



M36029K.1

45938; 13 HP Honda, 27.4 PSC, 30 Gal. Stationary Tank

Gasoline Stationary Air Compressor Installation, Operation and Maintenance Manual

To the Owner:

Thank you for purchasing a NorthStar 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 NorthStar 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 # 35605).	
Air Filter	Replacement air filter part number is #35409.	
Maximum Pressure	Item #45938 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.
	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 NorthStar Product Support 1-800-270-0810

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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

NorthStar 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.

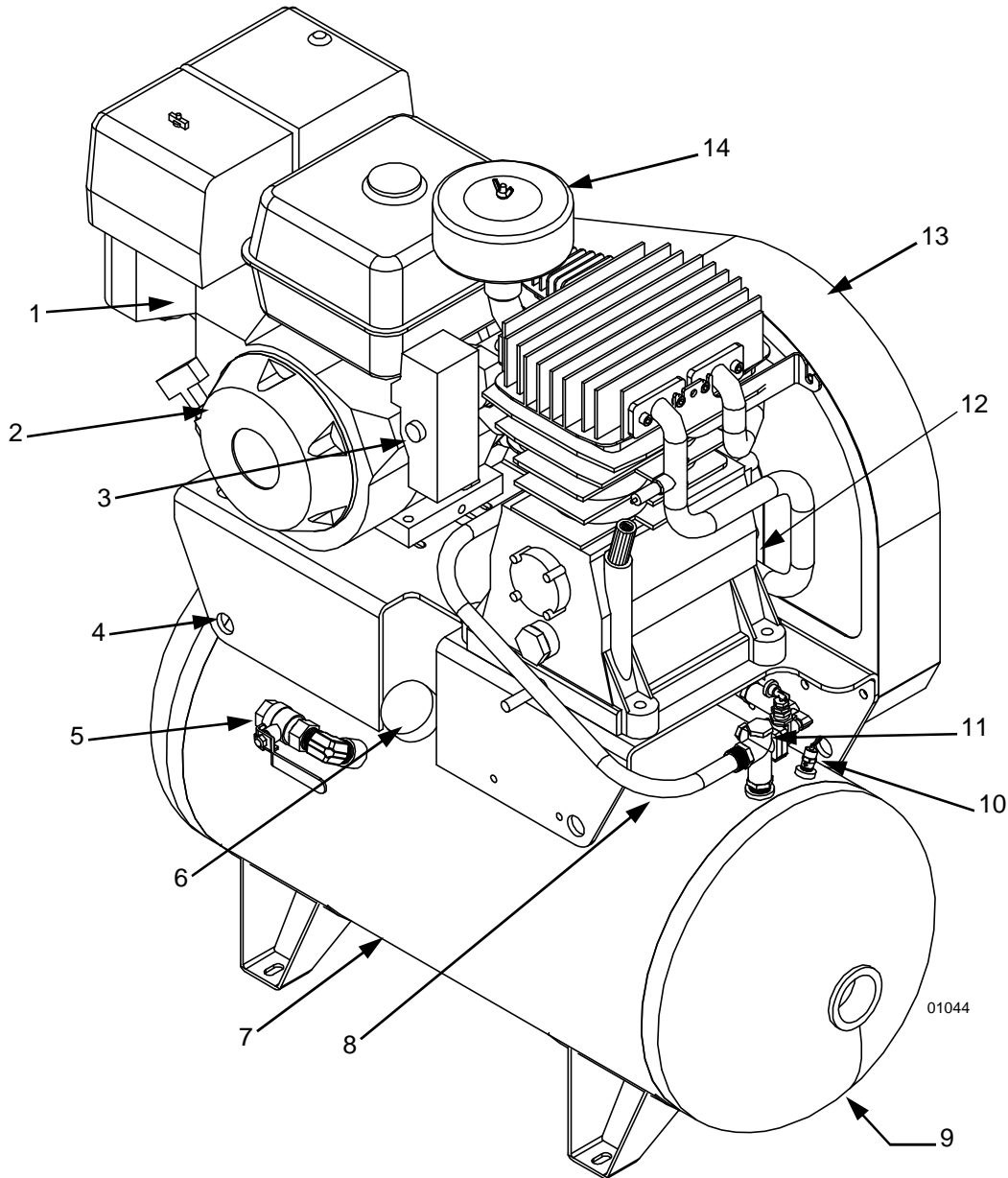
Receipt and Inspection

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

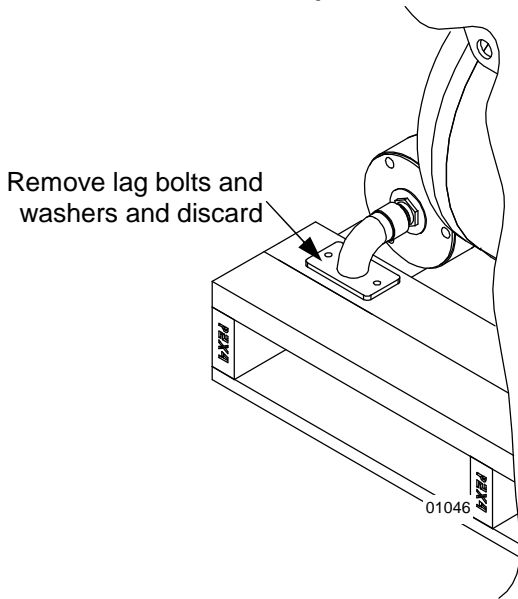


- 1.) **Engine Control** - Location of choke, engine speed and fuel valve.
- 2.) **Engine** - Engine is NOT shipped with oil. Refer to engine owners' manual for proper viscosity and capacity of oil for your engine.
- 3.) **On/Off/Start Switch** - Make sure switch is at "ON" position when starting engine with the recoil.
- 4.) **Lifting Eyes** - Also use as tie down locations.
- 5.) **Ball Valve** - 3/4" NPT.
- 6.) **Pressure Gauge** - Easy to read liquid filled gauge.
- 7.) **Air Receiver** - 30 gallon ASME certified tank.
- 8.) **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.

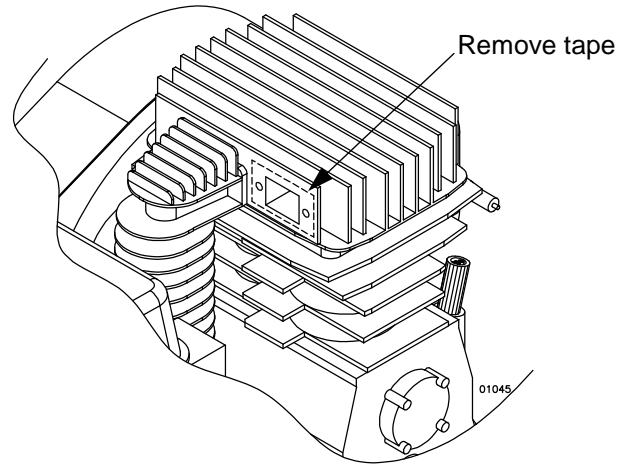
- 9.) **Drain Valve** - Location of tank drain valve. Drain tank daily after each use.
- 10.) **ASME Safety Valve** - This valve automatically releases air if the tank pressure exceeds the preset maximum.
- 11.) **Unloader** - Lift knob to relieve pressure when starting the engine.
- 12.) **Air Compressor Pump** - Air compressor pump is shipped with oil. Remove shipping plug and replace with oil fill plug in manual bag.
- 13.) **Belt Guard** - Covers the belt, motor pulley and flywheel. **NEVER** operate compressor without belt guard.
- 14.) **Compressor Air Filter** - Make sure your air filter is clean and particle free. See pump exploded view for replacement filter part number.

Assembly

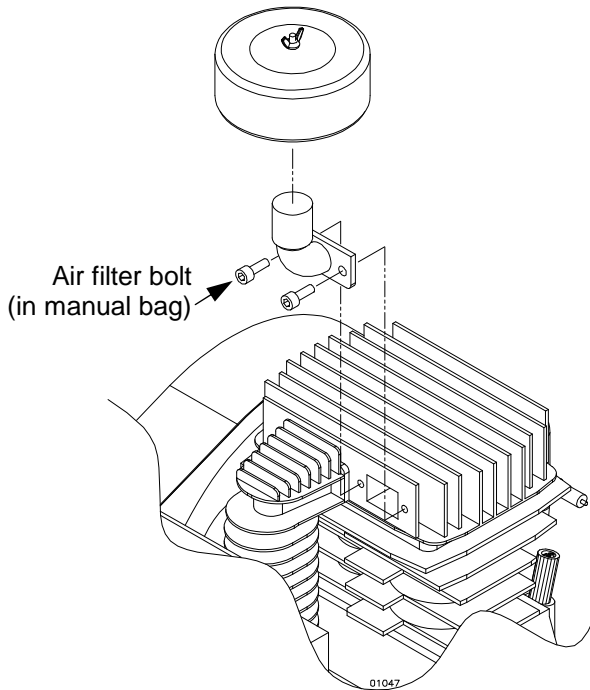
Step 1.
Remove compressor air filter from pallet.



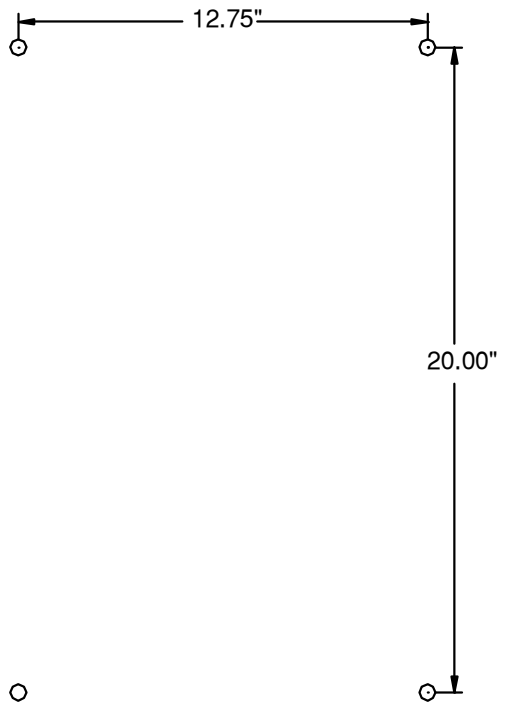
Step 2.
Remove tape from compressor inlet.



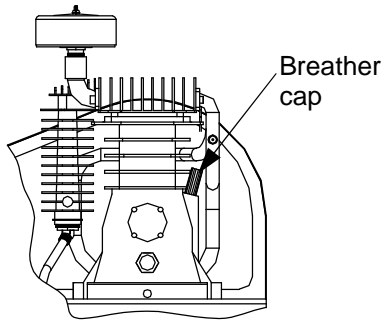
Step 3.
Bolt compressor air filter to compressor inlet.



Step 4.
Mounting dimensions

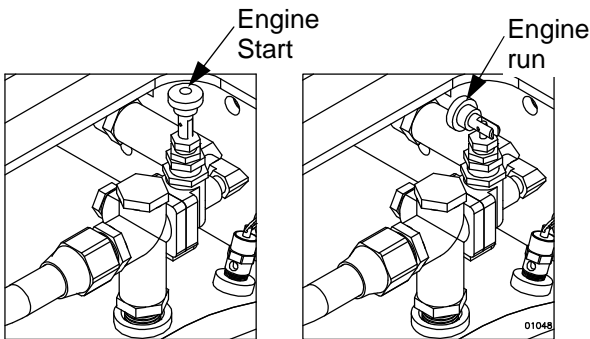


Operation



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 (NorthStar part #35605), 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. Refer to engine manual to start your engine.
5. Once the engine has started, move the pressure relief knob to the engine run position.

CAUTION! Unusual noise or vibration indicates a problem. Do not continue to operate until you identify and correct the source of the problem.

CAUTION! Do not attach air tools to open end of the hose until start-up is completed and the unit checks out OK.

6. Run the unit for 30 minutes, with ball valve open, to break in pump parts.
7. Close the ball valve to shut off air flow. The compressor is now ready for use.
8. 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 a 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 NorthStar Product Support at 1-800-270-0810 Monday - Friday 7:00 AM-5:30 PM, Saturday 7:30 AM-11:30 AM Central Standard Time.

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
45938	82 oz

Maintenance

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

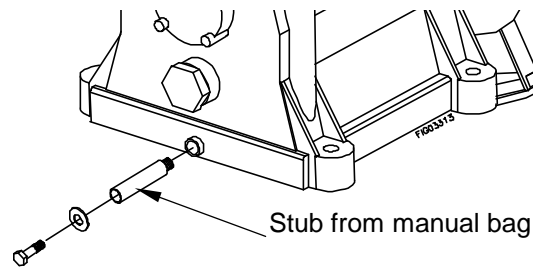
NOTE: All compressed air systems contain maintenance parts (e.g. lubricating oil, filters, separators), which are periodically replaced. These used parts may be, or contain, substances that are regulated and must be disposed of in accordance with local, state, and federal laws and regulations.

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.

INSTALLING OIL DRAIN PORT

1. Place an oil pan below port before unscrewing oil drain plug.
2. Remove plug (bolt and washer) from crankcase. Quickly screw in stub.
3. Install bolt and washer into stub after changing oil, or remove stub and reinstall plug into port.

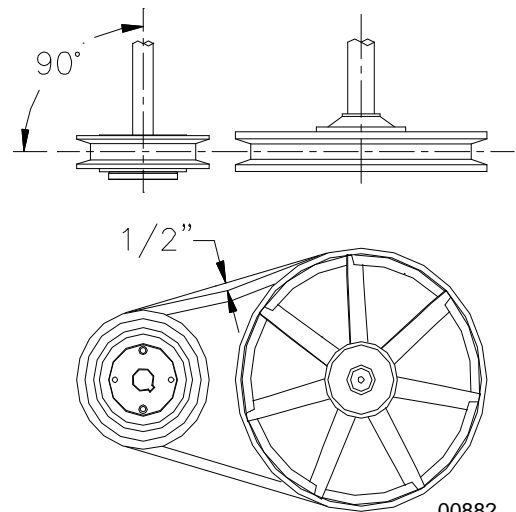


DRIVE BELT

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.



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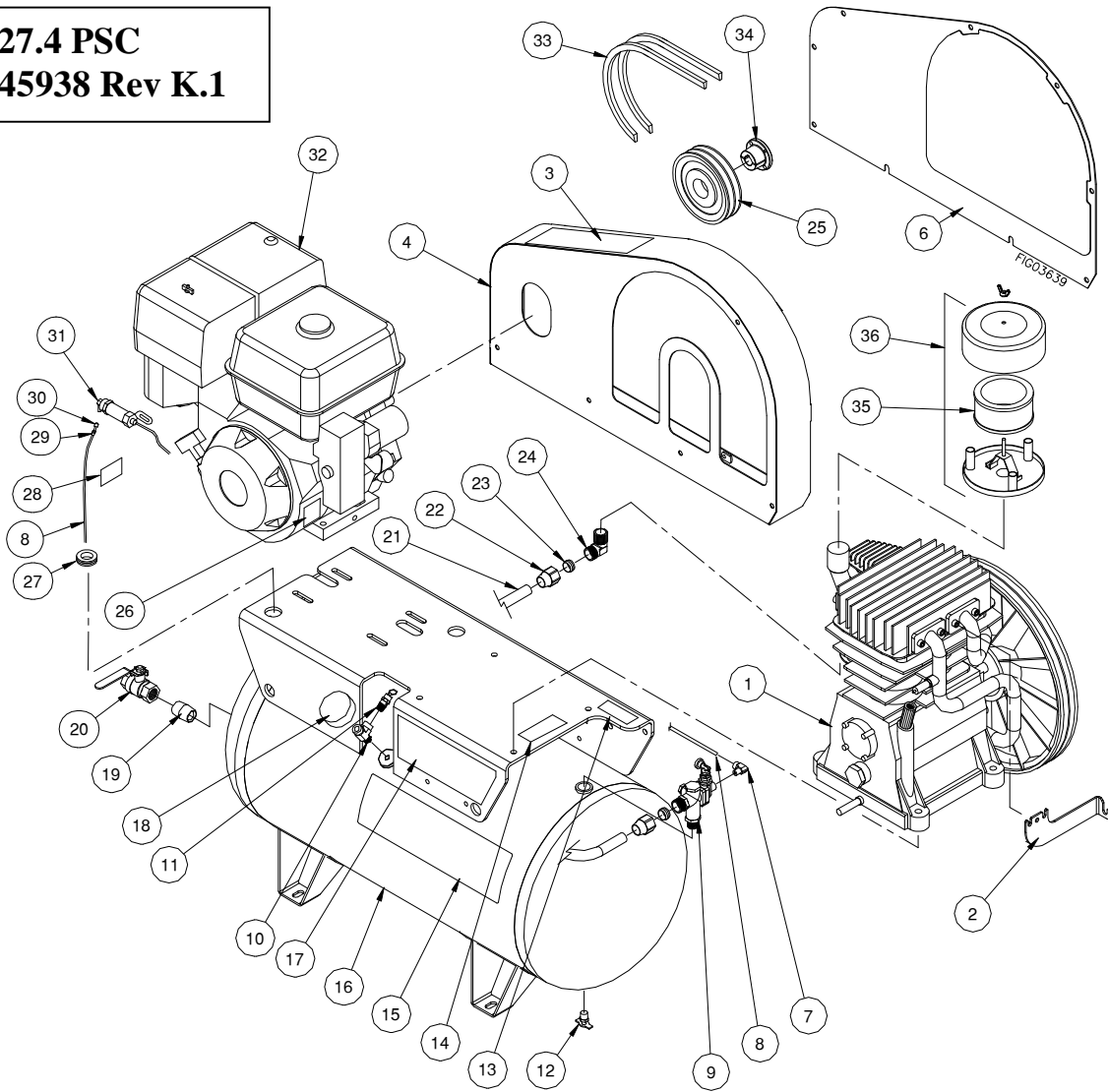
Kits and Service Parts

Air filter: Part #35409

Non-detergent Oil: Part #35605

Exploded View

Model 27.4 PSC
Item # 45938 Rev K.1



Ref	Description	Part #	Qty
1	Pump, B6000	779103	1
2	Guard bracket	35657	1
3	Warning decal	34782	1
4	Belt guard	37639	1
5	Grommet	32871	2
6	Belt guard cover	37642	1
7	Air tube connector elbow	779227	1
8	1/4" Plastic Tube, 1200 PSI	34746	4'
9	Unloader valve	36022	1
10	1/4" NPT street tee	780433	1
11	Safety valve, 200 psi	35121	1
12	Drain valve	34700	1
13	Rotating equip. decal	35189	1
14	Warning hot decal	35064	1
15	NorthStar decal	784822	1
16	Receiver tank	780796	1
17	Operation instr. decal	36030	1
18	Air gauge, liquid filled	34699	1

Ref	Description	Part #	Qty
19	3/4" closed nipple	780840	1
20	3/4" ball valve	35442	1
21	3/4" copper tube	36024	1
22	3/4" comp. nut	35454	2
23	3/4" comp. sleeve	35449	2
24	3/4" comp. elbow	36082	1
25	Sheave, 2AK59	37181	1
26	Nameplate	36028	1
27	Grommet	777146	1
28	Carbon monoxide decal	6022	1
29	1/4 Compress Long Nut	34740	1
30	1/4 Compress Sleeve Brass	34737	1
31	Throttle Control	779226	1
32	Engine, Honda GX390	601092	1
33	Belt, A66	35664	2
34	Bushing, H x 1"	37852	2
35	Air filter	35409	1
36	Air filter assembly	35404	1

779103 Pump Assembly

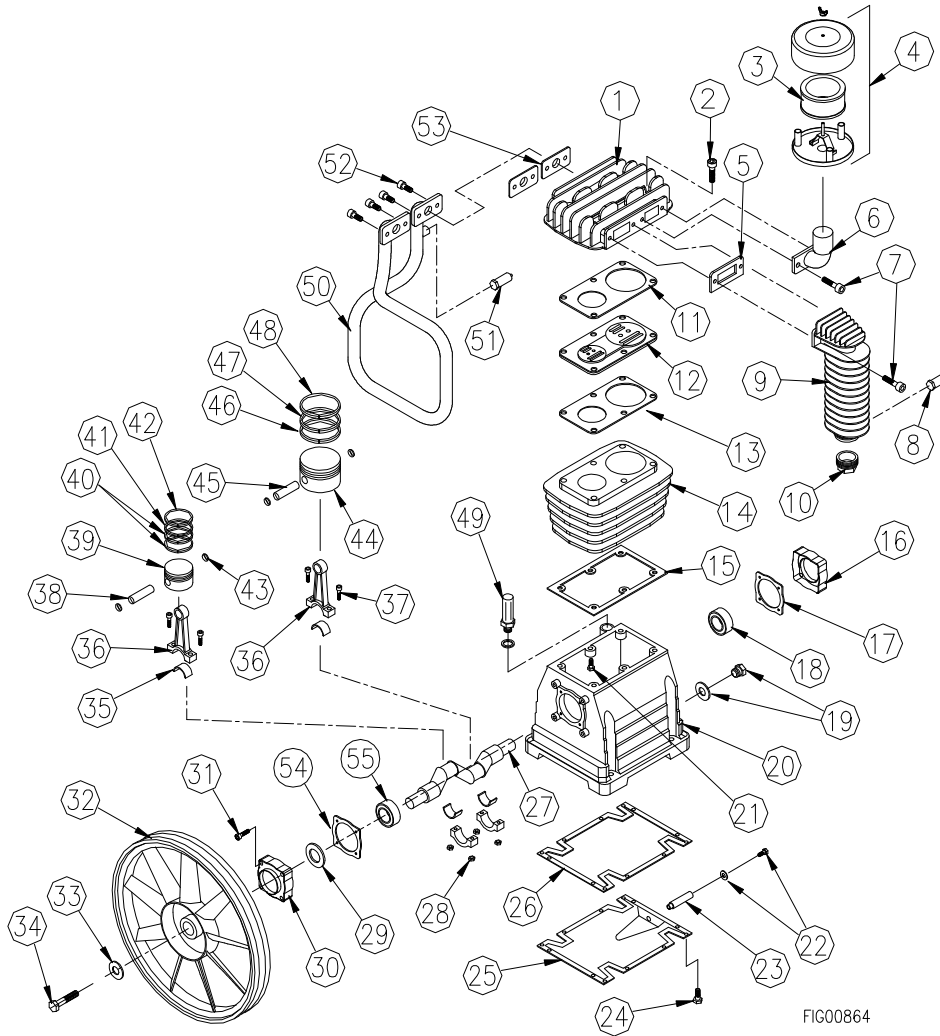
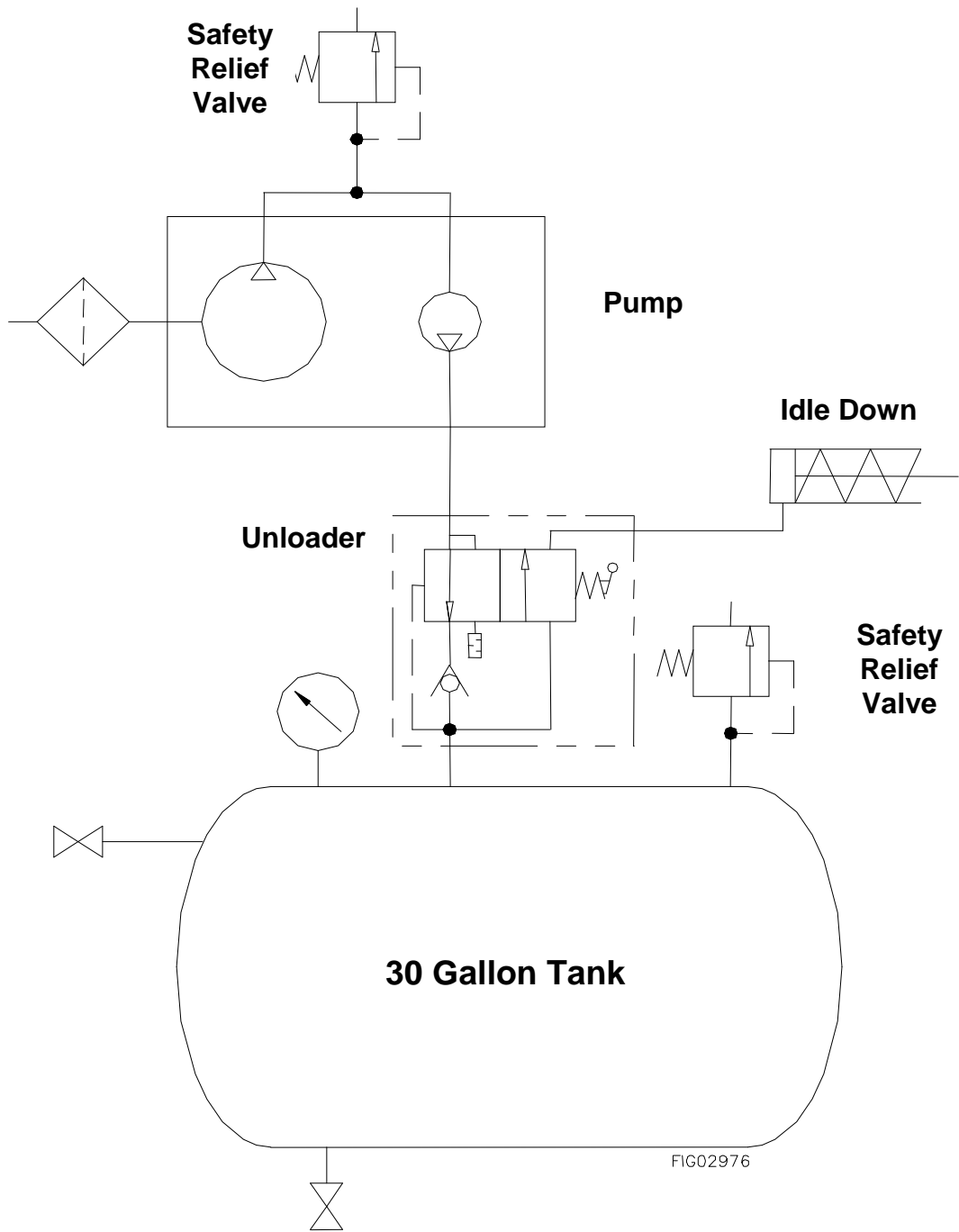


FIG00864

Item	Description	Part #	Qty
1	Pump Head	AB6061401	1
2	Head Bolt (M10 x 55mm SHCS)	AB9101754	6
3	Air Filter	35409	1
4	Air Filter Assy.	35404	1
5	Intake/After cooler Gasket	AB5070200	1
6	Intake Elbow	AB9083227	1
7	Intake/After cooler Bolt (M10 x 20 SHCS)	AB9101264	4
8	Safety Valve	AB9049011	1
9	After cooler	AB5070100	1
10	Reducer	AB9050284	1
11	Head Gasket	AB6050400	1
12	Valve Plate Assy.	AB6040051	1
13	Cylinder Gasket	AB6050300	1
14	Cylinder, Cast Iron	AB6030000	1
15	Upper Crankcase Gasket	AB6050200	1
16	Cover N.D.E.	AB5061690	1
17	Bearing Cover Gasket	AB5050500	1
18	Bearing	AB9170020	1
19	Oil Sight Glass	AB9022003	1
20	Crankcase	AB6061100	1
21	Cylinder Bolt (M10 x 40mm SHCS)	AB9101324	6
22	Crankcase Plug	AB9101164	1
23	Oil Drain Stub	AB9053201	1
24	Crankcase Bolt (M6 x 20mm HHCS)	AB9114262	12
25	Crankcase Pan	AB6061301	1
26	Lower Crankcase Gasket	AB6050101	1
27	Crankshaft	AB6061200	1

Item	Description	Part #	Qty
28	Rod Nut	AB9128234	4
29	Oil Seal	AB9163030	1
30	Cover D.E.	AB6061590	1
31	Cover Bolt (M6 x 15mm SHCS)	AB9101154	8
32	Flywheel, 430 mm	AB5000100	1
33	Flywheel washer	AB9004009	1
34	Screw, Reverse Thread	AB9110024	1
35	Half Bearing	AB9013014	4
36	Connecting Rod	AB6011101	2
37	Rod Bolt	AB9106244	4
38	Pin, High Pressure	AB6021200	1
39	H.P. Piston, Aluminum	AB6021100	1
40	Piston Ring ROF	AB9020073	2
41	Piston Ring ROS	AB9020041	1
42	Piston Ring AC	AB9020011	1
43	Circlip	AB9140060	4
44	L.P. Piston, Aluminum	AB6022100	1
45	Pin, Low Pressure	AB6022200	1
46	Piston Ring ROF	AB9020076	1
47	Piston Ring ROS	AB9020046	1
48	Piston Ring AC	AB9020016	1
49	Oil fill plug	AB9024006	1
50	Intercooler	AB5262010	1
51	Safety Valve	AB9049064	1
52	Intercooler Bolt (M8 x 20 mm SHCS)	AB9101254	4
53	Intercooler Gasket	AB5050600	2
	Complete Gasket Kit	AB6050057	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, 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 NorthStar Product Support 1-800-270-0810

Limited Warranty

Dear Valued Customer:

The NorthStar 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 NorthStar 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

NorthStar 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 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 NorthStar.

NOTE: Some services performed by parties other than NorthStar 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 NorthStar such as engines 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 NorthStar approved facility is the responsibility of the buyer and not covered under warranty. NorthStar 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 NorthStar 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 NorthStar 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 a warranty claim.

Customer Number: _____

Date of Purchase: _____

NorthStar Serial Number: _____

Item Number: _____



Manufactured by
Northern Tool + Equipment Co.,
2800 SouthCross Drive West
P.O. Box 1499 Burnsville, MN 55337-0499