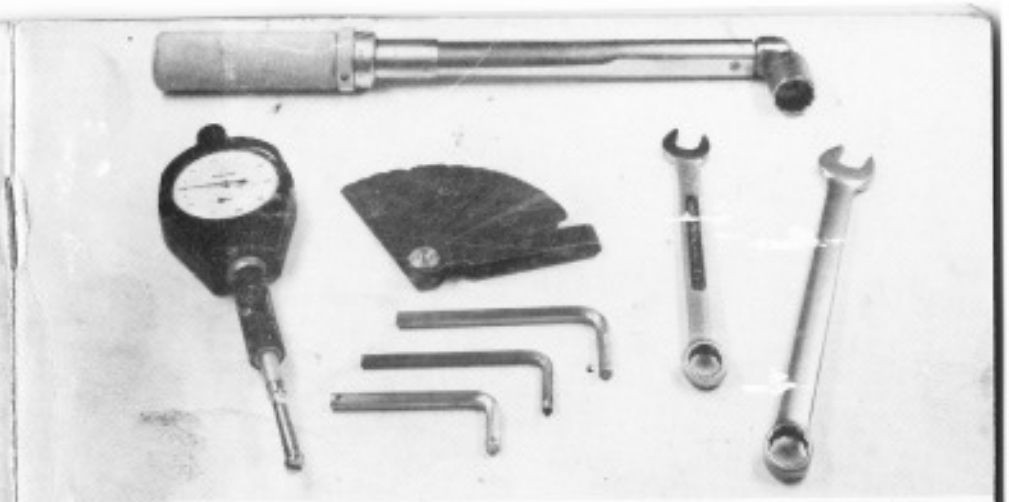
AMF
Harley-Davidson



Harley-Davidson

SPECIFICATION MANUAL
All Models

1970 to 1981

PART NO. 99955-81

IMPORTANT NOTICE

Harley-Davidson motorcycles produced after January 1, 1978, conform to all applicable U.S.A. Federal Motor Vehicle Safety Standards and U.S.A. Environmental Protection Agency regulations effective on the date of manufacture.

To maintain the safety, dependability and emission control performance it is essential that the procedures, specifications and service instructions in this manual are followed.

Any substitutions, alteration or adjustment of emission system components outside of factory specifications may be prohibited by law.

Harley-Davidson Motor Co., Inc.

1970 — 1981
SPECIFICATION MANUAL

FLT FL/FX XL

UL-1M-4/81 Printed in U.S.A.

FOREWORD

This specification manual has been prepared to supply a ready and accurate source of information necessary when performing service or maintenance.

Refer to the appropriate service manual for specific maintenance or repair instructions.

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NOTES

GENERAL INFORMATION

FLUID REQUIREMENTS

Harley-Davidson Oil

Use proper grade of oil for the lowest temperature expected before next oil change period as follows:

Air Temperature (Cold Engine Starting Conditions)	Use Harley-Davidson Oil Grade
20° to 90° F. - Normal and severe operating conditions	Power Blend Super Premium
Above 40°F. Below 40°F. Severe operating conditions at air temperatures above 90°F.	75 Medium Heavy 58 Special Light 105 Regular Heavy

Harley-Davidson Grease-All Grease

Use for all bearings on motorcycle, except where other special lubricants are recommended.

Harley-Davidson Chain Grease, Chain Saver and Chain Spray

Designed especially as a chain lubricant. Penetrates inner bearings for a long chain life.

Harley-Davidson Poly-Oil

Designed expecially for lubricating the FXB compensating sprocket rubber dampers.

Harley-Davidson/Loctite Products

The Harley-Davidson products, listed on the following page, are designed to increase the reliability of fasteners and to aid in minor repairs.

WARNING

Follow the directions listed on all Harley-Davidson/Loctite products. Read all labels, warnings, and cautions carefully before using.

Application	Product	Part No.	Size
Lock fender braces, master cylinder bolts, brake anchors, exhaust flanges and general body hardware.	Lock N' Seal* Adhesive	99625-77	6 ml tube on card
Secure upper and lower fork assemblies, shock absorber mounts, fittings, axle nuts, shift lever screws, cylinder head and crankcase studs, and handlebar clamps.	Stud N' Bearing Mount Adhesive	99626-77	6 ml tube on card
Lock adjustment screws and assembled parts. Secure footrests and kick starters.	Wick N' Lock* Adhesive	99627-77	6 ml tube on card
Retain brake pedal bushings, mainshaft sprockets, countershafts, oil seals, drive train, linkage, clutch hub and sprocket assemblies.	Retaining Compound	99628-77	10 ml tube on card
Bond brake pedal and kick starter pads. Secure loose hand grips. Repair loose windshield moldings and other rubber, vinyl and plastic parts.	SuperBonder* Adhesive	99629-77	3 ml tube on card
Seal threaded fuel line fittings, hydraulic brake line fittings and engine plugs.	Pipe Sealant with Teflon*	99630-77	6 ml tube on card
Make emergency gaskets on-the-spot. Seal crankcase covers, cylinder blocks to crankcase, fuel and oil pumps, and rocker arm covers.	Gasket Eliminator* Sealant	99633-77	24 ml tube on card
Prevent galling, seizing and corrosion on oil drain plugs, spark plugs, front fork and sock assemblies and chain slides.	Anti-Seize Lubricant	99632-77	12 oz. aerosol can
Dissolve grease, dirt and oil from parts quickly and safely. Prepare mating surfaces for Loctite products.	Cleaning Solvent	99631-77	12 oz. aerosol can

* Reg. TM DuPont Corp.

TORQUE REQUIREMENTS

Torque specifications for specific components are listed in each respective section. For all other fasteners, use the values listed in the table below. Torque figures are in ft-lbs except those marked with an asterisk (*) which are in in-lbs.

FASTENER	TYPE	MINIMUM TENSILE STRENGTH	MATERIAL	Body Size or Outside Diameter															
				2	3	4	5	6	8	10	¼	⅜	7/16	½	9/16	⅝	¾	⅞	1
	SAE 2 STEEL	74,000 PSI	LOW CARBON								6	12	20	32	47	65	96	155	206	318
	SAE 5 STEEL	120,000 PSI	MEDIUM CARBON HEAT TREAT						14*	22*	10	19	24	38	70	114	164	253	403	563
	SAE 7 STEEL	133,000 PSI	MEDIUM CARBON ALLOY								11	35	48	11	110	156	215	360	570	800
	SAE 8 STEEL	150,000 PSI	MEDIUM CARBON ALLOY								14	29	35	58	113	160	230	360	600	900
	SOCKET HEAD CAP SCREW	160,000 PSI	HIGH CARBON QUENCHED TEMPERED								16	33	50	68	125	180	250	400	640	919
	SOCKET SET SCREW	212,000 PSI	HIGH CARBON QUENCHED TEMPERED					5*	10*	18*	30*	180*	18	29	43	65	100	186		
	STUDS	Use SAE 2, 5 and 8 values when grade is known, with nut of sufficient strength.																	

NOTES

CHASSIS — 1970 to 1978

DIMENSIONS (INCHES)

		XL, XLH	XLCH
Wheel Base		58.5	58.5
Overall Length	1970-76	87.25	87.25
	1977 & later	87.75	87.75
Overall Width	1970-76	33	32
	1977 & later	35	35
Overall Height	1970-76	40.5	42
	1977 & later	48	48
Road Clearance	1970-72	6.75	6.5
	1973-77	7.25	7.25

CAPACITIES

Fuel Tank (U.S. Gallons) XL/XLH	Total	4.0 or 2.2
	Reserve	.25
Fuel Tank (U.S. Gallons) XLCH	Total	4.0 or 2.2
	Reserve	.25
Oil Tank (U.S. Quarts)		3
Transmission (U.S. Pints)		1.5
Front Forks (Ounces per Fork)		
1972 and Earlier	Wet	5.5
	Dry	6.5
1973 to 1978	Wet	5
	Dry	6

ADJUSTMENTS

Chains

Front Chain	
Cold Engine	5/8 to 7/8 in. slack
Hot Engine	3/8 to 5/8 in. slack
Rear Chain	1/2 in. slack

Brakes

Rear Drum Brake Foot Lever Free Play	1-1/4 in.
Front Drum Brake	
Hand Lever Free Play	1/4 Full Movement

TORQUES

Axle nuts	50 ft-lbs
Sprocket mounting bolts	45-50 ft-lbs
Brake disc mounting	16 ft-lbs
Caliper mounting bolts	11 ft-lbs
Caliper clamping bolt	45-50 ft-lbs
Upper bracket pinch bolt	20 to 25 ft-lbs
Lower bracket pinch bolts	20 to 25 ft-lbs

Slider cap nuts	11 ft-lbs
Throttle control clamp screws	12 to 16 in-lbs
Handlebar clamp screws	20 ft-lbs

CHASSIS — 1979 AND LATER

DIMENSIONS (INCHES)

	XLCH XLH	XLS
Wheel Base	58.5	59.6
Overall Length	88.0	89.6
Overall Width	33.8	29.2
Overall Height	46.5	42.5
Saddle Height	29.7	29.7
Road Clearance	6.9	6.8

CAPACITIES

Fuel Tank (U.S. Gallons) XLH	Total	2.25
	Reserve	0.25
Fuel Tank (U.S. Gallons) XLS	Total	3.6
	Reserve	0.6
Oil Tank (U.S. Quarts)		4
Transmission (U.S. Pints)		1.5
Front Forks (Ounces per Fork)	Wet	5 oz.
	Dry	6 oz.

ADJUSTMENTS

Chains

Front Chain	
Cold Engine	5/8 to 7/8 in. slack
Hot Engine	3/8 to 5/8 in. slack
Rear Chain	1/2 in. slack

Brakes

Rear Master Cylinder Free Play	3/32-1/8 in.

TORQUES

Axle nuts	50 ft-lbs
Sprocket mounting bolts	45 to 50 ft-lbs
Brake disc mounting	16 ft-lbs
Caliper mounting bolts	115 to 120 in-lbs
Caliper clamping bolt	45 to 50 ft-lbs
Upper bracket pinch bolt	22 to 26 ft-lbs
Lower bracket pinch bolts	22 to 26 ft-lbs
Slider cap nuts	11 ft-lbs
Throttle control clamp screws	12 to 16 in-lbs
Handlebar clamp screws	20 ft-lbs

NOTES

ENGINE — 1970 - 1978

GENERAL

Model Designation Letters	XL, XLH, XLCH
Number of Cylinders	2
Type	4-Cycle, 45 Degree V-Type
Bore: 1970-71	3.00 in. (76.2 mm)
1972 & later	3.188 in. (81 mm)
Stroke	3.8125 in. (96.8 mm)
Piston Displacement:	
1970-71	53.9 cu. in. (883 cc)
1972 & later	60.2 cu. in. (997.5 cc)
Compression Ratio	9.0 to 1

VALVES

Fit in guide (EX)	.0025 in.-.0045 in.
Fit in guide (IN)	.0015 in.-.0035 in.
Spring (outer)	50-66 lbs. at 1-9/32 in. (valve closed)
	152-168 lbs. at 15/16 in. (valve open)
Spring (inner)	30-36 lbs. at 1-3/32 in. (valve closed)
	76-86 lbs. at 3/4 in. (valve open)
Spring free length	1-1/2 in. (outer)
	1-23/64 in. (inner)

ROCKER ARM

Fit in bushing	.001 in. - .0025 in. loose

PISTON

Fit in cylinder	.003 to .004 in. loose
Ring gap	.015 in. - .025 in.
Ring side clearance	.0035 in. - .005 in.
Piston pin fit	Lift hand press fit at 70°F

CONNECTING ROD

Piston pin fit	.0008 in. - .001 in. loose
End play between flywheels	.005 in. - .015 in.
Fit on crank pin	.0005 in. - .0015 in. loose

OIL PUMP PRESSURE (OIL HOT)

Minimum (at idle)	4 lbs./sq. in.
Maximum (at 60 mph)	15 lbs./sq. in.

TAPPETS

Guide fit	.0005 in. - .001 in. press
Fit in guide	.0005 in. - .001 in. loose
Roller fit	.0005 in. - .001 in.
Roller end clearance	.008 in. - .010 in.
Tappet clearance	Just free (no lash) - Engine Cold

VALVE TIMING (@0.050 IN. TAPPET LIFT)

Intake opens	35.4° ± 3° BTC	Intake closes	41.2° ± 3° ABC
Exhaust opens	44.3° ± 4° BBC	Exhaust closes	20.2° ± 4° ATC

GEARCASE

Intermediate gear shaft in bushing	.0005 in. - .001 in.
Cam gear shaft in bushing	.0005 in. - .002 in.
Cam gear shaft in needle bearing	.0005 in. - .003 in.
Cam gear end play	
1976 and earlier	.001 in. - .005 in.
1977 and 1978	.005 in. - .012 in.
	except rear intake which is .004 in. - .010 in.
Cam gear backlash	.0000 in. - .0005 in.

FLYWHEEL ASSEMBLY

Gear shaft nut torque	100-120 ft-lbs
Sprocket shaft nut torque	100-120 ft-lbs
Crank pin nuts torque	150-175 ft-lbs
Runout (flywheels)	.003 in. maximum at rim
Runout (mainshafts)	.002 in. maximum

SPROCKET SHAFT BEARING

Cup fit in crankcase	.0005 in. - .0025 in. tight
Cone fit on shaft	.0002 in. - .0015 in. tight
End play	.001 in. - .007 in.

PINION GEAR SHAFT BEARING

Shaft fit in roller bearing	.0005 in. - .0015 in. tight
Shaft fit in cover bushing	.0005 in. - .0015 in. loose

IGNITION

Breaker point gap setting:

1970	.020 in.
1971 to 1978	.018 in.
Dwell:	
1970-71	90° @ 2000 rpm
1972 & later	140° @ 2000 rpm
Spark plug gap setting	.025 - .030 in.
Ignition timing (advanced):	
1971 & earlier	45° (11/16 in. BTC)
1972 & later	40° (17/32 in. BTC)
Ignition timing (retarded):	
1971 & earlier	15° (5/64 in. BTC)
1972 & later	10° (1/32 in. BTC)

TORQUES

Gear shaft nut	100 to 120 ft-lbs
Sprocket shaft nut	100 to 120 ft-lbs
Crank pin nuts	150 to 175 ft-lbs
Oil pump mounting screws	90 to 110 in-lbs
Cylinder head bolts	65 ft-lbs
Cylinder base nut	25-30 ft-lbs
Rocker arm cover nut	18 to 22 ft-lbs
Tappet adjusting locknut	8-10 ft-lbs
Rear motor mounting bolt-nut	16 to 24 ft-lbs

NOTES

ENGINE — 1979 AND LATER

GENERAL

Model Designation Letters	XLH, XLS
Number of Cylinders	2
Type	4-Cycle, 45 Degree V-Type
Bore	3.168 in. (81 mm)
Stroke	3.8125 in. (96.8 mm)
Piston Displacement	60.9 cu. in. (997.5 cc)
Compression Ratio	9.0 to 1

VALVES

Fit in guide (EX)	.0025 in. - .0045 in.
Fit in guide (IN)	.0015 in. - .0035 in.
Spring (outer)	50-66 lbs. at 1-9/32 in. (valve closed) 152-168 lbs. at 15/16 in. (valve open)
Spring (inner)	30-36 lbs. at 1-3/32 in. (valve closed) 76-88 lbs. at 3/4 in. (valve open)
Spring free length	1-1/2 in. (outer) 1-23/64 in. (inner)

ROCKER ARM

Fit in bushing	.001 in. - .0025 in. loose

PISTON

Fit in cylinder	.003 to .004 in. loose
Ring gap	.012 in. - .025 in.
Ring side clearance	.0035 in. - .005 in.
Piston pin fit	Light hand press fit at 70 °F

CONNECTING ROD

Piston pin fit	.0008 in. - .001 in. loose
End play between flywheels	.005 in. - .025 in.
Fit on crank pin	.0012 in. - .0015 in. loose

OIL PUMP PRESSURE (OIL HOT)

Minimum (at idle)	4 lbs./sq. in.
Maximum (at 60 mph)	15 lbs./sq. in.

TAPPETS

Fit in guide	.0005 in. - .001 in. loose
Roller fit	.0005 in. - .001 in.
Roller end clearance	.008 in. - .010 in.
Tappet clearance	Just free (no lash) - Engine Cold

VALVE TIMING (@0.050 IN. TAPPET LIFT)

1979

Intake opens	35.4° ± 3° BTC
Intake closes	41.2° ± 3° ABC
Exhaust opens	44.3° ± 4° BBC
Exhaust closes	20.2° ± 4° ATC

1980 — 1981

Intake opens	7.5° ± 3° BTC
Intake closes	42.5° ± 3° ABC
Exhaust opens	36° ± 4° BBC
Exhaust closes	8° ± 4° ATC

GEARCASE

Intermediate gear shaft in bushing	.0005 in. - .001 in.
Cam gear shaft in bushing	.0005 in. - .002 in.
Cam gear shaft in needle bearing	.0005 in. - .003 in.
Cam gear end play	.003 in. - .025 in. except rear intake which is .004 in. - .010 in.
Cam gear backlash	.0000 in. - .0005 in.

FLYWHEEL ASSEMBLY

Gear shaft nut torque	100-120 ft-lbs
Sprocket shaft nut torque	100-120 ft-lbs
Crank pin nuts torque	150-175 ft-lbs
Runout (flywheels)	.003 in. maximum at rim
Runout (mainshafts)	.002 in. maximum

SPROCKET SHAFT BEARING

Cup fit in crankcase	.0004 in. - .0024 in. tight
Cone fit on shaft	.0002 in. - .0015 in. tight
End play	.001 in. - .007 in.

PINION GEAR SHAFT BEARING

Shaft fit in roller bearing	.005 in. - .0015 in. tight
Shaft fit in cover bushing	.005 in. - .0015 in. loose

IGNITION

1979

Ignition timer air gap	.004 - .006 in.
Retarded	10°BTC (11/32" BTC)
Automatic Advance	40°BTC (17/32" BTC)
Spark plug gap setting (No. 4 plug)	.060 in.

1980-1981

Ignition timer air gap	not adjustable
Retarded	8°BTC
Idle Advance	26°BTC (600-1600 rpm)
Full Advance	40°BTC (above 1600 rpm)
Spark plug gap setting (No. 4-5, 4R5)	.038-.043 in.

TORQUES

Gear shaft nut	100 to 120 ft-lbs
Sprocket shaft nut	100 to 120 ft-lbs
Crank pin nuts	150 to 175 ft-lbs
Oil pump mounting screws	90 to 110 in-lbs
Cylinder head bolts	65 ft-lbs
Cylinder base nut	25 to 30 ft-lbs
Rocker arm cover nut	18 to 22 ft-lbs
Tappet adjusting locknut	10 ft-lbs
Rear motor mounting bolt-nut	16 to 24 ft-lbs

NOTES

TRANSMISSION — 1970 - 1978

GENERAL

Type ..... Constant Mesh, Foot Shift
Speeds ..... 4 Forward

Number of Sprocket Teeth	XL, XLH, XLCH 1973 & Later	XL, XLH, XLCH 1970-73	1970-71 XLCH Only:
Engine	34	34	34
Clutch	59	59	59
Transmission	21	20	19
Rear Wheel	51	51	51
Gear Ratios:			
First (Low) Gear	10.63	11.16	11.74
Second Gear	7.70	8.08	8.50
Third Gear	5.82	6.11	6.43
Fourth (High) Gear	4.22	4.42	4.66

CLUTCH

Type (1970) ..... Dry - multiple disc
Type (1971 and later) ..... Wet - Multiple disc
Capacity (1971 and later) ..... 1900 in-lbs
Set up Spring Pressure
1970 ..... 150 lbs.
1971 ..... 234 lbs.
1972 ..... 257 lbs.
Spring Adjustment
1970 ..... 3/16 in. from inner surface of spring tension adjusting plate to outer surface of spring cup flange
1971 to 1973 ..... 11/32 in. from outer surface of outer drive plate to outer surface of releasing disc
Late 1974 and later ..... Fixed spacers std. length of 1.530 in.
Clutch bearing ..... .0005 - .0029 in loose
Clutch cover (1970) ..... Must be leakproof. Do not coat gasket with sealer
Clutch release rod movement
1970 ..... .095 - .115 in.

PRIMARY CHAIN

Type	3/8 in. pitch triple chain
Looseness	5/8 to 7/8 in. slack (cold engine) 3/8 to 5/8 in slack (hot engine)

KICK STARTER

Minimum clearance between ratchet teeth on starter ratchet gear and starter ratchet on clutch shell — .040 in. with starter crank in up position.

Crankshaft endplay	.001 in. - .007 in.

MAINSHAFT GROUP

Clutch gear ball bearing in access cover	.001 in. - .0012 in. loose
Ball bearing on clutch gear	.0001 in. loose - .0009 in. tight
Clutch gear bushing on mainshaft	.001 in. - .002 in. loose
Mainshaft right side roller bearing assembly	.0066 in. - .0014 in. loose
Mainshaft end play	.003 in. - .009 in. (with all axial play removed)
Third gear	
On shaft	.002 in. - .003 in. loose
End play	.012 in. - .030 in.

COUNTERSHAFT GROUP

Countershaft end bearings	Retained needle roller bearing
Bearing fit on shaft ends	.0005 in. - .0029 in. loose
Bearing fit on case	press
End play	.004 in. - .009 in.
Second gear	
On shaft	.001 in. - .0025 in. loose
Low gear	
On shaft	.0005 in. - .0016 in. loose
End play	.004 in. - .009 in.
Drive gear	
On shaft	.0005 in. - .003 in. loose
End play	.004 in. - .009 in.
Clearance between clutch faces	
Countershaft low and third gear	.038 in. - .058 in.
Countershaft second and third gear	.038 in. - .058 in.
Mainshaft clutch gear and second gear	.043 in. - .063 in.
Mainshaft third gear and second gear	.043 in. - .063 in.
Shifter shaft end play (1970/1976)	.101 in. - .030 in.

TORQUES

Clutch Hub Nut	145-155 ft-lbs
Main Shaft Nut	135-165 ft-lbs
Access Cover Screws	13-15 ft-lbs
Drain Plug	12-20 ft-lbs
Primary Chain Case	
Cover Screws	90 to 110 in-lbs
Chain Tensioner Stud Nut	10-12 ft-lbs

NOTES

TRANSMISSION — 1979 AND LATER

GENERAL

Type	Constant Mesh, Foot Shift
Speeds	4 Forward

NUMBER OF SPROCKET TEETH

Engine	34
Clutch	59
Transmission	21
Rear Wheel	51

GEAR RATIOS

First (Low) Gear	10.63
Second Gear	7.70
Third Gear	5.82
Fourth (High) Gear	4.22

CLUTCH

Type	Wet - Multiple disc
Capacity	174 ft-lbs
Spring Adjustment	Fixed spacers std. length 1.530 in.
Clutch shell bearing on clutch gear	.0000 in. - .0010 in. loose

PRIMARY CHAIN

Type	3/8 in. pitch triple chain
Looseness	5/8 to 7/8 in. slack (cold engine) 3/8 to 5/8 in slack (hot engine)

KICK STARTER

Minimum clearance between ratchet teeth on starter ratchet gear and starter ratchet on clutch shell — .040 in. with starter crank in up position.

Crankshaft endplay	.001 in. - .007 in.

MAINSHAFT GROUP

Clutch gear ball bearing in access cover	.001 in. - .0012 in. loose
Ball bearing on clutch gear	.0001 in. loose - .0009 in. tight

Clutch gear bushing
on mainshaft ..... .001 in. - .002 in. loose
Mainshaft right side
roller bearing assembly.... .001 in. - .0034 in. loose
Mainshaft end play ..... .003 in. - .009 in. (with all axial play removed)

Third gear
On shaft ..... .002 in. - .003 in. loose
End play ..... .012 in. - .030 in.

COUNTERSHAFT GROUP

Countershaft end bearings ... Retained needle roller bearing
Bearing fit on shaft ends..... .0005 in. - .003 in. loose
Bearing fit on case ..... press
End play ..... .004 in. - .009 in.
Second gear
On shaft ..... .001 in. - .0025 in. loose
Low gear
On shaft ..... .0005 in. - .0016 in. loose
End play ..... .004 in. - .009 in.
Drive gear
On shaft ..... .0005 in. - .003 in. loose
End play ..... .004 in. - .009 in.
Clearance between clutch faces
Countershaft low and third gear... .038 in. - .058 in.
Countershaft second and third gear .038 in. - .058 in.
Mainshaft clutch gear and second gear ..... .043 in. - .063 in.
Mainshaft third gear and second gear ..... .043 in. - .083 in.

TORQUES

Clutch Hub Nut ..... 145-155 ft-lbs
Main Shaft Nut ..... 135-165 ft-lbs
Access Cover Screws ..... 13-15 ft-lbs
Drain Plug ..... 12-20 ft-lbs
Primary Chain Case
Cover Screws ..... 90 to 110 in-lbs
Chain Tensioner Stud Nut ..... 10-12 ft-lbs

ELECTRICAL — 1970 TO 1978

SPARK PLUGS

Standard ..... Harley-Davidson No. 4
Resistor type ..... Harley-Davidson No. 4R
Size 14mm
Gap — No. 4 ..... .025 - .030 in.
No. 4R ..... 0.038-0.043 in.
Tightening torque ..... 26-30 ft-lbs

NOTE

Plug nos. 4-5 and 4R5 can be used in place of the No. 4 plug providing they are gapped at .038-.043 in.

GENERAL

Battery
XLH ..... 12 volt, 32 amp hr.
XLCH ..... 12 volt, 7 amp hr.
Starter
XLH ..... Elect., 12 volt Bendix Drive
XLCH ..... Manual
Generator ..... Two brush shunt, external regulator control
Regulator ..... Current and voltage control
Horn ..... Electric vibrating

LIGHTS

LAMP DESCRIPTION (ALL LAMPS 12 V)	NUMBER OF BULBS REQUIRED	CANDLE POWER OR WATTAGE	HARLEY-DAVIDSON PART NUMBER
Headlamp High Beam Low Beam	1	 50 Watts 40 Watts	67717-65A
Tail and Stop Lamp Tail Lamp Stop Lamp	1	 3 C.P. 32 C.P.	68165-64
High Beam Indicator Light	1	2 C.P.	71090-64
Generator Signal Light	1	4 C.P.	68536-75
Oil Pressure Signal Light	1	4 C.P.	68536-75
Speedometer, Tachometer Lights	2	2 C.P.	71090-64
Turn Signal Lamps Early 73 and earlier	4	 4 C.P.	 68166-64
Late 73 to 78	4	32 C.P.	68572-64A

NOTES

ELECTRICAL — 1979 AND LATER

GENERAL

Battery ..... 12 v. 19 amp.
Generator ... Two brush shunt, external regulator control
Regulator ..... solid state current and voltage control
Horn ..... Electric, vibrating type

SPARK PLUGS

Standard ..... (1979) Harley-Davidson No. 4
Resistor type ... (1980-1981) Harley-Davidson No. 4R5
Size 14mm
Gap — No. 4 ..... .060 in.
No. 4-5, 4R5 ..... 0.038-0.043 in.
Tightening torque ..... 26-30 ft-lbs

NOTE

Plug nos. 4-5 and 4R5 can be used in place of the No. 4 plug providing they are gapped at .038-.043 in.

LIGHTS

LAMP DESCRIPTION (ALL LAMPS 12 V)	NUMBER OF BULBS REQUIRED	CANDLE POWER OR WATTAGE	HARLEY-DAVIDSON PART NUMBER
Headlamp High Beam Low Beam	1	 50 Watts 40 Watts	67717-65A
Tail and Stop Lamp Tail Lamp Stop Lamp	1	 3 C.P. 32 C.P.	68165-64
High Beam Indicator Light	1	2 C.P.	71090-64
Generator Signal Light	1	4 C.P.	68536-75
Oil Pressure Signal Light	1	4 C.P.	68536-75
Speedometer, Tachometer Lights	2	2 C.P.	71090-64
Turn Signal Lamps	4	32 C.P.	68572-64A

NOTES

CHASSIS — 1970 - 1978

DIMENSIONS (INCHES)

NOTE

Model FL specifications also apply to model FLP unless otherwise stated.

	FL/FLH	FX
Wheel Base	61.0	63.0
Overall Length	89.0	92.0
Overall Width	39.0	34.0
Overall Height	43.5	45.75

CAPACITIES

Fuel Tank

(U.S. Gallons)

FL/FLH	Total	5 or 3.5
	Reserve	1.2 or 1
FX/FXE 1973-74	Total	3.6
	Reserve	0.7
FX/FXE 1975 & Later	Total	3.6
	Reserve	0.6

Oil Tank

(U.S. Quarts) 4

Transmission

(U.S. Pints) 1.5

Front Fork

(U.S. Ounces)

	WET	DRY
1972 and Earlier	5¼	6½
1973 and Later	5	6

ADJUSTMENTS

Chains

Front Chain:	
Cold Engine	5/8-7/8 in. slack
Hot Engine	3/8-5/8 in. slack
Rear Chain	1/2 in. slack

Brakes

Rear Master Cylinder Plunger Free Play ..... 1/16 in.
Mechanical Front Drum Brake
Free Play ..... 1/4 Full Movement

TORQUES

Slider Cap Nuts ..... 11 ft-lbs

Front Axle Nut ..... 50 ft-lbs
Rear Axle Nut ..... 50 ft-lbs
Brake Disc Screws
Laced 16 and 21 in. ..... 23-27 ft-lbs
19 in. ..... 16-19 ft-lbs
Cast 16 in. ..... 23-27 ft-lbs
19 in. ..... 14-16 ft-lbs
Brake Caliper Mounting Bolts ..... 115-120 in-lbs
Brake Bleeder Nipple ..... 32-40 in-lbs
Rear Wheel Sprocket Screws ... Laced ..... 35 ft-lbs
Cast ..... 45-50 ft-lbs

CHASSIS — 1979 AND LATER

DIMENSIONS (INCHES)

	WHEEL BASE	OVERALL LENGTH	OVERALL WIDTH	OVERALL HEIGHT
FLH	61.12	92.88	42.50	63.25
FXB	63.50	92.00	29.00	41.75
FXE	63.00	91.50	33.75	45.75
FXEF	63.00	91.50	33.75	45.75
FXS	63.50	92.00	29.00	41.75
FXWG	65.00	93.00	27.50	47.00

CAPACITIES

Fuel Tank

(U.S. Gallons)

FLH ..... Total ..... 5 or 3.5
Reserve ..... 1.2 or 1
FXE ..... Total 3.2
Reserve 6
FXS/FXEF/
FXB ..... Total 3.5
Reserve 1
FXWG ..... Total 5
Reserve 1

Oil Tank

(U.S. Quarts) 4

Transmission

(U.S. Pints) 1.5

Front Fork (ounces)

	WET	DRY
FLH	7¾	8½
FXB	5	6
FXE	5	6
FXEF	5	6
FXS	5	6
FXWG	9¼	10

ADJUSTMENTS

Chains

Front Chain	
Cold Engine	5/8-7/8 in. slack
Hot Engine	3/8-5/8 in. slack
Rear Chain	1/2 in. slack

Belts

Primary	5/8-1 in. slack
Secondary	5/8-3/4 in. slack

Brakes

Rear Master Cylinder Plunger Free Play	1/16 in.

TORQUES

Slider Cap Nuts	11 ft-lbs
Front Axle Nut	50 ft-lbs
Rear Axle Nut	50 ft-lbs
Brake Disc Screws	
Laced 16 and 21 in.	23-27 ft-lbs
19 in.	16-19 ft-lbs
Cast 16 in.	23-27 ft-lbs
19 in.	14-16 ft-lbs
Brake Caliper Mounting Bolts	115-120 in-lbs
Brake Bleeder Nipple	32-40 in-lbs
Rear Wheel Sprocket Screws ... Laced	35 ft-lbs
Cast	45-50 ft-lbs

ENGINE — 1970 - 1978

GENERAL

Model Designation	FL, FLH
Number of Cylinders	2
Type	4-cycle, 45 Degree V
Horsepower — FLH	60 hp @ 5200 rpm
FL	57 hp @ 5200 rpm
Bore — 1200cc	3.438 in. (87.3 mm)
Stroke — 1200cc	3.968 in. (100.8 mm)
Piston Displacement — 1207cc	73.66 cu in.
Torque — FLH	70 ft-lbs @ 4000 rpm
FL	64 ft-lbs @ 3600 rpm
Compression Ratio — FLH-1200	8-1
FL	7.25-1

VALVES

Fit in Guide — Exhaust	.0035-.0055 in.
Intake	.00175-.00375 in.
Outer spring	104-120 lbs @ 1-3/8 in. (closed)
	179-195 lbs @ 1 in. (open)
	1-31/32 in. free length
Inner spring	26-32 lbs @ 1-3/16 in. (closed)
	69-81 lbs @ 51/64 in. (open)
	1-23/64 in. free length
Tappet adjustment	Hydraulic tappet unit compressed 1/8 in from fully extended position

ROCKER ARM

Fit in bushing (loose)	.0005-.002 in.
End clearance	.004-.025 in.

PISTON

Fit in cylinder (loose)	.001-.002 in.
Ring gap	.010-.020 in.
Compression ring side clearance	.004-.006 in.
Oil ring side clearance	.003-.005 in.
Piston pin fit	Light hand press at 70°

CONNECTING ROD

Piston pin fit (loose)	.0008-.0012 in.
End play between flywheels	.005-.025 in.
Fit on crankpin (loose)	.001-.0015 in.

OIL PUMP PRESSURE

At normal operating temperature and engine speed of 2000 rpm, oil pressure should be 12-35 psi.

TAPPETS

Guide fit (tight or loose)	.0025 in.
Fit in guide (loose)	.001-.002 in.
Roller fit	.0005-.001 in.
Roller end clearance	.008-.010 in.

GEARCASE

Timer gear end play	.003-.007 in.
Idler gear end play	.003-.020 in.
Breather gear end play	.001-.005 in.
Cam gear shaft in bushing	.00075-.00175 in.
Cam gear shaft in bearing	.0005-.003 in.
Cam gear end play	.001-.005 in.
Intermediate and idler gear (on shafts)	.001-.0015 in.
Oil pump drive shaft (crankcase bushing)	.0008-.0012 in.

FLYWHEELS

Gear shaft nut torque	170 ft-lbs
Sprocket shaft nut torque 1970-71	170 ft-lbs
Sprocket shaft nut torque 1972 & later	400 ft-lbs
Crank pin nuts torque	200 ft-lbs
Runout (flywheels)	.003 in. maximum at rim
Runout (mainshafts)	.001 in. maximum

SPROCKET SHAFT BEARING

Cup fit in crankcase (tight)	.0012-.0032 in.
Cone fit on shaft (tight)	.0002-.0015 in.
End play	.001-.006 in.

PISTON SHAFT BEARING

Roller bearing fit (loose)	.0004-.0008 in.
Cover bushing fit (loose)	.0005-.0012 in.

IGNITION TIMING

Breaker point setting	.018 gap
Ignition Timing (Retarded)	5 °BTC (1/64 in. before Piston T.C.)
(Automatic Advance	35 ° BTC (7/16 in. before Piston T.C.)
Spark plug gap	.026-.033 in.

TORQUES

Shaft/pin installed without hydraulic press	
Sprocket shaft nut	300-440 ft-lbs
Crank pin nut	150-250 ft-lbs
Pinion shaft nut	120-160 ft-lbs
Shaft/pin installed with hydraulic press	
Sprocket shaft nut	240-270 ft-lbs
Crank pin nut	150-180 ft-lbs
Pinion shaft nut	100-130 ft-lbs
Pinion gear nut	35-45 ft-lbs
Oil pump cover bolt or nut	
with plastic gasket	45-50 in-lbs
with paper gasket	50-60 in-lbs
Tappet guide bolts	85-110 in-lbs
Rocker cover nuts	12-15 ft-lbs
Cylinder cover nuts	55-60 ft-lbs
Cylinder base nut	32-36 ft-lbs
Upper engine mounting bracket nut	35-40 ft-lbs
Crankcase stud nut	12-15 ft-lbs
Crankcase bolt	22-26 ft-lbs
Tappet adjusting locknut	10 ft-lbs
Gear case cover screws	90-110 in-lbs

NOTES

ENGINE — 1979 AND LATER

GENERAL

Model Designation	FLH, FLH-80
Number of Cylinders	2
Type	4-cycle, 45 Degree V
Horsepower — FLH-1200	60 hp @ 5200 rpm
FLH-80 (1980 & earlier)	60 hp @ 4800 rpm
FLH-80 (1981)	65 hp @ 5400 rpm
Bore — 1200cc	3.438 in. (87.3 mm)
1340cc	3.498 in. (88.8 mm)
Stroke — 1200cc	3.968 in. (100.8 mm)
1340cc	4.250 in. (108.0 mm)
Piston Displacement — 1200cc	73.66 cu in.
1340cc	81.6 cu in.
Torque — FLH-1200	70 ft-lbs @ 4000 rpm
FLH-80 (1980 & earlier)	67 ft-lbs @ 3600 rpm
FLH-80 (1981)	71.5 ft-lbs @ 3800 rpm
Compression Ratio — FLH-1200	8-1
FLH-80 (1980 & earlier)	8-1
FLH-80 (1981	7.4-1

VALVES

Fit in Guide — Exhaust	
(early 1981 and earlier)	.0035-.0055 in.
(Late 1981)	.0014-.0031 in.
Intake (1979 and earlier)	.0018-.0038 in.
(1980 — early 1981)	.0020-.0040 in.
(Late 1981)	.0009-.0026 in.
Outer spring	104-120 lbs @ 1-3/8 in. (closed)
	179-195 lbs @ 1 in. (open)
	1-31/32 in. free length
Inner spring	26-32 lbs @ 1-3/16 in. (closed)
	69-81 lbs @ 51/64 in. (open)
	1-23/64 in. free length
Tappet adjustment	Hydraulic tappet unit compressed 1/8 in from fully extended position

ROCKER ARM

Fit in bushing (loose)	.005-.002 in.
End clearance	.004-.025 in.

PISTON

Fit in cylinder (loose)	.002-.0025 in.
Ring gap	.010-.020 in.
Compression ring side clearance	.002-.005 in.
Oil ring side clearance	.001-.010 in.
Piston pin fit	Light hand press at 70°

CONNECTING ROD

Piston pin fit (loose)	.0008-.0012 in.
End play between flywheels	.005-.025 in.
Fit on crankpin (loose)	.001-.0015 in.

OIL PUMP PRESSURE

At normal operating temperature and engine speed of 2000 rpm, oil pressure should be 12-35 psi.

TAPPETS

Guide fit	.0025 in.
Fit in guide (loose)	.001-.002 in.
Roller fit	.0005-.001 in.
Roller end clearance	.008-.010 in.

GEARCASE

Breather gear end play	.001-.016 in.
Cam gear shaft in bushing	.0008-.0018 in.
Cam gear shaft in bearing	.0005-.003 in.
Cam gear end play	.001-.016 in.
Oil pump drive shaft (crankcase bushing)	.0008-.0012 in.

FLYWHEELS

Runout (flywheels)	.004 in. maximum at rim
Runout (mainshaft)	.002 in. maximum

SPROCKET SHAFT BEARING

Cup fit in crankcase (tight)	.0012-.0032 in.
Cone fit on shaft (tight)	.0002-.0015 in.
End play	.001-.006 in.

PINION SHAFT BEARING

Roller bearing fit (loose)	.0004-.0008 in
Cover bushing fit (loose)	.0005-.0012 in

IGNITION TIMING

Timer air gap	
1979 and earlier	.004-.006 in.
1980 and later	not adjustable
Ignition timing	
fully retarded	3° BTC (1/64 in. BTC)
automatic advance	35° BTC (7/16 in. BTC)
Spark plug gap	.038-.043 in.

TORQUES

Shaft/pin installed without hydraulic press	
Sprocket shaft nut	300-440 ft-lbs
Crank pin nut	150-250 ft-lbs
Pinion shaft nut	120-160 ft-lbs
Shaft/pin installed with hydraulic press	
Sprocket shaft nut	240-270 ft-lbs
Crank pin nut	150-180 ft-lbs
Pinion shaft nut	100-130 ft-lbs
Pinion gear nut	35-45 ft-lbs
Oil pump cover bolt or nut	
with plastic gasket	45-50 in-lbs
with paper gasket	50-60 in-lbs
Tappet guide bolts	85-110 in-lbs
Rocker cover nuts	12-15 ft-lbs
Cylinder cover nuts	55-60 ft-lbs
Cylinder base nut	32-36 ft-lbs
Upper engine mounting bracket nut	35-40 ft-lbs
Crankcase stud nut	12-15 ft-lbs
Crankcase bolt	22-26 ft-lbs
Tappet adjusting locknut	10 ft-lbs
Gear case cover screws	90-110 in-lbs

NOTES

5/8" with aluminum release disc.

TRANSMISSION — 1970 - 1978

CLUTCH

Type	Dry-multiple disc
Capacity	206 ft-lbs torque
Spring pressure (total)	315 lbs
Roller bearing fit (loose)	.002-.003 in.
Spring adjustment	1-1/32 in. from spring collar edge to outer disc surface

SPROCKET AND GEAR RATIOS

Sprocket	No. of teeth
Engine Compensating	24, 23, 22, 19
Clutch	37
Transmission	
FL Models	22
FX Models	23
Rear Wheel	51

	4 SPEED TRANSMISSION					
	SOLO				SIDECAR	
	23		24		22	
	FL-FLH	FX 1973 -74	FX 1975 & Later	FL-FLH	FX 1973 -74	FX 1975 & Later	FL-FLH	FX 1973 -74	FX 1975 & Later
1st	11.19	10.71	9.91	10.74	10.25	9.48	11.69	11.20	10.33
2nd	6.79	6.51		6.50	6.24		7.09	6.80	
3rd	4.59	4.40		4.39	4.21		4.79	4.60	
4th	3.73	3.57		3.57	3.42		3.90	3.73	

	3 SPEED TRANSMISSION			
	SOLO		SIDECAR	
	FL	FLH	FL	FLH
	23	24	19	22
1st	10.01	9.69	12.20	10.57
2nd	5.60	5.36	6.75	5.84
3rd	3.73	3.57	4.50	3.90

MAINSHAFT MAIN DRIVE GEAR

Drive gear end play ..... .0025-.0135 in.
Roller bearing (loose) ..... .0005-.0019 in.
Inner bearing (loose) ..... .00175-.00325 in.

MAINSHAFT

Low gear end bearing
- In housing (loose) ..... .0013 in.
- (press) ..... .0001 in.
- On shaft (loose) ..... .001 in.
- (press) ..... .0007 in.
- Housing in case (loose) ..... .0005 in.
- (press) ..... .0010 in.

Third gear
- End play ..... .000-.017 in.
- Gear on shaft (loose) ..... .0012-.0023 in.
- Bushing in gear ..... press fit

COUNTERSHAFT

Drive gear end bearing (loose) ..... .0005-.0019 in.
Low gear end bearing (loose) ..... .0005-.0019 in.
Gear end play ..... .007-.012 in.
Second gear
- End play ..... .003-.017 in.
- Bushing on shaft (loose) ..... .000-.0015 in.
- Bushing in gear (loose) ..... .0005-.0025 in.

Low gear
- Bushing on shaft (loose) ..... .000-.0015 in.
- Bushing in gear (loose) ..... .0005-.0025 in.

Shifter clutch
- Low and second ..... .080-.090 in.
- Third and high ..... .100-.110 in
- Sliding reverse gear ..... .060-.070 in.

Gear backlash ..... .003-.006 in.

SHIFTER CAM

End play ..... .005-.0065 in.

TORQUES

Primary cover screws ..... 18-22 ft-lbs
Compensating sprocket nut ..... 80-100 ft-lbs
Transmission sprocket locknut ..... 140-160 ft-lbs
Fork shaft nut ..... 25 ft-lbs
Shifter finger ..... 50-60 ft-lbs
Mainshaft ball bearing nut ..... 110-130 ft-lbs
Countershaft nut ..... 55-65 ft-lbs
Drain plug ..... 12-15 ft-lbs
Neutral Switch ..... 3-5 ft-lbs
Mounting plate nut ..... 21-27 ft-lbs
Clutch hub nut ..... 50-60 ft-lbs

NOTES

TRANSMISSION — 1979 AND LATER

CLUTCH

Type	Dry-multiple disc
Capacity	206 ft-lbs torque
Spring pressure (total)	315 lbs
Spring adjustment	1-1/32 in. from spring collar edge to outer disc surface

SPROCKETS AND GEAR RATIOS

Sprocket	No. of teeth
Engine Compensating	24, 23, 22
Clutch	37
Transmission	
FL Models	22
FX Models (chain)	23
(belt)	33
Rear Wheel (chain)	51
(belt)	70

	4-Speed						
	24		23		22		33
	FL	FX	FL	FX	FL	FX	FXB
1st	10.74	8.38	11.19	8.75	11.69	9.14	8.00
2nd	6.50	5.68	6.79	5.94	7.09	6.21	5.42
3rd	4.39	4.21	4.59	4.40	4.79	4.60	4.02
4th	3.57	3.42	3.73	3.57	3.90	3.73	3.27

NOTE

23 and 22 tooth engine compensating sprockets are used for sidecar operation.

MAINSHAFT MAIN DRIVE GEAR

End play	.0025-.0135 in.
Bushing on mainshaft (loose)	.0018-.0032 in.

MAINSHAFT

Low gear end bearing	
In housing (loose)	.0013 in.
(press)	.0001 in.
On shaft (loose)	.001 in.
(press)	.0007 in.
Housing in case (loose)	.0005 in.
(press)	.0010 in.
Third gear	
End play	.000-.017 in.
Gear on shaft (loose)	.0012-.0023 in.
Bushing in gear	press fit
Shifter clutch	.100-.110 in.

COUNTERSHAFT

Drive gear end bearing (loose)	.0005-.0019 in.
Low gear end bearing (loose)	.0005-.0019 in.
Gear end play	.007-.012 in.
Second gear	
End play	.003-.017 in.
Bushing on shaft (loose)	.000-.0015 in.
Bushing in gear (loose)	.0005-.0025 in.
Low gear	
Bushing on shaft (loose)	.000-.0015 in.
Bushing in gear (loose)	.0005-.0025 in.
Shifter clutch	.080-.090 in.
Gear backlash	.003-.006 in.

TORQUES

Primary cover screws	18-22 ft-lbs
Compensating sprocket nut	80-100 ft-lbs
Transmission sprocket locknut	140-160 ft-lbs
Fork shaft nut	25 ft-lbs
Shifter finger	50-60 ft-lbs
Mainshaft ball bearing nut	110-130 ft-lbs
Countershaft nut	55-65 ft-lbs
Drain plug	12-15 ft-lbs
Neutral Switch	3-5 ft-lbs
Mounting plate nut	21-27 ft-lbs
Clutch hub nut	50-60 ft-lbs

ELECTRICAL — 1970 - 1978

SPARK PLUGS

Size	14 mm
Gap	0.028 to 0.033 in.
Type	
1974 and earlier	Harley-Davidson No. 3-4
1975 and later	Harley-Davidson No. 5-6
Tightening torque	20-25 ft-lbs

IGNITION COIL RESISTANCE

Primary	4.7 to 5.7 Ohms
Secondary	16,500 to 20,000 Ohms

BATTERY

FL/FLH	12 volt, 32 amp. hr.
FX	12 volt, 16 amp. hr.

ALTERNATOR

Integral permanent magnet design	225 watts

REGULATOR

Voltage control with ambient compensation

BULB CHART

LAMP DESCRIPTION	NO. OF BULBS REQUIRED	POWER	HARLEY-DAVIDSON PART NUMBER
HEADLIGHT	1	60/50 watts	67717-64 (FL)
		50/40 watts	67717-65A (FX)
TAIL AND STOP LIGHT	1		68165-64 (FL) (FX)
Tail Light		3 C.P.	
Stop Light		32 C.P.	
TURN SIGNAL	4	32 C.P.	68572-64A (FL) (FX)
INSTRUMENT LIGHTS			
Speedometer Light	1	2 C.P.	71090-64 (FL) (FX)
Tachometer Light	1	2 C.P.	71099-74 (FX)
High Beam Indicator	1	2 C.P.	68462-64 (FL) 71092-68A (FX)
Neutral Indicator	1	2 C.P.	68462-64 (FL) 67851-75 (FX)
Oil Pressure Signal	1	2 C.P.	68462-64 (FL) 68536-75 (FX)

ELECTRICAL — 1979 AND LATER

SPARK PLUGS

Size ..... 14 mm
Gap ..... 0.038 to 0.043 in.
Type
1979 and earlier ..... Harley-Davidson No. 5A6A (Standard)
Harley-Davidson No. 5R6A (Resistor type)
1980 and later ..... Harley-Davidson No. 5R6A
Tightening torque ..... 20-25 ft-lbs

NOTE

Harley-Davidson No. 5A6 plug may be used in place of a No. 5A6A plug and a 5R6 plug can be used in place of a 5R6A plug if regapped to 0.038 to 0.043 in.

IGNITION COIL RESISTANCE

1979 and Earlier
Primary ..... 4.7 to 5.7 Ohms
Secondary ..... 16,500 to 20,000 Ohms
1980 and Later
Primary ..... 3.3 to 3.7 Ohms
Secondary ..... 16,500 to 19,500 Ohms

BATTERY

FL/FLH ..... 12 volt, 32 amp. hr.
FX ..... 12 volt, 7.5 amp. hr.
FXE/FXEF/FXS/FXB/FXWG ..... 12 volt, 19 amp. hr.

ALTERNATOR

AC Voltage Output ..... 19-26 VAC per 1000 rpm
Stator Coil Resistance ..... .2-.4 ohms

REGULATOR

Voltage output @ 3600 rpm ..... 13.8-15 @ 75°F
Amperes @ 3600 rpm ..... 17.8 Amps. (cold engine)

BULB CHART

LAMP DESCRIPTION	NO. OF BULBS REQUIRED	POWER	HARLEY-DAVIDSON PART NUMBER
HEADLIGHT	1	60/50 watts	67717-64 (FL1978½-1980)
	1	60/50 watts	67697-81 (FL 1981)
	1	50/40 watts	67717-65A (FX)
TAIL AND STOP LIGHT	1		68165-64 (FL) (FX)
Tail Light		3 C.P.	
Stop Light		32 C.P.	
TURN SIGNAL	4	32 C.P.	68572-64A (FL) (FX)
INSTRUMENT LIGHTS			
Speedometer Light	1	2 C.P.	71090-64 (FL) (FX)
Tachometer Light	1	2 C.P.	71099-74 (FX)
High Beam Indicator	1	2 C.P.	68462-64 (FL) (FXWG) 71092-68A (FX)
Neutral Indicator	1	2 C.P.	68462-64 (FL) (FXWG) 67851-75 (FX)
Oil Pressure Signal	1	2 C.P.	68462-64 (FL) (FXWG) 68536-75 (FX)

CHASSIS

DIMENSIONS

Wheel Base	60.63 in.
Overal Width	37.0 in.
Overall Height	62.0 in.

CAPACITIES

Fuel Tank (U.S. Gallons) —	Total	5
	Reserve	.7
Oil Tank (U.S. Quarts)		4
Tranmission (U.S. Pints)		1
Front Fork (U.S. Ounces)	Wet	7.75
	Dry	8.5

ADJUSTMENTS

Chains

Front Chain:	
Cold Engine	5/8-7/8 in. slack
Hot Engine	3/8-5/8 in. slack
Rear Chain	1/2 in. slack

Brakes

Rear Master Cylinder Plunger Free Play	3/32-1/8 in.

TORQUES

Wheels and Brakes

Fork Stem Nut	45 ft-lbs
Slider Cap Nuts	11 ft-lbs
Front Axle Nut	35-40 ft-lbs
Rear Axle Nut	50 ft-lbs
Brake Disc Screws	34-42 ft-lbs
Brake Caliper Mounting Bolts	115-120 in-lbs
Brake Bleeder Nipple	32-40 in-lbs
Rear Wheel Sprocket Screws	65-75 ft-lbs
Rear Chain Rubber Boots Mounting Hardware	4 ft-lbs
Front Fender Mounting Bracket Bolts	18-29 ft-lbs

Rear Swing Arm

Pivot Shaft Nut	45 ft-lbs

NOTES

ENGINE

GENERAL

Model Designation	FLT
Number of Cylinders	2
Type	4-cycle, 45°V
Horsepower - 1980	60 hp @ 4800 rpm
1981	65 hp @ 5400 rpm
Bore - 1340 cc	3.498 in. (88.8 mm)
Stroke - 1340 cc	4.250 in. (108.0 mm)
Piston Displacement - 1340 cc	81.6 cu. in.
Torque - 1980	71.5 ft-lbs @ 3800 rpm
1981	67 ft-lbs @ 3600 rpm
Compression Ratio - 1980	8-1
1981	7.4-1

VALVES

Fit in guide - Exhaust (1980 - early 1981)	.0035-.0055 in.
(late 1981)	.0014-.0031 in.
Intake (1980 - early 1981)	.0020-.0040 in.
(late 1981)	.0009-.0026
Outer spring	104-120 lbs. @ 1-3/8 in. (closed)
	179-195 lbs. @ 1 in. (open)
	1-31/32 in. free length
Inner spring	26-32 lbs @ 1-3/16 in. (closed)
	69-81 lbs. @ 51/64 in. (open)
	1-23/64 in. free length
Tappet adjustment	Hydraulic tappet unit compressed 1/8 in. from fully extended position

ROCKER ARM

Fit in bushing	.0005-.002 in. loose
End clearance	.004-.025 in.

PISTON

Fit in cylinder (loose)	.002-.0025 in.
Ring gap	.010-.020 in.
Compression ring side clearance	.002-.005 in.
Oil ring side clearance	.001-.010 in.
Piston pin fit	Light hand press at 70°

CONNECTING ROD

Piston pin fit (loose)	.0008-.0012 in.
End play between flywheels	.005-.025 in.
Fit on crankpin (loose)	.001-.0015 in.

OIL PUMP PRESSURE

At normal operating temperature and engine speed of 2000 rpm oil pressure should be ..... 12-35 psi

TAPPETS

Guide fit	.0025 in.
Fit in guide (loose)	.001-.002 in.
Roller fit	.0005-.001 in.
Roller end clearance	.008-.010 in.

GEARCASE

Breather gear end play	.001-.016 in.
Cam gear shaft in bushing	.0008-.0018 in.
Cam gear shaft in bearing	.0005-.003 in.
Cam gear end play	.001-.016 in.
Oil pump drive shaft (crankcase bushing)	.0008-.0012 in.

FLYWHEELS

Runout (flywheels)	.004 in. maximum at rim
Runout (mainshaft)	.002 in. maximum

SPROCKET SHAFT BEARING

Cup fit in crankcase (tight)	.0012-.0032 in.
Cone fit on shaft	.0002-.0015 in. tight
End play	.001-.006 in.

PINION SHAFT BEARINGS

Roller bearing fit (loose)	.0004-.0008 in.
Cover bushing fit (loose)	.0005-.0012 in.

IGNITION TIMING

Timer air gap 1980 and later	not adjustable
Ignition timing - fully retarded	3 °BTC (1/64 in. BTC)
automatic advance	35 °BTC (7/16 in. BTC)
Spark plug gap	.038-.043 in.

TORQUES

Shaft/pin installed without hydraulic press	
Sprocket shaft nut	300-440 ft-lbs
Crank pin nut	150-250 ft-lbs
Pinion shaft nut	120-160 ft-lbs
Shaft/pin installed with hydraulic press	
Sprocket shaft nut	240-270 ft-lbs
Crank pin nut	150-180 ft-lbs
Pinion shaft nut	100-130 ft-lbs
Pinion gear nut	35-45 ft-lbs
Oil pump cover bolt or nut	
with plastic gasket	45-50 in-lbs
with paper gasket	50-60 in-lbs
Tappet guide bolts	85-110 in-lbs
Rocker cover nuts	9-13 ft-lbs
Cylinder cover nuts	55-60 ft-lbs
Cylinder cover base nut	32-36 ft-lbs
Upper engine mounting bracket nut	35-40 ft-lbs
Crankcase stud nut	12-15 ft-lbs
Crankcase bolt	22-26 ft-lbs
Tappet adjusting locknut	10 ft-lbs
Gearcase cover screws	90-110 in-lbs

TRANSMISSION

GENERAL

Type ..... 5-speed forward - constant mesh

Overall Ratios

	1980	1981
1st	10.89	10.45
2nd	7.43	7.13
3rd	5.38	5.17
4th	4.13	3.98
5th	3.36	3.23

Transmission Ratios

	1980	1981
1st	3.24	3.24
2nd	2.21	2.21
3rd	1.60	1.60
4th	1.23	1.23
5th	1.00	1.00

Sprockets

Clutch	37 teeth
Engine	24 teeth
Transmission	22 teeth
Rear Wheel - 1980	48 teeth
Rear Wheel - 1981	46 teeth

MAINSHAFT

Tolerance

Mainshaft end play	None
1st gear end play	.0037-.0339 in.
clearance	.0000-.0080 in.
2nd gear end play	.0037-.0329 in.
clearance	.0000-.0080 in.
3rd gear end play	.0050-.0420 in.
clearance	.0003-.0019 in.
4th gear end play	.0050-.0310 in.
clearance	.0003-.0019 in.
Main drive gear (5th)	
Fit in transmission case	.0009-.0020 in.
Fit on mainshaft	.0001-.0009 in.
End play	None

Sidedoor Bearing

Fit in sidedoor	.0001 in. tight
	.0014 in. tight

Fit on mainshaft	.0001 in. loose .0007 in. tight

Shifter Dog Clearance

Gears	Clearance Min.	Max.
2nd-5th	.025	.139
2nd-3rd	.021	.164
1st-4th	.030	.152

COUNTERSHAFT

Tolerance

Countershaft end play	None
1st gear end play	.0050-.0039 in.
clearance	.0003-.0019 in.
2nd gear end play	.0050-.0440 in.
clearance	.0003-.0019 in.
3rd gear end play	.0037-.0329 in.
clearance	.0000-.0080 in.
4th gear end play	.0050-.0390 in.
clearance	.0000-.0080 in.
5th gear end play	.0050-.0440 in.
clearance	.0000-.0080 in.

SHIFTER CAM ASSEMBLY

Shifter cam end play	.001-.010 in.

Shifter Dog Clearance

Gears	Clearance Min.	Max.
2nd-3rd	.019	.160
1st-3rd	.021	.157

Sidedoor Bearing

Sidedoor bearing	
Fit in sidedoor	.0001 in. tight .0014 in. tight
Fit on countershaft	.0001 in. loose .0007 in. tight

SHIFTER FORKS

Shifter fork to cam groove end play	.0017-.0019 in.
Shifter fork to gear groove end play	.0010-.0110 in.

CLUTCH

Type	Dry, multiple disc
Capacity	206 ft-lbs torque
Spring pressure (total)	315 lbs.
Spring Adjustment	1-1/32 in. from spring collar edge

TORQUES

Clutch hub nut	50-60 ft-lbs
Transmission sprocket nut	initially 60 ft-lbs loosen and retighten to 35-40 ft-lbs
Rear swing arm pivot shaft nut	50 ft-lbs
Primary chain case cover screw	18-22 ft-lbs
Top cover mounting bolts	7-9 ft-lbs
Side cover mounting bolts	7-9 ft-lbs
Drain plug	4-7 ft-lbs
Filler cap	finger tight
Clutch release arm nut	7-11 ft-lbs
All 1/4 in. fasteners	7-9 ft-lbs.
Mainshaft and countershaft sidedoor nuts	13-18 ft-lbs

NOTES

ELECTRICAL

SPARK PLUG

Type	No.	Size	Gap
Harley-Davidson	5R6A	14mm	.038-.043

NOTE

Make sure spark plugs are gapped to this specification before installing.

ALTERNATOR SYSTEM

Output Voltage ..... 14 V.
Amperes — 1980 to Early 1981 ..... 17.8 amp
Amperes — Late 1981 ..... 22 amp

BATTERY

Voltage 12V
Amperes ..... 22 amp. hr.

LIGHTS

LAMP DESCRIPTION (All lamps 12 V)	NUMBER OF BULBS REQUIRED	CANDLE POWER OR WATTAGE	HARLEY-DAVIDSON PART NUMBER
Headlamp	2		67716-73
High beam		30 Watts	
Low Beam		30 Watts	
Tail & Stop Lamp	1		68165-64
Tail Lamp		3 C.P.	
Stop Lamp		32 C.P.	
Turn Signal Lamps			
Front	2	32 C.P.	68165-64
		2 C.P.	
Rear	2	32 C.P.	68572-64A
Tour Pak Side Lights	4		53439-79
Fender Tip Lamps	2		53439-79
Instrument Panel Lamps	9		71099-74

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