

# IMPORTANT INSTRUCTIONS

MODEL 791 - (Two-Stage)  
MODEL 891 - (Single-Stage)



**GASMASTER  
COMPRESSORS**



**WARNING:** (1) Periodic inspection and maintenance of Corken products is essential. (2) Inspection, maintenance and installation of Corken products must be made only by experienced, trained and qualified personnel. (3) Maintenance, use and installation of Corken products must comply with Corken instructions, applicable laws and safety standards (such as NFPA Pamphlet 58 for LP-Gas and ANSI K61.1-1989 for Anhydrous Ammonia). (4) Transfer of toxic, dangerous, flammable or explosive substances using Corken products is at user's risk and equipment should be operated only by qualified personnel according to applicable laws and safety standards.

**CORKEN**<sup>®</sup>  
**IBEX**

## WARNING

**Install, use and maintain this equipment according to CORKEN, INC. instructions and all applicable federal, state, local laws and codes, and NFPA Pamphlet 58 for LP-Gas or ANSI K61.1 1989 for Anhydrous Ammonia. Periodic inspection and maintenance is essential.**

### CORKEN ONE YEAR LIMITED WARRANTY

CORKEN, INC. warrants that its products will be free from defects in material and workmanship for a period of 12 months following date of purchase from CORKEN.

CORKEN products which fail within the warranty period due to defects in material or workmanship will be repaired or replaced, at CORKEN's option, when returned, freight prepaid, to CORKEN, INC., 3805 N.W. 36th Street, Oklahoma City, Oklahoma 73112.

Parts subject to wear or abuse, such as mechanical seals, blades, piston rings, and packing, and other parts showing signs of abuse are not covered by this limited warranty. Also, equipment, parts and accessories not manufactured by CORKEN but furnished with CORKEN products are not covered by this limited warranty and the purchaser must look to the original manufacturer's warranty, if any. This limited warranty is void if the CORKEN product has been altered or repaired without the consent of CORKEN.

All implied warranties, including any implied warranty of merchantability or fitness for a particular purpose, are expressly negated to the extent permitted by law and shall in no event extend beyond the expressed warranty period.

**CORKEN DISCLAIMS ANY LIABILITY FOR CONSEQUENTIAL DAMAGES DUE TO BREACH OF ANY WRITTEN OR IMPLIED WARRANTY ON CORKEN PRODUCTS. Transfer of toxic, dangerous, flammable or explosive substances using CORKEN PRODUCTS is at the user's risk. Such substances should be handled by experienced, trained personnel in compliance with governmental and industrial safety standards.**

### WRITING THE FACTORY

For your convenience, the valve size and serial code are given on the valve nameplate. This serial code tells the month and year your valve was built. Space is provided below for you to keep a written record of this information.

**Always include the valve size and serial code when ordering parts.**

Valve Model \_\_\_\_\_ Valve Size \_\_\_\_\_ Serial Code \_\_\_\_\_

Date Purchased \_\_\_\_\_ Date Installed \_\_\_\_\_

Purchased From \_\_\_\_\_

Installed By \_\_\_\_\_

# **CORKEN GASTMASTER VERTICAL DOUBLE-ACTING COMPRESSOR**

## **Installation - Operation - Maintenance INSTRUCTIONS**

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## CORKEN GASTMASTER VERTICAL DOUBLE-ACTING GAS COMPRESSOR

Your new CORKEN compressor is a vertical double-acting reciprocating compressors. CORKEN vertical compressors are available in a number of variations to fit your individual needs. They are manufactured as single-stage or two-stage units; mechanical specifications are given in Table 1.

Table 1. Mechanical Specifications

SPECIFICATIONS	891 SINGLE-STAGE	791 TWO-STAGE	
		Stage 1	Stage 2
Bore in. (mm)	4.5 (114)	6 (152)	3.25 (83)
Stroke in. (mm)	4.0 (101)	4 (101)	4 (101)
Head End Clearance % (min.)	9.5	10.4	8.5
Head End Clearance % (max.)	9.5	27.8	8.5
Crank End Clearance %	11.4	10.9	10.4
Piston Area in <sup>2</sup> (cm <sup>2</sup> )			
Head End	15.9 (103)	28.3 (182)	8.3 (53.5)
Crank End	14.7 (95)	27.0 (174)	7.1 (45.6)
Displacement CFM (M3/hr)			
Head End @900 RPM	66.2 (112.5)	59.0 (99.9)	17.3 (29.3)
Crank End @900 RPM	61.2 (104.0)	56.3 (95.4)	14.8 (25.1)
Total @825 RPM	127.4 (216.5)	115.3 (195.3)	32.1 (54.4)
Maximum Cylinder Working Pressure PSIG (BAR)	400 (27.6)	350 (24)	600 (41)

Inlet/Outlet Port Size	2" Weld
Maximum Discharge Temperature	350°F (177°C)
Approximate Weight with Flywheel	800 lb. (365 kg)
Maximum Rated Power	45 HP (34 KW)
Maximum Allowable Rod Load	7000 lb. (3175 kg)
Cylinder Material	Ductile Iron ASTM A536

Compressor Sheave: 5 Groove 5V21.2

**NOTE:** 5V cross-section belts are modern cross-section V-belts which can transmit much more horsepower than conventional V-belts in the same drive space. For these compressors, four 5V belts can transmit well in excess of the crankcase rating. Low compressor speeds generally result in a smaller motor sheave, which may require 5VX belts.

### INSTALLATION OF YOUR COMPRESSOR

#### Location

Proper installation of your compressor is essential for peak performance and reliable service. Installation should be in a clean, ample space. A minimum of 18 inches clearance between the unit and the nearest wall is advised to make it accessible from all sides and to provide unrestricted air flow for adequate cooling of the motor and compressor. The unit should be firmly bolted to a solid, level base. It is recommended that the base be con-

crete or concrete-filled for adequate damping of vibration.

#### Piping

The compressor piping should be designed for the rate of flow anticipated and for the minimum pressure drop; in no case should the piping be smaller than the compressor nozzle to which it connects. If the length of the line must exceed 100 feet, the next larger size pipe should be used. Never install a shutoff valve in the discharge piping unless a safety relief valve is placed in the line between the shutoff valve and the compressor. Care must be taken that the compressor head not support the piping. Adequate supports and sufficient piping flexibility must be provided to absorb mechanical vibration and gas pulsation. Install a strainer at the compressor inlet. Remember to consider future expansion in your pipe sizing and layout.

A reciprocating compressor is designed to handle gas (vapor), not liquid! A liquid trap (scrubber) must be installed in the suction piping (and discharge line if condensate can drain back to the compressor) when handling any but the driest of gases. An interstage scrubber must be used on two-stage compressors.

#### Driver Installation

The wiring of an electric motor is extremely important, and must be done by a competent electrician. Improper motor wiring will cause you to experience expensive motor difficulties from low voltage. If you suspect that you have a low voltage problem, call your power company.

A humid climate can cause problems, particularly in explosion-proof motor applications. The normal breathing of the motor, and alternating between being warm when running and being cool when stopped, often will cause moist air to be drawn into the motor housing. This moist air will condense and may eventually add enough free water to the inside of the motor to cause it to fail. To prevent this, make a practice of running the motor at least once a week on a bright, dry day for an hour or so without the V-belts. In this period of time the motor will heat up and vaporize the condensed moisture, driving it from the motor. No motor manufacturer will guarantee his explosion-proof or totally enclosed (TEFC) motor against damage from moisture.

## INITIAL OPERATION OF YOUR COMPRESSOR

Initial operation of your compressor is the most critical time it will ever face. READ THIS SECTION CAREFULLY - IT WILL SAVE YOU MONEY AND INCREASE THE SAFETY OF YOUR OPERATION!

### Lubrication

The crankcase of your compressor was drained before shipment. Before starting the machine be sure to fill the crankcase to, but not above, the full mark of the oil level bayonet. **On new or newly rebuilt units add oil through the inspection plate opening (Fig. 1). This will assure initial lubrication of crossheads and guide on startup. Failure to do so may cause serious damage to the machine.** The type of oil should be a heavy-duty motor oil with rust and oxidation inhibitors of a viscosity shown in Table 2.

**TABLE 2. Oil Selection Chart**

Acceptable Crankcase Oil Products* for Corken Compressors				
Constant Weight - Nondetergent - R&O Inhibited				
Oil Product	ISO	VI	SAE	Ambient Temperature*
<b>Exxon</b>				
TERESSTIC	100	95	30	65° - 100°F
	68	95	20+	45° - 70°F
	46	95	20	35° - 50°F
	32	97	10+	20° - 40°F
<b>Mobil</b>				
RARUS 427 Reciprocating Compressor Oil	100	95	30	65° - 100°F
DTE Oil Heavy Medium	64	95	20+	45° - 100°F
DTE Oil Medium	44	95	20	35° - 50°F
DTE Oil Light	32	95	10+	20° - 40°F
<b>Conoco</b>				
Dectol R&O Oil	100	98	30	35° - 50°F
	68	97	20+	45° - 70°F
	46	99	20	35° - 50°F
	32	100	10+	20° - 40°F
<b>Texaco</b>				
Regal R&O Oil	100	92	30	65° - 100°F
	68	97	20+	45° - 70°F
	46	102	20	35° - 50°F
	32	104	10+	20° - 40°F
<b>Sun</b>				
Sun Vis 900 Series Oil	100	100	30	65° - 100°F
	68	100	20+	45° - 70°F
	46	100	20	35° - 50°F
	32	100	10+	20° - 40°F
<b>Chevron</b>				
Machine Oils R&O (This was a Gulf Oil Product Harmony R&O)	100	97	30	65° - 100°F
	68	97	20+	45° - 70°F
	46	98	20	35° - 50°F
	32	100	10+	20° - 40°F

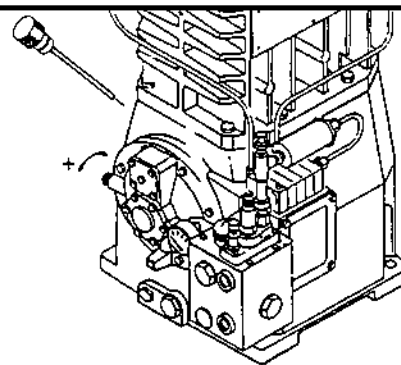
\* The listing shown is only a partial listing of lubrication products. Other oil manufacturers' products are acceptable if they meet the specification equivalency to those listed above.

\*\* Crankcase heaters are recommended in cold ambient temperatures below 32°F where crankcase oils are consistently at low

temperatures for long periods of time. Heaters maintain oil temperatures at 70°F and allow the use of heavier viscosities and their additional wear protection.

### Oil Pressure Adjustment (See Figure 1)

When the compressor is first started, observe the crankcase oil pressure gauge. If the gauge fails to indicate pressure within 30 seconds, stop the machine. Remove the pressure gauge and loosen the oil pump cover slightly. Restart the compressor and run it until oil comes out of the pressure gauge opening. Tighten the cover and install the gauge. The oil pressure should be at least 20 psi for normal service. If the discharge pressure is above 200 psi then oil pressure must be maintained at a minimum of 25 psi. The oil pressure is regulated by a spring-loaded relief valve mounted on the bearing housing opposite the sheave. Turn the adjusting screw clockwise to increase the oil pressure and counterclockwise to lower it. Be sure to loosen the adjusting screw locknut before trying to turn the screw and tighten it after making any adjustment.



**NOTE: FILL CRANKCASE WITH OIL THROUGH INSPECTION PLATE OPENING.**

**FIGURE 1. Oil Pressure Adjustment**

### Compressor Speed and Rotation Direction

The lubricator systems of the CORKEN Gasmaster compressor are designed to operate a minimum of 400 RPM. If lower speeds are necessary, consult the factory. The maximum speed of the D791 and D891 is 900 RPM. The crankshaft may be rotated in either direction.

### V-Belt Adjustment

Improper belt tension and sheave alignment can cause vibration, excessive belt wear and premature bearing failures. Before operating your compressor, check alignment of the V-grooves of the compressor and drive sheaves; visual inspection often will indicate if the belts are properly aligned, but use of a square is the best method.

Before working on the drive assembly be sure that the electric power is off. Always make sure the driver and compressor are close enough together to avoid forcing when mounting the belts. Tighten the belts so that they are taut, but not extremely tight. Consult your V-belt supplier for specific tension recommendations. Belts that are too tight may cause premature bearing failure.

### Startup After Extended Shutdown

If your compressor has been out of service for a long period of time, you should verify that the cylinder bore and valve areas are free of rust and other debris (see the maintenance section of this manual for valve and/or cylinder head removal instructions). In addition, the crankcase cover should be removed to ensure that no water has condensed in it. Squirt oil on the X-heads and rotate the crank by hand to ensure that all bearing surfaces are coated with oil, then replace the crankcase cover.

New compressors are shipped with a special oil designed to cling to metal surfaces. However, these special procedures are still worthwhile as it may have been some time since the unit was actually shipped from the factory.

### Force Feed Cylinder Lubrication (Lubed Models Only)

The standard lubricator is bolted directly to the crankcase and is driven by a chain inside the crankcase at approximately 80% of crankshaft speed. Refer to the external lubricator section for:

- A. Priming instructions.
- B. Adjusting pump flow rate.
- C. Operating and maintenance instructions.

The lube pump should be set at maximum capacity for the first hour of operation. Then, reduce the flow to the break-in rate for a week. At that time the pump flow can be reduced to normal operating levels. These rates should be noted on the log sheet (CP-217).

**NOTE: The lubricator must be supplied with oil from an external supply, not from the compressor crankcase.**

### Variable Clearance Heads

**NOTE: Used on 791, first stage only.**

The variable clearance head assembly is supplied to allow compressor adjustment for changing operating conditions. Variable clearance heads allow for capacity and BHP requirements of the cylinder to be varied. Normally, the packager will have already provided at least a preliminary adjustment of the V.C.H. If not, you may wish to adjust the heads for maximum clearance before startup. Then, the heads can be adjusted inward, increasing the capacity and BHP of the cylinder to the desired levels.

To Adjust the Variable Clearance Heads:

- A. Remove the V.C.H. adjusting bolt cap.
- B. Turn the adjusting bolt to adjust the cylinder head end clearance.

Turning the bolt inward reduces cylinder head end clearance.

Turning the bolt out increases cylinder head end clearance.

For percent clearance change per turn of the adjusting bolt, please refer to Table 1, Compressor Mechanical Specifications.

- C. Replace the V.C.H. adjusting bolt cap.

## **Startup Checklist**

Please verify all of the items on this list before starting your compressor! Failure to do so may result in a costly (or dangerous) mistake.

### **Before Starting the Compressor:**

1. Become familiar with the function of all piping associated with the compressor. Know each line's use!
2. Verify that actual operating conditions will match the anticipated conditions.
3. Ensure that line pressures are within cylinder pressure ratings.
4. Clean out all piping.
5. Check that packing vents are open and tubed to proper locations.
6. All mounting shims, cylinder and piping supports should be checked to ensure that no undue twisting forces exist on the compressor.
7. Verify that strainer elements are in place and clean.
8. Verify that cylinder bore and valve areas are clean.
9. Check V-belt tension and alignment. Check drive alignment on direct drive units.
10. Rotate unit by hand.
11. Check all fluid levels (crankcase, lubricator, radiator, oil, reservoirs, etc.).
12. Drain all liquid traps, separators, etc.
13. Verify proper electrical supply to motor and panel.
14. Check that all gauges are at zero level reading.
15. Test piping system for leaks.
16. Purge unit of air before pressurizing with gas.
17. Carefully check for any loose connections or bolts.
18. Remove all stray objects (rags, tools, etc.) from vicinity of unit.
19. Verify that all valves are open or closed as required.
20. Double check all of the above.

### **After Starting Compressor**

1. Verify and note proper oil pressure. Shut down and correct any problem immediately.
2. Observe noise and vibration levels. Correct immediately if excessive.
3. Verify proper compressor speed.
4. Examine entire system for gas, oil or water levels.
5. Note rotation direction.
6. Check startup voltage drop, running amperage and voltage at motor junction box.
7. Verify proper lube rate (lubed units only).
8. Test each shutdown device and record set points.
9. Test all dump valves, relief valves and unloaders.
10. Check and record all temperatures, pressures and volumes after 30 minutes and 1 hour.
11. After 1 hour running time, tighten all bolts.

## REPAIR SERVICE ON YOUR COMPRESSOR

### Routine Maintenance

If routine maintenance is performed as outlined in Table 3, repair service on your CORKEN gas compressor is generally limited to replacing valves or piston rings.

### Log Sheet (CP-217)

Use the log sheet in this manual on a regular basis. This will enable you to detect changes in operating conditions and give you the opportunity to correct problems while they are still small (and inexpensive).

If you need more copies, call the factory and ask for CP-217.

**TABLE 3. Routine Maintenance Chart**

ITEM TO CHECK	DAILY	WEEKLY	MONTHLY	EVERY 6 MONTHS	YEARLY
CRANKCASE OIL PRESSURE	X				
COMPRESSOR DISCHARGE PRESSURE	X				
OVERALL VISUAL CHECK	X				
CRANKCASE OIL LEVEL*	X				
LUBRICATOR OIL LEVEL		X			
DRAIN MOISTURE FROM ACCUMULATION POINTS		X			
CLEAN COOLING SURFACES ON COMPRESSOR		X			
CHECK BELTS FOR CORRECT TENSION			X		
INSPECT VALVE ASSEMBLIES				X	
PISTON RINGS**				X	
LUBRICATE MOTOR BEARINGS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS				X	
INSPECT MOTOR STARTER CONTACT POINTS					X

\* Change crankcase oil and filter at least every 6 months or more often if needed.

\*\* Piston ring life varies greatly depending on application, gas, and operating pressures. Consult factory for additional recommendations for your specific applications.

### Piston Ring Life

It is unrealistic to expect the same piston ring life from a dry cylinder compressor as from a lubricated cylinder machine because the PTFE rings have greater wear, particularly under high temperature conditions.

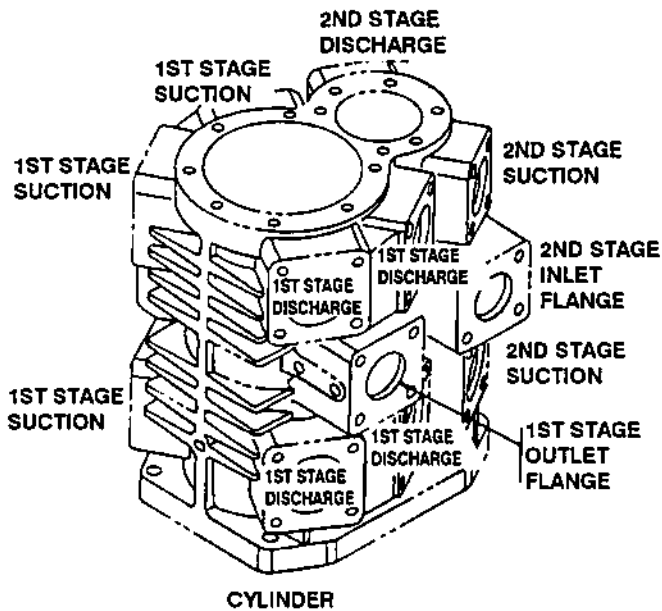
CORKEN uses one of the best PTFE ring formulations available, and the normal life expectancy of these rings is 2200 hours continuous service within recommended compression ratios, although longer life is common. Obviously, this can vary considerably with piston speed (RPM), ambient temperature, intermittent service conditions,

compression ratio and the nature of the gas being handled.

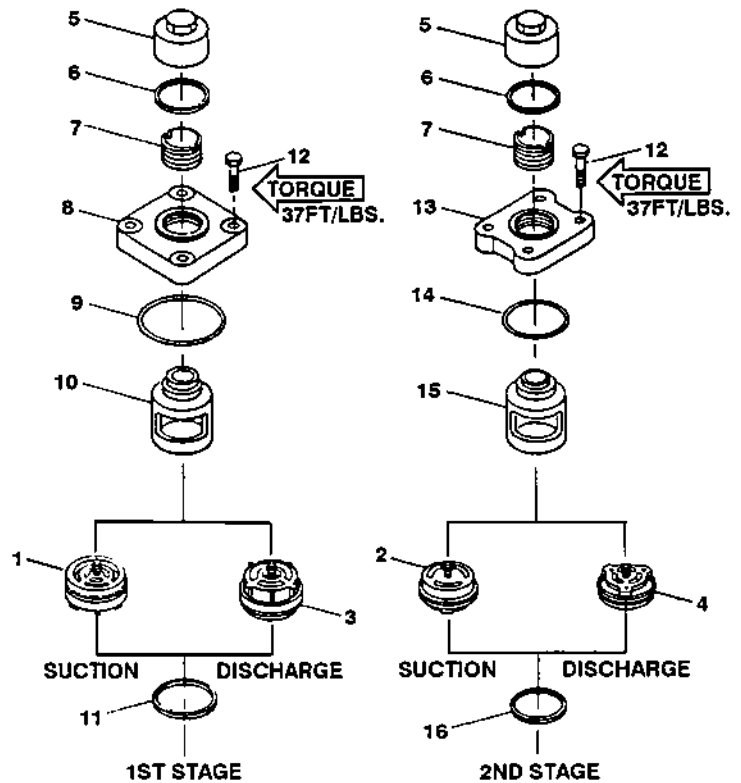
The secret to long ring life is low temperature operation. The lower the ambient temperature, the better the intercooling; the lower the compression ratio, then the better the ring wear.

### Lubricated Cylinder Compressors

If your compressor is equipped with cylinder lubrication you can expect considerably longer life with your piston rings than the dry cylinder units described above.



REF. NO.	DESCRIPTION
1.	SUCTION VALVE ASSEMBLY (6)
2.	SUCTION VALVE ASSEMBLY (3/4)
3.	DISCHARGE VALVE ASSEMBLY (6)
4.	DISCHARGE VALVE ASSEMBLY (3/4)
5.	VALVE CAP
6.	O-RING
7.	HOLDDOWN SCREW
8.	VALVE COVER PLATE
9.	O-RING
10.	VALVE CAGE
11.	VALVE GASKET
12.	BOLT
13.	VALVE COVER PLATE
14.	O-RING
15.	VALVE CAGE
16.	VALVE GASKET



INSTALL THE VALVES  
AFTER THE CYLINDER  
IS IN PLACE.

NOTE THIS DRAWING SHOWS 791 COMPONENTS.  
THE 891 IS VERY SIMILAR.

FIGURE 2. Valve Removal

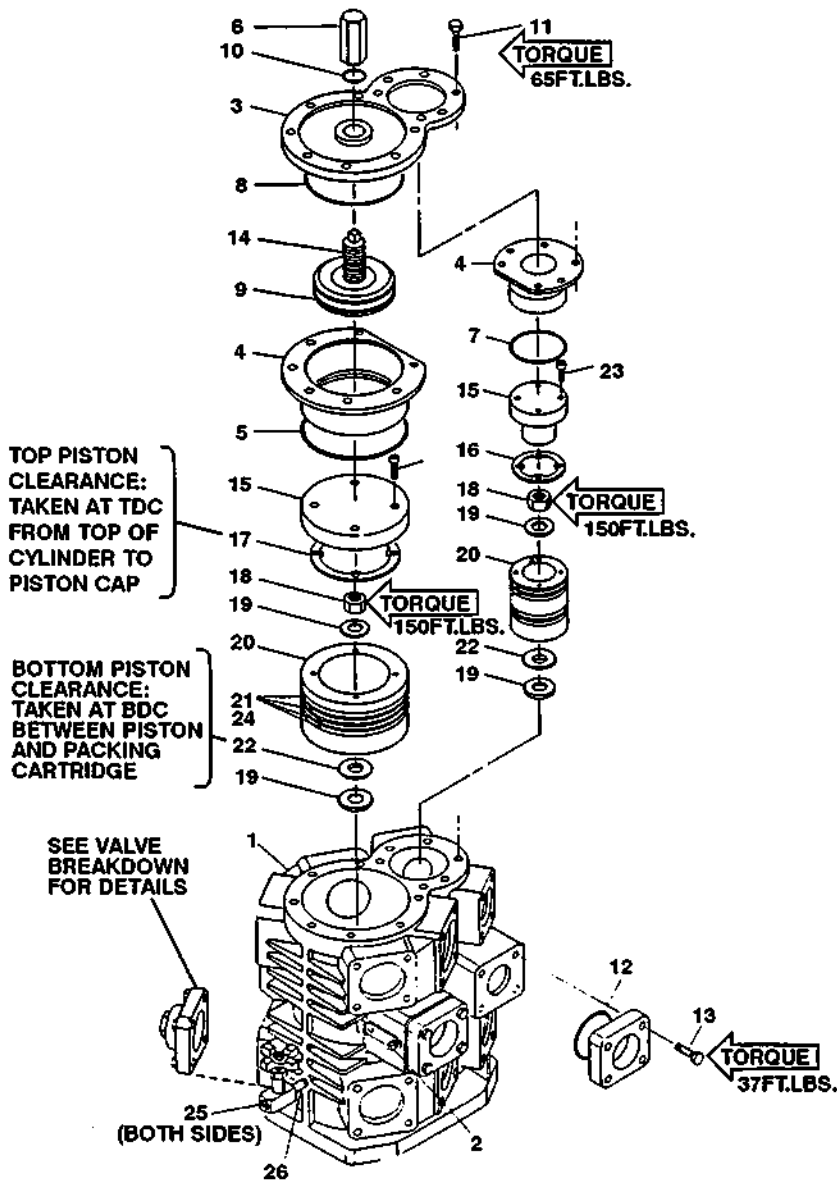
### Valve Repair and Inspection (See Figure 2)

Before starting to work be sure the compressor is vented and depressurized and power is disconnected.

1. Remove the valve cap.
2. Remove the holddown screw; a special CORKEN wrench is provided. (If the holddown screw comes out with the cap, separate them.)
3. Remove the bolts and valve cover plate.
4. Remove the valve cage.
5. The valve assembly can now be lifted out for

cleaning and inspection. Visual inspection will indicate if a spring or valve disc is broken or dirty. When replacing the valve, be sure the gaskets are properly sealed. Gaskets and o-rings are not normally reusable.

6. Remove valve assembly cage.
7. Replace cover plate and tighten bolt to 37ft.-lb. CAUTION: Be sure the holddown screw has been removed before tightening cover plate.
8. Replace holddown screw tightly enough to indent gasket.
9. Replace valve cap.



REF. NO.	DESCRIPTION
1.	CYLINDER
2.	PIPE PLUG, 1/4 SQ.
3.	ADJUSTING CAP
4.	CYLINDER HEAD
5.	O-RING
6.	ADJUSTING SCREW NUT (791 ONLY)
7.	O-RING
8.	O-RING
9.	O-RING
10.	O-RING
11.	BOLT
12.	O-RING
13.	BOLT
14.	ADJUSTING CUP (791 ONLY)
15.	PISTON CAP
16.	SHIM WASHER, THICK OR THIN
17.	SHIM WASHER, THICK OR THIN
18.	LOCK NUT
19.	THRUST WASHER
20.	PISTON
21.	PISTON RINGS
22.	SHIM WASHER, THICK OR THIN
23.	SCREW
24.	EXPANDER RING
25.	DRAIN VALVE
26.	NIPPLE

NOTE: THIS DRAWING SHOWS 791 COMPONENTS. THE 891 IS VERY SIMILAR (ALL TORQUE AND CLEARANCE VALUES ARE THE SAME).

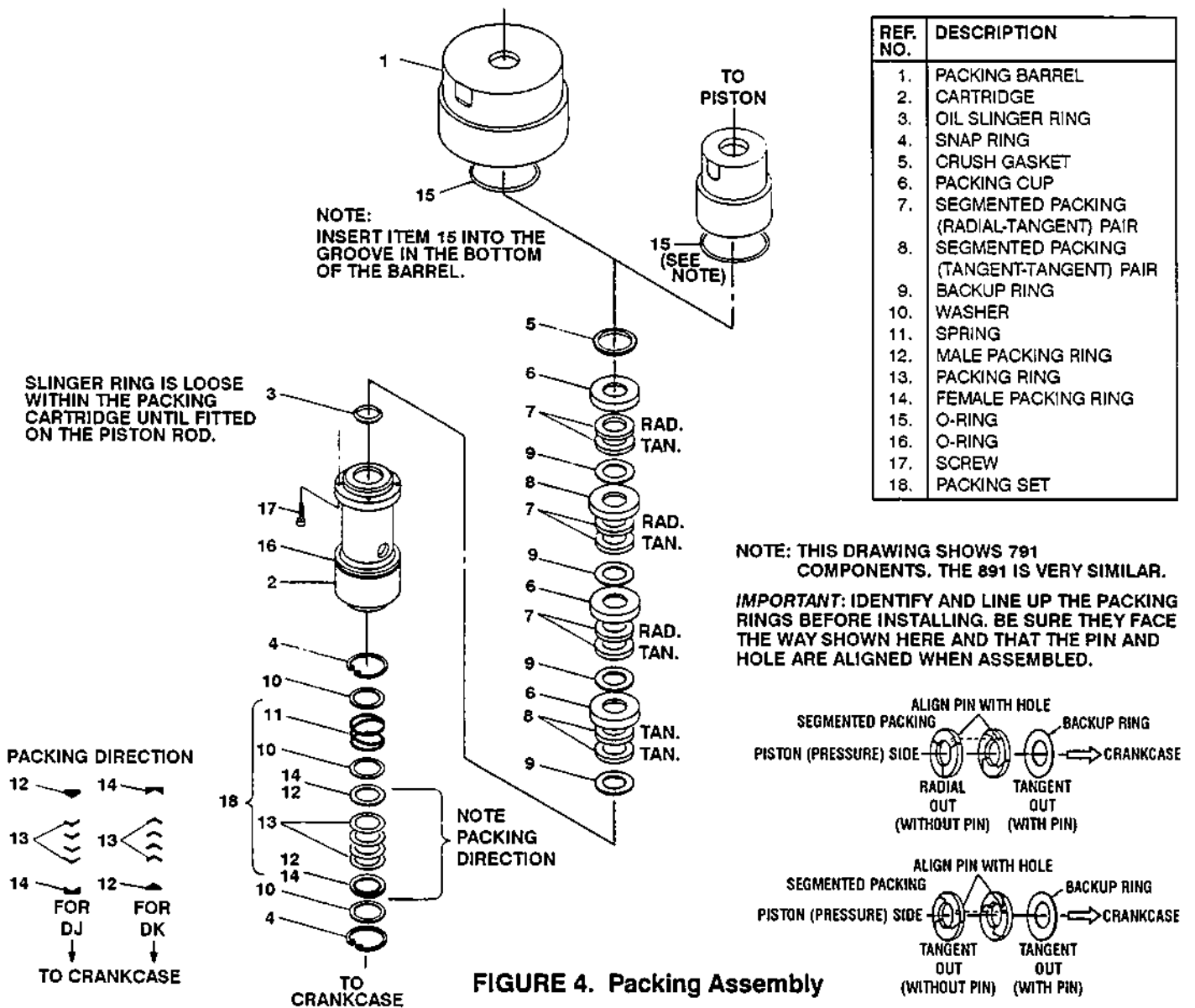
FIGURE 3. Piston Ring Replacement

### Piston Ring Replacement

Before starting to work, be sure the compressor is vented and depressurized and power is disconnected.

1. Remove the cylinder caps and heads (see Figure 3).
2. Remove the piston cap screws and lift off the piston head and shim washers.
3. Remove the piston nut and lift out the piston.
4. Replace piston rings and expanders as needed.
5. Install piston, making sure that all shim and thrust washers are in their proper place.
6. Torque piston nut and verify proper bottom piston clearance (see Figure 3).
7. Install piston cap and shim washer, then verify proper top piston clearance.
8. Replace cylinder head o-rings if needed and install cylinder head and cap (see Figure 3 for proper torque valves).
9. Rotate unit by hand to ensure proper assembly.

REF. NO.	DESCRIPTION
1.	PACKING BARREL
2.	CARTRIDGE
3.	OIL SLINGER RING
4.	SNAP RING
5.	CRUSH GASKET
6.	PACKING CUP
7.	SEGMENTED PACKING (RADIAL-TANGENT) PAIR
8.	SEGMENTED PACKING (TANGENT-TANGENT) PAIR
9.	BACKUP RING
10.	WASHER
11.	SPRING
12.	MALE PACKING RING
13.	PACKING RING
14.	FEMALE PACKING RING
15.	O-RING
16.	O-RING
17.	SCREW
18.	PACKING SET



## Packing Replacement and Inspection

Before starting to work, be sure the compressor is vented and depressurized and power is disconnected.

1. Remove the cylinder cap, heads, pistons and cylinder (see Figure 3).
2. To remove the packing barrels, pry upward under each one and lift entire barrel/cartridge assembly up from piston rod (see Figure 4).
3. Remove the four socket head screws which hold the packing cartridge to the barrel.
4. Replace packing as required. The segmented

packing and cups are in the barrel. The V-ring packing is in the cartridge. Note the arrangement of the particular packing set for the model machine you have (see Figure 4).

5. Replace the cartridges to the barrels. Install cartridge barrel assemblies, noting the alignment of the barrels as they sit on the crosshead guide. The valve scallops on the barrels must align properly with the valves of the cylinder.
6. Replace cylinder, pistons, heads and cap. See Figure 3 for proper torque and clearance values.
7. Rotate unit by hand to ensure proper assembly.

## COMPRESSOR TROUBLE SHOOTING

### General

In most cases problems with your CORKEN gas compressor can be solved quite simply. Table 4 lists some of the more frequent problems that

occur with reciprocating compressors along with a list of possible causes. If you are having a problem which is not listed or if you cannot find the source of the problem, consult the factory.

**TABLE 4. Compressor Trouble Shooting Guide**

PROBLEM	POSSIBLE CAUSES
LOW CAPACITY	1, 2, 3, 4
OVERHEATING	1, 2, 3, 5, 6, 11
KNOCKS, RATTLES AND NOISE	1, 7, 9, 10, 11, 14
ABNORMAL PISTON RING WEAR	1, 3, 5, 6, 11, 14
PRODUCT LEAKING THROUGH CRANKCASE BREATHER	8, 15
PRODUCT LEAKAGE	4, 8, 14
OIL LEAKAGE AROUND COMPRESSOR BASE	15, 16
NO OIL PRESSURE	17, 18
EXCESSIVE VIBRATION	1, 7, 9, 10, 11, 12, 13, 14, 26
MOTOR OVERHEATING OR STARTER TRIPPING OUT	19, 20, 21, 22, 23, 24, 25

REF.	POSSIBLE CAUSES	WHAT TO DO
1.	VALVES BROKEN, STUCK OR LEAKING	INSPECT AND CLEAN OR REPAIR
2.	PISTON RING WORN	INSPECT AND REPLACE AS NECESSARY
3.	INLET STRAINER CLOGGED	CLEAN OR REPLACE SCREEN AS NECESSARY
4.	LEAKS IN PIPING	INSPECT AND REPAIR
5.	INLET OR AMBIENT TEMPERATURE TOO HIGH	CONSULT FACTORY
6.	COMPRESSION RATIO TOO HIGH	CHECK APPLICATION AND CONSULT FACTORY
7.	LOOSE SHEAVE OR BELT	TIGHTEN
8.	WORN PISTON ROD PACKING	REPLACE
9.	WORN WRIST PIN OR WRIST PIN BUSHING	REPLACE
10.	WORN CONNECTING ROD BEARING	REPLACE
11.	UNBALANCED LOAD	INSPECT VALVES OR CONSULT FACTORY
12.	INADEQUATE COMPRESSOR BASE	STRENGTHEN, REPLACE OR GOUT
13.	IMPROPER FOUNDATION OR MOUNTING	TIGHTEN MOUNTING OR REBUILD FOUNDATION
14.	LOOSE VALVE, PISTON OR PACKING	TIGHTEN OR REPLACE AS NECESSARY
15.	LEAKING GAS BLOWING OIL FROM CRANKCASE	REPLACE PACKING
16.	BAD OIL SEAL	REPLACE
17.	NO OIL IN CRANKCASE	ADD OIL ACCORDINGLY
18.	OIL PUMP MALFUNCTION	SEE "OIL PRESSURE ADJUSTMENT"
19.	LOW VOLTAGE	CHECK LINE VOLTAGE WITH MOTOR NAMEPLATE CONSULT POWER COMPANY
20.	MOTOR WIRED WRONG	CHECK WIRING DIAGRAM
21.	WIRE SIZE TOO SMALL FOR LENGTH OF RUN	REPLACE WITH CORRECT SIZE
22.	WRONG POWER CHARACTERISTICS	VOLTAGE, PHASE AND FREQUENCY MUST COINCIDE WITH MOTOR NAMEPLATE CONSULT POWER COMPANY
23.	WRONG SIZE HEATERS IN STARTER	CHECK AND REPLACE ACCORDING TO MANUFACTURER'S INSTRUCTIONS
24.	COMPRESSOR OVERLOADING	REDUCE SPEED
25.	MOTOR SHORTED OUT	SEE "DRIVER INSTALLATION"
26.	BAD MOTOR BEARING	LUBRICATE ACCORDING TO MANUFACTURER'S INSTRUCTIONS

## Two-Stage Compressor Trouble Shooting

Two-stage compressors can have problems that never occur with single-stage machines. Interstage pressure is an important indicator of the condition of a two-stage compressor.

If interstage pressure is too high:

1. Second stage valves may be broken or leaking.
2. Second stage piston rings may be worn.

If interstage pressure is too low:

1. First stage valves may be broken or leaking.
2. First stage piston rings may be worn.

If suction and/or discharge pressures change, the interstage pressure will also change.

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## EXTENDED SHUTDOWN PROCEDURES

Properly preparing a unit for extended shutdown will minimize future startup problems.

1. Drain the crankcase oil and refill with rust inhibiting oil.
2. Operate for a few minutes while fogging oil into the compressor suction.
3. Relieve V-belt tension.
4. Plug all openings to prevent entry of insects and moisture. (The cylinders may also be protected by the use of a vapor phase inhibitor, silica gel, or dry nitrogen gas. If the silica gel is used, hang a tag on the unit indicating that it must be removed before a startup.)
5. Store in a dry area, off the ground if possible.
6. Rotate the flywheel every two weeks if possible.

## EXTERNAL LUBRICATORS USED ON CORKEN COMPRESSORS

### MADISON-KIPP MODEL DSL LUBRICATOR DATA:

ROTATION: Either Direction  
MAX. OPERATING PRESSURE: 3000 PSIG  
INLET AND OUTLET SIZE: 1/8" NPT  
DELIVERY PER PLUNGER STROKE:  
Adjustable 0 - 3.4 drops  
0 - 0.008 cubic inches

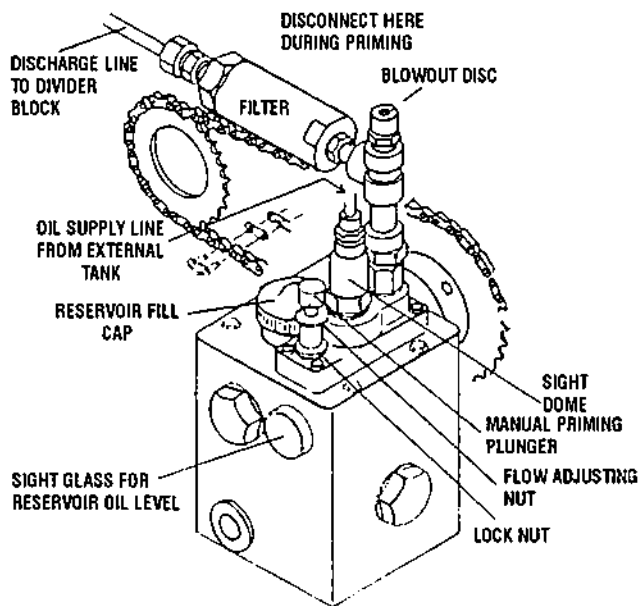
### MAX. DELIVERY/MIN:

Compressor RPM X .0151 X Delivery Per Stroke  
(Vertical Units 791-891)

(Basic drop size equals 0.0024 cubic inches)

**NOTE:** The lubricator supplied on your CORKEN compressor must be supplied with oil from an external supply tank, NOT from the compressor crankcase, or lubricator reservoir.

### EXTERNAL LUBRICATOR



The Madison-Kipp DSL lubricator is manufactured and designed so that each pumping unit can be individually adjusted for the exact amount of lubricating oil to be fed to a given position.

The operation and adjustment methods are described on a metal instruction plate attached to the side of the lubricator reservoir.

### To Start:

1. Check that all tubing is free of any kinks. Any replacement tubing should be clean and the ends free of burrs.
2. Fill reservoir with oil.
3. If oil is visible in sight dome, go to Step 7.
4. Remove the sight dome.
5. Fill the pump chamber with oil.
6. Replace the sight dome (finger tight only).
7. Connect tubing between top of sight dome until air bubbles are purged and oil is clear.
8. Remove the discharge tubing from the filter.
9. Prime by manually pumping plunger in front of sight dome until air bubbles are purged and oil is clear.
10. Reconnect the discharge tubing to the filter.
11. Operate the compressor manually to check stroke, alignment and operation.
12. Additional precautions taken at this time will eliminate the possibility of malfunction and prevent damage to your lubricator and equipment.

### To Adjust Flow:

1. Loosen lock nut on flow adjusting nut.
2. To increase flow, turn adjusting nut counter-clockwise; to decrease, turn clockwise.
3. Tighten lock nut.

### To Maintain At Peak Performance:

1. Use only clean oil.
2. Keep lubricator reservoir full of oil.
3. See that all connections are tight.
4. See that oil leads are supported where excessive vibration occurs.
5. Check lubricator drive system to ensure that all components are in alignment and good condition.
6. Make sure all mounting bolts are tight.

### CORKEN COMPRESSOR LOG SHEET (Electric Driven Units)

Compressor Model # \_\_\_\_\_ Serial # \_\_\_\_\_

Cylinder Serial #'s \_\_\_\_\_ RPM \_\_\_\_\_

Motor BHP \_\_\_\_\_, Frame \_\_\_\_\_, RPM \_\_\_\_\_, F.L. Amps \_\_\_\_\_, Manuf. \_\_\_\_\_

Packager \_\_\_\_\_ Package # \_\_\_\_\_

Installation Date \_\_\_\_\_ Startup Date \_\_\_\_\_

Customer \_\_\_\_\_

Location \_\_\_\_\_

Field Contact \_\_\_\_\_ Tel. # \_\_\_\_\_

Make and Grade of Oil \_\_\_\_\_

Pressure Switch Settings	Stage 1	Stage 2
Suction Pressure	_____	_____
Discharge Pressure	_____	_____

Cylinder Lube Pump Rate \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ Outside Temp. \_\_\_\_\_ Hour Meter \_\_\_\_\_

Readings:	Stage 1	Stage 2
Suction Pressure	_____	_____
Discharge Pressure	_____	_____
Suction Temperature	_____	_____
Discharge Temperature	_____	_____

**Check List:**

- |                       |                                   |
|-----------------------|-----------------------------------|
| _____ Oil Level       | _____ Cyl. Lube Pump Oil Level    |
| _____ Change Oil      | _____ Cyl. Lube Pump Supply Level |
| _____ Flywheel Bolts  | _____ Cyl. Lube Pump Feed Rate    |
| _____ Mounting Bolts  | _____ Belt Tension                |
| _____ Motor Amperage  | _____ Gauges (Zero Position)      |
| _____ Strainers       | _____ Packing Vents               |
| _____ Valve Positions | _____ Drain Separators            |
| _____ Dump Valves     | _____ Unloaders                   |

Additional Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Checked By: \_\_\_\_\_

# ***CORKEN***<sup>®</sup> ***INEX***

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