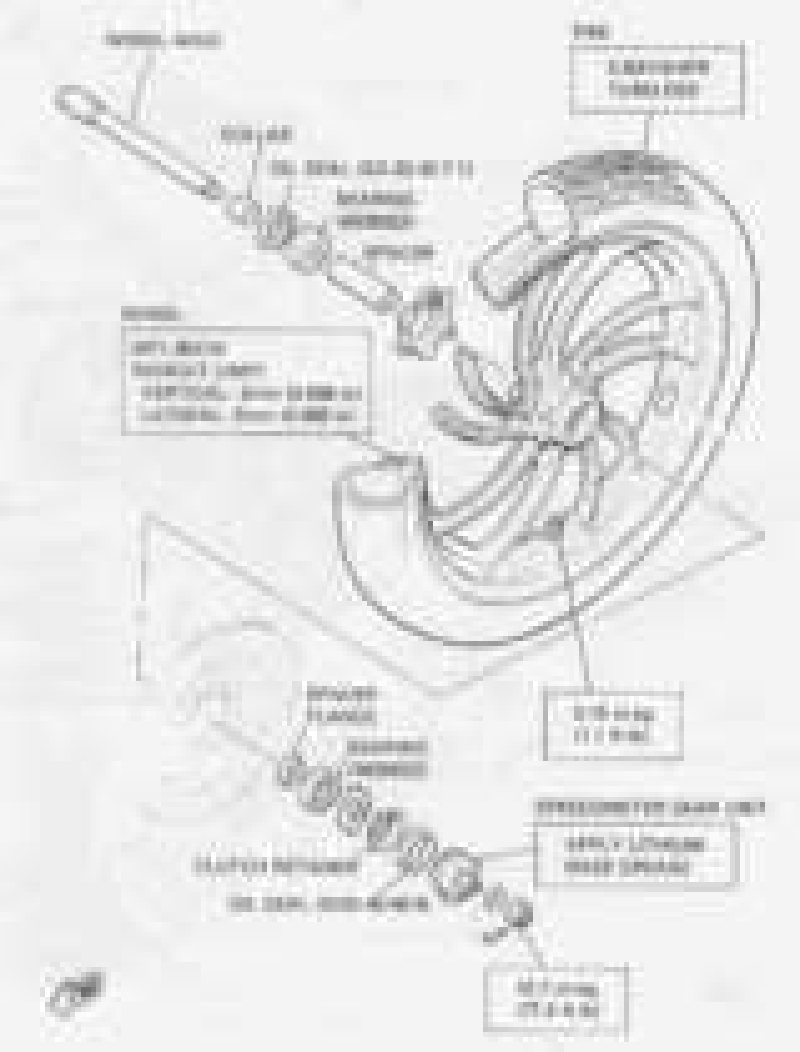
Clutch Type	Wet, Multiple-Disc			
Transmission:				
Primary Reduction System	Gear			
Primary Reduction Ratio	78/47 (1.660)			
Secondary Reduction System	Shaft Drive			
Secondary Reduction Ratio	47/45 x 19/18 x 32/11 (3.207)			
Transmission Type	Constant Mesh, 5-Speed			
Operation System	Left Foot Operation			
Gear Ratio 1st	40/17 (2.353)			
2nd	40/24 (1.667)			
3rd	36/28 (1.286)			
4th	32/31 (1.032)			
5th	30/33 (0.909)			
Chassis:				
Frame Type	Pressed Backbone			
Steering:				
Caster	29° 30′			
Trail	133mm (5.24 in)			
Fuel:				
Type	Regular Gasoline			
Tank Capacity, Total	12 Lit (3.2 Gal)			
Reserve	2.6 Lit (0.7 Gal)			
Tire Size:				
Front	3.50H19-4PR (Tubeless Tire)			
Rear	130/90-16 67H (Tubeless Tire)			
Tire Pressure (Cold):	**Front**		**Rear**	
	kg/cm²	psi	kg/cm²	psi
Up to 90 kg (198 lb) load	1.8	26	2.0	28
90 kg (198 lb) load ~ 160 kg (353 lb) load	2.0	28	2.3	32
160 kg (353 lb) load ~ 240 kg (529 lb) load	2.0	28	2.8	40
High Speed Riding	2.3	32	2.5	36
Braking System:				
Front	Disc Brake/Right-Hand operation			
Rear	Drum/Right Foot Operation			
Suspension:				
Front	Telescopic Fork (Pneumo-Mechanical)			
Rear	Swingarm (Monocross Suspension, Pneumo-Mechanical)			
Shock Absorber:				
Front	Air, Coil Spring, Oil Damper			
Rear	Air, Gas, Coil Spring, Oil Damper			
Electrical:				
Voltage	12V			

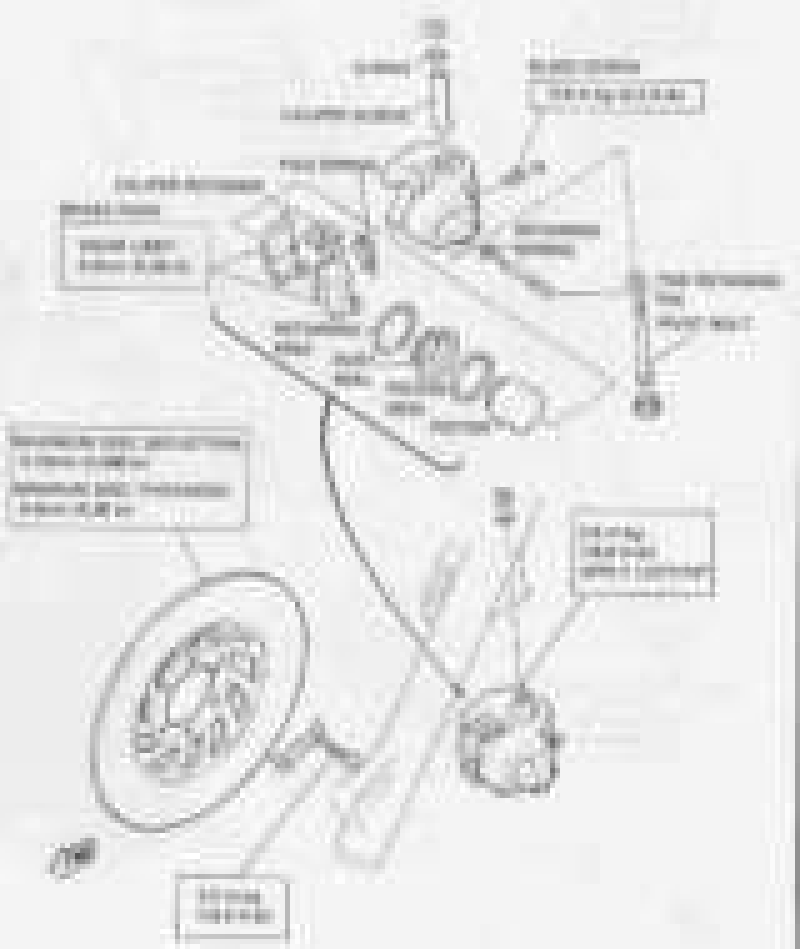


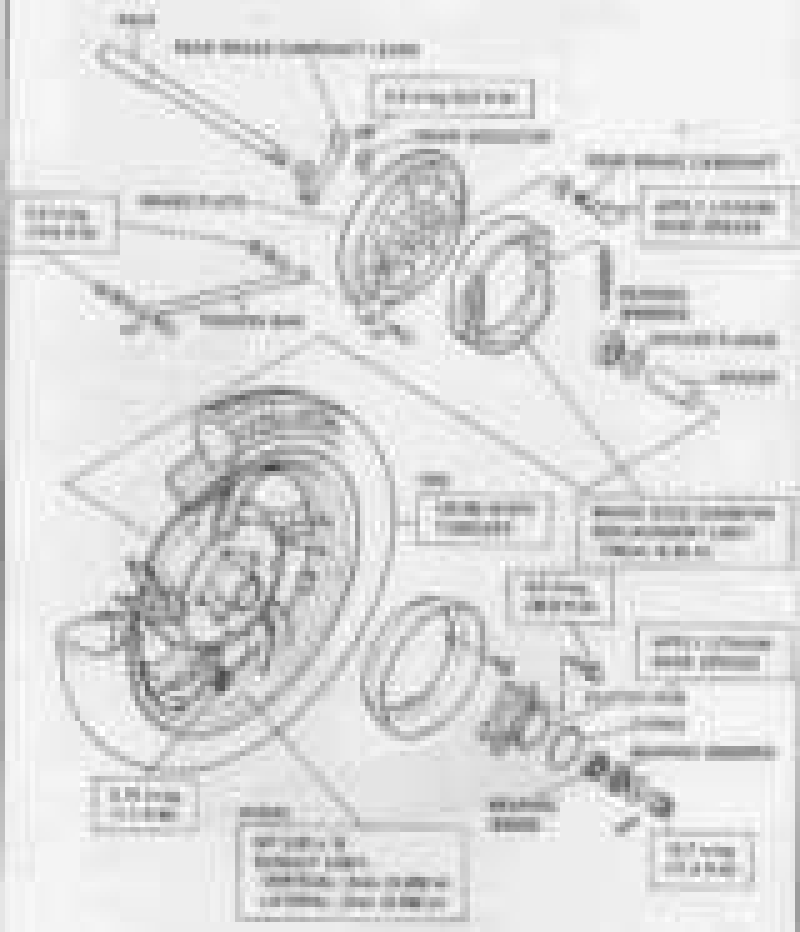


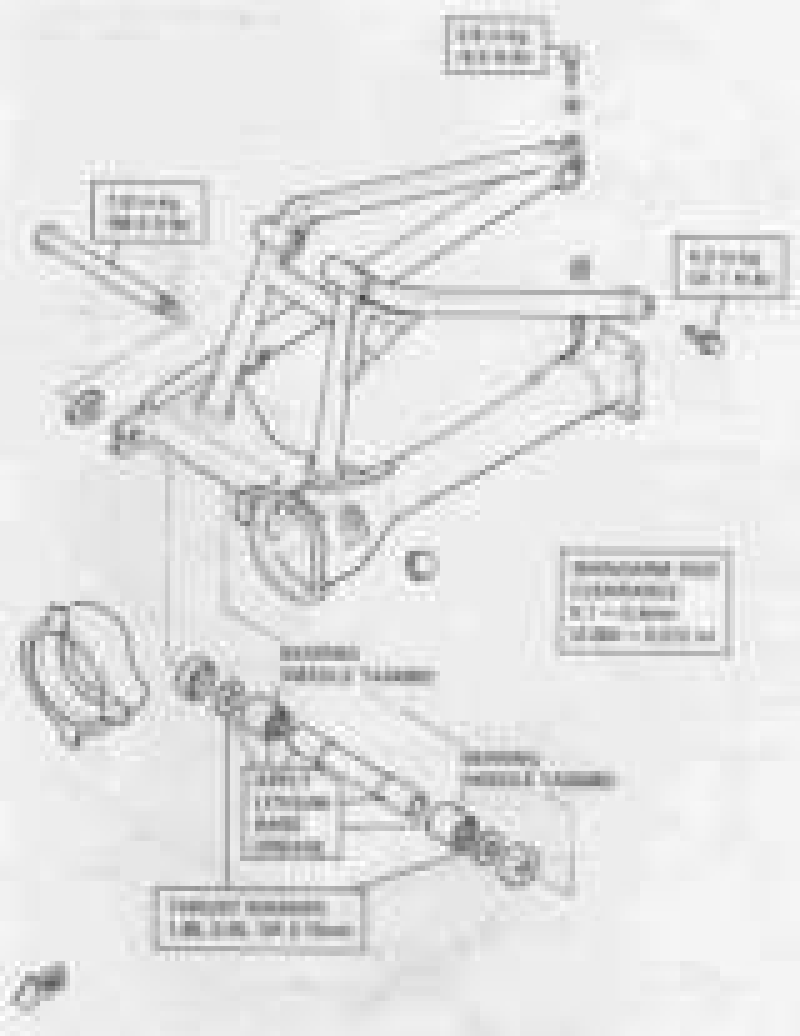




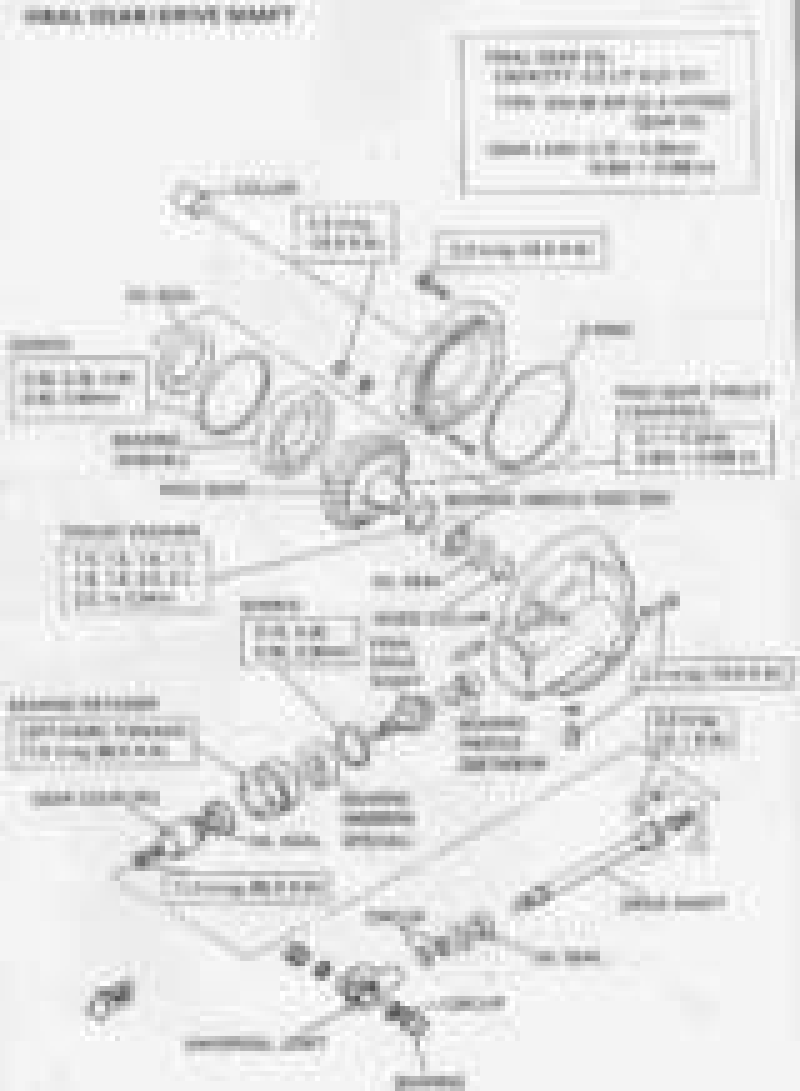


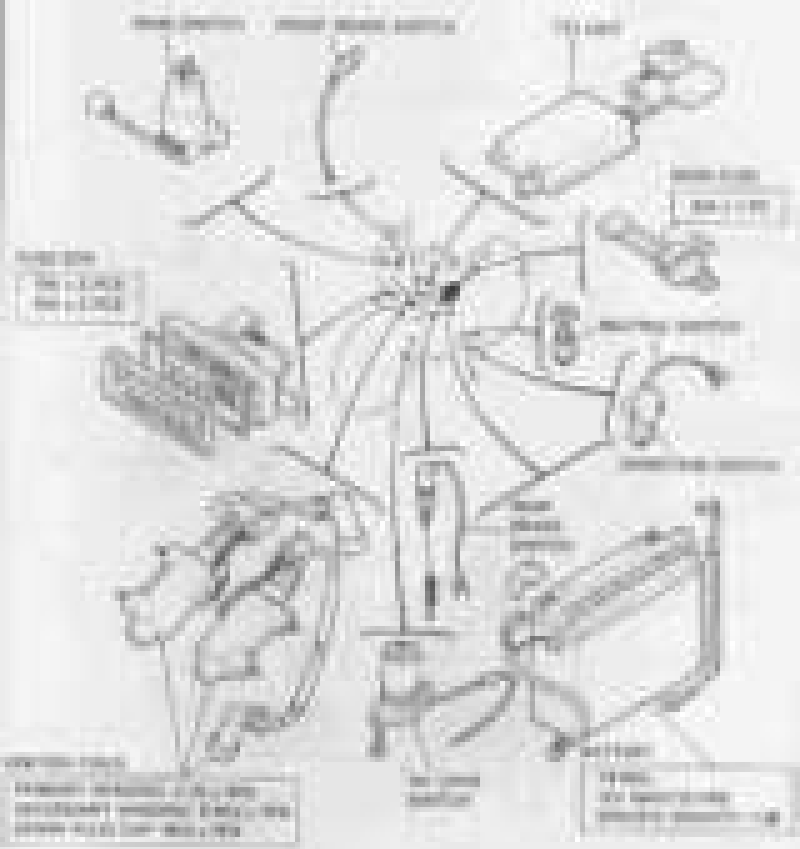






FINAL GEAR / DRIVE SHAFT



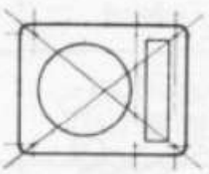


Bulb Wattage x Quantity:	
Headlight	60-55W x 1
Tail-Brake Light	8-27W x 1
Turn Light	27W x 4
Meter Light	3.4W x 2
License Light	8W x 1
Indicator Lights	
Neutral	3.4W x 1
Highbeam	3.4W x 1
Oil	3.4W x 1
Turn	3.4W x 2
Battery:	
Model/Capacity	YB16AL/12V 16AH

MAINTENANCE SPECIFICATIONS

A. Engine

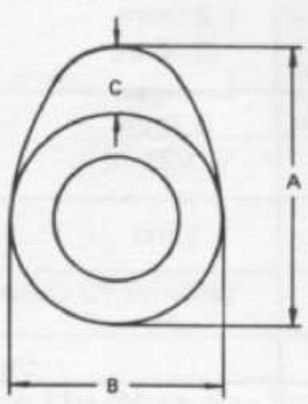
Cylinder Head:	
Volume	43.55cc (2.66 cu in)
Warp Limit	0.03mm (0.0012 in
Head Gasket Thickness (New)	2.3mm (0.091 in)



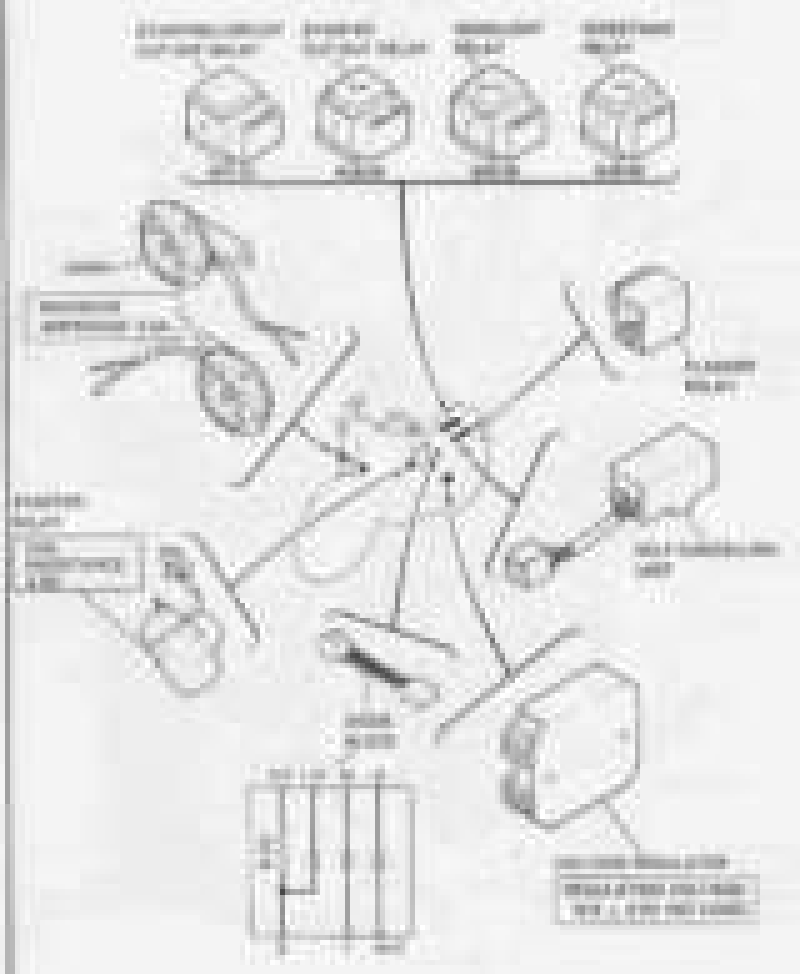
Cylinder:	
Material	Aluminum alloy with cast iron sleeve
Bore Size	83mm (3.268 in)
Taper Limit	0.05mm (0.002 in)

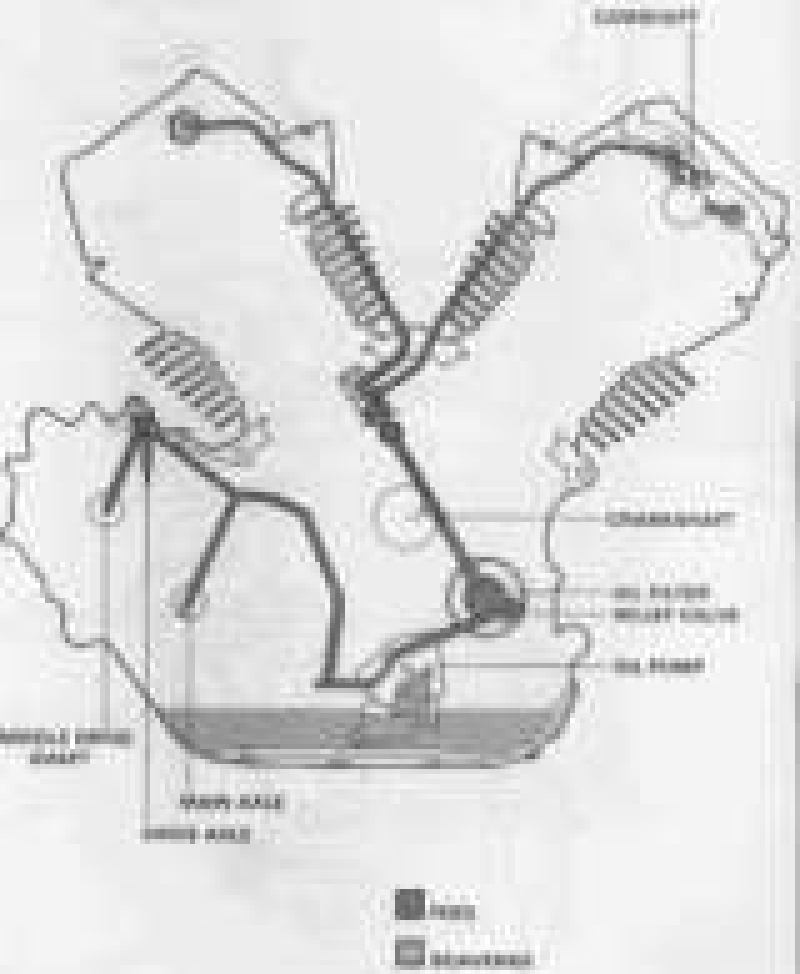
Camshaft:	
Drive Method	Chain drive
Bearing Type/Number	Cylinder head direct support / 2
Cam Bearing Inside Diameter	24 $^{+0.021}_{-0}$mm (0.9448 $^{+0.0008}_{-0}$in) / 25 $^{+0.021}_{-0}$mm (0.9843 $^{+0.0008}_{-0}$in)
Camshaft Outside Diameter	24 $^{-0.020}_{-0.033}$mm (0.9448 $^{-0.0008}_{-0.0013}$in) / 25 $^{-0.020}_{-0.033}$ mm (0.9843 $^{-0.0008}_{-0.0013}$in)
Shaft-To-Bearing Clearance	0.020 ~ 0.054mm (0.0008 ~ 0.0021 in)

Cam Dimensions

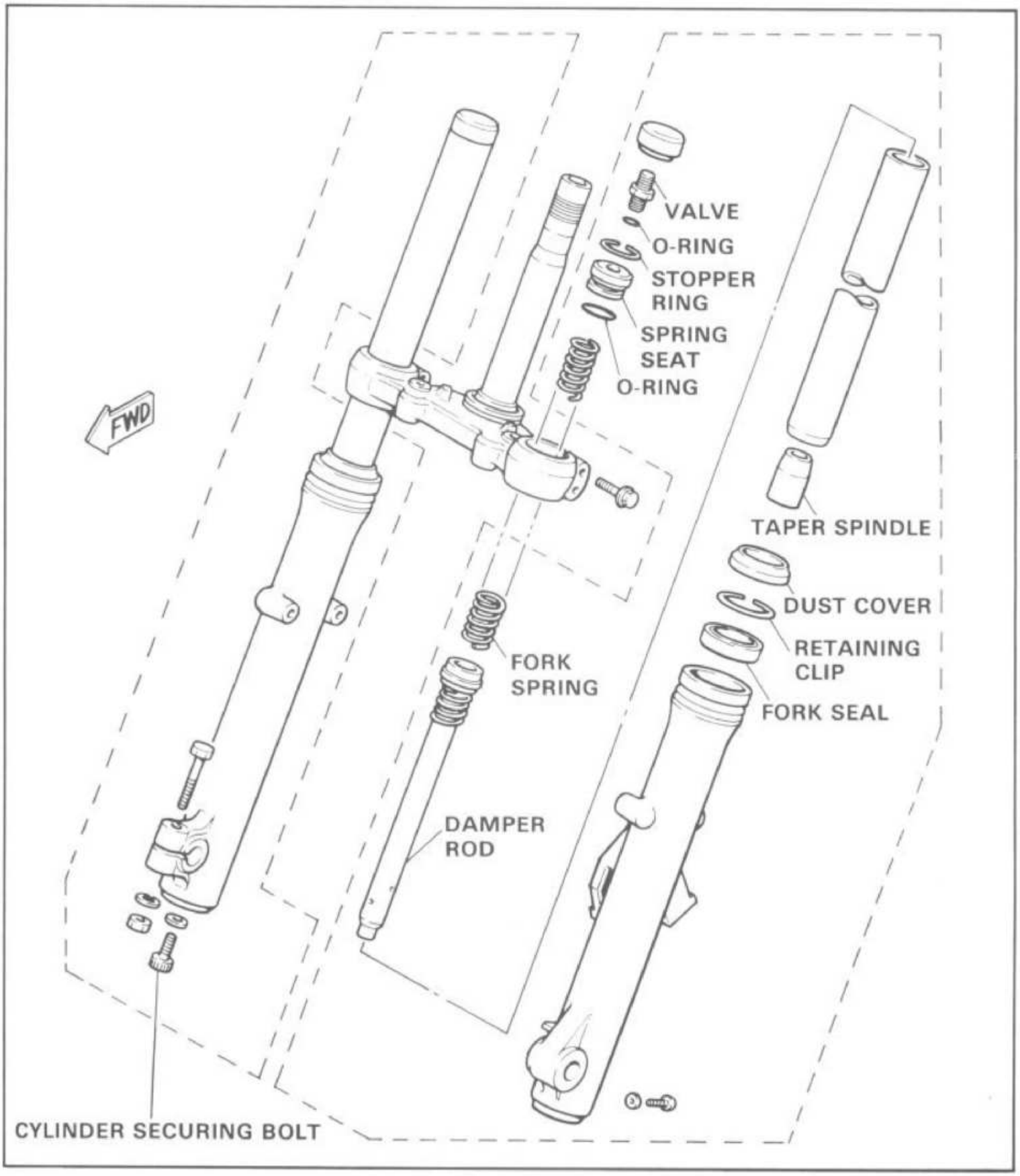


Intake	Standard	Wear limit
A	39.17mm (1.5421 in)	39.02mm (1.5362 in)
B	32.00mm (1.2598 in)	31.85mm (1.2539 in)
C	7.17mm (0.2823 in)	—
Exhaust		
A	39.20mm (1.5433 in)	39.05mm (1.5374 in)
B	32.00mm (1.2598 in)	31.85mm (1.2539 in)
C	7.20mm (0.2834 in)	—

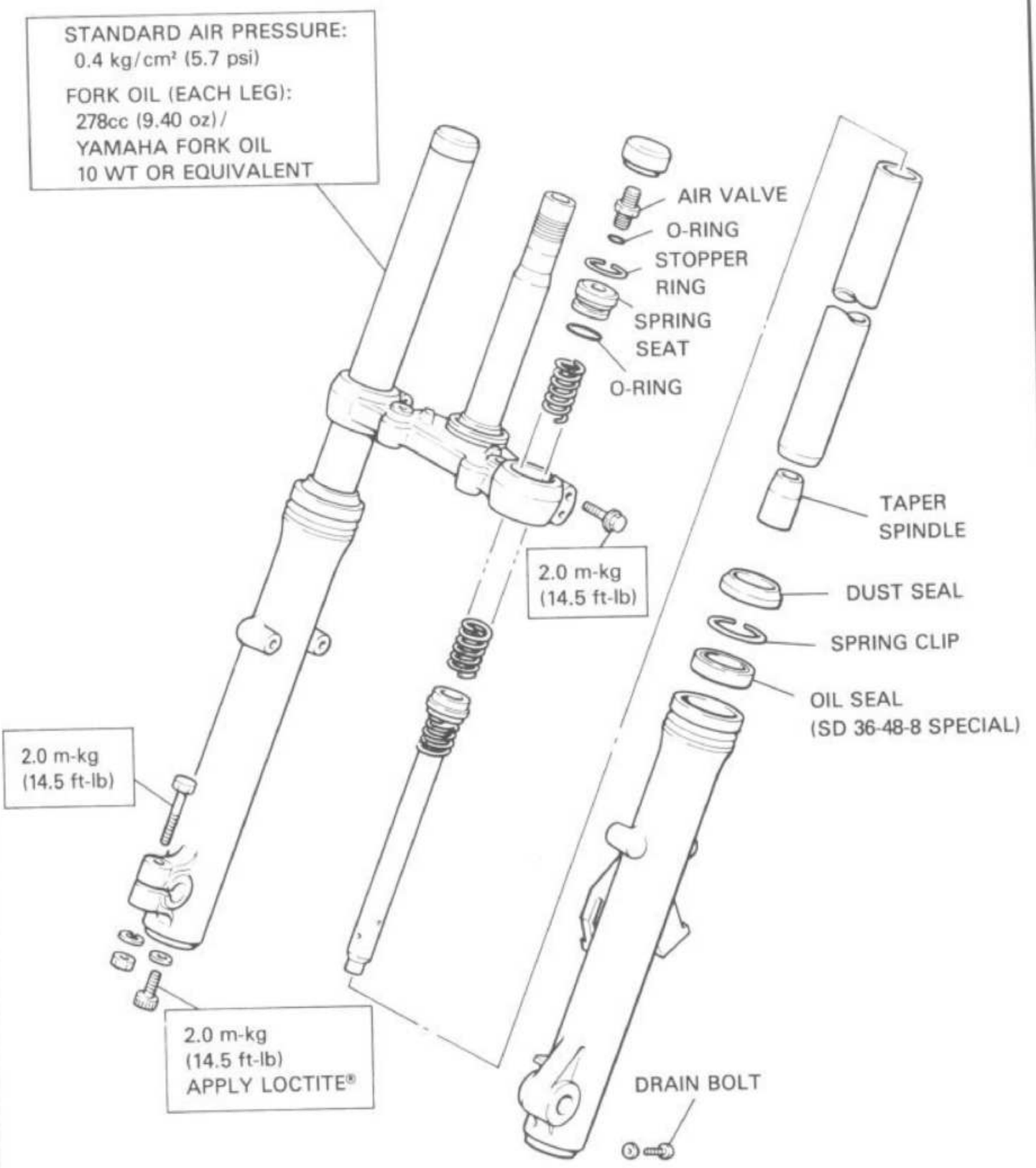




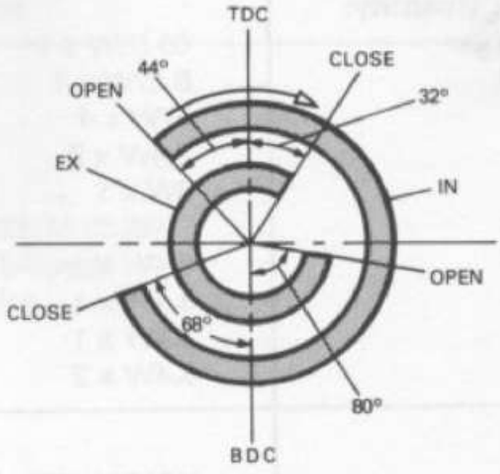
FRONT FORK


FWD
VALVE
O-RING
STOPPER RING
SPRING SEAT
O-RING
TAPER SPINDLE
DUST COVER
RETAINING CLIP
FORK SEAL
FORK SPRING
DAMPER ROD
CYLINDER SECURING BOLT

FRONT FORK


STANDARD AIR PRESSURE:
0.4 kg/cm² (5.7 psi)
FORK OIL (EACH LEG):
278cc (9.40 oz)/
YAMAHA FORK OIL
10 WT OR EQUIVALENT
AIR VALVE
O-RING
STOPPER RING
SPRING SEAT
O-RING
TAPER SPINDLE
2.0 m-kg (14.5 ft-lb)
DUST SEAL
SPRING CLIP
OIL SEAL
(SD 36-48-8 SPECIAL)
2.0 m-kg (14.5 ft-lb)
2.0 m-kg (14.5 ft-lb) APPLY LOCTITE®
DRAIN BOLT
FWD

Valve Timing:



Cam Chain Type/No. Of Links: Silent Chain / 98 Links

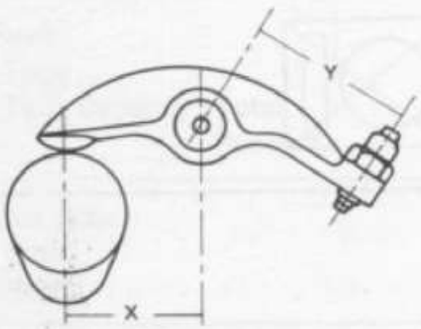
Rocker Arm/Rocker Arm Shaft:

Bearing Inside Diameter: 14 $^{+0.018}_{-0}$mm (0.5511 $^{+0.0007}_{-0}$in)

Shaft Outside Diameter: 14 $^{-0.010}_{-0.025}$mm (0.5511 $^{-0.0004}_{-0.0010}$in)

Arm-To-Shaft Clearance: 0.010 ~ 0.043mm (0.0004 ~ 0.0017 in)

Lift Ratio (X:Y): 26.50mm:35.69mm (1.0433 in:1.4051 in) / 1:1.347



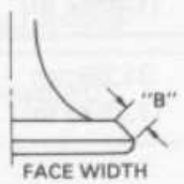
Valve/Valve Seat/Valve Guide:

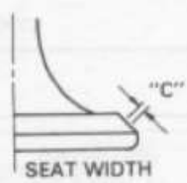
Valve Clearance (Cold) IN.: 0.10mm (0.0039 in)

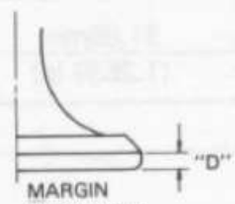
EX.: 0.15mm (0.0059 in)

Valve Dimensions





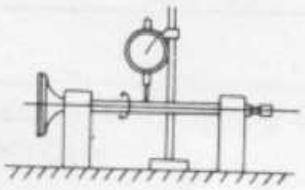




Intake	Standard	Limit
A	43 $^{+0.2}_{-0}$mm (1.693 $^{+0.008}_{-0}$in)	—
B	5.1mm (0.083 in)	—
C	1.3 ± 0.1mm (0.051 ± 0.0039 in)	2.0mm (0.08 in)
D	1.3 ± 0.2mm (0.051 ± 0.0079 in)	0.7mm (0.028 in)

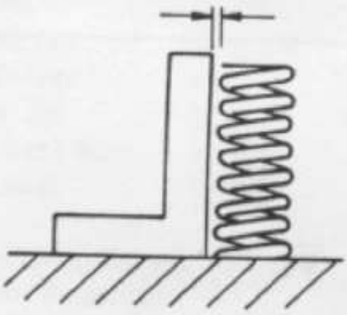
Exhaust	Standard	Limit
A	37 $^{+0.2}_{-0}$mm (1.457 $^{+0.008}_{-0}$in	—
B	2.1mm (0.083 in)	—
C	1.3 ± 0.1mm (0.051 ± 0.0039 in)	2.0mm (0.08 in)
D	1.3 ± 0.2mm (0.051 ± 0.0079 in)	0.7mm (0.028 in)

Stem Diameter (O.D.) IN.	8 $^{-0.010}_{-0.025}$mm (0.315 $^{-0.0004}_{-0.0010}$ in)
EX.	8 $^{-0.025}_{-0.040}$mm (0.315 $^{-0.0010}_{-0.0016}$ in)
Guide Diameter (I.D.) IN.	8 $^{+0.012}_{-0}$mm (0.315 $^{+0.0005}_{-0}$ in)
EX.	8 $^{+0.012}_{-0}$mm (0.315 $^{+0.0005}_{-0}$ in)
Stem-To-Guide Clearance/Limit IN.	0.01 ~ 0.037mm (0.0004 ~ 0.0015 in) / 0.1mm (0.0039 in)
EX.	0.025 ~ 0.051mm (0.0010 ~ 0.0020 in) / 0.1mm (0.0039 in)
Stem Run-Out Limit	0.03mm (0.0012 in)



Valve Spring:

	Inner		Outer	
	Intake	Exhaust	Intake	Exhaust
Free Length	45.3mm (1.783 in)	45.3mm (1.783 in)	44.6mm (1.756 in)	44.6mm (1.756 in)
Spring Rate	K1 = 1.67kg/mm (K1 = 93.5 lb/in) K2 = 2.12kg/mm (K2 = 119 lb/in)	K1 = 1.67kg/mm (K1 = 93.5 lb/in) K2 = 2.12kg/mm (K2 = 119 lb/in)	K1 = 3.60kg/mm (K1 = 202 lb/in) K2 = 4.63kg/mm (K2 = 259 lb/in)	K1 = 3.60kg/mm (K1 = 202 lb/in) K2 = 4.63kg/mm K2 = 259 lb/in)
Installed Length (Valve Closed)	38.0mm (1.496 in)	38.0mm (1.496 in)	40.0mm (1.575 in)	40.0mm (1.575 in)
Installed Pressure (Valve Closed)	12.2kg (26.7 lb)	12.2kg (26.7 lb)	16.4kg (36.2 lb)	16.4kg (36.2 lb)
Tilt Limit (Allowable Tilt From Vertical)	2.5°	2.5°	2.5°	2.5°

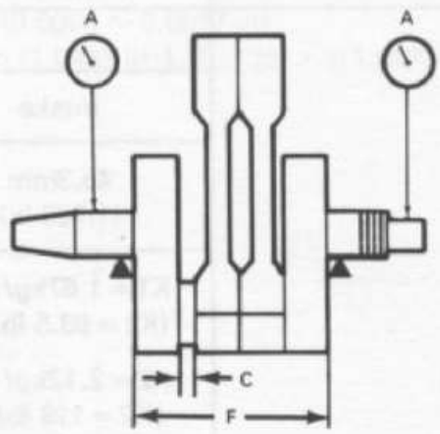


Direction Of Winding	Left	Left	Right	Right

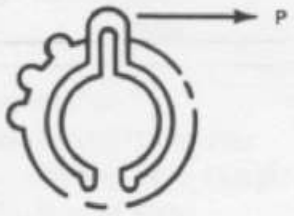
Piston:

Piston Size/Measuring Point	83mm (3.268 in) / 9.5mm (0.374 in)
Piston Clearance	0.04 ~ 0.06mm (0.0016 ~ 0.0024 in)
Oversize 1st	83.25mm (3.278 in)
2nd	83.50mm (3.287 in)
3rd	83.75mm (3.297 in)
4th	84.00mm (3.307 in)
Offset	0mm (0 in)

Piston Ring:	Top	2nd	Oil ring
Design			
End Gap (Installed)	0.3 ~ 0.5mm (0.0118 ~ 0.0197 in)	0.3 ~ 0.5mm (0.0118 ~ 0.0197 in)	▲ 0.3 ~ 0.9mm (0.0118 ~ 0.0351 in)
Side Clearance	0.04 ~ 0.08mm (0.0016 ~ 0.0031 in)	0.04 ~ 0.08mm (0.0016 ~ 0.0031 in)	0 (0)
Plating / Coating	Chrome / Ferox	—	Chrome / Ferox

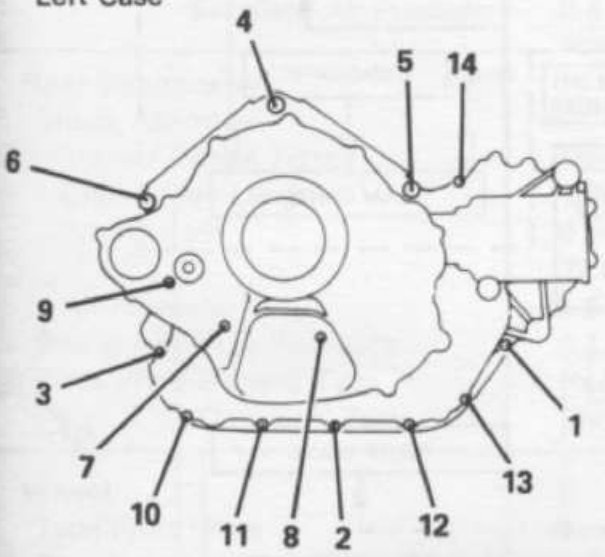
Connecting Rod:	
Small End Bearing-Type	Copper Plated
Inside Diameter	20 $^{+0.028}_{+0.015}$mm (0.7874 $^{+0.0011}_{+0.0006}$in)
Big End Bearing-Type	Plain
-Oil Clearance	0.030 ~ 0.054mm (0.0012 ~ 0.0021 in)
-Color Code	1-Blue 2-Black 3-Brown 4-Green 5-Yellow
Crankshaft:	
Assembly Width (F)	102 $^{0}_{-0.005}$mm (4.016 $^{0}_{-0.002}$ in)
Deflection (A)	0.02mm (0.0008 in)
Connecting Rod-Big End Side Clearance (C)	0.370 ~ 0.474mm (0.0146 ~ 0.0187 in)
Crankshaft Bearing	
-Type (Left) / Quantity	Ball Bearing B6308C4 / 1
-Type (Right) / Quantity	Ball Bearing B6308C3 / 1
Oil Seal	
-Type (Right) / Quantity	FAJ-1-14-27-5.2-VR / 1
Clutch:	
Friction Plate-Thickness / Quantity	3.0 ± 0.1mm (0.12 in) / 8
-Wear Limit	2.8mm (0.11 in)
Clutch Plate-Thickness / Quantity	1.6mm (0.063 in) / 7
-Warp Limit	0.1mm (0.004 in)
Clutch Spring-Free Length / Quantity	41.2mm (1.622 in) / 6
-Minimum Length	40.2mm (1.583 in)
Clutch Release Method	Inner Push / Screw Push
Push Rod Bending Limit	0.5mm (0.02 in)
Transmission:	
Main Axle Deflection Limit	0.08mm (0.0031 in)
Drive Axle Deflection Limit	0.08mm (0.0031 in)
Main Axle Bearing-Type (Left)	6304
-Type (Right)	6305
Drive Axle Bearing-Type (Left)	6205 DU8
-Type (Right)	6204
Shifter:	
Shifting Type	Cam Drum, Guide Bar
Change Pedal Shaft Oil Seal Type	SD-12-22-5HS

Starter:	
Type	Bendix Type
Spring Clip Friction Weight:	
Idler Gear #2	P = 2.2 ~ 2.5 kg (4.9 ~ 5.5 lb)
Starter Gear	P = 2.0 ~ 2.3 kg (4.4 ~ 5.1 lb)

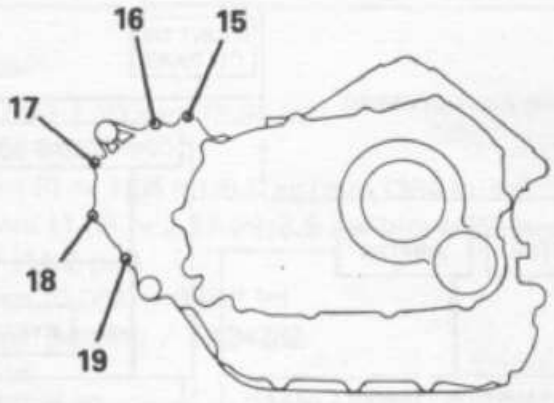


Crankcase Tightening Sequence:

Left Case

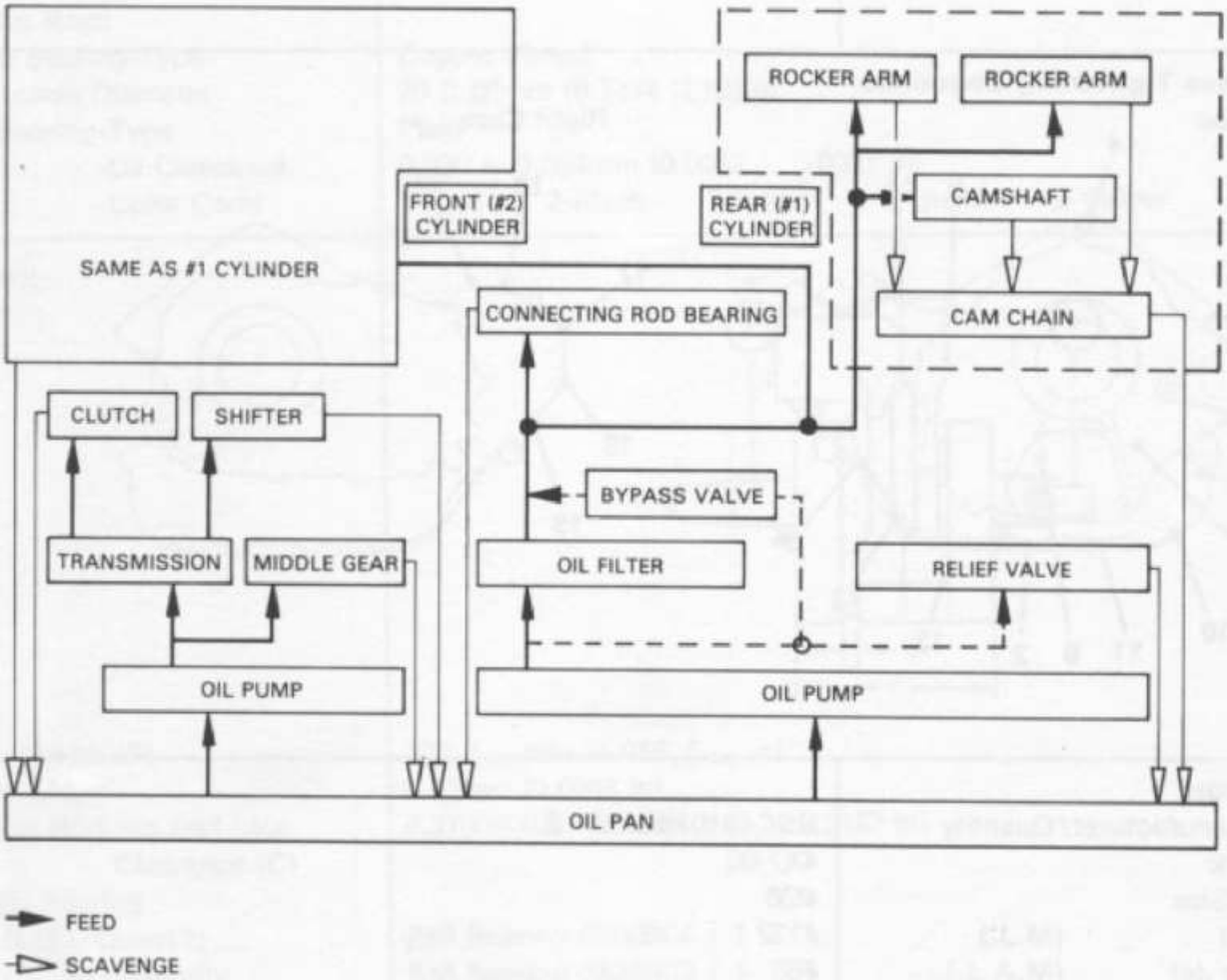


Right Case



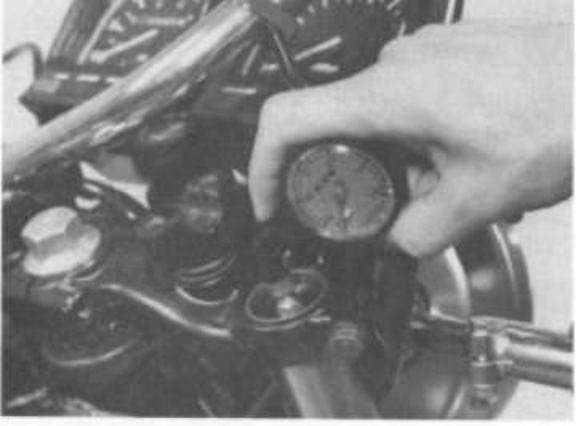
Carburetor:		
Type / Manufacturer / Quantity		HSC40 / Hitachi / 2
I.D. Mark		4X7-00
Venturi Size		ø36
Main Jet	(M.J.)	#122
Main Air Jet	(M.A.J.)	#50
Jet Needle	(J.N.)	#1 Cylinder: Y-23, #2 Cylinder: Y-22
Pilot Jet	(P.J.)	#41
Pilot Air Jet	(P.A.J.)	#185
Pilot Screw	(P.S.)	Preset
Starter Jet	(G.S.)	#40 (G.S.2: ø1.4)
Valve Seat Size	(V.S.)	ø2.0
Fuel Level	(F.L.)	Left (#1) Carburetor: 1.0 ± 1.0mm (0.04 ± 0.04 in) Right (#2) Carburetor: 2.0 ± 1.0mm (0.08 ± 0.04 in)
Engine Idling Speed		1000 ± 50 rpm
Vacuum Pressure		180mm Hg (7.09 in Hg)

Lubrication System:	
Oil Filter Type	Paper Type
Oil Pump Type	Trochoid Pump
Tip Clearance	0.03 ~ 0.09mm (0.0012 ~ 0.0035 in)
Side Clearance	0.03 ~ 0.08mm (0.0012 ~ 0.0031 in)
Bypath Valve Setting Pressure	1.0 ± 0.2 kg/cm² (14.2 ± 2.8 psi)
Relief Valve Operating Pressure	5 ± 0.5 kg/cm² (71.1 ± 7.1 psi)



Middle Gear:	
Gear Back Lash	0.10 ~ 0.20mm (0.0039 ~ 0.0079 in)
Drive Shaft-Bearing-Type (Left)	6209RSH$_2$C$_2$
-Type (Right)	Needle 20 x 26 x 12
Driven Shaft Bearing-Type (Front)	Needle 40 x 50 x 15
-Type (Rear)	6205RC$_2$
Driven Shaft Oil Seal Type	SD-12-22-5HS
Bearing Housing O-Ring Size	71 x 77 x 3

Steering System:	
Head Pipe Bearing Type	Ball Bearing
Number and Size of Balls in	
Steering Head-Upper	19 pcs 1/4 in
-Lower	19 pcs 1/4 in
Front Suspension:	
Front Fork-Travel/Diameter	150mm (5.91 in) / 36mm (1.42 in)
-Spring Free Length	635mm (25.0 in)
-Spring Rate	0.417 kg/mm (23.35 lb/in)
-Oil Capacity	278cc (9.40 oz)
-Oil Type	Yamaha Fork Oil 10 Wt or Equivalent
-Oil Seal Type	SD36-48-8 (Special)
-Standard Air Pressure	0.4 kg/cm² (5.69 psi)
Rear Suspension:	
Shock Absorber	
-Travel/ Wheel Travel	55mm (2.17 in) / 100mm (3.94 in)
-Spring Free Length	167mm (6.57 in)
-Spring Rate	0 ~ 27.5mm (0 ~ 1.08 in):6.5 kg/mm (364 lb/in)
	27.5 ~ 55mm (1.08 ~ 2.17 in):8.6 kg/mm (482 lb/in)
-Air Pressure	1.0 kg/cm² (14.2 psi)
Swing Arm Free Play-Side	0.1 ~ 0.3mm (0.008 ~ 0.012 in)
Pivot Shaft-Bearing Type	Needle Roller Bearing / TA2428Z
-Dust Seal Type	Thrust Cover
Wheel:	
Type-Front/Rear	Cast Wheel
Rim Size-Front/Material	MT1.85 x 19 / Aluminum
-Rear/Material	MT3.00 x 16 / Aluminum
Rim Run Out Limit (Front/Rear)	
-Vertical	2mm (0.079 in)
-Lateral	2mm (0.079 in)
Front Wheel Bearing Type-Left	6302Z
-Right	6302Z
Rear Wheel Bearing Type-Left	6203RS / 6203
-Right	6303RS
Front Wheel Oil Seal Type-Right	SD-22-42-7-1
Meter Gear Oil Seal Type	SDD-45-56-6
Disc Brake (Front):	
Type	Single Disc
Disc Size-Outside Dia x Thickness	298 x 7mm (11.73 x 0.28 in)
Disc Wear Limit	6.5mm (0.256 in)
Pad Thickness	5.7mm (0.224 in)
Pad Wear Limit	1.2mm (0.047 in)
Master Cylinder Inside Diameter	14.0mm (0.551 in)
Caliper Cylinder Inside Diameter	42.85mm (1.687 in)
Brake Fluid Type	DOT #3
Drum Brake (Rear):	
Type	Leading Trailing
Drum Diameter	180mm (7.087 in)
Lining Thickness	4mm (0.157 in)
Lining Wear Limit	2mm (0.079 in)
Shoe Spring Free Length	68mm (2.677 in)



Standard air pressure:
0.4 kg/cm² (5.7 psi)

Maximum air pressure:
1.2 kg/cm² (17 psi)

Minimum air pressure: Zero

* Never exceed the maximum pressure or oil seal damage may occur.
* The difference between both the left and right tubes should be 0.1 kg/cm² (1.4 psi) or less.

Rear Shock Absorber

1. Air Pressure Adjustment
   a. Place the motorcycle on the center-stand, and elevate the rear wheel.

NOTE:
When checking and adjusting the air pressure, there should be no weight on the rear end of the motorcycle.

   b. Remove the plastic cap from the filler valve.
   c. Using the air gauge, check and adjust the air pressure. If the air pressure is increased, the suspension becomes stiffer; if decreased the suspension becomes softer.
   To increase air pressure: Use a manual air pump

   To decrease air pressure: Release the air by pushing the valve pin.



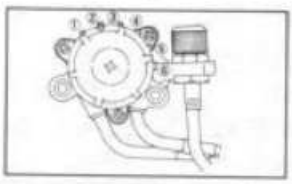
Standard air pressure:
1.0 kg/cm² (14 psi)

Maximum air pressure:
4.0 kg/cm² (57 psi)

Minimum air pressure:
0.5 kg/cm² (7 psi)

*Never exceed the maximum pressure, or oil seal damage may occur.

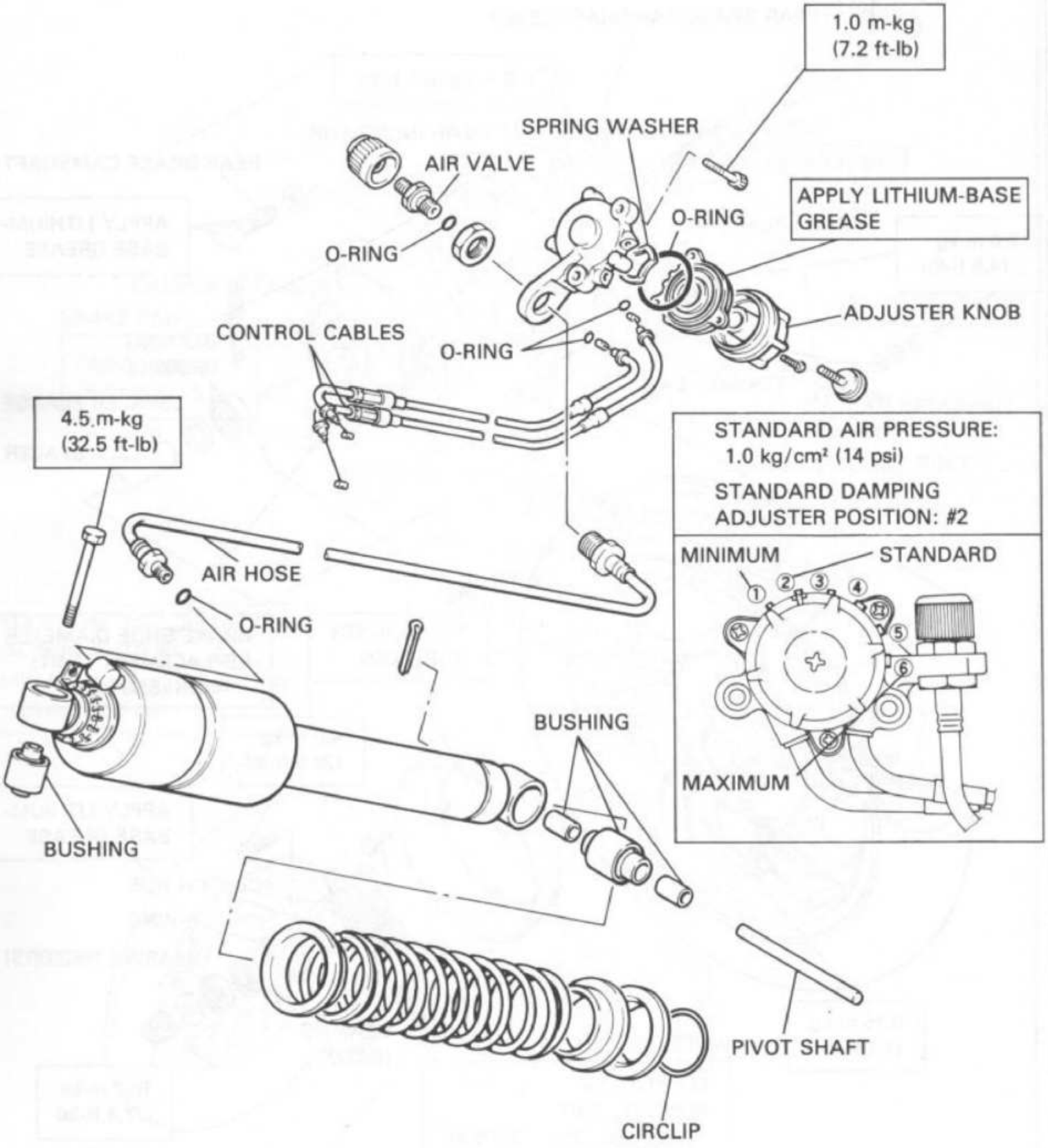
   d. Reinstall the plastic cap.
2. Damping Adjustment
   Turning the damping adjuster towards the "S" decreases the damping (the suspension becomes softer); turning the adjuster towards the "H" increases the damping (the suspension becomes harder).



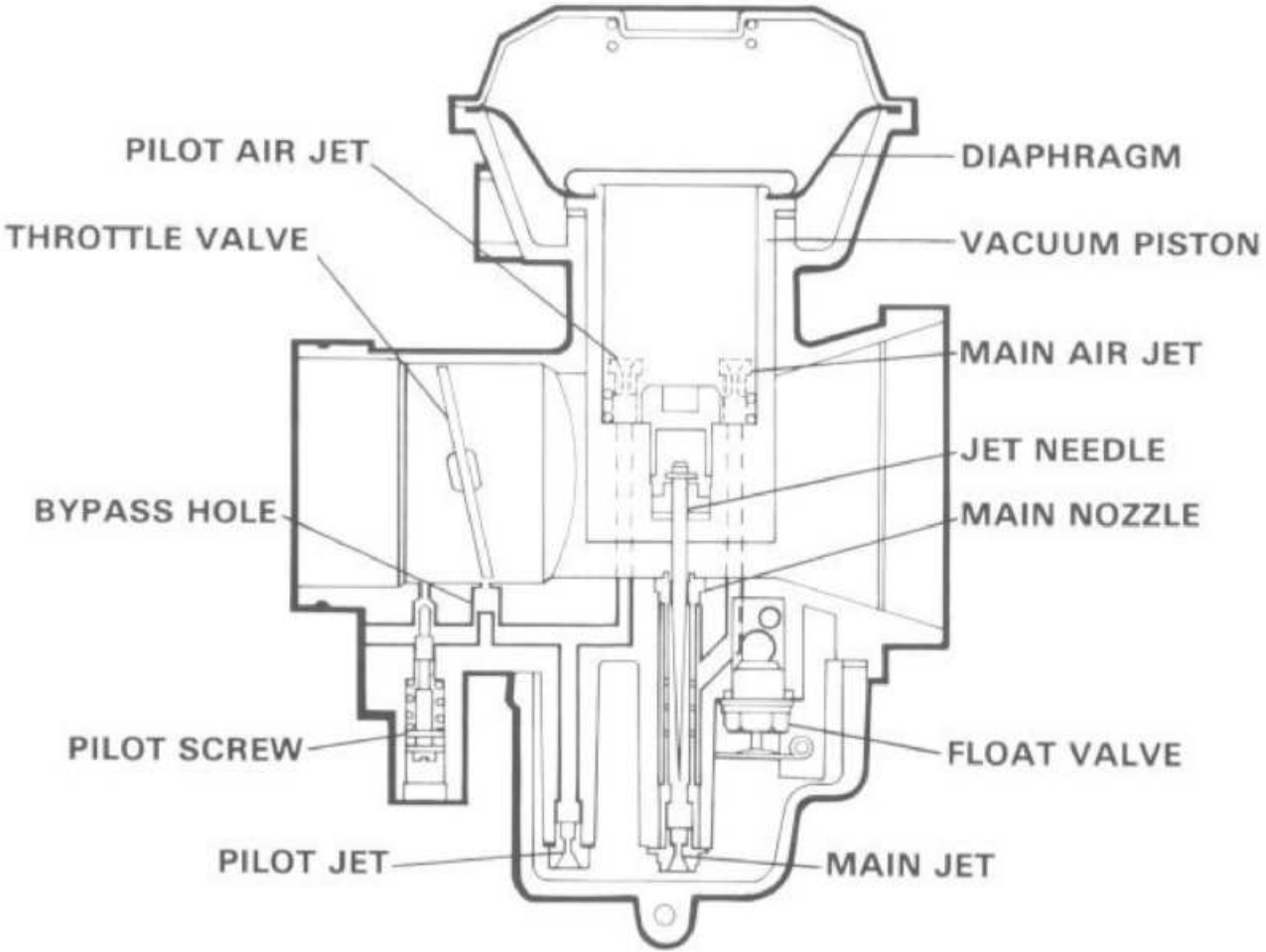
The table below shows the recommended combination of front fork and rear shock absorber settings. Use this table as a guide to meet the specific requirements of various riding and motorcycle load conditions.

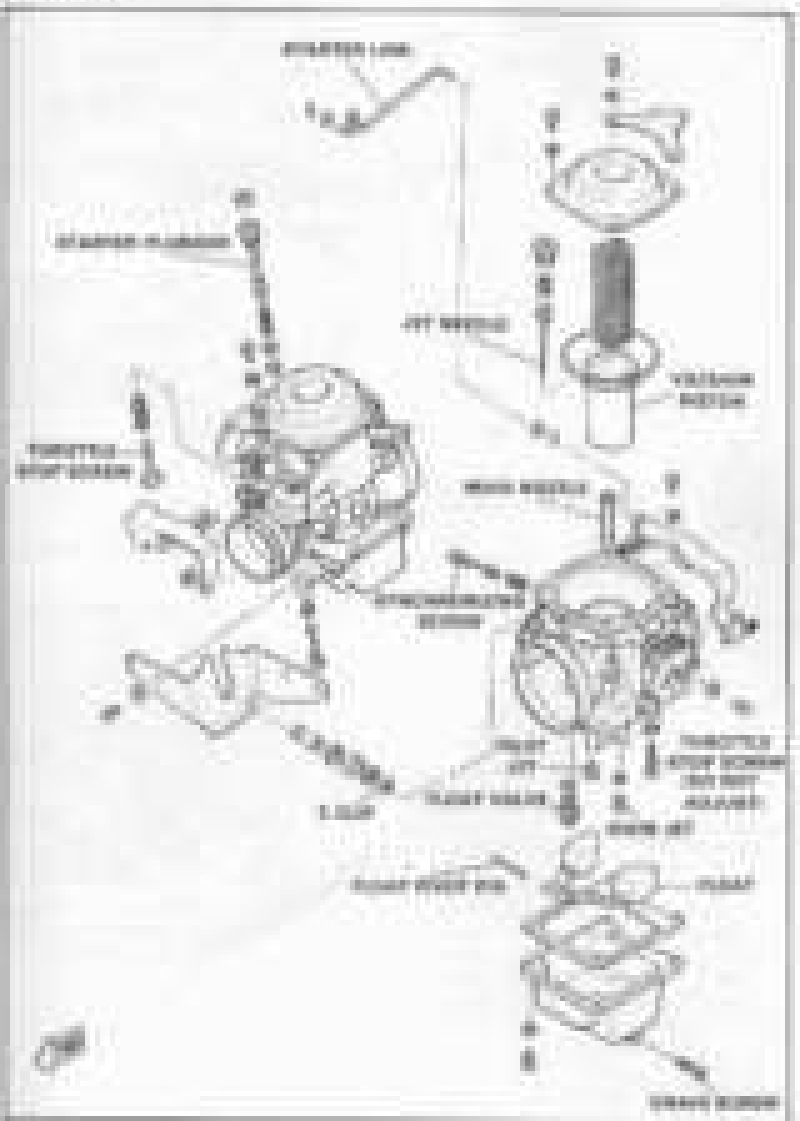
Recommended combinations of the front fork and the rear shock absorber.

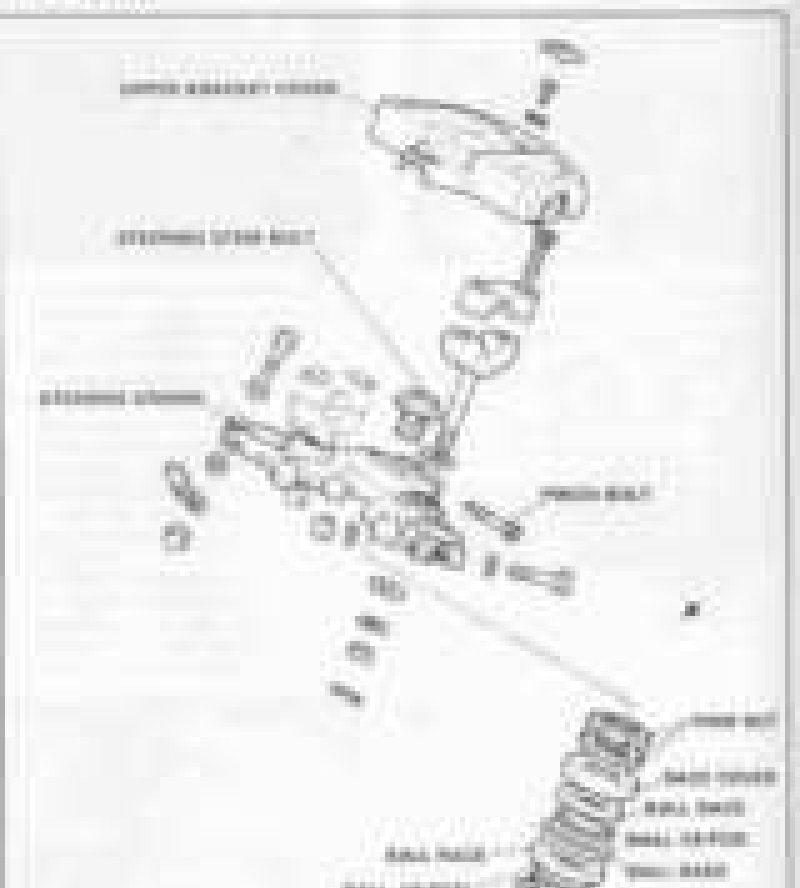
	Front fork	Rear shock absorber		Loading condition			
	Air pressure	Air pressure	Damping adjuster	Solo rider	With passenger	With accessories Without passenger	With accessories and passenger
1	0.4 ~ 0.8 kg/cm² (5.7 ~ 11 psi)	1.0 ~ 2.0 kg/cm² (14 ~ 28 psi)	1 ~ 3	○			
2	0.4 ~ 0.8 kg/cm² (5.7 ~ 11 psi)	3.0 ~ 4.0 kg/cm² (43 ~ 57 psi)	3 or 4		○		
3	0.4 ~ 0.8 kg/cm² (5.7 ~ 11 psi)	3.0 ~ 4.0 kg/cm² 43 ~ 57 psi)	4 or 5			○	
4	0.8 ~ 1.2 kg/cm² (11 ~ 17 psi)	4.0 kg/cm² (57 psi)	6				○


1.0 m-kg
(7.2 ft-lb)
SPRING WASHER
AIR VALVE
O-RING
O-RING
APPLY LITHIUM-BASE
GREASE
ADJUSTER KNOB
CONTROL CABLES
O-RING
4.5 m-kg
(32.5 ft-lb)
STANDARD AIR PRESSURE:
1.0 kg/cm² (14 psi)
STANDARD DAMPING
ADJUSTER POSITION: #2
MINIMUM
STANDARD
MAXIMUM
AIR HOSE
O-RING
BUSHING
BUSHING
PIVOT SHAFT
CIRCLIP
FWD

A. Section View







B. Adjustment
Refer to "D. Assembly" for steering gear adjustment procedures.

B. Removal
1. Remove the seat, fuel tank, and the cable bracket cover.