

POWERHORSE™

46851; 414cc Powerhorse Engine,
30 Gal. Stationary

M46851C

Gasoline Stationary Air Compressor Installation, Operation and Maintenance Manual

To the Owner:

Thank you for purchasing a Powerhorse Air Compressor. Your machine is designed for long life, dependability, and the top performance you demand! Please take time now to read through this manual so you better understand the machine's operation, maintenance and safety precautions. Everyone who operates this machine must read and understand this manual. The time you take now will prolong your machine's life and prepare you for its safe operation. Enjoy the exceptional performance of your Powerhorse Air Compressor, the industry leader!

The manufacturer reserves the right to make improvements in design and/or changes in specifications at any time without incurring any obligation to install them on units previously sold.

Quick Facts

Engine Oil	Engine is shipped without oil. Fill before starting. Use SAE 10W-30 motor oil.	
Pump Oil	Check pump oil level before starting. Use SAE 30W non-detergent pump oil (part # 4043).	
Air Filter	Replacement air filter part number is #35409.	
Maximum Pressure	Item #46851 maximum pressure = 175 psi	
Maintenance Schedule	Engine:	Oil: change after first 20 hours, then annually or every 100 hours. Spark Plug: clean every 100 hrs., replace annually or every 300 hrs. Air Filter: clean weekly, replace annually or every 1000 hrs. Refer to your Powerhorse engine owner's manual for further instructions.
	Tank:	Drain water daily.
	Compressor Pump:	Oil: change after first 50 hours, then every 3 months or 500 hours.

Read and understand all manuals before operating.

Any Questions, Comments, Problems or Parts Orders
Call Powerhorse Product Support 1-866-443-2576

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Safety

DEFINITIONS

DANGER!

WILL cause DEATH, SEVERE INJURY or substantial property damage.

WARNING!

CAN cause DEATH, SEVERE INJURY or substantial property damage.

CAUTION!

WILL or CAN cause MINOR INJURY or property damage.

GENERAL SAFETY PRECAUTIONS

- ALWAYS** wear eye protection when operating or servicing compressor.
- NEVER** operate where flammable or explosive liquids or vapors such as gasoline, natural gas and solvents are present.
- NEVER** remove, paint over, or deface decals. Replace any missing decals.
- NEVER** operate with guards or shields removed, damaged or broken.
- NEVER** operate indoors. This compressor is intended for outdoor use only. Avoid inhaling exhaust fumes, risk of asphyxiation. Exhaust fumes are deadly.
- NEVER** add fuel when the product is operating or hot.
- NEVER** directly inhale compressed air.
- NEVER** over-pressurize the receiver tank or similar vessels beyond design limits.
- NEVER** use a receiver tank or similar vessels that fail to meet the design requirements of the compressor.
- NEVER** drill into, weld or otherwise alter the receiver tank or similar vessels.
- NEVER** remove, adjust, bypass, change, modify or make substitutions for safety/relief valves, unloader valve or other pressure control related devices.
- NEVER** use air tools or attachments without first determining the maximum pressure recommended for that equipment.
- NEVER** point air nozzles or sprayers toward people or animals.
- NEVER** touch the compressor pump, engine or discharge tubing during or shortly after operation. These parts become hot.

BREATHING AIR PRECAUTION

Powerhorse air compressors are not designed, intended or approved for breathing air. Compressed air should not be used for breathing air applications unless treated in accordance with all applicable codes and regulations.

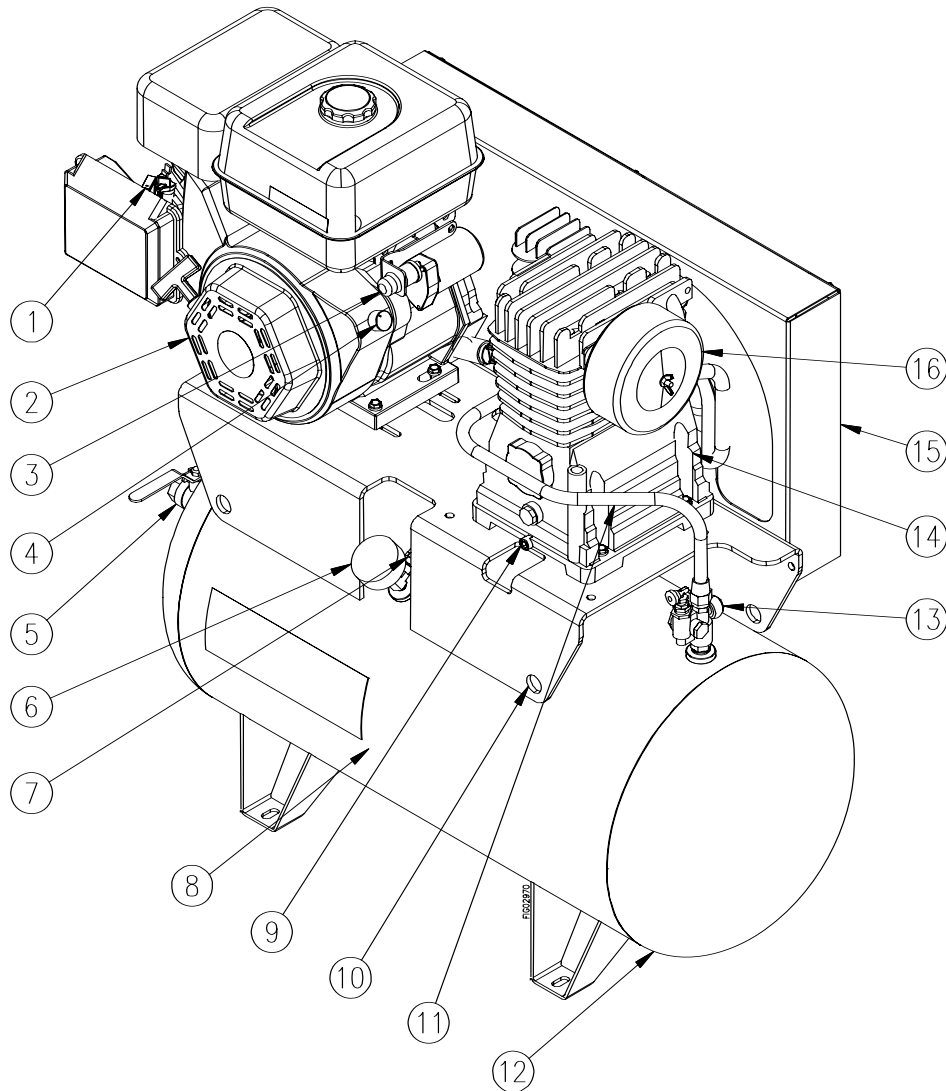
Receipt and Inspection

Before signing the delivery receipt, inspect for damage and missing parts. If damage or missing parts are apparent, make the appropriate notation on the delivery receipt, then sign the receipt. Immediately contact the carrier for an inspection. All material must be held in the receiving location for the carrier's inspection. Delivery receipts that have been signed without a notation of damage or missing parts are considered to be delivered "clear." Subsequent claims are then considered to be concealed damage claims. Settle damage claims directly with the transportation company.

If you discover damage after receiving the air compressor (concealed damage), the carrier must be notified within 15 days of receipt and an inspection must be requested by telephone with confirmation in writing. On concealed damage claims, the burden of establishing that the compressor was damaged in transit reverts back to the claimant.

Read the compressor nameplate to verify it is the model ordered, and read the motor nameplate to verify it is compatible with your electrical conditions. Make sure electrical enclosures and components are appropriate.

Machine Component Identification



1. **Engine Control** - Location of choke, engine speed and fuel valve.
2. **Engine** - Engine is NOT shipped with oil. Refer to engine owners' manual for proper viscosity and capacity of oil for your engine.
3. **Start Switch** - Make sure switch is at "ON" position, push the start switch to crank engine.
4. **On/Off Switch** - Make sure switch is at "ON" position when starting engine with the recoil.
5. **Ball Valve** - 3/4" NPT.
6. **Pressure Gauge** - Easy to read liquid filled gauge.
7. **ASME Safety Valve** - This valve automatically releases air if the tank pressure exceeds the preset maximum.
8. **Air Receiver** - 30 gallon ASME certified tank.
9. **Pump Oil Drain** - Drain the pump oil from this plug.
10. **Lifting Eyes** - Also use as tie down locations.
11. **Discharge Tube** - This tube carries compressed air from the pump to the check valve. This tube becomes very hot during use. To avoid the risk of severe burns, never touch the discharge tube.
12. **Drain Valve** - Location of tank drain valve. Drain tank daily after each use.
13. **Unloader** - Lift knob to relieve pressure when starting the engine.
14. **Air Compressor Pump** - Air compressor pump is shipped with oil. Remove shipping plug and replace with oil fill plug in manual bag.
15. **Belt Guard** - Covers the belt, motor pulley and flywheel. **NEVER** operate compressor without belt guard.
16. **Compressor Air Filter** - Make sure your air filter is clean and particle free. See pump exploded view for replacement filter part number.

Installation

SELECTING A LOCATION

Select a well-lit area with plenty of space for proper cooling airflow and accessibility. Locate the compressor at least 15 inches (38 cm) from walls.

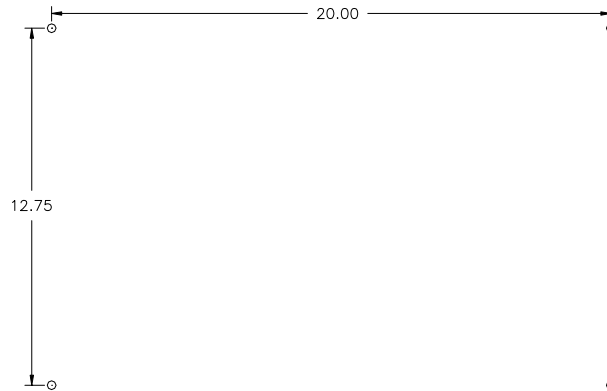
Temperature. Ideal operating temperatures are between 40° and 100°F (4° and 37° C). If temperatures consistently drop below 32° F (0° C), you must protect safety/relief valves and drain valves from freezing.

CAUTION!

NEVER operate in temperatures below 15° F (-9°C) or above 125° F (52°C).

Humid Areas. In frequently humid areas, moisture may form in the pump and produce sludge in the lubricant, causing running parts to wear out prematurely. Excessive moisture is especially likely to occur if the compressor is located in an unheated area that is subject to large temperature changes.

Step 1. Mounting Dimensions



Step 2. Connecting a Battery

Your air compressors engine is equipped with an electric starter, which requires the installation of a 12-volt battery. The battery is to be supplied by the customer. Follow the instructions detailed below for connecting and disconnecting the battery.

⚠️ WARNING: Battery hazards

Batteries are hazardous because they contain caustic acid, can emit explosive gases, and can cause electric shock. Caution must be exercised when making connections to a battery to avoid shock and contact with the acid, and to prevent any sparking that could lead to an explosion.

ALWAYS follow the general battery safety rules and instructions listed below.

General Battery Safety Rules

- ALWAYS use eye protection when handling batteries.
- NEVER smoke or work near sparks or other sources of ignition.
- NEVER touch both battery terminals at the same time with your hand or any non-insulated tools.
- If battery acid contacts skin or clothing, flush immediately with water and neutralize with baking soda.

Connecting the battery

Always connect the cables in the following sequence to avoid possible shock:

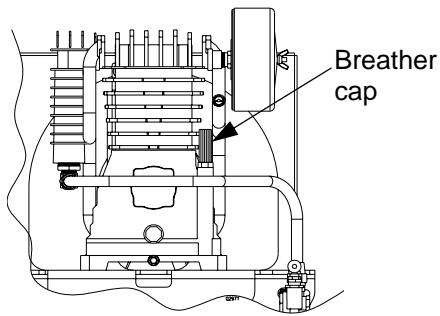
1. The Battery cables must be a minimum of 10 AWG.
2. Connect the **positive (+)** cable to the start solenoid on the engine.
3. Connect the **negative (-)** cable to one of the engine bolts.
4. Connect the **positive (+)** cable to the **positive (+)** terminal of the battery.
5. Then connect the **negative (-)** cable to the **negative (-)** terminal of the battery.

Disconnecting the battery

Always disconnect cables in the following sequence to avoid possible shock.

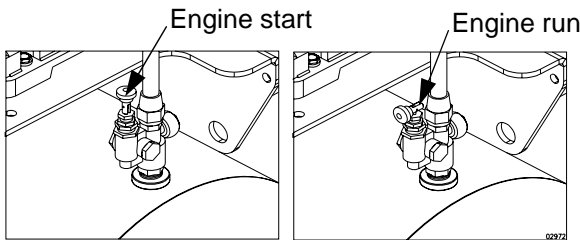
1. First, disconnect the **negative (-)** cable from the **negative (-)** terminal of the battery.
2. Next, disconnect the **positive (+)** cable from the **positive(+)** terminal of the battery.

Operation



INITIAL START-UP

1. Pump is shipped with oil. Remove the oil cap and check pump oil level. Add SAE 30 non-detergent pump oil (Part #4043), if necessary. Hand tighten breather cap.
2. Turn pressure relief knob to engine start position.



3. The engine is shipped without oil. Refer to the engine manual for oil capacity and viscosity recommendations.
4. Turn the gasoline line valve to the ON position.
5. For cold engine, move choke lever to full choke position. To restart a warm engine, move choke lever to half choke or to RUN position.
6. Start the engine:
 - A) Using electric start –
Turn the engine switch to the ON position. Push and hold the START button until the engine starts.
NOTE: *If the engine fails to start after 5 seconds, release the START button and wait 10 seconds before attempting to start again. Cranking the electric starter for more than 5 seconds continuously can overheat and damage the starter motor.*
Release the START button when the engine starts.
 - B) Using recoil start –
Turn the engine switch to the ON position. Pull the starter grip lightly until you feel resistance, then pull the starter cord out briskly and rapidly.
Allow starter cord to return slowly.
7. When engine starts, move choke lever to RUN position.
8. Once the engine has started, move the pressure relief knob to the engine run position.
9. **CAUTION!** Unusual noise or vibration indicates a problem. Do not continue to operate until you identify and correct the source of the problem.

10. **CAUTION!** Do not attach air tools to open end of the hose until start-up is completed and the unit checks out OK.
11. Run the unit for 30 minutes, with ball valve open, to break in pump parts.
12. Close the ball valve to shut off airflow. The compressor is now ready for use.
13. After 50 hours of operation change the compressor oil.

WARNING!

Never disconnect threaded joints with pressure in the tank.

NOTE: Reduce tank pressure below 10 psi, then drain moisture from tank daily to avoid tank corrosion. Drain moisture from tank by opening the drain petcock located at the bottom of the tank.

COMPRESSOR LUBRICATION

CAUTION! Do not operate without lubricant or with inadequate lubricant. Use of compressor without lubricant or inadequate lubricant voids all warranties.

Synthetic Lubricants

Synthetic lubricants are recommended after 50-hour break-in. Compressor life is greatly increased with the use of synthetic lubricants. **CAUTION!** If you will be using synthetic lubricant, all downstream piping material and system components must be compatible.

Suitable Viton®, Teflon®, Epoxy (Glass Filled), Oil Resistant Alkyd, Fluorosilicone, Fluorocarbon, Polysulfide, 2-Component Urethane, Nylon, Delrin®, Celcon®, High Nitrile Rubber (Buna N. NBR more than 36 Acrylonite), Polyurethane, Polyethylene, Epichlorohydrin, Polyacrylate, Melamine, Polypropylene, Baked Phenolics, Epoxy, Modified Alkyds

(® indicates trademark of DuPont Corporation)

Not Recommended

Neoprene, Natural Rubber, SBR Rubber, Acrylic Paint, Lacquer, Varnish, Polystyrene, PVC, ABS, Polycarbonate, Cellulose Acetate, Latex, EPR, Acrylics, Phenoxy, Polysulfones, Styrene Acrylonitrile (San), Butyl

Alternate Lubricants. You may use petroleum-based lubricant that is premium quality, does not contain detergents, contains only anti-rust, anti-oxidation, and anti-foam agents as additives, has a flashpoint of 440°F (227°C) or higher, and has an auto-ignition point of 650°F (343°C) or higher. See the petroleum lubricant viscosity table below. The table is intended as a general guide only. Heavy duty operating conditions require heavier viscosities. Refer specific operating conditions to Powerhorse Product Support at 1-866-443-2576

Temperature around Compressor	Viscosity Grade	
	ISO	SAE
Below 40°F (4°C)	60	20
40°F to 80°F (4°C to 27°C)	100	30
80°F to 100°F (27°C to 38°C)	150	40

Pump Capacities.

Refer to the following table for crankcase capacity

Item #	Crankcase capacity
46851	48 oz

Maintenance

WARNING! Disconnect spark plug wire from spark plug and release air pressure from system before performing maintenance.

NOTE: All compressed air systems contain maintenance parts (e.g. lubricating oil, filters, separators) which are periodically replaced. These used parts may be, or contain, substances that are regulated and must be disposed of in accordance with local, state, and federal laws and regulations.

NOTE: Take note of the position and locations of parts during disassembly to make reassembly easier. The assembly sequences and parts illustrated may differ for your particular unit.

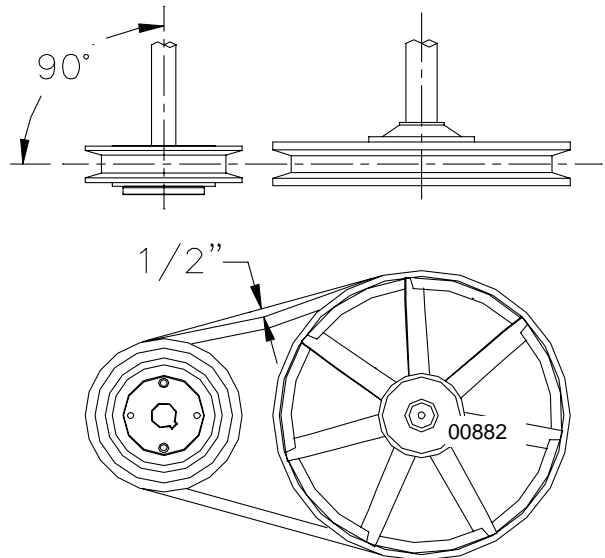
Daily or before each operation	<ul style="list-style-type: none"> •Check lubrication levels. Fill as needed. •Drain receiver tank condensation. •Check for unusual noise or vibration. •Ensure belt guards and covers are securely in place. •Ensure area around compressor is free from rags, tools, debris, and flammable or explosive materials.
Weekly	<ul style="list-style-type: none"> •Check safety/relief valves by pulling rings. Replace safety/relief valves that do not operate freely. •Inspect air filter element. Clean if necessary.
Monthly	<ul style="list-style-type: none"> •Inspect for air leaks. Squirt soapy water around joints during compressor operation and watch for bubbles. Tighten fittings if necessary. •Clean exterior.
3 months or 500 hours	<ul style="list-style-type: none"> •Change petroleum lubricant while crankcase is warm.
12 months or 1000 hours	<ul style="list-style-type: none"> •Replace air filter element.

DRIVE BELT

Belts will stretch in normal use. Properly adjusted, a 5 pound force applied to the belt between the motor pulley and the pump will deflect the belt about 1/2".

TO ADJUST DRIVE BELT:

1. Remove belt guard.
2. Loosen the four fasteners holding the engine to the compressor.
3. Shift the engine in the proper direction. The belt must be properly aligned when adjustment is made.
4. To align belt, visually center engine pulley to compressor pulley.
6. If necessary, move the pulley on the engine shaft.
7. Check for proper belt tension (see diagram).
8. Tighten the four fasteners holding the engine to the top plate.
9. Attach belt guard.

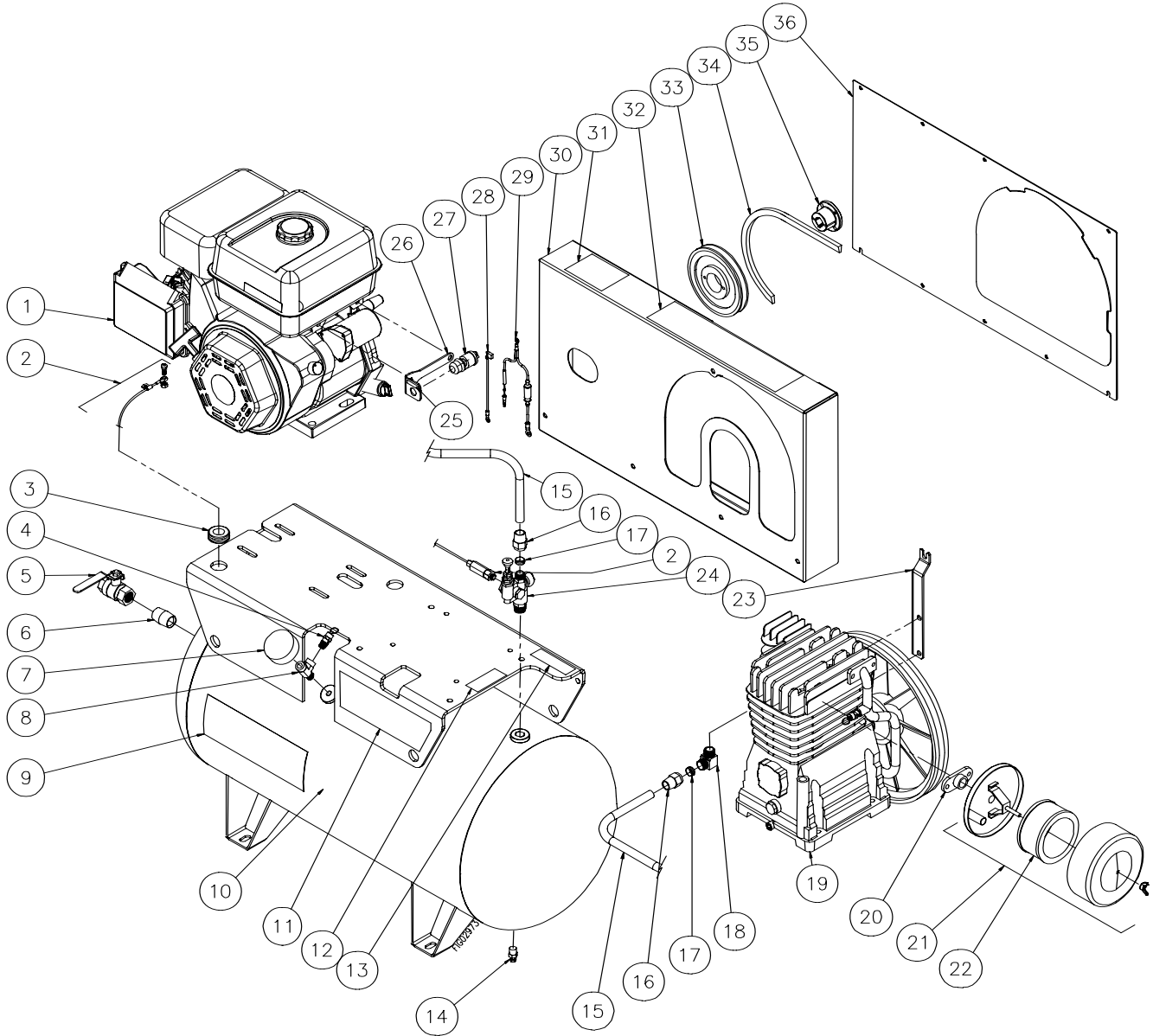


Kits and Service Parts

Air filter: Part #35409

Non-detergent Oil: Part #4043

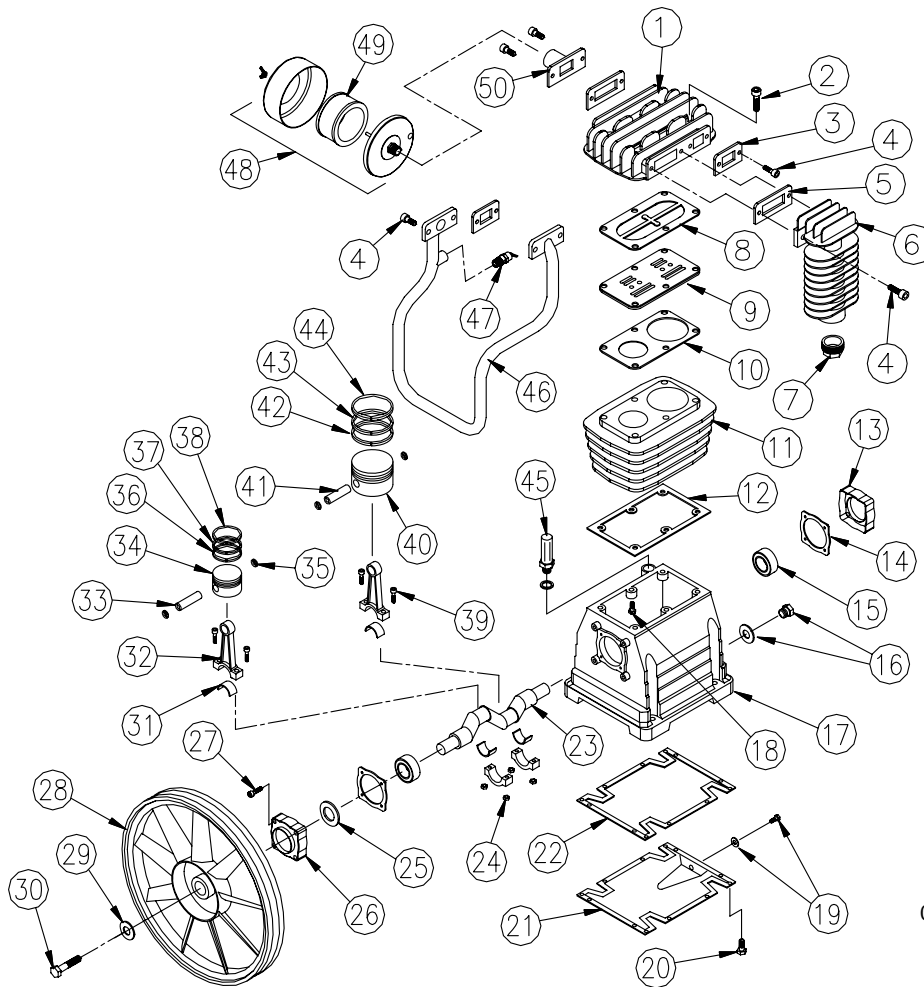
Exploded View 46851 - Rev. C



Ref	Description	Part #	Qty
1	Engine, Powerhorse 414cc	785560	1
2	Throttle control	777868	1
3	Grommet	777146	1
4	Safety valve, 200 psi	35121	1
5	3/4" ball valve	35442	1
6	3/4" Closed nipple	780840	1
7	Air gauge, liquid filled	34699	1
8	1/4" NPT street tee	780433	1
9	Powerhorse decal	780307	1
10	30 Gallon receiver tank	780797	1
11	Operation instr. decal	36030	1
12	Warning hot decal	35064	1
13	Rotating equip. decal	35189	1
14	Drain valve	779577	1
15	Discharge tube	780837	1
16	5/8" comp. nut	34724	2
17	5/8" comp. sleeve	34723	2
18	5/8" comp. elbow	34937	1

Ref	Description	Part #	Qty
19	Pump, B4900	779102	1
20	Intake manifold	35604	1
21	Air filter assembly	35603	1
22	Air filter	35409	1
23	Belt guard bracket	34785	1
24	Unloader valve	35626	1
25	Push To Start decal	780882	1
26	Switch bracket	780881	1
27	Start switch	30194	1
28	Wire assembly	780872	1
29	Wire assembly	780871	1
30	Belt guard	780492	1
31	CO warning decal	39259	1
32	Warning decal	34782	1
33	Sheave, AK59	777791	1
34	Belt, A60	37174	1
35	Bushing, H x 1"	777790	1
36	Belt guard cover	780493	1

779102 Pump Assembly

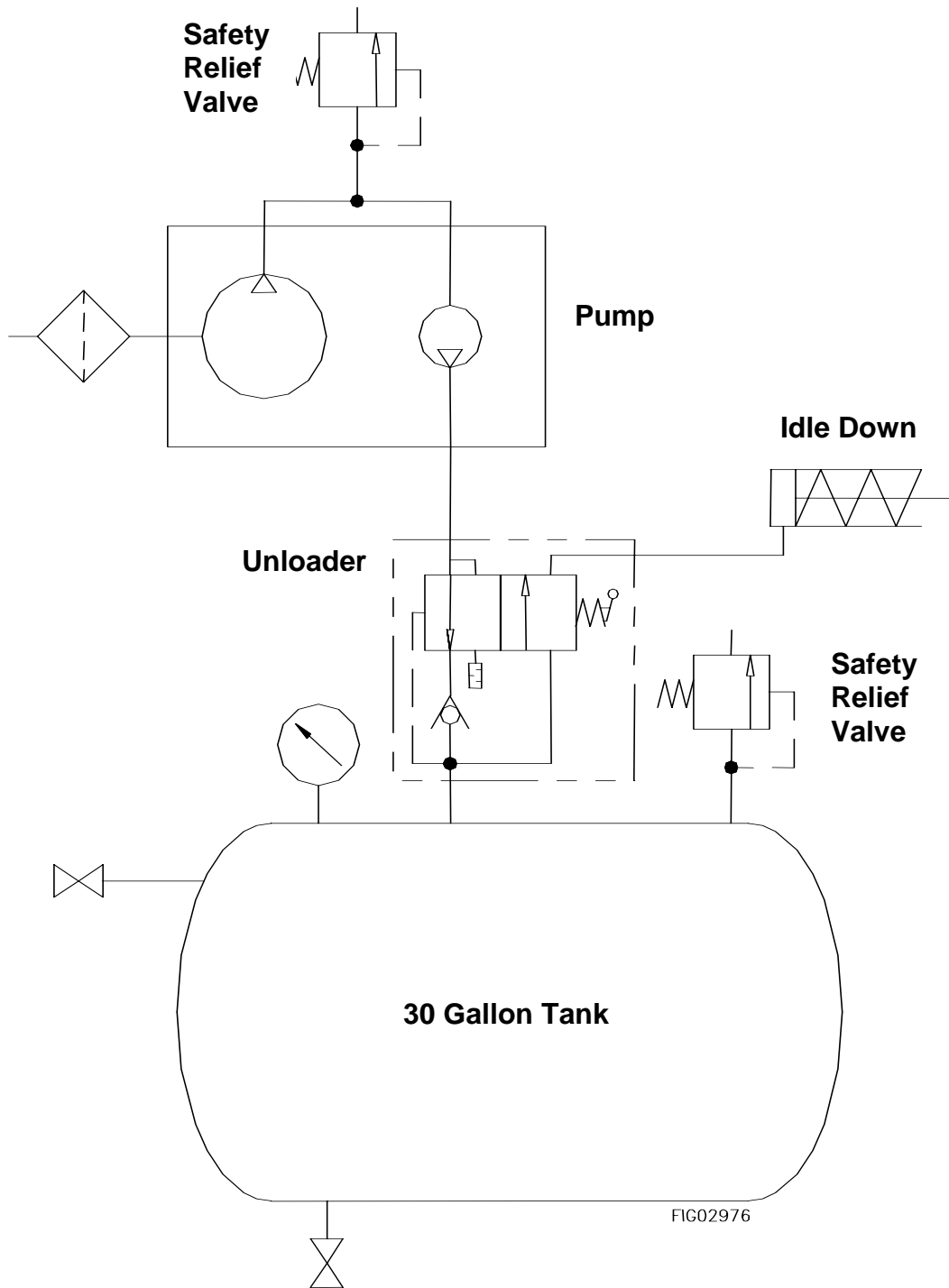


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Item	Description	Part #	Qty
1	Pump Head	AB4961400	1
2	Head Bolt (M8 x 55mm SHCS)	AB9101744	6
3	Intercooler Gasket	AB4650600	2
4	Intercooler/Aftercooler Bolt (M8 x 20mm SHCS)	AB9101254	8
5	Gasket	AB3970200	2
6	Aftercooler	AB2070100	1
7	Reducer	AB9050282	1
8	Head Gasket	AB4650400	1
9	Valve Plate Assembly	AB4940050	1
10	Cylinder Gasket	AB4950300	1
11	Cylinder, Cast Iron Sleeve	AB4930000	1
12	Frame Gasket	AB4950200	1
13	Cover N.D.E.	AB2060690	1
14	Bearing Cover Gasket	AB2050500	2
15	Bearing	AB9170010	2
16	Oil Sight Glass	AB9022001	1
17	Crankcase	AB4960101	1
18	Cylinder Bolt	AB9107254	6
19	Crankcase Plug	AB9101164	1
20	Crankcase Bolt (M5 x 15 HHCS)	AB9114271	12
21	Crankcase Pan	AB4961301	1
22	Crankcase Gasket	AB4950101	1
23	Crankshaft	AB4961200	1
24	Nut	AB9128234	4
25	Oil Seal	AB9163010	1
26	Cover D.E.	AB2060590	1

Item	Description	Part #	Qty
27	Cover Bolt (M6 x 15 SHCS)	AB9101094	8
28	Flywheel, 350 mm	AB3600100	1
29	Flywheel washer	AB9004008	1
30	Screw, Reverse Thread	AB9110014	1
31	Half Bearing	AB9013011	4
32	Connecting Rod	AB4011101	2
33	Wrist Pin	AB4621200	1
34	H.P. Piston, Aluminum	AB4621100	1
35	Circlip	AB9140050	4
36	Piston Ring ROF	AB9020086	2
37	Piston Ring ROS	AB9020053	1
38	Piston Ring AC	AB9020023	1
39	Rod Bolt	AB9106244	4
40	L.P. Piston, Aluminum	AB4922100	1
41	Wrist Pin	AB4922200	1
42	Piston Ring ROF	AB9020057	1
43	Piston Ring ROS	AB9020056	1
44	Piston Ring AC	AB9020055	1
45	Breather Cap	AB9024010	1
46	Intercooler	AB4662000	1
47	Safety Valve	AB9049064	1
48	Air Filter Assembly	35603	1
49	Air Filter	35409	1
50	Intake Manifold	35604	1
	Complete Gasket Kit	AB4950055	1

Pneumatic Schematic Diagram



Troubleshooting

This section provides a list of the more frequently encountered compressor malfunctions, their causes and corrective actions. Some corrective actions can be performed by the operator or maintenance personnel, and others may require assistance of a qualified electrician or Service Center.

PROBLEM	POSSIBLE CAUSE
Engine does not start.	A, B, C, D, E
Air delivery drops off.	H, I, J, L, M, N, P
Compressor does not come up to speed.	F, G, J, K
Compressor is slow to come up to speed.	F, G, J, K, L
Compressor will not unload cycle.	H, L, N, P
Compressor will not unload when stopped.	H, L, N, P
Excessive starting or stopping.	N, Q, S
Moisture in crankcase, "milky" substance in oil.	R
Oil in discharge air.	T
Safety/relief valve "pops".	L, M, N
Low interstage pressure.	W
High interstage pressure.	V

POSSIBLE CAUSE	POSSIBLE SOLUTION
A.) Low Oil Shutdown	Fill engine with the adequate amount of oil.
B.) Cold Engine	Choke engine to start.
C.) No Fuel	Add gas to engine. Make sure fuel shutoff valve is open
D.) Engine not turned ON	Place ON/OFF switch in the ON position.
E.) Spark plug wire not attached	Attach spark plug wire to spark plug.
F.) Compressor viscosity too high for ambient temperature.	Drain existing lubricant and refill with proper lubricant.
G.) Belt tension too tight or sheaves not aligned.	Check tension/ alignment.
H.) Air leaks in discharge piping.	Check tubing connections, Tighten joints or replace as required.
I.) Compressor components leaky, broken, loose.	Inspect components. Clean or replace as required.
J.) Loose flywheel or motor pulley, excessive end play in motor shaft or loose drive belts.	Check flywheel, motor pulley, and crankshaft drive belt tension/alignment. Replace or repair as required.
K.) Leaking check valve or check valve seat blown out.	Replace check valve.
L.) Clogged or dirty inlet and/or discharge line.	Clean or replace.
M.) Defective safety/relief valve.	Replace.
N.) Pressure switch unloader leaks or does not work.	Realign stem or replace.
O.) Inadequate ventilation around flywheel.	Relocate compressor for better air flow.
P.) Leaking, broken or worn inlet unloader parts at check valve.	Inspect parts and replace as required.
Q.) Excessive condensation in receiver tank.	Drain receiver tank.
R.) Detergent lubricant in crankcase.	Replace with proper lubricant.
S.) Light duty cycle.	Increase duty cycle.
T.) Lubricant level too high.	Drain excess lubricant.
U.) Worn cylinder finish.	Deglaze cylinder with 180 grit flex-hone.
V.) Low pressure inlet valve leaking.	Inspect, clean or repair as required.
W.) High pressure inlet valve leaking.	Inspect, clean or repair as required.

Any Questions, Comments, Problems or Parts Orders
Call Powerhorse Product Support 1-866-443-2576

Limited Warranty

Dear Valued Customer:

The Powerhorse Product you just purchased is built with the finest material and craftsmanship. Use this product properly and enjoy the benefits from its high performance. By purchasing a Powerhorse product, you show a desire for quality and durability. Like all mechanical equipment this unit requires a due amount of care. Treat this unit like the high quality piece of machinery it is. Neglect and improper handling may impair its performance. Please thoroughly read the instructions and understand the operation before using your product.

Limited Warranty

Powerhorse shall warranty any piece of equipment manufactured, or parts of equipment manufactured, to be free from defects in material or workmanship for a period of 2 years for noncommercial/nonrental use and a period of 90 days for commercial/rental use from the date of purchase by user.

Powerhorse shall warranty any wear item, including, but not limited to, valves, seals, pump diaphragms, hoses, and filter elements to be free from defects in material or workmanship for a period of 90 days from the date of purchase by user. This warranty applies to the original purchaser of the equipment and is non transferable. Verification of purchase is the responsibility of the buyer. Parts will be replaced or repaired at no charge, except when the equipment has failed due to lack of proper maintenance. Any misuse, abuse, alteration or improper installation or operations will void warranty. Determining whether a part is to be replaced or repaired is the sole decision of Powerhorse.

NOTE: Some services performed by parties other than Powerhorse may void warranty.

This warranty covers parts only. It will not provide for replacement of complete products due to defective parts. Components not manufactured by Powerhorse are guaranteed by their manufacturer and can be serviced at factory-authorized locations near you. Any costs incurred due to replacement or repair of items outside of a Powerhorse approved facility is the responsibility of the buyer and not covered under warranty. Powerhorse can supply you with the service center location in your area.

This warranty specifically excludes the following; failure of parts due to damage caused by accident, fire, flood, windstorm, acts of God, applications not approved by Powerhorse in writing, corrosion caused by chemicals, use of replacement parts which do not conform to manufacturer's specifications, and damage caused by vandalism. Additional exclusions: loss of running time, inconvenience, loss of income, or loss of use, including any implied warranty of merchantability of fitness for a specific use.

Warranty does not cover items subject to normal wear such as tires, receptacles or any part subject to direct physical contact by the public. This warranty does not cover any personal injury or damage to surrounding property caused by failure of any part.

This warranty is in lieu of any other warranty expressed or implied and Powerhorse assumes no other responsibility or liability outside that expressed within this warranty.

Please fill in the following information and have it on hand when you call in on a warranty claim.

Customer Number: _____

Date of Purchase: _____

Powerhorse Serial Number: _____

Item Number: _____



POWERHORSE™

Manufactured by
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2800 SouthCross Drive West
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