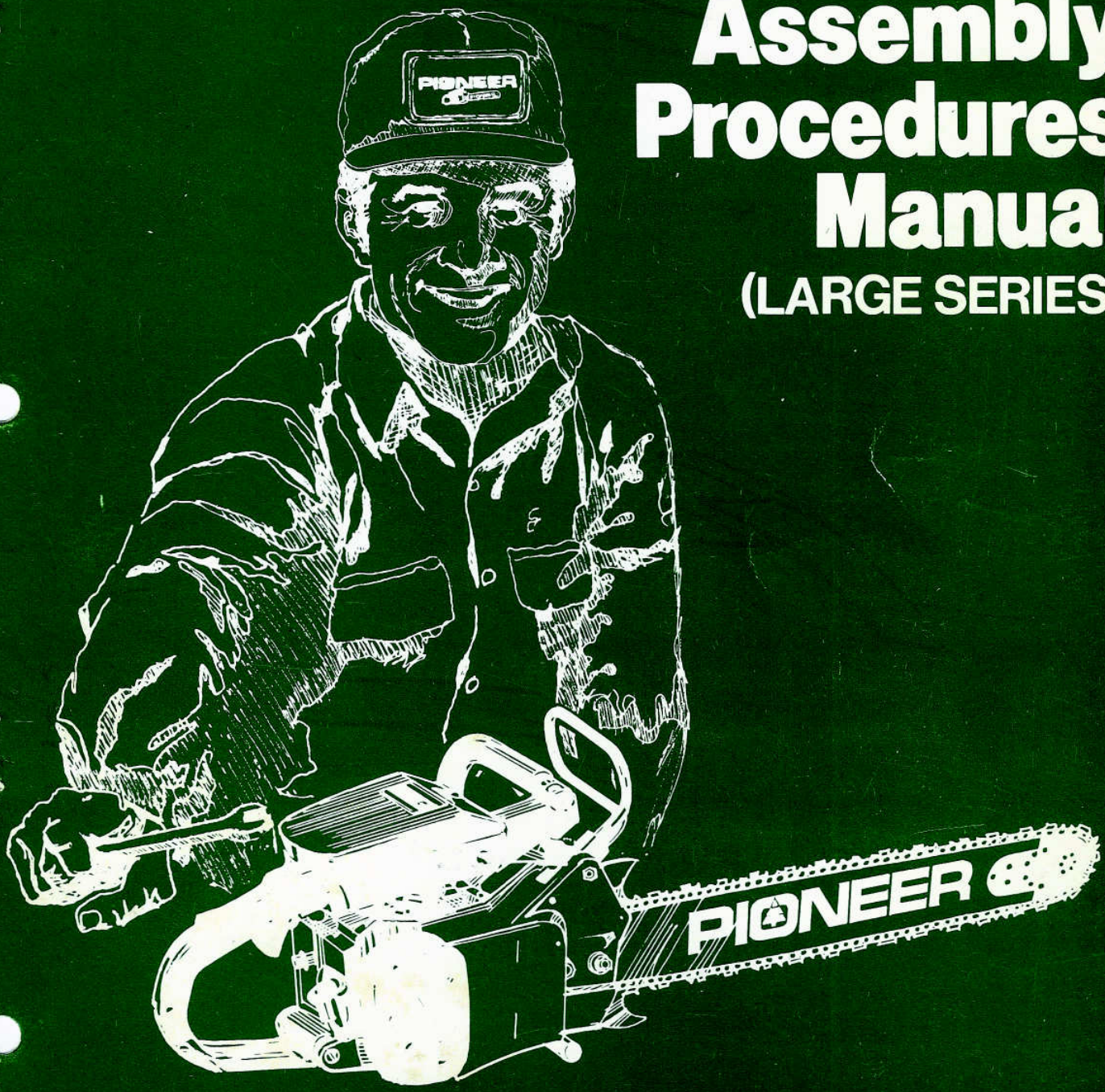
PIONEER

Disassembly and Assembly Procedures Manual

(LARGE SERIES)



MODEL FARMSAW SERIES SPECIFICATIONS

Dry Weight (less attachments):		FARMSAW	FARMSAW S
	Pounds:	14.8	16.0
	Kilograms:	6.7	7.3

Type of Drive:	Direct		
Front Handle:	Fully vibration isolated — Cushioned grip		
Rear Handle:	Fully vibration isolated		
Chain Oil Pump:	Automatic — Adjustable delivery		
Choke Equipped:	Yes		
Muffler:	Quiet, large volume with spark arresting screen		
Safety Throttle Inter-Lock:	Standard		
Throttle Lock:	Standard		
Guide Bar:	18" (45 cm.) Sprocket Nosed		
Chain:	3/8 Pitch, .058 Gauge		
Sprocket:	3/8 x 7-tooth (Star Type)		
Ignition System:	Electronic		
Spark Plug:	RCJ 8		
Spark Plug Gap:	.030" (.762 mm.)		
Fuel Capacity:	27.1 fl. oz. (Imperial)	16.0 fl. oz. (U.S. Units)	.770 l. (S.I. Units)
Oil Capacity:	13.0 fl. oz.	12.5 fl. oz.	.370 l.
Engine Lubrication:	2 Cycle Engine Oil		
Fuel/Oil Mix Ratio:	24:1 (4%)		
Chain Oil:	S.A.E. 10 to 40 Wt. (seasonal)		
Engine Type:	Single cylinder — Air-Cooled		
Bore and Stroke:	1-7/8" (47.625 mm.) x 1-7/16" (36.51 mm.) (respectively)		
Displacement:	3.97 cu. in./65 c.c.		
Compression Ratio:	7.5:1 (PSMA. STD.)		
Compression Pressure:	150 psig/1035 kPa		
Decompression Valve:	Automatic		
Crankshaft:	Three piece construction, forged alloy steel		
Crankshaft Main Bearings:	Ball Bearing		
Crankshaft Seals:	Spring loaded, synthetic rubber		
Connecting Rod:	One piece, forged alloy steel		
Con Rod Bearing-Wrist Pin End:	Needle Roller		
Con Rod Bearing-Crankpin End:	Needle Roller		
Piston:	Aluminum Alloy		
Piston Ring:	Single Cast Iron compression ring — Captive against rotation		
Piston Ring Gap:	.088"/.108"		
Crankcase:	Two piece die cast magnesium		
Cylinder Type:	Die cast aluminum — Chrome plated bore, E.D.M. Ported		
Starter:	Bendix type — "Easy Arc" — Automatic rewind		
Clutch:	Centrifugal - Three shoe molded friction material		
Carburetor:	All position — Diaphragm type		
Air Filter:	Nylon Mesh		
Fuel Filter:	Pick-up head with replaceable felt element		
Cylinder Angle:	Horizontal		
R.P.M. @ Maximum H.P.:	7,500		
Chain Speed @ Maximum H.P.:	3,281 ft./min.		

MODEL P41 SERIES SPECIFICATIONS

	P41F	P41SF	P41H	P41SH
Dry Weight (less attachments):				
Pounds:	15.8	16.8	15.6	16.6
Kilograms:	7.2	7.6	7.1	7.5
Type of Drive:	Direct			
Front Handle:	Fully vibration isolated — Cushioned grip			
Rear Handle:	Fully vibration isolated			
Chain Oil Pump:	Automatic — Adjustable delivery			
Choke Equipped:	Yes			
Muffler:	Quiet, large volume with spark arresting screen			
Safety Throttle Inter-Lock:	Standard			
Throttle Lock:	Standard			
Guide Bar:	16" (40 cm.)/ 28" (70 cm.) Hard or Sprocket Nose			
Chain:	3/8 Pitch, .058 Gauge			
Sprocket:	3/8 Pitch x 7-tooth — Full wrap 8-tooth — Half Wrap (Rim Type)			
Ignition System:	Electronic			
Spark Plug:	KCJ 7Y			
Spark Plug Gap:	.030" (.762 mm.)			
Fuel Capacity:	27.1 fl. oz. (Imperial)	26.0 fl. oz. (U.S. Units)	.770 l. (S.I. Units)	
Oil Capacity:	13.0 fl. oz.	12.5 fl. oz.	.370 l.	
Engine Lubrication:	2 Cycle Engine Oil			
Fuel/Oil Mix Ratio:	24:1 (4%)			
Chain Oil:	S.A.E. 10 to 40 Wt. (seasonal)			
Engine Type:	Single Cylinder — Air-Cooled			
Bore and Stroke:	1-7/8" (47.625 mm.) x 1-7/16" (36.51 mm.) (respectively)			
Displacement:	3.97 cu. in./65 c.c.			
Compression Ratio:	7.5:1 (PSMA. STD.)			
Compression Pressure:	150 psig/1035 kPa			
Crankshaft:	Three piece construction, forged alloy steel			
Crankshaft Main Bearings:	Ball Bearing			
Crankshaft Seals:	Spring loaded, synthetic rubber			
Connecting Rod:	Forged alloy steel, one piece			
Con Rod Bearing-Wrist Pin End:	Needle Roller			
Con Rod Bearing-Crank Pin End:	Needle Roller			
Piston:	Aluminum Alloy			
Piston Rings:	Two thin tool steel compression rings — Captive against rotation			
Piston Ring Gap:	.088"/.108"			
Crankcase:	Two piece die cast magnesium			
Cylinder Type:	Die cast aluminum — Chrome plated bore, E.D.M. Ported			
Starter:	Pawl type, automatic rewind			
Clutch:	Centrifugal — Three shoe sintered alloy			
Carburetor:	All position — Diaphragm type			
Air Filter:	Polyester felt			
Fuel Filter:	Pick-up head with replaceable felt element			
Cylinder Angle:	Horizontal			
R.P.M. @ Maximum H.P.:	8,500			
Chain Speed @ Maximum H.P.:	3,719 ft./min.			

MODEL P51 SERIES SPECIFICATIONS

		P51F	P51SF	P51H	P51SH
Dry Weight (less attachments):	Pounds:	18.0	18.9	17.7	18.6
	Kilograms:	8.2	8.5	8.0	8.4
Type of Drive:		Direct			
Front Handle:		Fully vibration isolated — Cushioned grip			
Rear Handle:		Fully vibration isolated			
Chain Oil Pump:		Automatic — Adjustable delivery			
Choke Equipped:		Yes			
Muffler:		Quiet, large volume with spark arresting screen			
Safety Throttle Inter-Lock:		Standard			
Throttle Lock:		Standard			
Guide Bar:		16" (40 cm.)/32" (80 cm.) Hard or Sprocket Nosed			
Chain:		3/8" Pitch, .058 Gauge			
Sprocket:		3/8 Pitch x 7-tooth (Rim Type)			
Ignition System:		Electronic			
Spark Plug:		KCJ 7Y			
Spark Plug Gap:		.030" (.762 mm.)			
Fuel Capacity:		33.1 fl. oz. (Imperial)	31.8 fl. oz. (U.S. Units)	.940 l. (S.I. Units)	
Oil Capacity:		14.3 fl. oz.	13.7 fl. oz.	.405 l.	
Engine Lubrication:		2 Cycle Engine Oil			
Fuel/Oil Mix Ratio:		24:1 (4%)			
Chain Oil:		S.A.E. 10 to 40 Wt. (seasonal)			
Engine Type:		Single cylinder — Air-Cooled			
Bore and Stroke:		2-1/16" (52.39 mm.) x 1-1/2" (38.1 mm.) (respectively)			
Displacement:		5 cu. in./82 c.c.			
Compression Ratio:		6.6:1 (PSMA. STD.)			
Compression Pressure:		150 psig/1035 kPa			
Decompression Valve:		Semi-automatic			
Crankshaft:		Three piece construction, forged alloy steel			
Crankshaft Main Bearings:		Ball Bearing			
Crankshaft Seals:		Spring loaded, synthetic rubber			
Connecting Rod:		One piece, forged alloy steel			
Con Rod Bearing-Wrist Pin End:		Needle Roller			
Con Rod Bearing-Crank Pin End:		Needle Roller			
Piston:		Aluminum Alloy			
Piston Rings:		Two thin tool steel compression rings — Captive against rotation			
Piston Ring Gap:		.088"/.108"			
Crankcase:		Two piece die cast magnesium			
Cylinder Type:		Die cast aluminum — Chrome plated bore, E.D.M. Ported			
Starter:		Pawl type, automatic rewind			
Clutch:		Centrifugal — Three shoe sintered alloy			
Carburetor:		All position — Diaphragm type			
Air Filter:		Polyester felt			
Fuel Filter:		Pick-up head with replaceable felt element			
Cylinder Angle:		Horizontal			
R.P.M. @ Maximum H.P.:		8,000			
Chain Speed@ Maximum H.P.:		3,500 ft./min.			

MODEL P61 SERIES SPECIFICATIONS

		P61F	P61SF	P61H	P61SH
Dry Weight (less attachments):	Pounds:	18.0	18.9	17.9	18.6
	Kilograms:	8.2	8.5	8.1	8.4
Type of drive:		Direct			
Front Handle:		Fully vibration isolated — Cushioned grip			
Rear Handle:		Fully vibration isolated			
Chain Oil Pump:		Automatic — Adjustable delivery, manual-override			
Choke Equipped:		Yes			
Muffler:		Quiet, large volume with spark arresting screen			
Safety Throttle Inter-Lock:		Standard			
Throttle Lock:		Standard			
Guide Bar:		20" (50 cm.)/36" (90 cm.) Hard or Sprocket Nosed			
Chain:		.404 Pitch, .058 Gauge, 3/8 Pitch, .058 Gauge			
Sprocket:		.404 or 3/8 x 7-tooth (rim type)			
Ignition System:		Electronic			
Spark Plug:		KCJ 7Y			
Spark Plug Gap:		.030" (.762 mm.)			
Fuel Capacity:		33.1 fl. oz. (Imperial)	31.8 fl. oz. (U.S. Units)	.940 l. (S.I. Units)	
Oil Capacity:		14.3 fl. oz.	13.7 fl. oz.	.405 l.	
Engine Lubrication:		2 Cycle Engine Oil			
Fuel/Oil Mix Ratio:		24:1 (4%)			
Chain Oil:		S.A.E. 10 to 40 Wt. (seasonal)			
Engine Type:		Single cylinder — Air-Cooled			
Bore and Stroke:		2-1/4" (57.1 mm.) x 1-1/2" (38.1 mm.) (respectively)			
Displacement:		6 cu. in./98 c.c.			
Compression Ratio:		7.2:1 (PSMA. STD.)			
Compression Pressure:		155 psig/1069 kPa			
Decompression Valve:		Semi-automatic			
Crankshaft:		Three piece construction, forged alloy steel			
Crankshaft Main Bearings:		Ball Bearing			
Crankshaft Seals:		Spring loaded, synthetic rubber			
Connecting Rod:		One piece, forged alloy steel			
Con Rod Bearing-Wrist Pin end:		Needle Roller			
Con Rod Bearing-Crankpin End:		Needle Roller			
Piston:		Aluminum Alloy			
Piston Rings:		Two thin tool steel compression rings — Captive against rotation			
Piston Ring Gap:		.090"/.120"			
Crankcase:		Two piece die cast magnesium			
Cylinder Type:		Die cast aluminum — Chrome plated bore, E.D.M. Ported			
Starter:		Pawl type, automatic rewind			
Clutch:		Centrifugal — Three shoe molded friction material — Three shoe sintered alloy (P61SH-P61SF)			
Carburetor:		All position — Diaphragm type			
Air Filter:		Polyester felt			
Fuel Filter:		Pick-up head with replaceable felt element			
Cylinder Angle:		Horizontal			
R.P.M. @ Maximum H.P.:		8,000			
Chain Speed & Maximum H.P.:		3,770 ft./min.			

LOCTITE APPLICATION

GRADE "242" BLUE

MODEL FARMSAW

1) Ignition module securing screws.
2) Starter cover screws.

MODEL P41/P41S

1) Cylinder shroud screws to starter cover.
2) Coil cover mounting screws
3) Ignition module securing screws.
4) Starter cover screws.
5) Screw (rear handle to lower frame).
6) Screws (rear hand guard to rear handle).
7) Starter pawl screws.

MODEL P51/P51S

1) Cylinder shroud screws to starter cover.
2) Ignition module securing screws.
3) Starter cover screws.
4) Screw (rear handle to lower frame).
5) Screws (rear hand guard to rear handle).
6) Starter pawl screws.

MODEL P61/P61S

1) Cylinder shroud screws to starter cover.
2) Ignition module securing screws.
3) Starter cover screws.
4) Screw (rear handle to lower frame).
5) Screws (rear hand guard to rear handle).
6) Starter pawl screws.

FUEL LINE INFORMATION

PART NO.	LENGTH	OUTSIDE DIAMETER	INSIDE DIAMETER	MODELS USED ON & APPLICATION
429970	3"	1/4"	1/8"	1074, P26E, P28E (Connector to Carb.)
431534	5-1/4"	1/4"	1/8"	1074, P26E, P28E (Fuel Vent Line)
				P41, FM, 1074, P26, P26E, P28, P28E (Connector to Pick-up)
431537	7-1/4"	1/4"	1/8"	P41, FM (Connector to Carb.)
431535	5-3/4"	1/4"	1/8"	P51, P61 (Connector to Pick-up)
431536	7"	1/4"	1/8"	P51, P61 (Connector to Carb.)
431541	10 ft.	Length of Fuel Line for all Models		

CRANKCASE SEAL INFORMATION

SEAL P/N MAGNETO SIDE	SEAL P/N DRIVESIDE	FOR SAW MODELS
428746	428746	1074,P26E,P28E,FM,P41,P51,P61

STARTER CORD INFORMATION

PART NUMBER	LENGTH	FOR SAW MODELS
426752	41"	P41, P51, P61
429278	43"	1074, P26E, P28E, FM

Starter cord is available in a 50 meter bulk roll.

PART NUMBER	LENGTH AND SIZE	FOR SAW MODELS
432363	50 Metres .156" Dia.	P41, P51, P61
432364	50 Metres .130" Dia.	1074, P26E, P28E, FM

OIL LINE INFORMATION

PART NUMBER	DESCRIPTION	LENGTH	MODELS USED ON
430227	Automatic Oil Pump Pick-up	4-1/2"	FM, P41
430640	Automatic Oil Pump Pick-up	5"	P51, P61

A 5' length of the automatic oil pump pick-up line for the above four (4) models is available under P/N 432656...1/8" I.D. x 3/16" O.D.

Model P61 has two (2) lines connecting the manual and automatic oil pumps.

PART NUMBER	LENGTH	HOSE SIZE
432296	5-1/2"	3/32" I.D. x 1/4" O.D.

TORQUE SPECIFICATIONS

MODELS FARMSAW/FARMSAW S, P41/P41S, P51/51S, P61/P61S

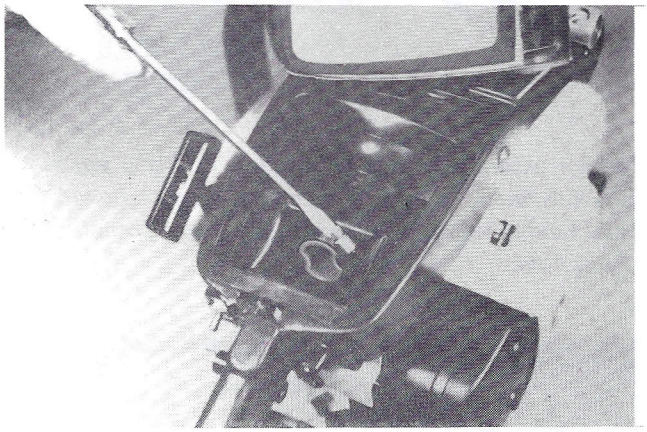
A)	Shock Absorber Screw	40 — 50 in. lbs.
B)	Air Filter Cover Screw	25 — 30 in. lbs.
C)	Cylinder Base Screw	90 — 100 in. lbs.
D)	Flywheel nut	25 — 30 ft. lbs.
E)	Spark Plug	7 — 8 ft. lbs.
F)	Carburetor Mounting Screws	20 — 25 in. lbs.
G)	Muffler Bolts (1/4 in.)	70 — 75 in. lbs.
H)	Reed to Crankcase Screws	25 — 30 in. lbs.
I)	Lower Grip Screws	8 — 12 in. lbs.
J)	Switch Nut	15 — 20 in. lbs.
K)	Air Filter Screw (Farmsaw)	20 — 25 in. lbs.
L)	Clutch Nut (see below) * *	30 — 35 ft. lbs.
M)	Shock Mounts	1/4 turn pre-tension
N)	Oil Pump Screws	25 — 30 in. lbs.
0) 1)	Cylinder Shroud Screws (Farmsaw)	10 — 15 in. lbs.
2)	Cylinder Shroud Screws (P41, P51, P61)	30 — 35 in. lbs.
P) 1)	Ignition Module Screws (Farmsaw)	25 — 30 in. lbs.
2)	Ignition Module Screws (P41, P51, P61)	45 — 50 in. lbs.
Q)	Fuel Tank Connector	25 — 30 in. lbs.
R)	Baffle Plate Screws (blower cover)	7 — 9 in. lbs.
S)	Bar Stud Nuts	18 — 20 ft. lbs.
T) 1)	Blower Cover Screws (Farmsaw)	25 — 30 in. lbs.
2)	Blower Cover Screw (P41, P51, P61)	45 — 50 in. lbs.
U)	Centre Post-Blower Cover Screw (FM)	10 — 15 in. lbs.
V)	Decompression Lever Screws (Farmsaw)	5 — 10 in. lbs.
W) 1)	Decompression Valve (Farmsaw)	80 — 90 in. lbs.
2)	Decompression Valve (P51, P61)	75 — 80 in. lbs.
X)	Starter Pawl Screw	120—125 in. lbs.

* * Clutch nut to be hand torqued to ensure 30 — 35 ft. lbs. as specified above.

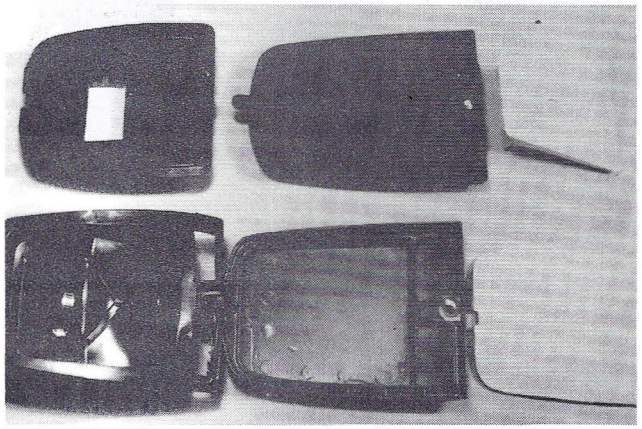
THREAD SIZE	TORQUE
#4	3 — 5 in. lbs.
#6	6 — 8 in. lbs.
#8	20 — 25 in. lbs.
#10	45 — 50 in. lbs.
#12	50 — 60 in. lbs.
#1/4	70 — 80 in. lbs.

SUBJECT: DISASSEMBLY AND ASSEMBLY PROCEDURE FOR MODELS FARMSAW THROUGH P61

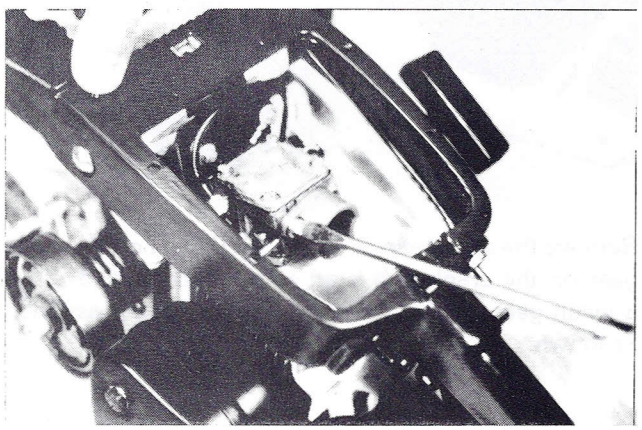
A. DISASSEMBLY PROCEDURE



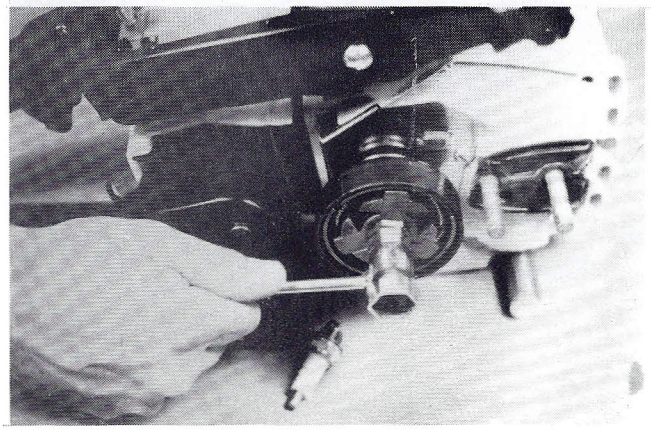
Remove air filter cover, air filter and inlet silencer boot.



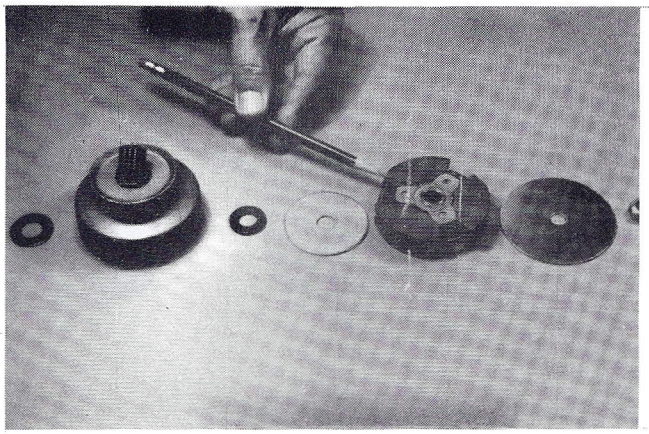
The large series saws have two different air filter systems. The FM system is shown at the Top. The models P41, P51, P61 system at the bottom.



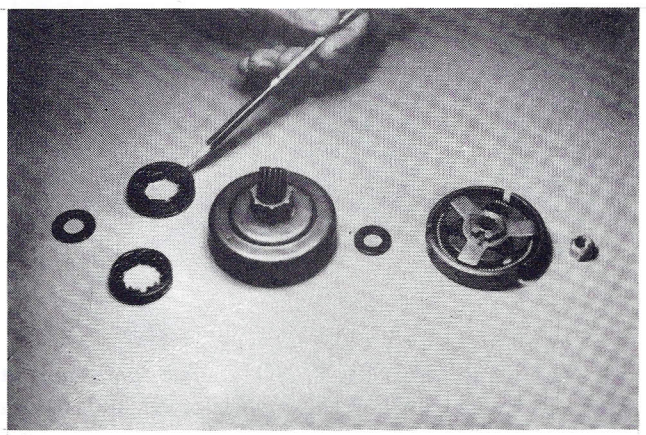
Remove the carburetor assembly.



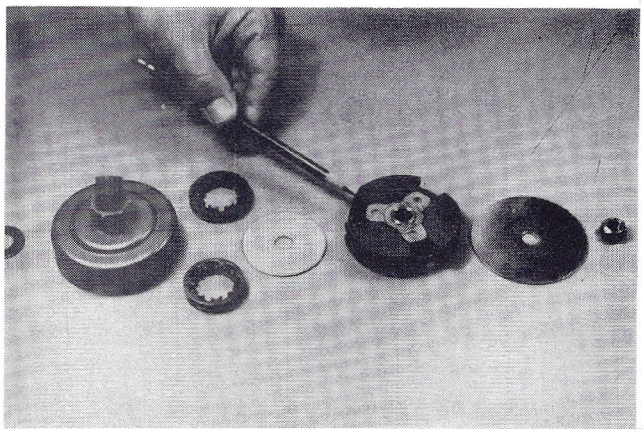
To remove the clutch assembly, install piston stop, P/N 432331. Remove the clutch nut and complete clutch assembly. NOTE: The crankshaft thread on both drive-side and magneto side are RIGHT HAND.



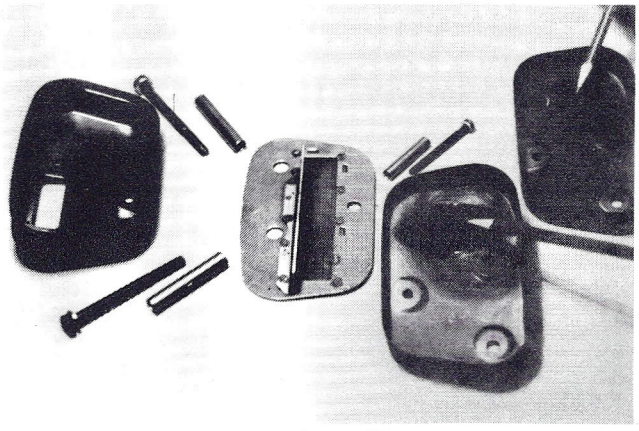
FM SAW CLUTCH ASSEMBLY. NOTE: In the direction of rotation, the trailing edge of the clutch shoe is chamfered as shown.



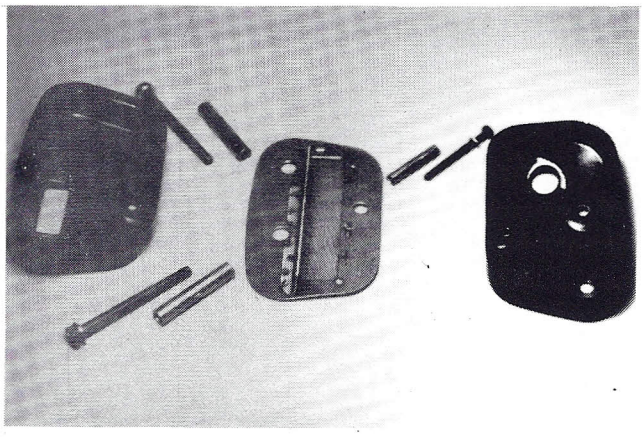
P41, P51 & P61S CLUTCH ASSEMBLY. NOTE: Model P41 with a half wrap handle is equipped with an 8-tooth pitch 3/8 "floating rim" drive spocket and P41 with a full wrap handle is equipped with a 7-tooth 3/8 pitch "floating rim" drive sprocket.



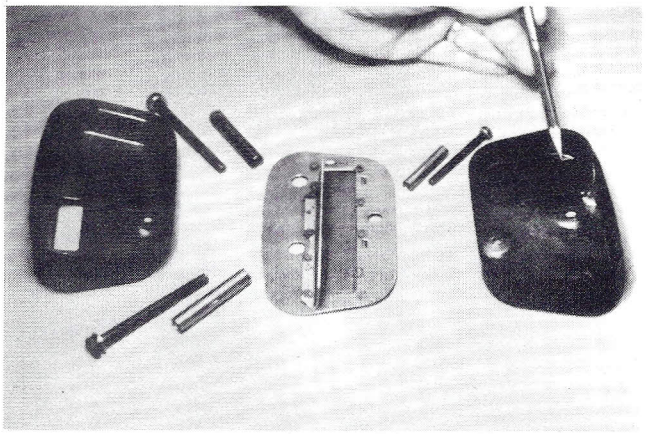
P61 CLUTCH ASSEMBLY. The drive sprocket can be either 7-tooth "3/8 pitch OR 404 pitch". Again, NOTE THE CHAMFER on the TRAILING edge of the clutch shoes.



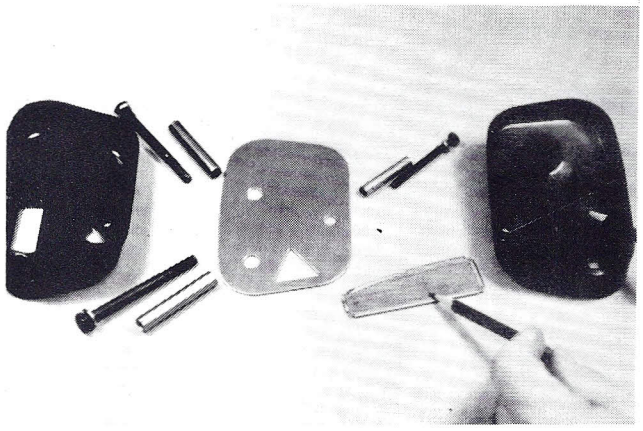
Muffler assemblies used on models P51 half wrap and P51 full wrap. The P51F exhausts straight down. The P51H exhaust is angled toward the lower portion of the clutch cover.



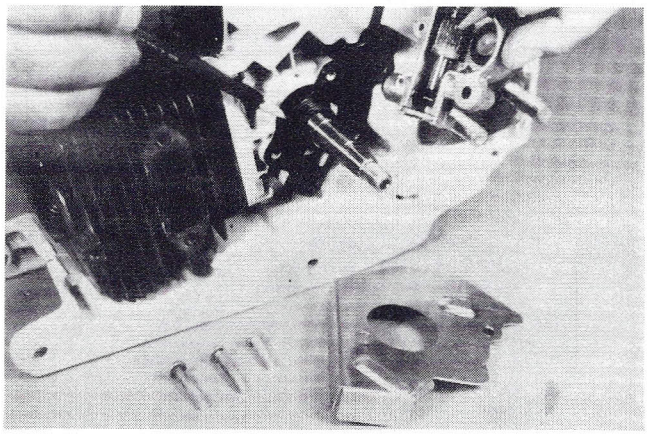
FM SAW muffler assembly



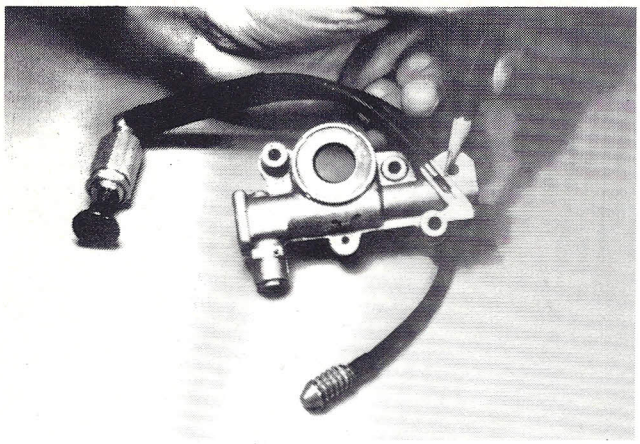
Muffler assembly used on model P61. NOTE: Exhaust direction.



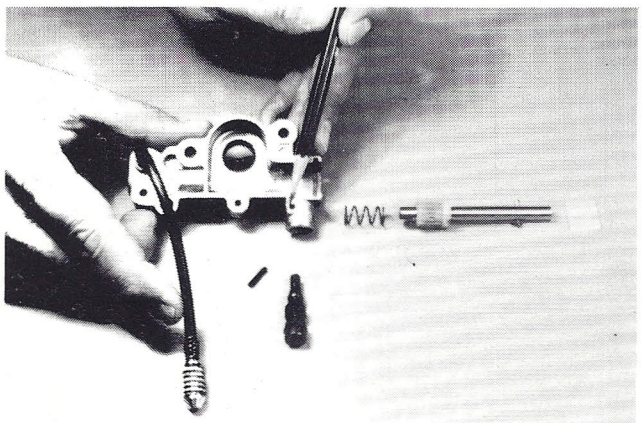
P41 MUFFLER ASSEMBLY. NOTE: The spark arrestor screen is situated INSIDE the muffler cover and can be overlooked.



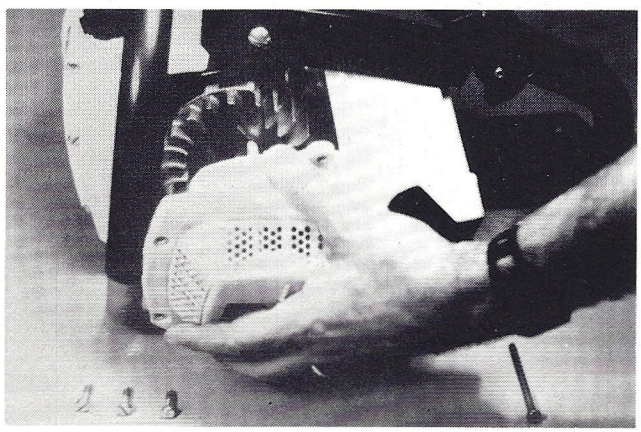
Remove the automatic oil pump. NOTE: The steel worm gear on the crankshaft is an interference fit and drives a nylon gear located inside the auto oil pump assembly as shown.



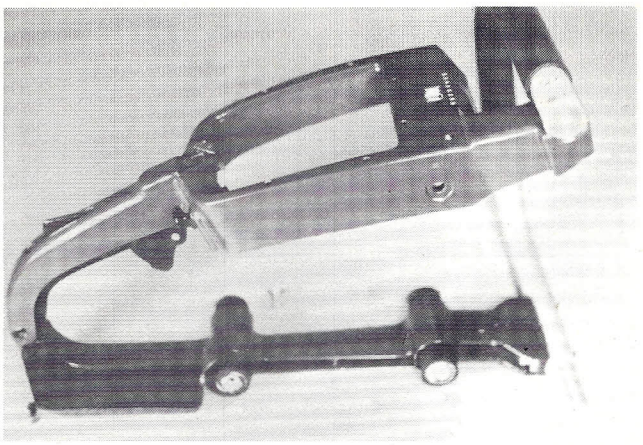
Oil pump assembly used on model P61. This pump assembly includes a manual override system. A check valve is located behind the outlet nipple of the automatic oil pump as shown in the cut-away casting.



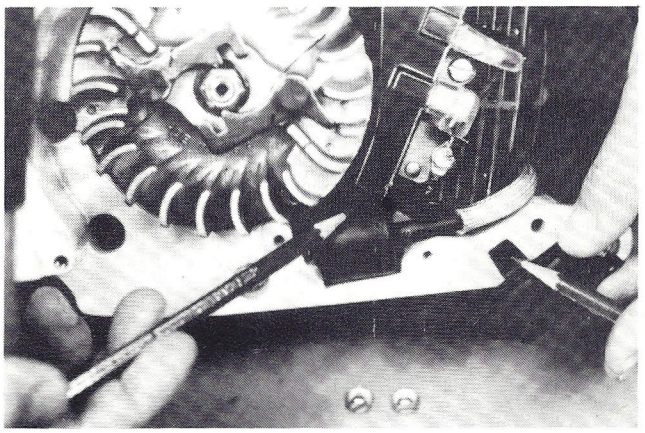
The automatic oil pumps on FM-P61 all work on the same principal. To dismantle the automatic oil pump remove the roll pin. Back out the cam adjustment screw, remove the plastic window and slide the gear/shaft and spring assembly out of the oil pump body.



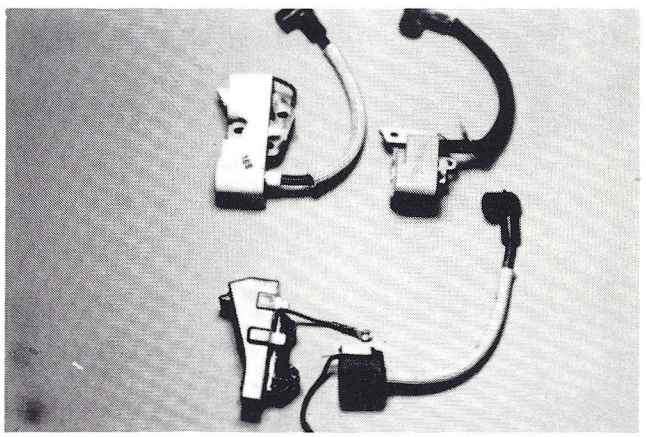
Remove the starter assembly.



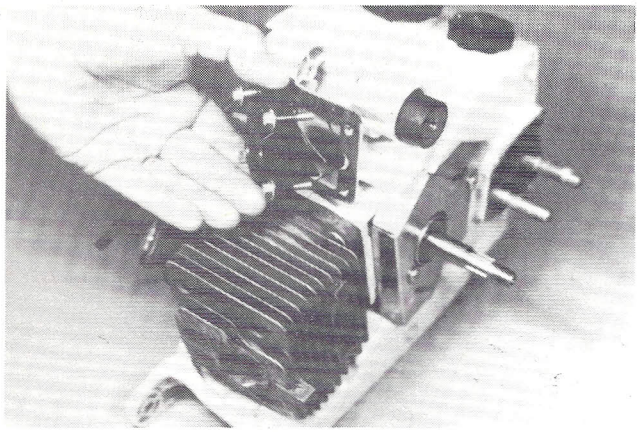
Remove the complete handle assembly. This assembly cradles the powerhead.



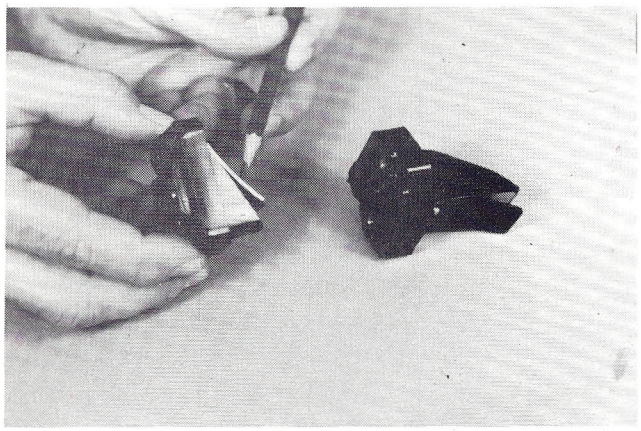
Remove the two-piece electronic ignition system for model P41. NOTE: On re-assembly of high tension coil be sure the primary wires (leading to and from the high tension coil) are placed BENEATH the tang on the coil cover.



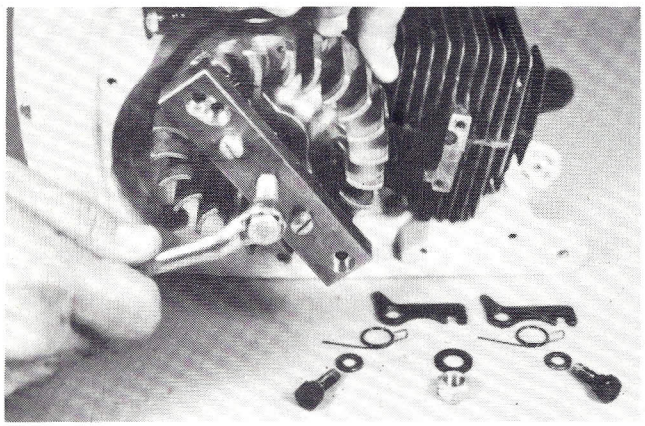
The electronic ignition systems as used on models FM, P41, P51, P61. NOTE: Models P51 and P61 takes the SAME ignition system.



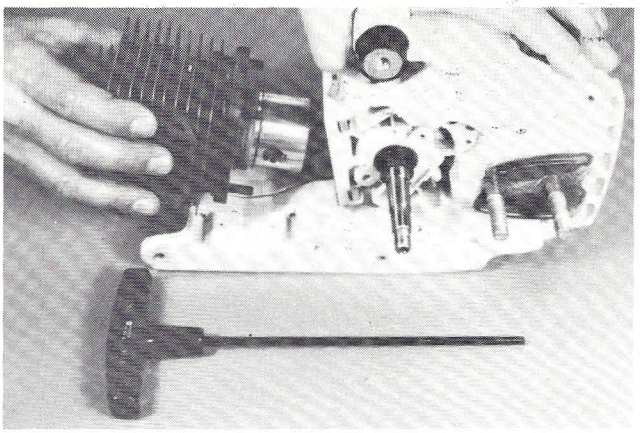
Remove the reed valve assembly.



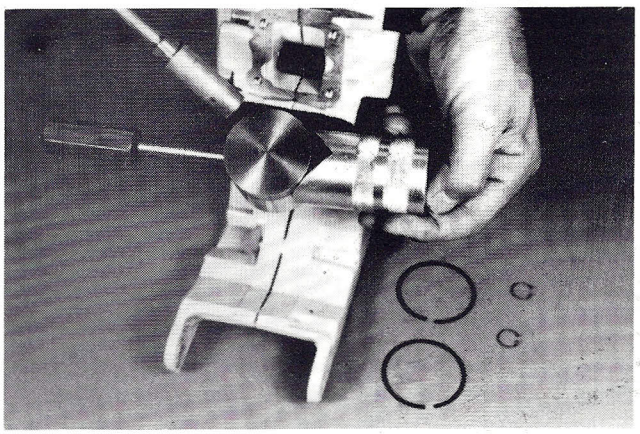
The reed valve assembly used on model FM, P41 is shown on the left. Shown on the right is the reed valve assembly used on model P51, P61. NOTE: Both assemblies for all 4 models have a backing plate that limits the maximum opening of the reed valve.



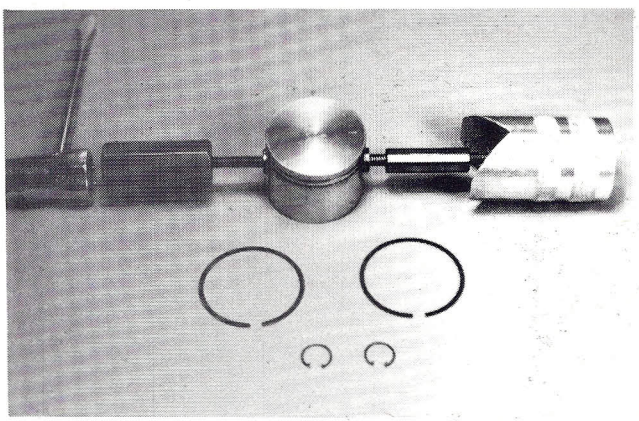
Remove the flywheel. The flywheel and crankcase puller assembly, P/N 475501 MUST be used. NOTE: As previously mentioned, the thread on the flywheel side of the crankshaft is RIGHT HAND.



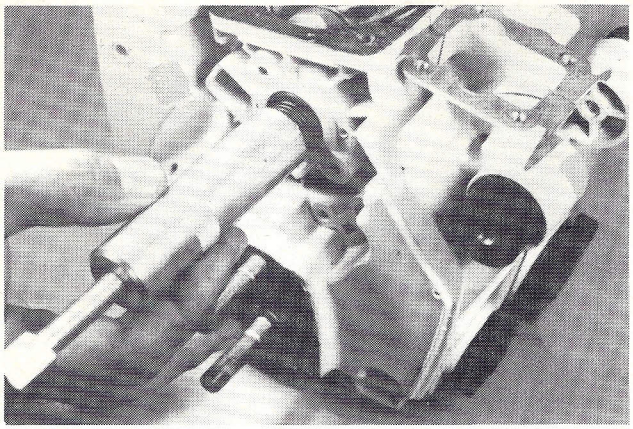
Remove the cylinder using a "T" handle 3/16 "Allen wrench", P/N 432521.



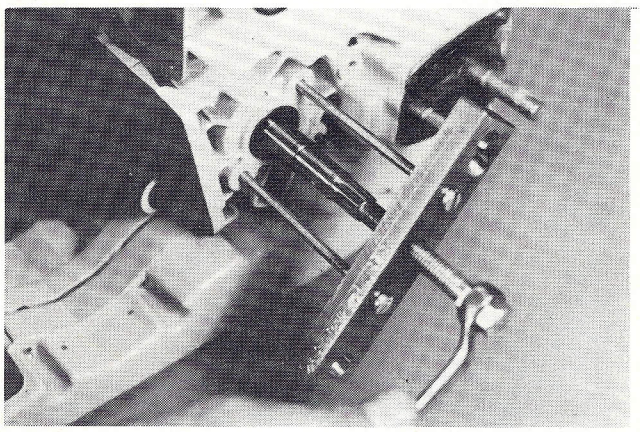
Remove the piston from the connecting rod assembly using wrist pin extractor/installer, P/N 475420. Remove the wrist pin keepers and the piston rings. Install the wrist pin extractor with the proper diameter extractor sleeve. Applying heat to the piston will ease the wrist pin removal.



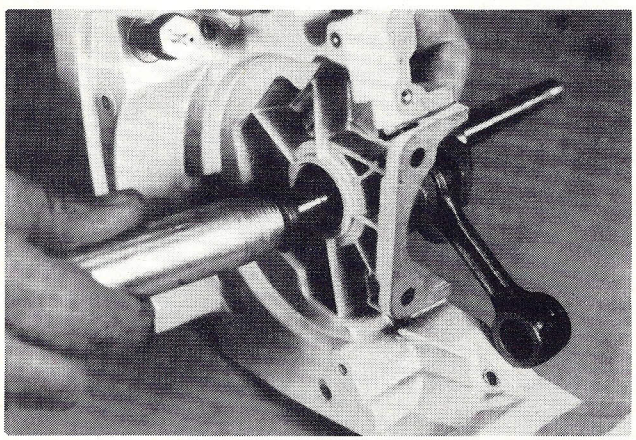
An illustration of the complete wrist pin extractor assembly.



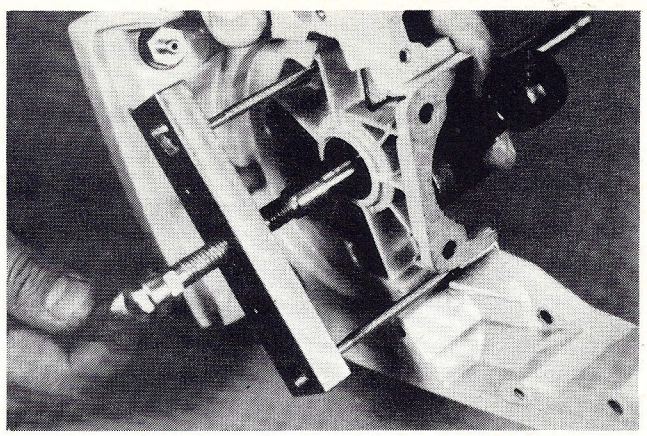
Remove the automatic oil pump drive gear from the crankshaft using tool, P/N 474329.



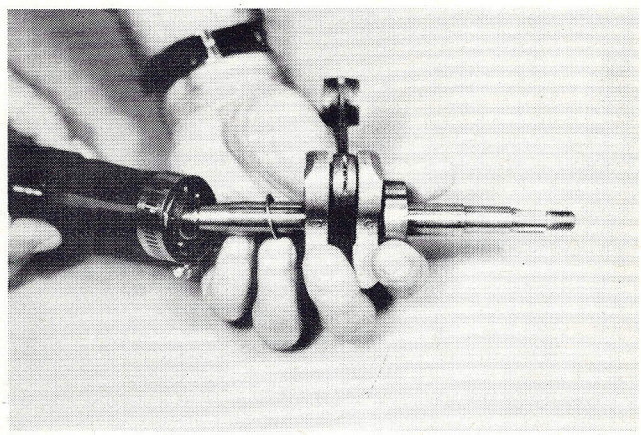
Flywheel and crankcase puller assembly, P/N 475501 must be used to separate the crankcase halves on FM thru to P61. NOTE: Ensure that all crankcase screws ARE REMOVED. Insert the puller assembly screws in the crankcase oil pump mounting holes. Turning the jack screw will separate the crankcase halves.



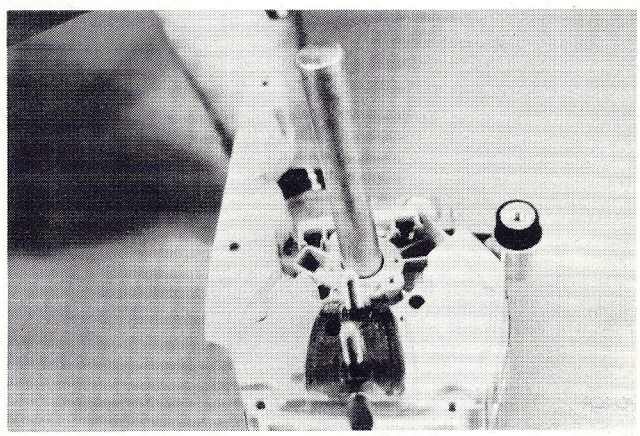
Remove the crankcase magneto side seal using tool, P/N 471437.



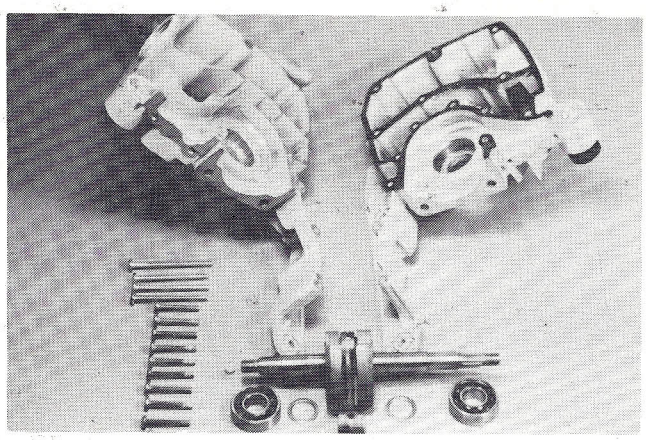
With flywheel and crankcase puller assembly P/N 475501 PUSH THE CRANKSHAFT OUT OF THE CRANK—CASE HALF.



To remove the main bearings from the crankshaft assembly, use tool P/N 471015.

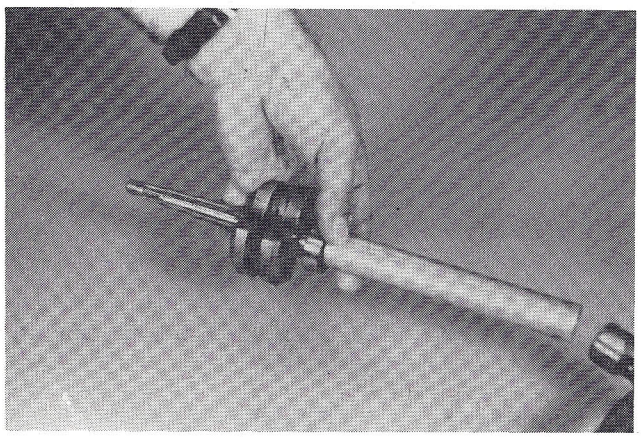


If the main bearings stay within the crankcase half, (not on the crankshaft), they will have to be driven from the crankcase half. NOTE: Apply heat around the main bearing bore for easier removal of the main bearing. Use main bearing driver, P/N 470335 to remove bearing.

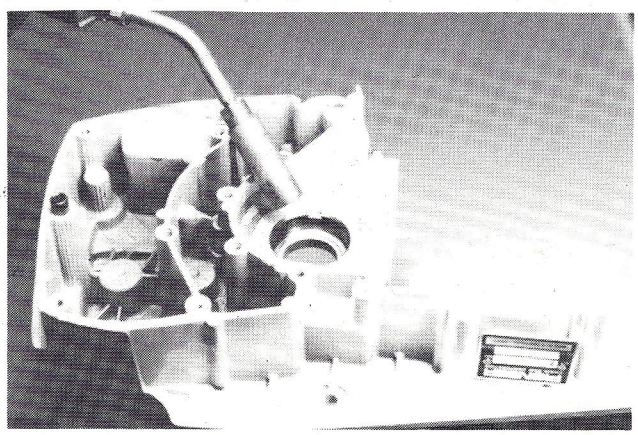


The engine is shown completely disassembled.

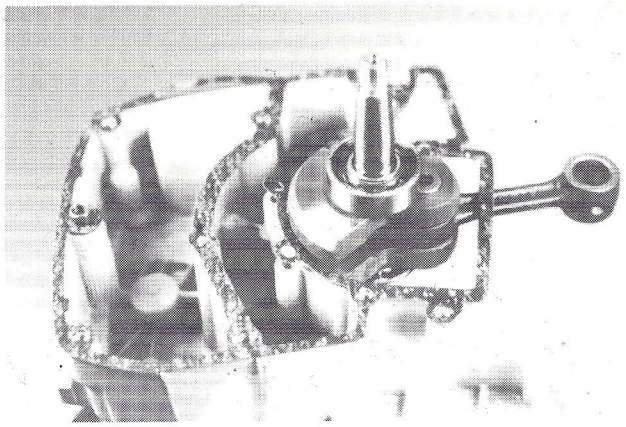
B. ASSEMBLY PROCEDURE



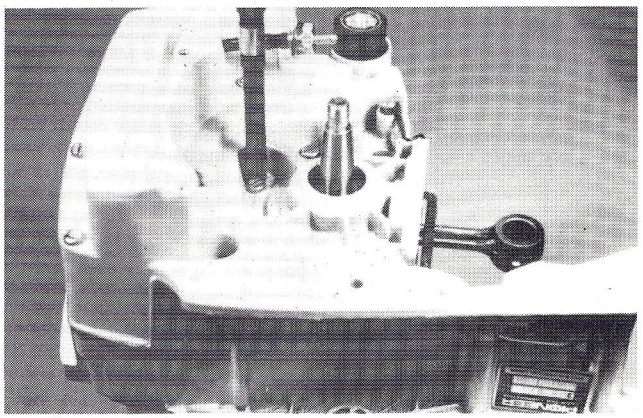
During re-assembly, new main bearings are to be installed on the crankshaft using main bearing driver, P/N 470335. NOTE: Ensure the thrust washers are placed on the crankshaft prior to installing the main bearings. The radius on the thrust washer must conform to the radius on the crankshaft at the crank web. Tap the main bearings in to place until they come up against the thrust washers.



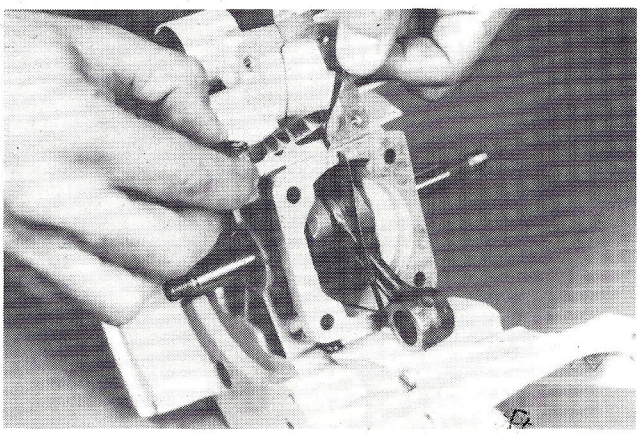
Heat the main bearing bore area of the crankcase to approximately 200 degrees F.



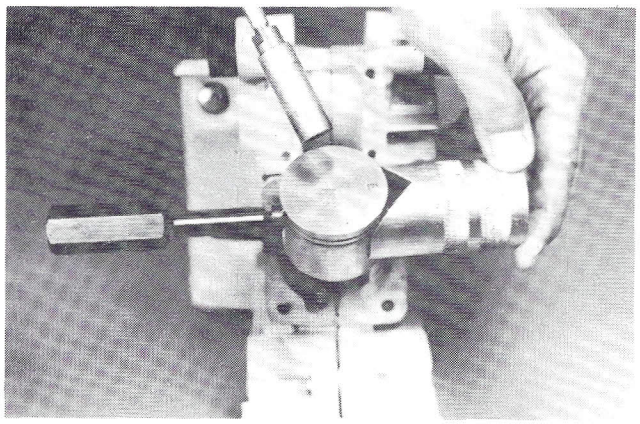
Align the crankshaft and the crankcase bore squarely, and with a quick, positive action push the crankshaft into the bore. Locate the crankcase gasket over the dowel pins.



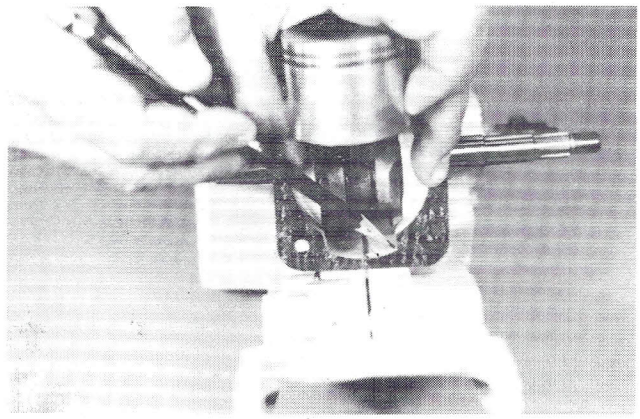
Heat the blower side crankcase half main bearing bore, then, carefully place it over the crankshaft, aligning it with the dowel pins. NOTE: Place and tighten all crankcase screws. Torque the screws in an outward spiral pattern beginning with the screws nearest the crankshaft.



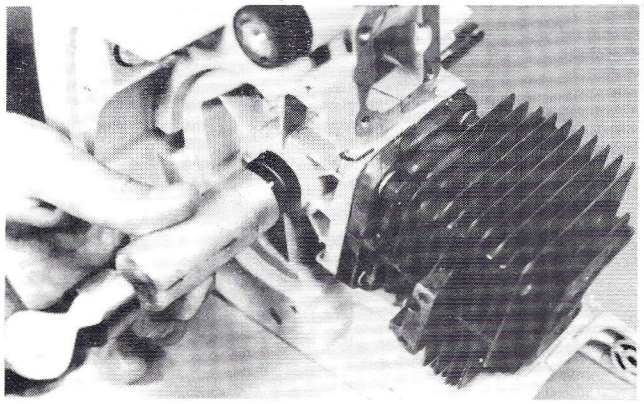
After all screws have been torqued, cut the gasket bridge flush with the cylinder base and the reed body surfaces. NOTE: If gasket is not cut flush with the castings an air leak will result.



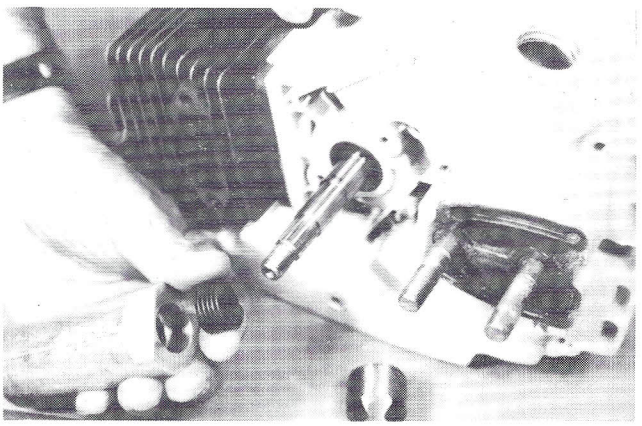
To install the piston, use extractor/installer, P/N 475420. The extractor sleeve is used as a pilot pin. Place the piston on the connecting rod and insert the pilot sleeve. Install the wrist pin on the rod of the assembly tool. Apply heat to the piston. The 3/4" hexagon nut portion of the tool pushes the wrist pin into place.



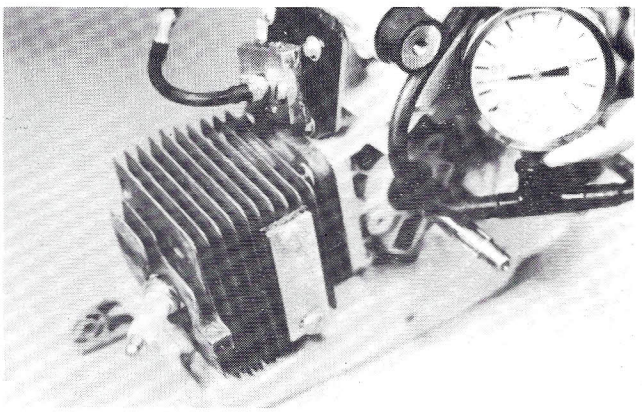
The cylinder base gasket can be correctly installed in ONE POSTION only. Make sure that the cut-out in the gasket lines up the shape of the transfer ports in the crankcase.



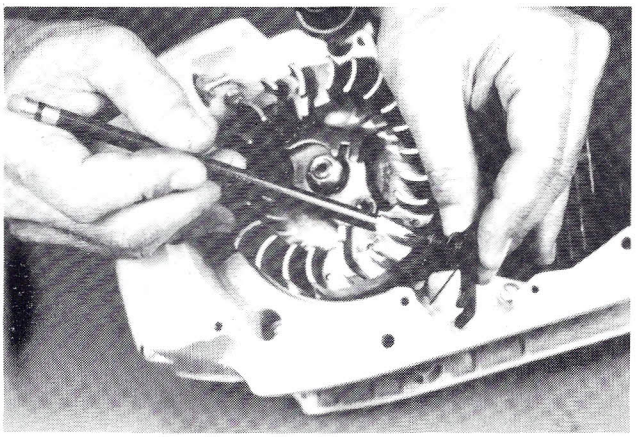
Install the crankcase seals in both crankcase halves. Apply a small amount of oil or grease to the inner lip of the crankcase seal. The magneto side seal is installed using seal driver, P/N 429445, and the driveside seal is installed using tool, P/N 427407. NOTE: Position the seals squarely against the crankcase and drive the seals flush with the crankcase casting surface.



Install the automatic oil pump worm gear on the crankshaft with seal driver, P/N 427407. NOTE: The gear is symetrical and, as such, it does not matter which end is to the outside. The worm gear will nest in a counterbore in the seal driver and will be driven to the proper depth on the crankshaft.

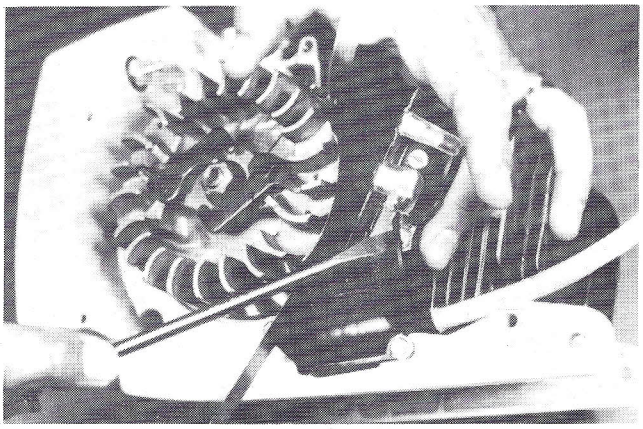


Before installing the carburetor, muffler, and decompression valve, block off these openings with the appropriate plates provided in the air leak test kit, P/N 475556. Attach the pressure pump, P/N 475467, to the blank off plate of the insulating block and pressurize the crankcase to a maximum of 5-7 lbs per square inch. The pressure on the gauge SHOULD NOT drop off. If pressure drops, an air leak will have to be located and corrected.

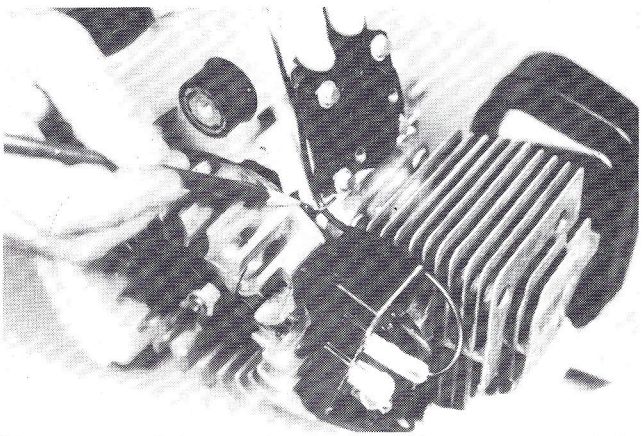


MODELS P41, P51, P61 have pawl type starter assemblies. Before installing the starter pawl screw apply a small amount of Loctite to the screw. Before torquing

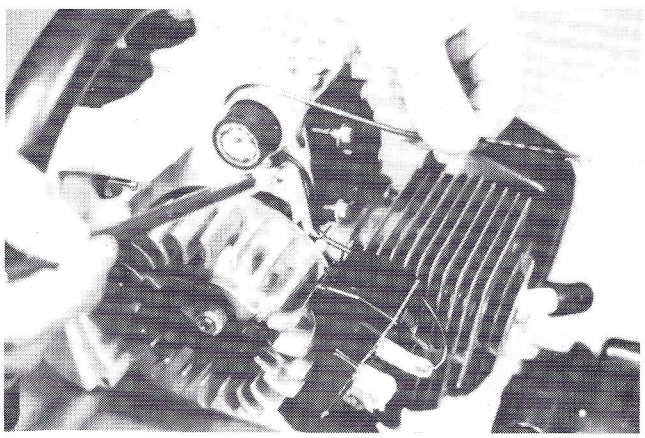
the screw ensure that all parts of the assembly are able to move FREELY.



MODELS FM & P41. The air gap is to be set at .010"-.012". Place a feeler gauge between the magnets of the flywheel and the ignition module. Before tightening the screws pull the module toward the magnets. NOTE: On models P51 and P61 the air gap is .025"-.030".



The routing of the switch wire from the ignition module must be held in place by the clip that is located behind the flywheel.



Continue routing the switch wire around the left top shock mount prior to the installation of the top frame.

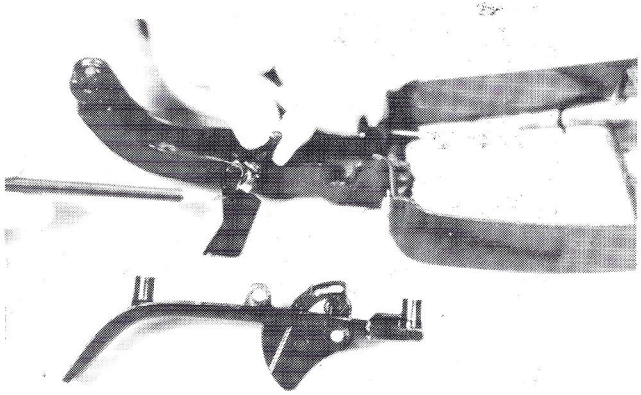
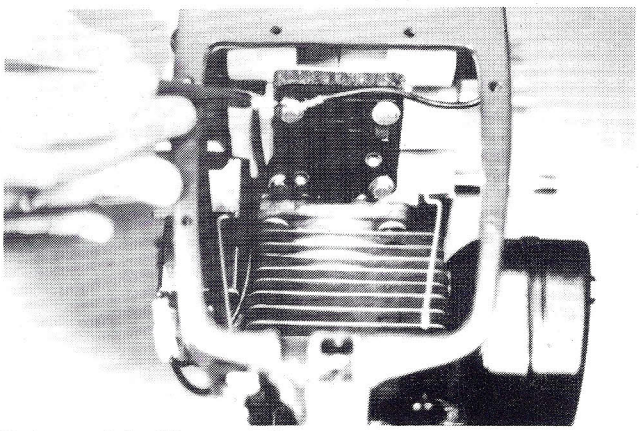
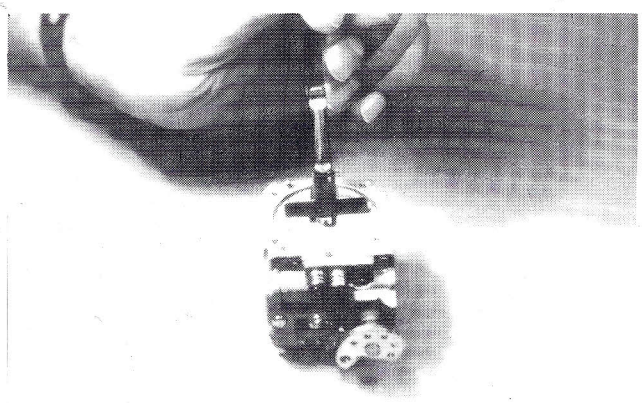


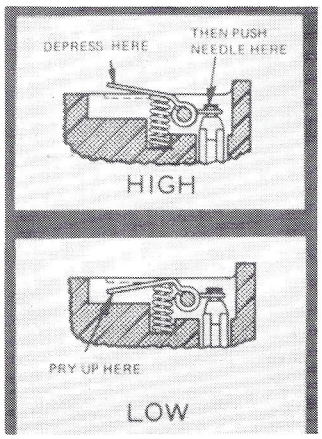
Illustration of the throttle trigger and throttle lock mechanism. Care must be taken to insure that the light weight springs controlling the action of the mechanism are properly located and able to move freely.



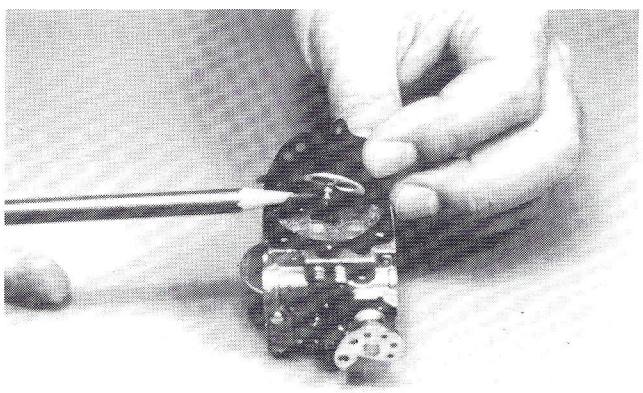
With models FM and P41 connect the ground wire leading from the top frame to the top left screw on the reed body. NOTE: With models P51 and P61 this wire connects under a screw in the driveside crankcase half.



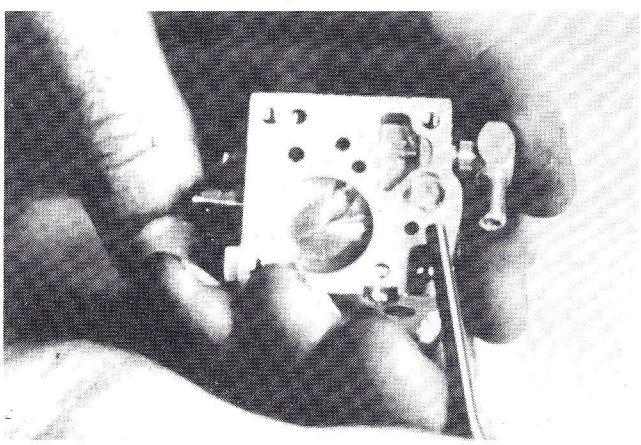
The correct inlet lever setting is flush with the metering chamber floor as shown. This applies to all model Walbro and Tillotson carburetors.



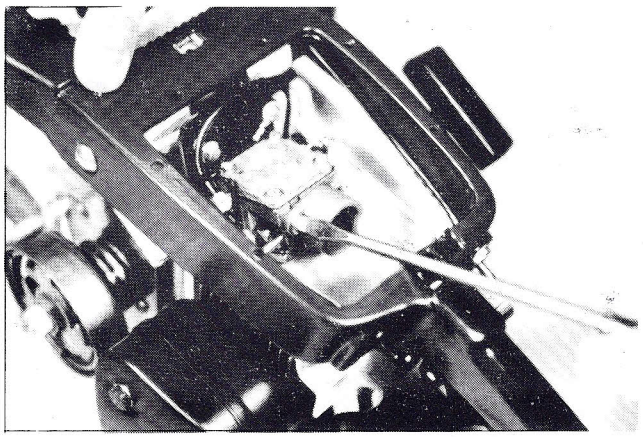
A high metering lever will result in a rich or flooding condition. Where as a low metering lever setting will result in lean idle and acceleration.



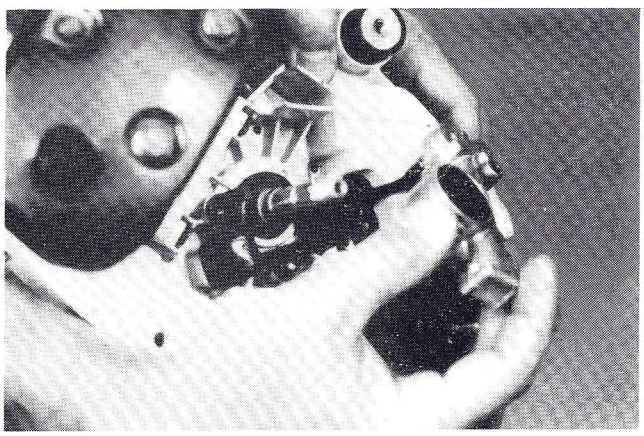
CAUTION: The metering diaphrapm buttom must be engaged in the fork of the fuel inlet lever.



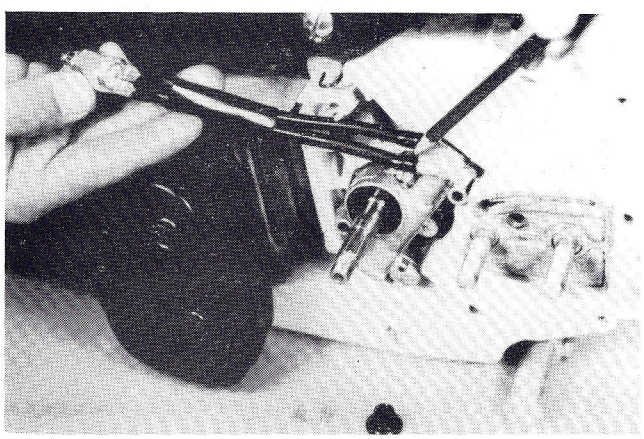
During the re-assembly of all carburetors, make sure the inlet screen is in place. The function of this screen is to filter all fuel going to the metering section of the carburetor.



Install the carburetor and blow back tube assembly. Be sure all gaskets are correctly positioned. NOTE: Check for FREE OPERATION of the throttle linkage.

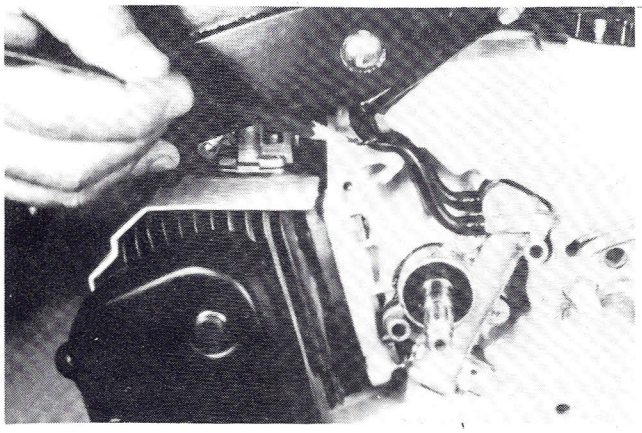


Care must be taken when installing the automatic oil pump on models FM thru P61 to insure that the dangler or pick-up head falls to the bottom of the oil tank reservoir. NOTE: To accomplish this, the engine should be slightly tipped nose down and tilted slightly toward the blower side. A test to ensure proper assembly would be to operate the pump with only a 1/4 tank of oil.

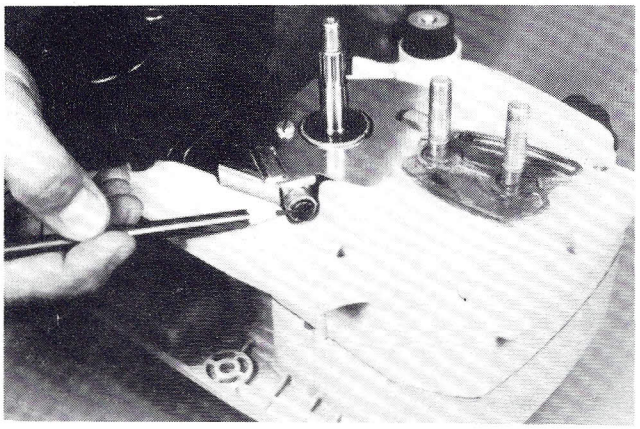


MODEL P61 has a manual oil pump that is connected to the automatic oil pump. NOTE: As illustrated, the hose that connects to the OUTSIDE of the manual oil pump also connects to the OUTSIDE nipple of the automatic oil pump. The outside hose is for oil delivery and is under pressure. Be sure to use #430545 clips on both

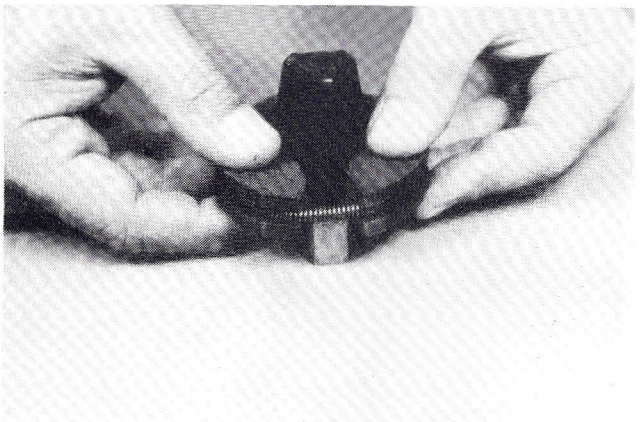
ends. Also use a clip on the INSIDE hose at the auto-pump end.



The manual oil pump lines must be held in place by the retaining clip as shown.



The adjustment screw for the automatic oil pump is shown. Turning the screw COUNTERWISE increases oil delivery. The setting for general use is approximately 3/4 of a turn open.



The FM and P61 clutch shoe and spring assembly is shown being installed on the clutch driver using tool, P/N 432537.

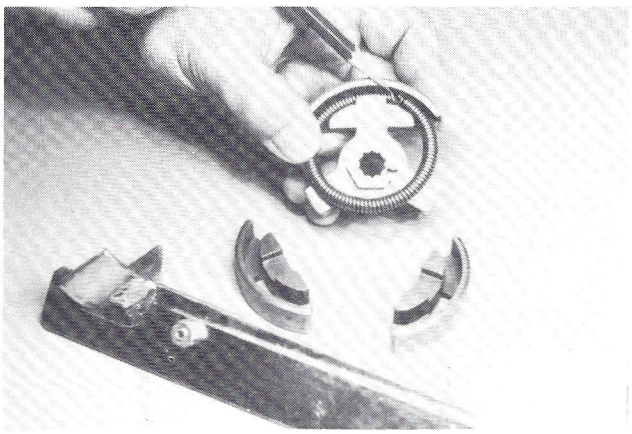
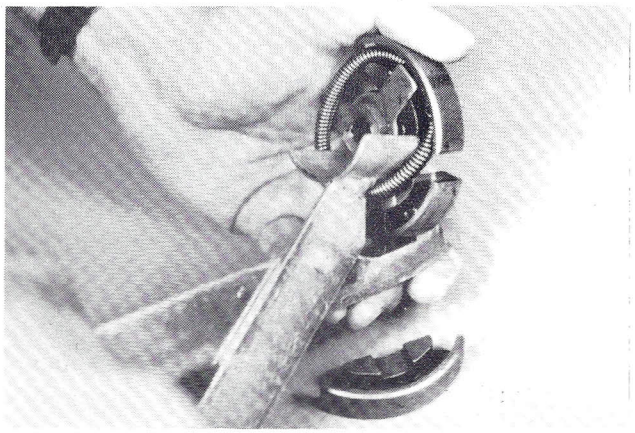
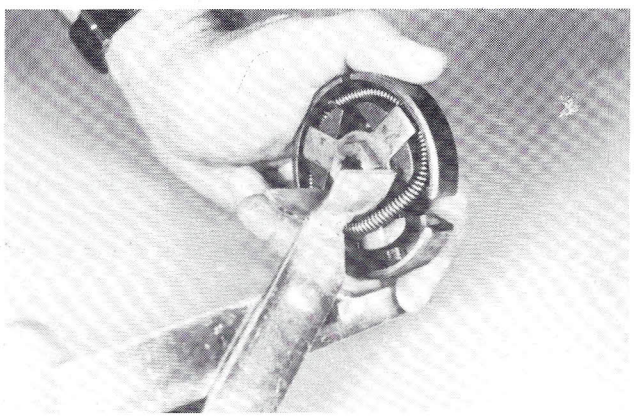


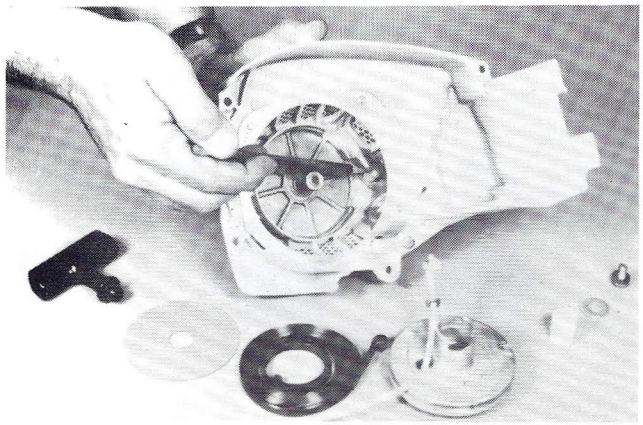
Illustration of the clutch assembly used on models P41, P51 and P61S. As shown, the hooked end of the clutch spring is nested inside the clutch shoe. Install the clutch driver to captivate the spring inside the first shoe during assembly. NOTE: The 3/4" hex nut on the clutch driver faces to the OUTSIDE.



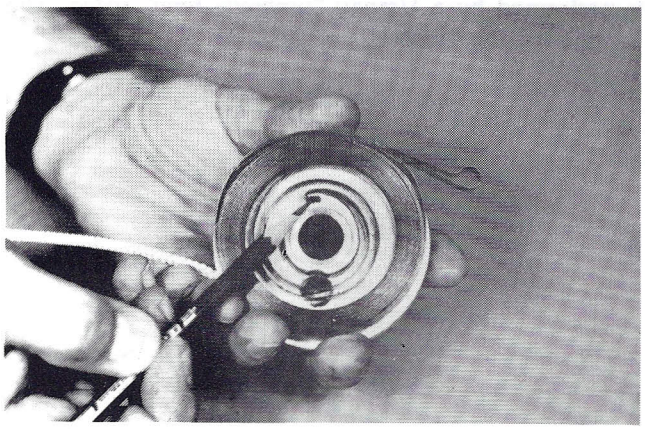
Using clutch pliers, P/N 475212, offer the second shoe to the driver. The "tang" on one side of the clutch pliers fits into a slot behind the clutch shoe, preventing the shoe from closing on the driver. The semi-circular side of the clutch assembly tool will push against the clutch spring. Squeeze the pliers together while rotating the clutch assembly in your hand, roll the spring into its proper location.



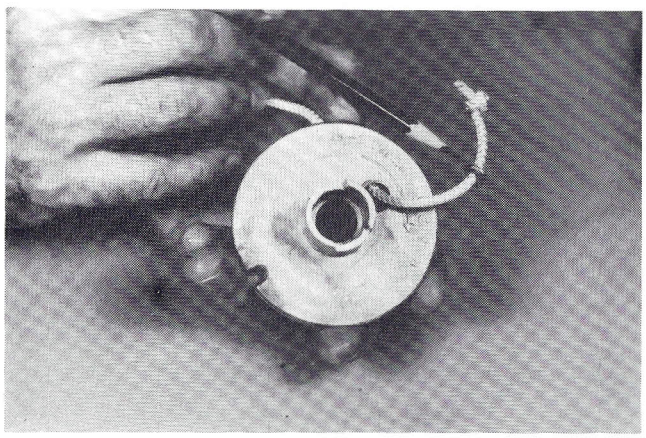
The same procedure applies for installing the 3rd clutch shoe.



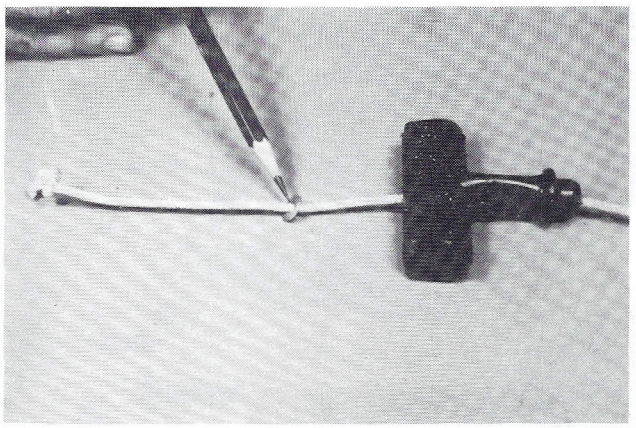
A complete starter housing assembly is shown dismantled. The nylon bushing that is located on the starter bridle spring retainer post is being pointed out.



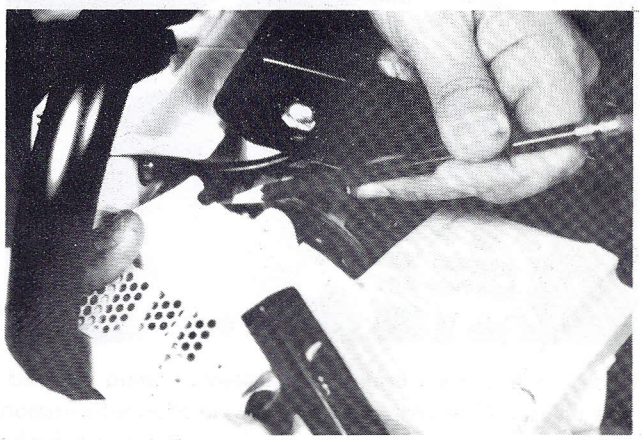
NOTE that the hooked end of the spring is fully engaged in a nest in the hub of the starter pulley. It is important to ensure that the hook is engaged PRIOR to pre-tensioning the starter.



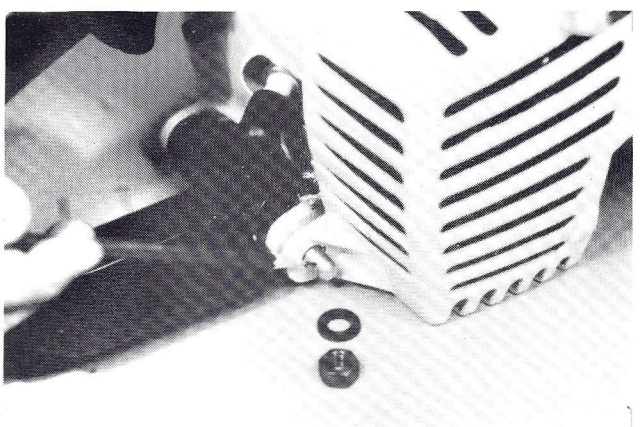
Be sure that curved "knot retainer" washer, P/N 432135, IS PLACED ON THE PULLEY END OF THE STARTER ROPE PRIOR TO INSTALLATION. NOTE: Refer to SB 1007 of Dec. 79 for information.



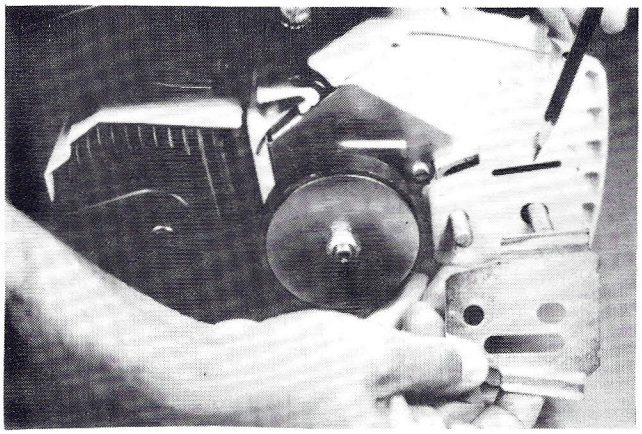
On model FM ensure that the small washer, P/N 431672, IS INSTALLED ON THE HANDLE END OF THE STARTER CORD DURING ASSEMBLY. The purpose of the washer is to prevent the starter cord knot from pulling through the starter handle.



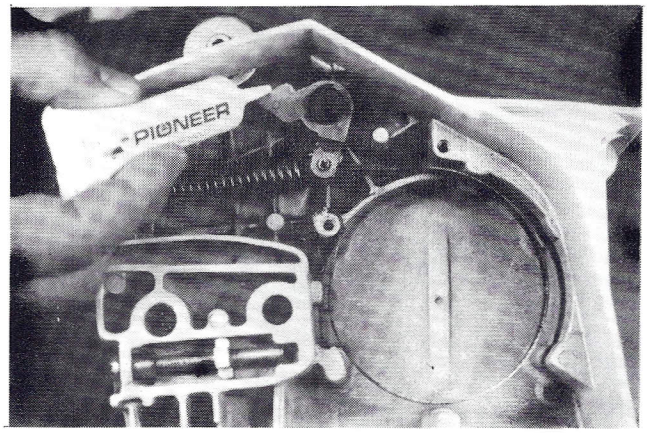
When installing the starter cover on FM thru P61 make sure that the fuel line is placed in the cut-out provided in the blower cover to prevent the line from being pinched.



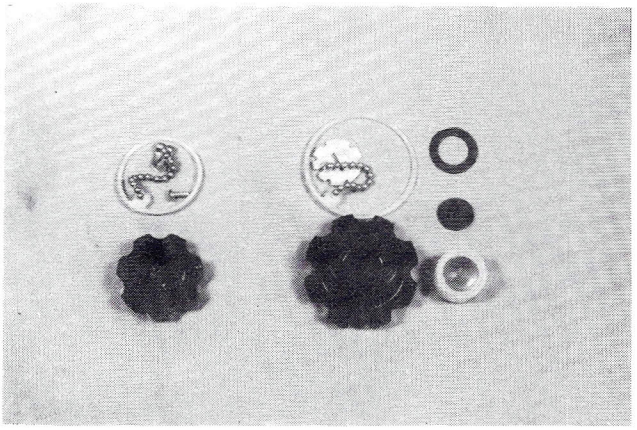
The West Coast muffler guard, standard equipment on model P61, is shown here. This muffler guard will also retro-fit model P51, P50. When using the West Coast cover the lower right rear shock mount screw is replaced by a special stud, P/N 432101, provided in #475452 and #475446 brake and standard kit respectively.



Models FM thru P61 use the same guide plates. NOTE: The inner guide plate is identified by the narrow oil slot.



Illustrates the chain brake cam assembly being greased. The Owner/Operator manual gives detailed information on the maintenance and operation of the chain brake assembly.



The oil cap has a sintered plug which functions as a two-way vent to atmosphere. The gas cap is vented one-way ONLY, allowing air to enter the tank. This function is performed by a Vernay "umbrella type" valve. The venting systems must be kept clean.

PIONEER

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