CRP750
OPERATION AND MAINTENANCE MANUAL

OWNER'S INFORMATION

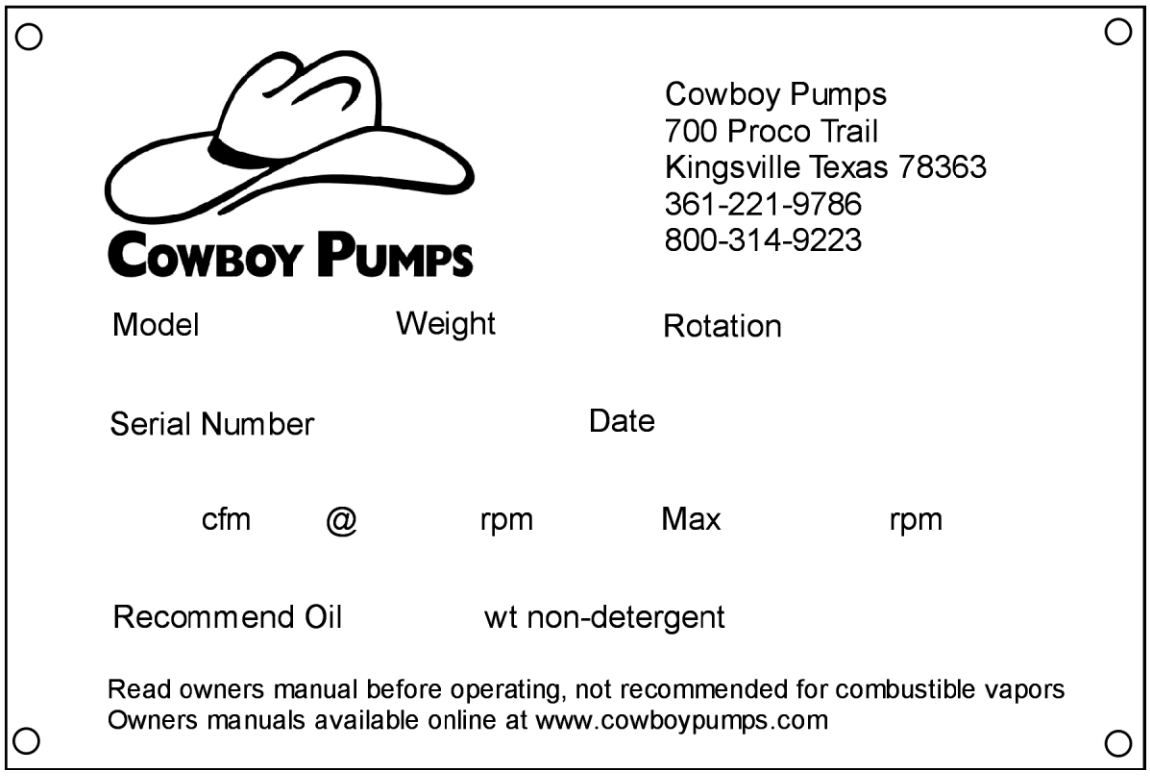
PURCHASED FROM:_____

DATE OF PURCHASE:_____

MODEL _____

SERIAL NUMBER_____

Cowboy Pumps ID Plate



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WARRANTY

Cowboy Pumps warranties products of its own manufacture for a period of <u>Two (2) Years</u> from the date of shipment to the purchaser against defective workmanship and materials. Normal wear and tear on bearings, inserts, or vanes is not included in the warranty. This warranty is void should the product be repaired or modified in any way not specifically authorized by Cowboy Pumps. Nor does the warranty cover any merchandise or component which, in the opinion of Cowboy Pumps, has been subjected to negligent handling, misuse or accident. Purchaser must follow and comply with all "safety regulations and inspections" published by the Federal, State or local governments pertaining to the equipment in order for any claim to be considered, i.e. OSHA. All warranty or damage claims must be submitted in writing to Cowboy Pumps and written approval must be obtained before any product or part is returned to the factory. Cowboy Pumps shall, at its sole option, repair, replace or refund an equitable portion of the purchase price of any product which it determines to have been defective.

Claims on any component not manufactured by Cowboy Pumps will not be approved, and credit will not be issued until such item has been returned, freight prepaid to our factory, and our respective supplier(s) approved the warranty claim(s).

Neither this warranty nor any oral, written or printed statement made by Cowboy Pumps is a service contract or a service guarantee; nor is it any assurance that the product is perfectly designed or perfectly built, or an expression of any belief that the product cannot be improved. This warranty is not a guarantee that the performance of the product will meet the expectations of the purchaser against hazards such as corrosion, wear, tear, misuse, misfortune or problems, arising from incorrect set-up, use, servicing,. Should Cowboy Pumps accept a warranty claim and decide to replace a part or product, the part or product required should be sent to the purchaser or the local distributor, who will be charged for the item at the time. When the defective part or product has been returned freight prepaid to our factory, the purchaser's account will be credited an amount equal to the amount shown on the invoice relating to the defective part or product returned.

The foregoing is Cowboy Pumps' only warranty, obligation, and liability, under tort (including alleged negligence), contract, or otherwise, for or in connection with it's products. In no event shall Cowboy Pumps be liable for consequential damages suffered by reason of any claimed defect in its product. The foregoing is expressly in lieu of all other warranties whatsoever, expressed, implied and statutory, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. It is specifically understood that Cowboy Pumps' price is based upon the foregoing limitation of liability and purchaser's waiver for any and all claims for damage. All sales by Cowboy Pumps are made subject to the terms and conditions set forth above, and no others. No verbal arrangements, advertising materials, terms and conditions of any purchase order(s) submitted by purchaser, or any other term or statement not contained here in shall be of any force or effect.

WARRANTY STEPS

Follow these warranty steps to solve your potential warranty situation:

1. Contact the company you purchased the product from (dealer).
2. Give model, serial number and date purchased to the dealer.
3. Do not try to repair the pump yourself as this may void the warranty claim.
4. Dealer will give you an RGA number along with the shipping address of the closest Cowboy Pumps Authorized Warranty Center (AWC).
5. Pump must be returned to Cowboy AWC before warranty will be honored.
6. Send pump freight prepaid in the most economical means to Cowboy AWC.
7. Cowboy's AWC will advise you of the extent of warranty.

LUBRICATION

New Vacuum Pump

Oil should be changed after the first 40 hours of operation time (break-in). Change oil filter (CRP430) and flush crankcase with diesel and wipe clean. This will remove any residue from the break-in period.

Schedule Maintenance Oil Changes

Oil and filter should be changed routinely after 270 hours.

Daily Maintenance

Oil level should be checked daily. Always have a rag to remove sand and mud from around dipstick area prior to removing dipstick and checking oil level. If contaminated oil is found. A crankcase flush and oil/filter change must be preformed to insure lasting pump performance.

Crankcase Breather Maintenance

The breather should be cleaned of debris with a diesel flush and blown out each time oil is changed or if clogged with dirt or mud. The breather keeps debris for entering the lubrication system of the vacuum pump. Do not operate vacuum pump without breather.

Recommended Lubrication

Cowboy Pumps recommend using straight 30 weight compressor oil. Multi viscosity engine oil is not recommended

The oil capacity of the CRP-750 is 7 ½ quarts. The operation range is between the two marks on the dipstick of the pump.

Oil Pressure

Oil pressure should run between 15 to 25 pounds with vacuum pump running at maximum RPM. Always keep pressure gauge in good working condition to insure proper oil pressure. If oil pressure is outside this range consult trouble shooting page 17

ROUTINE MAINTENANCE

Pump inspection
Inspect drive system weekly to insure belts and drive couplers are in good working condition, safety guards are in place and tight and pump is in proper working condition.

Grease u-joints and pillow block bearings monthly.

Check oil pressure daily

Check oil level before each operation.

Routinely power wash dirt and mud from pump. Be sure and clean cylinders and pump housing. The cylinder fins are used to dissipate heat.

System Inspection
Test tank relief valves monthly or per tank manufacturer's recommendations.

Drain moisture traps before each load (service if more than one quart of liquid is present in moisture traps/ scrubbers.

Cowboy CRP-750 Repair

Suction & Discharge Valves
(CRP290S & CRP290D)

To check valve integrity pour a small amount of diesel into the spring side of the valve. If the diesel leaks through valve plates the valve has to be repaired. Also check valve washer and springs by placing a flat head screwdriver into valve on top of valve washer (CRP295) to check for washer movement.
After disassembling valves inspect valve springs (CRP295) replace any broken or weak springs. It is best to replace springs in full sets.
Inspect both valve washers (CRP293 & CRP296). Valve washers should be smooth without wear and form a tight seal with valve bumper (CRP294D or CRP294S). If worn or damaged replace.
Inspect valve bumper for smooth finish without cracks. Replace if needed.
Wash all components in diesel to remove any debris. Assemble valve back and install new copper gasket (CRPG290) on bottom of valve before installing. See Torque Values page 22. Install valves in sets. Place discharge valves (CRP290D) on sheave side of cylinder heads and suction valves (CRP290S) on oil pump side of vacuum pump.
Retract valve set bolt slightly before installing valve covers. Tighten valve cover bolts and torque. Next torque valve set bolts and acorn nuts.

Caution: Never operate vacuum pump with a damaged valve. A malfunction valve will cause pump to over heat . Valve can also break and fall into piston causing pump failure.

Insert Bearings
(CRP170)
Crankshaft has exchangeable rod insert bearings (CRP170) bearing rod inserts. These inserts are available in standard and 0.030" oversized thickness.
Remove bottom half of piston rod. Note that rods are machined in mated pairs. Keep track of matching sides to reinstall correctly. Push piston rod up to give enough room to retract used insert and reinstall new. Be sure to clean both surfaces of crankshaft and piston rod of sand and debris, as this will reduce insert life. Brush crankshaft with oil before reinstalling inserts. Install matching bottom half of rod and re-torque rod bolts. See Torque Values page 22 Note: Evenly tighten bolts to proper toque. If you torque bolts tight one at a time the piston could become out of round.

Piston Pin bushings
(CRP211)
Cowboy's CRP211 piston pin bushings are machined to be cold pressed into the piston. Place bushings into freezer over night prior to installing. Remove worn bushings and press new bushings into piston. Bushings are machined to the correct piston pin to piston bushing size.

Piston Pin
(CRP191B)
When installing piston pins be sure to align rod bolt (CRP191B) into machined groove on piston pin. Re-torque rod bolt. See Torque Values page 22

Piston Rings

When installing piston rings be sure to keep all parts and work area free of sand and grit. As any debris will damage and score cylinder wall.
Piston rings must be installed in the proper order. Starting at the bottom is the oil ring. Oil ring is marked showing top of ring. Next the 3 compresion rings go divot up. Place spacer pushing ring up.

Caution: It is critical to evenly space ring gaps. Place 1 at 12 o'clock, 3 o'clock, 6 o'clock and 9 o'clock.

Wipe cylinder with oil. Compress rings and side piston into cylinder.

VACUUM PRINCIPLES

There are two ways to load with a vacuum pump.

Air loading involves loading a smaller amount of product along with large quantities of air. This is commonly used with a duckbill skimmer to load oil or other light fluids off the top of water, or a thin layer of water off of a hard surface. The CVP620 works well in a skimming environment if reduced to a 2 inch opening. The higher the CFM of the pump, the more effective it will be at skimming.

Vacuum loading uses the vacuum in the tank to load the product. The higher the vacuum in the tank, the heavier the product it will be able to load; or, it can lift the same product a greater distance than a pump with a lower vacuum.

Vane Pumps
Vane pumps are high volume pumps capable of vacuum in the 25" hg to 28" hg range and 30 to 35psig pressure. Industrial vane pumps are usually higher in CFM and lighter and more compact in size. The higher airflow does result in a louder pump, but does reduce load time.

Piston Pumps
Piston pumps are often 30% to 50% lower CFM than industrial vane pumps, but are higher vacuum. Vane pumps consume oil, and expel any excess oil in the exhaust, so oil pumps are set at the minimum levels for the application. Since vane pumps operate on a reduced amount of oil, anything which reduce the amount of lubrication at the friction points can greatly reduce pump life. Piston Pumps oil directly at the crankshaft. And splash lube the main bearings and cylinders. This allows for excess oil to be applied at the points of friction. The excess oiling makes piston pumps more durable to miss use and extreme conditions including: soapy wells, hot water or steam, prolonged vacuum with no air circulation (ie pipeline testing), excessive speed, or wrong grade of oil. Many mechanics prefer piston pumps to vane pumps due to similarities to air compressors or piston engines. The piston pump is also much quieter than the vane pump making it popular with some drivers, particularly with in-town, or enclosed locations. Piston pumps traditionally hold up better when water pulls in past the float ball than vane pumps due to the fragile nature of the fiber vanes.

INSTALLATION

FACTORY SETTINGS

All Cowboy Pumps are factory tested 2 hours to insure the most reliable product built.

ROTATION

Be sure to rotate the pump in the correct direction. The rotation is marked on the nameplate of each pump. Rotation is given facing the output shaft on the pump. Check the rotation of your drive system prior to ordering the pump as we build pumps to turn in both directions. Note: Pump rotation CAN be changed in the field. See oil pump rotation page

DRIVE SYSTEM

Cowboy Pumps offers free drive system engineering. Just call one of our engineers for assistance. 1-877-221-9786

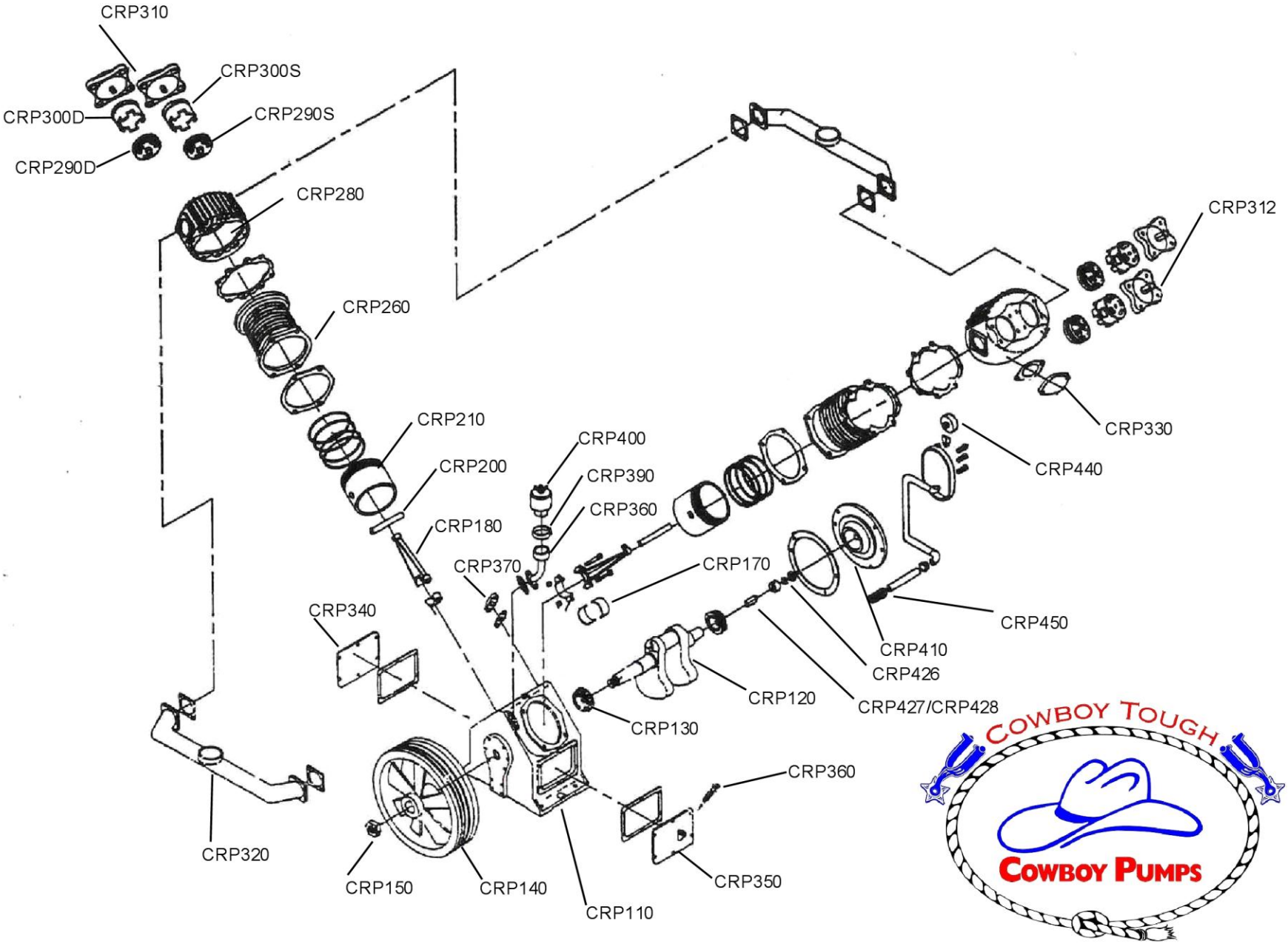
Having a properly engineered drive system will insure correct pump performance and longevity. Factors for a proper drive system are horsepower requirements, sheave ratios, belt guards, PTO ratios. These are just a few of the questions our trained staff will answer to insure a proper drive system.

VACUUM SYSTEM

The vacuum pump is only one part of your vacuum system. Before putting your new Cowboy pump in service, check the following vacuum system components to insure they are working properly:
Cowboy Pumps recommends the use of both a primary shutoff and an exterior scrubber (secondary shut-off).

There should be a pressure relief valve installed in the system. The pressure relief valve should be set at a maximum 25psig.

CRP750 PARTS DIAGRAM



Item #	Description
CRP-750K	CRP750- OVERHAUL KIT
CRP110	CASE - PISTON PUMP
CRP120	CRANKSHAFT
CRP125	KEYWAY - CRP750
CRP130	BEARING
CRP130R	BEARING RACE
CRP135	SEAL - CRANKSHAFT
CRP140	SHEAVE - RED
CRP150	NUT, SHEAVE
CRP170	BEARING ROD INSERT - STANDARD
CRP170-03	BEARING ROD INSERT - 0.030"
CRP180	PISTON CONNECTING ROD ASSM.- cast steel
CRP180-A	PISTON CONNECTING ROD - Aluminum
CRP190	BOLT - CONNECTING ROD BOLT
CRP191B	BOLT - PISTON ROD/WRIST PIN
CRP192B	BOLT-CONNECTING ROD BOLT FOR CAST ROD
CRP192N	NUT-CONNECTING ROD NUT FOR CAST RODS
CRP200	PISTON PIN
CRP210	PISTON
CRP211	BUSHING, PISTON
CRP215	PISTON RING KIT
CRP260	CYLINDER
CRP262B	BOLT - CYLINDER/CRANKCASE
CRP280	HEAD - CYLINDER
CRP282B	BOLT - CYLINDER/HEAD
CRP290D	VALVE - DISCHARGE
CRP290K	VALVE KIT - CRP
CRP290S	VALVE - SUCTION
CRP291B	BOLT, SUCTION/DISCHARGE VALVE
CRP292D	VALVE SEAT - DISCHARGE
CRP292S	VALVE SEAT - SUCTION
CRP293	VALVE WASHER -INNER
CRP294D	BUMPER, VAVLE - DISCHARGE
CRP294S	BUMPER, VALVE - SUCTION
CRP295	SPRING, VALVE
CRP296	VALVE WASHER - OUTER
CRP300D	VALVE CLAMP - DISCHARGE
CRP300S	VALVE CLAMP - SUCTION
CRP310	VALVE CAP
CRP312B	BOLT - VALVE COVER
CRP316	BOLT, SET - SUCTION VALVE
CRP316D	BOLT SET-DISCHARGE VALVE
CRP317	NUT, ACORN - VALVE SET BOLT
CRP320	MANIFOLD RED
CRP321	PLUG HEX 1/8" FOR MANIFOLD
CRP322	PLUG HEX 1/4" FOR MANIFOLD
CRP324	BOLT - MANIFOLD/HEAD
CRP325	BOLT-HEAD TO MANIFOLD
CRP326	BOLT - MANIFOLD /TO HEAD
CRP330	INSPECTION PLATE - HEAD - NRS
CRP332B	BOLT - BLANK FLANGE
CRP340	INSPECTION PLATE - HOUSING - NRS
CRP342B	BOLT - INSPECTION PLATE
CRP350	INSPECTION PLATE -OIL CHECK/HOUSING
CRP360	OIL DIPSTICK
CRP370	BLIND
CRP380	OIL FILL TUBE
CRP382B	BOLT - OIL FILL BODY
CRP390	CLAMP, BREATHER KIT
CRP400	BREATHER
CRP410	BEARING HOUSING
CRP415B	BOLT - BEARING HOUSING
CRP420	OIL PUMP COVER / FILTER MOUNT
CRP421	PIN - OIL PUMP
CRP422B	BOLT - FILTER ASSEMBLY
CRP423B	BOLT - FILTER ASSEMBLY
CRP425	OIL PUMP KIT
CRP426	OIL PUMP
CRP427	OIL PUMP BUSHING
CRP428	OIL PUMP SPRING
CRP430	FILTER-OIL
CRP440	GAUGE - OIL PRESSURE
CRP441	BUSHING - OIL PRESSURE GAUGE
CRP450	SCREEN-OIL CRANKCASE
CRP455	ELBOW, TUBE - OIL LINE
CRP460	ELBOW, TUBE - OIL LINE
CRP465	TUBING - OIL LINE
CRPG-KIT	GASKET KIT - CRP
CRPG260	GASKET - CYLINDER/CRANKCASE
CRPG280	GASKET - CYLINDER/HEAD
CRPG290	GASKET- COPPER - VALVE SUCTION/DISCHARGE
CRPG310	GASKET - VALVE COVER
CRPG315	GASKET - WASHER - VALVE SET BOLT
CRPG320	GASKET - MANIFOLD/HEAD
CRPG320-A	GASKET - MANIFOLD FLANGE
CRPG3201	GASKET- MANIFOLD, FLANGE
CRPG322	GASKET - WASHER
CRPG330	GASKET - BLANK FLANGE
CRPG350	GASKET - INSPECTION PLATES
CRPG380	GASKET - OIL FILLER BODY
CRPG410	GASKET - BEARING HOUSING
CRPG411	SHIM SET - BEARING HOUSING
CRPG411-05	SHIM - BEARING HOUSING 0.005" - blue
CRPG411-075	SHIM - BEARING HOUSING 0.075 - silver
CRPG411-22	SHIM - BEARING HOUSING 0.022" - yellow
CRPG420	SHIM SET - OIL PUMP/FILTER ASSEMBLY
CRPG420-05	SHIM - OIL PUMP 0.005 - blue
CRPG420-075	SHIM - OIL PUMP 0.0075" - clear
CRPG420-20	SHIM - OIL PUMP 0.020" - yellow

Vacuum Equipment Operation

Extreme care must be exercised regarding product handling. All vacuum / pressure units must be equipped with a pressure relief valve capable of venting the tank and should always be kept in good operating condition.

OPERATION

1. Place 3" four-way valve on vacuum pump in proper position for vacuum or pressure (**NOTE WARNING ON FLAMMABLE / COMBUSTIBLE MATERIALS).** Make sure both scrubber blow-down valves are closed.

2. Check Oil level in vacuum pump inspect oil for any foreign material such as water, other liquid, thin oil or solids. Oil should be drained, flushed and refilled if foreign material is found. Inspect pump for any physical damage. ***See Lubrication Specification page for recommended oil (page 5)***

3. Start vacuum pump by slowly engaging PTO on truck and set at proper RPM. Pump will start either pulling a vacuum or pressuring the tank. Upon reaching the desired pressure or vacuum, open one of the rear 4" valves thus allowing fluid to flow. Continue until operation is complete. NOTE: Rotary vane pumps have a minimum and maximum RPM. Too slow results in wash boarding the pump, too fast will cause overheating.

SCRUBBER OPERATION

4. Vacuum units should be equipped with an inside shutoff and an outside scrubber to prevent liquid from entering the vacuum pump. The scrubber and shutoff typically will have a 6" stainless steel float ball and a 3" rubber seat. Both must be in good condition to protect the vacuum pump. Any liquid entering the scrubber will be caught in the liquid sump, and drained out the blow down valve. A sizeable amount drained (quart or more) indicates a problem with the float ball or seat and should be corrected. The liquid drained from the scrubber is tank product and must be handled accordingly. Remember the vacuum pump is an air compressor, not a liquid pump. Liquid can do major damage, which would not be covered under warranty.

DON'TS

1. Your unit should be equipped with a relief valve set at the working pressure of the tank. This valve is never to be removed, plugged or reset unless performed by a qualified shop.

2. DO NOT release tank suction or discharge pressure until all personnel are in a safe position i.e. not directly behind outlets or near hoses.

3. DO NOT exceed maximum rpm, or go lower than the minimum rpm on the vacuum pump.

4. DO NOT load unit in excess of maximum carrying capacity of truck or trailer.

5. Tank Suction/discharge valve(s) should remain closed at all times except while loading or unloading.

6. Whenever entering tank be aware of most recent commodity hauled, check for toxic fumes and always have adequate ventilation. Never enter a tank without proper protective clothing and breathing air. If vapors inside tank are combustible, do not enter tank for ignition source will cause an explosion. Any personnel entering tank must be trained in accordance with OSHA Confined Space Entry.

7. Never place hand in proximity of suction or discharge line on pump or vacuum tank.

8. Do not release hatch bolts until pressure has been removed, i.e. open blow down lines. Loosen all four or six bolts without moving bolts to clear lid. Should lid stick to gasket and tank be pressurized, this should prevent lid from blowing open. With all bolts loose, slightly move lid to ensure it is free and there is no pressure in the tank. Move bolts and raise lid. Always keep your body (face and limbs) free from lid while opening lid to prevent injury in case of lid blowing open.

9. Your vacuum pump should be equipped with a cam fitting allowing you to pipe the exhaust gases into a low-pressure recovery system or down wind & away from the equipment and personnel. ***Remember the gases could be combustible or harmful if breathed***. Vapors should be monitored and if determined hazardous, handled in such a way as to eliminate any dangers to drivers or other workers.

OPERATING SEQUENCE OF VACUUM TANK

1. Close and secure all manways.

2. Connect hose(s) to rear tank connections, make sure that valve(s) in rear of vacuum tank is in closed position.

3. Check blow-down valves to insure they are in closed position.

4. Start compressor/vacuum pump. NOTE: If vapors inside the tank are hazardous or combustible, the exhaust from the vacuum pump should be hosed to a safe location.

5. Build desired pressure or vacuum.

6. Open desired valve, product should start flowing. Make sure hose is secure; hose may start whipping if air under pressure enters hose.

7. Watch pressure gauge when off loading. Pressure should not exceed the tank rated pressure. Relief valve should open at the set pressure and close once the pressure has dropped down. Should pressure build too high, disengage compressor.

8. Upon completion of operation, close rear valve.

9. Disengage vacuum pump.

10. Disconnect hose and connect dust cover to outlet. Load hose before moving truck to insure it is disconnected and driver does not run over, thus ruining hose.

11. Bleed pressure or vacuum from tank by opening bleed-off or drain valve on scrubber line. Open valve slowly. Stop should valve blow liquid, dust or particles from road into air. Any liquid should be handled properly based upon its hazardous content.

12. Tank should be inspected and retested as specified by current DOT regulations.

13. Vacuum pump oil level should be checked after each vacuum operation. Should the scrubber fail or the product loading foam, product may enter the vacuum pump. A pump flush is recommended to clean out vacuum pump (see page 3 for Pump Flushing)

DOT 407

DOT 407 designed and fabricated vacuum transports allow you to haul combustible liquids with special precautions. You must always remember if the material you are handling is combustible that with the right mixture of air (oxygen) and any ignition source (static electricity, spark caused by two metal objects striking or rubbing each other) or heat and an explosion or fire will occur.

DON'TS

1. DO NOT load or unload until proper ground, (one ohm) has been properly attached to tank. (NOTE paint is an insulator; make sure proper connection has been made).

2. DO NOT use compressor to build up pressure inside of tank. You are supplying the necessary oxygen for an explosion.

3. DO NOT pull vacuum on the tank with flammable vapors inside the tank. They will be exhausted through the 3" hose to the outside and could cause a fire outside the tank.

4. DO NOT remove relief valve.

5. DO NOT move trailer if product is leaking.

DO'S

1. Blanket the inside of the tank with an inert gas (nitrogen) when loading, hauling and unloading flammable liquids. If you must pressure off, use an inert gas.

2. Unload tank with an approved pump, not the vacuum pump.

3. Ground tank before unloading.

4. Inspect relief valve regularly for cleanliness and proper operation. Relief valve should be pressure tested regularly (minimum of monthly).

5. In case of emergency, push the emergency kill button on the front of the unit.

Cowboy's Pump Accessories

Part no.	Description

Cowboy's Pump Accessories

CA-8016	J-tube – 3″ Pre drilled for pump mount
CA-89300	4-way valve – 3″ for CRP-750
CA-9152K	Auxiliary Oil reservoir kit – 7 gal for CVP-620
CA-9279	Relief valve nipple – 3″ x 8″ w/ 1 ½″ coup. For CVP-620
CP-F1001	Oil catch muffler- 3″ for CVP-620

Drive System Accessories

	Muncie PTO's
	Hydraulic Pumps and Motors for CVP620
	Hydraulic fluid reservoirs for CVP620
	Pillow block bearings
	V-belts
	Sheaves
	Drive couplers – Hydraulic/Angle drive for CVP620
CD-GB4001:1	Angle drive gear box for CVP620
CD-Hyd-1-12	Hydraulic fluid cooler – 12 volt for CVP620
CD-PF8182	Adapter shaft – 1 ½″ for CRP-750
CD-9192	Jack shaft – 1 ½″
CVP700H	CVP-620 Hydraulic Drive Assm.
CVP750-ASM	CVP-620 Angle Drive Assm.

Pump Mounts

CRPM-TB	CRP-750 Top frame, belt drive, mount
CVPM-SB	CVP-620 Side frame, belt drive, mount
CVPM-SH	CVP-620 Side frame, hydraulic drive, mount
CVPM-TB	CVP-620 Top frame, belt drive, mount
CVPM-TH	CVP-620 Top frame, hydraulic drive, mount

Note: Cowboy Pumps mounts are made of black powder coated 3/8″ steel. Assembly bolt holes are pre-punched. All you need to do is drill frame bolt holes and Assemble. We also offer a completely engineered pump mount/drive system mounting kit. Kits come complete with PTO, sheaves and v-belts, cam fittings, hoses and pump mount. Call Cowboys engineers for more details at 1-877-221-9786.

TROUBLE SHOOTING

PUMP LOCKED UP

Foreign material in pump	Inspect oil for contamination, Remove inspection plate and check for damaged piston, rods or Crankshaft. Replace damaged components.
Lack of Lubrication	Inspect oil level. Remove inspection plate and check for damaged piston, rods or Crankshaft. Replace damaged components.
Broken valve	Remove valve covers and inspect valves. Replace damaged components.
Excessive RPM's	Inspect and replace damaged components
Pump Rotation	Check pump rotation. Oil pump is mono-directional

LACK OF VACUUM

Tank leaking	Place pump in pressure mode, inspect for leaks At manways, flanges and hoses.
Collapsed hose or crimped hose	Locate and replace
4way valve not functioning	Inspect 4 way valve to insure tight seal on diverter.
Stuck float ball	Place pump in pressure mode to dislodge.
Vacuum valve in pump Not functioning	Inspect pump valves to insure proper working condition .
RPM to low	Check RPM of drive system. Check condition of Drive system.

LACK OF PRESSURE

4way valve not functioning	Inspect 4 way valve to insure tight seal on diverter.
Crimped hose	Locate and replace
Vacuum valves in pump Not functioning	Inspect pump valves to insure proper working condition .
Tank leaking	Place pump in pressure mode, inspect for leaks At manways, flanges and hoses.

LUBRICATION PROBLEM

Oil pressure below minimum pressure	Check crankshaft and insert tolerances. See oil pump shimming section. Check Vacuum pump RPM are set correct. Oil pump bushing and spring need to be replaced. Clean oil suction screen (CRP450) Change oil filter
Oil pressure to high	Check Vacuum pump RPM are set correct. Change oil to proper oil specification. Change oil filter. See oil pump shimming section.
Oil is contaminated	Check scrubber system on trailer. Foam or hot water will turn to fluid inside the Vacuum pump. Sand and grit is found. Check air suction line is not mounted to low to the ground
" Oil Blow-by "	Check condition of piston rings. Check cylinder tolerances. Check cylinder for scores or scratch. Replace worn component. New pumps may have some " Blow-by" until piston rings have properly seated.

KNOCKING NOISE

Vacuum pump valves loose	Tighten valve set screws (CRP316 & CRP316D)
Piston bushing worn	Inspect bushing for proper tolerance
Piston rod loose	Inspect and torque piston rod bolts. Inspect crankshaft inserts and crankshaft for proper tolerances.
Pillow block bearings	At times bearing going out in the drive system will give noises that seem to come from the pump.
Main bearings	Main bearings (CRP 130) mostly have a roaring noise when going out.
Pump Mount	Inspect bolts that hold crankcase down to mount.

CRP750 PISTON PUMP

RPM range	600-800 rpm
Maximum air flow	175 scfm
Maximum Vacuum	28" hg
Maximum Pressure	40+ psi
HP @ 35 psi	25 BHP
Port size	3" NPT
Oil Capacity	7 quarts
4way valve	Separate
Lubrication	Star pump
Net weight	800 lb

CVP620 VANE PUMP

RPM range	1000 - 1400
Maximum air flow	340 cfm
Maximum Vacuum	28" hg
Maximum Pressure	35 psi
HP @ 35 psi	44 BHP
Port size	3" NPT
Oil Capacity	1 gallon
Air filter S/S	Standard
4way valve	Standard
Vane inspection ports	Standard
4-point lubrication	Standard
Anti-spin check valve	Standard

Cowboy Pumps - CRP-750

Tolerance Specifications :

Part number	Description	Min. / Max.
CRP120	Crankshaft - pin diameter	2.6225" / 2.6230"
CRP120	Crankshaft- main bearing diameter	2.501" / 2.503"
CRP260	Cylinder - bore	7.449" / 7.500"
CRP180	Piston Connecting Rod - insert bore	2.749" / 2.750"
CRP180	Piston Connecting Rod - piston pin bore	1.008" / 1.010"
CRP200	Piston Pin - diameter	1.0080" / 1.0082"
CRP200 / CRP211	Piston pin to Piston bushing	.0013" / .0020"
CRP211	Piston bushing - inside diameter	1.0095" / 1.0100"
CRP210	Piston - diameter	7.488 / 7.489"

Bolt Torque Specifications :

Size	Torque in foot pounds	
1/4" - 20	6 - 8 ft/#	general
3/8" -16	20-25 ft/#	CRP191B
	28-30 ft/#	general
1/2" - 13	55-60 ft/#	general
	60-65 ft/#	CRP282B/CRP415B
	75-80 ft/#	CRP192B
1/2" - 20	35-40 ft/#	CRP290D/CRP290S
5/8" - 11	50-60ft/#	CRP316 / CRP316D / CRP317
	85-90 ft/#	general
	140-150 ft/#	CRP262B / CRP415B

Cowboy Pumps
Warning and Caution Decals

Decals have been placed in the proper location on your new pump and should be explicitly followed. Naturally, we cannot foresee all of the possible hazards which you may encounter while operating the tank, so good common sense should always be exercised. If for any reason, the decals become lost or illegible, contact Cowboy Pumps or one of their dealers and new ones will be sent at no charge.