Packager Guidelines
Section 1: General Information

1-1. Serial Numbers
Correspondence concerning your compressor and related equipment must include the serial numbers of the equipment about which you are writing. A complete record of serial numbers and other data on your Dresser-Rand compressor is kept at the factory; giving the serial numbers in your correspondence and parts orders helps us in providing prompt service.

1. The compressor frame serial number applies to the frame and running gear parts. It is located on a nameplate that is attached to the side of the frame at the oil pump end. The serial number is also permanently stamped directly below the nameplate in the frame metal. It consists of several letters and numbers. Always give the complete serial number (for example; 6HF751, Y6H108) when requesting specific information.

2. Each compressor cylinder has its own serial number that is stamped on a nameplate attached to the cylinder. The cylinder nameplate also includes other data; this is described in the section that follows. Always give the complete serial number (for example; 6HC2400, Y6H775) when requesting specific information.

1-2. Cylinder Nameplate Information
The nameplate (Figure 1) attached to the compressor cylinder contains information that allows both the customer and Dresser-Rand to identify a particular cylinder. The following is an explanation of some of the terms used on nameplates.

![Cylinder Nameplate](image)

Figure 1. Cylinder Nameplate
1-2.1. **Cylinder Type, Serial Number, Bore & Stroke**
The first block describes the compressor type. Following this is the block for the serial number. The cylinder serial number is the most important item stamped on the nameplate. It allows the customer, the distributor and the manufacturer to identify a particular cylinder, its specifications, the parts used to build it and the performance conditions for which it was designed. This is important in that it allows tracking of a particular cylinder throughout its history, no matter what frame it may be installed on in later years. Always give this serial number when ordering spare parts. This will expedite the handling of your order and helps prevent shipment of incorrect parts. The cylinder bore is the inside diameter of the cylinder. If there is a liner present, the cylinder bore is the inside diameter of the liner. This is also the nominal piston diameter. Liners of different thicknesses may be installed in a given cylinder to vary the bore diameter. The stroke is the distance the piston and rod travels (forward or backwards) for every 1/2 revolution of the crank.

1-2.2. **Rated Discharge Pressure**
The rated discharge pressure, or RDP, is the maximum pressure the cylinder is allowed to see under normal continuous operating conditions.

1-2.3. **Maximum Allowable Working Pressure**
The maximum allowable working pressure, or MAWP, is the maximum gas pressure permitted in the cylinder period. The cylinder may be operated for short periods of time at pressures up to this figure provided that other factors (such as driver horsepower, maximum bearing loads, and piping and vessel limitations) do not prohibit this. Safety valve settings are usually much lower than this figure, and may never exceed it in any case.

1-2.4. **Hydrostatic Test Pressure**
The pressure at which the cylinder has been hydrotested. Hydrostatic tests are always performed at pressures at least 1.5 times that of the MAWP.

1-2.5. **Maximum Cooling Water Pressure**
This pressure limitation applies not only to jacketed cylinders, but to internally water cooled packing cases as well.

1-2.6. **Maximum Allowable Discharge Gas Temperature**
This is the highest temperature to which any compressor cylinder parts should be exposed to.

1-2.7. **Maximum Speed**
This is the maximum design speed of the cylinder. Certain cylinders, mainly the large ones with high reciprocating weights, may have speed limits that are lower than that of the frame. This is uncommon and always addressed in the early states of any potential application.

1-2.8. **Base Clearance**
This is the inherent clearance that lies within and/or built within the cylinder. It is in the form of a percent of the swept volume for a given end of the cylinder. It cannot be changed without physically altering the internals of the cylinder.

1-2.9. **Normal Lineal Clearance**
The clearance between the piston and the head when the piston is at the end of the stroke (each end). It is required to allow for the thermal expansion of the piston and rod when temperatures increase through compression.

1-2.10. **Added Fixed Clearance**
The clearance added by some physical means to meet the required operating condition(s). It is typically added in the form of valve spacers or a shorter than normal head or piston.
1-3. **Lifting Devices**
Compressor frames are drilled and tapped at the factory for lifting devices. These lifting devices are not supplied as standard scope of supply. These devices can either be purchased locally or from Dresser-Rand.

1-4. **Storage**
If the compressor frame or skid is to be stored at any time and it is not resting on a foundation, it should be supported the full length to prevent any possible sag or distortion. It will also be necessary to protect the unit from the weather, either in a building or by a tarpaulin or similar covering. The standard shipping preparation used by Dresser-Rand is suitable for outdoor equipment storage of up to six months. Additional protection for longer storage periods can be provided as an equipment option. This additional protection is normally selected to suit the particular storage requirements and environmental conditions.

**NOTE**
Local environment has such an effect on how well any rust preventative material or technique will hold up that Dresser-Rand cannot realistically accept responsibility for the storage, as we have no control of the local conditions at the installation site.

When a lubricated compressor cylinder is shipped, the main bores and gas passages are coated with rust preventative oil. This oil should not be removed or wiped out of the cylinder until actual starting of the compressor. All of the cylinder openings must be completely closed so that dirt, rain or dust cannot be blown into them. Consult Dresser-Rand on storage requirements when non-lubricated cylinders are involved.

**NL Cylinder Application - For Domestic applications,** aluminum paint is used in the cylinder gas passageways and heads as a corrosion preventative. On Export Shipments or Extended Storage, the gas passages and heads will be sprayed with a mineral rust preventative after the aluminum paint is applied. Pressure, partition packings and oil wiper rings are removed and placed into a greaseproof, waterproof, flexible barrier material followed by an outer wrap. Export or Extended Storage also requires the piston and rod assembly to be removed for shipment. Piston and rider rings are to be removed and packed in the same manner as the packing rings mentioned above. Piston and rod are sprayed with a fingerprint neutralizer, then the piston, rod and jamnut are sprayed with a rust preventative and finally wrapped in the same manner as the packing rings mentioned above.

Before storing the unit, it is important to check inside as well as outside the machine to be sure all running parts and exposed surfaces subject to corrosion are adequately protected. Make certain all covers are bolted tight and all openings are properly closed against moisture and dust. During storage, periodically remove covers and check the frame interior for condensation and for adequate protection of the internal surfaces. This should be done at least once a month.

1-4.1. **Extended Storage**
The following recommendations apply to compressors that are being stored for an extended period of over six months. Because of the variations between storage sites, these recommendations are presented only as guidelines, which should be modified to suit a particular situation. The following procedure is in addition to the storage instructions described in the preceding paragraphs.
1. The internal surfaces of the frame, frame extensions and the internal running gear components have been coated with a rust preventative at the factory; this protective coating must be left in place. While installing the compressor, take extreme care to prevent dirt, sand and other contaminants from entering it. Any contaminants introduced at this time must be thoroughly removed. After the machine is installed, it is important that all frame openings are closed and sealed to prevent contamination of the frame interior.

**NOTE**
When the compressor is to be stored for an extended period in an "as shipped" condition, an inspection schedule must be established whereby the frame interior can be periodically examined and the rust preventative coating restored as required. Any rust preventative applied to the parts during this period should meet U.S. Government Specification MIL-C-16173 (latest edition), Grade II, (such as Valvoline Tectyl 502-C® distributed by Ashland Oil, Inc.)

**NOTE**
For compressors stored longer than 6 months contact High Speed Reciprocating Compressors for storage guidelines.

2. All pipe connections must be plugged or fitted with suitable covers. Openings at the ends of the frame extensions must also be closed if the compressor cylinders are not mounted.

3. Ensure all access covers on the compressor are in place. It is important that the machine is adequately closed against moisture and dirt. Wipe the outside of the unit clean and dry. Spray all exposed "bright" surfaces, including that portion of the crankshaft between the drive end and frame, with rust preventative.

4. Bar over the crankshaft at least once every thirty days (more frequently if feasible) during storage. When possible, operate the priming oil pump to be sure that rust preventative oil is flushed onto all internal bearing surfaces. Do not allow the crankshaft to come to rest at the same position it was in before barring. A simple scribe line on an exposed portion of the shaft will aid in this determination.

5. Remove compressor valves from the cylinders and either store them submerged in an oil tank or coat them with a suitable rust preventative, wrap them and store them indoors.

6. When compressor cylinders are shipped, the main bores and gas passages are coated with rust preventative oil. This oil should not be removed or wiped out of the cylinder until it is time to start up the compressor. All of the cylinder openings must be completely closed so that dirt, rain or dust cannot be blown into them.

7. If the pistons, piston rods and packings are left installed during the storage period, the cylinder lubricator should be filled with rust preventative oil. Operate the lubricator so that the rust preventative oil is pumped into the lubricator lines and main bores at the same time the unit is being barred over. Prior to starting, drain this oil and flush the system with the normal lubricating oil.
8. The rust preventative oil we use is only good for six months. We cannot ensure that any parts put in storage over six months will not suffer damage.

9. The following inspections for corrosion should be made at the end of the initial 6-month period and each 6-month period thereafter.

   A. Inspect the internal surfaces of the frame.
   B. Inspect the cylinder bores.
   C. Inspect the piston, piston rods and packing for rust.
   D. Inspect the valves by removing the protective coating of protective paper and checking for rust. Carefully repackage these parts after inspection.
   E. If there is any rust present, clean and re-coat parts with a preservative oil.

10. When the compressor is ready to be placed in operation, drain all of the rust preventative oil and flush the system as described in CHAPTER 3 (OPERATION AND TROUBLESHOOTING) of the Instruction Manual before filling the lubrication system with the oil selected for regular operation.

1-5. Unit Throw Configuration (See Page 10)
See Drawing to View Throw Configuration

1-6. Recommended Allowable Forces and Moments (See Page 11)
See Drawing to View Forces and Moments