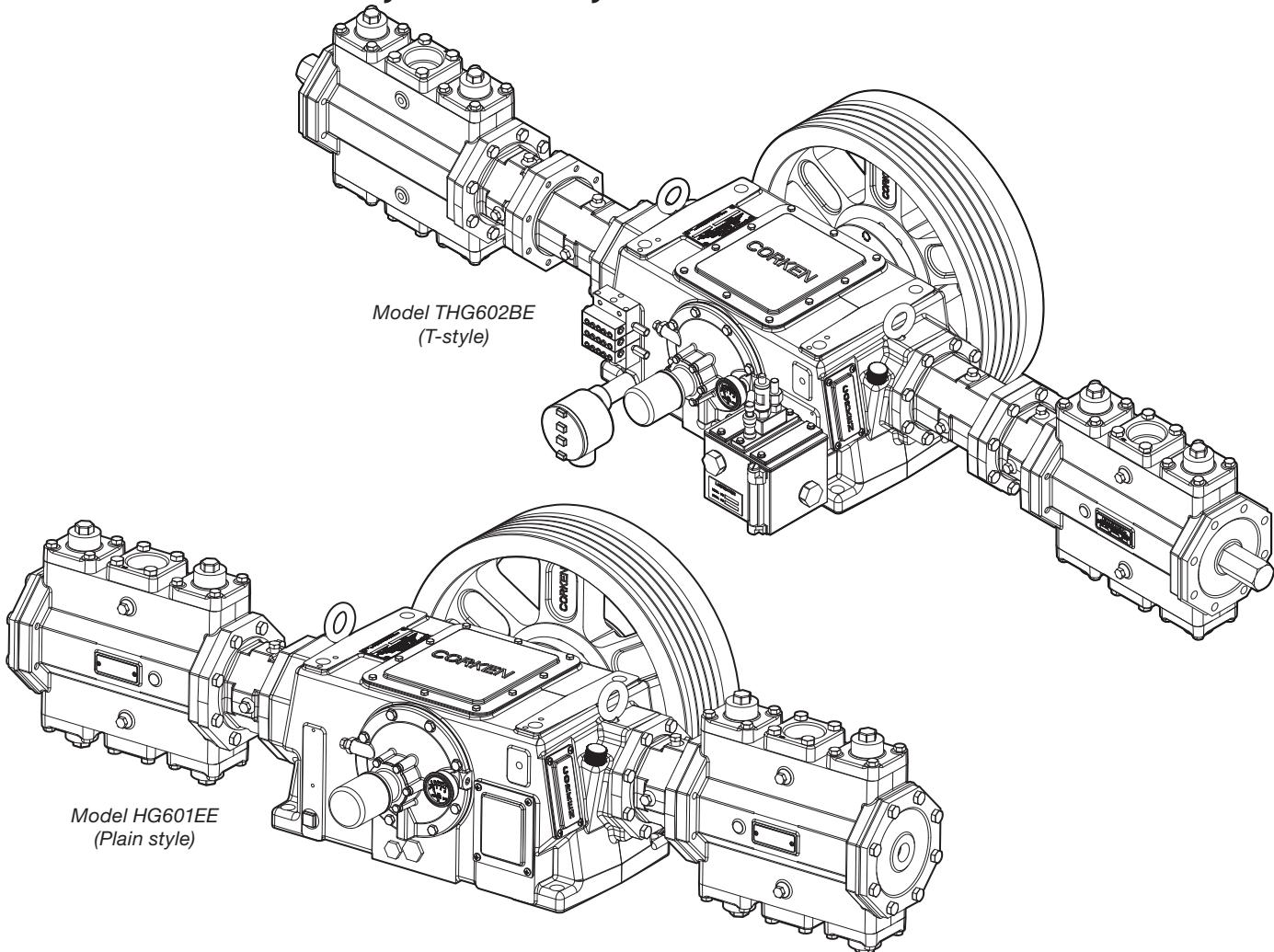


Installation, Operation & Maintenance Manual

**Plain & T-Style Double-Acting Gas Compressors
Models HG601, HG602, THG601 & THG602 Series**



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. (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.

Solutions beyond products...

CORKEN®

Warning

Install, use and maintain this equipment according to Corken's instructions and all applicable federal, state, local laws and codes. Periodic inspection and maintenance is essential.

Corken One Year Warranty

CORKEN, INC. warrants that its products will be free from defects in material and workmanship for a period of one year from date of installation, provided that the warranty shall not extend beyond twenty-four (24) months from the date of shipment from CORKEN. If a warranty dispute occurs, the DISTRIBUTOR may be required to provide CORKEN with proof of date of sale. The minimum requirement would be a copy of the DISTRIBUTOR'S invoice to the customer.

CORKEN products which fail within the warrant period due to defects in material or workmanship will be repaired or replaced at CORKEN's option, when returned, freight prepaid to CORKEN, INC., 9201 North I-35 Service Road, Oklahoma City, OK. 73131.

Parts subject to wear or abuse, such as mechanical seals, blades, piston rings, valves and packing, and other parts showing signs of abuse, neglect or failure to be properly maintained 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. Experienced, trained personnel in compliance with governmental and industrial safety standards should handle such substances.

Important notes relating to the European Union (EU) Machinery Directive

Compressors delivered without electric motors are not considered as machines in the EU Machinery Directive. These compressors will be delivered with a Declaration of Incorporation. The fabricator of the machinery must assure and declare full compliance with this Directive before the machine in which the compressor will be incorporated, or of which it is a part, is put into service.

Contacting the Factory

Before contacting the factory, note the model and serial numbers. The serial number directs Corken personnel to a file containing all information on material specifications and test data applying to the product. When ordering parts, the Corken service manual or Installation, Operations, and Maintenance (IOM) manual should be consulted for the proper part numbers. **ALWAYS INCLUDE THE MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING PARTS.**

The model and serial numbers are shown on the nameplate of the unit. Record this information for future reference.

Model No. _____

Serial No. _____

Date Purchased _____

Date Installed _____

Purchased From _____

Installed By _____

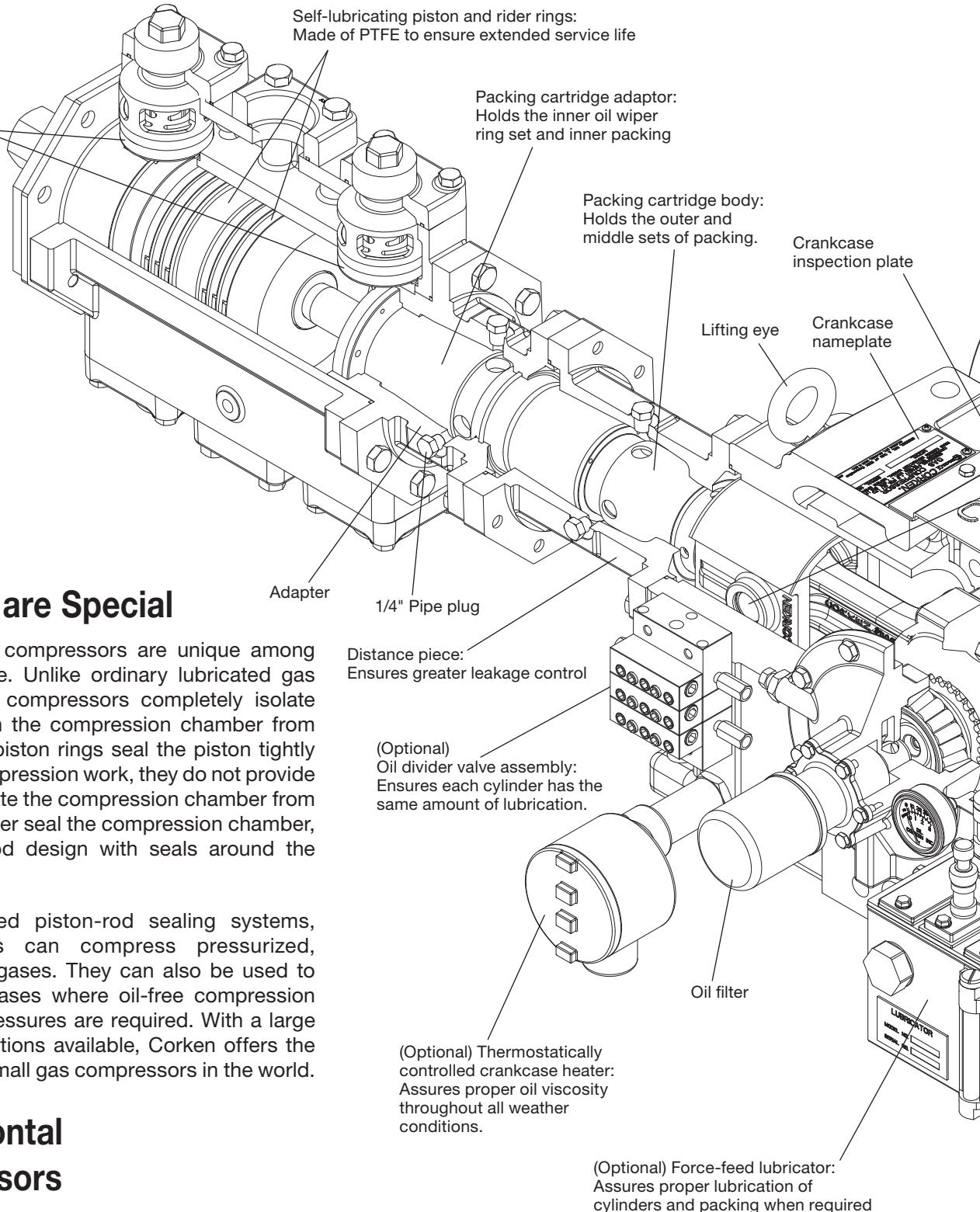
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Chapter 1—Introduction

Placement of valves:
Make inspection and
maintenance simple.

Self-lubricating piston and rider rings:
Made of PTFE to ensure extended service life



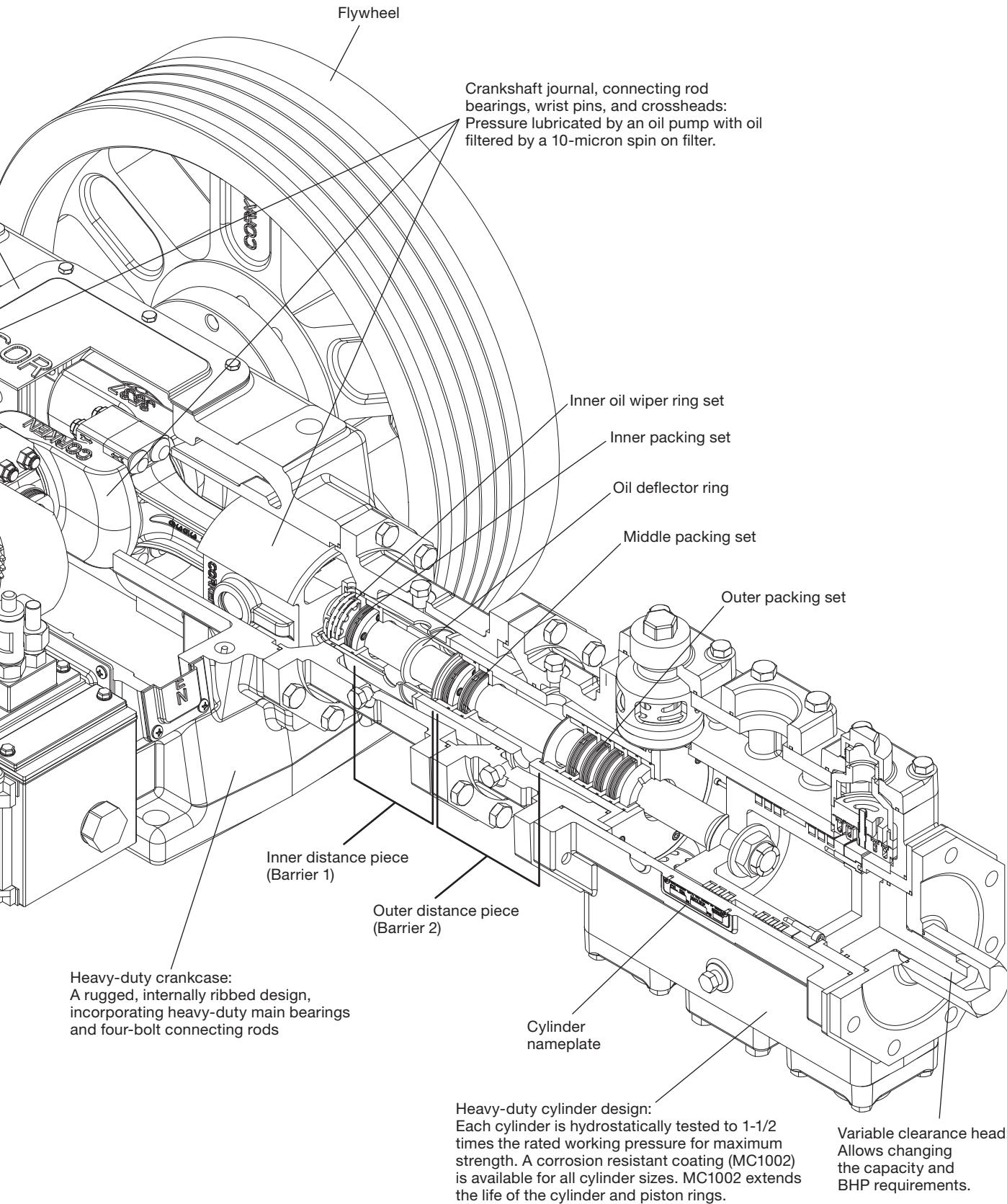
Why Corken Compressors are Special

Corken industrial gas compressors are unique among compressors their size. Unlike ordinary lubricated gas compressors, Corken compressors completely isolate the pressurized gas in the compression chamber from the crankcase. While piston rings seal the piston tightly enough for it to do compression work, they do not provide enough sealing to isolate the compression chamber from the crankcase. To further seal the compression chamber, a crosshead/piston rod design with seals around the piston rod is required.

By utilizing specialized piston-rod sealing systems, Corken compressors can compress pressurized, flammable, and toxic gases. They can also be used to compress harmless gases where oil-free compression or elevated suction pressures are required. With a large selection of design options available, Corken offers the most versatile line of small gas compressors in the world.

Corken Horizontal Gas Compressors

Corken's horizontal compressor is a double-acting reciprocating compressor; however, when an optional blank valve is used, the compressor is single acting. Corken horizontal compressors have a large number of configurations to fit individual requirements. They are manufactured as single stage- or two-stage units. For more information on the various configurations, refer to Appendix A.



Chapter 2—Installation of the Compressor

2.1 Location

NOTE: Compressor must be installed in a well ventilated area.

Corken compressors are designed and manufactured for outdoor duty. For applications where the compressor will be subjected to extreme conditions for extended periods such as corrosive environments, arctic conditions, etc., consult Corken. Check local safety regulations and building codes to assure installation will meet local safety standards.

Corken compressors handling toxic or flammable gases should be located outdoors. A minimum of 18 inches (457.2 mm) clearance between the compressor and the nearest wall is advised to make it accessible from all sides and to provide unrestricted air flow for adequate cooling.

Noise:

Corken Horizontal compressors should not exceed an 85 DBA noise level at a distance of one meter (3.3 ft.) when properly installed.

2.2 Foundation

The foundation design is the end user's responsibility. Local soil conditions can affect the foundation design. Generally speaking, the larger the foundation, vibration or shaking problems are less likely. As a rule of thumb, when preparing the foundation, the mounting slab should be 8 to 10 inches thick with the overall length and width 4 inches longer and wider on each side of the structural skid.

Grouting the skid helps reduce vibration. An un-grouted skid flexes and allows the compressor to vibrate.

Note: The depth of the concrete foundation will vary based on local soil conditions.

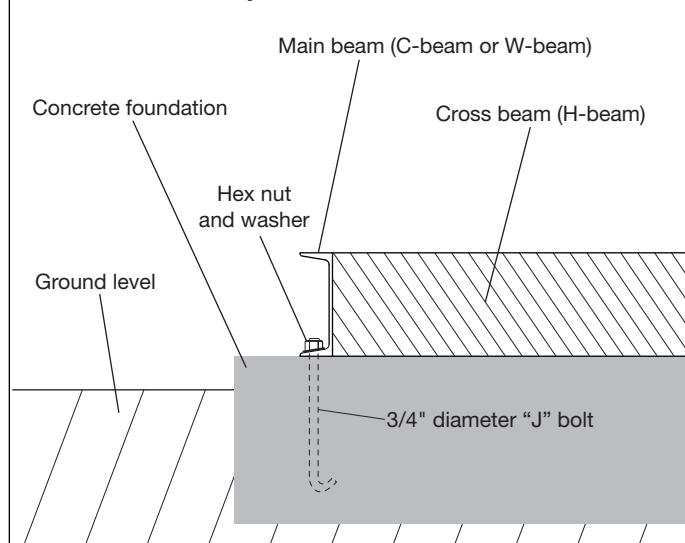


Figure 2.2

Secure the skid with 3/4-inch diameter "J" type anchor bolts embedded in the concrete. Use a sufficient length and strength and do not skip any holes on the skid. Expansion bolts and All-thread should never be used. All anchor bolts should be tightened on a routine basis.

NOTE: Be sure to use all anchor holes on the skid.

2.3 Piping

Piping design and installation is as important as the foundation for trouble-free compressor operation. Improper piping installation will result in undesirable compressor vibration transmission through the piping to other parts of the installation.

DO NOT SUPPORT PIPING WITH THE COMPRESSOR.

The compressor must not support any significant piping weight; therefore, the piping must be fully supported. The use of flexible connections to the compressor is highly recommended. Rigid, unsupported piping combined with a poor foundation will result in severe vibration. In order to reduce vibration in the piping induced by the compressor, flex hoses may be installed at the inlet and outlet. These should be oriented vertically and not horizontally. Vibration can also be caused by the pulsating flow of gas inside the pipes.

The pulsating flow is normal and to be expected from a piston type compressor. If this is a problem, it can generally be corrected with pipe supports or pulsation dampeners. In Corken's size range, generally, a small vessel in the piping is all that is required to act as a pulsation dampener. The rule of thumb to size a pulsation dampener is the volume must be at least ten times the swept cylinder volume. Please note that this calculation may vary depending on the application.

Pipe must be adequately sized to prevent excessive pressure drop between the suction source and the compressor as well as between the compressor and the final discharge point. In most cases, piping should be at least the same diameter as the suction nozzle on the compressor.

Install a strainer at the compressor inlet to reduce the amount of foreign particles in the gas stream. These can shorten the effective life of valves, piston rings, cylinder, etc.

Never install a shut-off valve in the discharge piping unless a safety relief valve is placed in the line between the shut-off valve and the compressor. Remember to consider future expansion when sizing piping and layout.

If a restrictive device such as an isolation valve or check valve is to be installed in the compressor's suction line, care must be taken. The suction line volume between

the restrictive device and the compressor suction nozzle must be at least ten times the swept cylinder volume.

On liquefied gas applications such as LPG, it is of extreme importance to prevent the entry of liquid into the compressor. Installing a liquid trap on the inlet side will prevent liquid from entering the compressor (see section 1.4). It is of equal importance to protect the discharge side of the compressor from liquid entry. This may be done by installing a check valve on the discharge side of the compressor combined with a piping design that does not allow liquid to gravity drain into the compressor.

For vapor recovery applications, be certain to install a check valve on vapor lines discharging to the liquid space of the tank.

All piping must be in accordance with the laws and codes governing the service. In the United States, the following codes apply:

For LP Gas—The National Fire Protection Association Pamphlet No. 58, Standard for the Storage and Handling of Liquefied Petroleum Gases.

For Ammonia—The American National Standards Institute, Inc., K61.1-1989, Storage and Handling of Anhydrous Ammonia.

Install, use, and maintain this equipment according to Corken instructions and all applicable federal, state, and local laws and codes.

2.4 Liquid Trap

Compressors are designed to pressurize gas and not pump liquids. The entry of even a small amount of liquid into the compressor will result in serious damage to the compressor.

A liquid trap (scrubber) must be installed in the suction piping and discharge line if condensate can drain back to the compressor.

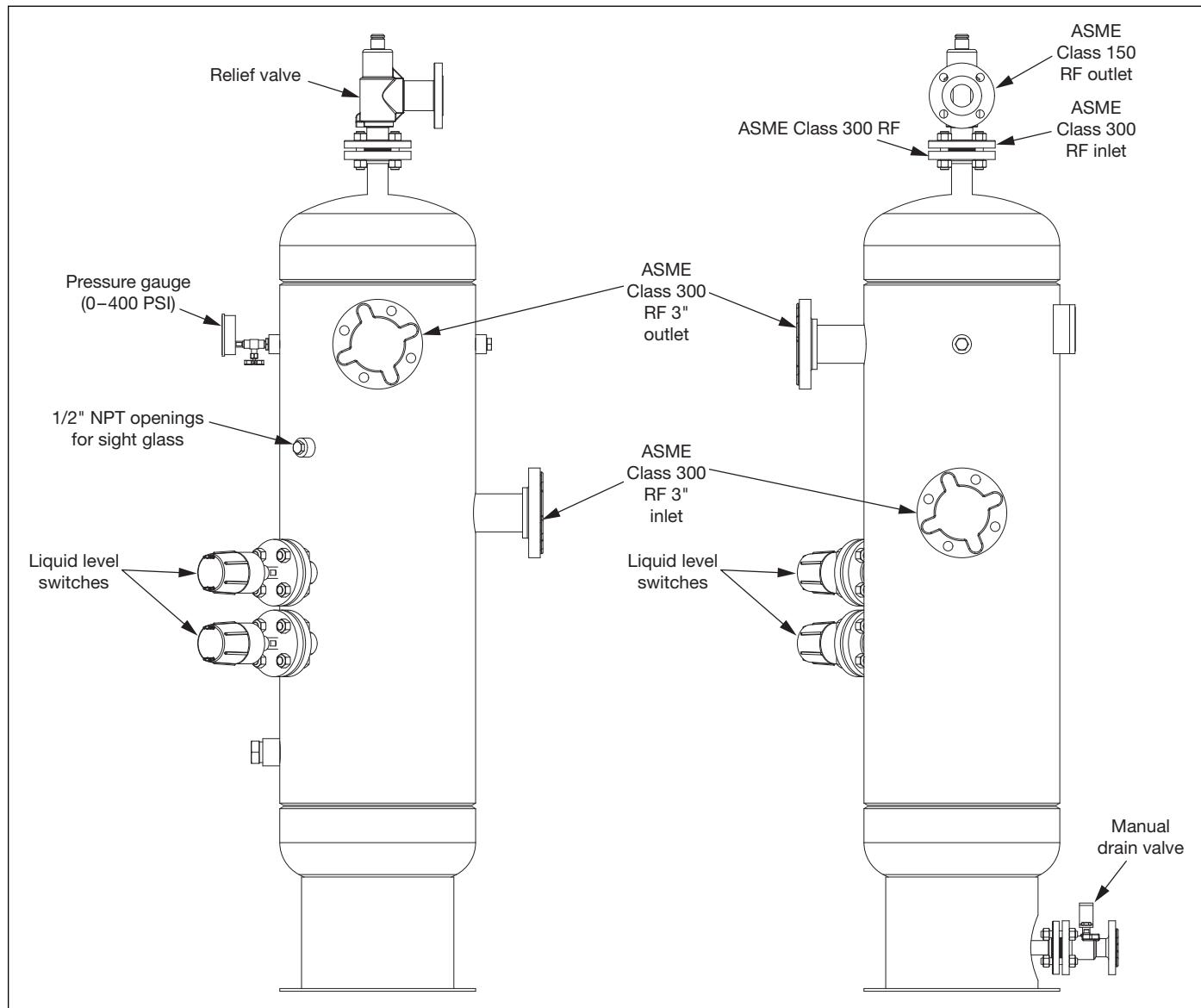


Figure 2.4

If the compressor is equipped with a liquid trap not manufactured by Corken, make sure it is adequately sized; otherwise, it may not be able to remove the liquid entrained in the suction stream.

Corken's liquid trap provides the most thorough liquid separation (see figure 1.4) and is American Society of Mechanical Engineers (ASME) code stamped. It contains:

- Manual drain valve.
- Relief valve designed according to the ASME code to protect the vessel
- Pressure gauge with isolation needle valve
- Two (2) level switches: one for alarm and one for shutdown. In some cases, the alarm switch is used to activate a dump valve (not included with trap) or sound an alarm so the operator can drain the trap using the manual drain valve at the bottom of the trap.
- This trap also contains a mist pad. A mist pad is a mesh of interwoven wire designed to remove fine liquid mists.

NOTE: The liquid level switches MUST be removed from the trap before grounding any welding devices to the trap or associated piping. Failure to do so will damage the switch contacts!

2.5 Driver Installation and Flywheels

Corken compressors may be driven by either electric motors or internal combustion engines (e.g. gasoline, diesel, natural gas, etc.). They are usually V-belt driven. The fly wheel has dual purpose it is sheave for the V-belts and for compressor speed variation reduction.

The electric motor wiring is extremely important and must be done by a competent electrician. Low voltage or improper wiring of the motor will result in expensive consequences. If there is a low voltage problem, call the power company.

Humid climates can cause problems with explosion proof motors. Explosion proof and TEFC motors are designed to expand and contract due temperature changes. This allows air to enter and exit the enclosures. The moist air inside the motor can condense and if enough water accumulates, the motor will fail.

To prevent this two method can be followed

- Make a practice of running the motor at least once a week on a bright, dry day for an hour. During this period of time, the motor will heat up and vaporize the condensed moisture.
- Motor space heaters are recommended which need to be powered at all times to vaporize the any moisture.

NOTE: No motor manufacturer will guarantee their explosion proof or totally enclosed (TEFC) motor against damage from moisture.

Drivers should be selected so the compressor operates between 400 and 1200 RPM. The unit must not be operated without the flywheel or severe torsional imbalances will result causing vibration and a high horsepower requirement. The flywheel should never be replaced unless it has a higher wk_2 value than the flywheel supplied from factory.

For installation with engine drivers, thoroughly review instructions from the engine manufacturer to assure the unit is properly installed.

2.6 Crankcase Lubrication

The crankcase was drained before shipment. Before starting the machine, fill the crankcase to the full mark on the oil bayonet and not above. To ensure proper lubrication of the crankcase parts, the crankcase should be filled through the crankcase inspection plate (see figure 2.6A for the proper oil filling location).

General Notes on Crankcase Oil

Corken gas compressors handle a wide variety of gases in a multitude of operating conditions. They are used in all areas of the world from hot dusty deserts, to humid coastal areas, to cold arctic climates. Some compressors may be lightly loaded and run only occasionally, while others may be heavily loaded and operate 24/7. Thus, no single crankcase oil or maintenance schedule is right for every compressor. Availability of brands and grades of oil can vary from one location to another. These factors can make it

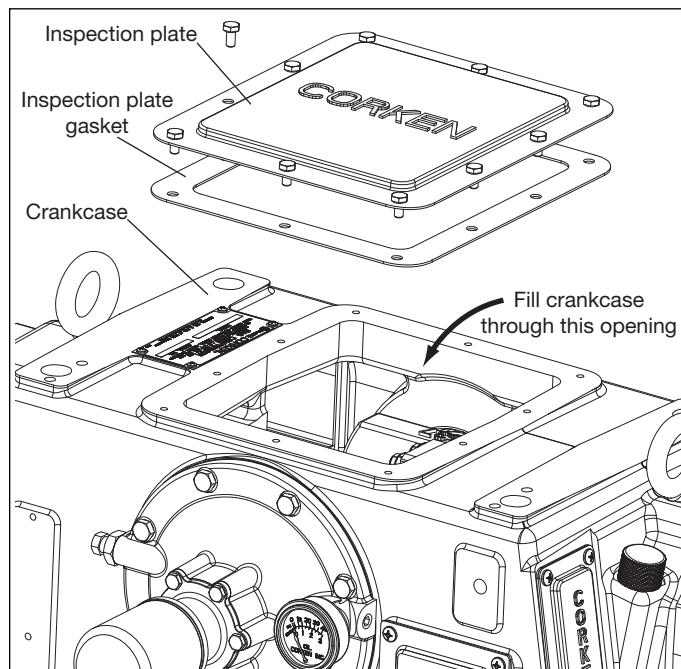


Figure 2.6A

challenging for a Corken compressor user to select a suitable crankcase oil. This guide is intended to aid in that regard.

Compressor Model	Approximate Capacity	
	Quarts	Liters
HG/THG600	7	6.6

Figure 2.6B

It is safe to say that purchasing a quality crankcase oil, and changing it regularly, is significantly less costly than the repair bill and downtime associated with a lubrication failure in any gas compressor. Considering the relatively small volume of oil used in Corken compressors, and the critical nature of the services where these compressors are used, selecting the appropriate high quality oil is the most economical choice. It will help ensure the dependability and longevity of the compressor.

Corken recommends using industrial oils (rather than engine oil or "motor oil"). Industrial oils have additives selected and blended for specific purposes. Many are designed specifically for the challenges inherent in compressor crankcases. Industrial oils are available as a conventional (mineral based) oil, a synthetic oil, or a blend of the two.

All new Corken compressors are tested at the factory using a conventional mineral oil. This oil is drained prior to shipment. An oil suitable for the anticipated environmental and operating conditions must be selected and added to the compressor prior to the initial startup.

Oils to Avoid

Selecting a crankcase oil based on low price or easy availability is seldom the best decision. Following are oils to avoid:

- **Do not use** any oil with a viscosity index below 95.
- **Do not use** any oil with a pour point less than 20°F (11°C) lower than the anticipated minimum ambient temperature (unless a crankcase oil heater is used).
- **Do not use** engine/motor oil.

See below for additional detail on each of these parameters.

Critical Oil Characteristics

Viscosity

Viscosity is the most important physical property of lubricating oil. Simply put, the viscosity of an oil is a measure of its resistance to flow. In gas compressors, oils with higher viscosity (like ISO 100) are thicker and are used for higher ambient temperatures. Oils with lower viscosity (like ISO 68) are thinner and are used at lower

ambient temperatures. If the oil's viscosity is too high, the oil may not circulate through the compressor adequately. If the viscosity is too low, the lubricating film will be unable to protect the components from wear.

Viscosity Index

Viscosity Index (VI) is a measure of how much the oil's viscosity changes as its temperature changes. A low viscosity index is an indication that the viscosity changes more as the temperature changes. Oils with low viscosity index tend to become thin as the oil temperature increases. This can cause lubrication failure as well as unstable oil pressure. A high viscosity index reflects a more stable viscosity, and is generally preferred for Corken compressors. **The minimum Viscosity Index for oils used in Corken compressors is 95** (VI is a unit-less number). This is particularly important when operating at high or low temperature extremes, or at a variety of ambient temperatures (seasonal changes). Oils with a high viscosity index can be used at wider ambient temperature range compared to oils with a lower viscosity index.

It should be noted that a conventional oil (not synthetic) with a high viscosity index may not necessarily be suitable for continuous service at high temperature. Such an oil will oxidize faster than a synthetic oil. Synthetics have naturally high viscosity index, and are therefore recommended for "heavy service" as described below—including high temperature and continuous duty applications. In many climates, the use of the correct synthetic oil will eliminate the need to change oil viscosity grades as the seasons change.

Pour Point

The pour point of an oil is the lowest temperature at which the oil flows. At temperatures below the pour point, the oil is essentially solid and can't freely flow to the compressor's bearings and other wear surfaces, or even to the compressor's oil pump.

The oil's pour point is particularly critical when starting a compressor at low temperature conditions. An oil should have a pour point at least 20°F (11°C) below the lowest expected ambient temperature. For example, if the minimum ambient temperature is expected to be 0°F (-18°C), the pour point must be no higher than -20°F (-29°C).

Do not assume the pour point of an oil is low enough. Consult the oil's technical data sheet – generally available on the oil manufacturer's website. Many conventional oils have a pour point around 0 to 15°F (-18 to -9°C) which is too high to use at low ambient temperatures. Synthetic oils generally have a lower pour point than conventional oils.

Crankcase Oil Recommendations

The primary factors for selecting a suitable crankcase oil from the chart below are ambient temperature range and the

anticipated service – normal service or heavy service. The ambient temperature determines the required oil viscosity. Consider the full range of high and low ambient temperatures at the compressor's location when selecting an oil. It may be necessary to use an ISO 100 in summer and an ISO 68 in winter. Synthetic oils generally have a wider ambient temperature range due to their higher viscosity index.

For the purpose of selecting a suitable crankcase oil for a Corken compressor, normal and heavy service are defined below.

Normal Service

“Normal service” can be defined as anything that is not considered “heavy service” as described below.

Common examples of “normal service” applications:

- LPG liquid transfer (intermittent duty)
- Ammonia liquid transfer (intermittent duty)
- Most tank evacuation applications

Conventional mineral based oils have been used successfully for many years in these services.

Heavy Service

“Heavy Service” is defined as an application where the compressor is subject to any one (or more) of the following:

- Continuous duty service (several hours each day or more)
- Compressor consistently loaded at or near its maximum horsepower rating
- Compressor speed is at or near its maximum speed rating
- Services with a “wet” gas such as natural gas with high content of heavy hydrocarbons such as butane, pentane, etc.
- Services dealing with low vapor pressure hydrocarbons (such as butane unloading in winter) where condensation in the gas can result in dilution of the crankcase oil
- Compressors operating at high or low temperature extremes

Synthetic oils are recommended for “heavy” services.

Crankcase Oil Recommendations (Except Ammonia Service)

Normal Service					
Ambient Temperature ¹	Oil Product	Oil Type ²	Viscosity ISO ³	Viscosity Index ³	Pour Point ³
40 to 100°F (4 to 38°C)	Mobil DTE 10 Excel 100	C	100	127	-27°F (-33°C)
	Mobil Rarus 427	C	100	100	16°F (-9°C)
	Phillips 66 Gas Compressor Oil	C	100	102	-20°F (-29°C)
	Chevron Regal R&O	C	100	97	5°F (-15°C)
	Sunoco Sunvis 900	C	100	95	-15°F (-26°C)
10 to 65°F (-12 to 18°C)	Mobil DTE 10 Excel 68	C	68	156	-38°F (-39°C)
	Mobil DTE Heavy Medium	C	68	95	5°F (-15°C)
	Phillips 66 Premium Gas Compressor Oil	B	68	133	-27°F (-33°C)
	Chevron Regal R&O	C	68	99	-11°F (-24°C)
	Sunoco Sunvis 900	C	68	104	-21°F (-29°C)
Heavy Service					
10 to 100°F (-12 to 38°C)	Mobil SHC 627 ⁴	S	100	162	-49°F (-45°C)
	Royal Purple Synfilm NGL 100	S	100	130	-44°F (-42°C)
	Dyna-Plex 21C Synzol CO ISO 100	S	100	132	-49°F (-45°C)
-20 to 90°F (-29 to 32°C)	Mobil SHC 626 ⁴	S	68	165	-59°F (-51°C)
	Royal Purple Synfilm NGL 68	S	68	132	-76°F (-60°C)

Crankcase Oil Recommendations (Ammonia Service Only)

Normal Service					
Ambient Temperature ¹	Oil Product	Oil Type ²	Viscosity ISO ³	Viscosity Index ³	Pour Point ³
40 to 100°F (4 to 38°C)	Mobil Rarus 427	C	100	100	16°F (-9°C)
10 to 65°F (-12 to 18°C)	Phillips 66 Ammonia Compressor Oil	C	68	102	-27°F (-33°C)
	Chevron Capella P68	C	68	96	-44°F (-42°C)
	Mobil Rarus 426	C	68	105	16°F (-9°C)
Heavy Service					
10 to 100°F (-12 to 38°C)	Mobil Gargoyle Arctic SHC 228 ⁵	S	100	147	-43°F (-45°C)
	Royal Purple Uni-Temp 100	S	100	124	-53°F (-47°C)
-20 to 90°F (-29 to 32°C)	Mobil Gargoyle Arctic SHC 226E ⁵	S	68	136	-58°F (-50°C)
	Royal Purple Uni-Temp 68	S	68	118	-51°F (-46°C)

¹ Consult Corken for oil recommendations in very hot climates—ambient temperatures consistently above 100°F (38°C).

² Oil type: C=Conventional, S=Synthetic, B=Conventional/Synthetic blend

³ Information available from oil manufacturers at the time of publication.

⁴ Mobil SHC oils are synthetic oils which require that the crankcase be flushed of residual mineral oil.

⁵ Mobil Gargoyle Arctic SHC oils are synthetic oils which require that the crankcase be flushed of residual mineral oil.

Ammonia Service

Compressing ammonia presents particular challenges from a lubrication standpoint. Never use a detergent oil in a compressor in ammonia service. Ammonia will react with the detergent and cause lubrication failure. Fortunately, some oils are specifically blended for use in ammonia compressors — though some of these are best suited only for cooler climates.

Consult these charts or the oil manufacturer's product data sheet for information regarding the oil's viscosity, viscosity index, pour point, etc. This information is generally available online or from the oil supplier. Do not use an oil if its critical properties can not be confirmed, or if there is any other reason to doubt its suitability. Contact Corken if additional assistance is needed when selecting a crankcase oil.

Oil Change Intervals

Oil change intervals can vary significantly depending on local environmental conditions, the gas being compressed, and the oil being used. Unless there are factors that shorten the life of the oil, the following recommendations apply:

Conventional oil: 2200 hours or 6 months—whichever comes first

Synthetic oil: 6000–8000 hours* or one year—whichever comes first

* Oil change intervals in this range should be confirmed via oil analysis.

Environmental or operational issues such as dirty/dusty or humid conditions will require more frequent oil changes. Contamination/dilution of the oil by liquids in the gas stream can also shorten the life of the oil. Visually check the oil level and the oil condition at least monthly (compare to unused oil).

Indications that dictate more frequent oil changes:

- Unusually dirty or discolored oil (or unusual smell)
- Oil dilution by condensation or other liquids in the gas stream (see below)
- Change in viscosity for any reason (various oil additives can break down over time)
- Changing ambient temperature may cause the need for a different viscosity

The oil should be changed as often as necessary to maintain clean, undiluted oil of the proper viscosity. Each time the oil is changed, the oil filter (Corken part number 4225) should also be changed.

Oil analysis

The best way to determine the needed oil change interval for any particular compressor is to have an oil analysis

conducted. Numerous labs can analyze a used oil sample and advise its condition. After 2–3 such tests, a determination can be made for a recommended oil change interval for a particular compressor in its specific environmental situation and operating conditions. Regular oil analysis can help improve the compressor durability and decrease oil usage by maximizing the oil change intervals. Based on the oil analysis, the oil can be changed when it is needed, and not changed when it is not yet necessary.

Oil dilution

Crankcase oil can be diluted by various products in the gas stream. As an example, when compressing butane in winter, the vapor pressure is very low and there can be a lot of entrained liquid butane with the gas stream. This liquid can collect in the compressor and dilute the crankcase oil. This thins the oil and reduces its ability to properly lubricate the compressor.

Hydrocarbon mixtures containing heavy hydrocarbons such as butane, pentane, hexane, etc. often operate at pressure above the vapor pressure of these heavier constituents. Thus, they often produce a “wet” gas which can dilute the crankcase oil.

Long term storage

When a compressor is removed from long term storage, the oil should be changed before putting the compressor back into service. Specifically, if it has been unused over a season (such as over a winter), the oil should be changed.

Crankcase Oil Heater Option

Corken offers a crankcase oil heater as an option on all models except the small model 91. This heater is available in 110V and 220V versions and is rated for Class 1, Division 1 and 2, Group B, C, D service. The heater includes a thermostat set at 70°F (21.1°C). The heater alleviates concerns about cold weather startup. When using the heater, an ISO 100 viscosity oil will do well regardless of low ambient temperature.

Note that all Corken HG600 compressors come ready to accept the optional heater.

Cylinder Lubricating Oil

All Corken gas compressors are designed to operate without cylinder lubrication. However, many Corken Customers, particularly in the oil and gas industry, use lubricated compressor cylinders to extend the service life of the compressor's valves, piston rings, and packing. Compressor cylinders operate at higher temperatures than the crankcase, so oils used in this service often have a higher viscosity than the crankcase oil. A viscosity of ISO 150 (or higher) is common for cylinder lube oil. Several companies make oil specifically designed for this service and many of these oils have properties that inhibit dilution or washing away of the oil by condensates in the process

gas. These oils typically also have properties that prevent corrosion and carbon buildup in the cylinders and valves. Contact Corken is assistance is needed in selecting a suitable cylinder lubricating oil. Oil manufacturers are often a good source for this information as well.

Engine oils (motor oils) should never be used as a cylinder lubricant. The additives in engine oil are poorly suited for that purpose.

Engine Oils (Motor Oils)

At noted above, engine oils (or motor oils) are not recommended for use in Corken compressor crankcases or cylinders. Engine oils are formulated for use in internal combustion engines and contain additives that specifically counter the contaminants created by the combustion of fuel (soot, CO₂, water, etc.). As such, they are not necessarily the best oils to use in a gas compressor.

Detergents and dispersants in engine oils can react with the compressor's process gas, or form emulsions inside the compressor's crankcase that are detrimental to lubrication. Ultimately, this negatively effects the oil's properties and damages the compressor's critical internal components.

If a suitable industrial oil is not readily available, engine oils can **temporarily** be used in Corken compressors in normal service, but only until a suitable industrial oil can be sourced (see above for definition of "normal service"). Engine oils should not be used for compressors in "heavy service".

Engine oil is labeled with an API "donut" indicating the API Service Grade. It is **critical** that the engine oil have an API Service Grade of **SJ or better**. Engine oils with an API Service Grade of SA and SB are obsolete, but still readily available. These very low quality oils should **never** be used in Corken compressors. Industrial oils do not receive an API Service Grade like engine oil does.

2.7 Relief Valves

A relief valve should be fitted in the piping between the compressor discharge any device that blocks or restricts the gas flow. Relief valves should be properly sized and made of a material compatible with the gas being compressed and temperatures generated by the compressor. Local codes and regulations should be checked for specific relief valve requirements. Also, relief valves may be required at other points in the compressor's system piping like to protect ASME code vessels.

A rule of thumb to select the set pressure on a relief valve located on compressor piping discharge is for it to be between 10–20% above the highest discharge pressure the compressor can produce, but less than the maximum compressor working pressure. This can vary with relief valve manufacturer so consult the valve supplier.

2.8 Shutdown/Alarm Devices

For all applications, shutdown/alarm sensors (switches or transmitters) provide worthwhile protection that may prevent serious damage to the compressor system. All electronic devices should be selected to meet local code requirements. Shutdown/alarm devices typically used on Corken compressors are as follows:

- Low Oil Pressure Sensor:** Shuts down the unit if crankcase oil pressure falls below 15 psig (1.03 bar g) due to oil pump failure or low oil level in crankcase. The switch or the compressor controller must have a 30 second delay on startup which allows the compressor to build oil pressure in the crankcase.
- High Discharge Temperature Sensor:** This sensor is strongly recommended for all applications. Both sensor and the compressor have an operating range. It is preferable that the sensor set point be 30°F (17°C) above the normal compressor discharge temperature, but below the maximum design temperature for O-ring material used on the compressor (see note below). The O-ring code can be found on the compressor model number.

Note: Maximum temperature for these material are:

- Buna-N and Neoprene^{®1} 250°F (121°C)
- Viton^{®1} and PTFE 350°F (177°C)

¹ Registered trademark of the DuPont Company.

- Low Suction Pressure Sensor:** Shuts down the unit if inlet pressure is below a preset limit (set point). The set point should follow these guidelines:

- For safety shut off it must be greater than the compressor minimum suction pressure (atmospheric) to prevent pulling oil from the crankcase into the gas stream.
- For process shut off a good rule of thumb set point is 25% of product vapor pressure. It can be lower or higher based on economic decision on how much product can be recovered. This decision must be made by the customer.

- High Discharge Pressure Sensor:** Shuts down the unit if outlet pressure is above a preset limit (set point). The set point should follow these guidelines:

- Less than the compressor's maximum working pressure.
- Less than 80–90% of the relief valve pressure set point (consult relief valve manufacturer)
- Greater than the compressor's discharge pressure based on normal operating conditions.

- Vibration Switch:** Shuts down the unit if vibration becomes excessive.

Chapter 3—Starting Up the Compressor

The initial operation of the compressor is the most critical time it will ever face. **READ ALL OF CHAPTER TWO BEFORE PROCEEDING TO THE STARTUP CHECKLIST.**

3.1 Inspection After Extended Storage

If the compressor has been out of service for a long period of time, make sure the cylinder bore and valve areas are free of rust and other debris. For valve and/or cylinder head removal instructions, refer to chapter 4 of this IOM manual.

Drain the oil from the crankcase and remove the crankcase inspection plate. Inspect the running gear for signs of rust and clean or replace parts as necessary. Fill crankcase with the appropriate lubricant through the crankcase inspection plate opening. Squirt oil on the crossheads and rotate the crankshaft by hand to ensure that all bearing surfaces are coated with oil.

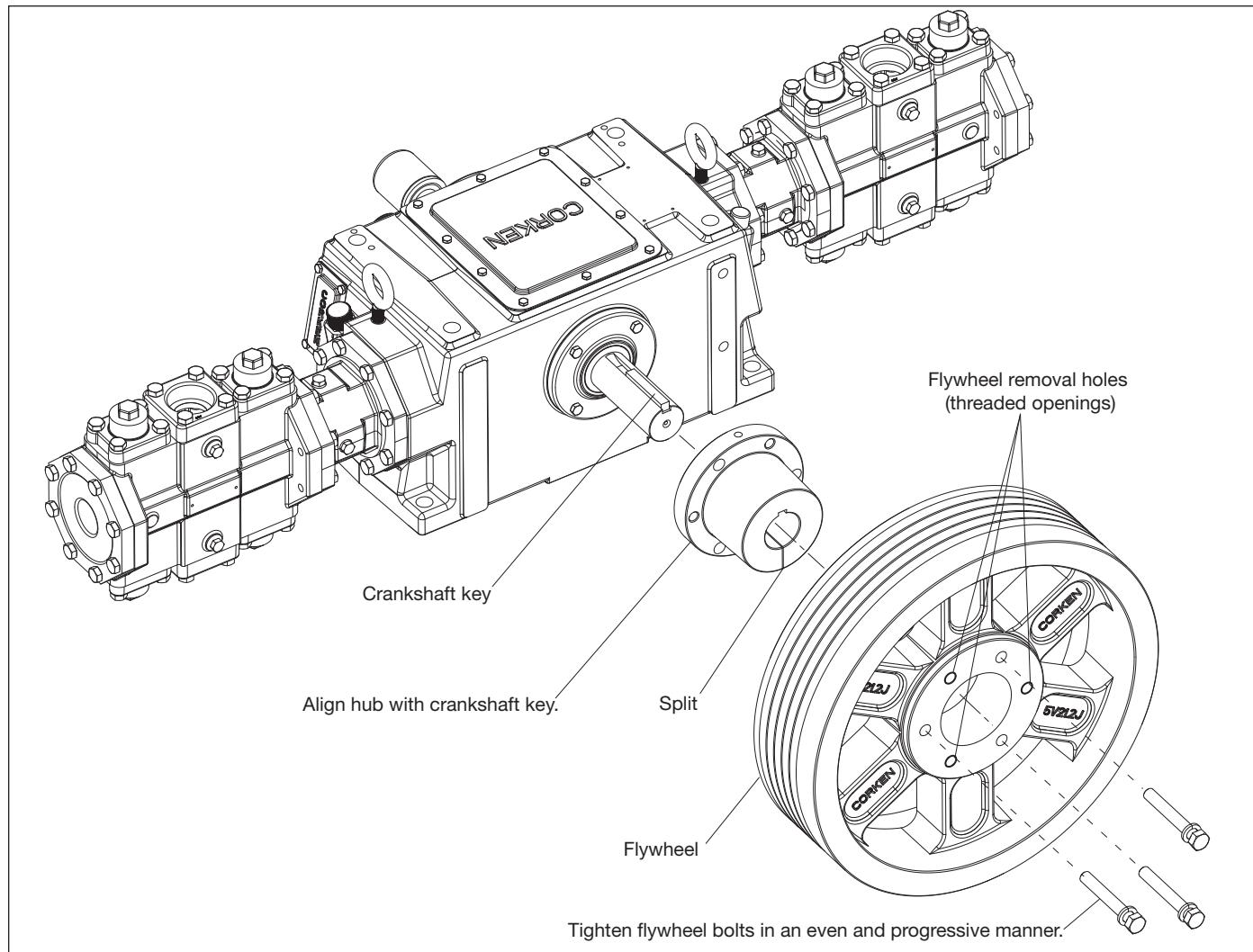
Rotate unit manually to ensure running gear functions properly. Replace the crankcase inspection plate and proceed with startup.

3.2 Flywheel and V-belt Alignment

Before working on the drive assembly, be sure that the electric power is disconnected. When mounting new belts, always make sure the driver and compressor are close enough together to avoid forcing.

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

The flywheel is mounted on the shaft via a split, tapered bushing and three bolts (refer to figure 3.2A). These bolts should be tightened in an even and progressive manner until torqued as specified below. There must be a gap between the bushing flange and the flywheel when installation is complete. Always check the flywheel runout before startup and readjust if it exceeds the value listed in Appendix B.



NOTE:

- 1) When using **five individual V-belts** (5V or 5VX), 1/4 to 3/8 inches (6.4 to 9.5 mm) of movement is normal.
- 2) When using **five banded V-belts**, movement will be much less due to the stiffness of the banded V-belt design.

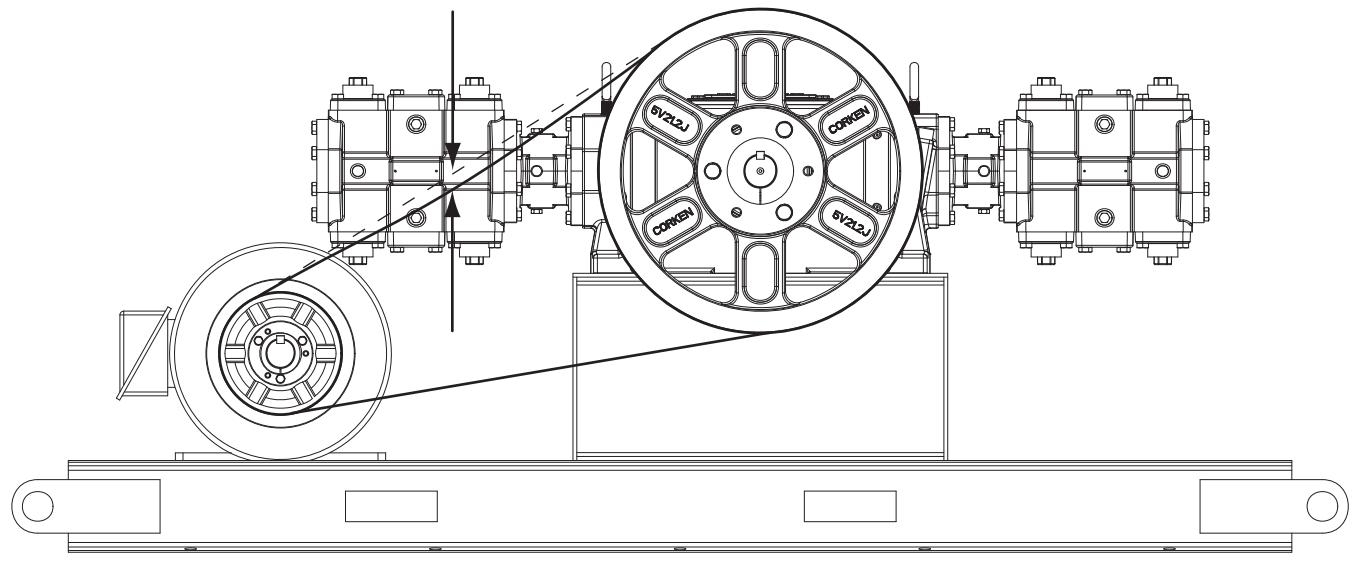


Figure 3.2C

Hub Size	Diameter in. (cm)	Bolt Torque Ft-lb (kg-meter)	Set Screw Torque Ft-lb (kg-meter)
SF	4.625 (11.7)	12–18 (1.7–2.5)	22 (3.1)
E	6.0 (15.2)	30–36 (4.1–4.9)	22 (3.1)
J	7.25 (18.4)	75–81 (10.3–11.1)	109 (15.1)

Figure 3.2B

Tighten the belts until they are taut, but not extremely tight. Consult the V-belt supplier for specific tension recommendations. Belts that are too tight may cause premature bearing failure. Refer to figure 3.2B.

3.3 Crankcase Oil Pressure Adjustment

The compressor is equipped with an automatically reversible gear type oil pump. It is essential to ensure the pumping system is primed and the oil pressure is properly adjusted in order to assure smooth operation.

Before starting the compressor, check and fill the crankcase with the proper amount of lubricating oil (see figure 1.6B for details).

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 and loosen the oil filter. Restart the compressor and run until oil comes out and tighten the filter.

The oil pressure should be about 20 psi (1.4 bars) minimum for normal service. If the discharge pressure is above 200 psi (13.8 bars) the oil pressure must be maintained at a minimum of 25 psi (1.7 bars). A spring-loaded relief valve mounted on the bearing carrier opposite the flywheel regulates the oil pressure. As shown in figure 3.3, 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 re-tighten it after making any adjustment.

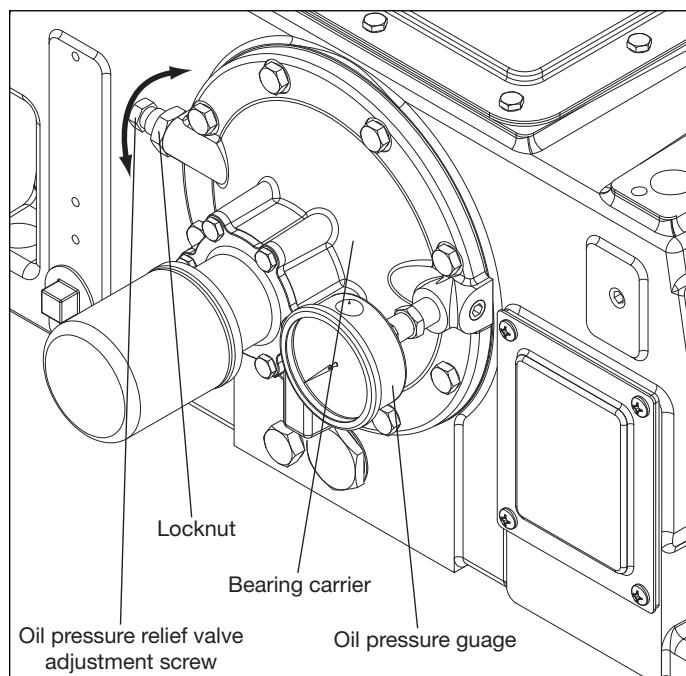


Figure 3.3

3.4 Compressor Speed and Rotation Direction

The lubrication system of the Corken horizontal compressor is designed to operate at a minimum of 400 RPM. If lower speeds are necessary, consult the factory. The maximum speed is 1200 RPM. The crankshaft may be rotated in either direction.

3.5 Compressor Cooling

AIR COOLED: Double acting units generate a lot of heat around the valve area. It is very important that the compressor be located where good air flow and ventilation can be provided. In extreme cases external cooling fans can be used to provide additional air flow across the cylinders.

WATER COOLED: If the compressor has water cooled cylinders (optional), be sure that the cooling system has been inspected for leaks and proper circulation. Purge air from the cooling jackets to eliminate air pockets in the cooling system. If chilled water systems are used be sure that water shut-off valves are installed to stop water flow when compressor stops. Monitor system for any signs of internal sweating. If internal moisture is detected, water temperatures and flow rates should be checked. Normal flow rate for cylinders is approximately 1–2 gpm.

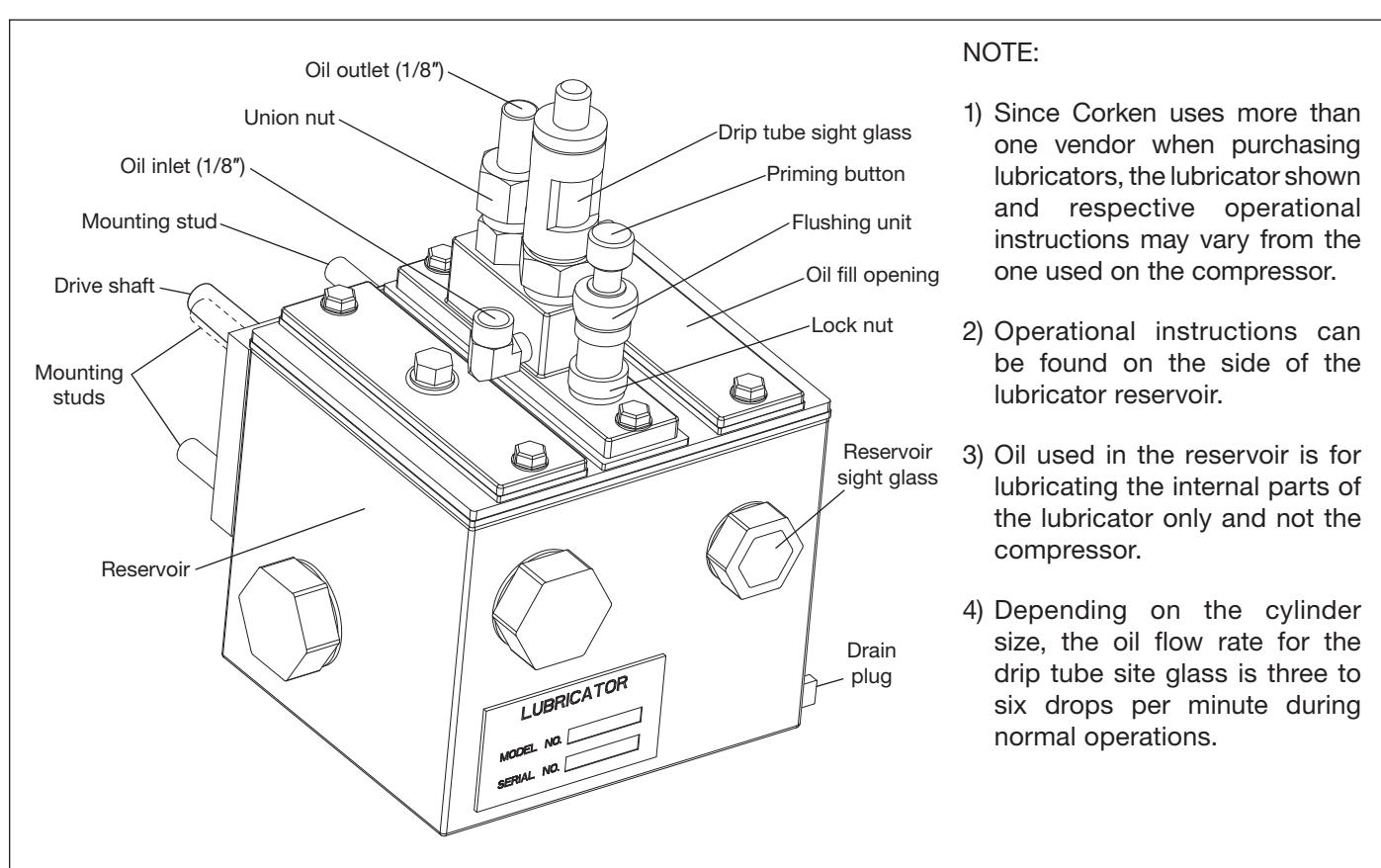
3.6 Force Feed Cylinder Lubrication (Lubed models only)

An external lubricator is bolted directly to the crankcase and is driven by a chain inside the crankcase at 80% of crankshaft speed. To ensure each cylinder receives the same volume of lubrication, an oil divider valve assembly is also mounted to the opposite end of the crankcase (see lubricator assembly details in Appendix D). Since lubricators supplied with Corken compressors are made by a number of different manufacturers, refer to the manufacturer's instructions provided with the lubricator for specific details on priming, adjusting, and maintaining the lubricator. Basic operating instructions and flow rate adjustments are also listed on the side of the lubricator reservoir.

At the initial setup of the compressor, the lubricator flow should be set to maximum capacity. After the first hour, reduce the flow to normal operating levels. Normal operating levels range from three to six drops per minute depending upon the cylinder size.

NOTE: The lubricator supplied with a CORKEN compressor must be supplied with oil from an external supply tank and NOT from the compressor crankcase or lubricator reservoir.

Oil types: Refer to section 2.6 (crankcase lubrication).



NOTE:

- 1) Since Corken uses more than one vendor when purchasing lubricators, the lubricator shown and respective operational instructions may vary from the one used on the compressor.
- 2) Operational instructions can be found on the side of the lubricator reservoir.
- 3) Oil used in the reservoir is for lubricating the internal parts of the lubricator only and not the compressor.
- 4) Depending on the cylinder size, the oil flow rate for the drip tube site glass is three to six drops per minute during normal operations.

Typical lubricator shown above.

3.7 Variable Clearance Heads (VCH)

Variable clearance head (VCH) assemblies (outboard) allow adjustment of the compressor when operating conditions change. Turning the clearance volume adjusting cup changes the capacity and bhp requirements of the cylinder. Normally, the packager has already provided at least a preliminary adjustment of the VCH. If not, it may be necessary to adjust the heads for maximum clearance before startup. After startup, adjust the heads inward to increase the capacity and bhp of the cylinder to the desired levels.

To adjust the variable clearance heads, follow the steps below.

- 1) Remove the VCH adjusting screw nut. Adjustment can be made while the unit running.
- 2) Turn the end of the adjusting cup to adjust the cylinder head end clearance.
- 3) Turning the end of the adjusting cup inward (clockwise) reduces cylinder head end clearance.
- 4) Turning the end of the adjusting cup outward (counterclockwise) increases cylinder head end clearance.
- 5) Replace the VCH adjustable screw nut and O-ring.

The approximate clearance volume change per turn of the adjusting bolt is 3%.

3.8 Startup Check List

Please verify all of the items on this list before starting the 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 all mounting shims, cylinder and piping supports to ensure that no undue twisting forces exist on the compressor.
6. Verify that strainer elements are in place and clean.
7. Verify that cylinder bore and valve areas are clean.
8. Check V-belt tension and alignment. Check drive alignment on direct drive units.
9. Rotate unit by hand. Check flywheel for wobble or play.
10. Check crankcase oil level.
11. Drain all liquid traps, separators, etc.
12. Verify proper electrical supply to motor and panel.
13. Check that all gauges are at zero level reading.
14. Test piping system for leaks.
15. Purge unit of air before pressurizing with gas.
16. Carefully check for any loose connections or bolts.
17. Remove all stray objects (rags, tools, etc.) from vicinity of unit.
18. Verify that all valves are open or closed as required.
19. 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 (not at the starter).
7. Test each shutdown device and record set points.
8. Test all relief valves.
9. Check and record all temperatures, pressures and volumes after 30 minutes and one hour.
10. After one hour running time, tighten all head bolts, valve holdown bolts, and baseplate bolts. See [Appendix B](#) for torque values.

Chapter 4—Routine Maintenance Chart

Item to Check	Daily	Weekly	Monthly	Six Months	Yearly
Crankcase oil pressure	●				
Compressor discharge pressure	●				
Overall visual check	●				
Crankcase oil level			● ¹	● ¹	
Drain liquid from accumulation points	● ²				
Drain distance pieces	●				
Clean cooling surfaces on compressor and intercooler (if any)		● ⁴			
Lubricator supply tank level (if any)		●			
Check belts for correct tension			●		
Inspect valve assemblies				●	
Lubricate motor bearings in accordance with manufacturers' recommendations				●	
Inspect motor starter contact points					●
Inspect piston rings ¹				● ³	

¹ Change oil every 2,200 hours of operation or every 6 months, whichever occurs first. If the oil is unusually dirty, change it as often as needed to maintain a clean oil condition. Change replacement filter 4225 with every oil change.

² Liquid traps should be drained prior to startup.

³ Piston ring life varies greatly, depending on application, gas, and operating pressures. Consult factory for additional recommendations for a specific application.

⁴ Follow all safety precautions and use appropriate PPE (glasses, eye protection, special clothing, etc.) while cleaning. In particular, verify cooling fins are cleaned regularly with a non-toxic, non-flammable, non-corrosive cleaning agent.

Chapter 5—Routine Service and Repair Procedures

CAUTION: Always relieve pressure in the unit before attempting any repairs. After repair, the unit should be pressure tested and checked for leaks at all joints and gasket surfaces.

If routine maintenance is performed as listed in chapter 4, repair service is generally limited to replacing valves or piston rings. When it comes time to order replacement parts, be sure to consult the part details appendix in the back of this Installation, Operation & Maintenance (IOM) manual for a complete list of part numbers and descriptions.

5.1 Compressor Valves

Test the compressor valves by closing the inlet piping valves while the unit is running; however, do not allow the machine to operate in this way very long. If the inlet pressure gauge does not drop to zero almost immediately, one or more of the compressor valves is probably damaged or dirty. However, it is possible for the pressure gauge itself to be faulty.

In most cases, if a compressor valve or valve gasket is leaking, it will create more heat. On a single stage

compressor, compare the operating temperatures of the two suction or discharge valves and cover plates to each other. If a valve or gasket is leaking, it will have a higher operating temperature. NOTE: This method will not be suitable for two stage compressors if each stage does not have more than one valve.

Each suction and/or discharge valve assembly is easily removed as a unit for inspection. If any part of the valve assembly is broken, the valve assembly should be replaced. See valve assembly parts details in the [Appendix D](#) for a complete list of part numbers and descriptions.

If a compressor valve is leaking due to dirt or any other foreign material that keeps the valve plate and seat from sealing, the valve may be cleaned and reused. New gaskets and/or O-rings should be used to ensure a good seal.

The valve holdown components and valve assemblies listed in [Appendix D](#) show the various specifications used on horizontal compressors. Since more than one suction valve arrangement is available for each model of compressor, it is necessary to know the complete model number so the valve type specification number can be identified (see example listed below).

Model number THG601BBGM	4	FBANSNNN
Valve type = spec 4		

Valve Inspection and/or Replacement

Before removing and inspecting the valves, begin by depressurizing and purging (if necessary) the unit and refer to Appendix D.

Disassembly of 2.75" Cylinder Size

1. Remove the valve cover plate and O-ring by removing each of the three bolts.
2. After the cover plate and O-ring have been removed, the valve assembly and valve gasket can be lifted out.
3. Inspect valves for breakage, corrosion, debris and scratches on the valve plate. In many cases, valves may simply be cleaned and reinstalled. If the valves show any damage, they should be repaired or replaced. Replacement is usually preferable although repair parts are available. If valve plates are replaced, seats should also be lapped until they are perfectly smooth. If more than .005 of an inch must be removed to achieve a smooth surface, the valve should be discarded. If plates are replaced without re-lapping the seat, rapid wear and leakage may occur.

Assembly of 2.75" Cylinder Size

1. Insert metal valve gasket into the suction and/or discharge opening of the head. The metal valve gasket should always be replaced when the valve is reinstalled.
2. Insert cleaned or new valve assembly. Make sure the suction and discharge valves are in the proper suction and discharge opening in the head.
3. Replace the O-ring and valve cover plate. Torque the bolts to the value listed in Appendix B. NOTE: Gaskets and O-rings are not normally reusable.
4. Check bolts after first week of operation. Re-torque if necessary. See Appendix B for torque values.

Disassembly of 3.25", 4", 5", 6" and 8"

Cylinder Sizes

1. Unscrew the valve cap and remove the O-ring.
2. Remove the valve cover plate, O-ring and holddown screw by removing each of the four bolts. The holddown screw is easily removed with the special wrench supplied with the compressor.
3. After the cover plate and O-ring have been removed, the valve cage, valve assembly and valve gasket can be lifted out.
4. Inspect valves for breakage, corrosion, debris and scratches on the valve plate. In many cases, valves may simply be cleaned and reinstalled. If the valves show any damage, they should be repaired or

replaced. Replacement is usually preferable although repair parts are available. If valve plates are replaced, seats should also be lapped until they are perfectly smooth. If more than .005 of an inch must be removed to achieve a smooth surface, the valve should be discarded. If plates are replaced without re-lapping the seat, rapid wear and leakage may occur.

Assembly of 3.25", 4", 5", 6" and 8" Cylinder Sizes

1. Insert metal valve gasket into the suction and/or discharge opening of the head. The metal valve gasket should always be replaced when the valve is reinstalled.
2. Insert cleaned or new valve assembly. Make sure the suction and discharge valves are in the proper suction and discharge opening in the head.
3. Insert the valve cage.
4. Replace the O-ring and valve cover plate. Torque the bolts to the value listed in Appendix B. CAUTION: Be sure the holddown screw has been removed.
5. To ensure the valve gasket is properly seated, insert the holddown screw and tighten to the value listed in Appendix B. NOTE: Gaskets and O-rings are not normally reusable.
6. Replace the O-ring and valve cap and tighten to the value listed in Appendix B.
7. Check bolts and valve holddown screws after first week of operation. Re-torque if necessary. See Appendix B for torque values.

5.2 Heads

A horizontal compressor cylinder head or adjusting cap seldom require replacement if the compressor is properly maintained. The primary cause of damage to a cylinder head and adjusting cap is corrosion and the entry of solid debris or liquid into the compression chamber. Improper storage can also result in corrosion damage to the cylinder heads and adjusting caps (for proper storage instructions see chapter 6).

Many compressor repair operations require removal of the cylinder heads and adjusting caps. While the compressor is disassembled, special care should be taken to avoid damage or corrosion. If the compressor is to be left open for more than a few hours, bare metal surfaces should be coated with rust preventative.

When reassembling the compressor, make sure the bolts are re-tightened to the torque values listed in Appendix B.

5.3 Piston Rings and Piston Ring Expander Replacement

Piston Ring Life—Dry Cylinder Compressor Applications

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. The normal life expectancy is approximately 2,200 hours of continuous service within recommended compression ratios. However, ring life will vary considerably depending upon 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 operating at a low temperature. A low ambient temperature and compression ratio along with better intercooling will provide better ring wear.

Piston Ring Life—Lubricated Cylinder Compressor Applications

If the compressor is equipped with cylinder lubrication, piston rings have a longer service life than the dry cylinder units described above.

Piston ring life varies considerably from application to application but improves dramatically at lower speeds and temperatures.

Piston and Piston Ring Expander Replacement

1. To replace the piston rings, depressurize the compressor and purge if necessary.
2. Remove the cylinder cap (if any) and head.
3. Loosen the piston cap screws and remove the piston cap as shown in figure 5.3 by pinching two loose screws together.

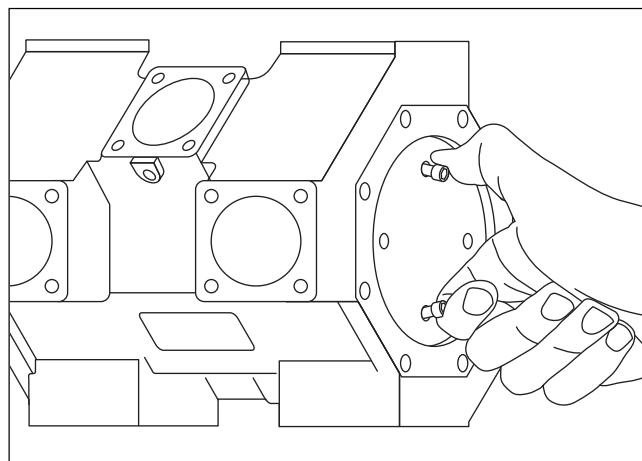


Figure 5.3

4. Remove the lock nut, washer and shims and pull the piston off the end of the piston rod. Keep track of which piston washer and shims came out of each cylinder.
5. Piston rings and expanders may then be easily removed and replaced. Corken recommends replacing expanders whenever rings are replaced. To determine if rings should be replaced, measure the radial thickness and compare it to the chart in [Appendix B](#).

5.4 Pistons

While reading the following instructions, refer to [Appendix D](#) for parts details.

1. To replace the pistons, depressurize the compressor and purge if necessary.
2. Remove the head (or adjusting screw nut, cylinder cap, adjusting cup and head—applies to adjustable head configuration only) as shown in [Appendix D](#).
3. Remove the piston cap and shims by loosening and removing the piston cap screws holding the piston cap to the piston. Re-insert two loose screws as shown in figure 5.3. Using fingers, pinch the screws together and pull the piston cap out of the cylinder.
4. Remove the lock nut and thrust washer and pull the piston out of the cylinder. Then, remove the thrust washer and shims on the end of the piston rod.
5. Check the thrust washer and shims for damage and replace if necessary.
6. Measure the thickness of the existing shims.
7. Insert one thrust washer against piston rod shoulder followed by the same shims (or the same thickness of shims) as before.
8. Before installing the piston, attach the piston ring expanders and piston rings to the piston. Then, install the piston on the piston rod.
9. Install a thrust washer and lock nut and tighten the lock nut to the value listed in [Appendix B](#).
10. Now remove an inboard valve and measure dimension "Y" on the inboard end of the piston as shown in [Appendix B](#). If this measurement does not fall within the tolerances listed in the piston assembly details ([Appendix B](#)), remove the piston and adjust the shims as necessary. Re-install the piston and tighten the lock nut to the value listed in [Appendix B](#). Re-measure the "Y" dimension.
11. After the "Y" dimension is within tolerance, install the piston cap with the same shim/shims (or same thickness of shims) as before.

-
12. Torque the piston cap screws to the value listed in Appendix B.
 13. Install the head (or head and adjustable cap—applies to adjustable head configuration only) as show in Appendix D. Torque bolts to the value listed in Appendix B.
 14. Now remove an outboard valve and measure dimension "X" at the outboard end of the piston as shown in the Appendix B. If this measurement does not fall within the tolerances in Appendix B, remove the head (or head and adjustable cap—applies to adjustable head configuration only) and piston cap and adjust the shims as necessary. Re-install the piston cap and tighten the piston cap screws in an alternating sequence to the values listed in Appendix B. Re-install the head (or head and adjustable cap—applies to adjustable head configuration only) and torque to the value listed in Appendix B. Re-measure the "X" dimension again.
 15. After the "X" dimension is within tolerance, remove the adjustable cap and install the adjustable cup followed by the adjustable cap and adjustable screw nut as shown in Appendix D.
 16. Torque the bolts in an alternating sequence to the values listed in Appendix B.
 17. Replace the previously removed valves. Best results will be obtained if new valve gaskets are used.
 18. Follow standard startup procedures.
- 1) Keep foreign material out of crosshead bore on crankcase. Wipe inside of bore with clean rag and coat bore with oil.
 - 2) Inspect piston rod for cleanliness and coat with oil before assembly.
 - 3) Before installing adapter and packing cartridge on piston rod, install packing installation cone (Corken #3905) over piston rod threads. This will aid and protect packing during installation. Failure to use this packing cone could result in packing damage. Refer to Appendix D for correct installation of packing.
 - 4) Rotate flywheel/crankshaft by hand several revolutions to ensure proper fit of all assembled parts.
 - 5) Orient cylinder inlet and outlet to piping installation to ensure proper valve alignment with system. Valves must be properly oriented with suction and discharge piping.
 - 6) For piston installation instructions, see section 5.4.
 - 7) After installing the piston, again, rotate flywheel/ crankshaft by hand several revolutions to ensure proper fit of all assembled parts.
 - 8) Check crankcase for proper oil level.
 - 9) See startup procedure in section 3.7. During startup, listen to the compressor for any unusual noises. If any problems arise during assembly, please contact the factory.

5.5 Cylinder Replacement

Cylinders very seldom require replacement if the compressor is properly maintained. The primary cause of damage to cylinders is corrosion and the entry of solid debris or liquid into the compression chamber. Improper storage can also result in corrosion damage to cylinder (for proper storage instructions see chapter 5). Damage can also occur if the piston rings are allowed to wear so much that the ring expander can reach the cylinder wall.

Many compressor repair operations require removal of the cylinder. While the compressor is disassembled, special care should be taken to avoid damage or corrosion to the cylinder. If the compressor is to be left open for more than a few hours, bare metal surfaces should be coated with rust preventative.

If the cylinder does become damaged or corroded, use a hone to smooth the cylinder bore and then polish it to the value shown in Appendix B. If more than .005 of an inch must be removed to smooth the bore, replace the cylinder. Cylinder liners and oversized rings are not available. OVERBORING THE CYLINDER WILL RESULT IN GREATLY REDUCED RING LIFE.

When reassembling the compressor, make sure the bolts are retightened using the torque values listed in Appendix B.

5.6 Packing Replacement Instructions

Caution: Before installing the new piston rod packing, bleed all pressure from the compressor and piping and purge if necessary. After the new piston rod packing has been installed, the unit should be pressure tested and checked for leaks at all joints and gasket surfaces. When the compressor is being used with toxic, dangerous, flammable or explosive gases, this pressure and leak testing should be done with air or a dry, inert gas such as nitrogen.

For specific construction details and actual part numbers, consult Appendix D in the back of this Installation, Operation & Maintenance (IOM) manual. Use instructions below that apply to the MODEL and SERIAL NUMBER of the compressor.

Cleanliness:

Sealing a reciprocating piston rod is a very difficult task. In order to create the best seal possible between the piston rod and the packing, KEEP HANDS, PARTS, AND TOOLS CLEAN DURING INSTALLATION.

Workmanship:

A compressor is a precision piece of equipment with very close tolerances. Treat it as such. Never force parts on or off.

Disassembly of Packing—Plain-style Compressor Models HG601 and HG602

1. Depressurize and open the compressor before performing any tasks.
2. Remove the head (along with adjustable head components, if any), pistons and cylinder.

3. Standard Packing Specification

- a. Refer to Appendix D and identify the correct model of compressor and note the order in which the parts are removed.
- b. Mark the top of the packing cartridge body to facilitate later reassembly. Remove the four socket head bolts that attach the packing cartridge assembly to the adapter. It is not normally necessary to remove the adapter from the crankcase in order to disassemble or reassemble the packing.
- c. Partially insert the bolts in the puller holes in the outer end of the packing cartridge body and pull outward to remove the entire packing cartridge assembly from the adapter and over the piston rod. If the packing cartridge assembly does not slide out easily, it may be necessary to alternately turn the bolts clockwise in the puller holes so that the bolts engage the adapter and force the packing cartridge assembly to come out.
- d. Remove the outer retainer ring, solid packing breaker (not included on 6" and 8" cylinders), packing cups, all packing sets, backup rings, etc. from the cylinder side of the packing cartridge body.
- e. Remove the inner retainer ring, packing washer and oil wiper ring set from the crankcase side of the packing cartridge body.

4. Purge Packing Specification

- a. Refer to Appendix D and identify the correct model of compressor and note the order in which the parts are removed.
- b. Mark the top of the packing cartridge cap to facilitate later reassembly. Remove the four socket

head bolts that attach the packing cartridge cap to the adapter. It is not normally necessary to remove the adapter from the crankcase in order to disassemble or reassemble the packing.

- c. Partially insert the bolts in the puller holes in the outer end of the packing cartridge cap and pull outward to remove the packing cartridge cap from the rest of the packing cartridge assembly, adapter and over the piston rod. If the packing cartridge cap does not slide out easily, it may be necessary to alternately turn the bolts clockwise in the puller holes so that the bolts engage the adapter and force the packing cartridge cap to come out.
- d. Mark the top of the packing cartridge body to facilitate later reassembly and proper alignment with the packing cartridge cap. Pull outward to remove the packing cartridge assembly from the adapter and piston rod.
 - i. **2-3/4" and 3-1/4" Cylinders:** Using a pair of flat-bladed screwdrivers or similar tools, engage the annular groove on the outer end (cylinder side) of the packing cartridge body and pry the packing cartridge assembly from the adapter and over the piston rod.
 - ii. **4", 5", 6" and 8" Cylinders:** Partially insert the bolts in the puller holes in the outer end of the packing cartridge body and pull outward to remove the packing cartridge assembly from the adapter and over the piston rod. If the packing cartridge assembly does not slide out easily, it may be necessary to alternately turn the bolts clockwise in the puller holes so that the bolts engage the adapter and force the packing cartridge assembly to come out.
- e. In addition to the packing cartridge cap previously removed, remove the solid packing breaker (not included on 6" and 8" cylinders), packing cups, all packing sets, backup rings, purge packing cups, cup spacer, packing spacer, oil wiper cup, oil wiper ring set, etc. from the cylinder side of the packing cartridge body.

Assembly of Packing—Plain-style Compressor Models HG601 and HG602

1. Always use new O-rings, packing and oil wiper ring sets during assembly.
 2. Clean packing cartridge body and parts removed from it during disassembly process.
- ### **3. Standard Packing Specification**
- a. Refer to Appendix D and note the order in which the parts are to be installed and their correct orientation.

- b. Install the oil wiper ring set, packing washer and inner retainer ring into the crankcase side of the packing cartridge body.
- c. Install the O-ring on the packing spacer, and install both into the cylinder side of the packing cartridge body.
- d. Install a back-up ring, segmented packing set (tangent-tangent [TT]) and packing cup with O-ring into the cylinder side of the packing cartridge body.
- e. Install a back-up ring, a segmented packing set (radial-tangent [RT]) and packing cup with O-ring into the cylinder side of the packing cartridge body. Repeat this process for the remaining RT packing sets.
- f. Install the pressure breaker ring (not included on 6" and 8" cylinders) and final packing cup with O-ring into the cylinder side of the packing cartridge body. Reinstall outer retainer ring.
- g. Install a packing installation cone (Part no. 3905) on threaded end of the piston rod
- h. Install a new O-ring inside the adapter.
- i. Carefully install the assembled packing cartridge assembly on the piston rod and insert into the adapter. Be sure the mark previously made on the packing cartridge body is oriented up because the packing cartridge body can only be installed in one position. Attach the packing cartridge body to the adapter with the four socket head bolts.
- j. Remove the packing installation cone.
- k. Replace the cylinder, pistons and cylinder head (along with adjustable head components, if any).
- l. Rotate the unit by hand to insure proper assembly.

4. Purge Packing Specification

- a. Refer to Appendix D and note the order in which the parts are to be installed and their correct orientation.
- b. Install oil wiper ring set and oil wiper ring cup into the cylinder side of the packing cartridge body.
- c. Install a biased packing set (tangent-tangent with springs toward cylinder [TTs]), purge packing cup with O-ring and cup spacer into the cylinder side of the packing cartridge body. **NOTE: The six springs in the biased packing sets are very small and fit loosely, so extra care is needed to keep from losing them or having them become dislodged during assembly.**
- d. Install a purge packing cup with O-ring and biased packing set (tangent-tangent with springs toward crankcase [sTT]) into cylinder side of packing cartridge body.
- e. Install the O-ring on the packing spacer, and install both into the cylinder side of the packing cartridge body.
- f. Install the back-up ring, segmented packing set (tangent-tangent [TT]) and packing cup with the O-ring into the cylinder side of the packing cartridge body.
- g. **2-3/4", 3-1/4" and 4" Cylinders:** Each of these cylinder sizes includes a pressure breaker ring on the outer end of the packing cartridge assembly. Also, these cylinder sizes include a packing cartridge cap into which at least some of the segmented packing sets (radial-tangent [RT]) are positioned.
 - i. Install a back-up ring, segmented packing set (radial-tangent [RT]) and packing cup with O-ring into cylinder side of packing cartridge body. Repeat this process as necessary for additional RT packing sets until a packing cup extends partially from the cylinder side of the packing cartridge body.
 - ii. Install the pressure breaker ring and packing cup with O-ring into the packing cartridge cap.
 - iii. Install a back-up ring, segmented packing set (radial-tangent [RT]) and packing cup with O-ring into the packing cartridge cap. Repeat this process for remaining RT packing sets.
 - iv. Install the packing cartridge cap on the packing cartridge body, making sure the previously made markings on each are aligned. The portion of the packing cup extending from the packing cartridge body should extend into the packing cartridge cap.
 - v. Insure that the pin extending from the outer end of packing box cartridge fits into the corresponding hole in the packing cartridge cap. **NOTE: Some early models did not have this pin.**
- h. **5", 6" and 8" Cylinders:** Each of these cylinder sizes includes a flat packing cartridge cap that fits on the outer end of the packing cartridge body.
 - i. Install a back-up ring, segmented packing set (radial-tangent [RT]) and packing cup with O-ring into the cylinder side of the packing cartridge body. Repeat this process for remaining RT packing sets.

- ii. Position the packing cartridge cap on the packing cartridge body, making sure the previously made markings on each are aligned. The holes in the packing cap should be aligned with the corresponding holes in the packing cartridge body.
- i. Install a packing installation cone (Part no. 3905) on threaded end of the piston rod
- j. Install a new O-ring inside the adapter.
- k. Carefully install the assembled packing cartridge assembly with packing cartridge cap on the piston rod and insert into the adapter. Be sure the marks previously marked on the packing cartridge body and cap are oriented up because most packing cartridge bodies can only be installed in one position. Attach the packing cartridge cap to the adapter with the four socket head bolts.
- l. Remove the packing installation cone.
- m. Replace the cylinder, pistons and cylinder head (along with adjustable head components, if any).
- n. Rotate the unit by hand to insure proper assembly.

Disassembly of Packing—T-style Compressor Models THG601 and THG602

1. Depressurize and open the compressor before performing any tasks.
2. Remove the head (along with adjustable head components, if any), pistons and cylinder.
3. Refer to Appendix D and identify the correct model of compressor and note the order in which the parts are removed.
4. Mark the top of the packing cartridge cap to facilitate later reassembly. Remove the four socket head bolts that attach the packing cartridge cap to the adapter. It is not normally necessary to remove the adapter from the distance piece or the distance piece from the crankcase in order to disassemble or reassemble the packing.
5. Partially insert the bolts in the puller holes in the outer end of the packing cartridge cap and pull outward to remove the packing cartridge cap from the rest of the packing cartridge assembly, adapter and over the piston rod. If the packing cartridge cap does not slide out easily, it may be necessary to alternately turn the bolts clockwise in the puller holes so that the bolts engage the adapter and force the packing cartridge cap to come out.
6. Mark the top of the packing cartridge body to facilitate later reassembly. Pull outward to remove the packing

cartridge assembly from the adapter and over the piston rod.

- a. **2-3/4" and 3-1/4" Cylinders:** Using a pair of flat-bladed screwdrivers or similar tools, engage the annular groove on the outer end (cylinder side) of the packing cartridge body and pry the packing cartridge assembly from the adapter and piston rod.
- b. **4", 5", 6" and 8" Cylinders:** Partially insert the bolts in the puller holes in the outer end of the packing cartridge body and pull outward to remove the packing cartridge assembly from the adapter and over the piston rod. If the packing cartridge assembly does not slide out easily, it may be necessary to alternately turn the bolts clockwise in the puller holes so that the bolts engage the adapter and force the packing cartridge assembly to come out.
7. Separate the packing cartridge adapter from the packing cartridge body by removing the four small socket head screws. Remove the cup spacer by sliding it out of the packing cartridge body or packing cartridge adapter.

8. Outer Packing

- a. In addition to the packing cartridge cap previously removed, remove solid packing breaker (not included on 6" and 8" cylinders), packing cups, packing sets, backup rings, packing spacer and purge packing cup, etc. from the cylinder side of the packing cartridge body.
- b. If the packing components are not easily removable, it may be necessary to use Corken Packing Removal Tool 4789-X. Referring to figure 5.6A, orient the packing cartridge body so that the open end (cylinder side) faces down, and align the tool with the center opening of the packing cartridge.
- c. Insert Tool 4789-X into the packing cartridge body until the engagement end of the tool is just above the purge packing cup. See figure 5.6B.
- d. Press the spring-loaded lever inward so that the engagement end of the lever moves outward. While still holding the lever in, place the engagement ends of the tool and lever in contact with the purge packing cup, and use a hammer or similar device to drive the outer packing set from the packing cartridge body.

9. **Middle Packing:** Remove the packing cups, packing sets, backup rings, packing spacer and purge packing cup, etc. from the crankcase side of the packing cartridge body. If necessary Packing Removal Tool 4789-X may be used to remove the middle packing set in a manner similar to the outer packing set.

- 10. Inner Packing:** Remove the purge packing cup, segmented packing, oil wiper cup, oil wiper ring set, etc. from the cylinder side of the packing cartridge adapter.

Assembly of Packing—T-style Compressor Models THG601 and THG602

1. Always use new O-rings, packing sets and oil wiper ring sets during assembly.
2. Clean the packing cartridge body and parts removed from it during disassembly process.
3. Refer to Appendix D and note the order in which the parts are to be installed and their correct orientation.
4. **Inner Packing:** The inner packing set is most easily assembled using Packing Assembly Tool 4794-X.
 - a. Set the end plate of the Tool 4794-X on a horizontal work surface and remove the slotted clamp of the tool.
 - b. Place a purge packing cup and a biased packing set (TTs) onto the end plate of the tool and over the rod of the tool. The cylinder side of the packing should face the end plate of the tool such that the springs in the biased packing set face toward the end plate. **NOTE: The six springs in the biased packing sets are very small and fit loosely, so extra care is needed to keep from losing them or having them become dislodged during assembly.** Place the oil wiper ring cup and oil wiper ring set onto the purge packing cup. A full inner packing set is now positioned on the end plate of the tool. See figure 5.6C.
 - c. Orient the packing cartridge adapter so that the open end (cylinder side) faces down. Being careful not to dislodge the inner packing set previously placed on the end plate of the tool, position the packing cartridge adapter over the inner packing set and end plate of the tool so that the rod of the tool extends through the packing cartridge adapter. Place the slotted clamp above the packing cartridge adapter as shown in figure 5.6D.
 - d. Tighten the nut on the rod of the tool until the inner packing set is fully drawn into the packing cartridge adapter. See figure 5.6E.
 - e. Invert the packing cartridge adapter with the inner packing set in it, and remove Tool 4794-X. Slide the cup spacer into the packing cartridge adapter so that it engages the inner packing set. See figure 5.6F.
 - f. Place an oil deflector ring inside the cup spacer so that it is generally concentric with the inner packing set.

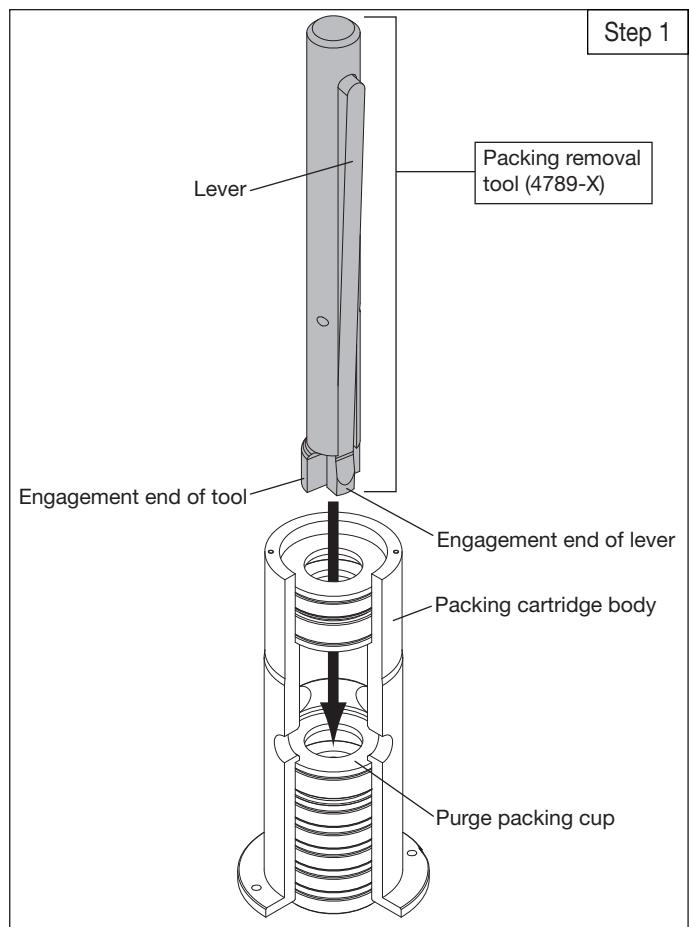


Figure 5.6A: Packing disassembly

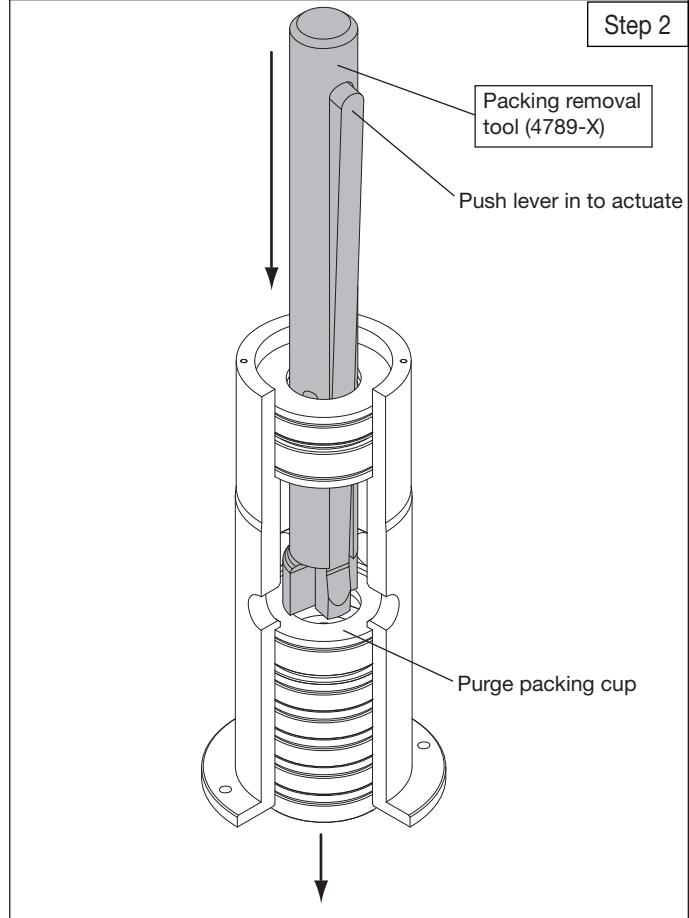


Figure 5.6B: Packing disassembly

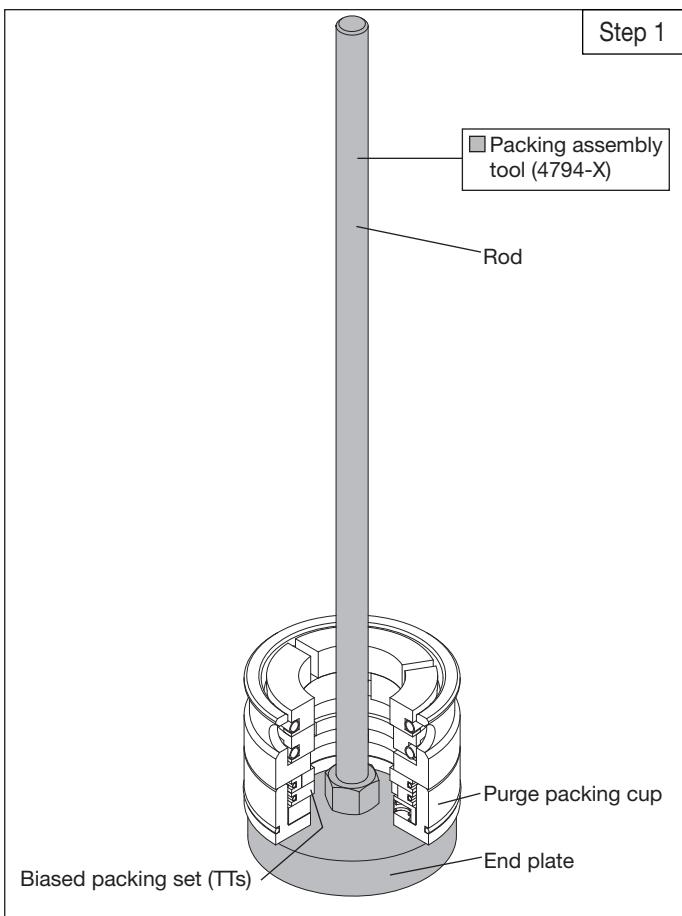


Figure 5.6C: Packing assembly

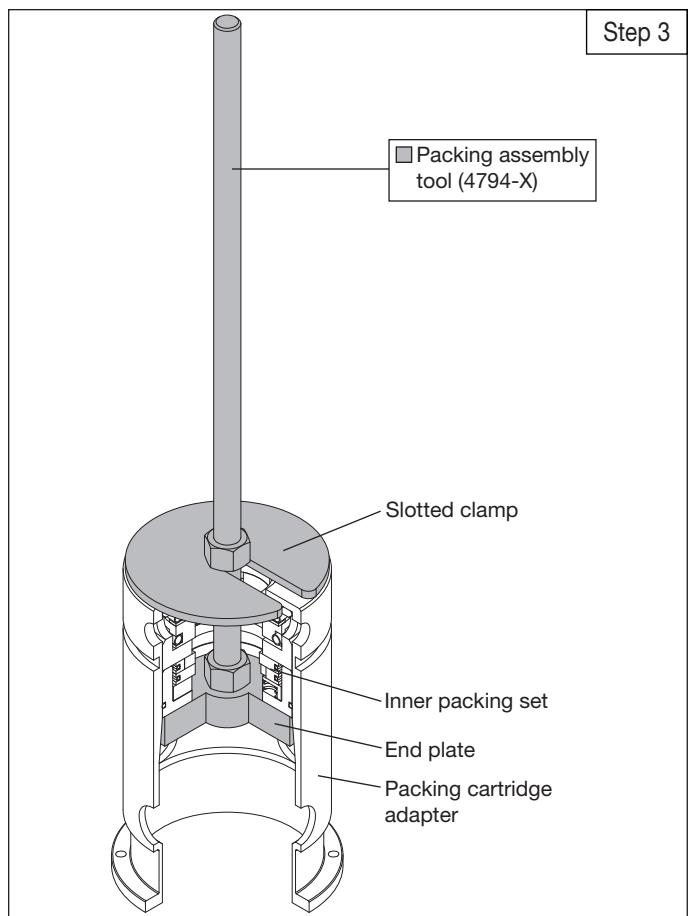


Figure 5.6E : Packing assembly

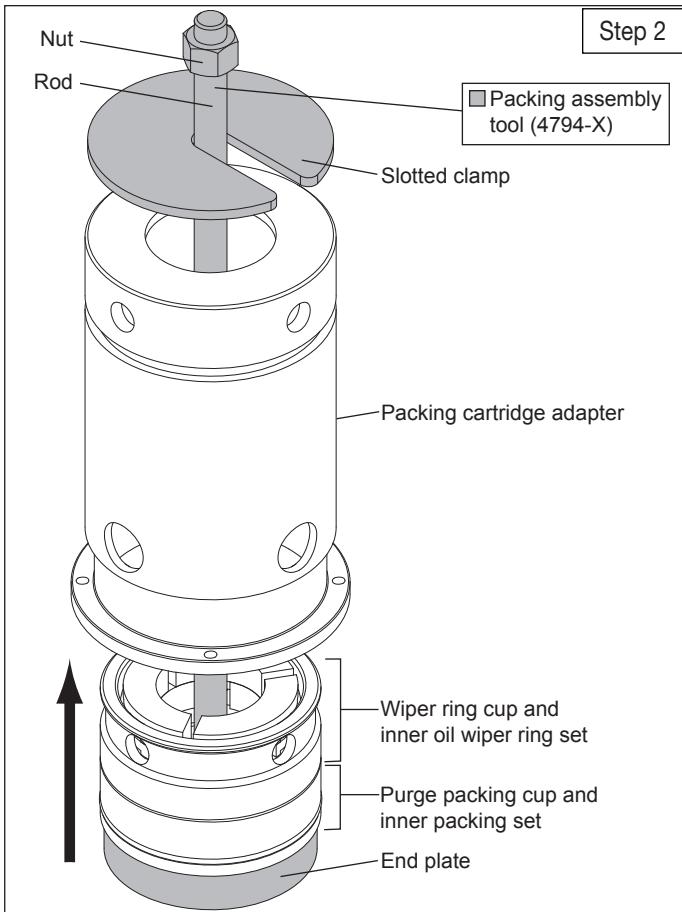


Figure 5.6D : Packing assembly

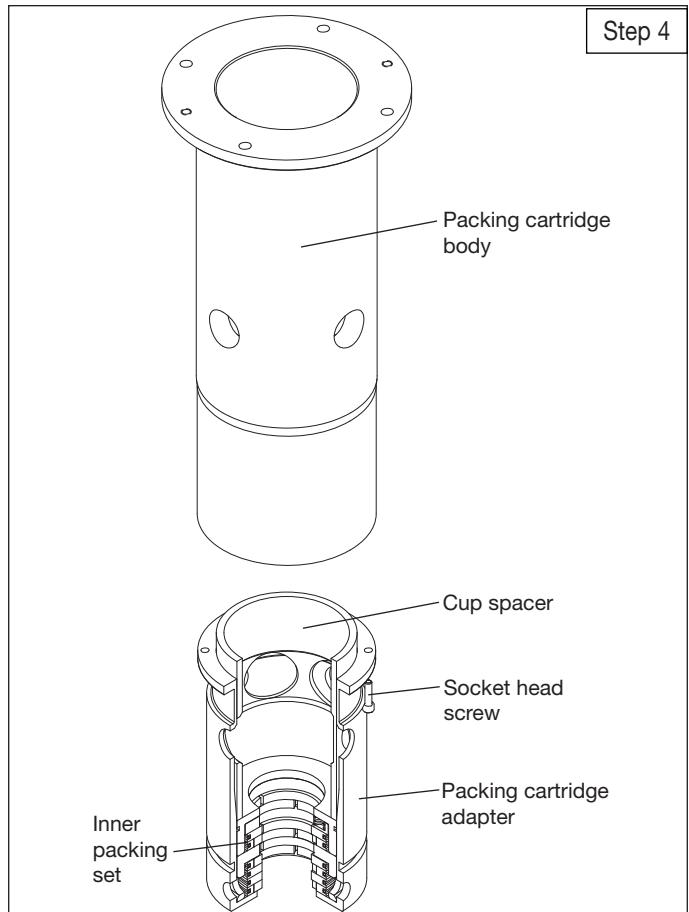


Figure 5.6F : Packing assembly

5. Middle Packing

- a. Install packing cup with O-ring. Install segmented packing set (tangent, tangent) with pin side towards the cylinder followed by the packing backup ring.
- b. Install purge packing cup with O-ring. Install biased packing set (tangent, tangent with springs towards cylinder) with pin side towards crankcase.
- c. Install O-ring on a packing spacer and install both into crankcase side of the packing cartridge body with O-ring side first.
- d. For both Specification Codes G and H, install the packing cartridge adapter onto the crankcase side of the packing cartridge body such that the cup spacer slides into the crankcase side of the packing cartridge adapter and engages the middle packing set to retain it in the packing cartridge body. Attach the packing cartridge adapter to the packing cartridge body with the four small socket head screws.

6. Outer Packing

- a. Install an O-ring on a packing spacer and install both into cylinder side of packing cartridge body O-ring towards cylinder.
- b. Install biased packing set (tangent, tangent with spring towards cylinder) with pin side towards cylinder followed by purge packing cup with O-ring.
- c. Install a back-up ring, segmented packing set (tangent-tangent [TT]) and packing cup with O-ring into the cylinder side of packing cartridge body.
- d. Install a back-up ring, segmented packing set (radial-tangent [RT]) and packing cup with O-ring into the cylinder side of packing cartridge body. Repeat this process for remaining RT packing sets
- e. Install a pressure breaker ring (not included on 6" and 8" cylinders) and final packing cup with O-ring into the cylinder side of packing cartridge body
- f. Install a new O-ring on the outside of the packing cartridge adapter and inside the adapter
- g. Install a packing installation cone (Part no. 3905) on the threaded end of the piston rod.
- h. Carefully install the completed packing cartridge assembly on the piston rod and insert into the adapter. Be sure the mark previously made on the packing cartridge body is oriented up because most packing cartridge bodies can only be installed in one position.

- i. Install the packing cartridge cap in the adapter. Be sure the mark previously made on the packing cartridge cap is oriented up because the packing cartridge cap can only be installed in one position. On 2-3/4", 3-1/4" and 4" Cylinders only, insure that the pin extending from the outer end of the packing box cartridge fits into the corresponding hole in the packing cartridge cap.
 - j. Attach the packing cartridge cap to the adapter with the four socket head bolts
 - k. Remove the packing installation cone.
7. Replace the cylinder, pistons and cylinder head (along with adjustable head components, if any).
 8. Rotate unit by hand to insure proper assembly.

5.7 Bearing Replacement for Crankcase and Connecting Rod

1. To replace the crankcase roller bearings, wrist pin bushing and connecting rod bearings, begin by removing the head (or head, adjustable cap and adjustable cup—applies to adjustable head configuration only), cylinder, pistons, adapter, distance piece (THG600 only) and crosshead and connecting rod assemblies.
2. Drain the crankcase and remove the inspection plates.
3. Choose and mark one connecting rod and the corresponding connecting rod cap to identify them. DO NOT MIX CONNECTING RODS AND CAPS. Loosen and remove the connecting rod nuts in order to remove the crosshead and connecting rod assemblies.

5.7.1 Wrist Pin Bushing Replacement

1. To replace the wrist pin bushing, remove the retainer rings that position the wrist pin in the crosshead.
2. Press out the wrist pin so the crosshead and connecting rod may be separated. Inspect the wrist pin for wear and damage and replace if necessary.
3. Press out the old wrist pin bushing and press a new bushing into the connecting rod. DO NOT MACHINE THE O.D. OR I.D. OF THE BUSHING BEFORE PRESSING INTO CONNECTING ROD.
4. Make sure the lubrication hole in the bushing matches the oil passage in the connecting rod. If the holes do not align, drill out the bushing through the connecting rod lubricant passage with a long drill. Bore the wrist pin bushing I.D. as indicated. See Appendix D for details. Over boring the bushing can lead to premature failure of the wrist pin bushing and/or wrist pin.

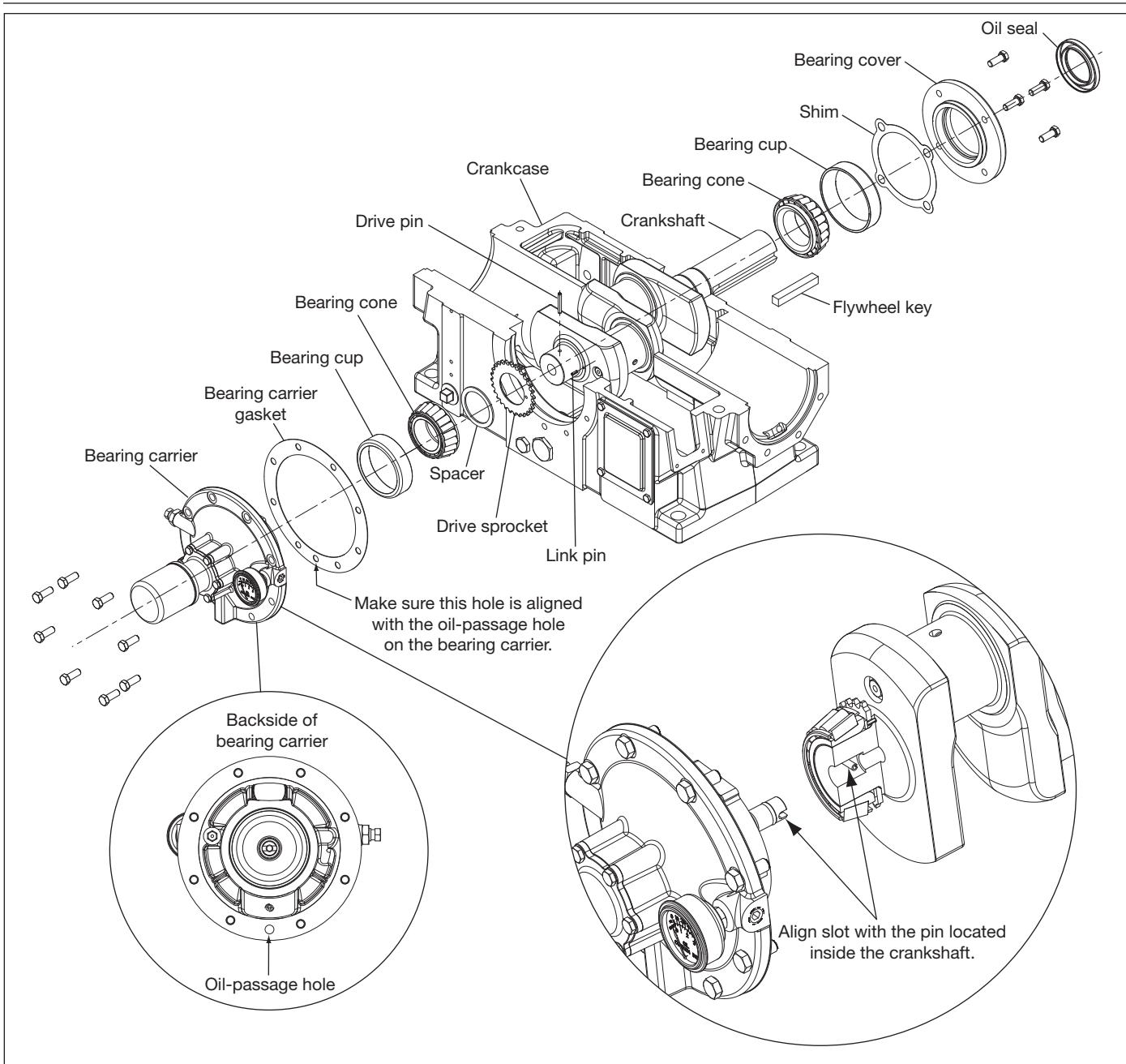


Figure 5.7A

5. Inspect the oil passage for debris and clean thoroughly before proceeding.
6. Press the wrist pin back into the crosshead and wrist pin bushing and reinstall retainer rings. NOTE: The fit between the wrist pin and bushing is tighter than on lubricated air compressors and combustion engines.

5.7.2 Replacing Connecting Rod Bearings

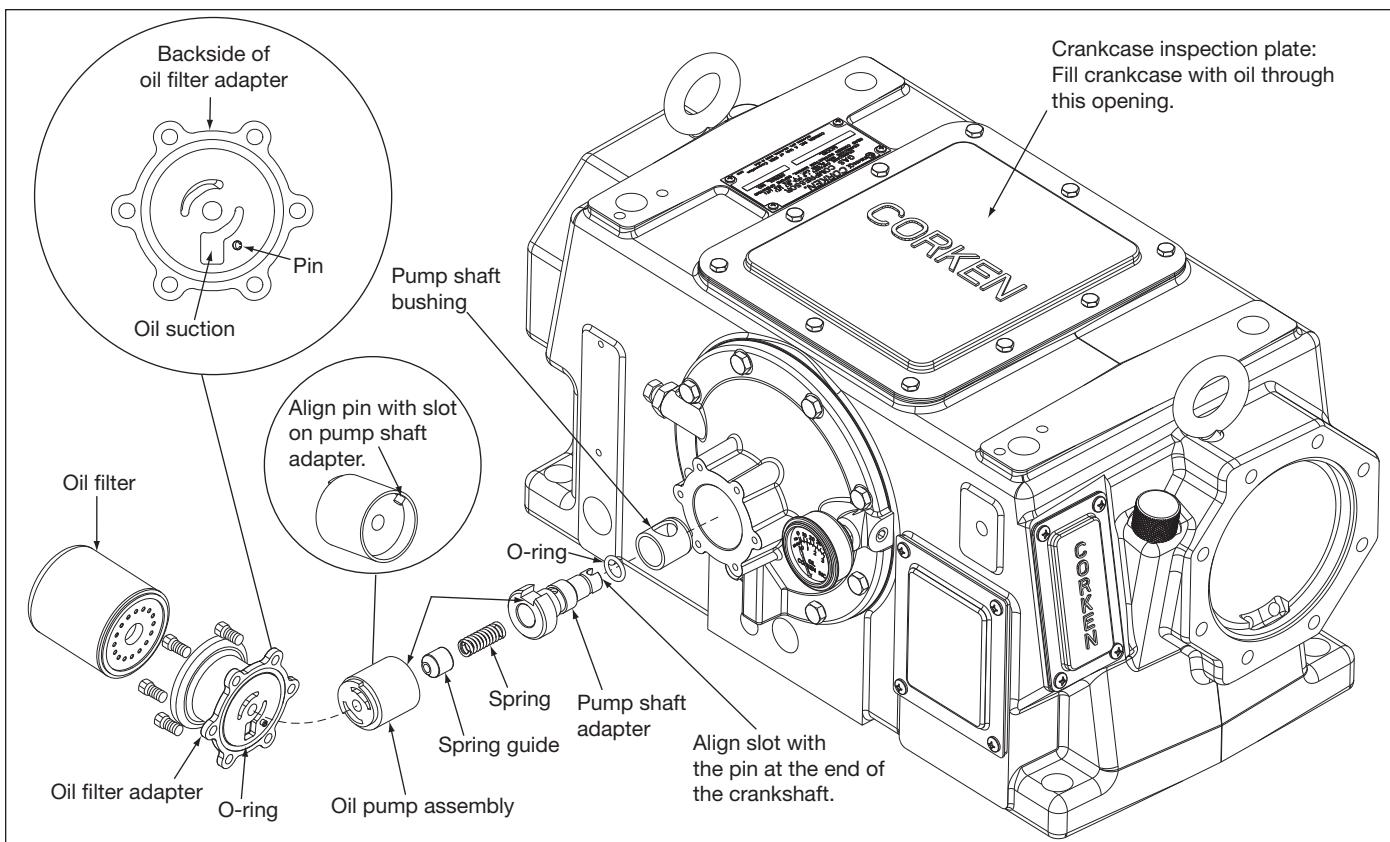
The semi-circular connecting rod bearings are easily replaced by removing the connecting rods. Make sure the indentations in the connecting rod bearing and connecting rod line up when installing the new bearings. **MAKE SURE THE ARROW AND/OR ALIGNMENT NOTCH ON CONNECTING ROD AND CAP ARE ALIGNED. BE SURE THE PREVIOUSLY MARKED CONNECTING ROD AND CAP ARE KEPT TOGETHER.**

Before reinstalling the crosshead/connecting rod assemblies, make sure the crankshaft throw and bearing surface are clean and lubricated. Tighten the connecting rod nuts to the torque value listed in [Appendix B](#).

5.7.3 Replacing Crankcase Roller Bearings

To inspect the roller bearings, remove the flywheel, flywheel hub, bearing carrier and crankshaft using the following steps.

1. Remove the flywheel from the crankshaft by removing the three bolts that holds the flywheel to the hub. After removal, re-insert the bolts into the three THREADED flywheel removal holes (see figure 3.2A for details). Tighten the bolts EVENLY to remove the flywheel from the flywheel hub.



2. After the flywheel has been removed, remove the hub from the crankshaft. If the hub will not slide off the crankshaft easily, gently insert a flat head screw driver into the split on the hub and lightly tap with a screw driver. The hub should easily slide off the shaft.
3. Remove the bearing carrier and crankshaft from the crankcase (see figure 5.7A for details). If corrosion or pitting is present, the roller bearings should be replaced. When replacing the roller bearings, always replace the entire bearing and not just the cup or the cone. Purchasing extra shims is recommended as well. For crankcase assembly details, refer to [Appendix D](#).

NOTE: REMOVING AND REPLACING THE BEARING CONES AND BEARING CUPS (STEPS FOUR AND FIVE LISTED BELOW) REQUIRES THE SERVICES OF A PROFESSIONAL MACHINE SHOP. DO NOT ATTEMPT TO REPLACE THEM IN THE FIELD.

4. To replace the bearings, press out the bearing cup on the flywheel side of the crankcase and the other bearing cup located on the bearing carrier. Using a bearing puller, remove the bearing cones from each end of the crankshaft.
5. Press one new bearing cup into the bearing carrier and press the other new bearing cup into the crankcase (opposite the bearing carrier side). Press one bearing cone on each end of the crankshaft. Insert the crankshaft through the bearing carrier opening. The flywheel side of the

crankshaft should slide through the opening of the bearing cup and bearing cover. Slowly lower the opposite end of the crankshaft to the bottom of the bearing carrier opening.

6. Before installing the bearing carrier, **make sure the slot at the end of the oil pump shaft is aligned with the pin located at the end of the crankshaft.** Alignment should be either twelve and six o'clock or nine and three o'clock. Make sure the gasket for the bearing carrier is installed correctly. An improperly installed gasket will block the oil passage (see figure 5.7A).
7. Push the end of the crankshaft toward the crankcase and pull back; if a clicking noise or motion is detected, the crankshaft has too much endplay. See [Appendix B](#).
8. To reduce endplay, remove the bearing cover located on the flywheel side of the crankcase and remove a thin shim. Recheck the endplay after replacing the bearing cover.
9. When there is no detectable endplay, the shaft must still be able to rotate. If the crankshaft sticks or becomes abnormally warm, then the crankshaft bearings are too tight. If the crankshaft is too tight, add more shims but do not over shim. ([Appendix B](#) lists the proper crankshaft endplay). When the crankshaft can be rotated by hand with proper endplay, the rest of the compressor may be reassembled.

NOTE: if the crankshaft roller bearings are too tight or too loose, premature bearing failure will result.

10. Reinstall the flywheel and check the runout as shown in Appendix B.

5.8 Oil Pump Inspection

If the compressor operates for a prolonged period with dirty or contaminated crankcase oil, damage to the oil pump and bearings may result.

1. To check the oil pump, unbolt the oil filter adapter and remove the oil pump, spring guide, spring and oil pump shaft adapter as shown in figure 5.7B.
2. Inspect the gears in the oil pump for corrosion or pitting and replace if necessary.
3. Check the oil pump shaft bushing in the bearing carrier. If the bushing is corroded, pitted or worn, the oil pump shaft bushing should be replaced. Inspect and replace other parts as necessary.
4. Before reassembling the oil pump mechanism, replace the O-rings in the oil filter adapter and on the oil pump shaft adapter (see figure 5.7B).
5. Rotate the drive pin in the crankshaft to a vertical position for easiest reassembly.
6. Insert the pump shaft adapter so it engages the drive pin.
7. Next, insert the spring, spring guide and oil pump assembly. The pin on the oil pump must align with the slot in the oil pump shaft adapter.
8. As the oil filter adapter is attached to the bearing carrier, make certain the pin on the back of the oil filter adapter aligns with the opening on the oil pump assembly as shown in figure 5.7B. When the pin is properly aligned, install the oil filter adapter bolts finger tight. If alignment is correct, the oil filter adapter will mount flush to the bearing carrier. If it does not, re-check the pin alignment.
9. Tighten the bolts in an alternating sequence. See section 3.3 for directions on oil pressure adjustment.
10. Finally, rotate the crankshaft by hand to ensure smooth operation. Then rotate it in opposite directions, listening for a click, which indicates proper alignment of the oil pump's pins and slots.

5.9 Disposal

Disposal of compressor or components (once deemed non-useable by the factory and end user) should be done in accordance with all applicable codes. Contact the local waste management authorities to determine proper disposal methods.

Chapter 6—Extended Storage Procedures

Following a few simple procedures will greatly minimize the risk of the unit becoming corroded and damaged. Corken recommends the following precautions to protect the compressor during storage:

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 startup.)
5. Store in a dry area and off the ground if possible.
6. Rotate the flywheel every two weeks if possible.

6.1 Repair Kits

Repair Kit	Part Type
3788-X1	Crankcase
3792-X1A	8" cylinder Buna-N
3792-X1D	8" cylinder Viton® ¹
3792-X1E	8" cylinder PTFE
3792-X2A	8" cylinder Buna-N
3792-X2E	8" cylinder PTFE
3792-X3E	8" cylinder PTFE
3791-X1A	6" cylinder Buna-N
3791-X1D	6" cylinder Viton® ¹
3791-X1E	6" cylinder PTFE
3791-X2A	6" cylinder Buna-N
3791-X2D	6" cylinder Viton® ¹
3791-X2E	6" cylinder PTFE
3792-X3E	6" cylinder PTFE
5335-X1A	5" cylinder Buna-N
5335-X1D	5" cylinder Viton® ¹
5335-X1E	5" cylinder PTFE
3790-X1A	4" cylinder Buna-N
3790-X1D	4" cylinder Viton® ¹
3790-X1E	4" cylinder PTFE
3790-X3E	4" cylinder PTFE
3789-X1A	3-1/4" cylinder Buna-N
3789-X1D	3-1/4" cylinder Viton® ¹
3789-X1E	3-1/4" cylinder PTFE
3789-X2A	3-1/4" cylinder Buna-N
3789-X2D	3-1/4" cylinder Viton® ¹
3789-X2E	3-1/4" cylinder PTFE
3789-X3E	3-1/4" cylinder PTFE
3950-X1A	2-3/4" cylinder Buna-N
3950-X1E	2-3/4" cylinder PTFE
3950-X3A	2-3/4" cylinder Buna-N
3950-X3D	2-3/4" cylinder Viton® ¹
3950-X3E	2-3/4" cylinder PTFE

¹ Registered trademark of the DuPont company.

6.2 Gasket Sets

THG Series

Gasket Set	Cylinder Size	Description
3582-T8SE2	8"	Standard head (PTFE, steel)
3582-T8SD2	8"	Standard head (Viton® ¹ , steel)
3582-T8AE2	8"	Adjustable head (PTFE, steel)
3582-T8AD2	8"	Adjustable head (Viton® ¹ , steel)
3582-T6SD	6"	Standard head (Viton® ¹ , aluminum)
3582-T6SA2	6"	Standard head (Buna-N, aluminum)
3582-T6SE2	6"	Standard head (PTFE, steel)
3582-T6AD2	6"	Adjustable head (Viton® ¹ , steel)
3582-T5SA2	5"	Standard head (Buna-N, steel)
3582-T5AD2	5"	Adjustable head (Viton® ¹ , steel)
3582-T4AA	4"	Adjustable head (Buna-N, aluminum)
3582-T4AD2	4"	Adjustable head (Viton® ¹ , steel)
3582-T3SE2	3-1/4"	Standard (PTFE, steel)
3582-T3AA	3-1/4"	Adjustable head (Buna-N, aluminum)
3582-T3AD2	3-1/4"	Adjustable head (Viton® ¹ , steel)
3582-T2AE2	2-3/4"	Adjustable head (PTFE, steel)
3582-T2AD2	2-3/4"	Adjustable head (Viton® ¹ , steel)

HG Series

Gasket Set	Cylinder Size	Description
3582-X7A	8"	Standard head (Buna-N, steel)
3582-X7D	8"	Standard head (Viton® ¹ , steel)
3582-X7E	8"	Standard head (PTFE, steel)
3582-X8A	8"	Adjustable head (Buna-N, steel)
3582-X8D	8"	Adjustable head (Viton® ¹ , steel)
3582-X8E	8"	Adjustable head (PTFE, steel)
3582-X5A	6"	Standard head (Buna-N, steel)
3582-X5D	6"	Standard head (Viton® ¹ , steel)
3582-X5E	6"	Standard head (PTFE, steel)
3582-X6A	6"	Adjustable head (Buna-N, steel)
3582-X6D	6"	Adjustable head (Viton® ¹ , steel)
3582-X6E	6"	Adjustable head (PTFE, steel)
3582-X12A	5"	Adjustable head (Buna-N, steel)
3582-X12D	5"	Adjustable head (Viton® ¹ , steel)
3582-X12E	5"	Adjustable head (PTFE, steel)
3582-X3A	4"	Standard head (Buna-N, steel)
3582-X3D	4"	Standard head (Viton® ¹ , steel)
3582-X3E	4"	Standard head (PTFE, steel)
3582-X4A	4"	Adjustable head (Buna-N, steel)
3582-X4B	4"	Adjustable head (Viton® ¹ , steel)
3582-X4E	4"	Adjustable head (PTFE, steel)
3582-X1A	3-1/4"	Standard head (Buna-N, steel)
3582-X1D	3-1/4"	Standard head (Viton® ¹ , steel)
3582-X1E	3-1/4"	Standard head (PTFE, steel)
3582-X2A	3-1/4"	Adjustable head (Buna-N, steel)
3582-X2D	3-1/4"	Adjustable head (Viton® ¹ , steel)
3582-X2E	3-1/4"	Adjustable head (PTFE, steel)
3582-X2B	3-1/4"	Adjustable head (Neoprene® ¹ , steel)
3582-X9A	2-3/4"	Adjustable head (Buna-N, steel)
3582-X9D	2-3/4"	Adjustable head (Viton® ¹ , steel)
3582-X9E	2-3/4"	Adjustable head (PTFE, steel)
3582-X9B	2-3/4"	Adjustable head (Neoprene® ¹ , steel)

¹ Registered trademark of the DuPont company.

6.3 Crankcase and Cylinder Kit Options

Crankcase Options (frame only)

Model Number	Lubricator
HG600XXM	Not included
THG600XXM	Not included
HG600XXL	Included
THG600XXL	Included

Cylinder Kit Options

Each kit contains all parts required to change from one cylinder size to another in the field. The crosshead assembly is not included in the kit. The kits will be assembled "hand tight" and will include a cylinder nameplate.

Care must be exercised when selecting the cylinder kit required for a specific application. The proper head type and piston material must be chosen. To maintain proper balance, the following piston combinations are required for two-stage compressors.

Item Number	Size	Head Type	Piston
3671-X1A	8"	Standard	Aluminum
3671-X1D	8"	Standard	Aluminum
3671-X2A	8"	Standard	Iron
3671-X2E	8"	Standard	Iron
3671-X3A	8"	Adjustable	Aluminum
3671-X4A	8"	Adjustable	Iron
3528-X1A	6"	Standard	Aluminum
3528-X1D	6"	Standard	Aluminum
3528-X2A	6"	Standard	Iron
3528-X2D	6"	Standard	Iron
3528-X2E	6"	Standard	Iron
3528-X3A	6"	Adjustable	Aluminum
3528-X3D	6"	Adjustable	Aluminum
3528-X3E	6"	Adjustable	Aluminum
3528-X4A	6"	Adjustable	Iron
3528-X4D	6"	Adjustable	Iron
5290-X1A	5"	Adjustable	Iron
5290-X1K	5"	Adjustable	Iron
4276-X1A	4"	Standard	Iron
4276-X2A	4"	Adjustable	Iron
4276-X3A	4"	Standard	Iron
4276-X4A	4"	Adjustable	Iron
3523-X1A	3-1/4"	Standard	Iron
3523-X2A	3-1/4"	Adjustable	Iron
3888-X1A	2-3/4"	Adjustable	Iron
3888-X1D	2-3/4"	Adjustable	Iron
3888-X1E	2-3/4"	Adjustable	Iron

NOTE: Single-stage compressors must use the same material for each piston.

Chapter 7—Safety

Warnings/Information



General Danger Warning

Corken gas compressors are industrial machines and thus have inherent general dangers. (Black on yellow background)



Hot Surface / Burn Warning

Some components of Corken gas compressors, such as the head, cylinder, and crosshead guide, may have surfaces above 50°C. (Black on yellow background)



Read Operators Manual

Corken gas compressors should not be installed, started, or operated before reading this IOM manual. (White on blue background)



Lifting Point Warning

Lifting of Corken horizontal gas compressors should only be done using the lifting eye(s) provided (White on blue background)

5. End user must take all necessary precautions for their selected process gas – hazardous / flammable / explosive / toxic / PPE etc.

a. Warning—do no inhale harmful gases, mists or fumes

b. Warning—all areas accessible to personnel which contain concentrations of process gases capable of displacing breathing air shall be kept at acceptable levels per all local regulations / codes

6. End user to take all necessary precautions for the selected crankcase oil (MSDS/SDS and PPE). Corken recommended oils are listed in this manual.

7. End user to take all necessary precautions for their selected coolant.

8. Only trained operators and maintenance technicians are to work on the compressor. Training for such personnel should include conventional training as a mechanic and additional training in the installation, operation and maintenance of reciprocating gas compressors. Gas compressor training is provided by Corken and many of its distributors.

9. Compressor unit is not to be accessed / adjusted / maintained during operation. Unit must be isolated, depressurized, and immobilized before undertaking any such activities.

10. Inspection plates / access plates are only to be removed once the compressor is isolated, depressurized and immobilized.

11. Do not climb on the compressor.

12. Use access aids / step ladders when repairing or cleaning components out of reach.

13. PPE requirements for various maintenance / adjustment / cleaning operations:

a. Fire protective clothing for compressors used on flammable gases

b. Hard hat

c. Gloves

d. Eye protection

e. Steel-toed footwear

f. Hearing protection as necessary

14. Precautions are to be taken to prevent ice and snow interfering with the compressor unit operation when operating at ambient temperatures below 0°C.

15. Warning: follow recommendations in the acceptable oil products table. High oil viscosity during cold

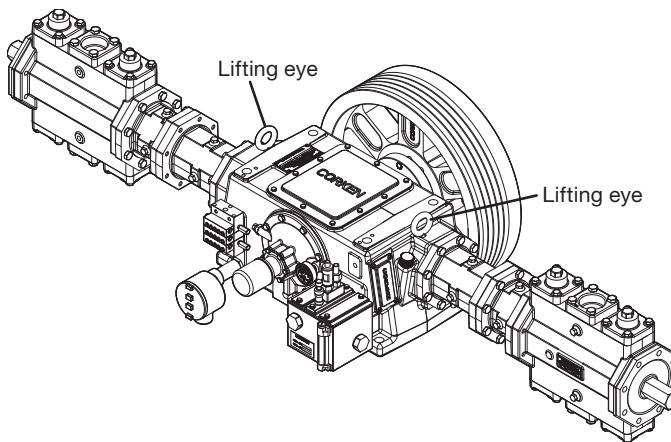
Other Warnings, Precautions, and Information

1. If end user repaints the compressor unit they must ensure that all nameplates, warning labels (if applicable), and supplemental information stickers remain visible.
2. Corken gas compressors are not to be used for pumping liquids.
3. Corken gas compressors are not to be used with the following process gases:
 - a. Acetylene
 - b. Fluorine
 - c. Nerve gases
 - d. Corrosive gases, without prior factory consultation
 - e. Oxygen
4. Most Corken gas compressor units are designed to be oil free. If an end user wishes to utilize the unit as an oil lubricated compressor at > 50 bar they must consult the factory.

startup, clogged oil filters or valve malfunction can result in oil starvation and subsequent damage to the compressor.

16. Safe lifting, transporting, and handling:

- a. Connect a lifting apparatus, such as a hoist, forklift or sling to the lifting eye(s) on the crankcase of the compressor. End user must ensure the lifting apparatus has a load capacity at least as large as the weight of the compressor being lifted
- b. All compressors should be securely bolted in a crate or on a pallet prior to transporting or otherwise handling the compressor away from the installation site



Appendix A—Model Number Identification Code and Available Options

Industrial Horizontal Single Cylinder Compressors

Plain Style (Single Packed)	Base Model #	Air Cooled—Single Cylinder						Model Number Base X X X X X X X X X X X X X X	
		HG601AX	HG601BX	HG601CX	HG601DX	HG601EX	HG601FX		
		Cylinder size	8"	6"	5"	4"	3 1/4"		
	Weight lbs. (kg.)	730 (331)	650 (295)	640 (290)	630 (286)	620 (281)	620 (281)		
T-Style (Triple Packed)	Base Model #	Air Cooled—Single Cylinder							
		THG601AX	THG601BX	THG601CX	THG601DX	THG601EX	THG601FX		
		Cylinder Size	8"	6"	5"	4"	3 1/4"		
	Weight lbs. (kg.)	780 (354)	700 (318)	690 (313)	680 (308)	670 (304)	670 (304)		
Specification Fields									
Packing Arrangement	Plain style only	Standard packing	Standard				0		
	Purge packing		Optional				P		
T-Style only	Pad packing		Standard				G		
Crankcase Style	Standard crankcase option with lubricator		Optional				L		
	Standard crankcase option with lubricator and heater		Optional				LH		
	Pressure lubricated with external oil cooler		Standard				M		
	Standard crankcase option with heater		Optional				MH		
Valves	Standard suction and discharge valves		Standard	NA	NA	Standard	Standard	4	
	Standard suction and discharge valves with PEEK valve plates		NA	Standard	Standard	NA	NA	4P	
	Standard and blank valves		Optional	NA	NA	Optional	Optional	4B	
	Standard and blank valves with PEEK plates		NA	Optional	Optional	NA	NA	4PB	
	Low inlet pressure valves		No charge	NA	NA	NA	NA	4L ¹	
	Low inlet pressure valves with PEEK plates		NA	No charge	NA	NA	NA	4PL ¹	
	Low inlet pressure valves with blank valves		Optional	NA	NA	NA	NA	4BL ¹	
	Low inlet pressure valves and blank valves with PEEK plates		NA	Optional	NA	NA	NA	4PBL ¹	
	Unloaders		Optional	NA	NA	Optional	Optional	9	
	Unloaders with PEEK plates		NA	Optional	Optional	NA	NA	9P	
	Unloaders with blank valves		Optional	NA	NA	Optional	Optional	9B	
	Unloaders with blank valves and PEEK plates		NA	Optional	Optional	NA	NA	9PB	
	Unloaders with low inlet pressure valves		Optional	NA	NA	NA	NA	9L ¹	
	Unloaders with low inlet pressure valves and PEEK plates		NA	Optional	NA	NA	NA	9PL ¹	
	Unloaders with low inlet pressure valves and blank valves		Optional	NA	NA	NA	NA	9BL ¹	
	Unloaders with low inlet pressure valves and blank valves with PEEK plates		NA	Optional	NA	NA	NA	9PBL ¹	
Piston Ring and Packing Material	PTFE piston and Alloy 50 packing material		Standard				F		
Gasket Material	Steel		Standard				D		
O-ring Material	Buna-N		Standard				A		
	Neoprene ^{®2}		No charge option				B		
	Viton ^{®2}		Optional				D		
	PTFE		Optional				E		
Intercooler	Without intercooler		Standard				N		
Flywheel	No flywheel supplied		Optional				N		
	Standard flywheel		Standard				S		
Protective Coating	Coated cylinder only		Optional	Optional	Consult Factory	Optional	Optional	C	
	No coating		Standard				N		
	Coating on all necessary wetted parts		Optional	Optional	Consult Factory	Optional	Optional	W	
Piston Rod Coating	Nitrotec ^{®3}		Standard				N		
Adjustable Head	None		Standard	Standard	Standard	Standard	NA	N	
	Adjustable head		Optional	Optional	Optional	Optional	Optional	1	

¹ For inlet pressures 0 to 15 PSI.

² Registered trademark of the DuPont company.

³ Registered trademark of TTI Group Ltd.

Appendix A—Model Number Identification Code and Available Options

Reciprocating Vertical Compressors (D-Style) Double-acting, Single-stage Models

Plain Style (Single Packed)	Base Model #	Air Cooled—Two Cylinders						Model Number Base X X X X X X X X X X X X X X X X
		HG601AA	HG601BB	HG601CC	HG601DD	HG601EE	HG601FF	
		8" x 8"	6" x 6"	5" x 5"	4" x 4"	3½" x 3¼"	2¾" x 2¾"	
	Weight lbs. (kg.)	1,070 (485)	910 (413)	890 (404)	870 (395)	845 (383)	845 (383)	
T-Style (Triple Packed)	Base Model #	Air Cooled—Two Cylinders						
		THG601AA	THG601BB	THG601CC	THG601DD	THG601EE	THG601FF	
		8" x 8"	6" x 6"	5" x 5"	4" x 4"	3½" x 3¼"	2¾" x 2¾"	
	Weight lbs. (kg.)	1,170 (521)	1,010 (458)	990 (449)	970 (440)	945 (429)	945 (429)	
Specification Fields								
Packing Arrangement	Plain style only	Standard packing	Standard				0	
	Purge packing		Optional				P	
	T-Style only	Pad packing	Standard				G	
Crankcase Style	Standard crankcase option with lubricator			Optional				L
	Standard crankcase option with lubricator and heater			Optional				LH
	Pressure lubricated with external oil cooler			Standard				M
	Standard crankcase option with heater			Optional				MH
Valves	Standard suction and discharge valves	Standard	NA	NA	Standard	Standard	Standard	4
	Standard suction and discharge valves with PEEK valve plates	NA	Standard	Standard	NA	NA	NA	4P
	Standard and blank valves	Optional	NA	NA	Optional	Optional	Optional	4B
	Standard and blank valves with PEEK plates	NA	Optional	Optional	NA	NA	NA	4PB
	Low inlet pressure valves	No charge	NA	NA	NA	NA	NA	4L ¹
	Low inlet pressure valves with PEEK plates	NA	No charge	NA	NA	NA	NA	4PL ¹
	Low inlet pressure valves with blank valves	Optional	NA	NA	NA	NA	NA	4BL ¹
	Low inlet pressure valves and blank valves with PEEK plates	NA	Optional	NA	NA	NA	NA	4PBL ¹
	Unloaders	Optional	NA	NA	Optional	Optional	NA	9
	Unloaders with PEEK plates	NA	Optional	Optional	NA	NA	NA	9P
	Unloaders with blank valves	Optional	NA	NA	Optional	Optional	NA	9B
	Unloaders with blank valves and PEEK plates	NA	Optional	Optional	NA	NA	NA	9PB
	Unloaders with low inlet pressure valves	Optional	NA	NA	NA	NA	NA	9L ¹
	Unloaders with low inlet pressure valves and PEEK plates	NA	Optional	NA	NA	NA	NA	9PL ¹
	Unloaders with low inlet pressure valves and blank valves	Optional	NA	NA	NA	NA	NA	9BL ¹
	Unloaders with low inlet pressure valves and blank valves with PEEK plates	NA	Optional	NA	NA	NA	NA	9PBL ¹
Piston Ring and Packing Material	PTFE piston and Alloy 50 packing material	Standard				F		
Gasket Material	Steel	Standard				D		
O-ring Material	Buna-N	Standard				A		
	Neoprene ^{®2}	No charge option				B		
	Viton ^{®2}	Optional				D		
	PTFE	Optional				E		
Intercooler	Without intercooler	Standard				N		
Flywheel	No flywheel supplied	Optional				N		
	Standard flywheel	Standard				S		
Protective Coating	Coated cylinder only	Optional	Optional	Consult Factory	Optional	Optional	Optional	C
	No coating	Standard				N		
	Coating on all necessary wetted parts	Optional	Optional	Consult Factory	Optional	Optional	Optional	W
Piston Rod Coating	Nitrotec ^{®3}	Standard				N		
Adjustable Head	None	Standard	Standard	Standard	Standard	Standard	NA	N
	Adjustable heads on both cylinders	Optional	Optional	Optional	Optional	Optional	Standard	3

¹ For inlet pressures 0 to 15 PSI.

² Registered trademark of the DuPont company.

³ Registered trademark of TTI Group Ltd.

Appendix A—Model Number Identification Code and Available Options

Reciprocating Horizontal Models (Plain & T-Style) Two-stage (Two Cylinder)

Plain Style (Single Packed)		Base Model #	Air Cooled—Two Cylinders					Model Number Base X X X X X X X X X X X X X X	
			HG602AB	HG602AC	HG602AD	HG602BC	HG602BD		
Cylinder size	8" x 6"		8" x 5"	8" x 4"	6" x 5"	6" x 4"			
Weight lbs. (kg.)	990 (449)	980 (445)	970 (440)	930 (422)	895 (406)				
T-Style (Triple Packed)	Base Model #	Air Cooled—Two Cylinders							
		THG602AB	THG602AC	THG602AD	THG602BC	THG602BD			
		8" x 6"	8" x 5"	8" x 4"	6" x 5"	6" x 4"			
	Weight lbs. (kg.)	1,090 (494)	1,080 (490)	1,070 (485)	1,030 (467)	995 (451)			
Specification Fields									
Packing Arrangement	Plain style only	Standard packing	Standard			0			
		Purge packing	Optional			P			
	T-Style only	Pad packing	Standard			G			
Crankcase Style	Standard crankcase option with lubricator		Optional			L			
	Standard crankcase option with lubricator and heater		Optional			LH			
	Pressure lubricated with external oil cooler		Standard			M			
	Standard crankcase option with heater		Optional			MH			
Valves	Standard suction and discharge valves		NA	NA	Standard	NA	NA	4	
	Standard suction and discharge valves with PEEK plates		Standard	Standard	NA	Standard	Standard	4P	
	Standard and blank valves in both stages		NA	NA	Optional	NA	NA	4B	
	Standard and blank valves in both stages with PEEK plates		Optional	Optional	NA	Optional	Optional	4PB	
	Low inlet pressure valves		NA	NA	No charge	NA	NA	4L ¹	
	Low inlet pressure valves with PEEK plates		No charge	No charge	NA	No charge	No charge	4PL ¹	
	Low inlet pressure valves with blank valves in both stages		NA	NA	Optional	NA	NA	4BL ¹	
	Low inlet pressure valves with blank valves in both stages with PEEK plates		Optional	Optional	NA	Optional	Optional	4PBL ¹	
	Standard valves with blank valves in 1st stage		NA	NA	Optional	NA	NA	4F	
	Standard and blank valves in 1st stage with PEEK plates		Optional	Optional	NA	Optional	Optional	4PF	
	Low inlet pressure valves with blank valves in 1st stage		NA	NA	Optional	NA	NA	4FL ¹	
	Low inlet pressure valves with blank valves in 1st stage with PEEK plates		Optional	Optional	NA	Optional	Optional	4PFL ¹	
	Standard valves with blank valves in 2nd stage		NA	NA	Optional	NA	NA	4S	
	Standard and blank valves in 2nd stage with PEEK plates		Optional	Optional	NA	Optional	Optional	4PS	
	Low inlet pressure valves with blank valves in 2nd stage		NA	NA	Optional	NA	NA	4SL ¹	
	Low inlet pressure valves with blank valves in 2nd stage with PEEK plates		Optional	Optional	NA	Optional	Optional	4PSL ¹	
	Unloaders		NA	NA	Optional	NA	NA	9	
	Unloaders with PEEK plates		Optional	Optional	NA	Optional	Optional	9P	
	Unloaders with blank valves in both stages		NA	NA	Optional	NA	NA	9B	
	Unloaders with blank valves in both stages with PEEK plates		Optional	Optional	NA	Optional	Optional	9PB	
	Unloaders with low inlet pressure valves		NA	NA	Optional	NA	NA	9L ¹	
	Unloaders with low inlet pressure valves with PEEK plates		Optional	Optional	NA	Optional	Optional	9PL ¹	
	Unloaders with low inlet pressure valves and blank valves in both stages		NA	NA	Optional	NA	NA	9BL ¹	
	Unloaders with low inlet pressure valves and blank valves in both stages with PEEK plates		Optional	Optional	NA	Optional	Optional	9PBL ¹	
	Unloaders with blank valves in 1st stage		NA	NA	Optional	NA	NA	9F	
	Unloaders with blank valves in 1st stage with PEEK plates		Optional	Optional	NA	Optional	Optional	9PF	
	Unloaders with low inlet pressure valves and blank valves in 1st stage		NA	NA	Optional	NA	NA	9FL ¹	
	Unloaders with low inlet pressure valves and blank valves in 1st stage with PEEK plates		Optional	Optional	NA	Optional	Optional	9PFL ¹	
	Unloaders with blank valves in 2nd stage		NA	NA	Optional	NA	NA	9S	
	Unloaders with blank valves in 2nd stage with PEEK plates		Optional	Optional	NA	Optional	Optional	9PS	
	Unloaders with low inlet pressure valves and blank valves in 2nd stage		NA	NA	Optional	NA	NA	9SL ¹	
	Unloaders with low inlet pressure valves and blank valves in 2nd stage with PEEK plates		Optional	Optional	NA	Optional	Optional	9PSL ¹	

For specifications on piston ring, packing, gasket, and O-ring materials, intercooler, flywheel, protective coating, piston rod coating, and adjustable head options, see next page.

Appendix A—Model Number Identification Code and Available Options Continued

Reciprocating Horizontal Models (Plain & T-Style) Two-stage (Two Cylinder)

Plain Style (Single Packed)	Base Model #	Air Cooled—Two Cylinders					Model Number Base X XXX XXX XXX XXX XXX
		HG602AB	HG602AC	HG602AD	HG602BC	HG602BD	
		8" x 6"	8" x 5"	8" x 4"	6" x 5"	6" x 4"	
	Weight lbs. (kg.)	990 (449)	980 (445)	970 (440)	930 (422)	895 (406)	
T-Style (Triple Packed)	Base Model #	Air Cooled—Two Cylinders					
		THG602AB	THG602AC	THG602AD	THG602BC	THG602BD	
	Cylinder Size	8" x 6"	8" x 5"	8" x 4"	6" x 5"	6" x 4"	
	Weight lbs. (kg.)	1,090 (494)	1,080 (490)	1,070 (485)	1,030 (467)	995 (451)	

Specification Fields

For packing arrangement, crankcase style, and valve specifications, see previous page.

Piston Ring and Packing Material	PTFE piston and Alloy 50 packing material	Standard	F
Gasket Material	Steel	Standard	D
O-ring Material	Buna-N Neoprene ^{®2} Viton ^{®2} PTFE	Standard No charge option Optional Optional	A B D E
Intercooler	Without intercooler	Standard	N
Flywheel	No flywheel supplied Standard flywheel	Optional Standard	N S
Protective Coating	Coated cylinder only No coating Coating on all necessary wetted parts	Optional Standard Optional	C N W
Piston Rod Coating	Nitrotec ^{®3}	Standard	N
Adjustable Head	None Adjustable head on 1st stage cylinder only Adjustable head on 2nd stage cylinder only Adjustable head on both cylinders	Standard Optional Optional Optional	N 1 2 3

¹ For inlet pressures 0 to 15 PSI.

² Registered trademark of the DuPont company.

³ Registered trademark of TTI Group Ltd.

Appendix A—Model Number Identification Code and Available Options

Reciprocating Horizontal Models (Plain and T-Style) Two-stage (Two Cylinder)

Plain Style (Single Packed)	Base Model #	Air Cooled—Two Cylinders					Model Number Base X X X X X X X X X X X X X X
		HG602BE	HG602BF	HG602CD	HG602CE	HG602CF	
		6" x 3 1/4"	6" x 2 3/4"	5" x 4"	5" x 3 1/4"	5" x 2 3/4"	
	Weight lbs. (kg.)	880 (399)	880 (399)	860 (390)	860 (390)	845 (383)	
T-Style (Triple Packed)	Base Model #	Air Cooled—Two Cylinders					
		THG602BE	THG602BF	THG602CD	THG602CE	THG602CF	
		6" x 3 1/4"	6" x 2 3/4"	5" x 4"	5" x 3 1/4"	5" x 2 3/4"	
	Weight lbs. (kg.)	980 (445)	980 (445)	960 (435)	960 (435)	945 (429)	
Specification Fields							
Packing Arrangement	Plain style only	Standard packing	Standard			0	
	Purge packing		Optional			P	
T-Style only	Pad packing		Standard			G	
Crankcase Style	Standard crankcase option with lubricator		Optional			L	
	Standard crankcase option with lubricator and heater		Optional			LH	
	Pressure lubricated with external oil cooler		Standard			M	
	Standard crankcase option with heater		Optional			MH	
Valves	Standard suction and discharge valves with PEEK plates		Standard			4P	
	Std. valves w/ blank valves in both stages w/ PEEK plates		Optional			4PB	
	Low inlet pressure valves with PEEK plates	No charge	No charge	NA	NA	NA	
	Low inlet pressure valves with blank valves in both stages with PEEK plates	Optional	Optional	NA	NA	NA	
	Standard valves w/ blank valves in 1st stage w/ PEEK plates		Optional			4PF	
	Low inlet pressure valves with blank valves in 1st stage with PEEK plates	Optional	Optional	NA	NA	NA	
	Standard valves w/ blank valves in 2nd stage w/ PEEK plates		Optional			4PS	
	Low inlet pressure valves with blank valves in 2nd stage with PEEK plates	Optional	Optional	NA	NA	NA	
	Unloaders with PEEK plates		Optional			9P	
	Unloaders with blank valves in both stages with PEEK plates		Optional			9PB	
	Unloaders with low inlet pressure valves with PEEK plates	Optional	Optional	NA	NA	NA	
	Unloaders with low inlet pressure valves and blank valves in both stages with PEEK plates	Optional	Optional	NA	NA	NA	
	Unloaders with blank valves in 1st stage with PEEK plates		Optional			9PF	
	Unloaders with low inlet pressure valves and blank valves in 1st stage with PEEK plates	Optional	Optional	NA	NA	NA	
	Unloaders with blank valves in 2nd stage with PEEK plates		Optional			9PS	
	Unloaders with low inlet pressure valves and blank valves in 2nd stage with PEEK plates	Optional	Optional	NA	NA	NA	
Piston Ring and Packing Material	PTFE piston and Alloy 50 packing material		Standard			F	
Gasket Material	Steel		Standard			D	
O-ring Material	Buna-N		Standard			A	
	Neoprene ^{®2}		No charge option			B	
	Viton ^{®2}		Optional			D	
	PTFE		Optional			E	
Intercooler	Without intercooler		Standard			N	
Flywheel	No flywheel supplied		Optional			N	
	Standard flywheel		Standard			S	
Protective Coating	Coated cylinder only	Optional	Consult factory			C	
	No coating		Standard			N	
	Coating on all necessary wetted parts	Optional	Consult factory			W	
Piston Rod Coating	Nitrotec ^{®3}		Standard			N	
Adjustable Head	None	Standard	NA	Standard	Standard	NA	
	Adjustable head on 1st stage cylinder only	Optional	NA	Optional	Optional	NA	
	Adjustable head on 2nd stage cylinder only	Optional	Standard	Optional	Optional	Standard	
	Adjustable head on both cylinders	Optional	Optional	Optional	Optional	Optional	

¹ For inlet pressures 0 to 15 PSI.

² Registered trademark of the DuPont company.

³ Registered trademark of TTI Group Ltd.

Appendix A—Model Number Identification Code and Available Options

Reciprocating Horizontal Models (Plain and T-Style) Two-stage (Two Cylinder)

Plain Style (Single Packed)	Base Model #	Air Cooled—Two Cylinders			Model Number Base X X X X X X X X X X X X X X X X
		HG602DE	HG602DF	HG602EF	
		4" x 3 1/4"	4" x 2 3/4"	3 1/4" x 2 3/4"	
Weight lbs. (kg.)		860 (1,896)	860 (1,896)	845 (1,863)	
T-Style (Triple Packed)	Base Model #	Air Cooled—Two Cylinders			
		THG602DE	THG602DF	THG602EF	
		4" x 3 1/4"	4" x 2 3/4"	3 1/4" x 2 3/4"	
Cylinder Size		960 (2,116)	960 (2,116)	945 (2,083)	
Weight lbs. (kg.)					
Specification Fields					
Packing Arrangement	Plain style only	Standard packing	Standard	O	
	Purge packing		Optional	P	
Crankcase Style	T-Style only	Pad packing	Standard	G	
	Standard crankcase option with external lubricator		Optional	L	
Valves	Standard crankcase option with heater		Optional	LH	
	Pressure lubricated with external oil cooler		Standard	M	
Crankcase Style	Standard crankcase option with heater		Optional	MH	
Valves	Standard suction and discharge valves		Standard	4	
	Standard valves with blank valves in both stages		Optional	4B	
Valves	Standard valves with blank valves in 1st stage		Optional	4F	
	Standard valves with blank valves in 2nd stage		Optional	4S	
Unloaders	Unloaders	Optional	NA	9	
	Unloaders with blank valves in both stages	Optional	NA	9B	
Unloaders	Unloaders with blank valves in 1st stage	Optional	NA	9F	
	Unloaders with blank valves in 2nd stage	Optional	NA	9S	
Piston Ring and Packing Material	PTFE piston and Alloy 50 packing material	Standard	F		
Gasket Material	Steel	Standard	D		
O-ring Material	Buna-N	Standard	A		
	Neoprene ^{®2}	No charge option	B		
Protective Coating	Viton ^{®2}	Optional	D		
	PTFE	Optional	E		
Intercooler	Without intercooler	Standard	N		
Flywheel	No flywheel supplied	Optional	N		
	Standard flywheel	Standard	S		
Protective Coating	Coated cylinder only	Optional	Consult factory	C	
	No coating	Standard	N		
Piston Rod Coating	Coating on all necessary wetted parts	Optional	Consult factory	W	
	Nitrotec ^{®3}	Standard	N		
Adjustable Head	None	Standard	NA	NA	N
	Adjustable head on 1st stage cylinder only	Optional	NA	NA	1
	Adjustable head on 2nd stage cylinder only	Optional	Standard	Standard	2
	Adjustable head on both cylinders	Optional	Optional	Optional	3

¹ For inlet pressures 0 to 15 PSI.

² Registered trademark of the DuPont company.

³ Registered trademark of TTI Group Ltd.

Appendix A—Model Number Identification Code and Available Options

LPG Horizontal Two Cylinder, Single-stage Compressors

Plain Style (Single Packed)	Base Model #	Plain Style		T-Style		Model Number Base X X X X X X X X X X X X X X
		HG601AA	HG601BB	THG601AA	THG601BB	
		8" x 8"	6" x 6"	8" x 8"	6" x 6"	
	Weight lbs. (kg.)	1,070 (485)	910 (413)	1,070 (485)	1,010 (458)	
Specification Fields						
Packing Arrangement	Plain style only	Standard packing	Standard	NA	O	
	Purge packing		Optional	NA	P	
	T-Style only	Pad packing	NA	Standard	G	
Crankcase Style	Standard pressure lube	Standard	NA	Standard	NA	M
	Standard pressure lube with heater		Optional		Optional	MH
Valves	Standard valves	Standard	NA	Standard	NA	4
	Standard valves with PEEK plates	NA	Standard	NA	Standard	4P
	Suction valve unloaders	Optional	NA	Optional	NA	9
	Suction valve unloaders with PEEK plates	NA	Optional	NA	Optional	9P
Piston Ring and Packing Material	PTFE piston and Alloy 50 packing material	Standard			F	
Gasket Material	Aluminum gaskets	Standard			B	
O-ring Material	Buna-N	Standard			A	
	Neoprene ^{®2}	No charge option			B	
Intercooler	No intercooler	Standard			N	
Flywheel	No flywheel supplied	Optional			N	
	Standard flywheel	Standard			S	
Protective Coating	No coating	Standard			N	
Piston Rod Coating	Nitrotec ^{®3}	Standard			N	
Adjustable Head	None	Standard			N	
	Adjustable heads on both cylinders	Optional			3	

¹ For inlet pressures 0 to 15 PSI.

² Registered trademark of the DuPont company.

³ Registered trademark of TTI Group Ltd.

Appendix B—Specifications for HG600/THG600 Series

Operating Specifications

Cylinder Data

Description	Cylinder Code					
	A	B	C	D	E	F
Cylinder Bore in. (mm)	8.0 (203.2)	6.0 (152.4)	5.0 (127)	4.0 (101.6)	3.25 (82.6)	2.75 (69.9)
Maximum allowable working pressure psia (bar g)	330 (22.8)	385 (26.5)	825 (56.9)	1,100 (75.8)	1,320 (91.0)	1,815 (125.1)
Piston ring radial thickness (minimum) inches (mm)	0.215 (5.46)	0.155 (3.98)	0.155 (3.98)	0.082 (2.08)	0.082 (2.08)	0.090 (2.29)

NOTE: The minimum inlet pressure is atmospheric pressure. The maximum working pressure for horizontal compressors is determined by cylinder size. Single-stage horizontal compressors begin with HG601 or THG601 and do not have an interstage section, thus no intermediate pressure. Two-stage units begin with HG602 or THG602 and have an interstage section with an intermediate pressure at a level between that of the inlet and outlet pressures.

Frame Data

Stroke inches (mm)	3.0 (76.2)
Maximum gas rod load lb (kg.)	7,500 (3,401.9)
Maximum motor size hp (kg.)	75 (55.9)
Maximum discharge temp °F (°C) ¹	350.6 (177)
Minimum temp °F (°C) ¹	-20 (-28.9)
RPM range	400 - 1,200

THG/HG600 Series Clearances and Dimensions

Specification	Inches
Piston clearance	See piston clearance details
Clearance: connecting rod bearing to crankshaft journal	0.0013 0.0033
Clearance: wrist pin to wrist pin bushing (maximum) ²	0.001
Cylinder finish	16–32 RMS
Clearance: oil pump adapter shaft to bushing (maximum) ²	0.0036
Crankshaft end play (cold)	0.002 0.003
Flywheel runout at O.D. (maximum)	0.020
Clearance: crosshead to crosshead guide bore (maximum)	0.008
Crosshead guide bore finish in crankcase	32 RMS (limited number of small pits and scratches are acceptable)

¹ Inlet, intermediate, and discharge operating temperatures vary based on the gas being handled, the compression ratio, compressor speed, type of coolant, and coolant flow rate. The type and size of intercoolers are also factors.

² Dimensions for honing are included with new bushings (which must be installed, then honed).

Appendix B—Specifications for HG600/THG600 Series

Single-stage Horizontal Compressors

Single Cylinder Models	HG601AX THG601AX	HG601BX THG601BX	HG601CX THG601CX	HG601DX THG601DX	HG601EX THG601EX	HG601FX THG601FX
Size	8"	6"	5"	4"	3.25"	2.75"
Displacement cfm (m ³ /hr)						
400 rpm	68.8 (116.9)	38.4 (65.2)	26.4 (44.9)	16.8 (28.5)	10.8 (18.3)	7.4 (12.6)
1200 rpm	207.0 (351.7)	115.0 (195.4)	79.2 (134.4)	49.8 (84.6)	32.2 (54.5)	22.2 (37.7)
Approximate shipping weight lb. (kg.)						
HG model	730 (331.1)	650 (295.0)	640 (290.3)	630 (285.8)	620 (281.2)	620 (281.2)
THG model	780 (353.8)	700 (317.5)	690 (313.0)	680 (308.4)	670 (303.9)	670 (303.9)

Two Cylinder Models	HG601AA THG601AA	HG601BB THG601BB	HG601CC THG601CC	HG601DD THG601DD	HG601EE THG601EE	HG601FF THG601FF
Size	8" x 8"	6" x 6"	5" x 5"	4" x 4"	3.25" x 3.25"	2.75" x 2.75"
Displacement cfm (m ³ /hr)						
400 rpm	138 (234.5)	76.8 (130.5)	52.8 (89.7)	33.2 (56.4)	21.2 (36.0)	14.8 (25.1)
1200 rpm	414 (704)	231 (393)	158.4 (268.8)	99.6 (169.2)	64 (108.7)	44.4 (75.6)
Approximate shipping weight lb. (kg.)						
HG model	1,070 (485.4)	910 (412.8)	890 (403.7)	870 (394.6)	845 (383.3)	845 (383.3)
THG model	1,170 (530.7)	1,010 (458.1)	990 (449.1)	970 (440.0)	945 (428.7)	945 (428.7)

Two-stage Horizontal Compressors

Two Cylinder Models	HG602AB THG602AB	HG602AC THG602AC	HG602AD THG602AD	HG602BC THG602BC	HG602BD THG602BD	HG602BF THG602BF
Size	8" x 6"	8" x 5"	8" x 4"	6" x 5"	6" x 4"	6" x 2.75"
Displacement cfm (m ³ /hr)						
400 rpm	68.8 (116.9)	68.8 (116.9)	68.8 (116.9)	38.4 (65.2)	38.4 (65.2)	38.4 (65.2)
1200 rpm	207.0 (351.7)	207.0 (351.7)	207.0 (351.7)	115.0 (195.4)	115.0 (195.4)	115.0 (195.4)
Approximate shipping weight lb. (kg.)						
HG model	990 (449.1)	980 (444.5)	970 (440.0)	930 (421.9)	895 (406.0)	880 (399.2)
THG model	1,090 (494.4)	1,080 (489.9)	1,070 (485.4)	1,030 (467.2)	995 (451.3)	980 (444.5)

Two Cylinder Models	HG602BE THG602BE	HG602CD THG602CD	HG602CF THG602CF	HG602DE THG602DE	HG602DF THG602DF	HG602EF THG602EF
Size	6" x 3.25"	5" x 4"	5" x 2.75"	4" x 3.25"	4" x 2.75"	3.25" x 2.75"
Displacement cfm (m ³ /hr)						
400 rpm	38.4 (65.2)	26.4 (44.9)	26.4 (44.9)	16.8 (28.5)	16.8 (28.5)	10.8 (18.3)
1200 rpm	115 (195.4)	79.2 (134.4)	79.2 (134.4)	49.8 (84.6)	49.8 (84.6)	32.2 (54.5)
Approximate shipping weight lb. (kg.)						
HG model	880 (399.2)	880 (399.2)	867 (393.3)	860 (390.1)	860 (390.1)	845 (383.3)
THG model	980 (444.5)	980 (444.5)	967 (438.6)	960 (435.5)	960 (435.5)	945 (428.7)

Appendix B—Specifications for HG600/THG600 Series

Machine mass

The machine mass varies with the compressor model and is shown in the following tables:

Horizontal Compressor Model	Machine Mass (kg.)	Horizontal Compressor Model	Machine Mass (kg.)
HG601AX	331	THG601AX	354
HG601BX	295	THG601BX	318
HG601CX	290	THG601CX	313
HG601DX	286	THG601DX	308
HG601EX	281	THG601EX	304
HG601FX	281	THG601FX	304
HG601AA	485	THG601AA	531
HG601BB	413	THG601BB	458
HG601CC	404	THG601CC	449
HG601DD	395	THG601DD	440
HG601EE	383	THG601EE	429
HG601FF	383	THG601FF	429
HG602AB	449	THG602AB	494
HG602AC	444	THG602AC	490

Horizontal Compressor Model	Machine Mass (kg.)	Horizontal Compressor Model	Machine Mass (kg.)
HG602AD	440	THG602AD	485
HG602AE	435	THG602AE	471
HG602AF	435	THG602AF	471
HG602BC	422	THG602BC	467
HG602BD	406	THG602BD	451
HG602BE	399	THG602BE	444
HG602BF	399	THG602BF	444
HG602CD	399	THG602CD	444
HG602CE	393	THG602CE	439
HG602CF	393	THG602CF	439
HG602DE	390	THG602DE	436
HG602DF	390	THG602DF	436
HG602EF	383	THG602EF	429

Noise Level

The noise level generated by the compressor unit on its own is < 85 dB(A) at 1 meter. The end user must take all necessary precautions dependent on the noise levels generated by the complete system.

Appendix B—Specifications for HG600/THG600 Series

Material Specifications

Part	Model No.	Standard Material	Optional Material
Crankcase	All	Ductile iron ASTM A536, Grade 80-55-06	
Adapters	All	Ductile iron ASTM A536, Grade 65-45-12	
Cylinders	All	Ductile iron ASTM A536, Grade 65-45-12	
Cylinder heads (adjustable and standard)	All	Ductile iron ASTM A536, Grade 65-45-12	
Valve caps	All	Ductile iron ASTM A536, Grade 65-45-12	
Bearing carrier	All	Gray iron ASTM A48, Class 30	
Flanges	All	Steel slip-on weld	
Valve bumper (guard)	All	Stainless steel	
Valve seat	All	Stainless steel	
Valve plates	2.75", 3.25", 4"	Stainless steel	
	5", 6"	PEEK	
Valve springs	All	Stainless steel	
Valve gaskets	2.75", 3.25", 4", 5", 6", 8"	Steel (industrial models)	
	6", 8"	Aluminum (LPG models)	
Pistons	2.75", 3.25", 4", 5"	Steel	
	6", 8"	Aluminum A356-T6	Ductile iron A536 Grade 65-45-12 (single stage only)
Piston rod	All	1045 Steel Nitrotec® ¹	
Crosshead	All	Gray iron ASTM A48, Class 30	
Connecting rod and packing cartridge	All	Ductile iron ASTM A536, Grade 65-45-12	
Piston rings	All	PTFE (glass and moly filled)	
Rider rings	All	PTFE (glass and moly filled)	
Packing: segmented rings	All	PTFE (carbon filled)	
Packing: segmented oil wiper rings	All	Brass	
Connecting rod bearing	All	Bimetal steel backing tinbase babbitt plate	
Crankshaft	All	Ductile iron ASTM A536, Grade 80-55-06	
Wrist pin	All	Mild steel	
Wrist pin bushing	All	Bronze SAE 660	
Main bearings	All	Tapered roller	
Inspection plate	All	Carbon steel	
O-rings	All	Buna-N	PTFE, Viton® ² , Neoprene® ²
Retainer rings	All	Carbon steel	
Lubricator tubing	Lube models	Steel	
Lubricator	Lube models	Force feed with divider block — no flow shutdown	

¹ Registered trademark of TTI Group Ltd.

² Registered trademark of the DuPont company.

Appendix B—Specifications for HG600/THG600 Series

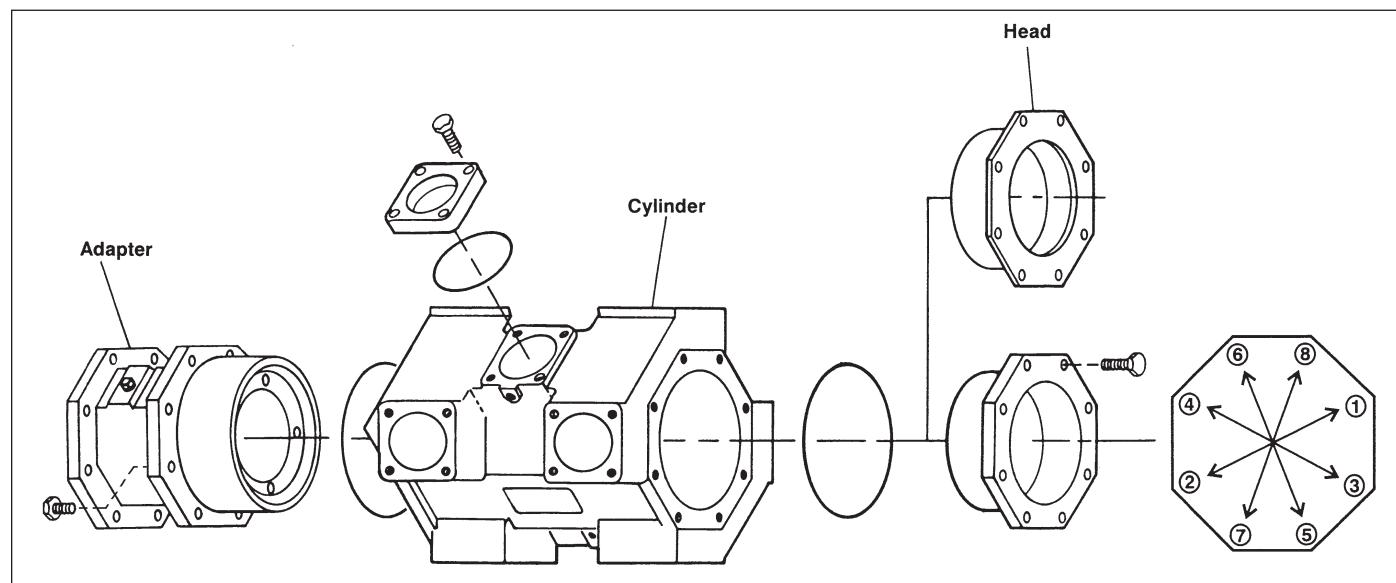
Bolt Torque Values (in ft•lb)

Cylinder Size	2.75"	3.25"	4"	5"	6"	8"
Connection rod bolt	40	40	40	40	40	40
Bearing carrier	40	40	40	40	40	40
Bearing cover	40	40	40	40	40	40
Crankcase inspection plate	8	8	8	8	8	8
Adapter to crankcase or distance piece ¹	65	65	65	65	65	65
Distance piece to crankcase ¹	65	65	65	65	65	65
Cylinder to adapter ¹	65	65	65	65	65	65
Valve cover plate bolt	35	35	40	40	40	40
Valve holddown screw ²	40	40	40	40	40	40
Piston nut torque	150	150	150	150	150	150
Piston screw torque	100	50	100	100	100	100
Valve unloader cap torque	25	25	25	25	25	25
Head to cylinder ¹	65	65	65	65	65	65

¹ Preliminary tightening: Snug all head bolts in the sequence shown. Final tightening: Torque all head bolts in the sequence shown to the value listed above.

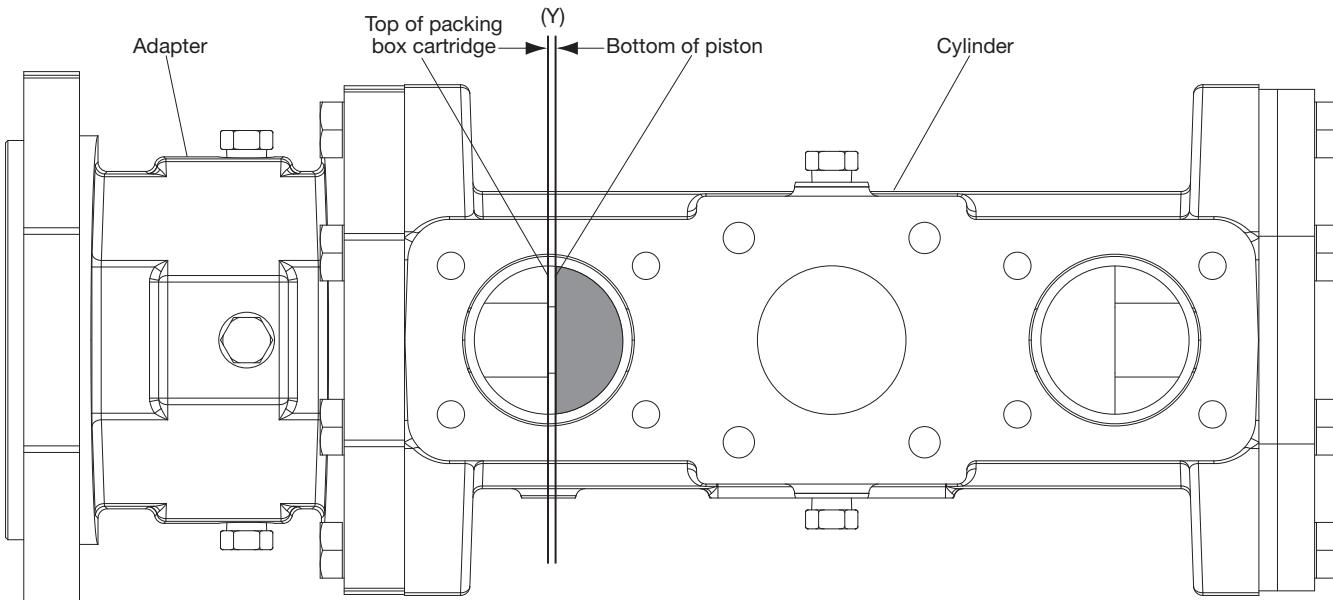
² Retorque to the value listed above after 2 to 5 hours of running time.

Horizontal Compressor Bolt Tightening Sequence

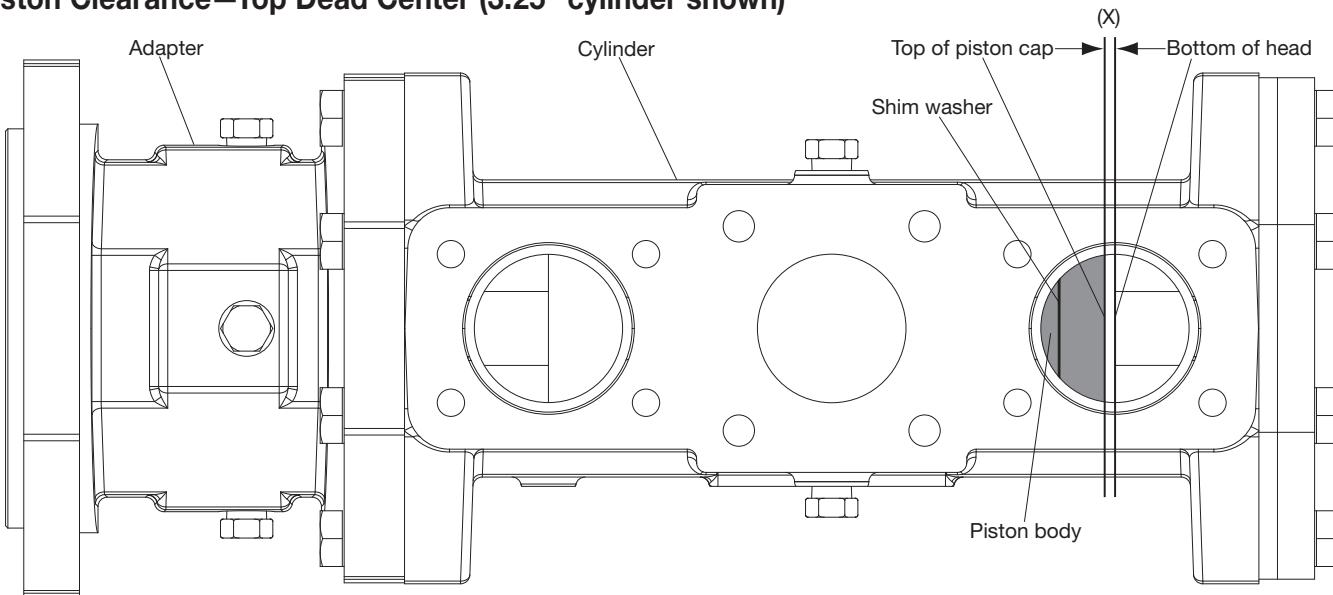


Appendix B—Specifications for HG600/THG600 Series

Piston Clearance—Bottom Dead Center (3.25" cylinder shown)



Piston Clearance—Top Dead Center (3.25" cylinder shown)

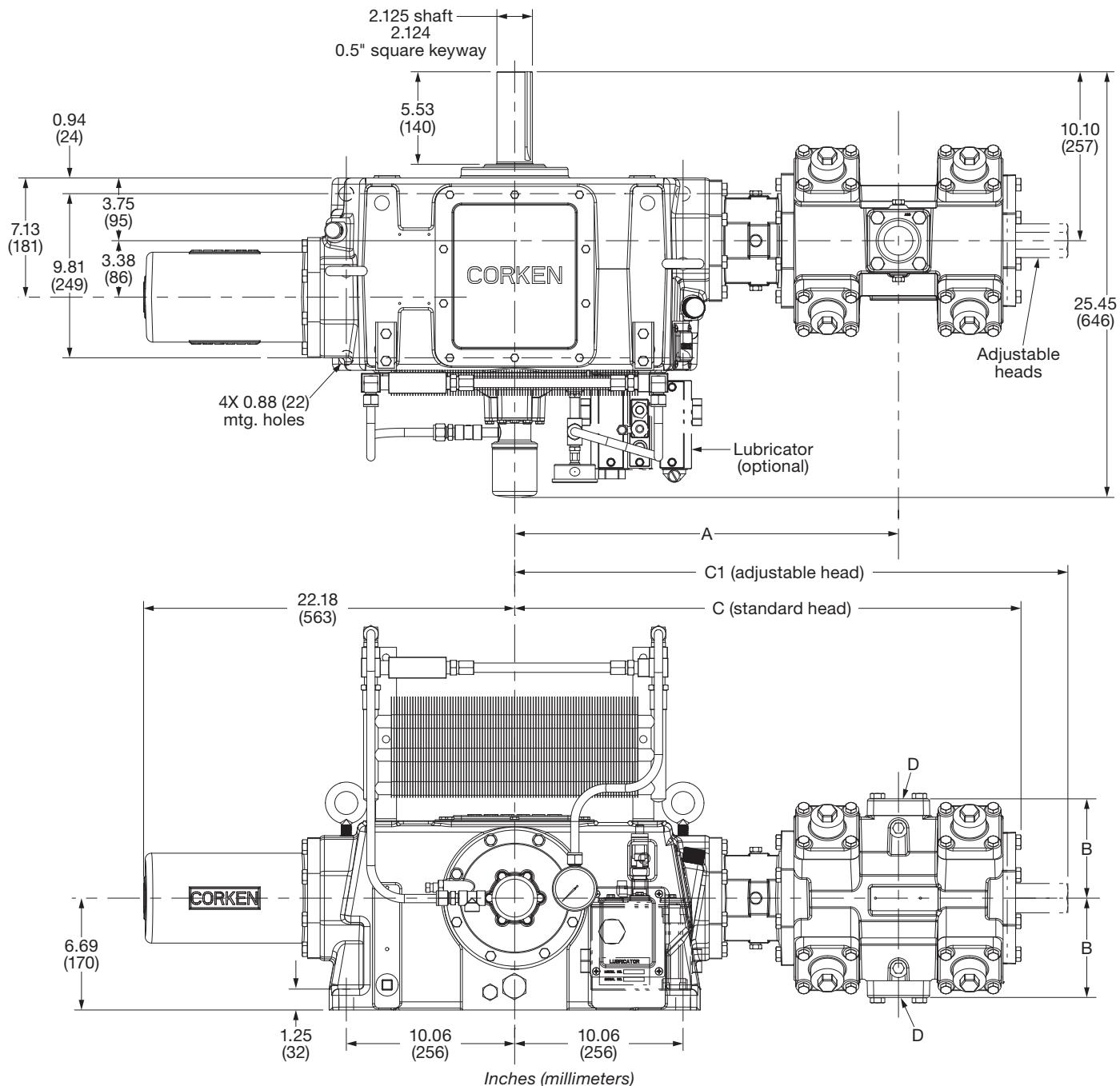


X and Y Dimension—Inches (mm)

	Piston Size					
	2.75"	3.25"	4"	5"	6"	8"
Plain style						
Bottom minimum clearance (Y)	0.010 (0.25)	0.010 (0.25)	0.010 (0.25)	0.010 (0.25)	0.010 (0.25)	0.010 (0.25)
Bottom maximum clearance (Y)	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)
Top minimum clearance (X)	0.040 (1.02)	0.083 (2.11)	0.083 (2.11)	0.083 (2.11)	0.083 (2.11)	0.088 (2.24)
Top maximum clearance (X)	0.065 (1.65)	0.093 (2.36)	0.093 (2.36)	0.093 (2.36)	0.093 (2.36)	0.098 (2.49)
T-Style						
Bottom minimum clearance (Y)	0.005 (0.13)	0.005 (0.13)	0.005 (0.13)	0.005 (0.13)	0.005 (0.13)	0.005 (0.13)
Bottom maximum clearance (Y)	0.015 (0.38)	0.015 (0.38)	0.015 (0.38)	0.015 (0.38)	0.015 (0.38)	0.015 (0.38)
Top minimum clearance (X)	0.030 (0.76)	0.073 (1.85)	0.073 (1.85)	0.073 (1.85)	0.073 (1.85)	0.078 (1.98)
Top maximum clearance (X)	0.055 (1.46)	0.083 (2.11)	0.083 (2.11)	0.083 (2.11)	0.083 (2.11)	0.088 (2.24)

Appendix C—Outline Dimensions

HG601 Series—Plain Style Single Cylinder



Cylinder Size	A Nozzle CL	B Flange Height	C (Standard head)	C1 (Adjustable head)	D Flange Size
2.75"	23.41 (594.6)	4.38 (111.1)	—	33.94 (862.1)	a
3.25"	22.50 (571.5)	5.00 (127.0)	29.31 (744.4)	32.13 (816.1)	2" slip on
4"	23.56 (598.4)	5.83 (148.1)	31.77 (806.9)	34.56 (877.8)	2" slip on
5"	23.38 (593.9)	6.07 (154.2)	31.21 (792.7)	34.01 (863.9)	2" slip on
6"	22.94 (582.7)	5.94 (150.9)	30.25 (768.4)	33.06 (839.7)	2" slip on
8"	23.63 (600.2)	7.25 (184.2)	32.13 (816.1)	34.69 (881.1)	3" slip on

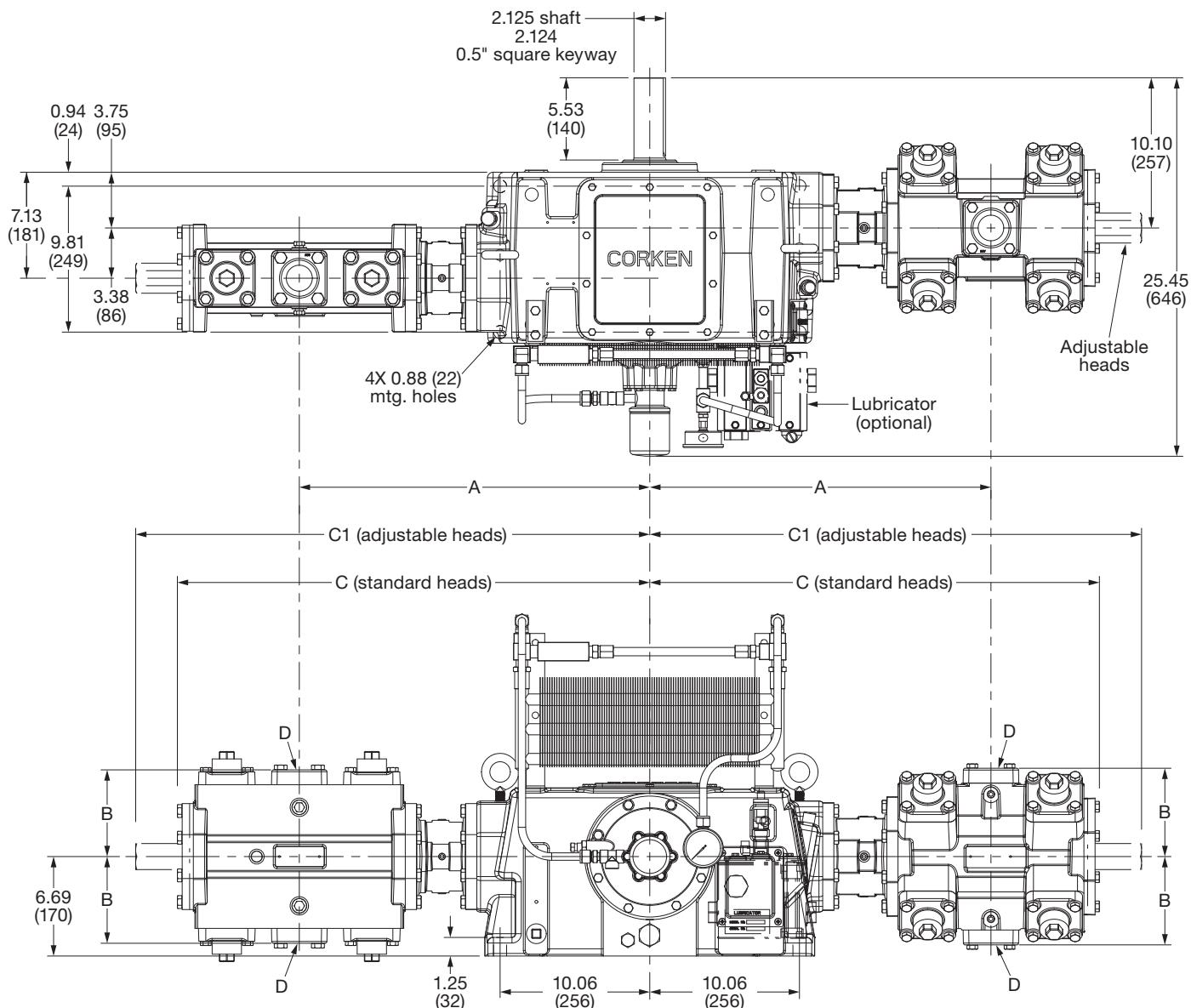
^a 1.5" Class 1500 RF flange not supplied.

NOTE: 1. Standard flywheel (not shown) 5-5V 21.2

2. Jacking screw provided for cylinder support (8" and 6" cylinders only).

Appendix C—Outline Dimensions

HG601 Series—Plain Style Double Cylinder



Inches (millimeters)

Cylinder Size	A Nozzle CL	B Flange Height	C (Standard head)	C1 (Adjustable head)	D Flange Size
2.75"	23.41 (594.6)	4.38 (111.1)	—	33.94 (862.1)	^a
3.25"	22.50 (571.5)	5.00 (127.0)	29.31 (744.4)	32.13 (816.1)	2" slip on
4"	23.56 (598.4)	5.83 (148.1)	31.77 (806.9)	34.56 (877.8)	2" slip on
5"	23.38 (593.9)	6.07 (154.2)	31.21 (792.7)	34.01 (863.9)	2" slip on
6"	22.94 (582.7)	5.94 (150.9)	30.25 (768.4)	33.06 (839.7)	2" slip on
8"	23.63 (600.2)	7.25 (184.2)	32.13 (816.1)	34.69 (881.1)	3" slip on

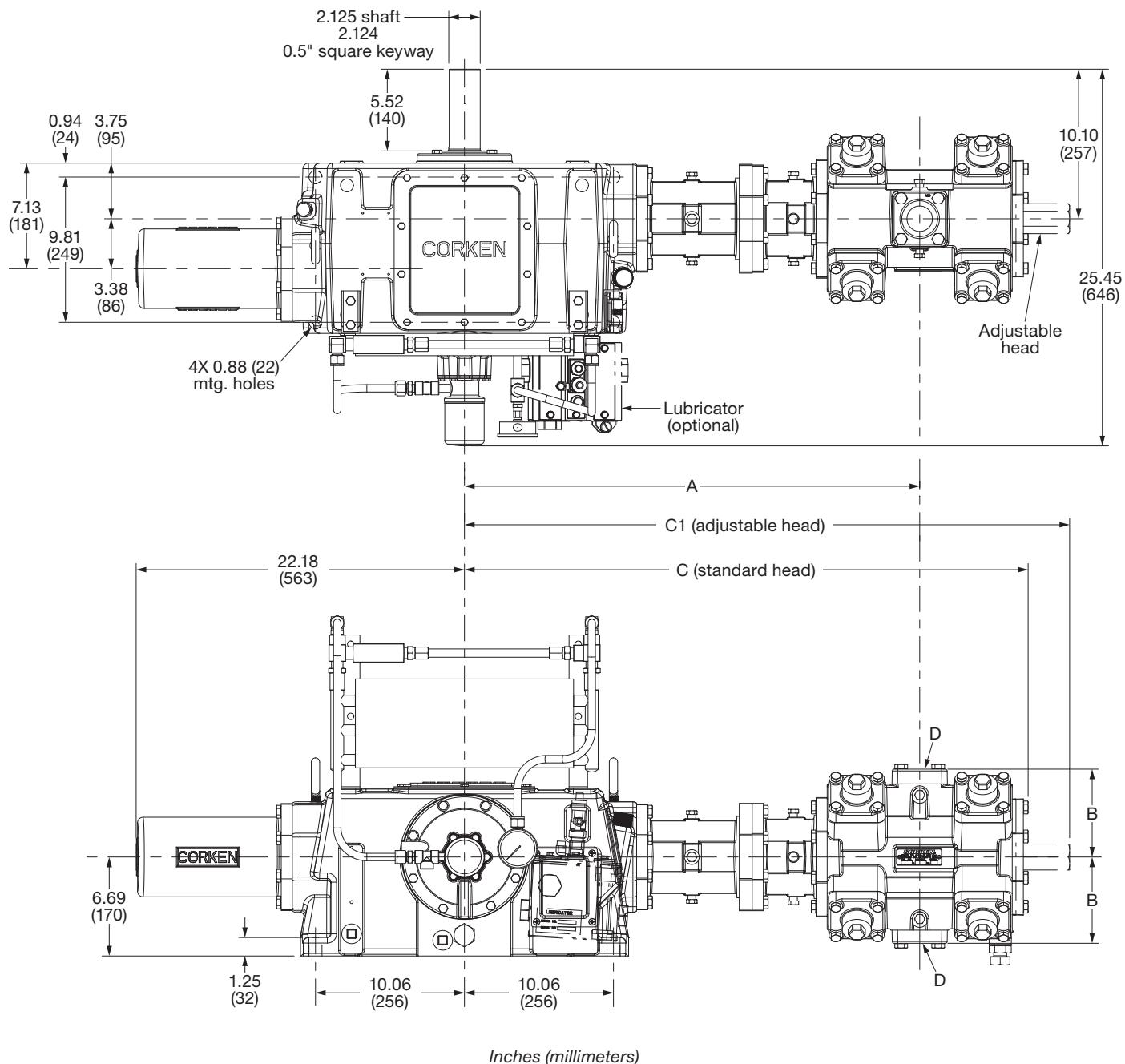
^a 1.5" Class 1500 RF flange not supplied.

NOTE: 1. Standard flywheel (not shown) 5-5V 21.2

2. Jacking screw provided for cylinder support (8" and 6" cylinders only).

Appendix C—Outline Dimensions

THG601 Series—T-Style Single Cylinder



Cylinder Size	A Nozzle C _L	B Flange Height	C (Standard head)	C1 (Adjustable head)	D Flange Size
2.75"	31.22 (793.0)	4.38 (111.3)	—	41.75 (1,060.5)	a
3.25"	30.31 (769.9)	5.00 (127.0)	37.14 (943.4)	40.00 (1,016.0)	2" slip on
4"	31.37 (796.8)	5.83 (148.1)	39.57 (1,005.1)	42.37 (1,076.2)	2" slip on
5"	31.19 (792.2)	6.07 (154.2)	39.02 (991.1)	41.82 (1,062.2)	2" slip on
6"	30.75 (781.1)	5.94 (150.9)	38.07 (967.0)	40.88 (1,038.4)	2" slip on
8"	31.50 (800.1)	7.25 (184.2)	40.07 (1,017.8)	42.88 (1,089.0)	3" slip on

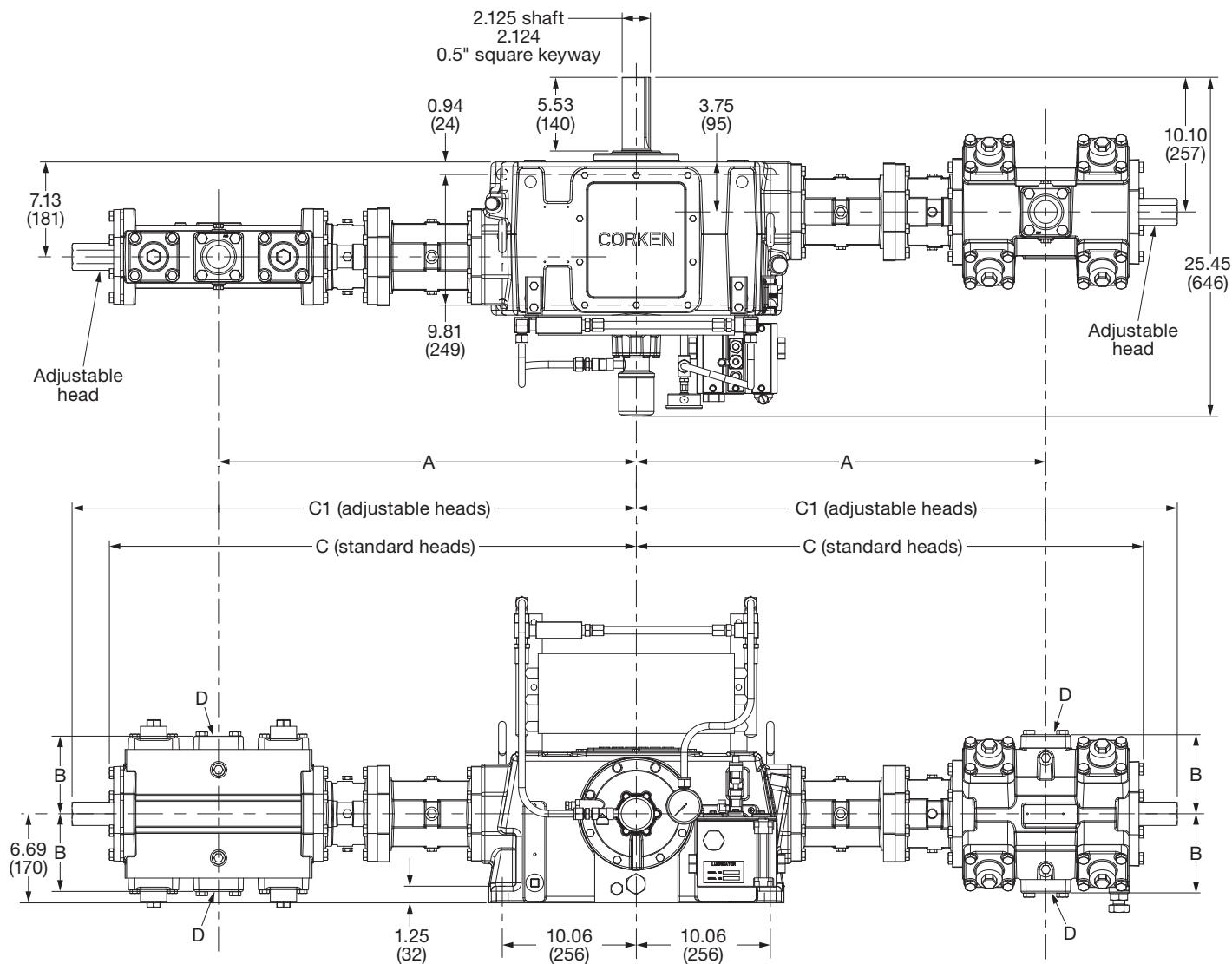
^a 1.5" Class 1500 RF flange not supplied.

NOTE: 1. Standard flywheel (not shown) 5-5V 21.2

2. Jacking screw provided for cylinder support (8" and 6" cylinders only).

Appendix C—Outline Dimensions

THG601 Series—T-Style Double Cylinder



Inches (millimeters)

Cylinder Size	A Nozzle CL	B Flange Height	C (Standard head)	C1 (Adjustable head)	D Flange Size
2.75"	31.22 (793.0)	4.38 (111.3)	—	41.75 (1,060.5)	a
3.25"	30.31 (769.9)	5.00 (127.0)	37.14 (943.4)	40.00 (1,016.0)	2" slip on
4"	31.37 (796.8)	5.83 (148.1)	39.57 (1,005.1)	42.37 (1,076.2)	2" slip on
5"	31.19 (792.2)	6.07 (154.2)	39.02 (991.1)	41.82 (1,062.2)	2" slip on
6"	30.75 (781.1)	5.94 (150.9)	38.07 (967.0)	40.88 (1,038.4)	2" slip on
8"	31.50 (800.1)	7.25 (184.2)	40.07 (1,017.8)	42.88 (1,089.0)	3" slip on

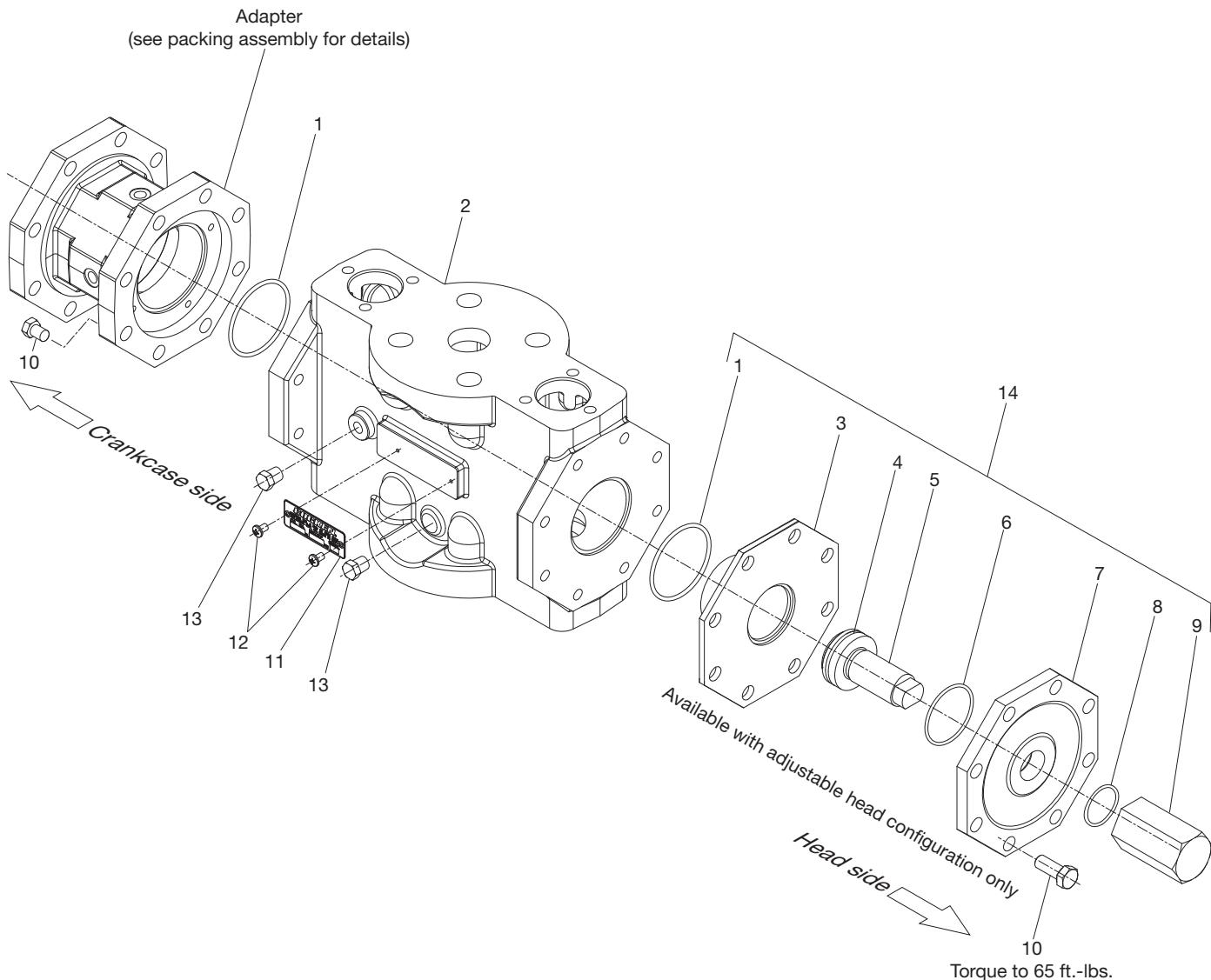
^a 1.5" Class 1500 RF flange not supplied.

NOTE: 1. Standard flywheel (not shown) 5-5V 21.2

2. Jacking screw provided for cylinder support (8" and 6" cylinders only).

Appendix D—Cylinder Head Assembly Details (HG600/THG600 Series)

2.75" Cylinder Head



Cylinder—Bill of Materials

Ref No.	Part No.	Description	Qty. per Cylinder
1.	2-232 _a	O-ring	2
2.	3888	Cylinder	1
3.	3899-1	Adjustable head	1
4.	2-225 _{a, f}	O-ring	1
5.	3898	Adjusting cup	1
6.	2-227 _a	O-ring	1
7.	3897	Adjusting cap	1
8.	2-127 _a	O-ring	1
9.	3665	Adjusting screw nut	1
10.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
11.	3698	Nameplate	1
12.	7012-006SE019E	Drive screw	2
13.	3442	Pipe plug (1/4")	5

Ref No.	Part No.	Description	Qty. per Cylinder
14.	3899-1X	Adjustable head assembly	1
—	b	Flange	1
—	c	Flange gasket	1
—	d	Flange bolt	1

^a _ denotes material code. See material code chart for details.

^b Use 1-1/2" ASME Class 1500 RF flange (not provided).

^c Use 1-1/2" RF flange gasket (not provided).

^d Use 1" - 8 x 3-1/2" hex head bolt (not provided).

^e Registered trademark of the DuPont company.

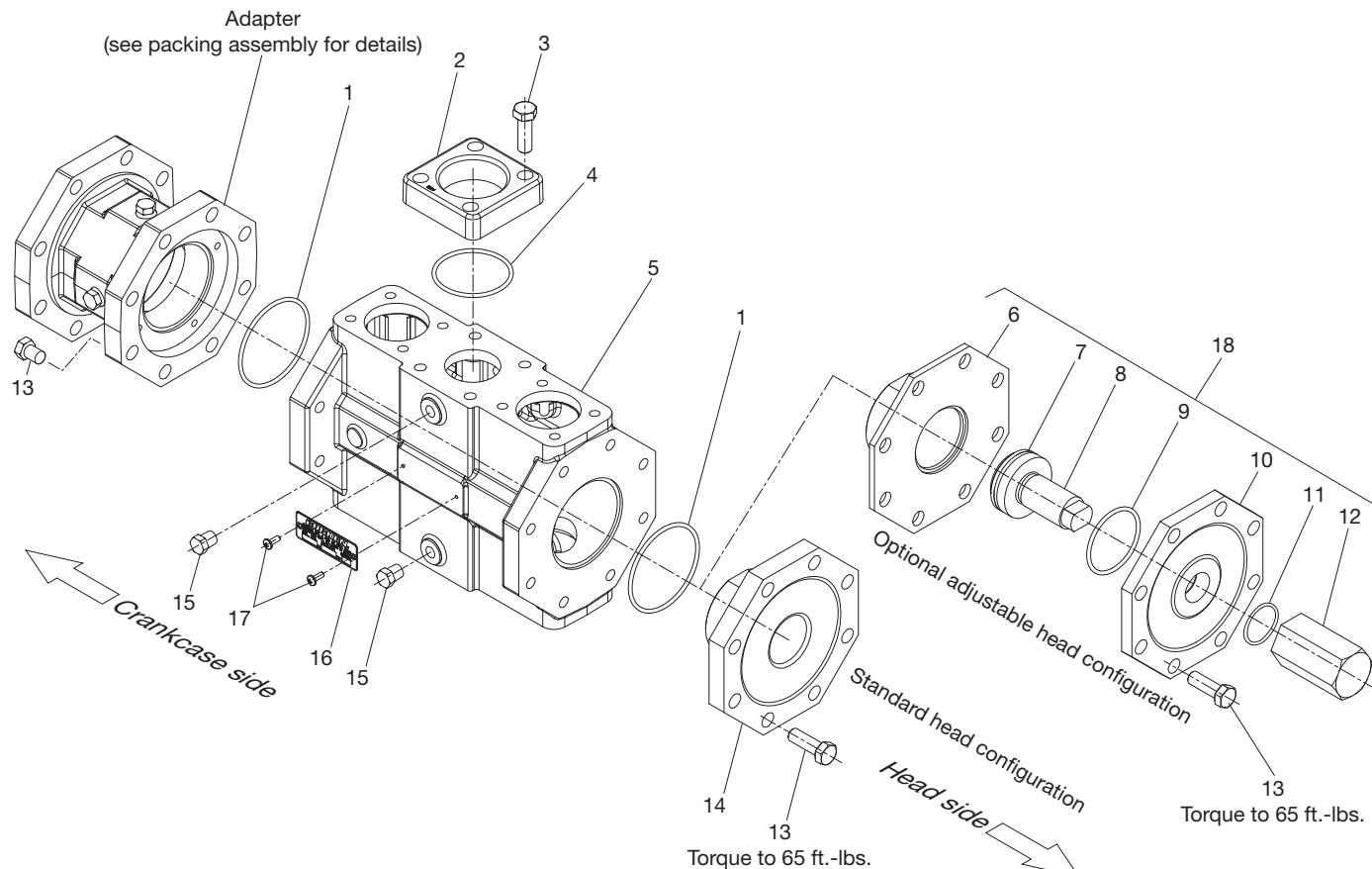
^f Material code D or K only.

Material Code	
A	Buna-N
B	Neoprene® ^e
D	Viton® ^e
E	PTFE
K	Kalrez® ^e

 CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D—Cylinder Head Assembly Details (HG600/THG600 Series)

3.25", 4", and 5" Cylinder Head



Cylinder—Bill of Materials

Ref No.	Cylinder Size			Description	Qty. per Cylinder
	3.25"	4"	5"		
	Part No.	Part No.	Part No.		
1.	2-236 ^a	2-242 ^a	2-250	O-ring	2
2.	3793-2S	3793-2S	3793-2S	Flange	2
3.	7001-150NC175A	7001-050NC175A	7001-050NC175A	Bolt (hex head, 1/2"-13 x 1-3/4")	8
4.	2-231 ^a	2-231 ^a	2-231 ^a	O-ring	2
5.	3523	4276	5290	Cylinder	1
6.	3527-1	3763-1	5293-1	Adjustable head	1
7.	2-227 ^a	2-233 ^{a, c}	2-240 ^{a, c}	O-ring	1
8.	3664	3775	5295	Adjusting cup	1
9.	2-229 ^a	2-235 ^a	2-242 ^a	O-ring	1
10.	3660	3774	5294	Adjusting cap	1
11.	2-127 ^a	2-127 ^a	2-127 ^a	O-ring	1
12.	3665	3665	3665	Adjusting screw nut	1
13.	7001-050NC150A	7001-050NC150A	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
14.	3527	3763	5293	Head	1
15.	3442	3442	3442	Pipe plug (1/4")	4
16.	3698	3698	3698	Nameplate	1
17.	7012-006SF019E	7012-006SF019E	7012-006SF019E	Drive screw	2
18.	3527-1X	3763-1X	5293-1X	Adjustable head assembly	1

^a denotes material code. See material code chart for details.

^b Registered trademark of the DuPont company.

^c Material code D or K only.

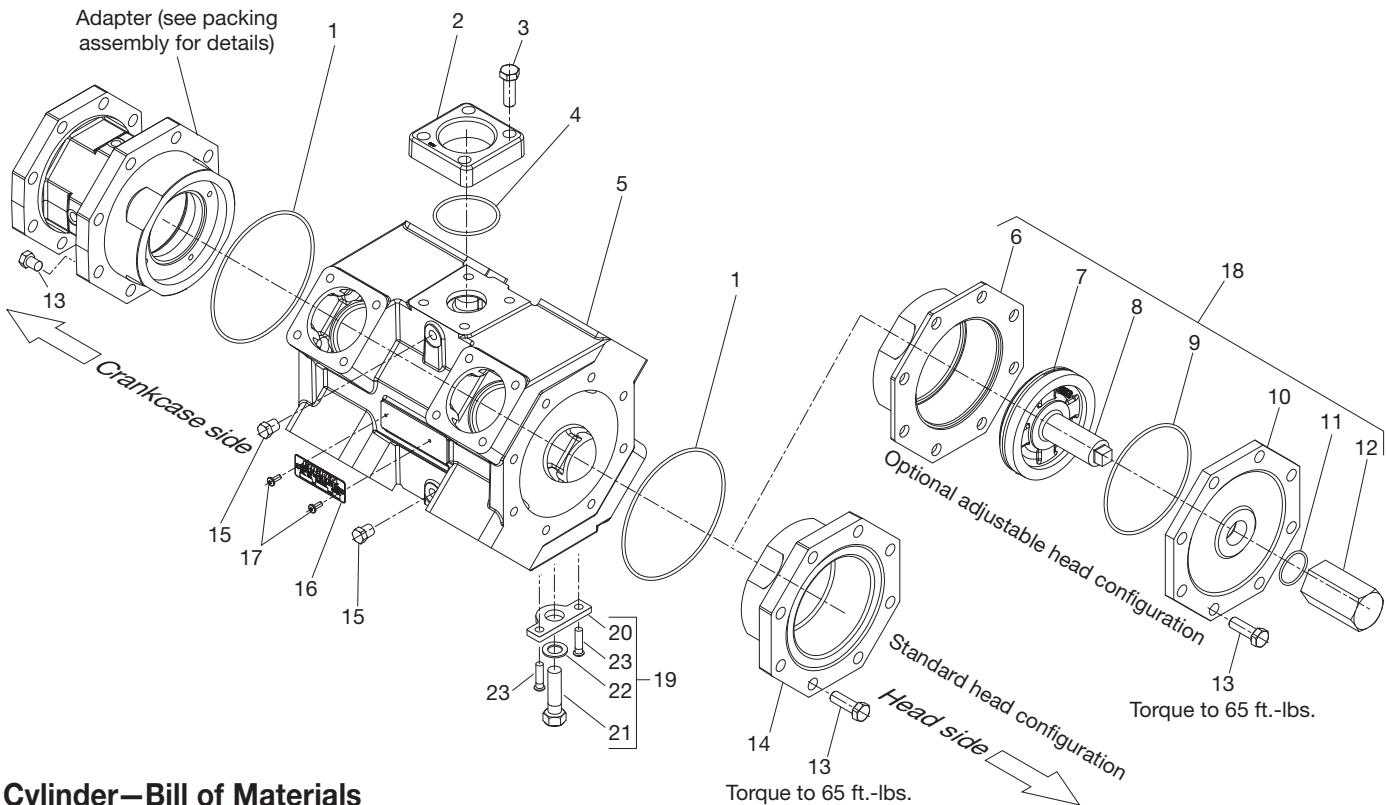


CAUTION: Always relieve pressure in the unit before attempting any repairs.

Material Code	
A	Buna-N
B	Neoprene ^{®b}
D	Viton ^{®b}
E	PTFE
K	Kalrez ^{®b}

Appendix D—Cylinder Head Assembly Details (HG600/THG600 Series)

6" and 8" Cylinder Head



Cylinder—Bill of Materials

Ref No.	Cylinder Size		Description	Qty. per Cylinder
	6"	8"		
	Part No.	Part No.		
1.	2-258 ^a	2-266 ^a	O-ring	2
2.	3793-2S	3794-3S	Flange	2
3.	7001-050NC175A	7001-050NC175A	Bolt (hex head, 1/2"-13 x 1-3/4")	8
4.	2-231 ^a	2-242 ^a	O-ring	2
5.	3528	3671	Cylinder	1
6.	3532-1	3672-1	Adjustable head	1
7.	2-248 ^{a, c}	2-261 ^{a, c}	O-ring	1
8.	3663	3683	Adjusting cup	1
9.	2-250 ^a	2-262 ^a	O-ring	1
10.	3637	3682	Adjusting cap	1
11.	2-127 ^a	2-127 ^a	O-ring	1
12.	3665	3665	Adjusting screw nut	1
13.	7001-050NC150A	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
14.	3532	3672	Head	1
15.	3442	3442	Pipe plug (1/4")	4
16.	3698	3698	Nameplate	1
17.	7012-006SF019E	7012-006SF019E	Drive screw	2
18.	3532-1X	3672-1X	Adjustable head assembly	1
19.	3840-X1	3840-X1	Cylinder support assembly (optional)	1
20.	3840	3840	Support base	1
21.	7001-087NC150E	7001-087NC150E	Support screw	1
22.	2903	2903	Jam nut	2
23.	7001-037NC075A	7001-037NC075A	Bolt (hex head, 3/8"-16 x 3/4")	2

^a—denotes material code. See material code chart for details.

^b Registered trademark of the DuPont company.

^c Material code D or K only.

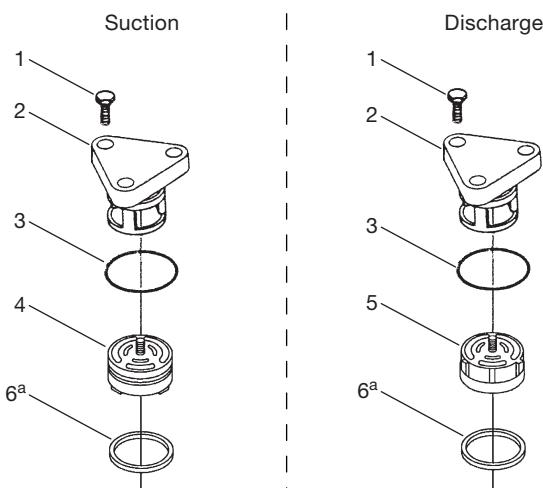


CAUTION: Always relieve pressure in the unit before attempting any repairs.

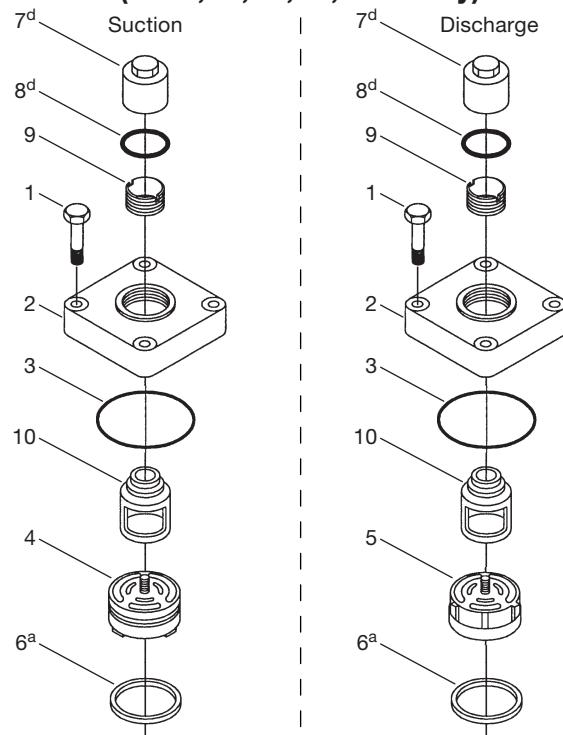
Material Code	
A	Buna-N
B	Neoprene ^b
D	Viton ^b
E	PTFE
K	Kalrez ^b

Appendix D—Valve Holdown Assembly Details (HG600/THG600 Series)

Valve Holdown Assembly (2.75" only)



Valve Holdown Assembly (3.25", 4", 5", 6", & 8" only)



Ref. No.	Description	Cylinder Diameter					
		2.75"		3.25"		4"	
		Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder
1.	Hex head bolt	7001-050NC150A	12	7001-043NC150A	16	7001-043NC150A	16
2.	Valve cover plate	3894	4	2205	4	1764	4
3.	O-ring	2-224 ^b	4	2-143 ^b	4	2-235 ^b	4
4.	Suction valve assembly	3900-X (steel)	2	4029-X2 (steel)	2	3807-X (steel)	2
5.	Discharge valve assembly	3901-X (steel)	2	4030-X2 (steel)	2	3808-X (steel)	2
6.	Valve gasket	3896 ^a	4	1418-2 ^a (steel)	4	2114-2 ^a (steel)	4
7.	Valve cap	N/A	—	2714-1 ^d	4	2714-1 ^d	4
8.	O-ring	N/A	—	2-031 ^b	4	2-031 ^b	4
9.	Holdown screw	N/A	—	2715	4	2715	4
10.	Valve cage	N/A	—	3569	4	3809	4
11.	Actuator	N/A	—	3689	2	3956	2
12.	Unloader spring	N/A	—	3690	2	3695	2
13.	Unloader cap	N/A	—	2598-1	2	2598-1	2
14.	Unloader assembly	N/A	—	3689-X1	2	3956-X	2
15.	Bolt	N/A	—	1910	2	1910	2
16.	Bal-seal	N/A	—	2619-X	4	2619-X	4
17.	Unloader piston cap	N/A	—	2857	2	2857	2
18.	Gasket	N/A	—	2858	2	2858	2
19.	Unloader piston	N/A	—	4205	2	3957	2

^a Included with valve assembly.

^b Denotes material code. See material code chart for details.

^c Prior to serial number FN (January 1, 1984), use valve cap #2714 and gasket #2716.

^d Quantity = 2 if equipped with unloaders.

^e H₂O cylinder requires cage #4311.

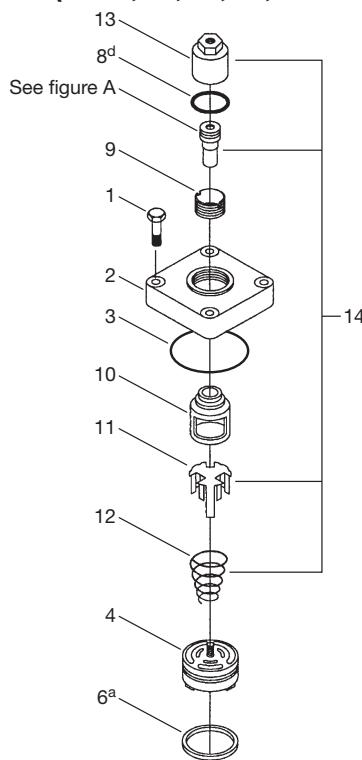
^f Registered trademark of the DuPont company.



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D—Valve Holddown Assembly Details (HG600/THG600 Series)

Suction Valve with Unloader (3.25", 4", 5", 6", & 8" only)



Unloader Piston Assembly Details

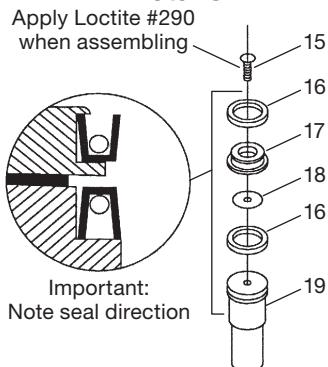
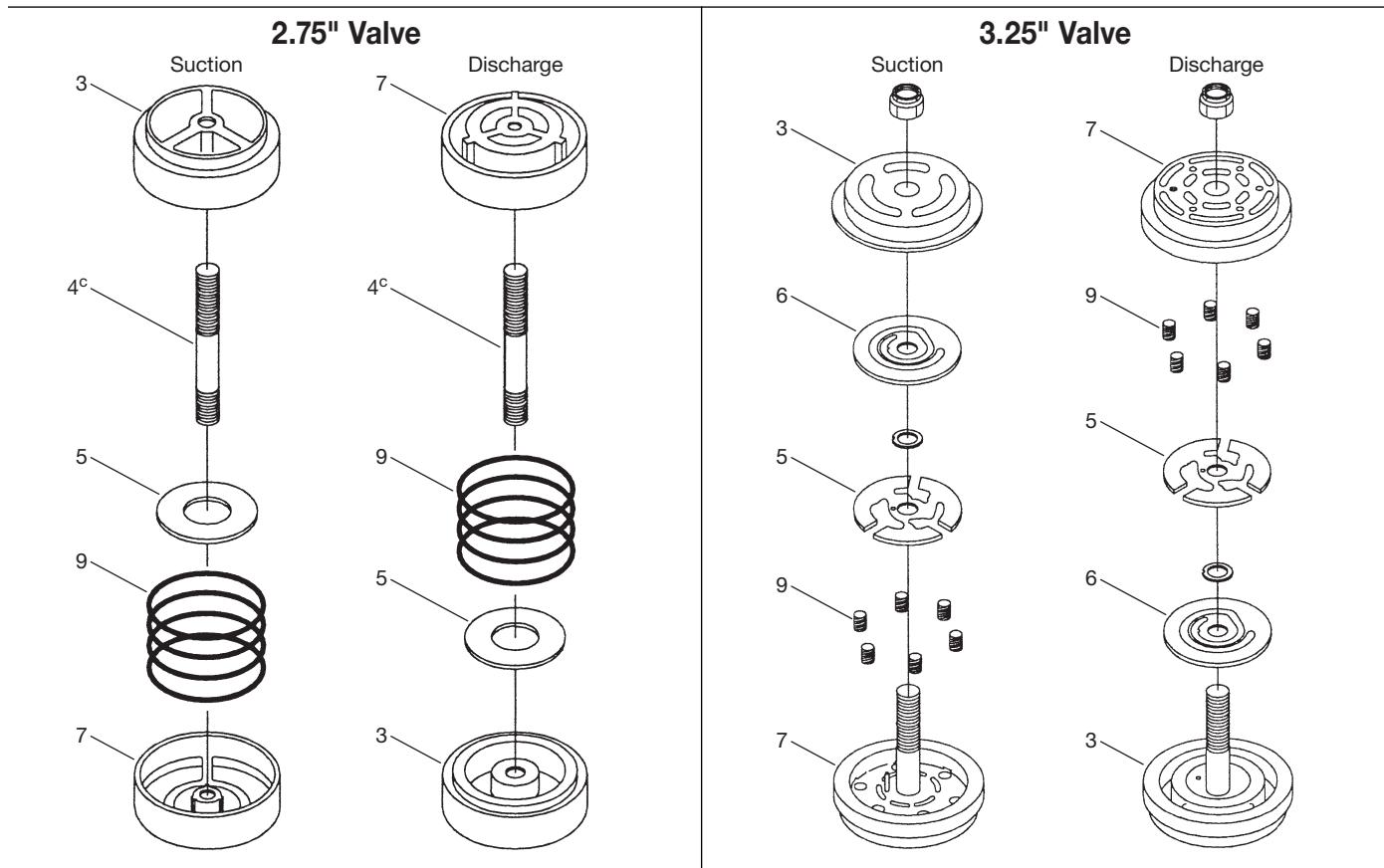


Figure A

Material Code	
A	Buna-N
B	Neoprene®f
D	Viton®f
E	PTFE
K	Kalrez®f

Ref. No.	Description	Cylinder Diameter					
		5"		6"		8"	
		Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder
1.	Bolt (hex head)	7001-043NC150A	16	7001-043NC150A	16	7001-043NC150A	16
2.	Valve cover plate	1764	4	1764	4	3675	4
3.	O-ring	2-235_ b	4	2-235_ b	4	2-242_ b	4
4.	Suction valve assembly	3856-5X (aluminum)	2	3856-2X (aluminum)	4	3710-X (aluminum)	4
	Suction valve assembly	3856-5X2 (steel)	2	3856-2X2 (steel)	4	3710-X2 (steel)	4
5.	Discharge valve assembly	3857-5X (aluminum)	2	3857-2X (aluminum)	4	3709-X (aluminum)	4
	Discharge valve assembly	3857-5X2 (steel)	2	3857-2X2 (steel)	4	3709-X2 (steel)	4
6.	Valve gasket	2114 ^a	4	2114 ^a	4	3691 ^a	4
7.	Valve cap	2714-1 ^d	4	2714-1 ^d	4	2714-1 ^d	4
8.	O-ring	2-031_ b	4	2-031_ b	4	2-031_ b	4
9.	Holddown screw	2715	4	2715	4	2715	4
10.	Valve cage	3570-1	4	3570-1 ^e	4	3676	4
11.	Actuator	3694	2	3694	2	3697	2
12.	Unloader spring	5324	2	3695	2	3695	2
13.	Unloader cap	2598-1	2	2598-1	2	2598-1	2
14.	Unloader assembly	3694-X2	2	3694-X	2	3697-X	2
15.	Bolt	1910	2	1910	2	1910	2
16.	Bal-seal	2619-X	4	2619-X	4	2619-X	4
17.	Unloader piston cap	2857	2	2857	2	2857	2
18.	Gasket	2858	2	2858	2	2858	2
19.	Unloader piston	5323	2	3696	2	2710	2

Appendix D—Valve Assembly Details (HG600/THG600 Series)



Ref. No.	Description	Cylinder Diameter							
		2.75"		3.25"		4"		5"	
		Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder
1.	Suction valve assembly ^b	3900-X (steel)	2	4029-X2 (steel)	2	3807-X (steel)	2	3856-5X (aluminum)	2
		—	—	—	—	—	—	3856-5X2 (steel)	2
2.	Discharge valve assembly ^b	3901-X (steel)	2	4030-X2 (steel)	2	3808-X (steel)	2	3857-5X (aluminum)	2
		—	—	—	—	—	—	3857-5X2 (steel)	2
3.	Valve seat	3940	4	—	—	3832	4	3856-4	4
4.	Stud ^c	3828	4	—	—	3828	4	3920	4
5.	Valve plate (inner) ^a	—	—	—	—	3831	4	3872	4
6.	Valve plate (outer) ^a	3941	4	—	—	3830	4	3871	4
7.	Valve bumper	3939	4	—	—	3826	4	3857	4
8.	Spring button ^a	—	—	—	—	—	—	—	—
9.	Spring (inner) ^a	3924	4	—	—	3829	4	3929	4
						3829-1 (Inconel optional)			
	Spring (outer) ^a	—	—	—	—	—	—	3928	4
10.	Repair kit	3804-X1	4	3124-X (suction)	2	3805-X1	4	3146-X1	4
		—	—	3125-X (discharge)	2	—	—	—	—
11.	Blank (not shown) ^d	3943	1	3767	1	3838	1	3768	1

^a These parts included in the repair kit.

^b Valve assembly also includes gaskets (not O-rings) as required for installation. See valve holdown assembly details.

^c Direction of the stud MUST be as shown.

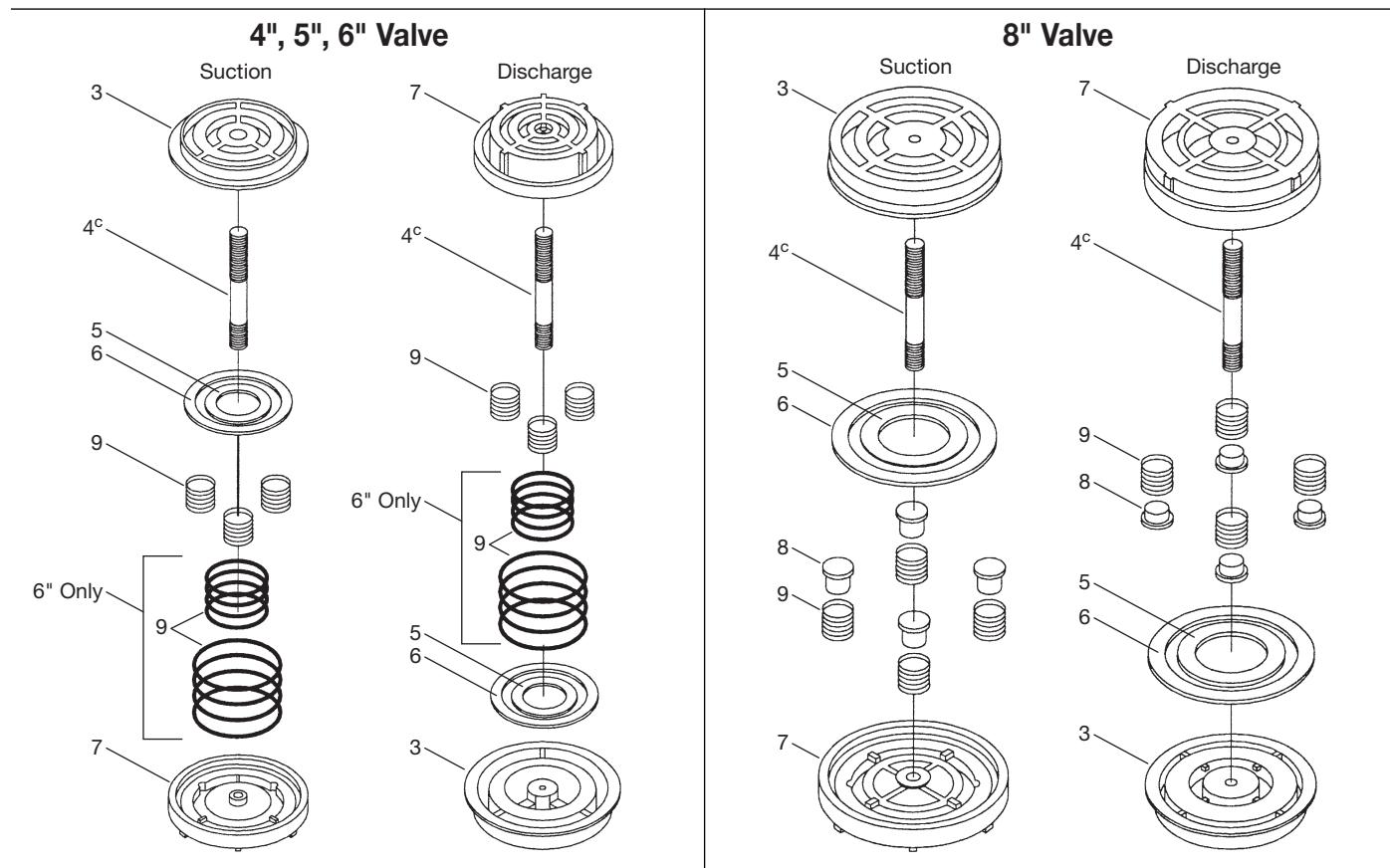
^d Use when blank valve option is required for reduced capacity.

^e Prior to serial number NN51400 used 3732-X for suction and 3733-X for discharge.



CAUTION: Always relieve pressure in the unit before attempting any repairs.

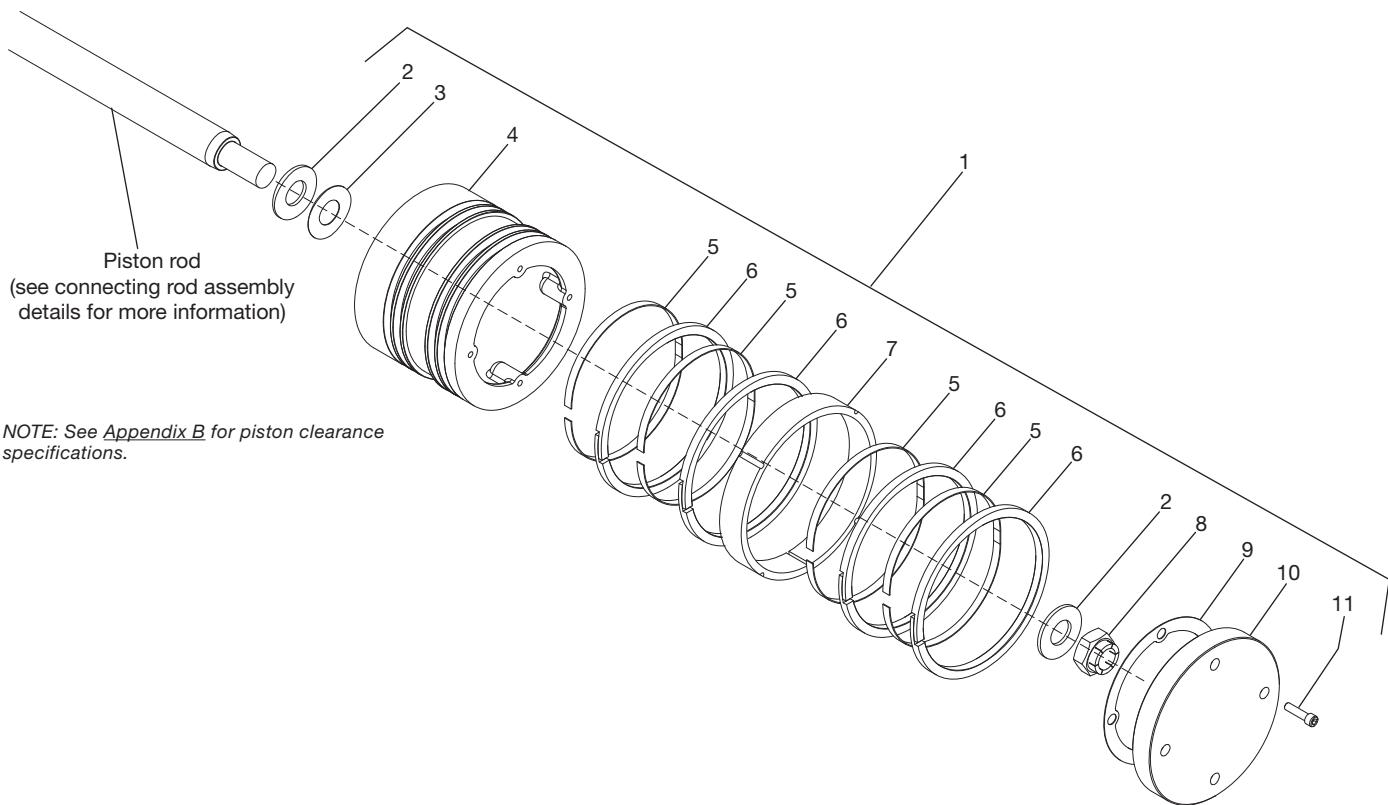
Appendix D—Valve Assembly Details (HG600/THG600 Series)



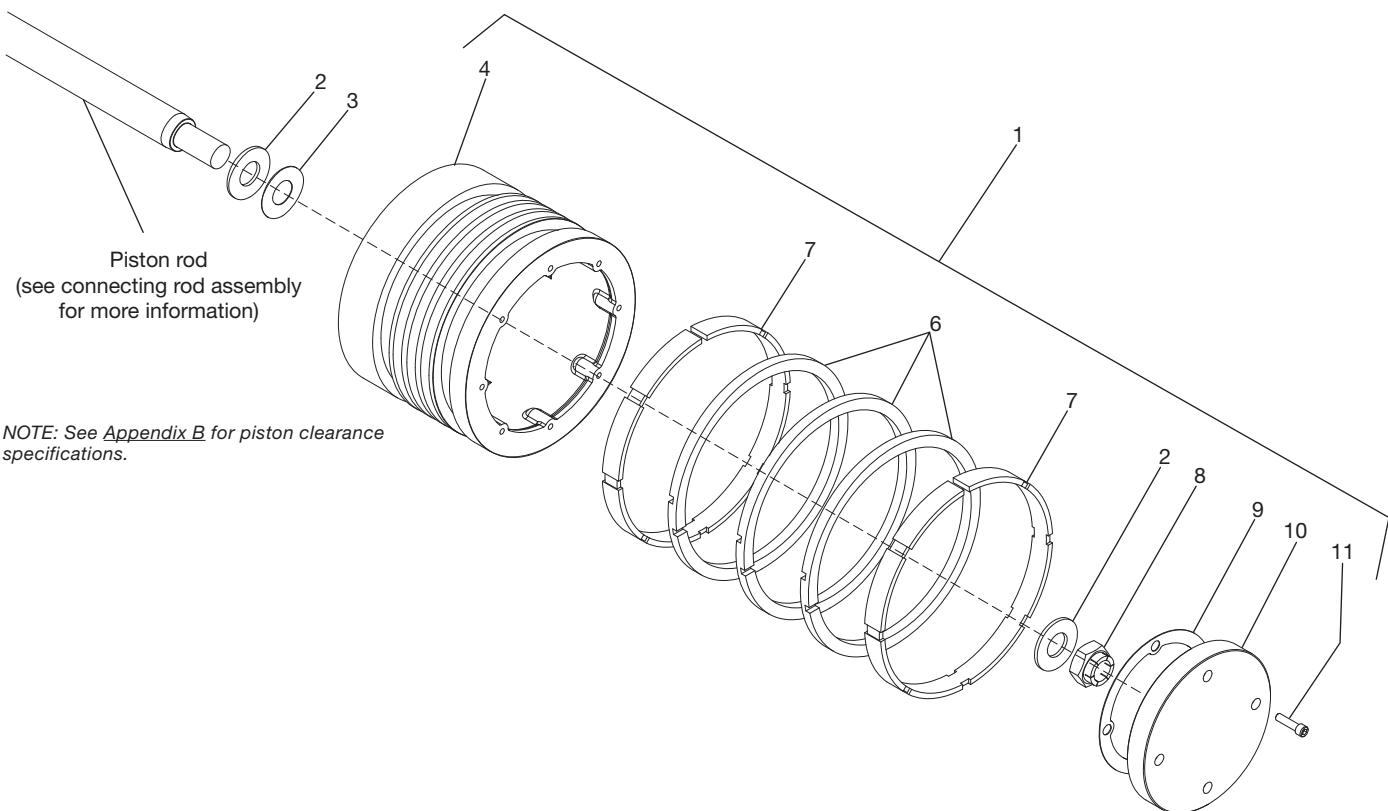
Ref. No.	Description	Cylinder Diameter							
		6" (15+ psi suction pressure)		6" (0 to 15 psi suction pressure)		8" (15+ psi suction pressure)		8" (0 to 15 psi suction pressure)	
		Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder	Part No.	Qty. per Cylinder
1.	Suction valve assembly ^b	3856-5X (aluminum) ^e	4	3856-3X (aluminum)	4	3710-X (aluminum)	4	3710-1X (aluminum)	4
		3856-5X2 (steel)	4	3856-3X2 (steel)	4	3710-X2 (steel)	4	3710-1X2 (steel)	4
2.	Discharge valve assembly ^b	3857-5X (aluminum)	4	3857-3X (aluminum)	4	3709-X (aluminum)	4	3709-X (aluminum)	4
		3857-5X2 (steel)	4	3857-3X2 (steel)	4	3709-X2 (steel)	4	3709-X2 (steel)	4
3.	Valve seat	3856	4	3856	4	3834	2	3834	2
4.	Stud ^c	3920	4	3920	4	3828	2	3828	2
5.	Valve plate (inner) ^a	3872	4	3872	4	3837	2	3837	2
6.	Valve plate (outer) ^a	3871	4	3871	4	3836	2	3836	2
7.	Valve bumper	3857	4	3857	4	3833	2	3833	2
8.	Spring button ^a	—	—	—	—	3835	4	3835	4
9.	Spring (inner) ^a	3929	4	3951 (suction) 3929 (discharge)	4	3829	4	3818 (suction)	2
		—	—	—	—	3829-1 (Inconel opt.)	4	3829 (discharge)	2
	Spring (outer) ^a	3928	4	3993 (suction) 3928 (discharge)	4	—	—	—	—
10.	Repair kit	3146-X1	4	—	4	3806-X1	2	3806-1X1	2
11.	Blank ^d	3768	2	3768	2	3769	2	3769	2

Appendix D—Piston Assembly Details (HG600/THG600 Series)

2.75", 3.25", 4", 5", and 6" Piston Sizes



8" Piston Size



Appendix D—Piston Assembly Details (HG600/THG600 Series)

Piston Assembly—Bill of Materials

Ref. No.	Description	Cylinder Diameter					
		2.75"		3.25"		4"	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
1.	Piston assembly (iron)	3889-X1	1	3525-X1	1	4365-X1 (light) 4292-X1 (heavy)	1
2.	Thrust washer	3730	2	3730	2		
3.	Shim washer (thick)	3603	As req.	3603	As req.	3603	As req.
	Shim washer (thin)	3603-1	As req.	3603-1	As req.	3603-1	As req.
4.	Piston (iron)	3889	1	3525	1	4292	1
5.	Expander ring	1774	8	1757	4	1776	4
6.	Piston ring	3892	8	1756	4	3781	4
7.	Rider ring	3893	1	3574	1	3776	1
8.	Lock nut	3604	1	3604	1	3604	1
9.	Shim washer (thick)	3895	As req.	3731	As req.	3780	As req.
	Shim washer (thin)	3895-1	As req.	3731-1	As req.	3780-1	As req.
10.	Piston cap (iron)	3890	1	3561	1	3773 (light) 4291 (heavy)	1
11.	Socket head cap screw	7002-025TP062A	6	7002-010TP100A	4		
12.	Loctite 620 tube ^b	3812	1	3812	1	3812	1

Ref. No.	Description	Cylinder Diameter					
		5"		6"		8"	
		Part No.	Qty.	Part No.	Qty.	Part No.	Qty.
	Piston assembly (iron)	5301-X1	—	3530-X1	1	3674-X1	1
1.	Piston assembly (aluminum)	5301-1X1	1	3530-1X1	1	3674-1X1	1
2.	Thrust washer	3730	2	3730	2	3730	2
3.	Shim washer (thick)	3603	As req.	3603	As req.	3603	As req.
	Shim washer (thin)	3603-1	As req.	3603-1	As req.	3603-1	As req.
4.	Piston (iron)	5301	1	3530	1	3674	1
	Piston (aluminum)	5301-1	1	3530-1	1	3674-1	1
5.	Expander ring	5326	6	1753	4	—	—
6.	Piston ring	5302	6	1752	4	3677	3
7.	Rider ring	5303	1	3573	1	3679	2
8.	Lock nut	3604	1	3604	1	3604	1
9.	Shim washer (thick)	5322	As req.	3625	As req.	3681	As req.
	Shim washer (thin)	5322-1	As req.	3625-1	As req.	3681-1	As req.
10.	Piston cap (iron)	5325	1	3562	1	3680	1
	Piston cap (aluminum)	5325-1	1	3562-1	1	3680-1	1
11.	Socket head cap screw	7002-025TP100A	4	7002-025TP100A	4	7002-025TP100A	8
12.	Loctite 620 tube ^b	3812	1	3812	1	3812	1

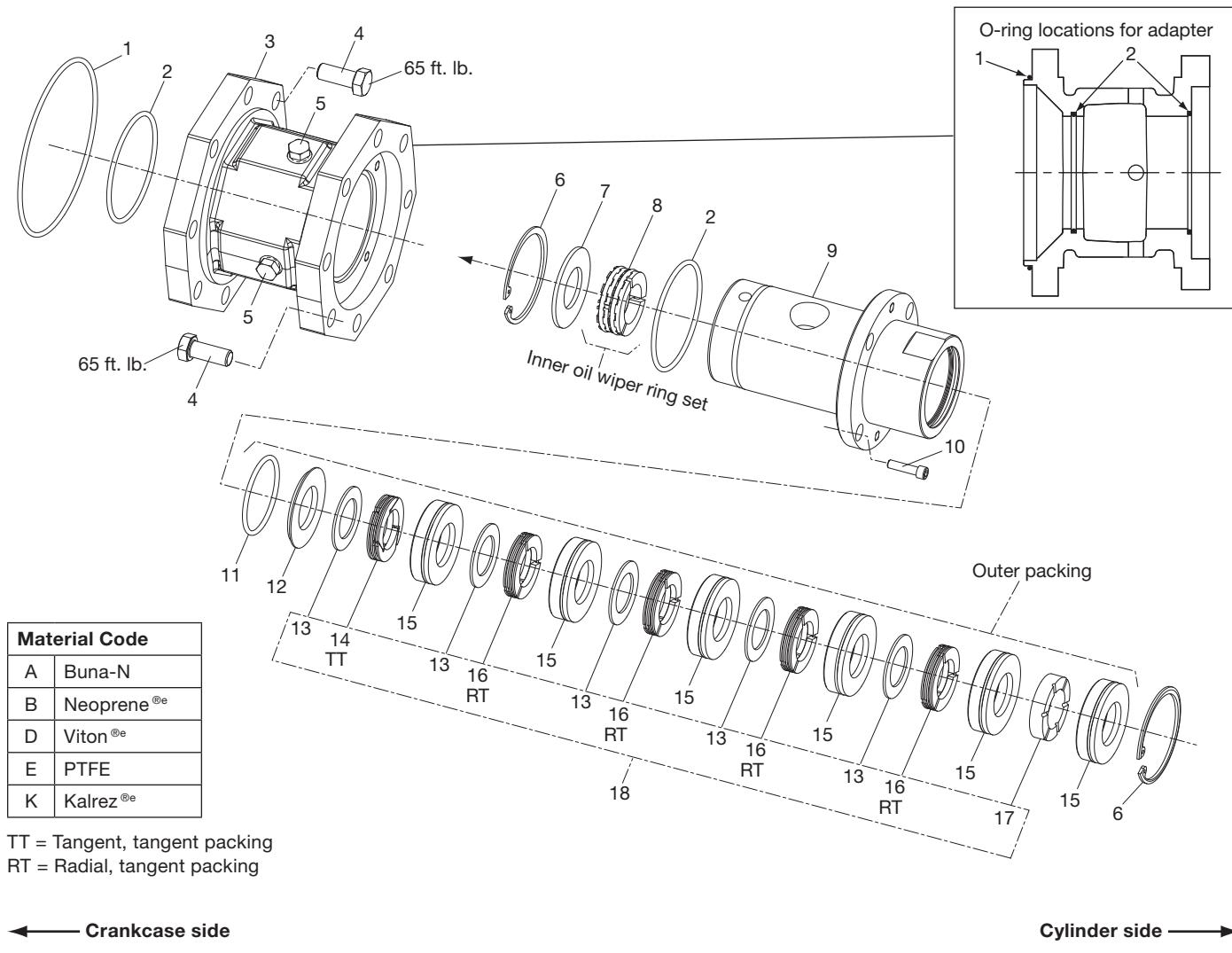
^a Prior to serial number S/N FZ44175 uses 7002-010TP100A. Serial number FZ44175 and later use 7002-025TP100A.

^b Use Loctite retaining compound 620.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

2.75" Standard Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



TT = Tangent, tangent packing

RT = Radial, tangent packing

← Crankcase side

Cylinder side →

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	2
3.	3524	Adapter	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug	Varies
6.	5002-250	Retainer ring	2
7.	3631	Packing washer	1
8.	3816 ^c	Oil wiper ring set (two per set)	1
9.	3891	Packing cartridge	1
10.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4")	4
11.	2-228 ^{a, d}	O-ring	1
12.	3819	Packing spacer	1
13.	3811	Back-up ring	5

Ref No.	Part No.	Description	Qty.
14.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	1
15.	3817	Packing cup	6
	2-036 ^{a, d}	O-ring	6
16.	3810 ^b	Segmented packing ring (radial, tangent—pair)	4
17.	3815	Pressure breaker ring	1
18.	3810-X3	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

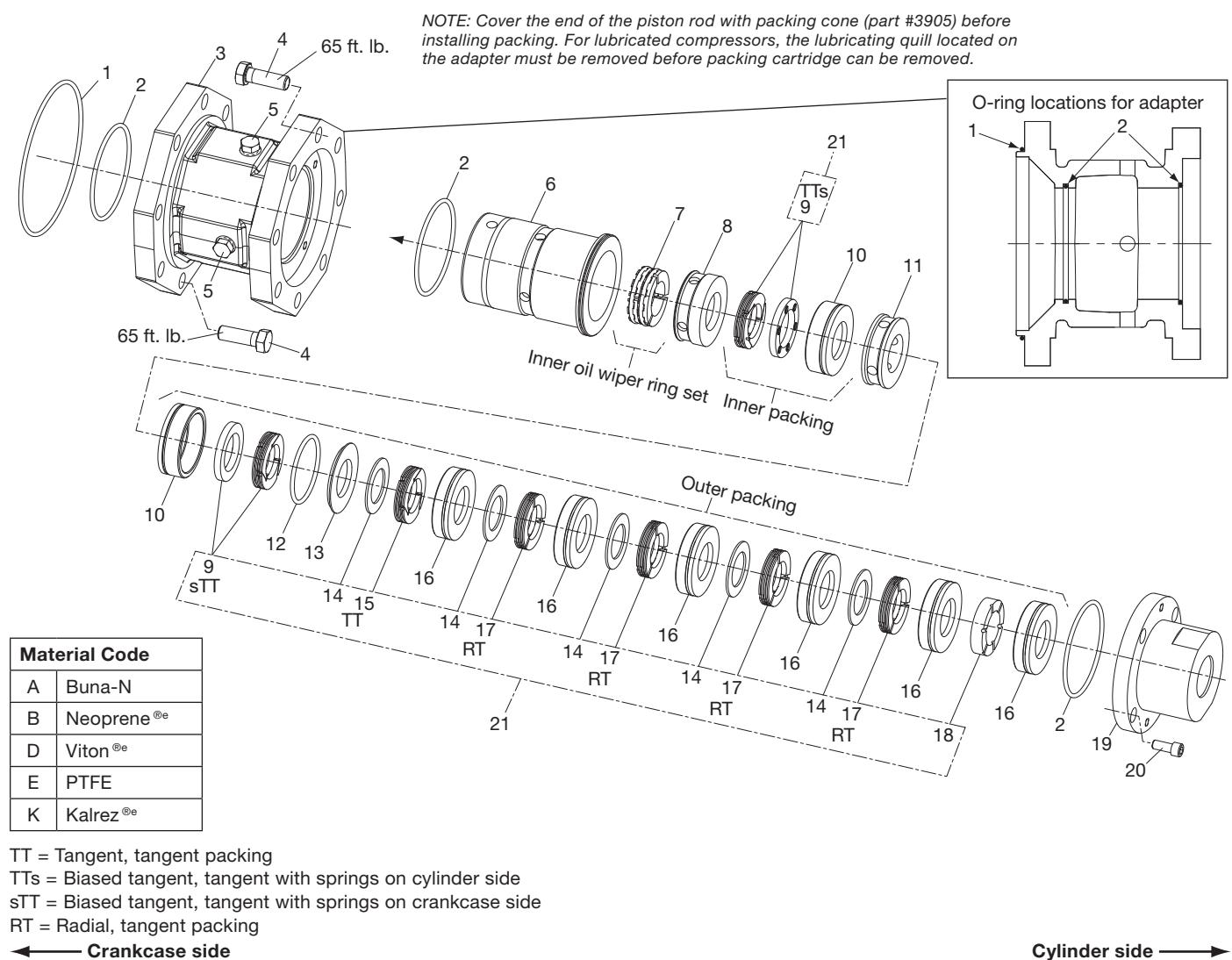
^d _ denotes material code. See material code chart for details.

^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

2.75" Purge Packing Specification



Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	3
3.	3524-2	Adapter	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug (1/4")	Varies
6.	4363	Packing cartridge body	1
7.	3816 ^c	Oil wiper ring set (two per set)	1
8.	4270	Oil wiper ring cup	1
9.	4273	Biased segmented packing set (tangent, tangent—includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
10.	4271	Purge packing cup	2
	2-036 ^{a, d}	O-ring	2
11.	4364	Cup spacer	1
12.	2-228 ^{a, d}	O-ring	1
13.	4272	Packing spacer	1

Ref No.	Part No.	Description	Qty.
14.	3811	Back-up ring	5
15.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	1
16.	3817	Packing cup	6
	2-036 ^{a, d}	O-ring	6
17.	3810 ^b	Segmented packing ring (radial, tangent—pair)	4
18.	3815	Pressure breaker ring	1
19.	4362	Packing cartridge cap	1
20.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4")	4
21.	4273-X3	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d _a denotes material code. See material code chart for details.

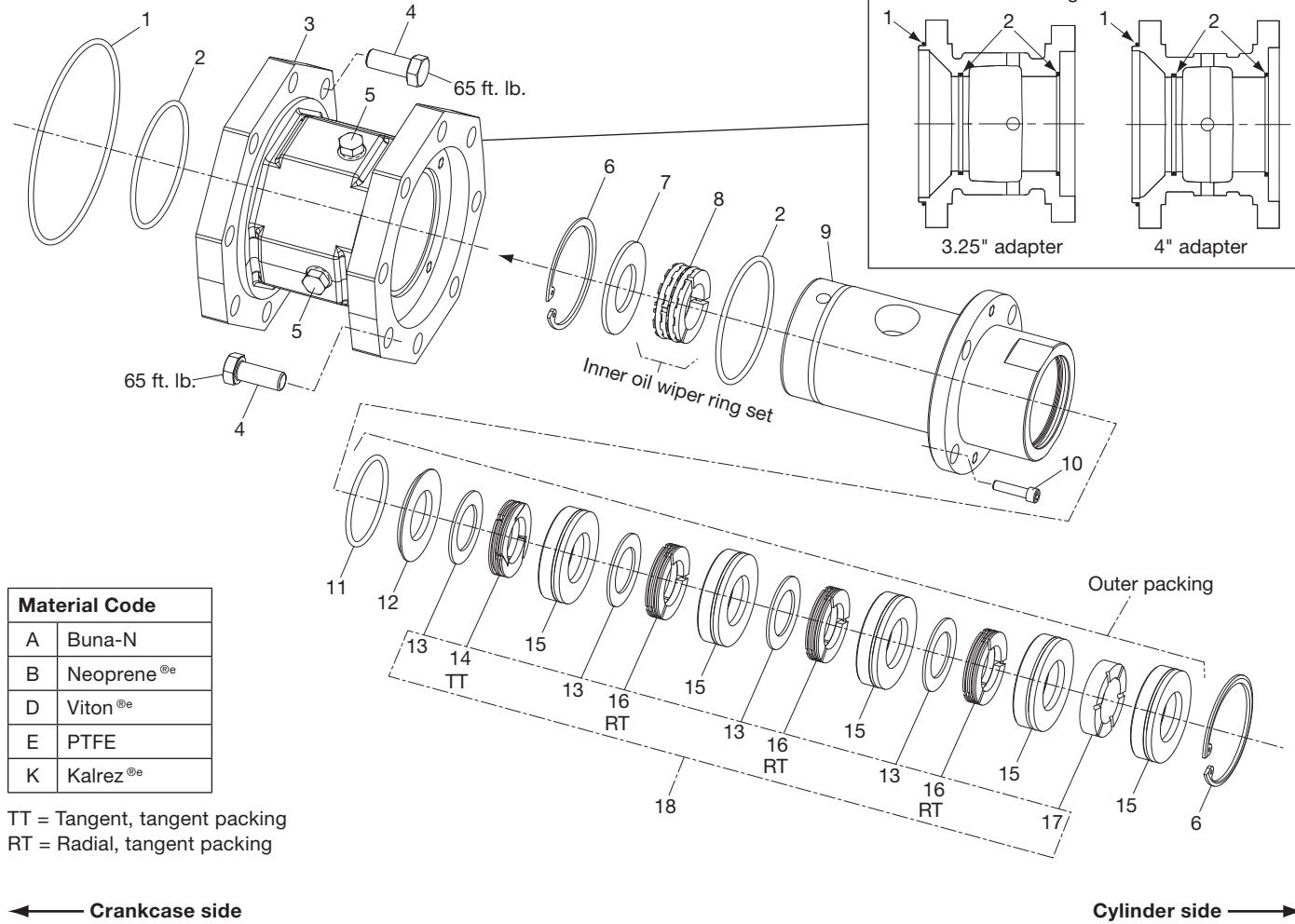
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

3.25" and 4" Standard Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



← Crankcase side

Cylinder side →

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	2
3.	3524	Adapter (3.25")	1
	3762	Adapter (4")	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug	Varies
6.	5002-250	Retainer ring	2
7.	3631	Packing washer	1
8.	3816 ^c	Oil wiper ring set (two per set)	1
9.	3594	Packing cartridge (3.25")	1
	3764	Packing cartridge (4")	1
10.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4") - 3.25"	4
	7002-025NC062A ^f	Bolt (socket head, 1/4"-20 x 5/8") - 4"	4
11.	2-228 ^{a, d}	O-ring	1

Ref No.	Part No.	Description	Qty.
12.	3819	Packing spacer	1
13.	3811	Back-up ring	4
14.	3814 ^b	Segmented packing ring (tangent, tangent-pair)	1
15.	3817	Packing cup	5
	2-036 ^{a, d}	O-ring	5
16.	3810 ^b	Segmented packing ring (radial, tangent-pair)	3
17.	3815	Pressure breaker ring	1
18.	3810-X2	Packing set (fits 3.25" and 4")	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d _ denotes material code. See material code chart for details.

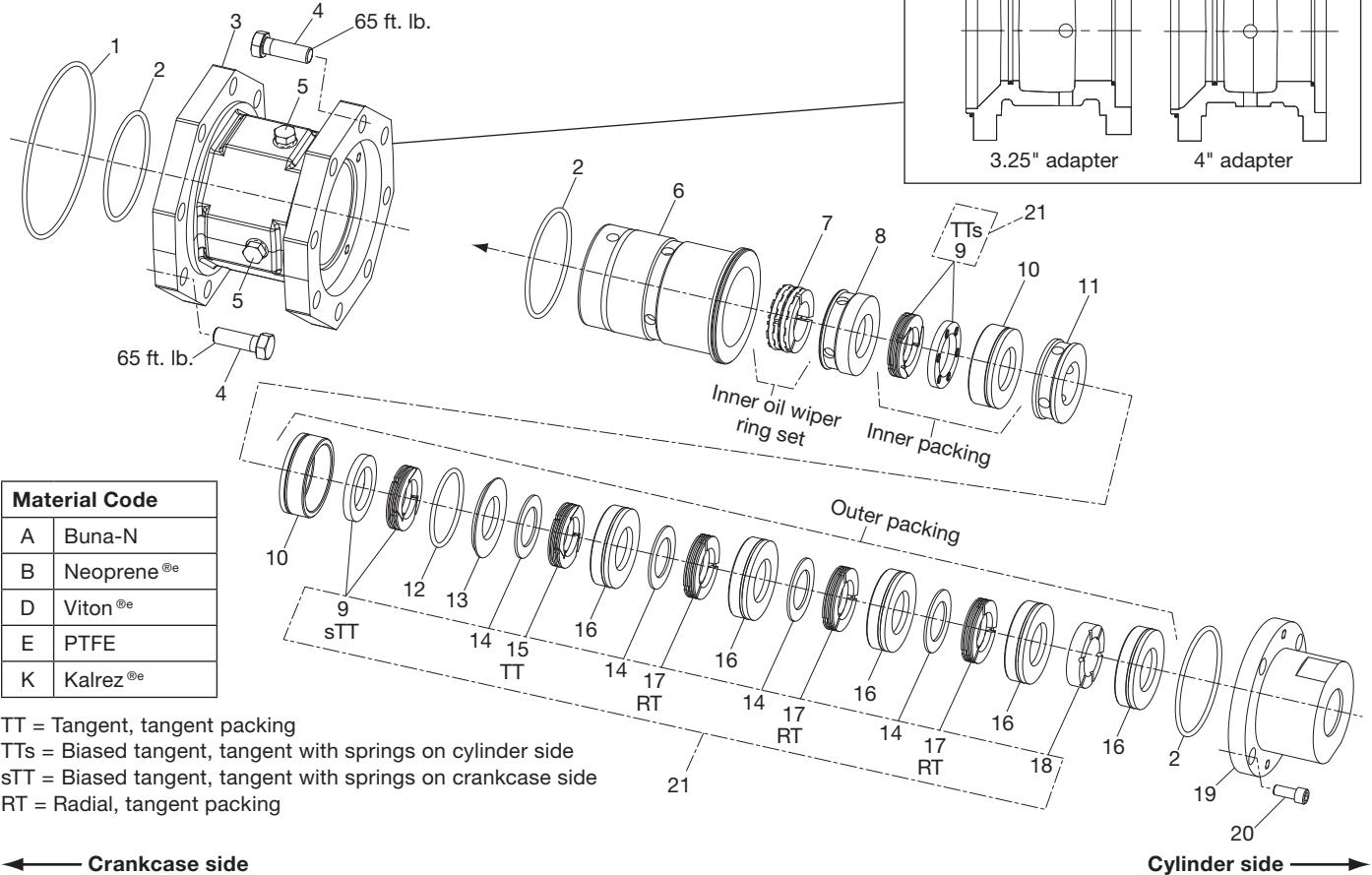
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

3.25" and 4" Purge Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	3
3.	3524-1	Adapter (3.25")	1
	3762-1	Adapter (4")	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug (1/4")	Varies
6.	4287	Packing cartridge body (3.25")	1
	4289	Packing cartridge body (4")	1
7.	3816 ^c	Oil wiper ring set (two per set)	1
8.	4270	Oil wiper ring cup	1
9.	4273	Biased segmented packing set (tangent, tangent—includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
10.	4271	Purge packing cup	2
	2-036 ^{a, d}	O-ring	2
11.	4285	Cup spacer	1
12.	2-228 ^{a, d}	O-ring	1
13.	4272	Packing spacer	1

Ref No.	Part No.	Description	Qty.
14.	3811	Back-up ring	4
15.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	1
16.	3817	Packing cup	5
	2-036 ^{a, d}	O-ring	5
17.	3810 ^b	Segmented packing ring (radial, tangent—pair)	3
18.	3815	Pressure breaker ring	1
19.	4286	Packing cartridge cap (3.25")	1
	4288	Packing cartridge cap (4")	1
20.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4") - 3.25"	4
	7002-010NC075A ^f	Bolt (socket head, 10"-24 x 3/4") - 4"	4
21.	4273-X2	Packing set (fits 3.25" and 4")	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d denotes material code. See material code chart for details.

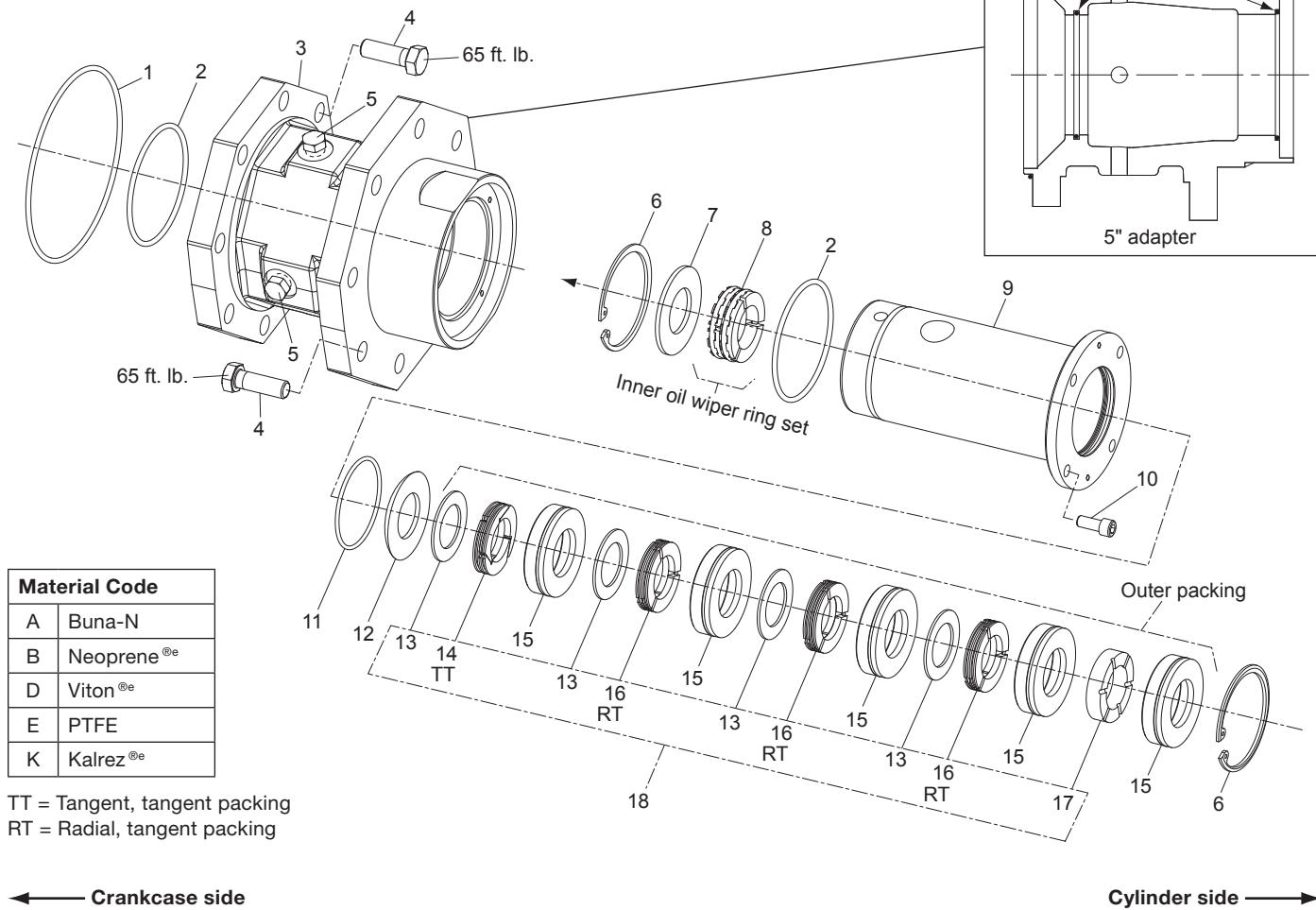
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

5" Standard Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



← Crankcase side

Cylinder side →

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	2
3.	5291	Adapter	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug	Varies
6.	5002-250	Retainer ring	2
7.	3631	Packing washer	1
8.	3816 ^c	Oil wiper ring set (two per set)	1
9.	5304	Packing cartridge	1
10.	7002-010NC075A ^f	Bolt (socket head, 5/16"-18" x 3/4")	4
11.	2-228 ^{a, d}	O-ring	1
12.	3819	Packing spacer	1
13.	3811	Back-up ring	4
14.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	1

Ref No.	Part No.	Description	Qty.
15.	3817	Packing cup	5
	2-036 ^{a, d}	O-ring	5
16.	3810 ^b	Segmented packing ring (radial, tangent—pair)	3
17.	3815	Pressure breaker ring	1
18.	3810-X2	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d _ denotes material code. See material code chart for details.

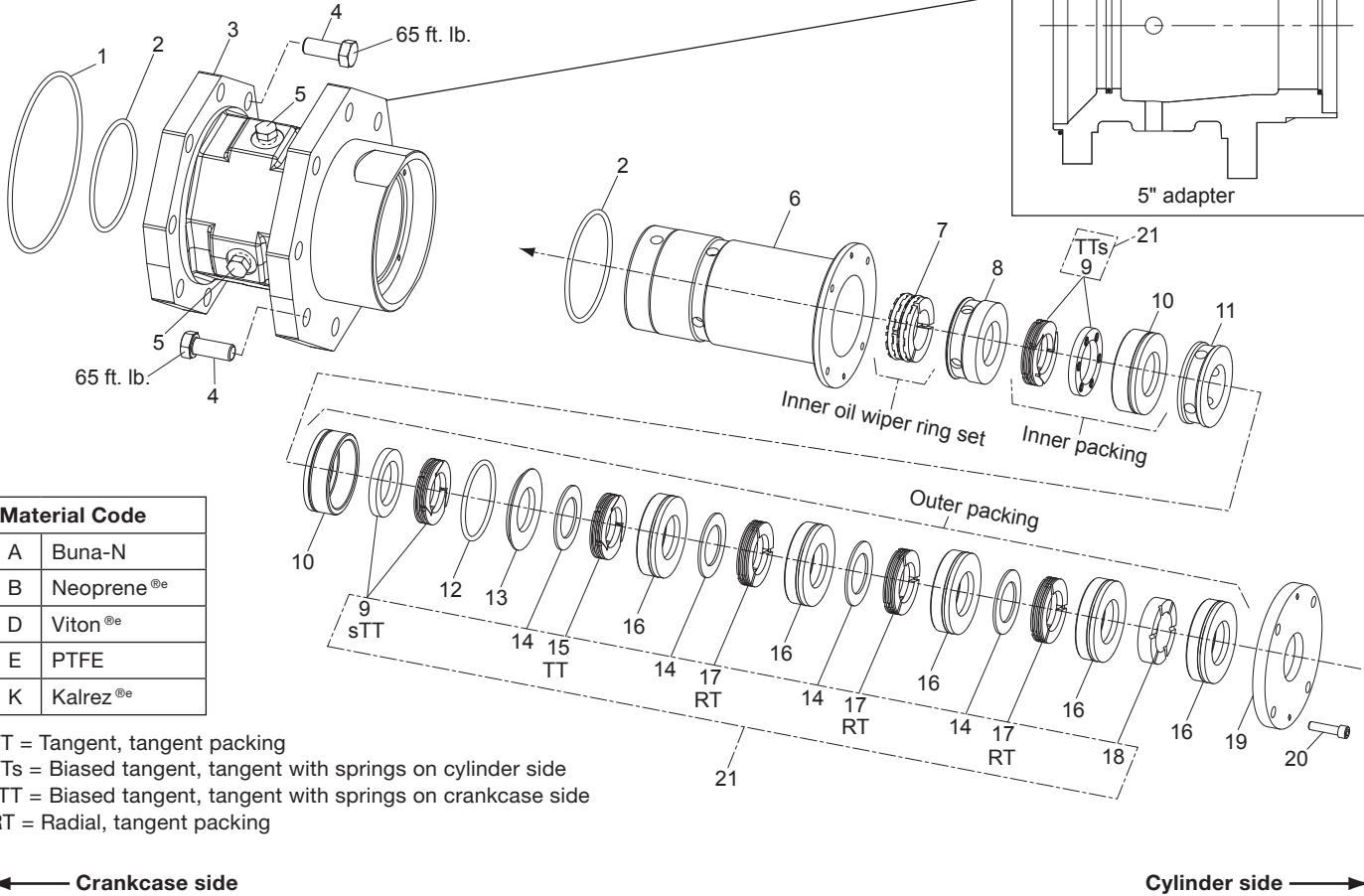
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

5" Purge Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	2
3.	5291-1	Adapter	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug (1/4")	Varies
6.	5298	Packing cartridge body	1
7.	3816 ^c	Oil wiper ring set (two per set)	1
8.	4270	Oil wiper ring cup	1
9.	4273	Biased segmented packing set (tangent, tangent—includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
10.	4271	Purge packing cup	2
	2-036 ^{a, d}	O-ring	2
11.	4285	Cup spacer	1
12.	2-228 ^{a, d}	O-ring	1
13.	4272	Packing spacer	1
14.	3811	Back-up ring	4

Ref No.	Part No.	Description	Qty.
15.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	1
16.	3817	Packing cup	5
	2-036 ^{a, d}	O-ring	5
17.	3810 ^b	Segmented packing ring (radial, tangent—pair)	3
18.	3815	Pressure breaker ring	1
19.	5321	Packing cartridge cap	1
20.	7002-010NC075A ^f	Bolt (socket head, 5/16"-18" x 3/4")	4
21.	4273-X2	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d _ denotes material code. See material code chart for details.

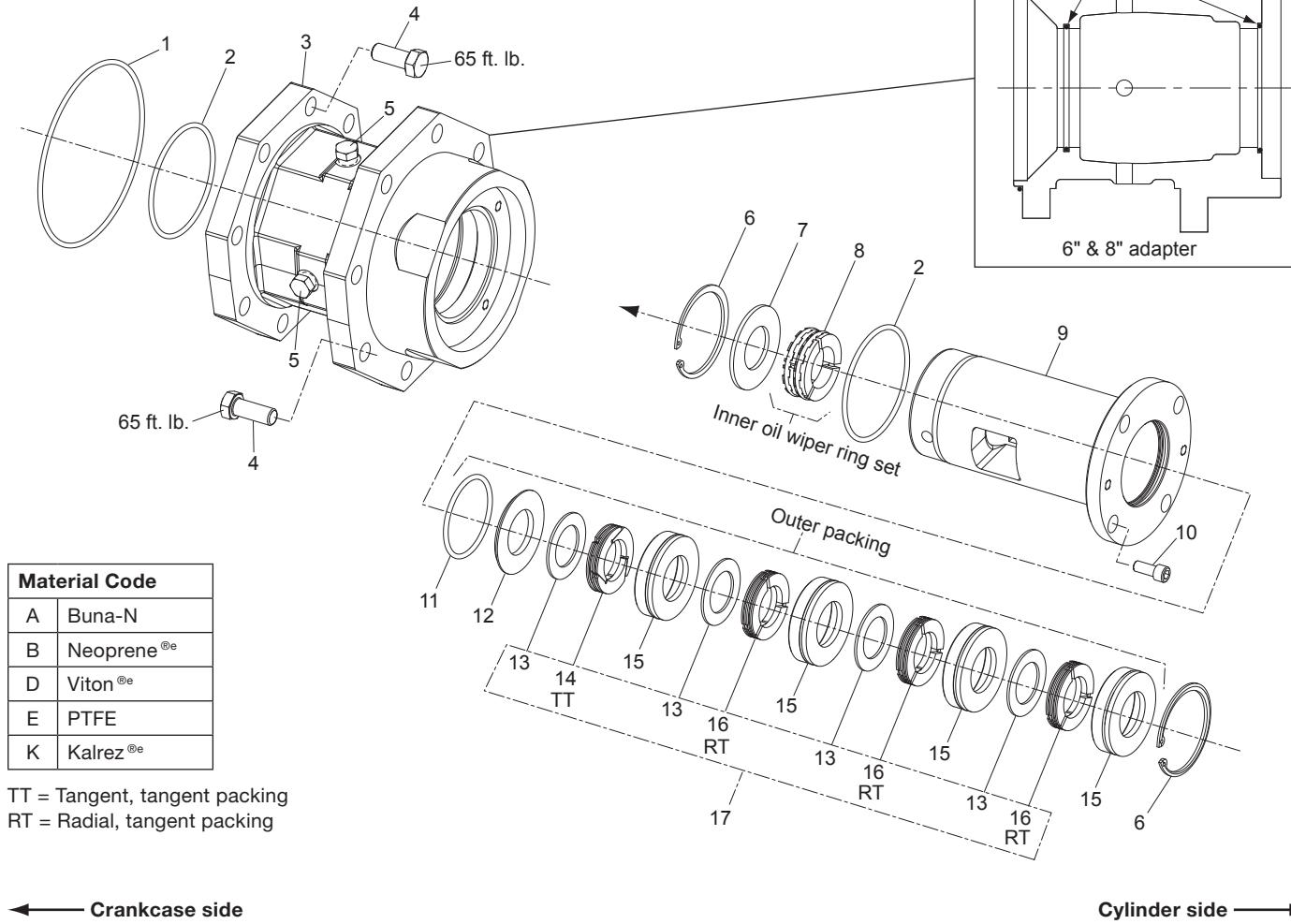
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

6" and 8" Standard Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



Material Code	
A	Buna-N
B	Neoprene® ^e
D	Viton® ^e
E	PTFE
K	Kalrez® ^e

TT = Tangent, tangent packing
RT = Radial, tangent packing

← Crankcase side

Cylinder side →

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d, g}	O-ring	2
3.	3529	Adapter (6")	1
	3673	Adapter (8")	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug	Varies
6.	5002-250	Retainer ring	2
7.	3631	Packing washer	1
8.	3816 ^c	Oil wiper ring set (two per set)	1
9.	3533	Packing box cartridge (6" & 8")	1
10.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4")	4
11.	2-228 ^{a, d}	O-ring	1
12.	3819	Packing spacer	1
13.	3811	Back-up ring	4

Ref No.	Part No.	Description	Qty.
14.	3814 ^b	Segmented packing ring (tangent, tangent - pair)	1
15.	3817	Packing cup	4
	2-036 ^{a, d}	O-ring	4
16.	3810 ^b	Segmented packing ring (radial, tangent - pair)	3
17.	3810-X1	Packing set (6" and 8")	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d denotes material code. See material code chart for details.

^e Registered trademark of the DuPont company.

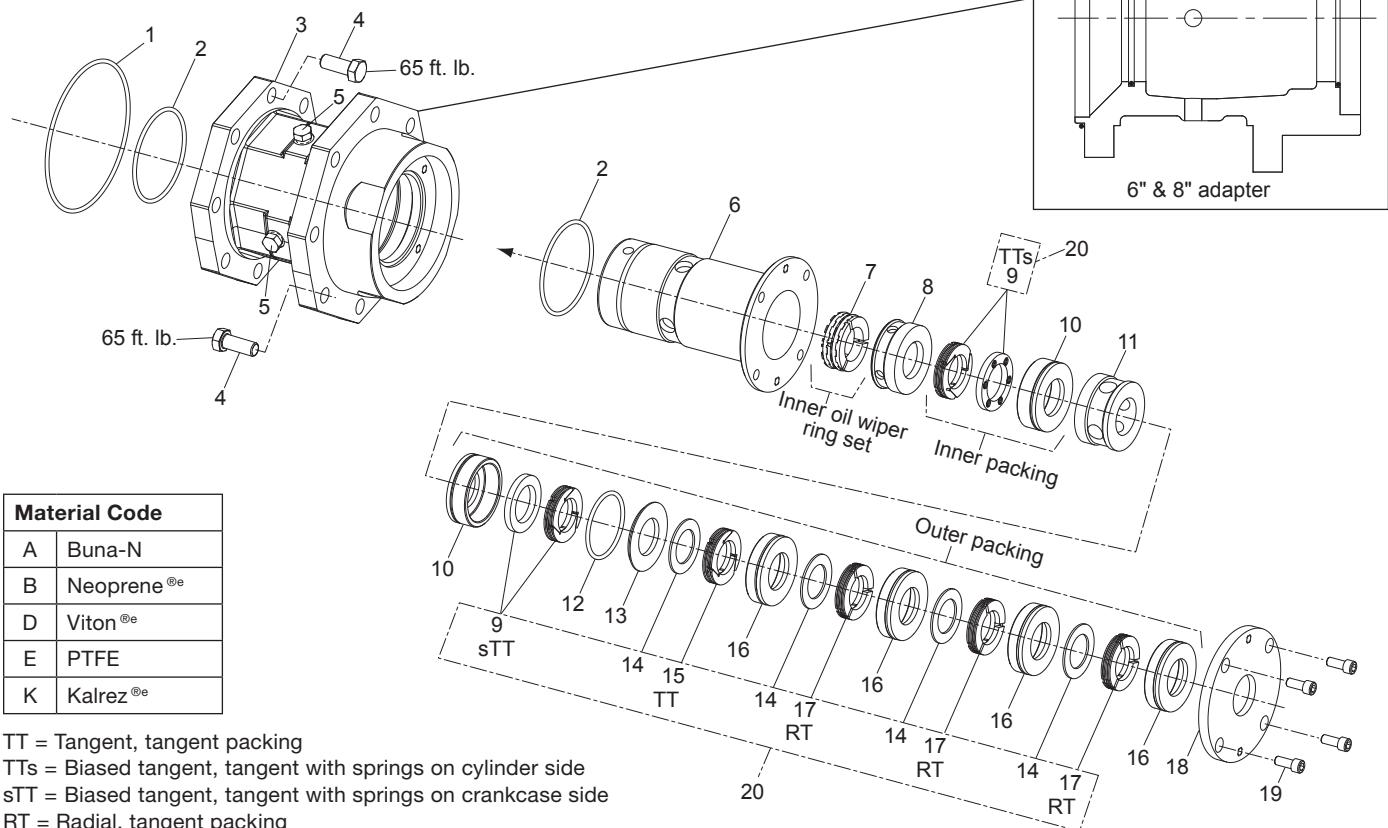
^f Apply a small amount of Loctite #272 to the circumference of the threads.

^g Beginning with serial number NN51397.

Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

6" and 8" Purge Packing Specification

NOTE: Cover the end of the piston rod with packing cone (part #3905) before installing packing. For lubricated compressors, the lubricating quill located on the adapter must be removed before packing cartridge can be removed.



Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	1
2.	2-236 ^{a, d}	O-ring	2
3.	3529-1	Adapter (6")	1
	3673-1	Adapter (8")	1
4.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	16
5.	3442	Pipe plug (1/4")	Varies
6.	4268	Packing cartridge body	1
7.	3816 ^c	Oil wiper ring set (two per set)	1
8.	4270	Oil wiper ring cup	1
9.	4273	Biased segmented packing set (tangent, tangent - includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
10.	4271	Purge packing cup	2
	2-036 ^{a, d}	O-ring	2
11.	4269	Cup spacer	1
12.	2-228 ^{a, d}	O-ring	1

Ref No.	Part No.	Description	Qty.
13.	4272	Packing spacer	1
14.	3811	Back-up ring	4
15.	3814 ^b	Segmented packing ring (tangent, tangent - pair)	1
16.	3817	Packing cup	4
	2-036 ^{a, d}	O-ring	4
17.	3810 ^b	Segmented packing ring (radial, tangent - pair)	3
18.	4267	Packing cartridge cap	1
19.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4")	4
20.	4273-X1	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d Denotes material code. See material code chart for details.

^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

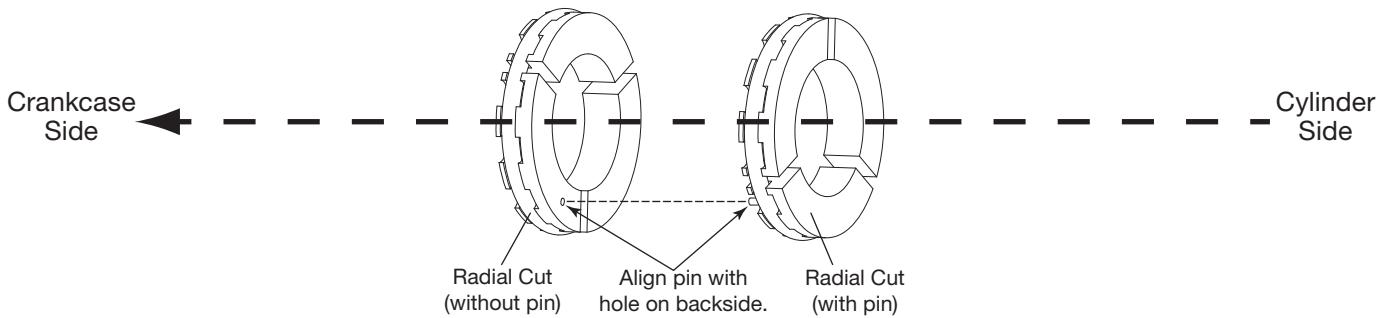
Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

Inner Oil Wiper Ring Sets

1. Standard Specification

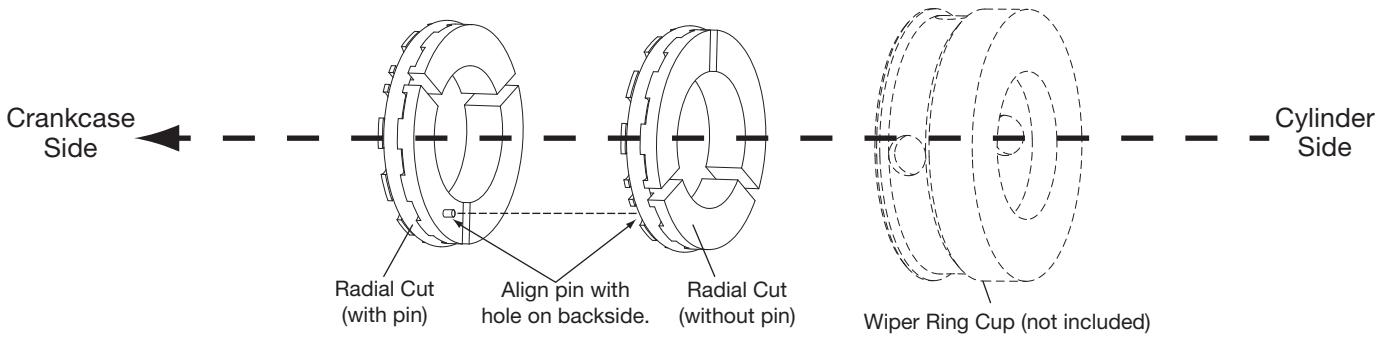
Part number 3816

Oil wiper ring set (Radial, Radial)



2. Purge Specification

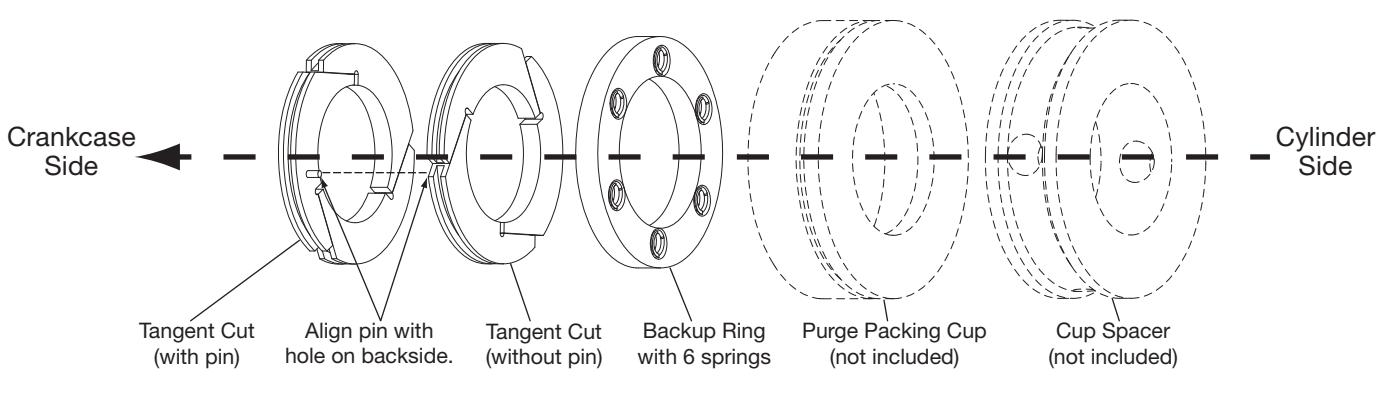
Oil wiper ring set (Radial, Radial)



Inner Packing Details for Purge Specification Only

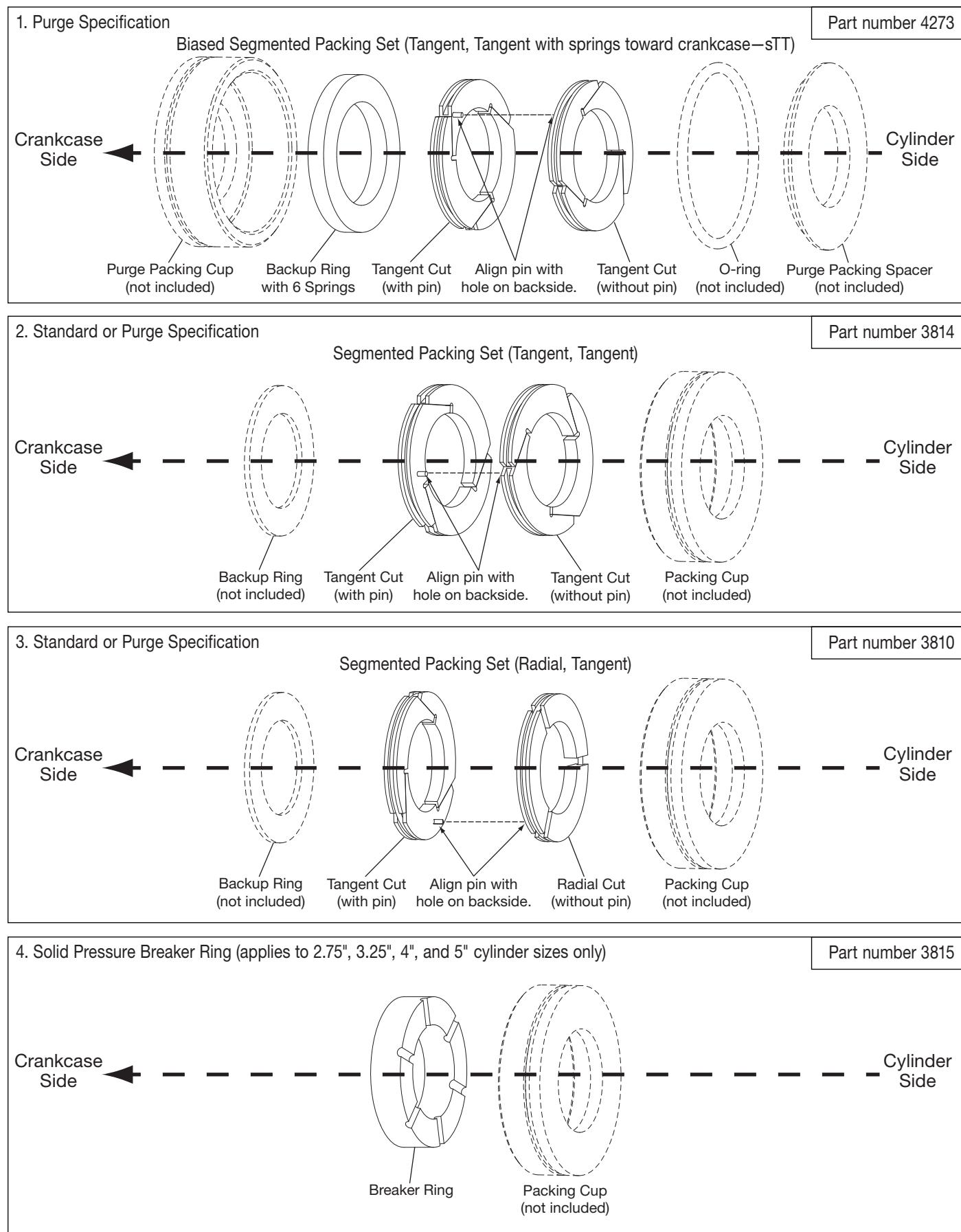
Biased Segmented Purge Packing Set (Tangent, Tangent with spring toward cylinder—TTs)

Part number 4273



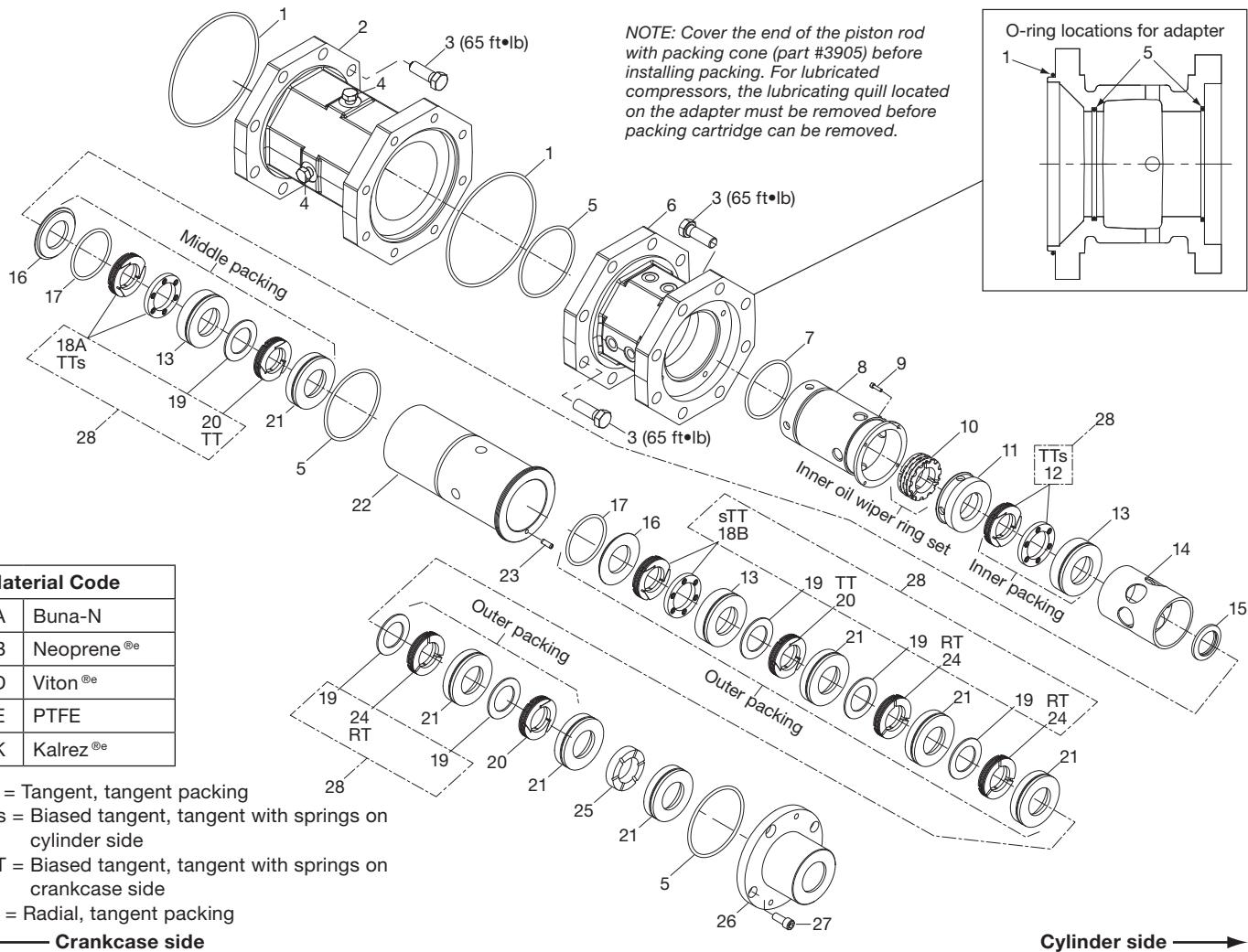
Appendix D—Packing Assembly Details for HG600 Series (Plain Style)

Outer Packing Details for Standard and Purge Packing Specifications



Appendix D—Packing Assembly Details for THG600 Series (T-Style)

2.75" Pad Packing Specification



Material Code

A	Buna-N
B	Neoprene ®e
D	Viton ®e
E	PTFE
K	Kalrez ®e

TT = Tangent, tangent packing

TTs = Biased tangent, tangent with springs on cylinder side

sTT = Biased tangent, tangent with springs on crankcase side

RT = Radial, tangent packing

← Crankcase side

→ Cylinder side

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	2
2.	4772	Distance piece	1
3.	7001-050NC150A	Bolt (hex head, 1/2"-13" x 1-1/2")	24
4.	3442	Pipe plug (1/4")	Varies
5.	2-236 ^{a, d}	O-ring	3
6.	3524-2	Adapter	1
7.	2-231 ^{a, d}	O-ring	1
8.	4778	Packing cartridge adapter	1
9.	7002-005NC050A ^f	Bolt (socket head)	4
10.	3816 ^c	Oil wiper ring set (two per set)	1
11.	4270	Oil wiper ring cup	1
12.	4273-1	Biased segmented packing set (tangent, tangent—includes 1 TT pair, 1 iron backup rings, and 6 springs)	1
13.	4271	Purge packing cup	3
14.	2-036 ^{a, d}	O-ring	3
15.	4779	Cup spacer	1
16.	1732	Oil deflector ring	1
17.	4272	Packing spacer	1
18.	2-228 ^{a, d}	O-ring	1

Ref No.	Part No.	Description	Qty.
18A.	4273	Biased segmented packing set (tangent, tangent—includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
19.	3811	Back-up ring	6
20.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	2
21.	3817	Packing cup	7
22.	2-036 ^{a, d}	O-ring	7
23.	4773	Packing cartridge body	1
24.	3253 ^g	Pin	1
25.	3810 ^b	Segmented packing ring (radial, tangent—pair)	4
26.	3815	Pressure breaker ring	1
27.	4362 ^g	Packing cartridge cap	1
28.	7002-031NC075A ⁱ	Bolt (socket head, 5/16"-18 x 3/4")	4
	4273-1X3	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d _ denotes material code. See material code chart for details.

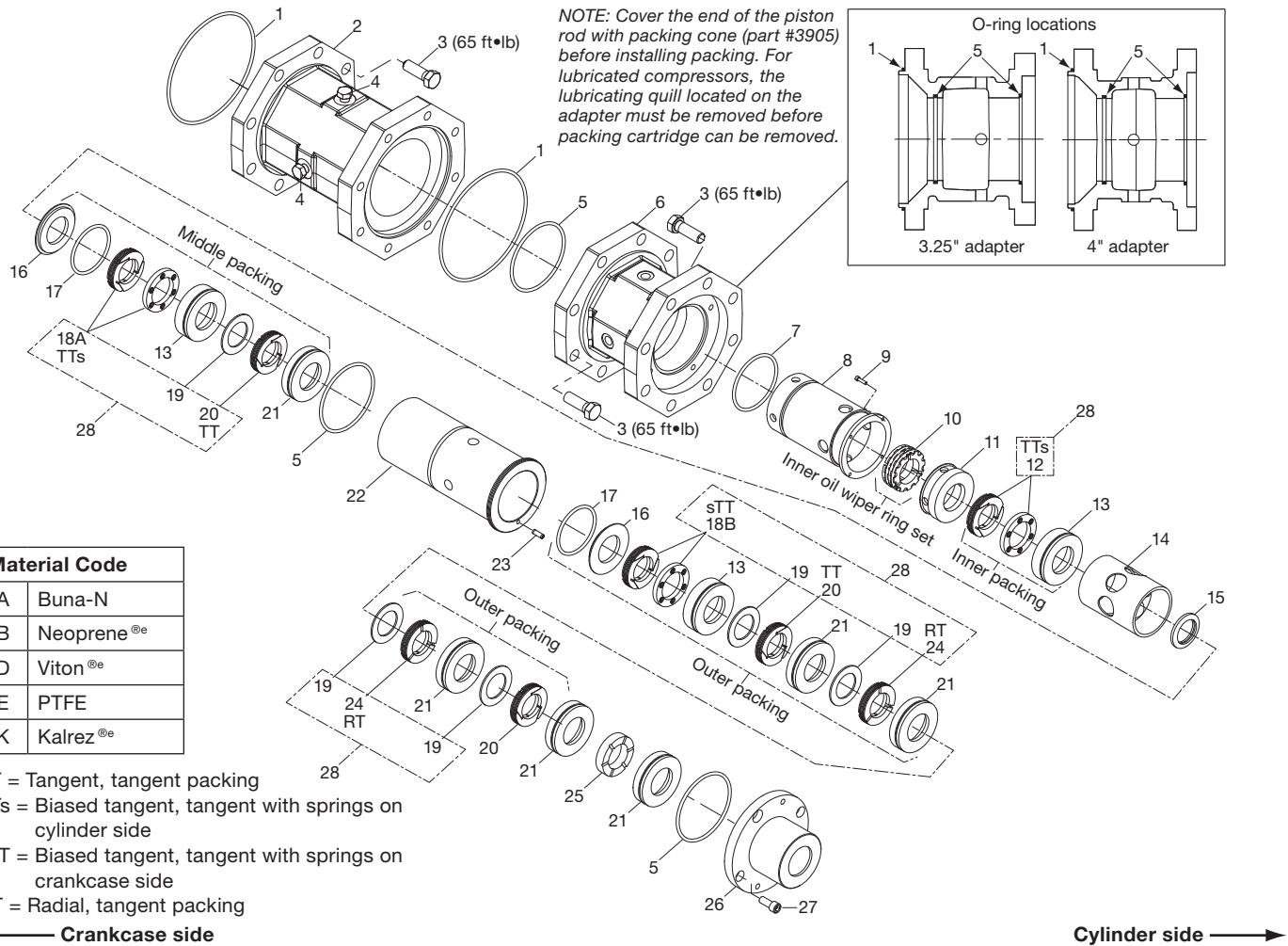
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

^g Align pin with the hole on the back side of the packing cartridge cap.

Appendix D—Packing Assembly Details for THG600 Series (T-Style)

3.25" and 4" Pad Packing Specification



Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	2
2.	4772	Distance piece	1
3.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	24
4.	3442	Pipe plug (1/4")	Varies
5.	2-236 ^{a, d}	O-ring	3
6.	3524-1	Adapter (3.25")	1
6.	3762-1	Adapter (4")	1
7.	2-231 ^{a, d}	O-ring	1
8.	4778	Packing cartridge adapter	1
9.	7002-005NC050A ^f	Bolt (socket head)	4
10.	3816 ^c	Oil wiper ring set (two per set)	1
11.	4270	Oil wiper ring cup	1
12.	4273-1	Biased segmented packing set (tangent, tangent—includes 1 TT pair, 1 iron backup rings, and 6 springs)	1
13.	4271	Purge packing cup	3
13.	2-036 ^{a, d}	O-ring	3
14.	4779	Cup spacer	1
15.	1732	Oil deflector ring	1
16.	4272	Packing spacer	2
17.	2-228 ^{a, d}	O-ring	2
18A.	4273	Biased segmented packing set (tangent, tangent—includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
18B.			

Ref No.	Part No.	Description	Qty.
19.	3811	Back-up ring	5
20.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	2
21.	3817	Packing cup	6
21.	2-036 ^{a, d}	O-ring	6
22.	4774	Packing cartridge body (3.25")	1
22.	4775	Packing cartridge body (4")	1
23.	3253	Pin	1
24.	3810 ^b	Segmented packing ring (radial, tangent—pair)	3
25.	3815	Pressure breaker ring	1
26.	4286	Packing cartridge cap (3.25")	1
26.	4288	Packing cartridge cap (4")	1
27.	7002-031NC075A ^f	Bolt (socket head, 5/16"-18 x 3/4") - 3.25"	4
27.	7002-010NC075A ^f	Bolt (socket head, 10"-24 x 3/4") - 4"	4
28.	4273-1X2	Packing set (fits 3.25" & 4")	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

^d denotes material code. See material code chart for details.

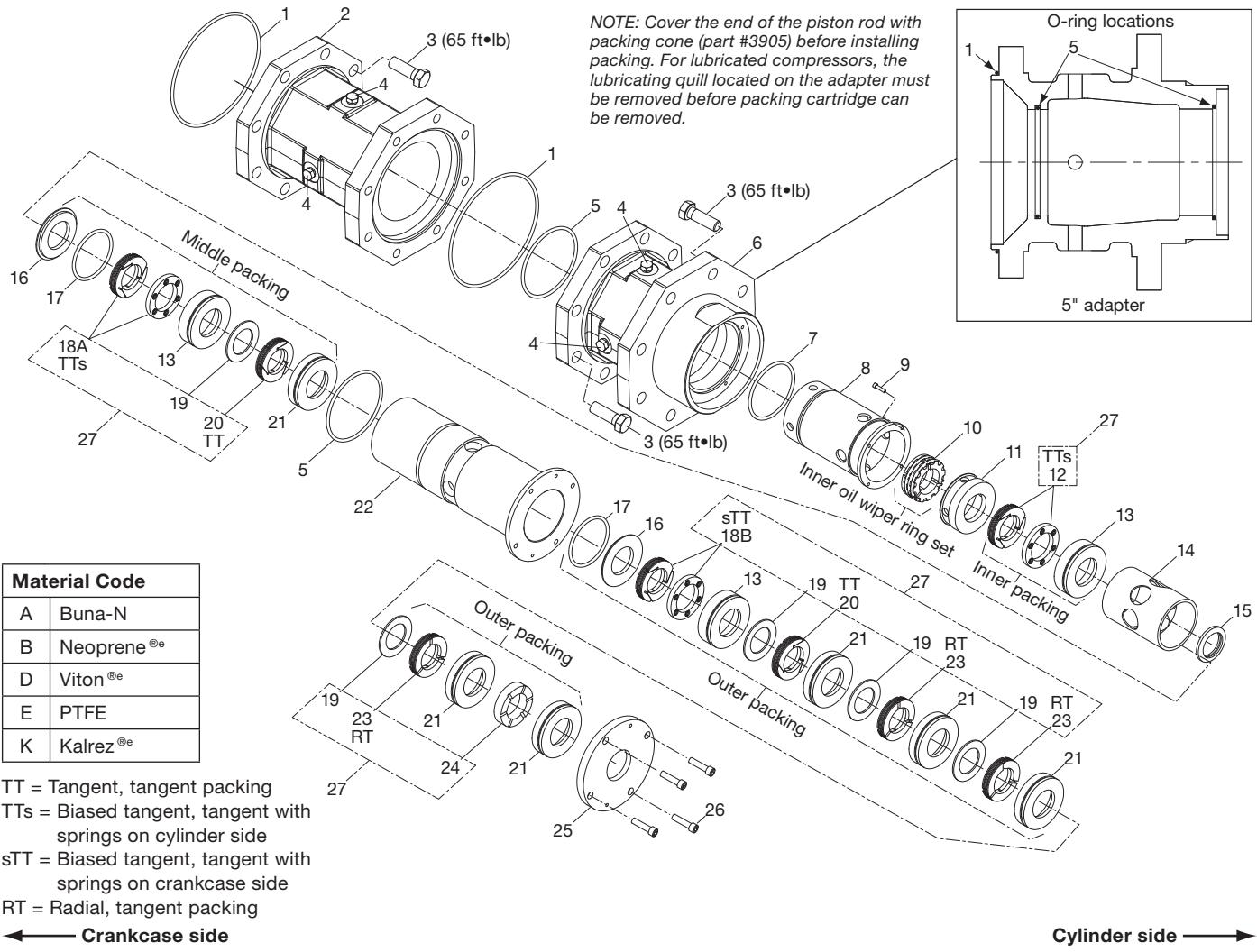
^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

^g Align pin with the hole on the back side of the packing cartridge cap.

Appendix D—Packing Assembly Details for THG600 Series (T-Style)

5" Pad Packing Specification



Material Code
A Buna-N
B Neoprene ^{®e}
D Viton ^{®e}
E PTFE
K Kalrez ^{®e}

TT = Tangent, tangent packing

TTs = Biased tangent, tangent with springs on cylinder side

sTT = Biased tangent, tangent with springs on crankcase side

RT = Radial, tangent packing

← Crankcase side

Cylinder side →

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	2
2.	4772	Distance piece	1
3.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	24
4.	3442	Pipe plug (1/4")	Varies
5.	2-236 ^{a, d}	O-ring	2
6.	5291-1	Adapter	1
7.	2-231 ^{a, d}	O-ring	1
8.	4778	Packing cartridge adapter	1
9.	7002-005NC050A ^f	Bolt (socket head)	4
10.	3816 ^c	Oil wiper ring set (two per set)	1
11.	4270	Oil wiper ring cup	1
12.	4273-1	Biased segmented packing set (tangent, tangent—includes 1 TT pair, 1 iron backup rings, and 6 springs)	1
13.	4271	Purge packing cup	3
	2-036 ^{a, d}	O-ring	3
14.	4779	Cup spacer	1
15.	1732	Oil deflector ring	1
16.	4272	Packing spacer	2
17.	2-228 ^{a, d}	O-ring	2

Ref No.	Part No.	Description	Qty.
18A.	4273	Biased segmented packing set (tangent, tangent—includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
18B.			
19.	3811	Back-up ring	5
20.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	2
21.	3817	Packing cup	6
	2-036 ^{a, d}	O-ring	9
22.	4776	Packing cartridge body	1
23.	3810 ^b	Segmented packing ring (radial, tangent—pair)	3
24.	3815	Pressure breaker ring	1
25.	5321	Packing cartridge cap	1
26.	7002-010NC075A ^f	Bolt (socket head, 10"-24 x 3/4")	4
27.	4273-1X2	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

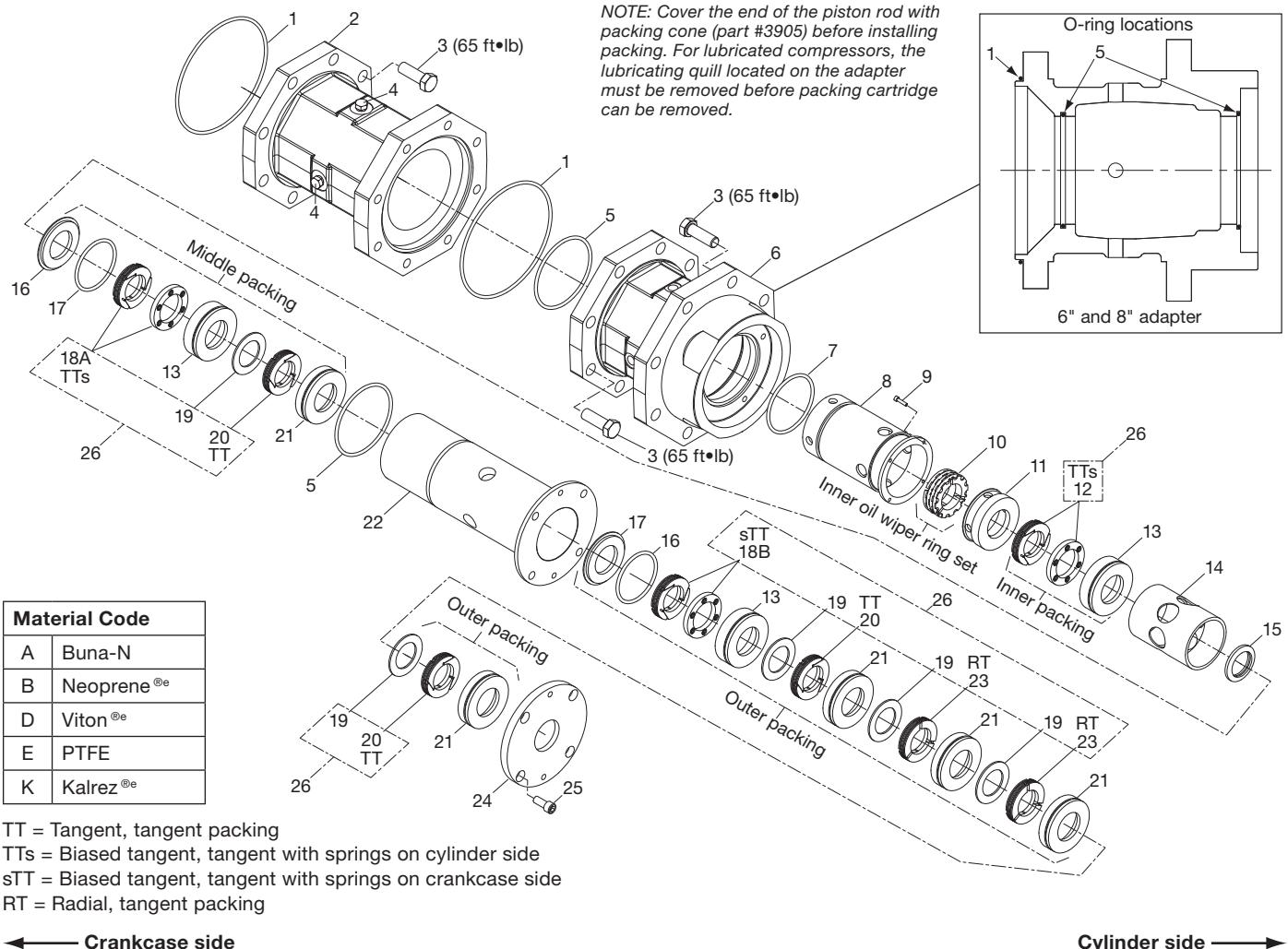
^d _ denotes material code. See material code chart for details.

^e Registered trademark of the DuPont company.

^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for THG600 Series (T-Style)

6" and 8" Pad Packing Specification



Material Code	
A	Buna-N
B	Neoprene®
D	Viton®
E	PTFE
K	Kalrez®

TT = Tangent, tangent packing

TTs = Biased tangent, tangent with springs on cylinder side

sTT = Biased tangent, tangent with springs on crankcase side

RT = Radial, tangent packing

← Crankcase side → Cylinder side

Packing Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	2-253 ^{a, d}	O-ring	2
2.	4772	Distance piece	1
3.	7001-050NC150A	Bolt (hex head, 1/2"-13 x 1-1/2")	24
4.	3442	Pipe plug (1/4")	Varies
5.	2-236 ^{a, d}	O-ring	2
6.	3529-1	Adapter (6")	1
	3673-1	Adapter (8")	1
7.	2-231 ^{a, d}	O-ring	1
8.	4778	Packing cartridge adapter	1
9.	7002-005NC050A ^f	Bolt (socket head)	4
10.	3816 ^c	Oil wiper ring set (two per set)	1
11.	4270	Oil wiper ring cup	1
12.	4273-1	Biased segmented packing set (tangent, tangent—includes 1 TT pair, 1 iron backup rings, and 6 springs)	1
13.	4271	Purge packing cup	3
	2-036	O-ring	8
14.	4779	Cup spacer	1
15.	1732	Oil deflector ring	1
16.	4272	Packing spacer	2
17.	2-228 ^{a, d}	O-ring	2

Ref No.	Part No.	Description	Qty.
18A.		Biased segmented packing set (tangent, tangent - includes 2 TT pairs, 2 iron backup rings, and 12 springs)	1
18B.	4273		
19.	3811	Back-up ring	4
20.	3814 ^b	Segmented packing ring (tangent, tangent—pair)	2
21.	3817	Packing cup	5
	2-036	O-ring	5
22.	4777	Packing cartridge body	1
23.	3810 ^b	Segmented packing ring (radial, tangent—pair)	3
24.	4267	Packing cartridge cap	1
25.	7002-031NC075A ^f	Bolt (socket head)	4
26.	4273-1X1	Packing set	1

^a See detail for O-ring location.

^b Direction of packing is important. See packing assembly page for details.

^c Direction of oil wiper ring set is important. See packing assembly page for details.

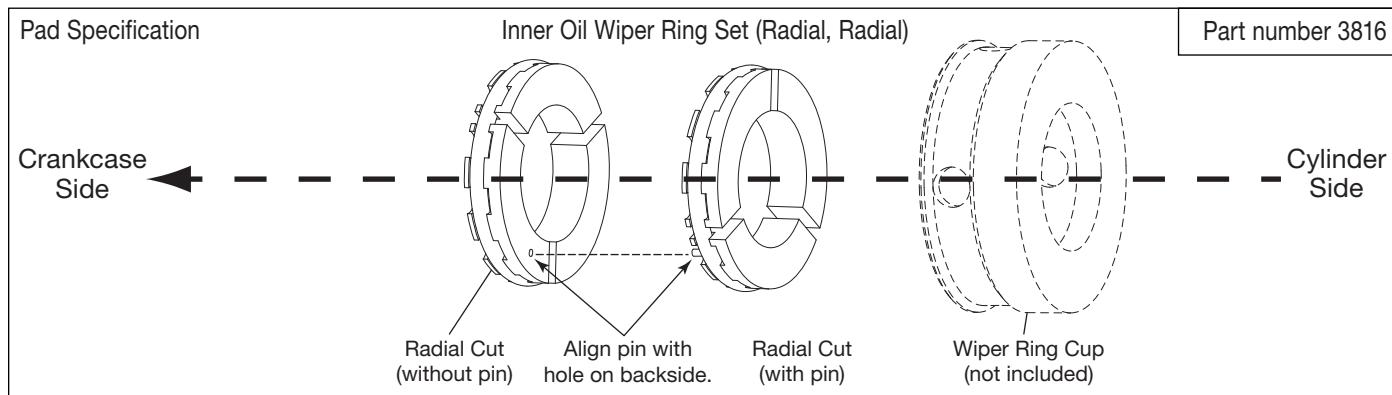
^d denotes material code. See material code chart for details.

^e Registered trademark of the DuPont company.

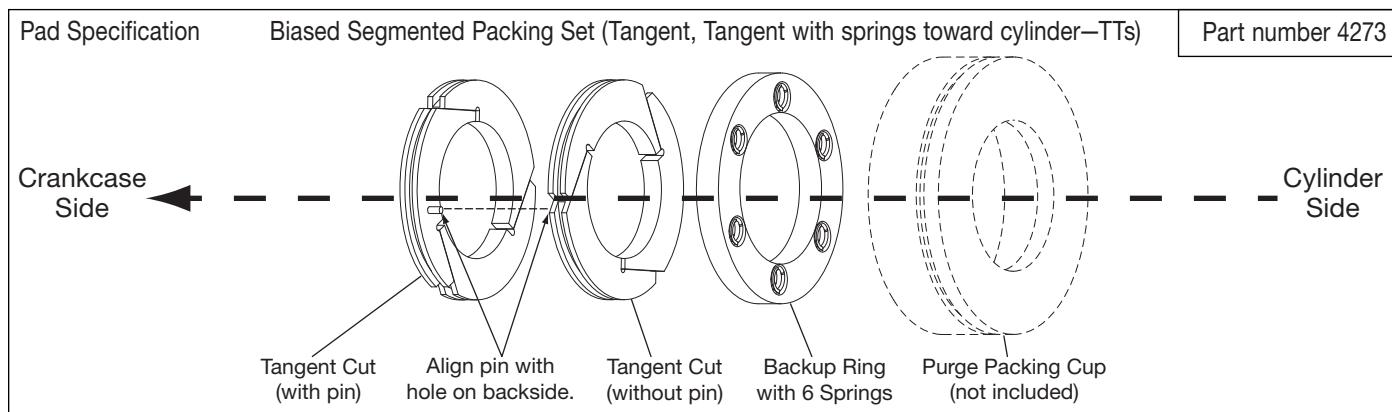
^f Apply a small amount of Loctite #272 to the circumference of the threads.

Appendix D—Packing Assembly Details for THG600 Series (T-Style)

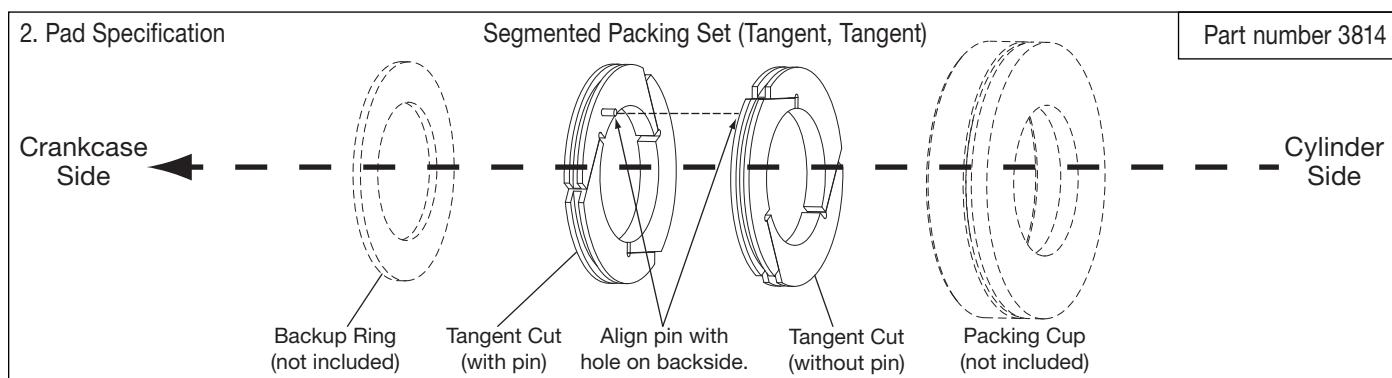
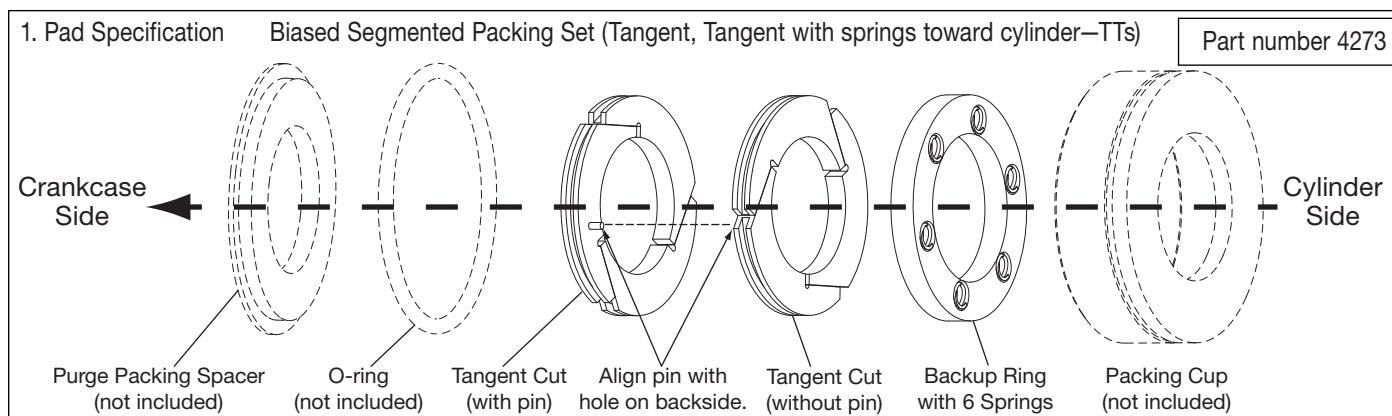
Inner Oil Wiper Ring Set



Inner Packing Details

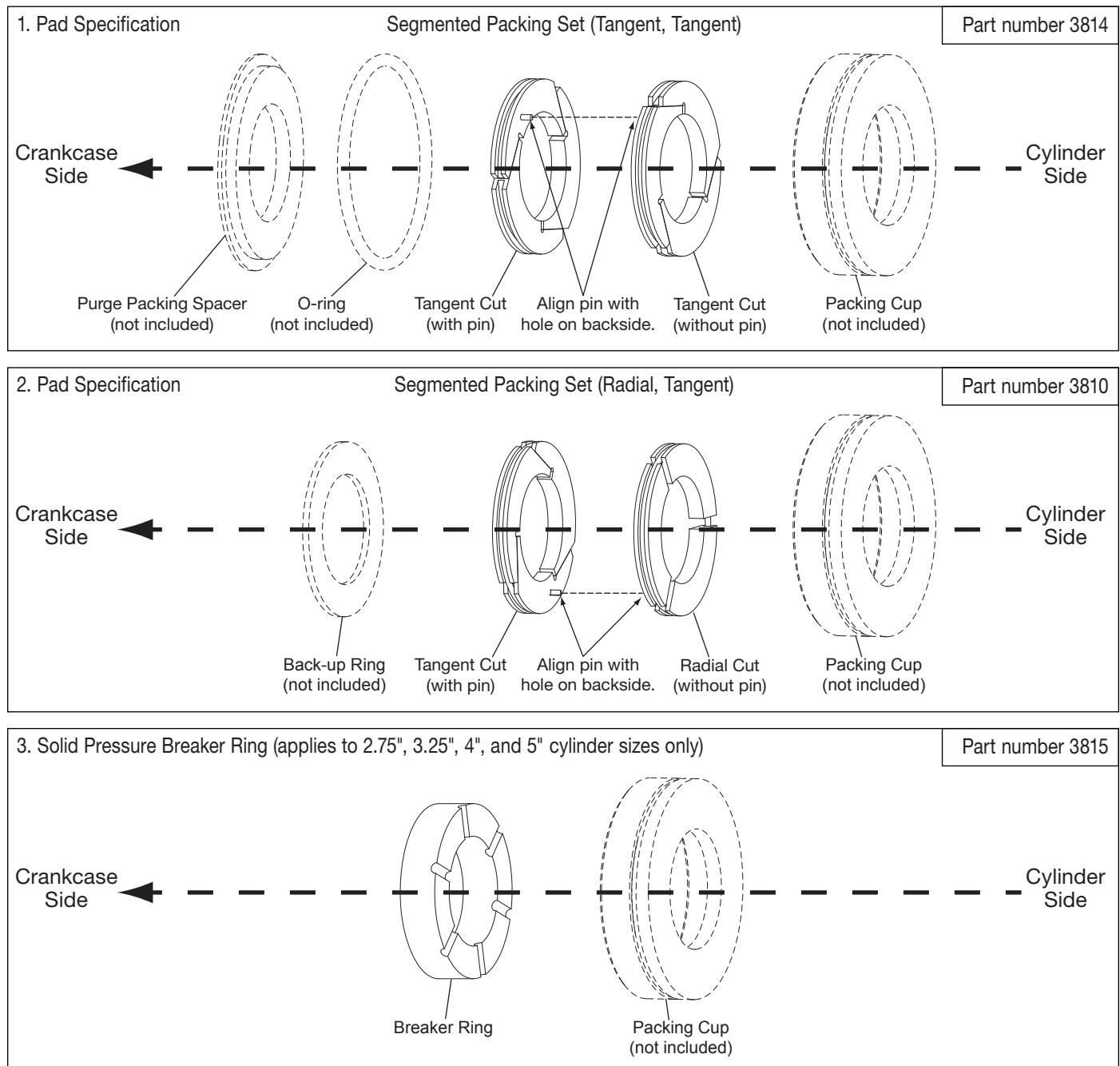


Middle Packing Details

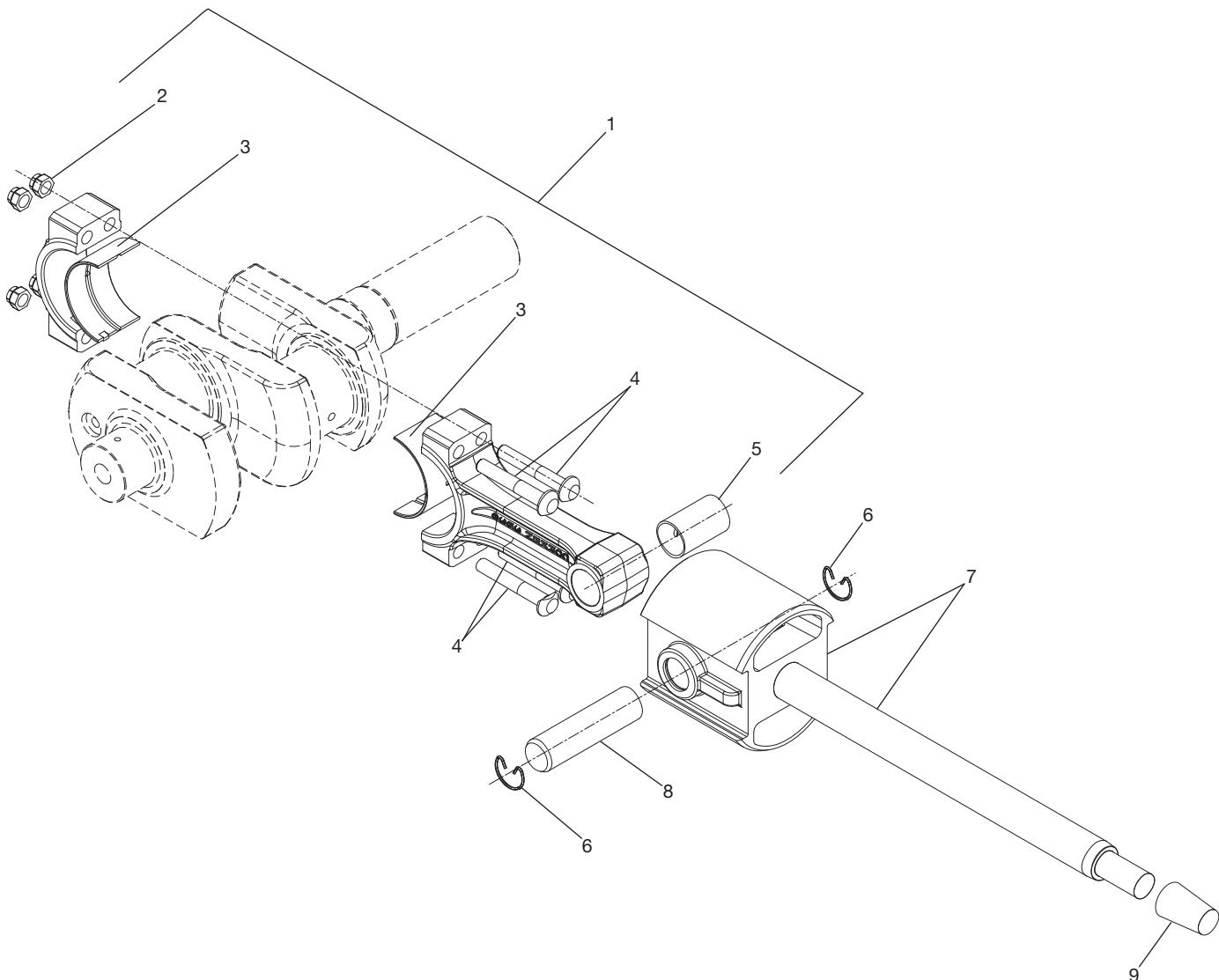


Appendix D—Packing Assembly Details for THG600 Series (T-Style)

Outer Packing Details



Appendix D—Connecting Rod Assembly Details for HG600/THG600 Series



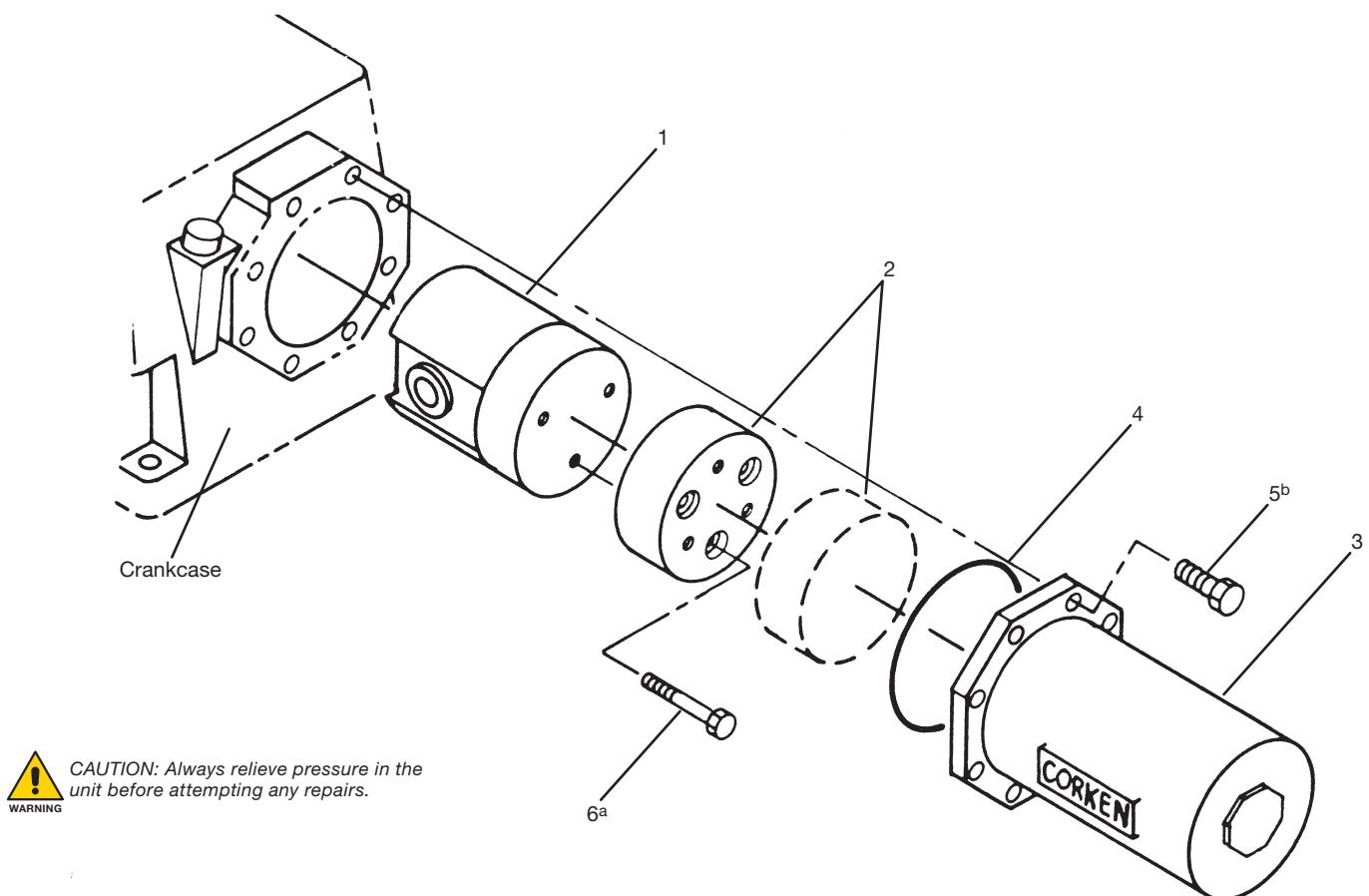
Connecting Rod Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3536-X	Connecting rod assembly	1
2.	1727 ^b	Connecting rod nut	4
3.	3542	Connecting rod bearing (pair)	1
4.	1726	Connecting rod bolt	4
5.	3541 ^a	Wrist pin bushing	1
6.	3590	Wrist pin retainer ring	2
7.	3544-X1	Crosshead assembly (HG600)	1
	3544-X11	Crosshead assembly (THG600)	1
8.	3540	Wrist pin (HG600)	1
	3544-X11	Wrist pin (THG600)	1
9.	3905	Packing cone (HG600)	1
	4802	Packing cone (THG600)	1

^a Must be reborbed and honed after replacing (1.1256"/1.1252" diameter).

^b Torque connecting rod nuts to 40 ft. lb.

Appendix D—Single Cylinder Assembly Details for HG600/THG600 Series



Bill of Materials

Ref. No.	Part Number	Description	Cylinder Diameter							
			2.75"	3.25"	4"	5"	6"	6"	8"	8"
			Steel	Steel	Steel		Aluminum	Iron	Aluminum	Iron
			Quantity per Compressor							
1.	3544-X2	Crosshead assembly	1	1	1	1	1	1	1	1
2.	3864	Balance weight	–	–	1	1	–	1	1	3
3.	3861	Crosshead cap	1	1	1	1	1	1	1	1
4.	2-253_c	O-ring	1	1	1	1	1	1	1	1
5.	7001-043NC150A ^a	Bolt (hex head, 1/2"-13 x 1-1/2")	8	8	8	8	8	8	8	8
6.	7001-050NC250A ^b	Bolt (hex head, 7/16"-14 x 2-1/2")	–	–	3	3	–	3	3	9
7.	3812	Loctite 620 tube	1	1	1	1	1	1	1	1

^a Use Loctite retaining compound 620 and torque bolts to 40 ft. lb. when assembling.

^b Torque to 65 ft. lb.

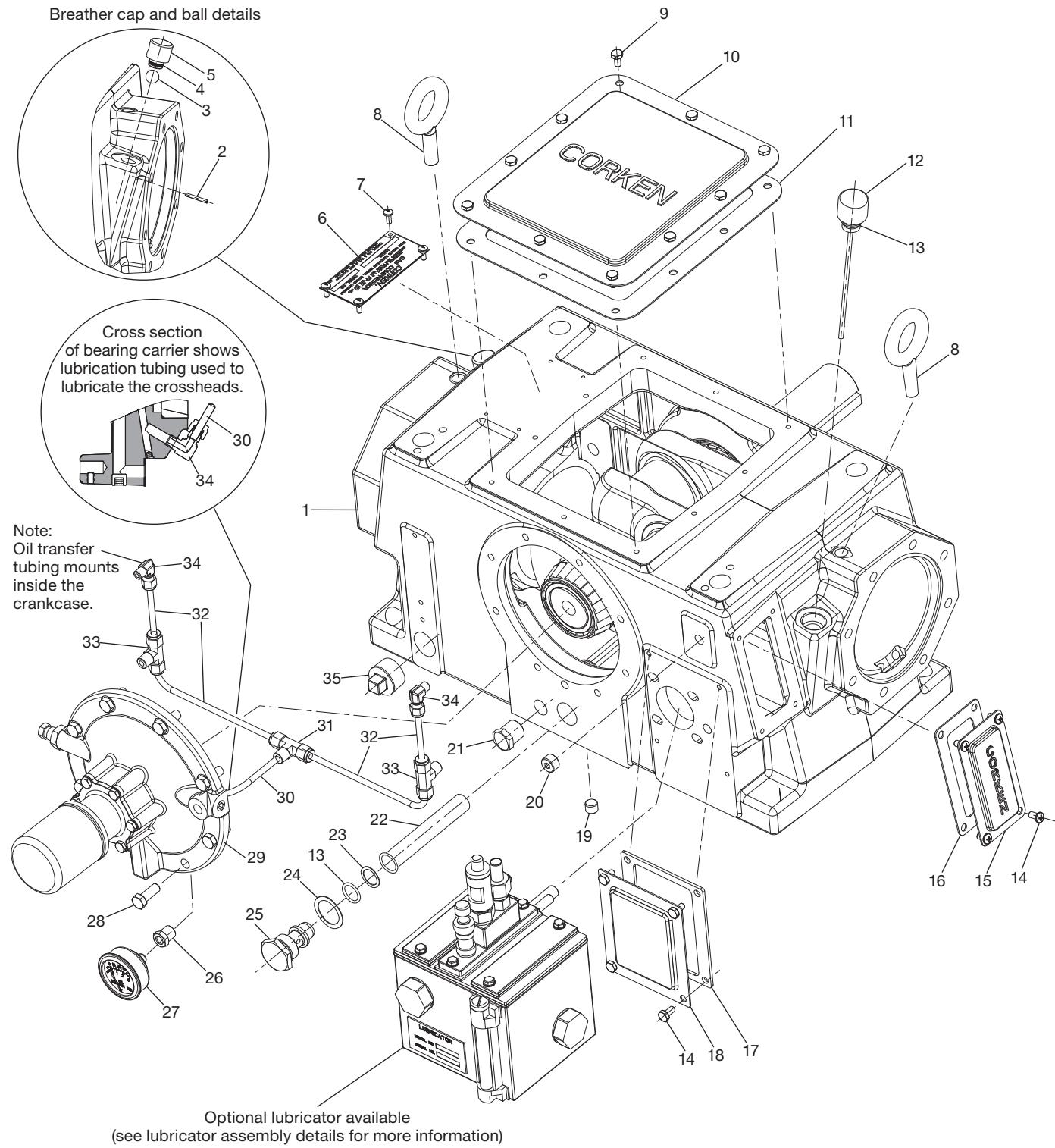
^c _ denotes material code. See material code chart for details.

^d Registered trademark of the DuPont company.

Note: 3861-X1 single cylinder balance kit includes: (1) 3544-X2, (3) 3864, (1) 3861, (1) 2-253A, (9) 7001-043NC250A, (1) 3812

Material Code	
A	Buna-N
B	Neoprene ^{®d}
D	Viton ^{®d}
E	PTFE
K	Kalrez ^{®d}

Appendix D—Crankcase Assembly Details for HG600/THG600 Series



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Appendix D—Crankcase Assembly Details for HG600/THG600 Series

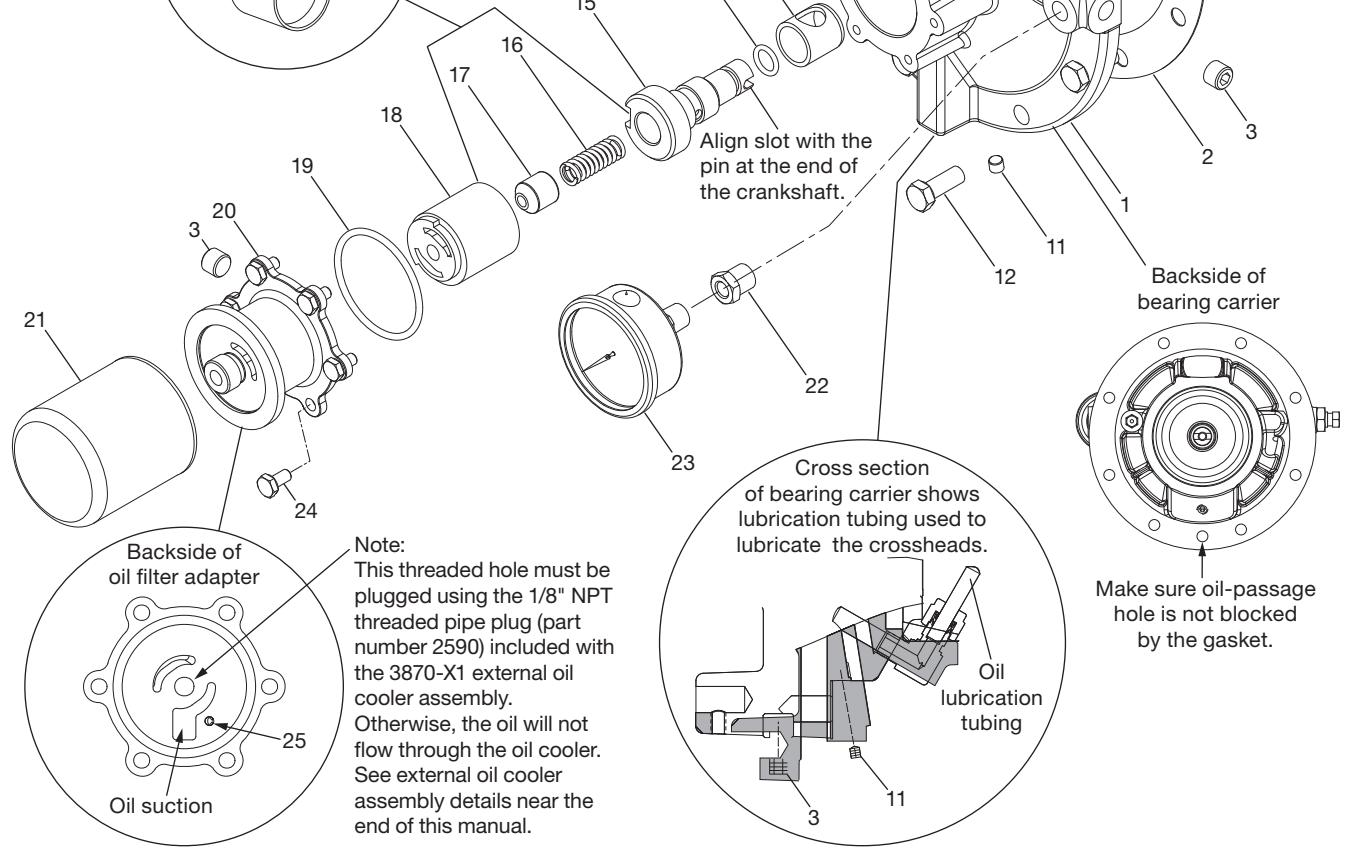
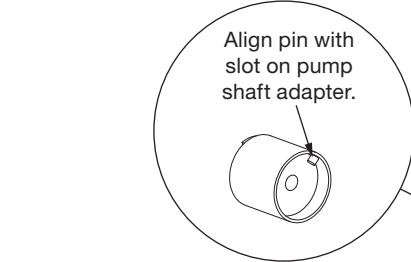
Crankcase Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.	Ref No.	Part No.	Description	Qty.
1.	3538	Crankcase	1	17.	3874	Access cover gasket	1
	3538-X1	Crankcase assembly—HG600M (without external lubricator)	1	18.	3875	Access cover	1
	3538-X2	Crankcase assembly—HG600L (with external lubricator)	1	19.	3289	Pipe plug (1/4 NPT flush seal)	1
2.	1483	Lock pin	1	20.	3823	Pipe plug (3/8" NPT flush seal)	2
3.	2796	Breather ball	1	21.	3443	Pipe plug (1/2" NPT steel)	1
4.	2-111A	O-ring (Buna-N)	1	22.	1275	Oil filter screen	1
5.	1279-X	Breather cap assembly (including O-ring)	1	23.	1276	Filter screen washer	1
	1279	Breather cap	1	24.	1281	Filter screen screw gasket	1
6.	3606	Nameplate	1	25.	1280	Filter screw	1
7.	7012-006SF019E	Drive screw	4	26.	1044	Bushing (1/4" NPT x 1/8" NPT)	1
8.	3567	Eyebolt	2	27.	1302	Oil pressure gauge	1
9.	7001-025NC050A	Bolt (hex head, 1/4"—20 x 1/2")	10	28.	7001-037NC100A	Bolt (hex head, 3/8"—16 x 1")	8
10.	3581	Crankcase inspection plate	1	29.	3220-2X1	Bearing carrier assembly	1
11.	3582	Inspection plate gasket	1	30.	R3387	1/4" plastic tubing (specify length)	—
12.	3583-X1	Oil bayonet assembly with O-ring	1	31.	3652	Union tee (1/4" T brass)	1
13.	2-116A	O-ring (Buna-N)	2	32.	R2886	1/4" copper tube (specify length)	—
14.	7003-025NC037E	Screw (phillips head, 1/4" x 3/8")	8	33.	1435	Tee (1/8" P x 1/4" T x 1/4" T brass)	2
15.	3946	Lubricator access cover	1	34.	1399	Male elbow (1/8" P x 1/4" T brass)	2
16.	3947	Lubricator access cover gasket	1	35.	3643	Pipe plug (1" NPT steel)	1

Appendix D—Bearing Carrier Assembly Details for HG600/THG600 Series



CAUTION: Always relieve pressure in the unit before attempting any repairs.



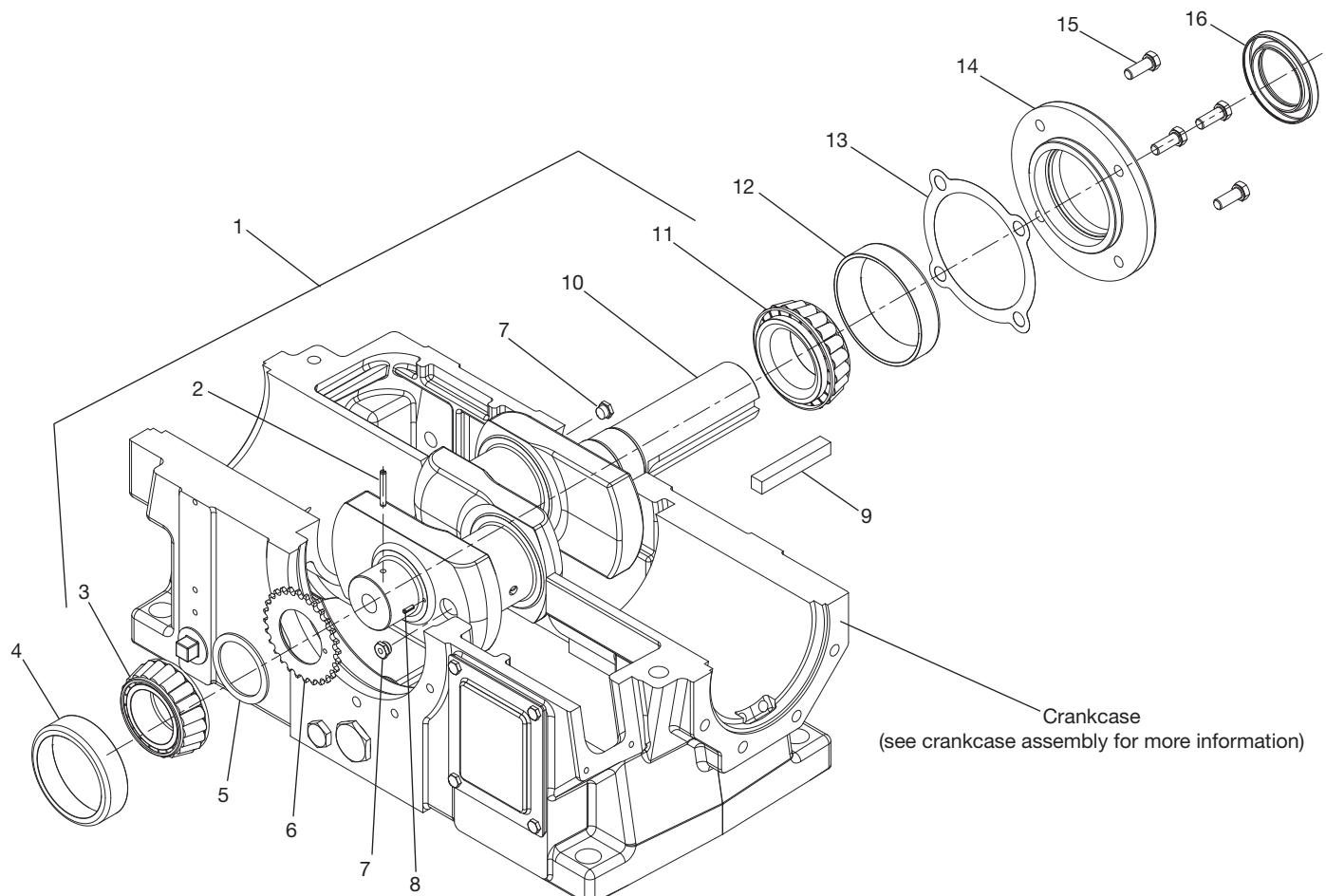
Crankcase Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3220-2	Bearing carrier	1
	3220-2X1	Bearing carrier assembly	1
2.	2131	Bearing carrier gasket	1
3.	3289	Pipe plug (1/4" NPT flush seal)	2
4.	2961-X	Air release valve assembly	1
5.	1736	Bearing cup	1
6.	1293	Relief valve ball	1
7.	1292	Relief valve spring	1
8.	1291	Adjusting screw locknut	1
9.	2-011A	O-ring	1
10.	1290	Relief valve adjusting screw	1
11.	1629	Pipe plug (1/16" NPT flush seal)	1
12.	7001-037NC100A	Bolt (hex head, 3/8"-16 x 1")	8
13.	2805	Pump shaft bushing	1
	2805-X	Pump shaft bushing with tag	1

Ref No.	Part No.	Description	Qty.
14.	2-112A	O-ring	1
15.	3219	Pump shaft adapter	1
16.	2852	Oil pump spring	1
17.	2851	Spring guide	1
18.	2849-1X ^a	Oil pump assembly	1
19.	2-228A	O-ring	1
20.	4222	Oil filter adapter	1
21.	4225	Filter	1
22.	1044	Bushing (1/8" x 1/4" NPT)	1
23.	1302	Oil pressure gauge	1
24.	7001-025NC050A	Bolt (hex head, 1/4"-20 x 1/2")	11
25.	2798	Oil filter adapter pin (included with 4222-X)	1

^a Caution: To avoid damage during assembly, refer to Important Instructions IE400.

Appendix D—Crankshaft Assembly Details for HG600/THG600 Series



CAUTION: Always relieve pressure in the unit before attempting any repairs.

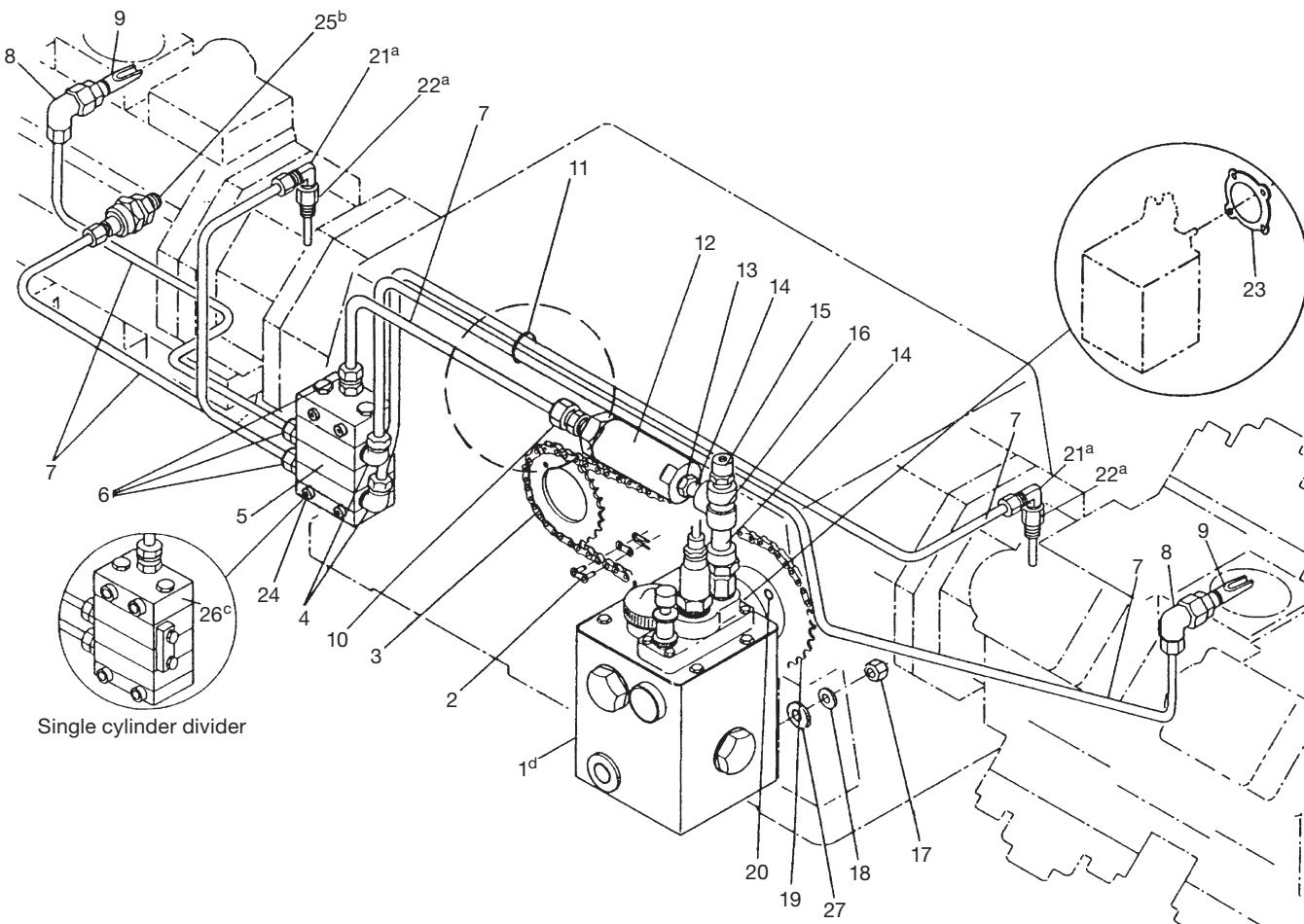
Crankcase Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3537-X1	Crankshaft assembly	1
2.	2135	Rotor drive pin	1
3.	1737	Bearing cone	1
4.	1736	Bearing cup	1
5.	3638	Spacer	1
6.	3635	Drive sprocket	1
7.	1284	Crankshaft orifice	2
8.	2933	Link pin	1
9.	3503	Flywheel key	1
10.	3537	Crankshaft	1
11.	3580	Bearing cone	1
12.	3579	Bearing cup	1

Ref No.	Part No.	Description	Qty.
13.	3589	Bearing adjustment shim (0.005")	As req.
	3589-1	Bearing adjustment shim (0.007")	As req.
	3589-2	Bearing adjustment shim (0.020")	As req.
14.	3539	Bearing cover	1
15.	7001-037NC100A	Bolt (hex head, 3/8"-16 x 1")	4
16.	3526	Oil seal	1

^a Caution: To avoid damage during assembly, refer to Important Instructions IE400.

Appendix D—Lubricator Assembly Details for HG600/THG600 Series



CAUTION: Always relieve pressure in the unit before attempting any repairs.

Crankcase Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3639-X ^d	Lubricator assembly	1
2.	3634	Spring clip connecting link	1
3.	3633	Chain	1
4.	1399-1	Elbow (1/8" P x 1/4" T steel)	2
5.	3658-X	Divider valve assembly (two cylinders)	1
6.	1434-1	Straight connection (1/8" P x 1/4" T steel)	3
7.	R2920	1/4" steel tubing (specify length)	As req.
8.	3651-1	Female elbow (1/4" P x 1/4" T steel)	2
9.	3656	Quill-check valve	2
10.	1670-1	Straight connection (1/4" P x 1/4" T steel)	1
11.	3389	Cable tie	As req.
12.	3655	Filter	1
13.	1044	Bushing (1/4" NPT x 1/8" NPT steel)	1

Ref No.	Part No.	Description	Qty.
14.	3607	Nipple (schedule 80, 1/8" NPT x 1-1/2")	2
15.	3654	Blow out disc	1
16.	2609	Tee (1/8" NPT steel)	1
17.	7101-037NC01A	Hex nut (3/8" – 16)	4
18.	7206-037A	Lockwasher (3/8")	4
19.	3636	Driven sprocket	1
20.	7006-025NC100A	Set screw (socket head, 1/4"-20 x 1")	1
21.	1669-1 ^a	Elbow (1/4" P x 1/4" T steel)	2
22.	1449-1X ^a	Quill assembly	2
23.	2010	Flange gasket	1
24.	7002-010NC200A	Bolt (socket head, 10"-24 x 2")	4
25.	2709 ^b	Back check valve	2
26.	3668-X ^c	Divider valve assembly (single cylinder)	1
27.	7201-037A	Washer (3/8")	4

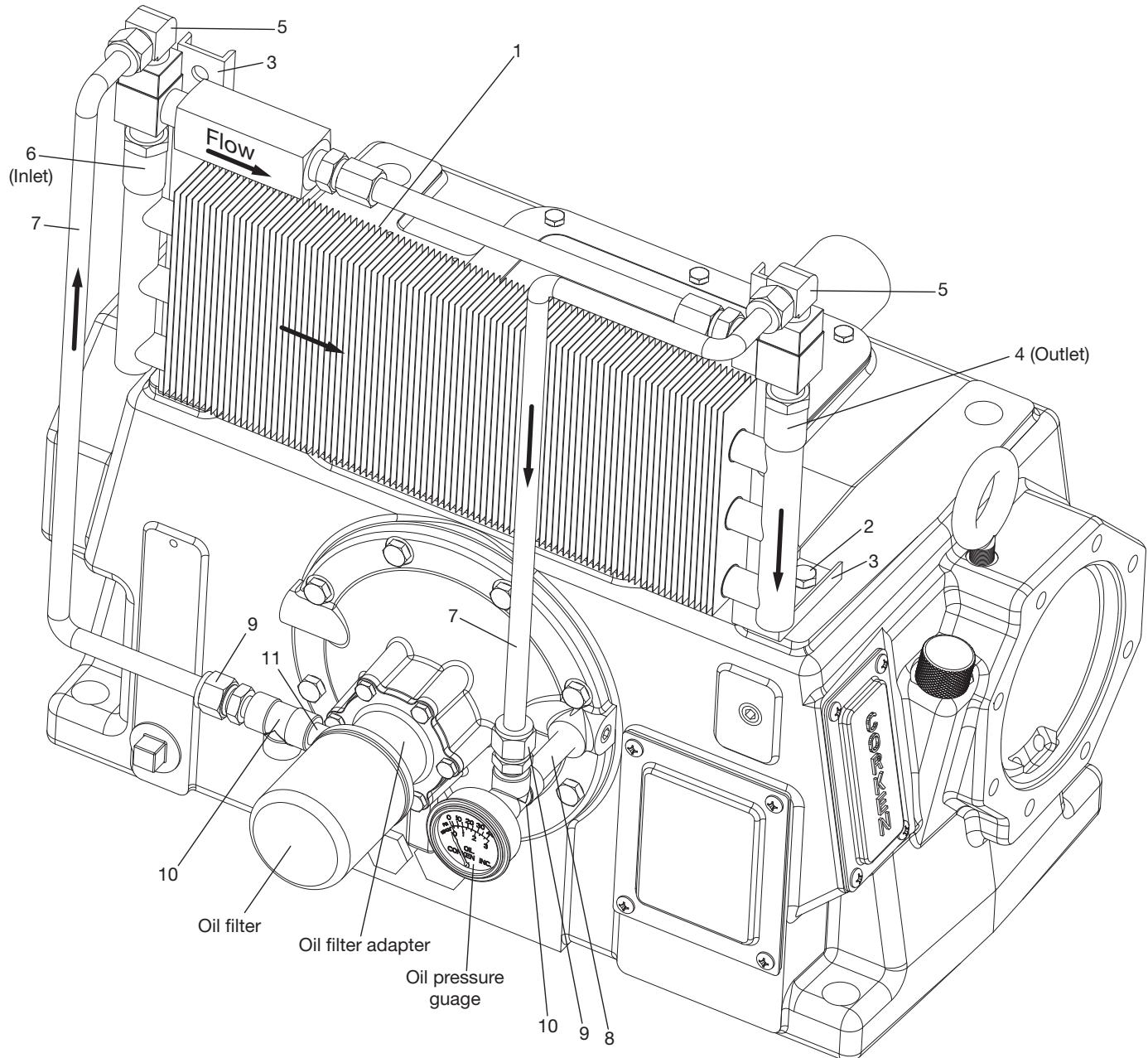
^a Except 2-3/4" cylinder

^b 2-3/4" cylinder only

^c Single cylinder units only

^d Optional

Appendix D—3870-X1 External Oil Cooler Assembly Details for HG600/THG600 Series



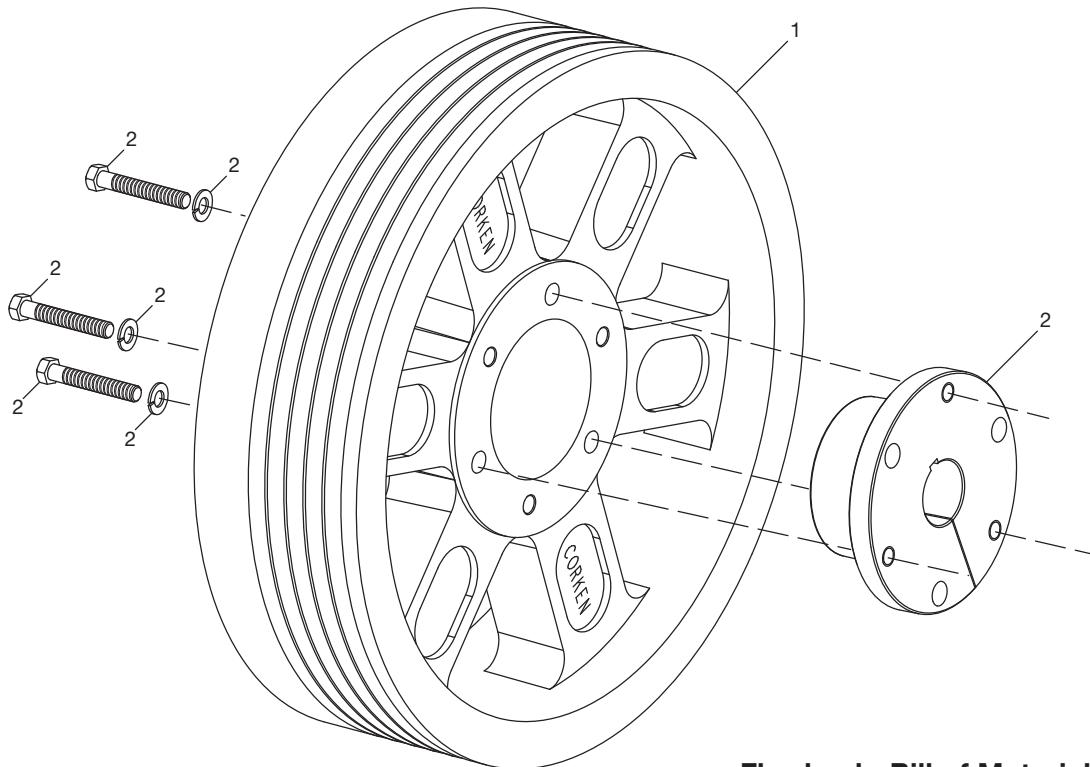
3870-X1 External Oil Cooler Assembly—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3870	External oil cooler	1
2.	7001-037NC075A	Bolt (hex head, 3/8"-16 x 3/4", GR 5)	4
3.	3688	External oil cooler bracket	2
4.	2817	Decal (OUT)	1
5.	2322-1	Tube elbow (1/2" T x 1/2" P steel)	2
6.	2814	Decal (IN)	1
7.	R 3433	Tube (1/2" x .035 SAE J525)	Specify
8.	2021	Nipple (schedule 80, 1/4" x 2-1/2")	1

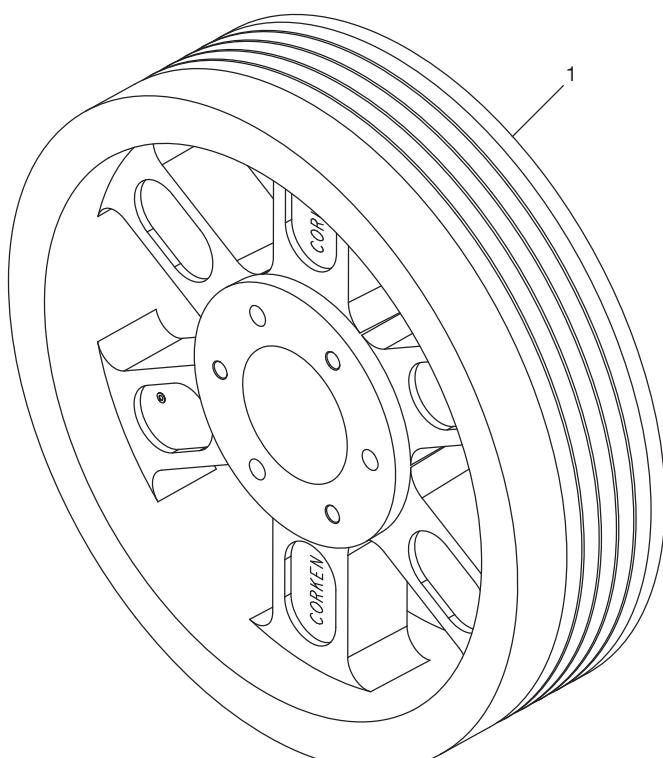
Ref No.	Part No.	Description	Qty.
9.	3912-1	Tube, straight connection (1/2" T x 1/4" P ST)	2
10.	2063	Tee (1/4" NPT 2000 LB A105)	2
11.	2228	Nipple (schedule 80, 1/4" x 1-1/4")	1
Not shown	2590 ^a	Pipe plug (1/8" NPT flush)	1

^a Must be installed in the center hole on the backside of the oil filter adapter. See reference #29 on page 80 for details on the backside of the oil filter adapter (part #4222).

Appendix D—Flywheel Assembly Details for HG600/THG600 Series



Back Side



Front Side

Flywheel—Bill of Materials

Ref No.	Part No.	Description	Qty.
1.	3852	Flywheel (21.2" O.D., 5 V-grooves)	1
2.	H J-2.125	Hub with three bolts and lockwashers	1

Assembly Number	Assembly Name
3852-X	Flywheel assembly (flywheel, hub, and three bolts)

Appendix E—Troubleshooting

General

In most cases problems with a CORKEN gas compressor can be solved quite simply. The table below lists some of the more frequent problems that occur with reciprocating compressors along with a list of possible causes. If a problem is not listed, consult the factory.

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:

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

If interstage pressure is too low:

- First stage valves may be broken or leaking.
- First stage piston rings may be worn.
- If suction and/or discharge pressures change, the interstage pressure will also change.

Problem	Possible Cause
Low capacity	1, 2, 3, 4
Overheating	1, 2, 3, 5, 6, 11, 15
Knocks, rattles, and noise	1, 7, 9, 10, 11, 14
Oil in cylinder	8, 14
Abnormal piston-ring wear	1, 3, 5, 6, 11, 14, 15
Product leaking through crankcase breather	8, 14
Product leakage	4, 8, 14
Oil leakage around compressor base	16, 17
No oil pressure	18, 19
Excessive vibration	1, 7, 9, 10, 11, 12, 13, 25, 27
Motor overheating or starter tripping out	20, 21, 22, 23, 24, 25, 26, 27

Ref. No.	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 flywheel 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 valve or consult factory
12.	Inadequate compressor base	Strengthen, replace or grout
13.	Improper foundation or mounting	Tighten mounting or rebuild foundation
14.	Loose valve, piston or packing	Tighten or replace as necessary
15.	Dirty cooling fins	Clean weekly
16.	Leaking gas blowing oil from crankcase	Tighten packing
17.	Bad oil seal	Replace
18.	No oil in crankcase	Add oil
19.	Oil-pump malfunction	See oil-pressure adjustment
20.	Low voltage	Check line voltage with motor nameplate. Consult power company
21.	Motor wired wrong	Check wiring diagram

Appendix E—Troubleshooting

Ref. No.	Possible Causes	What To Do
22.	Wire size too small for length or run	Replace with correct size
23.	Wrong power characteristics	Voltage, phase, and frequency must coincide with motor nameplate. Consult with power company.
24.	Wrong size of heaters in starter	Check and replace according to manufacturer's instructions
25.	Compressor overloading	Reduce speed
26.	Motor shorted out	See driver installation
27.	Bad motor bearing	Lubricate according to manufacturer's instructions



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