

INSTRUCTION MANUAL

Troubleshooting Chart

SYMPTOM	POSSIBLE CAUSE (S)	CORRECTIVE ACTION
Pump does not Develop full pressure	<ol style="list-style-type: none"> 1. System relief valve set too low or leaking 2. Oil temp is too high 3. Pump is worn out 4. Double acting cylinder piston seals are cut or worn out 	<ol style="list-style-type: none"> 1. Check system relief valve for proper setting with pressure gauge in outlet line 2. Let oil cool below 140°F 3. Replace worn parts or pump 4. Replace or repair cylinder
Motor won't start	<ol style="list-style-type: none"> 1. Lose connection 2. Circuit breaker tripped 3. Voltage drop 4. Seized pump 	<ol style="list-style-type: none"> 1. Check wiring 2. Reset circuit breaker 3. Use heavier gauge wire 4. Replace pump
Will not pump oil (motor runs but cylinder does not move, or moves slow)	<ol style="list-style-type: none"> 1. No oil in reservoir 1. Check oil level, refill 2. Motor rotating wrong direction 2. Change rotation of prime mover or Reverse inlet and outlet hoses 3. Oil level low 3. Add oil as needed 4. Suction strainer is clogged 4. Clean suction strainer 5. Double acting cylinder piston seals are cut or worn out 5. Replace or repair cylinder 6. Reservoir breather is dirty or clogged 6. Clean reservoir breather and reinstall 	
Pump motor unit is noisy	<ol style="list-style-type: none"> 1. Low oil level 1. Add oil as needed 2. Air in system 2. Bleed air from highest fitting in system by loosening fitting very slightly and operating unit bubbling of air stops, then tighten. 3. Suction strainer or inlet filter is clogged 	<ol style="list-style-type: none"> 3. Clean suction strainer or inlet filter

Description

Our two stage, hi-low, external gear hydraulic pump are designed to be direct- driven by gas engines or electric motors. They are suited for use in log splitters and other applications, such as: hydraulic lifts, platform lifts, die tables, automatic hoists, trash compactors, bench presses, machine tool lube systems, filter systems, damping devices, and transfer systems, etc. They are ideal for press-type applications requiring fast approach/retract speeds and slower peak actuator work speeds because of horsepower limitations or safety constraints.

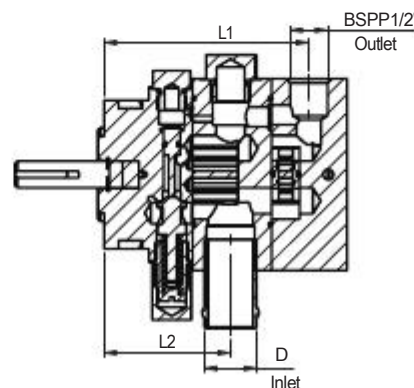
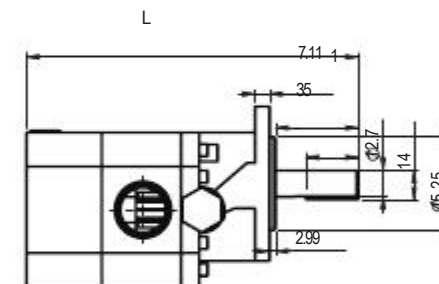
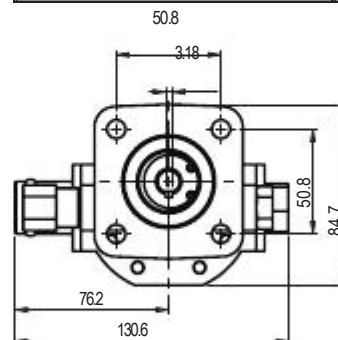
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Unpacking

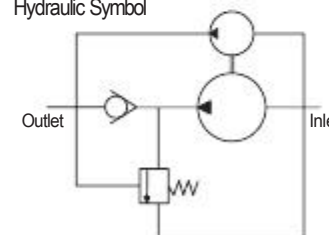
Due to cast iron construction. Very little damage can occur during transit. Do not remove the plastic shipping plugs from the ports until ready for installation. This will keep dirt or foreign material from entering the system.

Specifications

Model	GPCBN080PC	GPCBN110PC	GPCBN160PC
Stage	2	2	2
Max. Operating Speed	3600	3600	3600
Construction	"Front End: Iron Body: Aluminum"	"Front End: Iron Body: Aluminum"	"Front End: Iron Body: Aluminum"
Unloader Valve Setting	44.82 bar	44.82 bar	44.82 bar
Mounting	4-Bolt 4F17	4-Bolt 4F17	4-Bolt 4F17
Shaft Diameter	12.7(mm)	12.7(mm)	12.7(mm)
Inlet	25.4(mm)	25.4(mm)	25.4(mm)
Outlet	1/2 BSPP	1/2 BSPP	1/2 BSPP
Pump Rotation	Clockwise	Clockwise	Clockwise



Hydraulic Symbol



Model	L(mm)	L1(mm)	L2(mm)
GPCBN080PC	154.2	95.2	61.2
GPCBN110PC	167.9	107.6	69.6
GPCBN160PC	180.7	122.1	84.1

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Performance Characteristics

Specification	Model		
	GPCBN080PC	GPCBN110PC	GPCBN160PC
Flow(l/min)	30	42	58
Displacement	Hi Pre(ml/r)	2.1	3.6
	Low Pre(ml/r)	6.3	8.8

When Outlet port pressure is under 650 PSI, Both stages are working and total displacement applies. Above 650 PSI, Only 2 nd stage displacement applies

WARNING

DISCONNECT POWER AND RELEASE ALL SYSTEM PRESSURE BEFORE SERVICING THIS EQUIPEMENT

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA)
2. Never exceed the maximum operating speed or pressure.
3. When using AC motors, ground the motor properly by wiring with a grounded, metal-dad raceway system, using a separate ground wire connected to bare metal of the motor frame, or other suitable means.
4. Guard all moving parts.

WARNING

RELEASE SYSTEM PRESSURE BEFORE SERVICING THIS EQUIPMENT.

5. Drain all liquids from the system before servicing.
6. Check hoses and connections for security before servicing.
7. Periodically check the pump and system components.
8. Provide a means of pressure relief for pumps whose discharge line can be shut off or obstructed.
9. Wear safety glasses at all times when working with pump.
10. Keep work area clean, uncluttered and properly lighted; replace all unused tools.
11. Keep visitors at a safe distance from the works area.
12. Make the workshop child-proof with padlocks, master switches, and by removing start keys.
13. Do not operate an engine in an enclosed area.
14. Do not spill gasoline on hot engine surfaces
15. Store gasoline only in an approved container.
16. Keep dirty and oily cleaning rags in a tightly closed metal container.
17. Check engine oil level before operating the engine.
18. Familiarize yourself with the controls and emergency shutdown procedures.
19. Never operate the equipment when you are fatigued.
20. All system components pressure ratings should be greater than maximum system pressure.
21. Put safety guards on all moving parts.
22. Keep all guards in place.

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Installation



CAUTION

Do not overtighten fittings and bolts-this can damage the pump

1. Assemble one coupling half to the engine/ motor and tighten the set screw.
2. Assemble the other coupling half loosely to the pump shaft.

Note: Drive key dimensions in Specification section of this manual.



CAUTION

Do not force coupling onto pump shaft. A snap ring inside pump may be damaged by forcing coupling.

3. Insert the rubber spider into engine/motor coupling half.
4. Bolt the pump loosely to 4-bolt footmounted pump adaptor.
5. Align the shafts to make sure they are on center with each other.



CAUTION

Misalignment with shafts may result in premature shaft seal failure.

6. Tighten the mounting bolts.
7. Mate the coupling halves together, allowing 1.59(mm) gap between halves.
8. Check the alignment again.



CAUTION

The gap in the coupling halves is to prevent end loading of the pump shaft.

9. Tighten the setscrew in the mating coupling halves.
10. Remove plastic shipping plugs from the inlet and outlet ports.
11. Squirt clean oil into pump for pre-lubrication and start-up.
12. Turn shaft coupling slowly to ensure proper shaft alignment and coupling installation.
13. Connect inlet line by slipping inlet hose over inlet tube and fasten with hose clamp.

NOTE: A few drops of oil on inlet tube beaded section will help ease the installation.

14. Keep inlet hose short and of adequate size to avoid pump cavitation.

NOTE: Cavitation is recognized by excessive pump noise.



CAUTION

Provide cooling for the hydraulic oil based on: duty cycle, pressure/flow, ambient temperature, oil and component maximum temperature specifications, and reservoir capacity.

15. Use a 1/2" NPT, high pressure fitting for the outlet port.

Use a good quality pipe joint compound (pipe dope) on all NPT Hydraulic fittings.



CAUTION

Flush all lines to ensure contaminants have been removed.



CAUTION

Do not use thread tape on NPT hydraulic fittings.



CAUTION

Do not overtighten NPT pressure fitting in pump. This could distort or crack the pump gear housing.

16. At initial start-up, turn the drive shaft several times by hand to prime.
17. Bleed all air from the system to prevent erratic operation.
18. After several cycles, check the reservoir oil level and refill as necessary.

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Operation

1. Check oil level before each use.
2. Follow operating instructions for engine or motor.

WARNING

DO NOT EXCEED THE PRESSURE RATINGS OF THE SYSTEM COMPONENTS A HYDRAULIC PRESSURE GAUGE IS RECOMMENDED IN THE HYDRAULIC CIRCUIT.

3. The unloading valve is adjustable up to 900 PSI by turning the adjusting screw clockwise.



CAUTION

Pressure gauge required when adjusting unloading valve.

NOTE: Increasing the unloading valve pressure will require increasing the pump drive horsepower. Factory preset, with a 400-900 PSI adjustment range.



CAUTION

If pump has not operated for an extended period of time, manually rotate pump shaft to prime and lubricate pump.

Maintenance

1. Keep the reservoir filled with hydraulic fluid.
NOTE: Use a good quality hydraulic oil.
2. Make frequent inspection of hydraulic fluid and change if contaminated.
3. To fill the reservoir with clean oil: Use a clean funnel fitted with a fine mesh wire screen. Do not use a cloth strainer. Most pump failure, valve malfunctions and short unit life can be traced directly to other foreign material (water, chips, lint, etc.) getting into, or already in, the hydraulic system.
4. Keep the unit clean of dirt and foreign materials.
5. Keep electrical connections clean.

Horizontal Engines



1.8hp LC152F

	LC152F
Engine Type	SV
Net Power (hp @ r/min)	1.8 @ 3600
Net Power (kW @ r/min)	1.35 @ 3600
Net Torque (Nm @ r/min)	3.3 @ 3000
Bore x Stroke (mm)	52 x 46
Displacement (cc)	97
Compression Ratio	5.6 : 1
Oil Capacity	0.45
Fuel Consumption	≤ 450 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1700 ± 150
Starting System	Recoil
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	270 x 270 x 345
Net Weight (kg)	9



2.1hp LC154F

	LC154F
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	2.1 @ 3600
Net Power (kW @ r/min)	1.6 @ 3600
Net Torque (Nm @ r/min)	4.5 @ 3000
Bore x Stroke (mm)	54 x 38
Displacement (cc)	87
Compression Ratio	8.0 : 1
Oil Capacity	0.35
Fuel Consumption	≤ 450 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1800 ± 150
Starting System	Recoil
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	310 x 260 x 305
Net Weight (kg)	10.5



3.5hp G120F

Model	G120F
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	3.5 @ 3600
Net Power (kW @ r/min)	2.6 @ 3600
Net Torque (Nm @ r/min)	7.3 @ 2500
Bore x Stroke (mm)	60 x 42
Displacement (cc)	118
Compression Ratio	8.5 : 1
Oil Capacity	0.6
Fuel Consumption	≤ 395 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	341 x 305 x 318
Net Weight (kg)	13



4.8hp G160F

Model	G160F
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	4.8 @ 3600
Net Power (kW @ r/min)	3.6 @ 3600
Net Torque (Nm @ r/min)	10.3 @ 2500
Bore x Stroke (mm)	68 x 45
Displacement (cc)	163
Compression Ratio	8.5 : 1
Oil Capacity	0.6
Fuel Consumption	≤ 395 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	362 x 312 x 335
Net Weight (kg)	15



5.5hp G200F

	G200F
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	5.5 @ 3600
Net Power (kW @ r/min)	4.1 @ 3600
Net Torque (Nm @ r/min)	12.4 @ 2500
Bore x Stroke (mm)	68 x 54
Displacement (cc)	196
Compression Ratio	8.5 : 1
Oil Capacity	0.6
Fuel Consumption	≤ 395 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	376 x 312 x 335
Net Weight (kg)	16



7hp G240F

	G240F
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	7.0 @ 3600
Net Power (kW @ r/min)	5.2 @ 3600
Net Torque (Nm @ r/min)	15.1 @ 2500
Bore x Stroke (mm)	73 x 58
Displacement (cc)	242
Compression Ratio	8.2 : 1
Oil Capacity	0.95
Fuel Consumption	≤ 374 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	430 x 380 x 410
Net Weight (kg)	24.5





9.5hp G340F

G340F	
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	9.5 @ 3600
Net Power (kW @ r/min)	7.1 @ 3600
Net Torque (Nm @ r/min)	21.6 @ 2500
Bore x Stroke (mm)	82 x 64
Displacement (cc)	337
Compression Ratio	8 : 1
Oil Capacity	1.1
Fuel Consumption	≤ 374 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	450 x 405 x 443
Net Weight (kg)	31



12hp G390F

G390	
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	12 @ 3600
Net Power (kW @ r/min)	9 @ 3600
Net Torque (Nm @ r/min)	26.5 @ 2500
Bore x Stroke (mm)	90 x 66
Displacement (cc)	420
Compression Ratio	8.3 : 1
Oil Capacity	1.1
Fuel Consumption	≤ 374 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	450 x 405 x 443
Net Weight (kg)	31



12hp G420F

G420	
Engine Type	Single cylinder, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	12 @ 3600
Net Power (kW @ r/min)	9 @ 3600
Net Torque (Nm @ r/min)	26.5 @ 2500
Bore x Stroke (mm)	90 x 66
Displacement (cc)	420
Compression Ratio	8.3 : 1
Oil Capacity	1.1
Fuel Consumption	≤ 374 g/kw h
Oil Consumption	≤ 6.8 g/kw h
Idle Speed	1450 ± 150
Starting System	Recoil / Electric start
Noise (≤ 7m)	70dBA
Dimensions (L x W x H mm)	450 x 405 x 443
Net Weight (kg)	31



19.7 hp V-Twin

LC2V78FD-1	
Engine Type	V-Twin, 4-stroke, OHV, forced air cooling
Net Power (hp @ r/min)	19.7 @ 3600
Net Power (kW @ r/min)	14.7 @ 3600
Net Torque (Nm @ r/min)	43.5 @ 2500
Bore x Stroke (mm)	78 x 71
Displacement (cc)	678
Compression Ratio	8.5 : 1
Fuel Consumption	≤ 360 g/kw h
Idle Speed	1500 ± 150
Speed Fluctuate Ratio	≤ 10%
Starting Mode	Electric
Dimensions (L x W x H mm)	510 x 400 x 450
Net Weight (kg)	43



