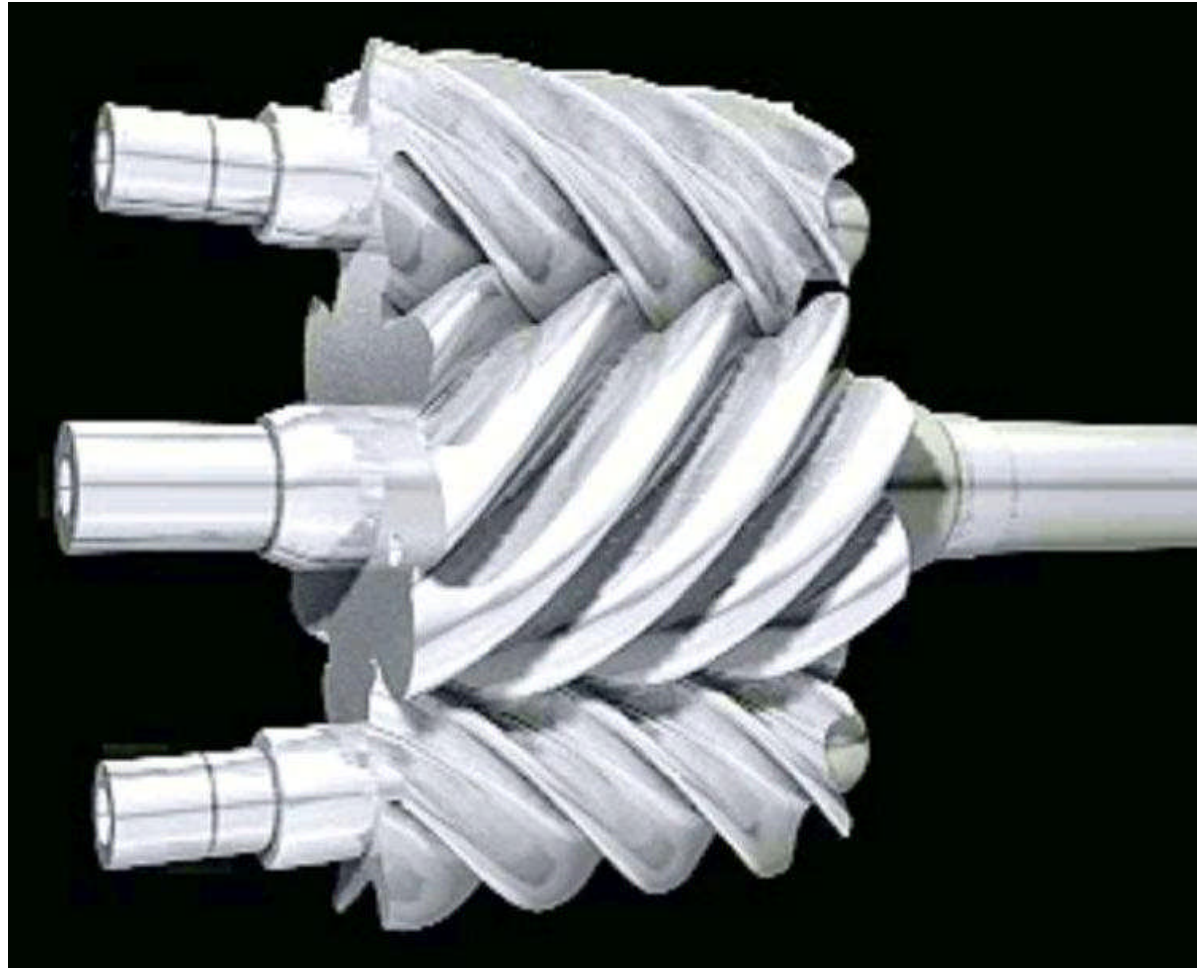


23XR Screw Compressor

- R-134a Design
- Three Rotors
 - Balanced Loads
 - Reduced Loads
- Greatly Reduced Oil Flow
 - Improved Machining
 - Reduced Clearances
 - Conformal Coatings

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23XR Rotors



Conformal Coatings

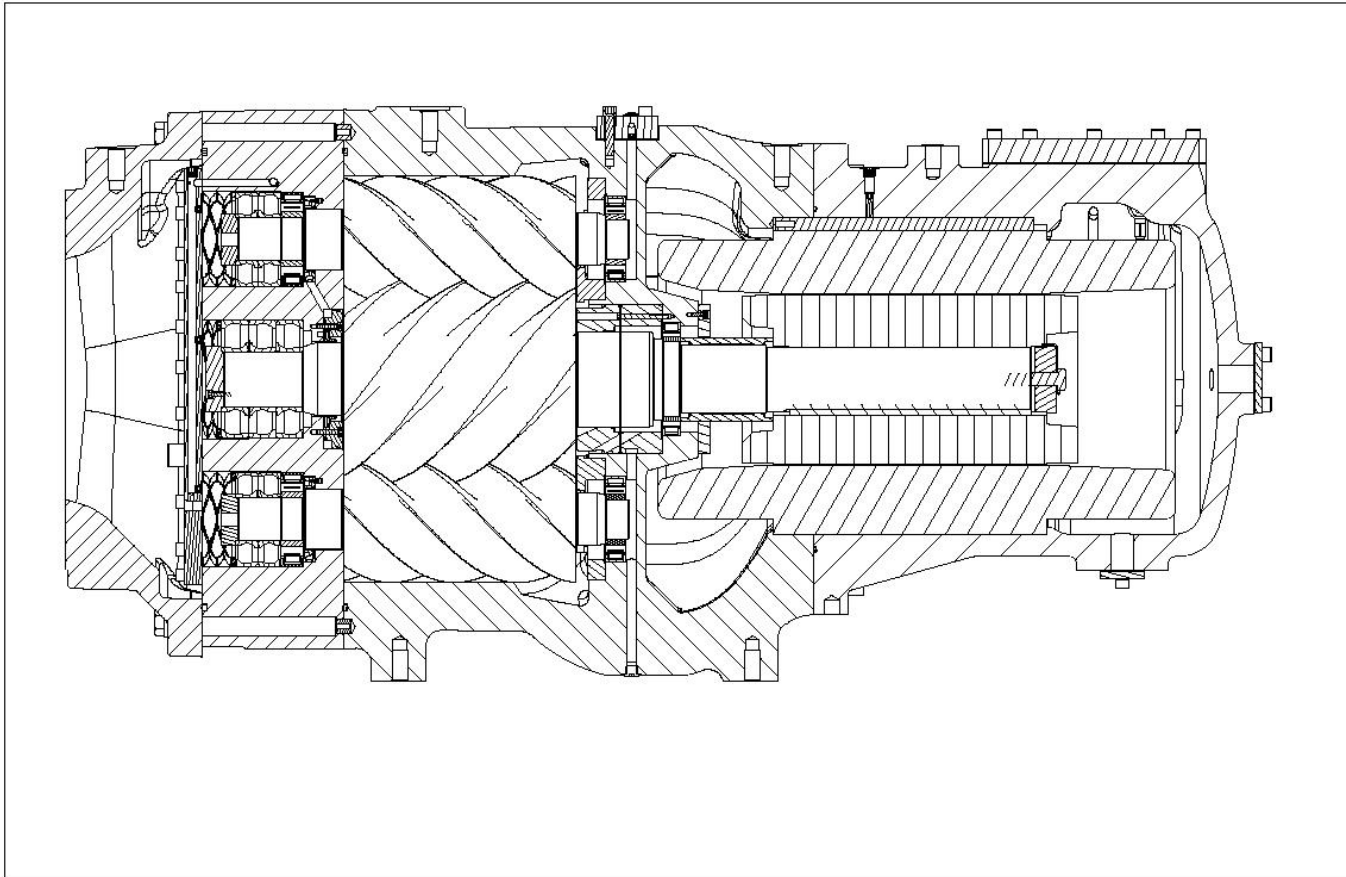


Rotors

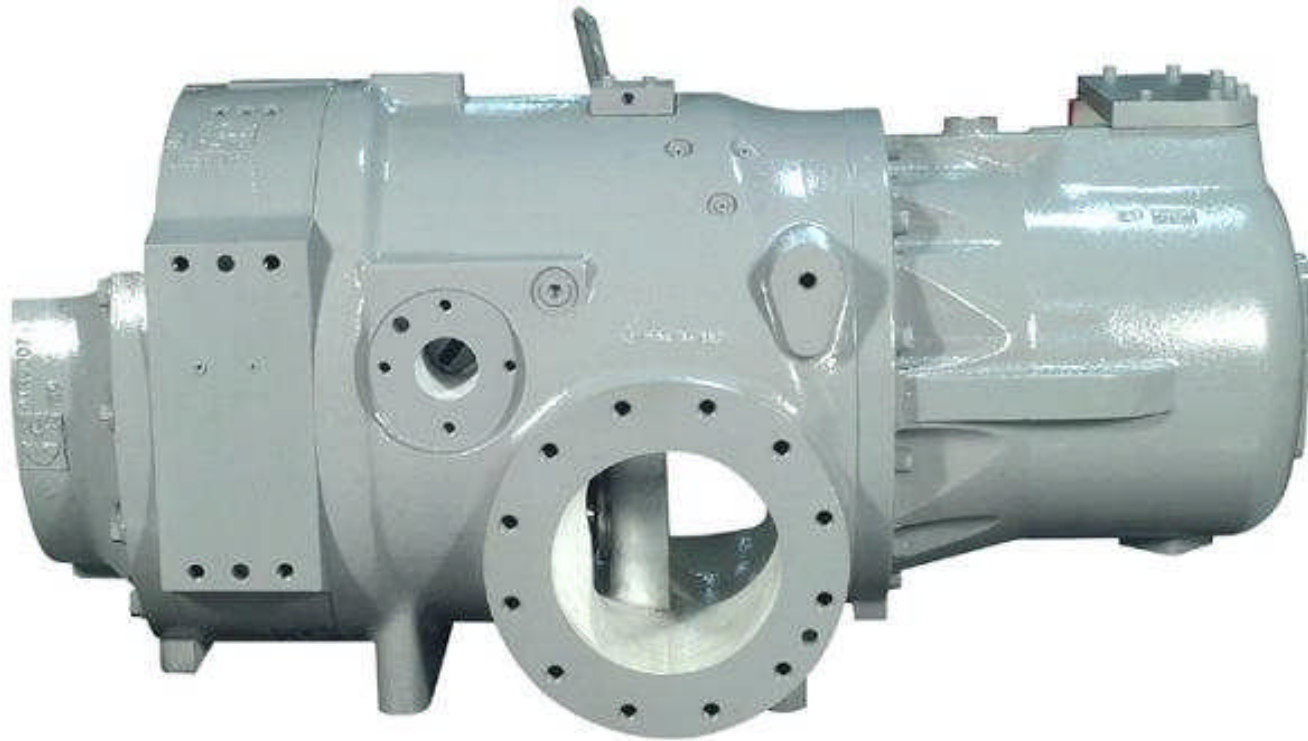


End Wall

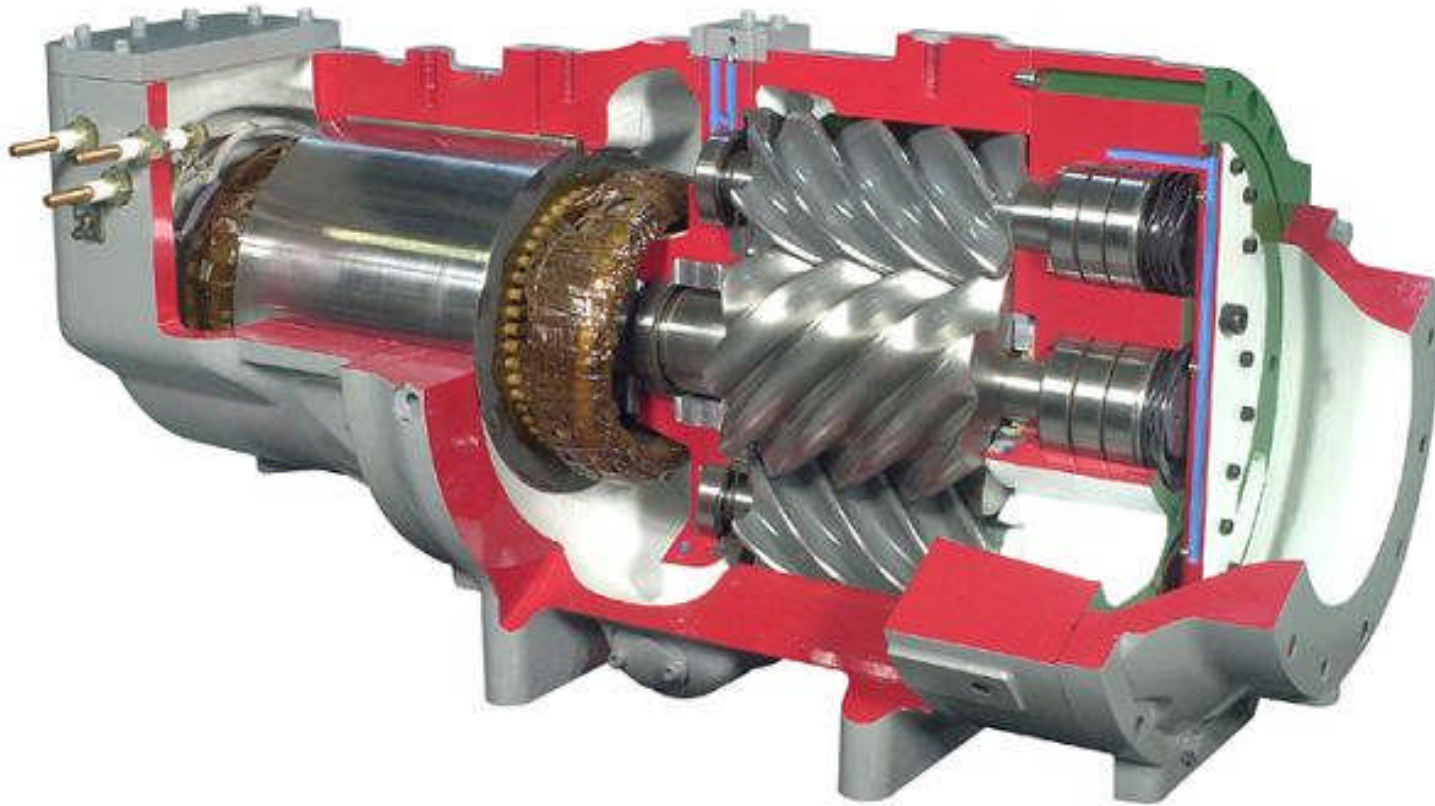
23XR Cross Section



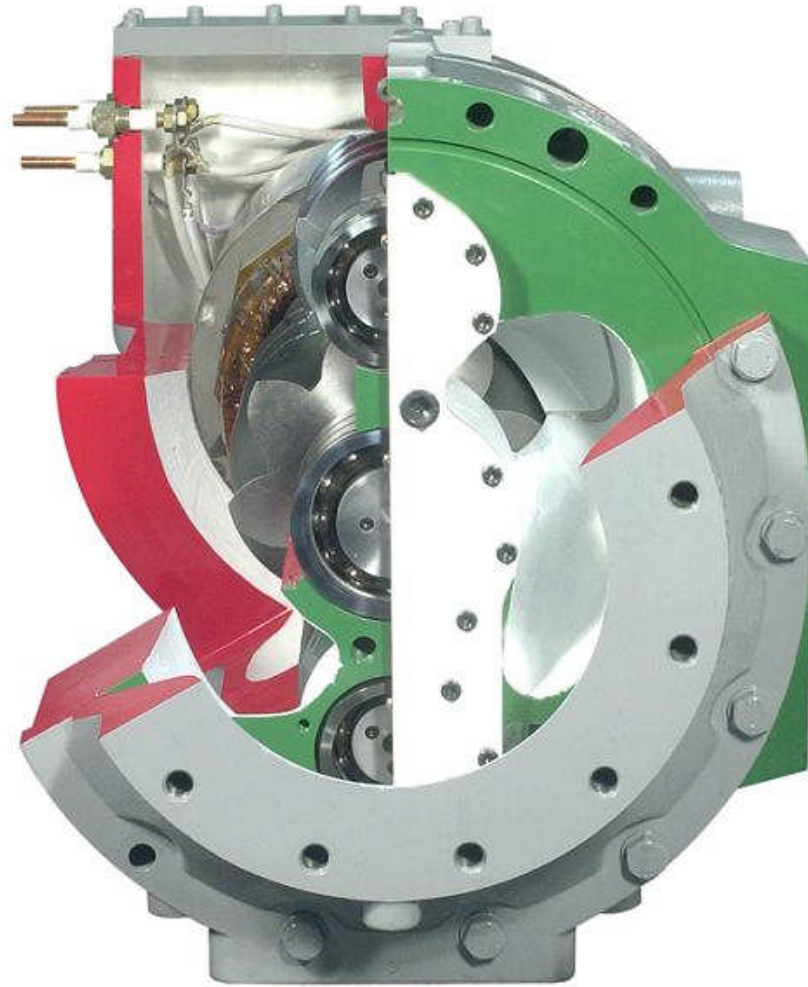
Compressor Inlet



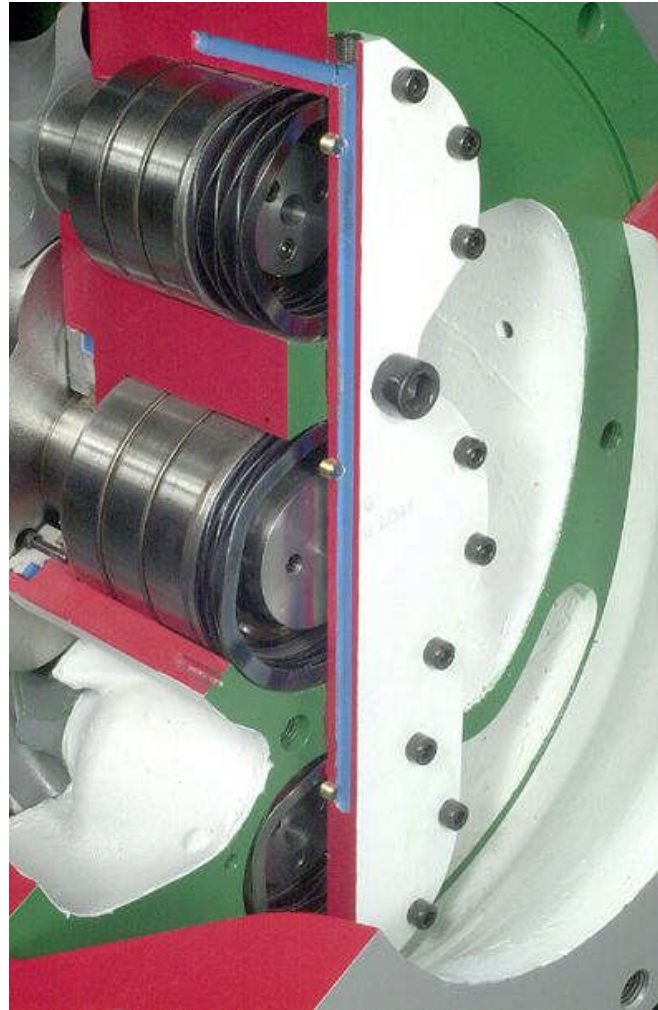
23XR Compressor



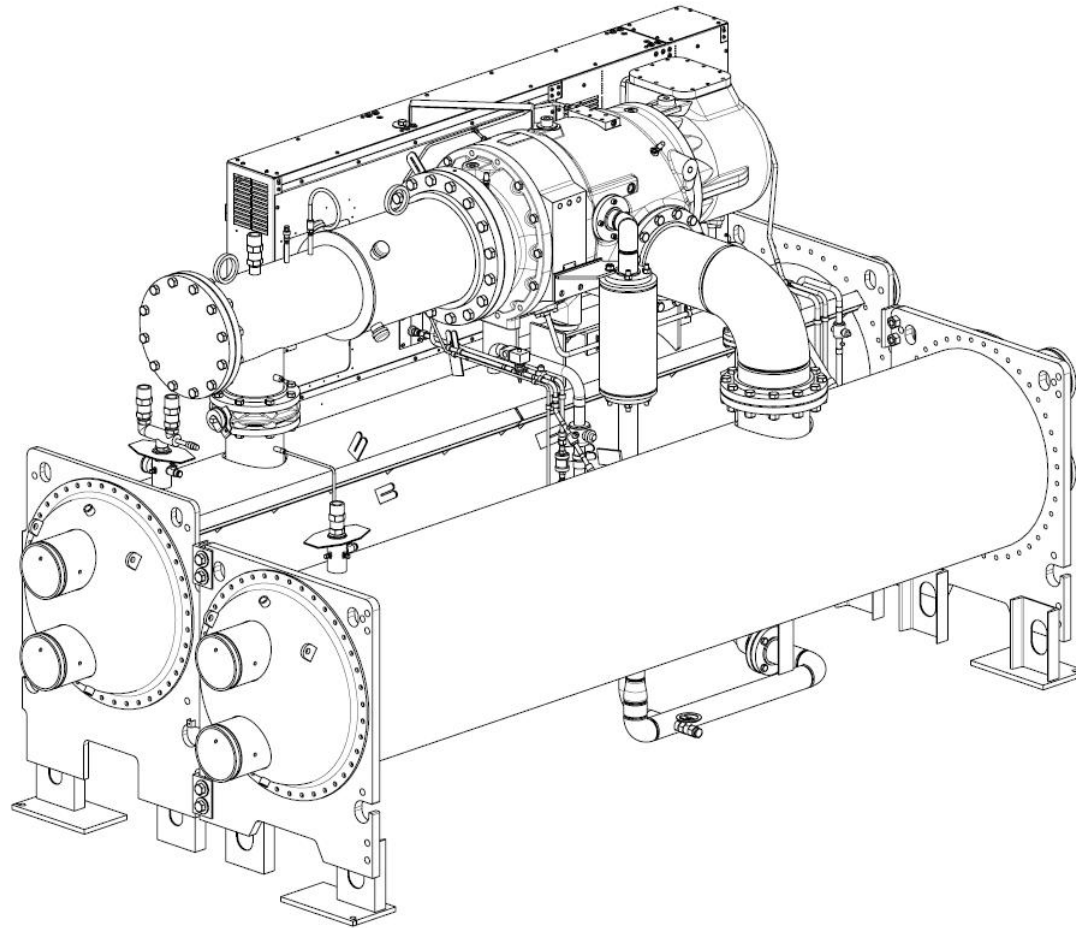
Compressor Outlet



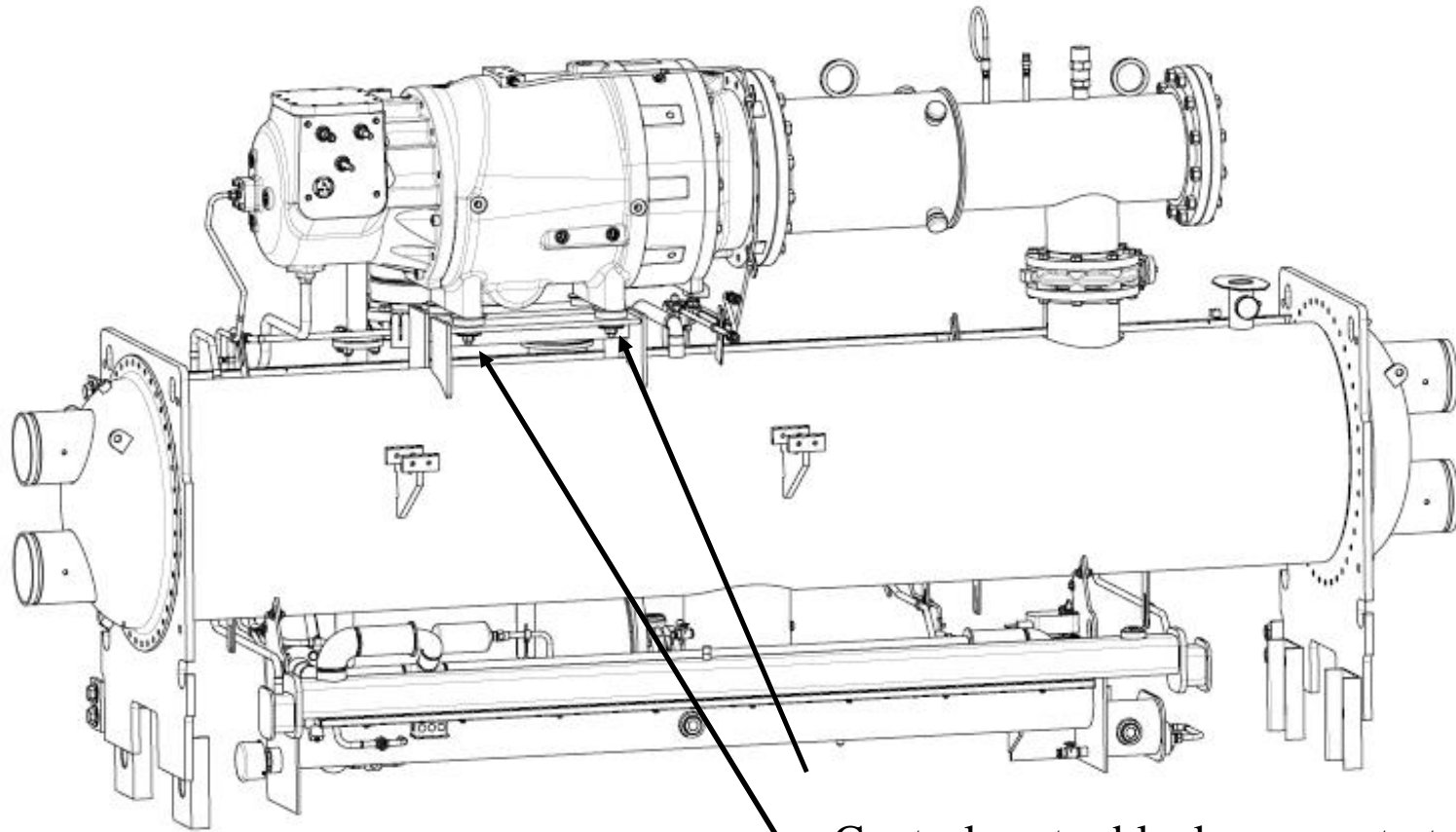
Compressor Outlet Bearings



23XR Compressor Teardown

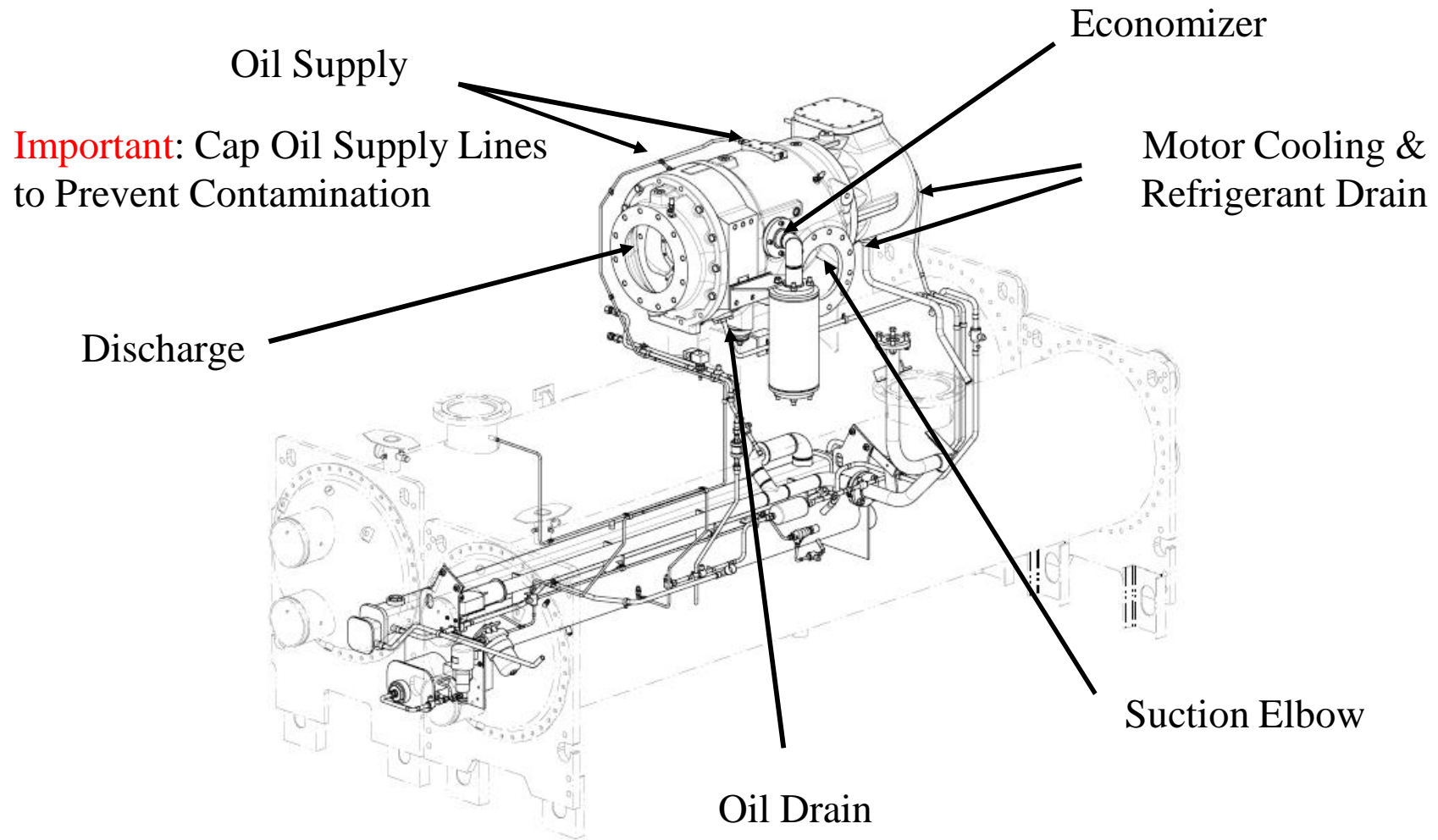


Remove Control Center



Control center blocks access to two compressor mounts

Remove Compressor Piping



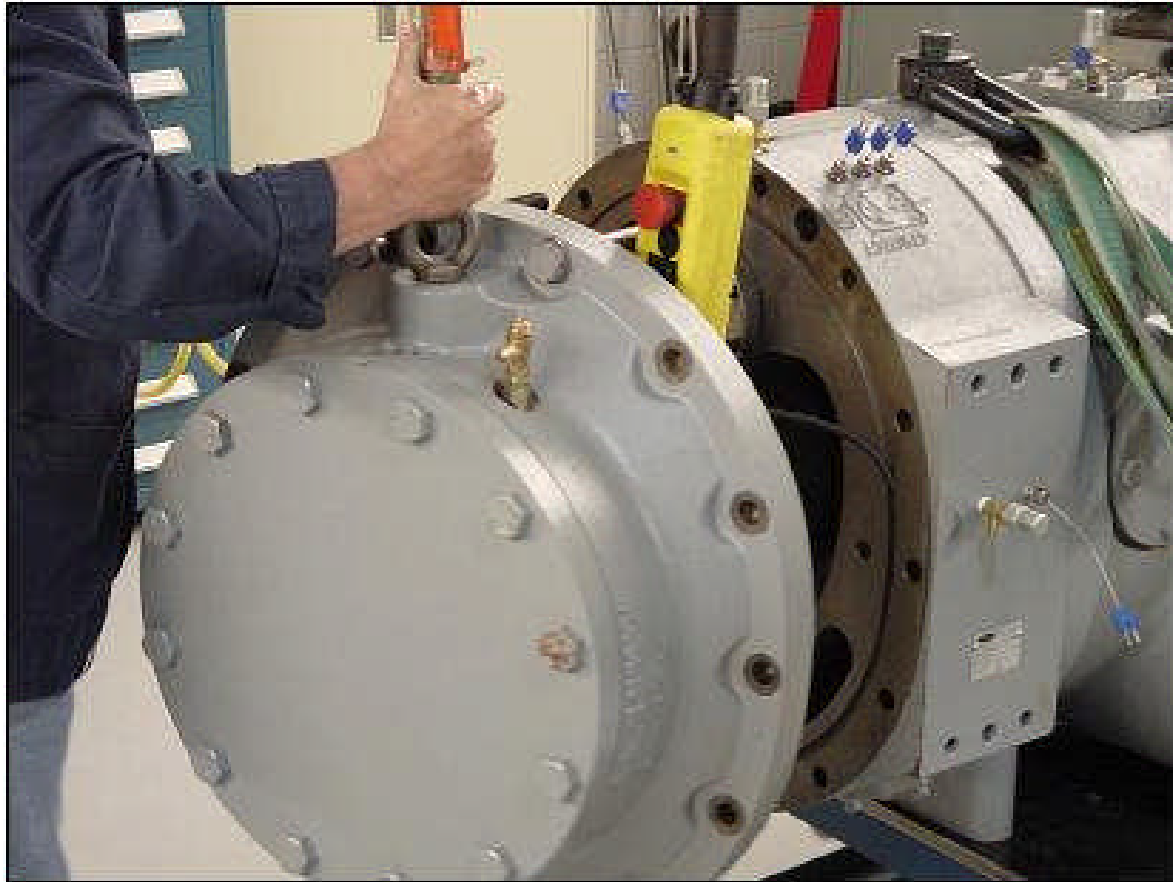
Lower Compressor to Work Table



Note: Compressor
Weight = 2207 kg
(4866 lbs)

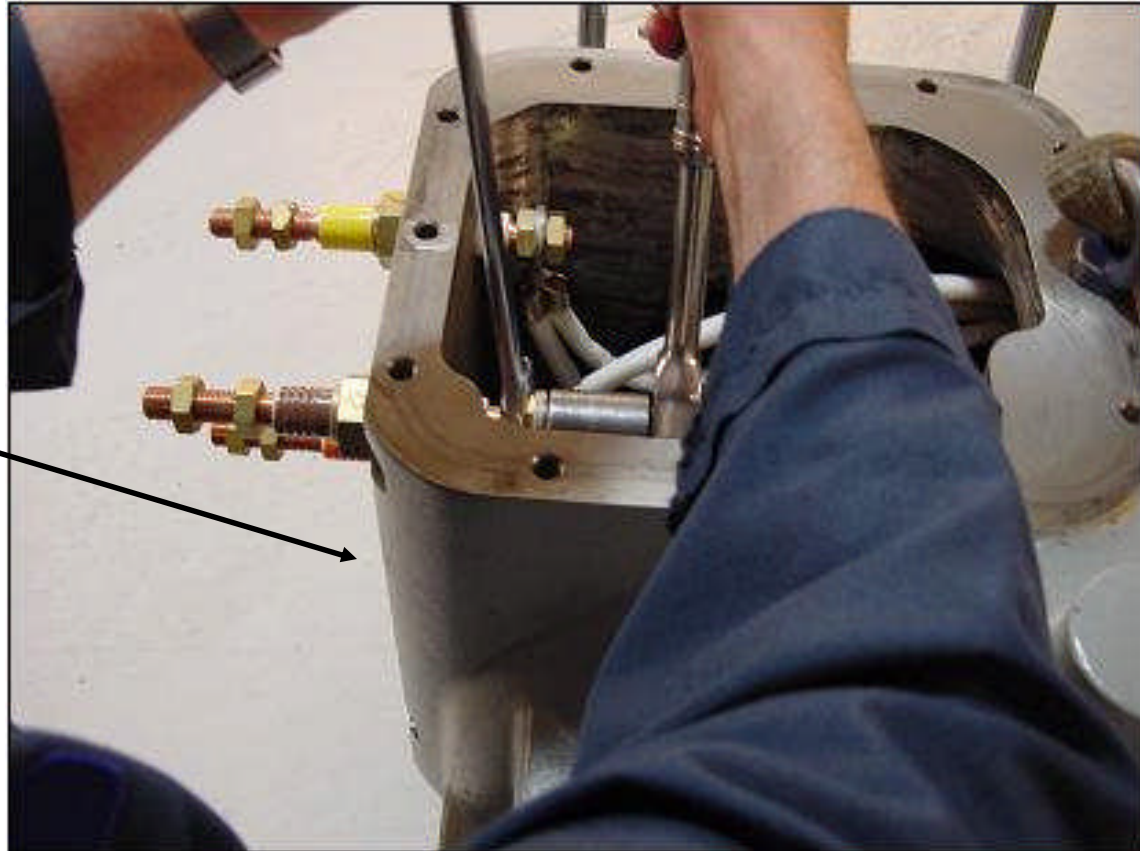
M30 Threaded Holes

Remove Discharge Housing

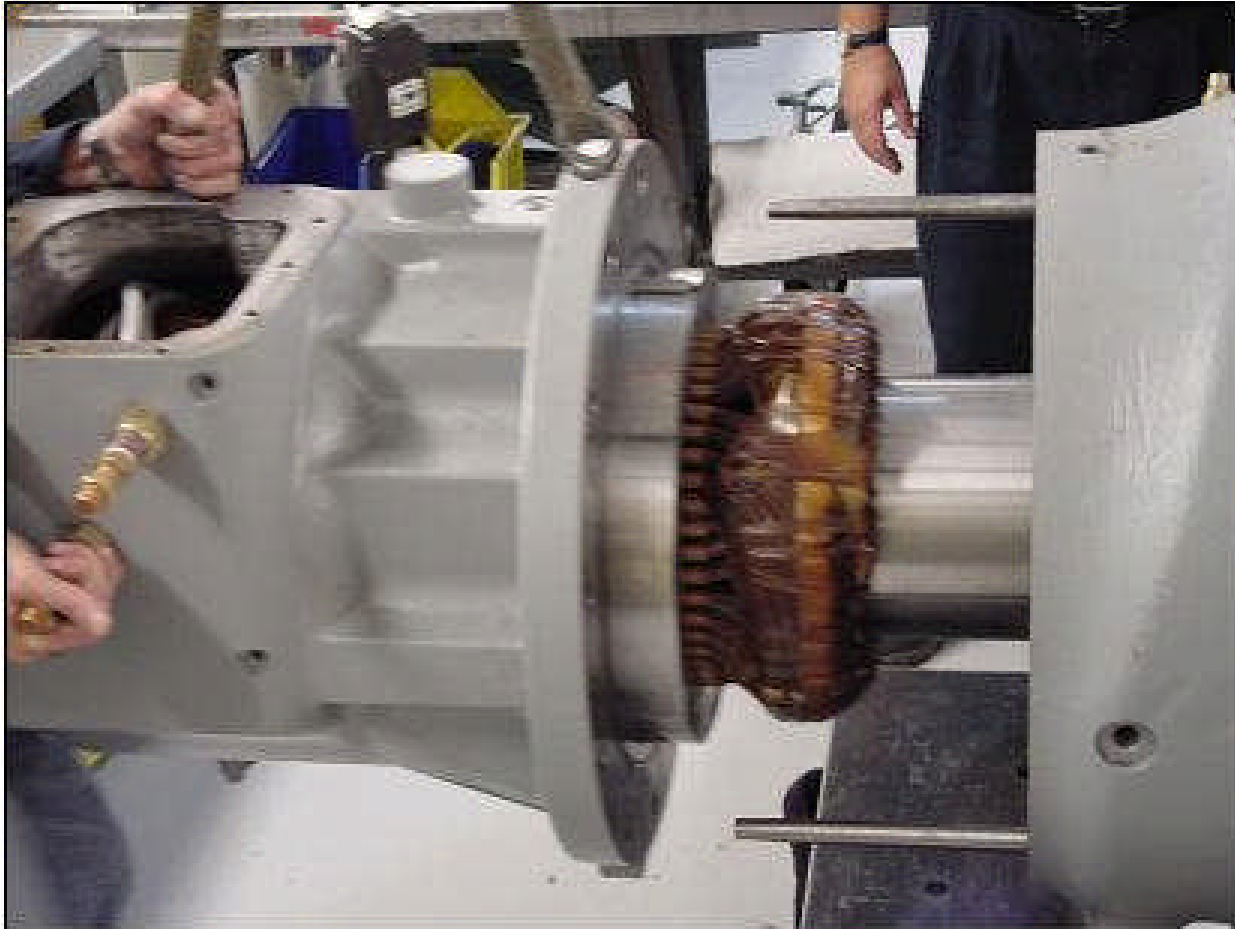


Disconnect Motor Leads

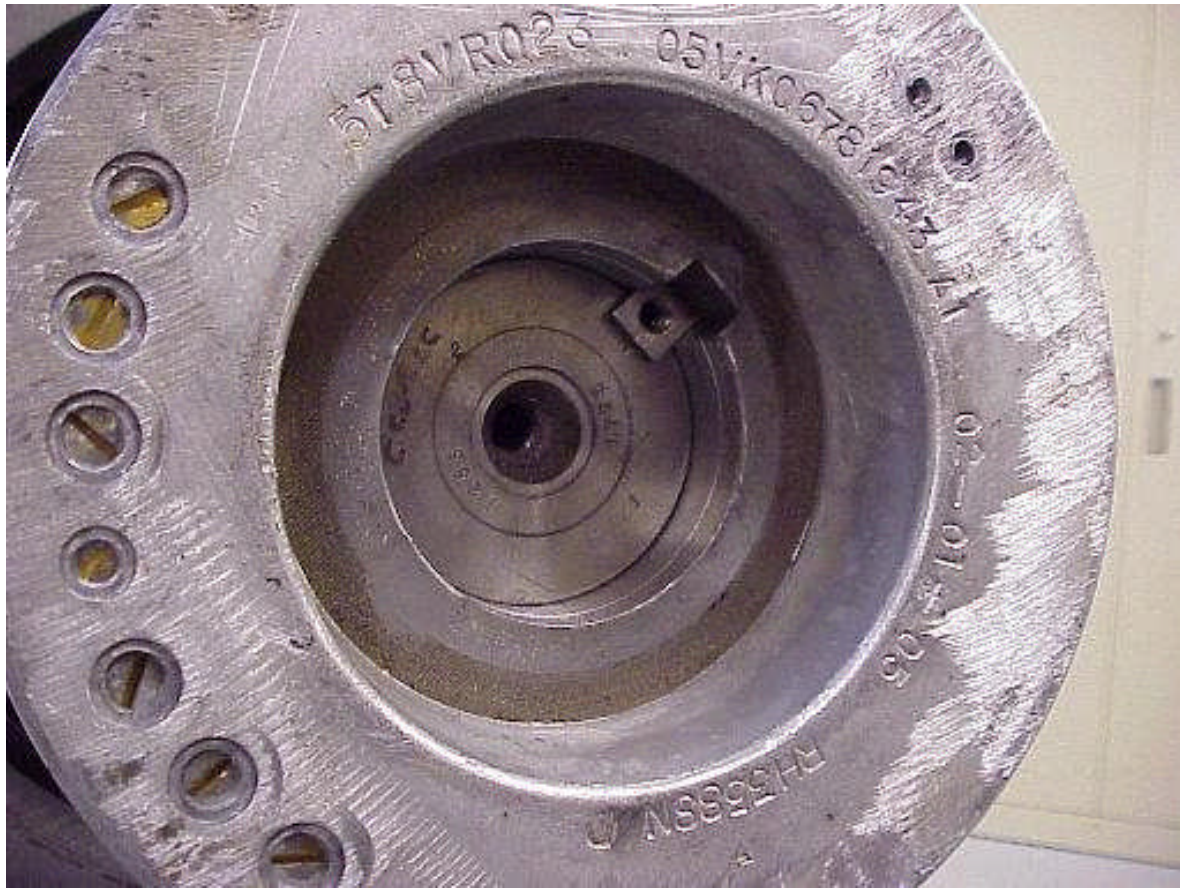
Also disconnect
motor temperature
sensor terminal
block



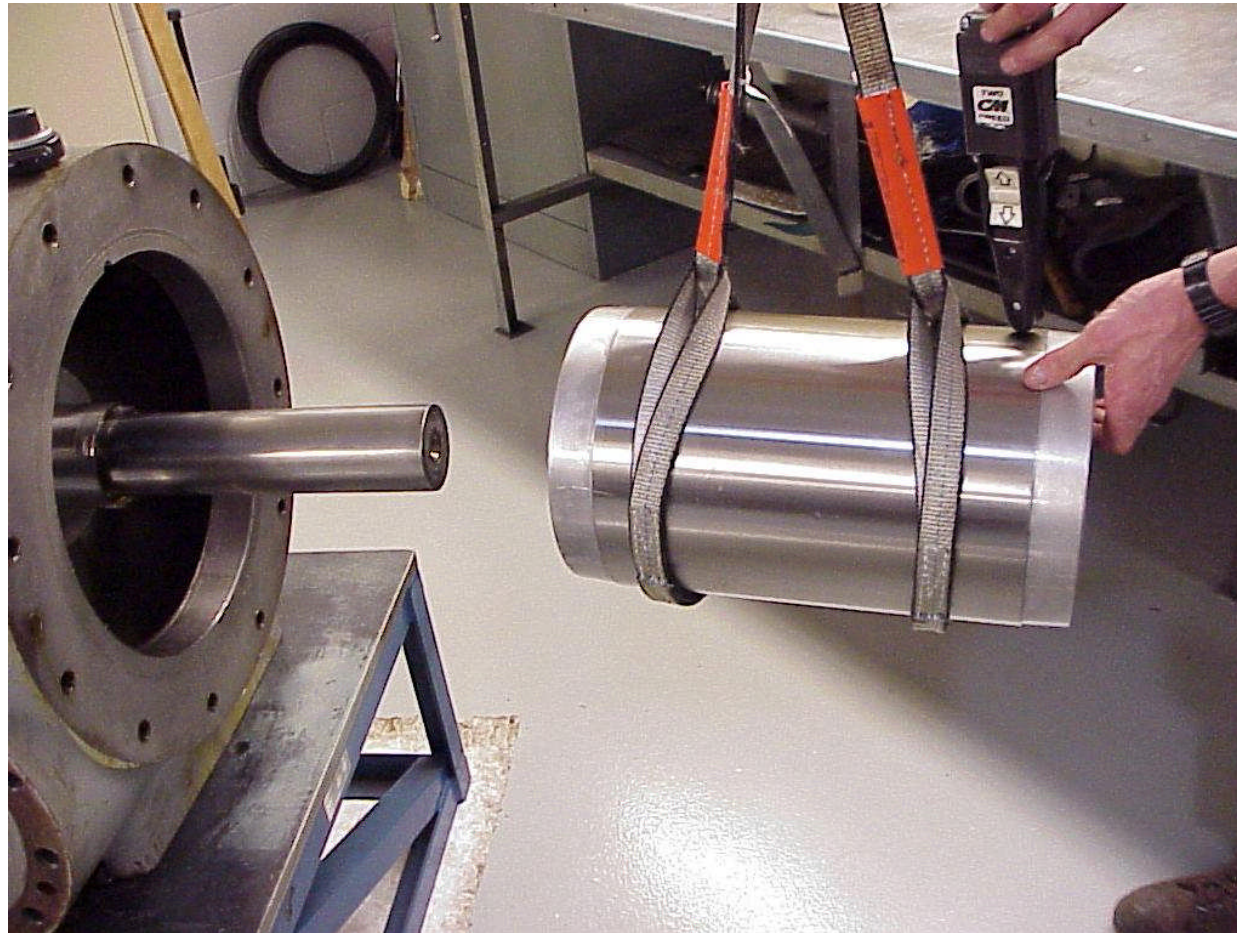
Remove Stator Housing



Rotor Key



Remove Rotor

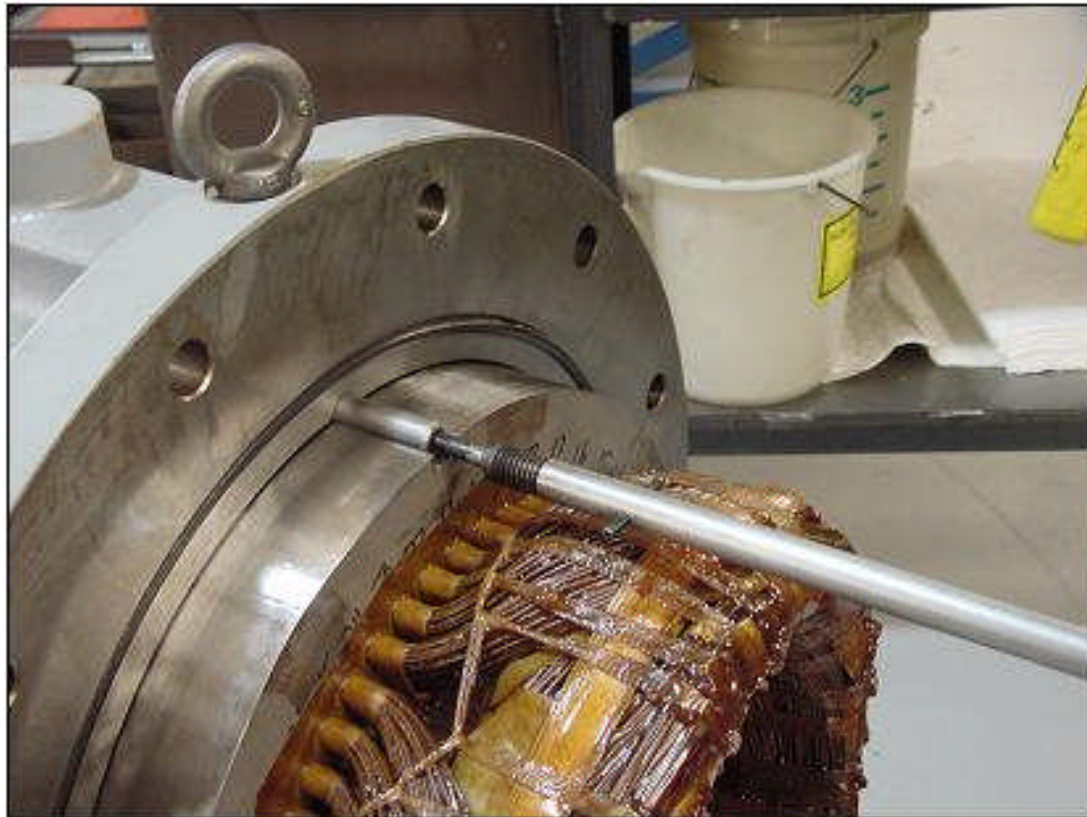


Remove Male Rotor Labyrinth

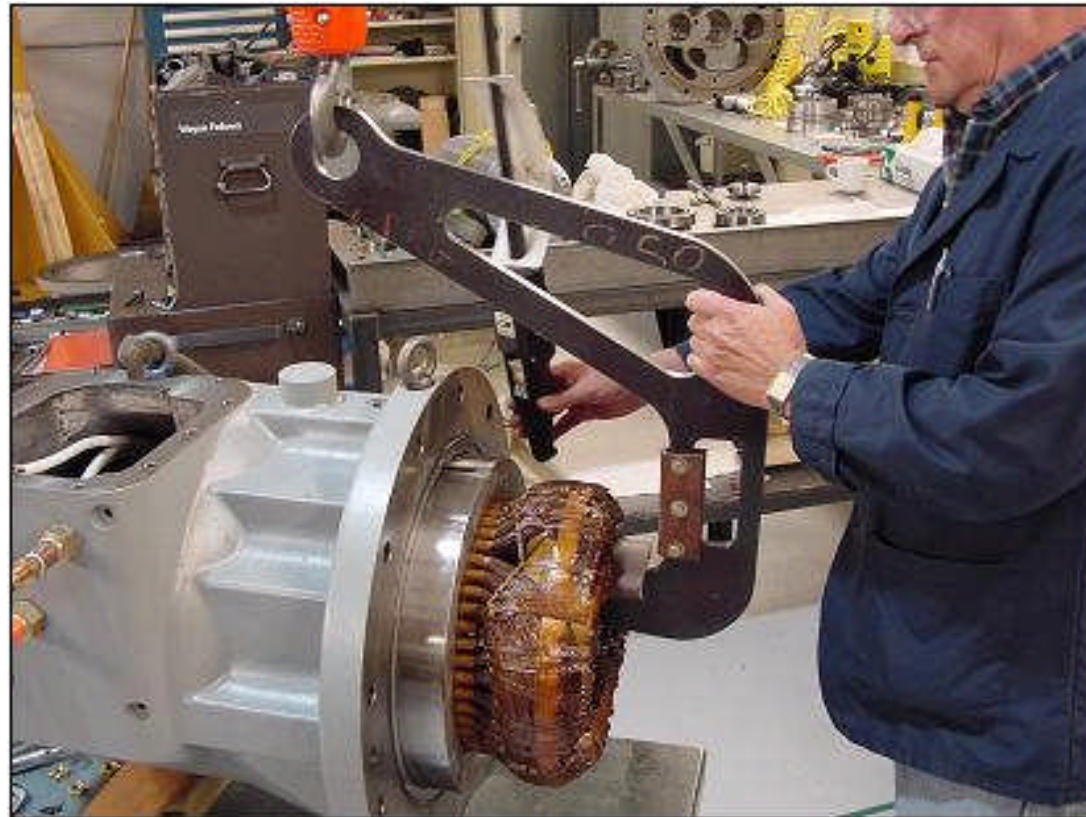
Note: Labyrinth is on motor side of male rotor shaft



Remove Stator Key



Remove Stator from Stator Housing



Install Protective Nylon Sleeve

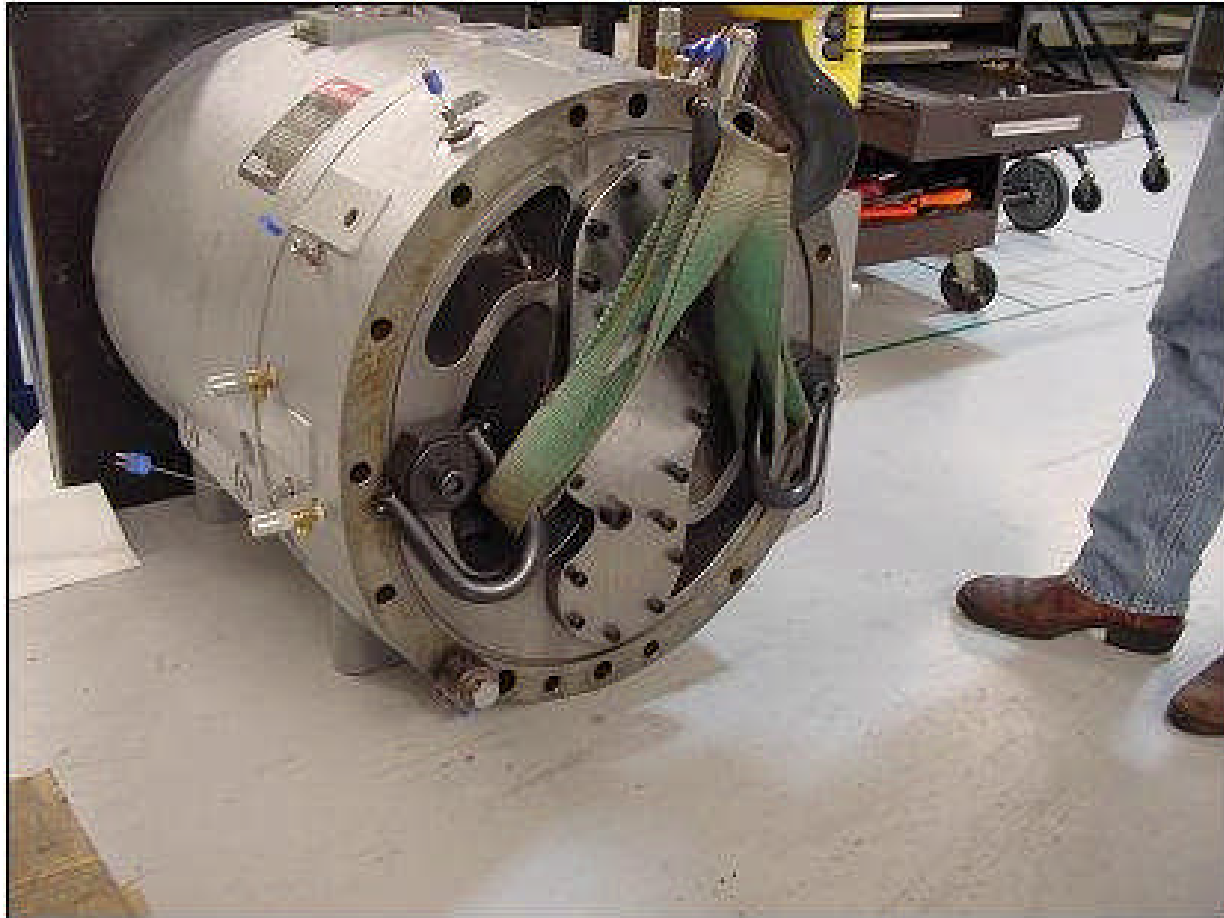


Secure Work Table in Place



Work table bolt circle
matches motor housing
bolt circle

Install Lifting Shackles in Outlet Case



Rotate Compressor Vertically



Lift Outlet Case and Rotors to Check Clearance

Note: Assembly lifted unusually high to demonstrate purpose of protective nylon sleeve on male rotor shaft



Compressor Nameplate

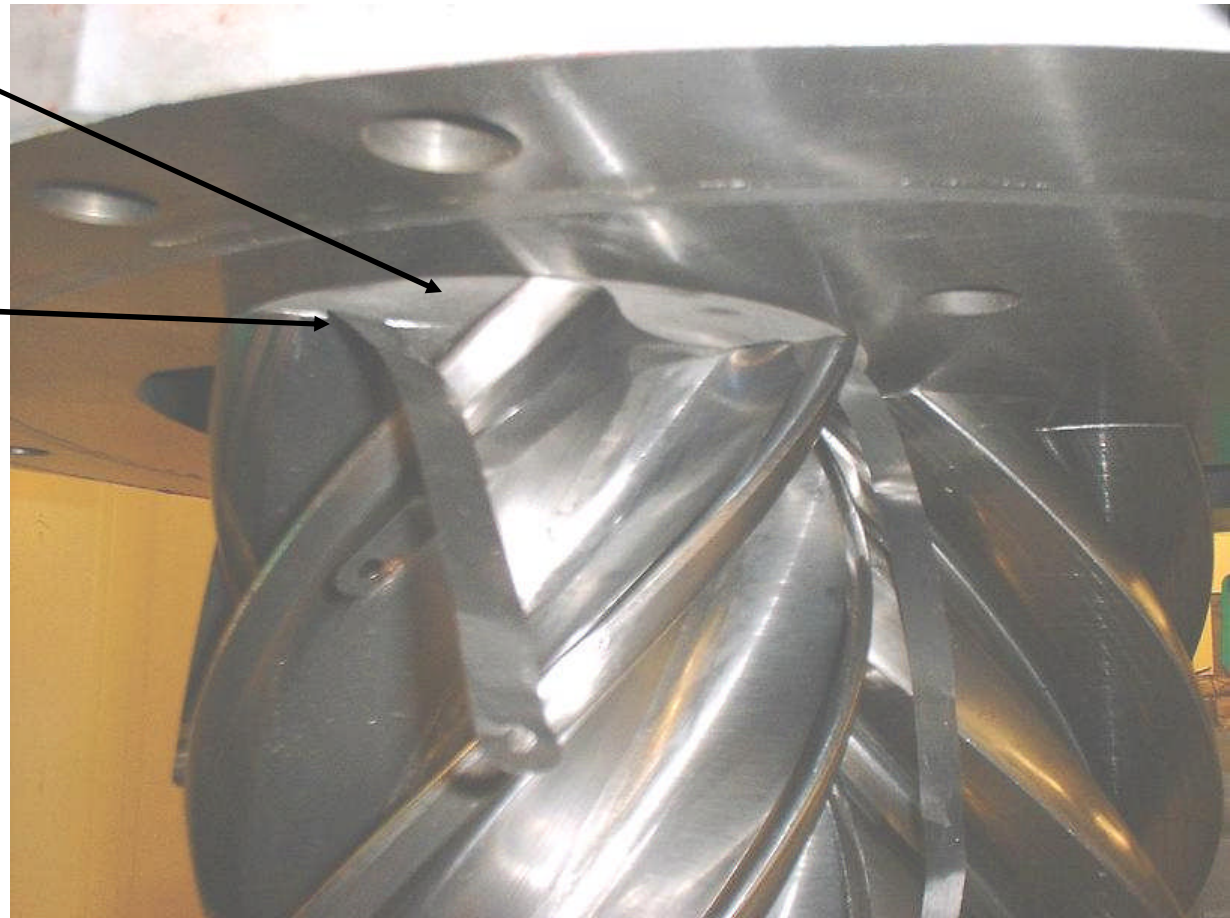
Guide Pins

Check Rotor End Clearance

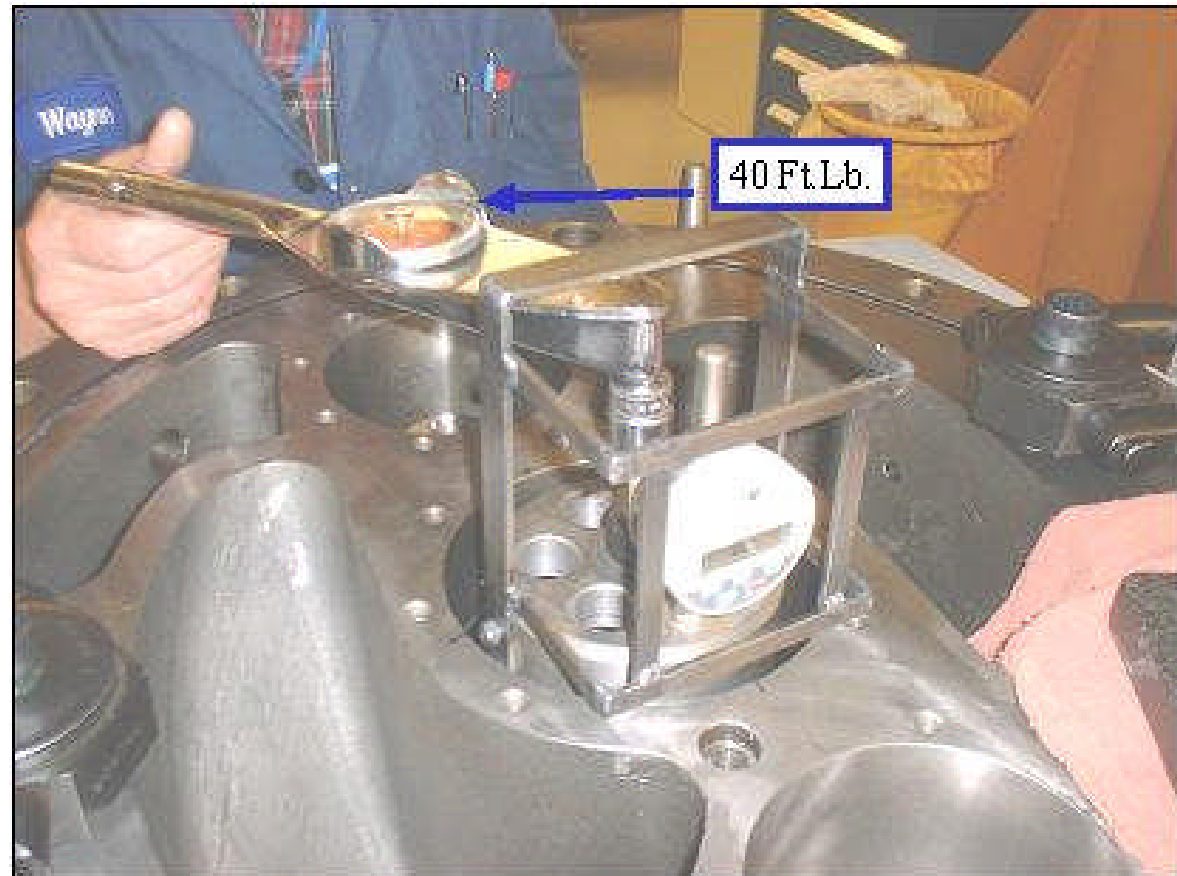
Conformal Coating

Design Rotor End
Clearance = .035 mm
(.0014 in)

Note: 23XL Rotor
Clearance is .13 mm
(.005 in)



Shim Thickness Measurements



Note: This measurement is taken during the assembly process

Remove M10 Outer Bearing Cover Bolts First

DANGER: Outer M10 bolts cannot support counterthrust bearing spring force. Remove outer M10 bolts first. Remove center M20 bolts last



Bearing End Cover Warnings

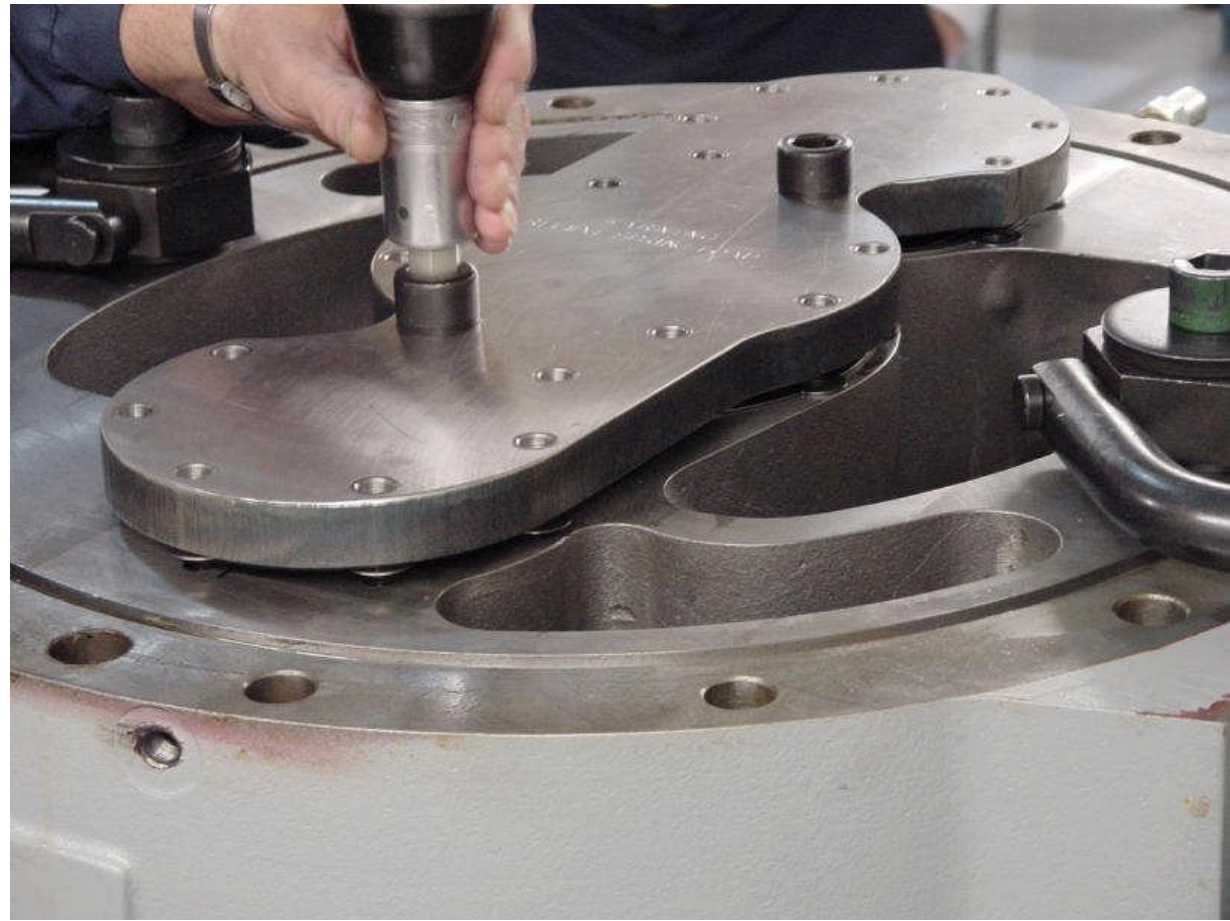
(2) M20 Bolt Holes



(21) M10 Bolt Holes

Remove M20 Inner Bearing Cover Bolts Last

Note: Loosen M20 bolts
evenly to distribute the
counterthrust spring force



Counterthrust Springs



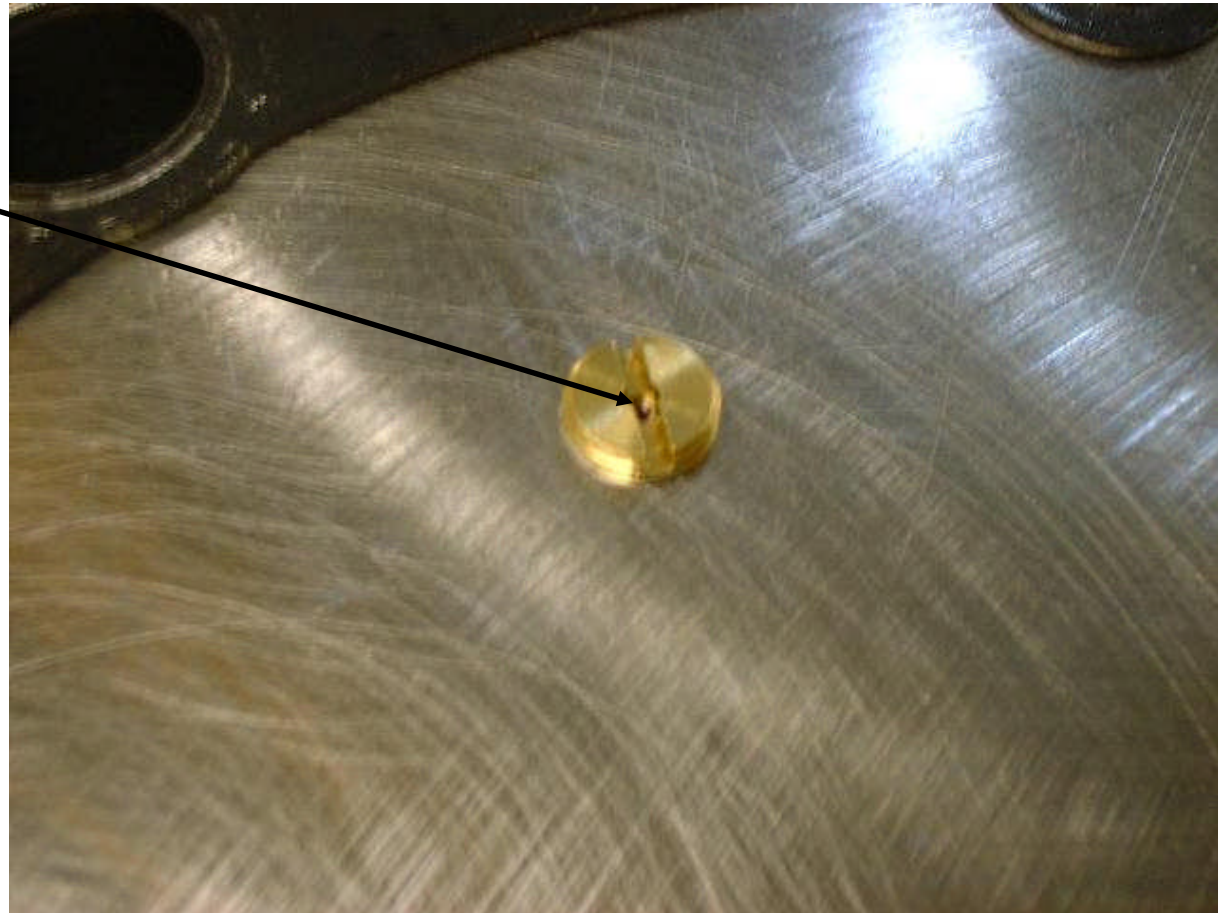
Bearing Cover Oil Orifices



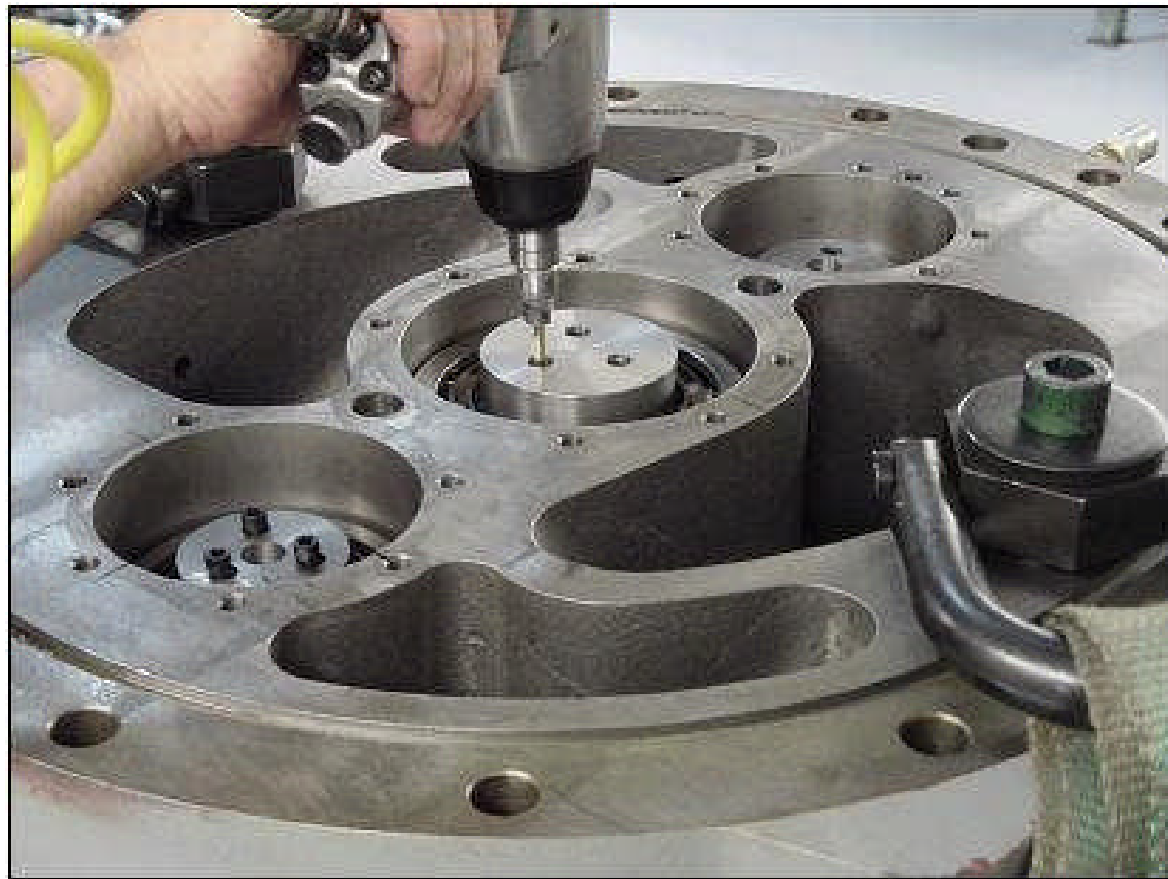
Oil
Metering
Orifices

Bearing Cover Oil Orifice

Oil Orifice Diameter =
.587 mm (.0231 in)



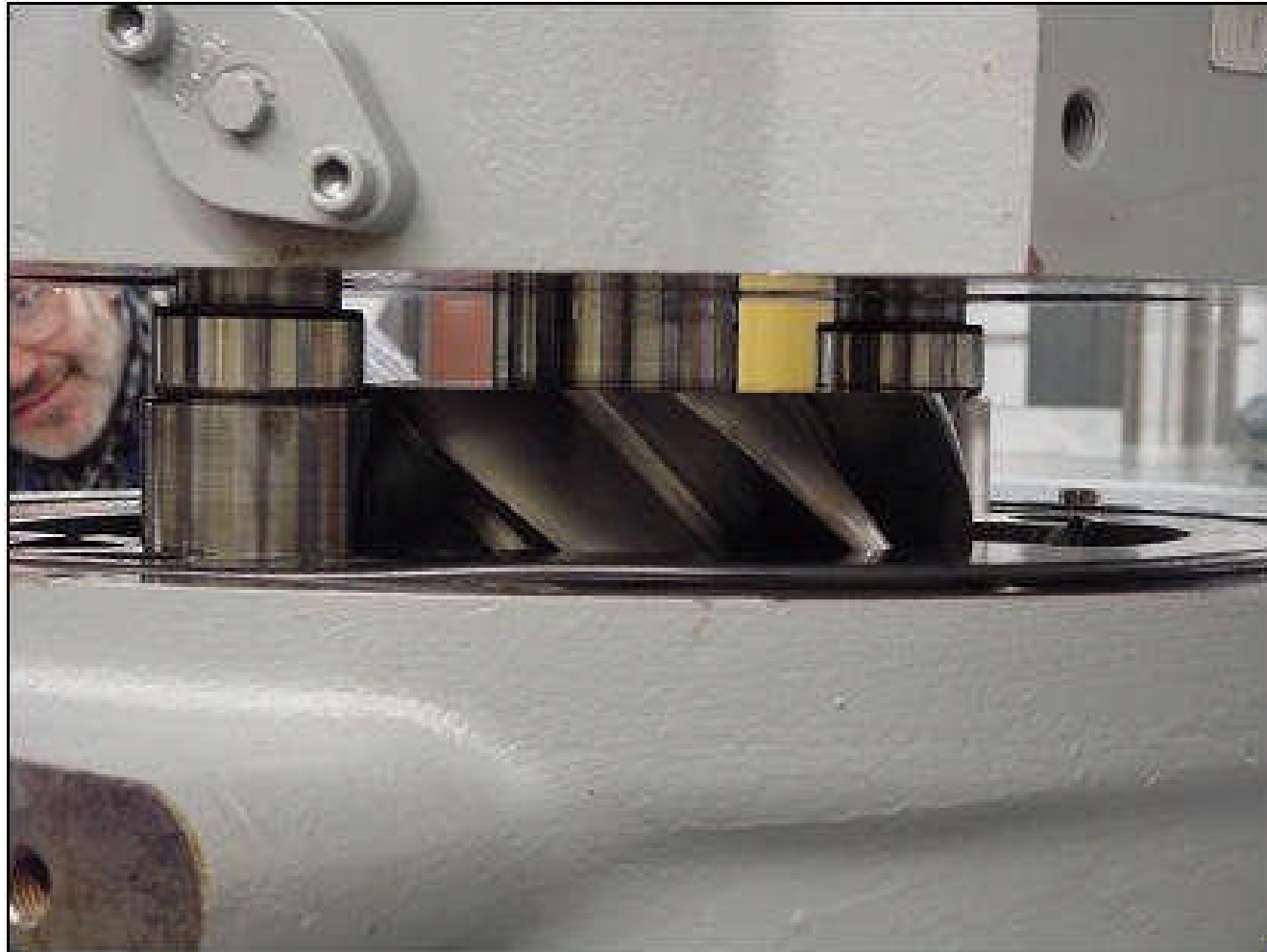
Remove Rotor Caps



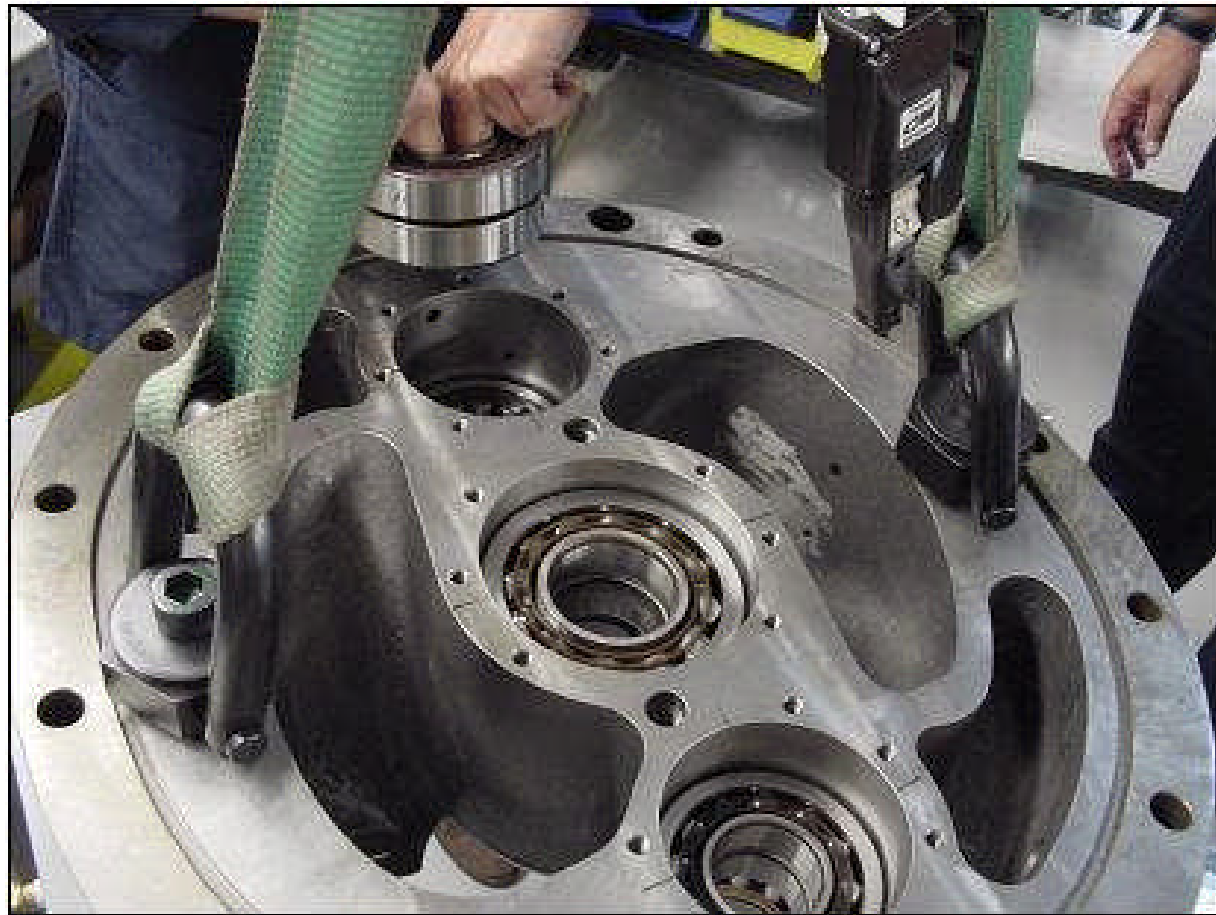
Press Rotor Shafts from Outlet Case Bearings



Press Rotor Shafts from Outlet Case Bearings



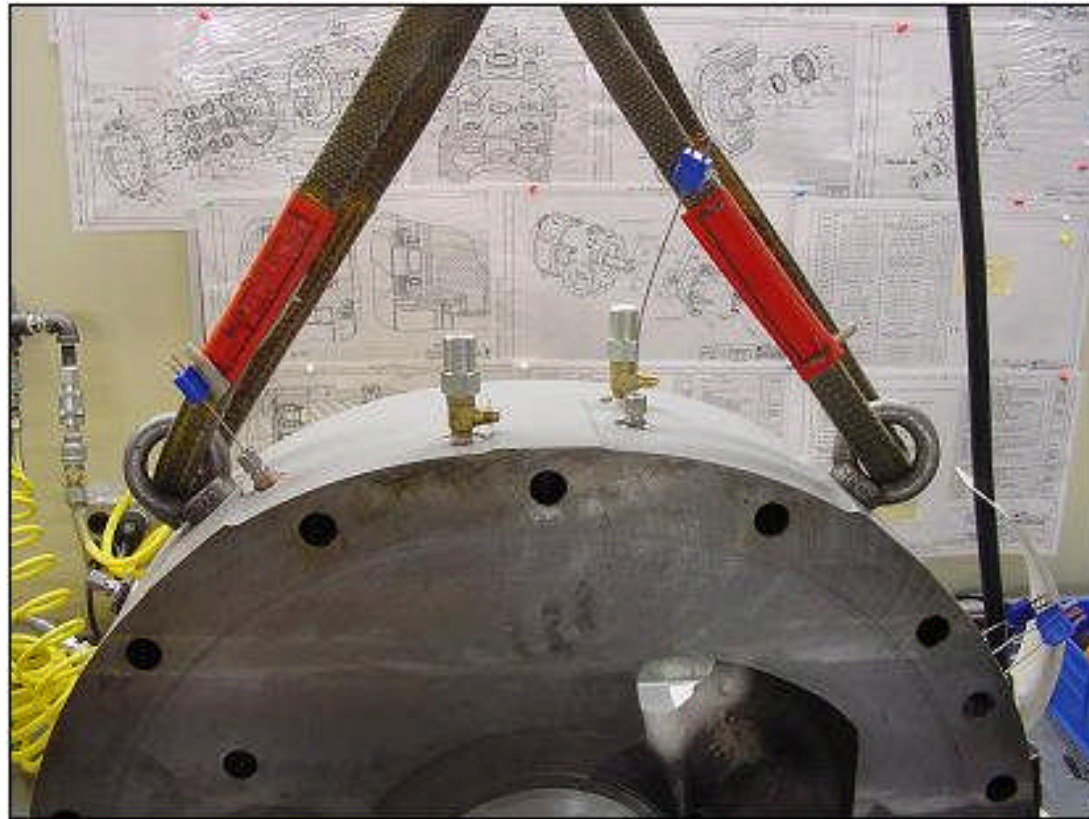
Remove Outlet Case Bearings



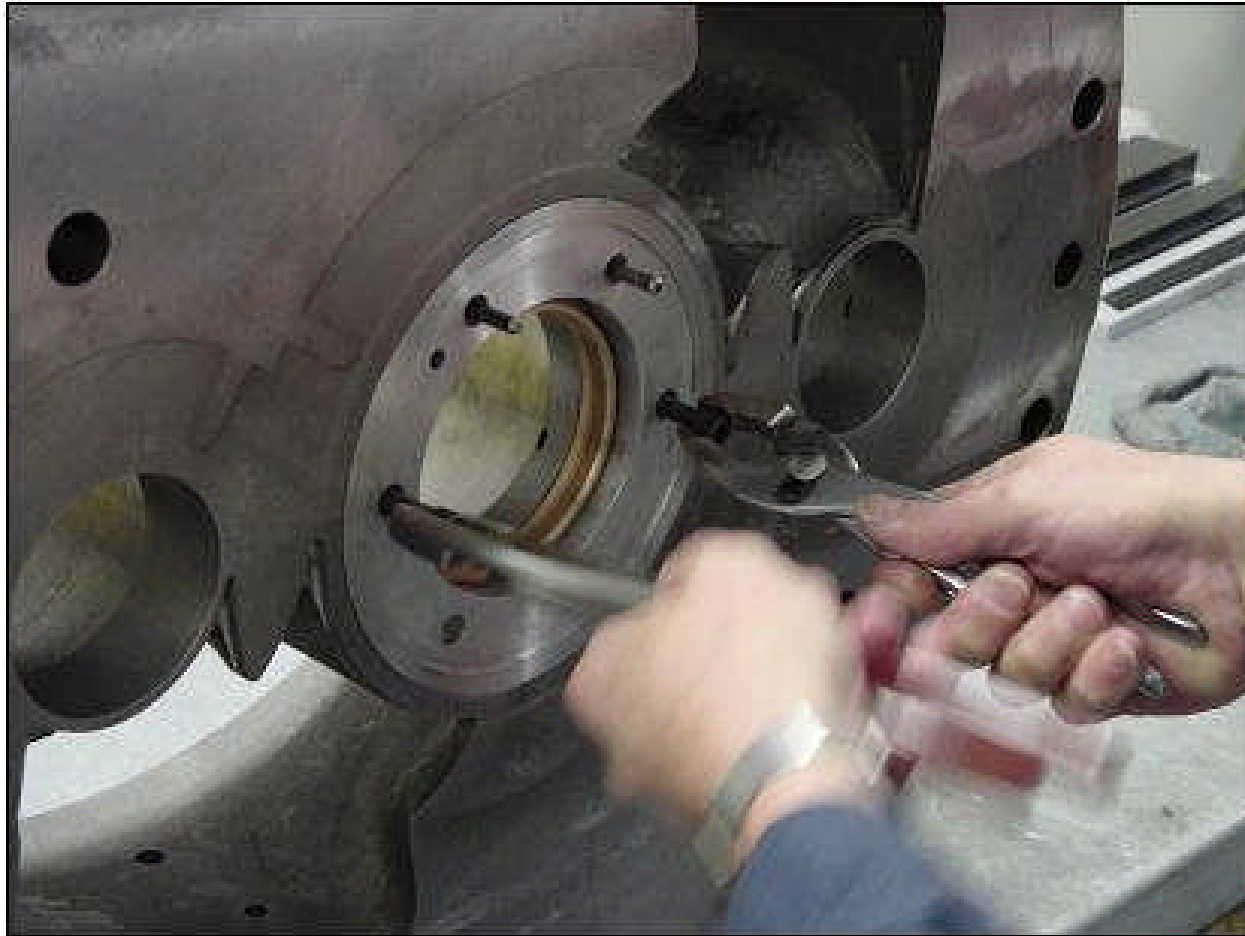
Outlet Case Bearings



Position Outlet Case Upright



Remove Male Rotor Axial Seal with Jacking Screws



Remove Female Rotors



Protect Rotors from Damage

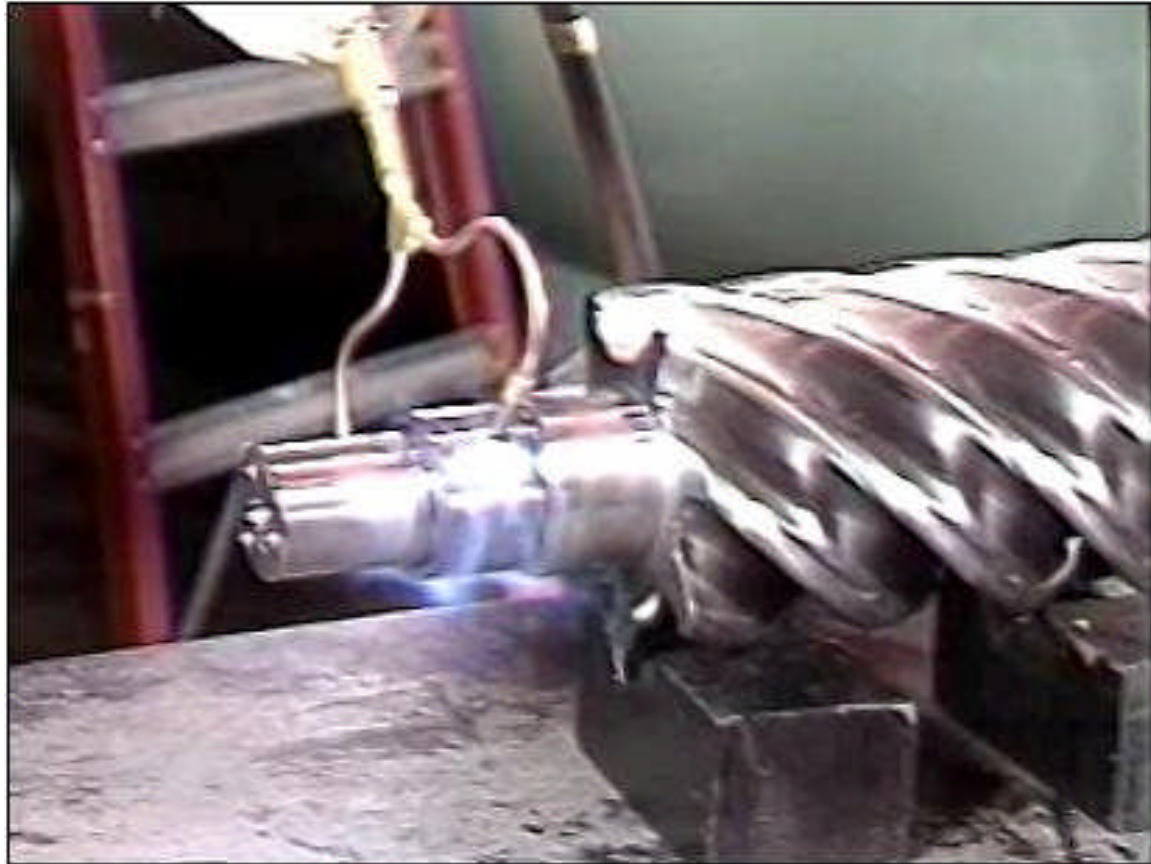


Protect Male Rotor from Damage



Note: Male Rotor
Weight = 131 kg
(289 lbs)

Heat Inner Roller Bearing Race to Remove



Remove Inlet Seals



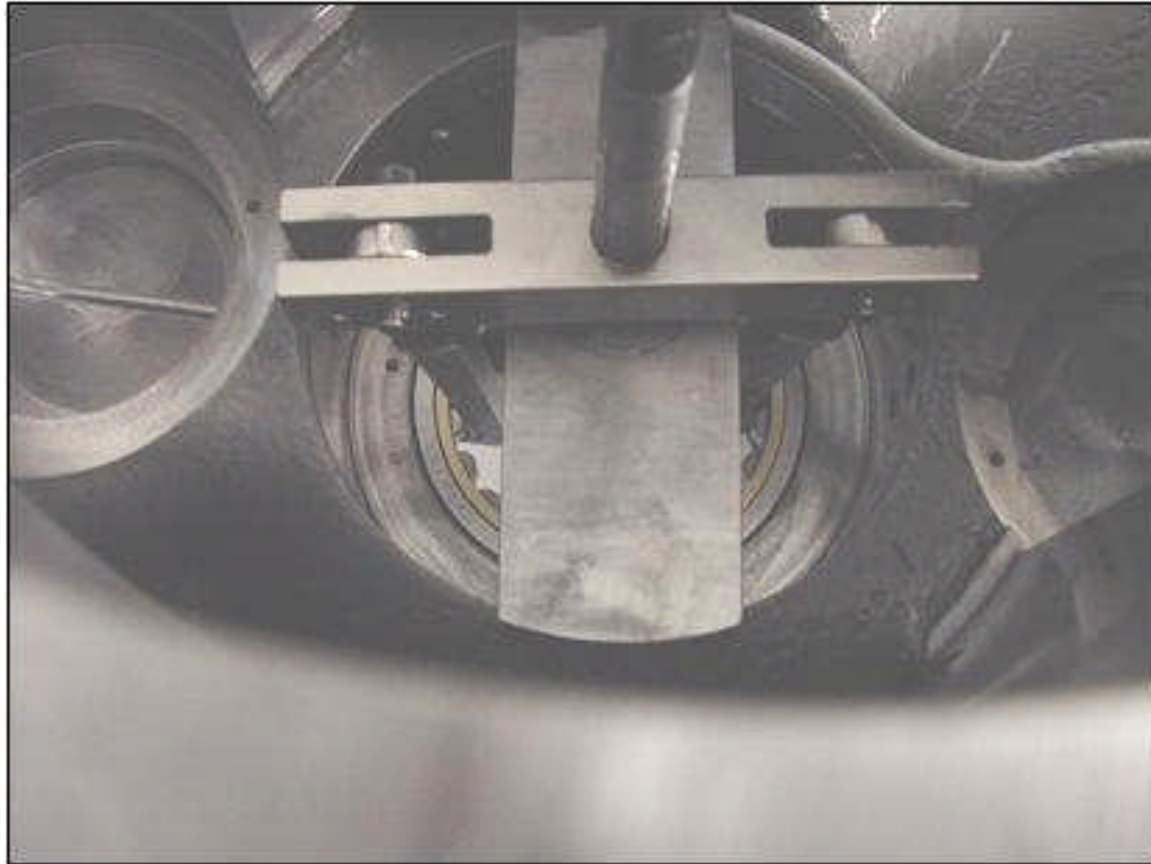
Remove Inlet End Female Rotor Roller Bearings



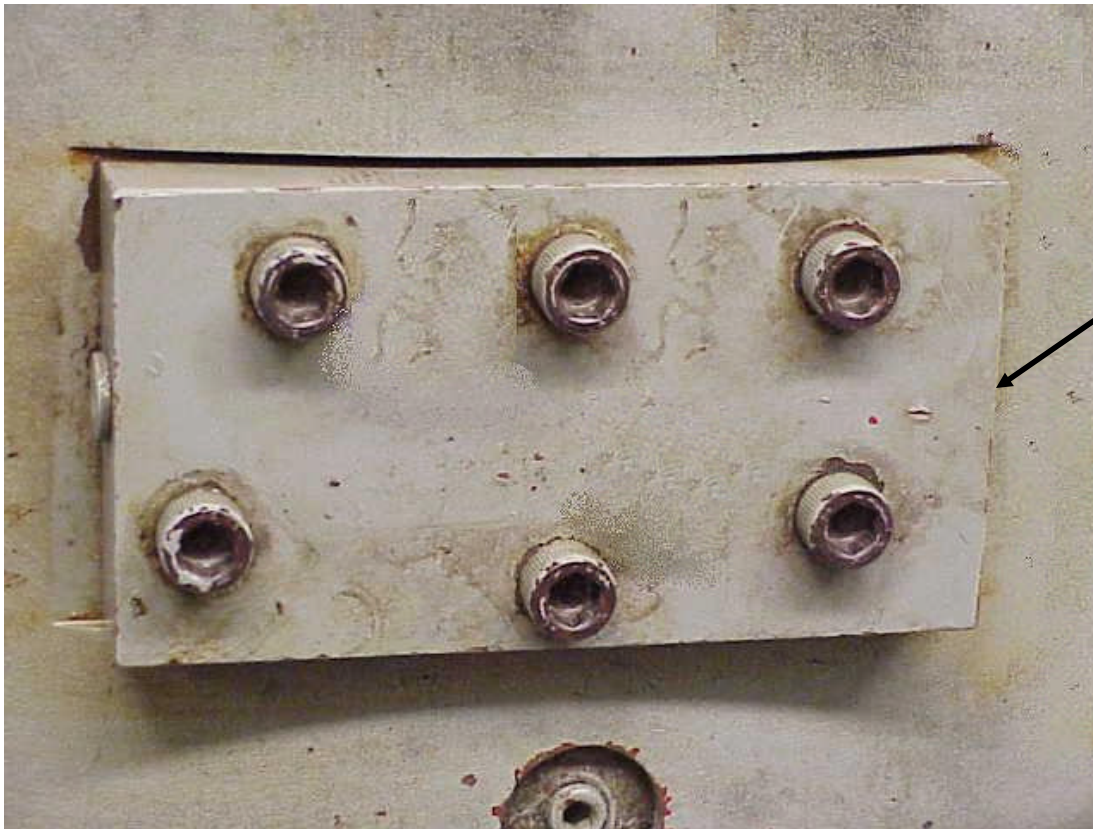
Remove Male Rotor Inlet Labyrinth Seal



Remove Inlet End Male Rotor Roller Bearing

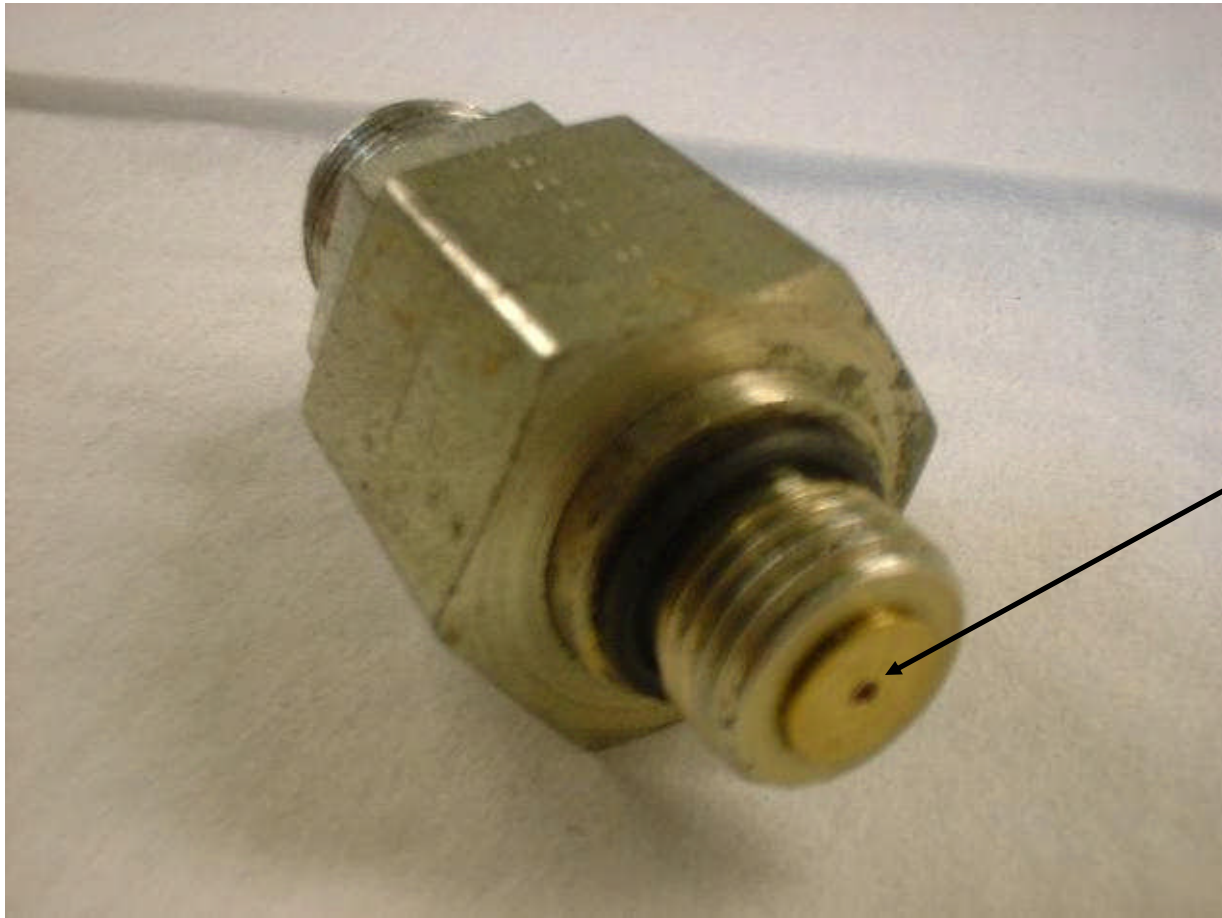


Lubrication Block



Choke Orifice
threads into this
side

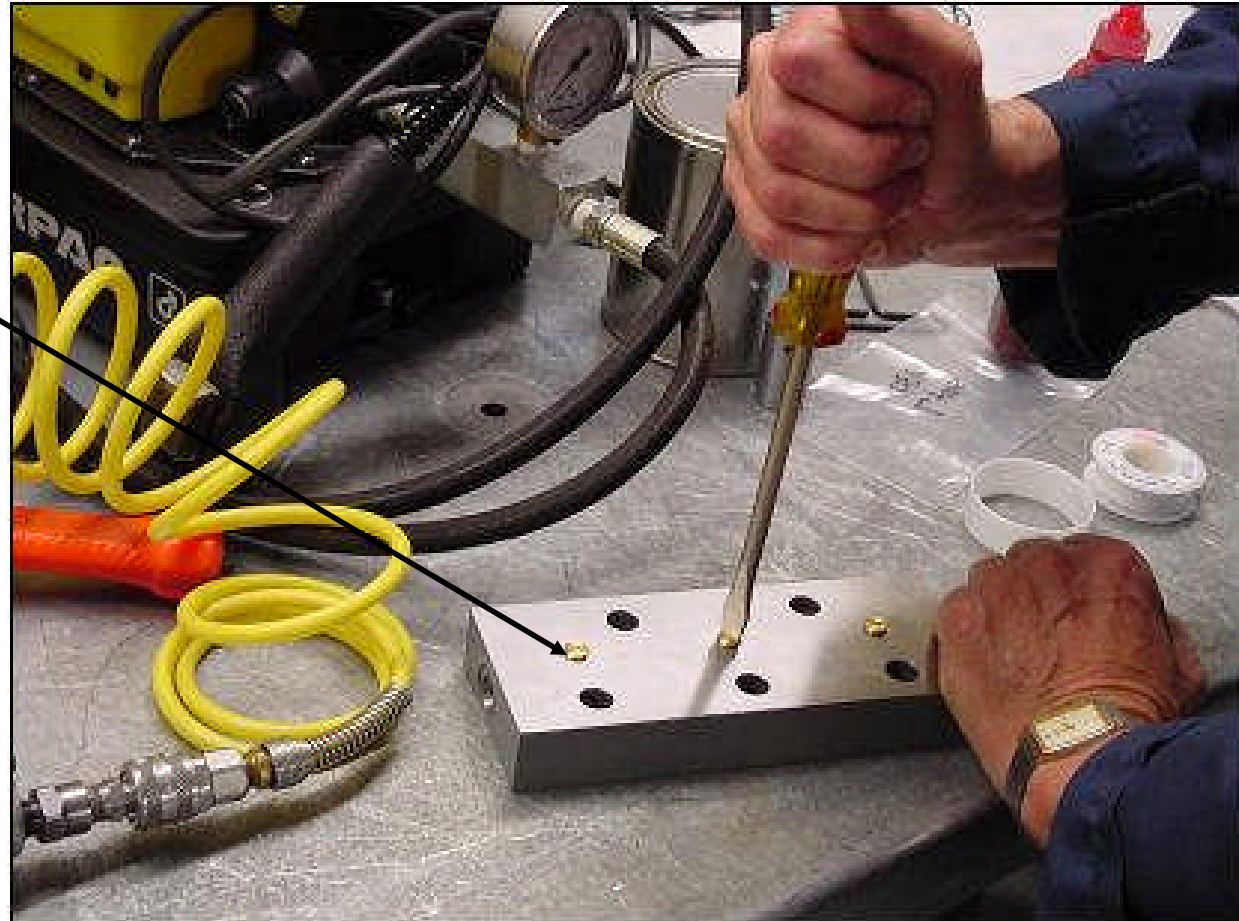
Lubrication Block Choke Orifice



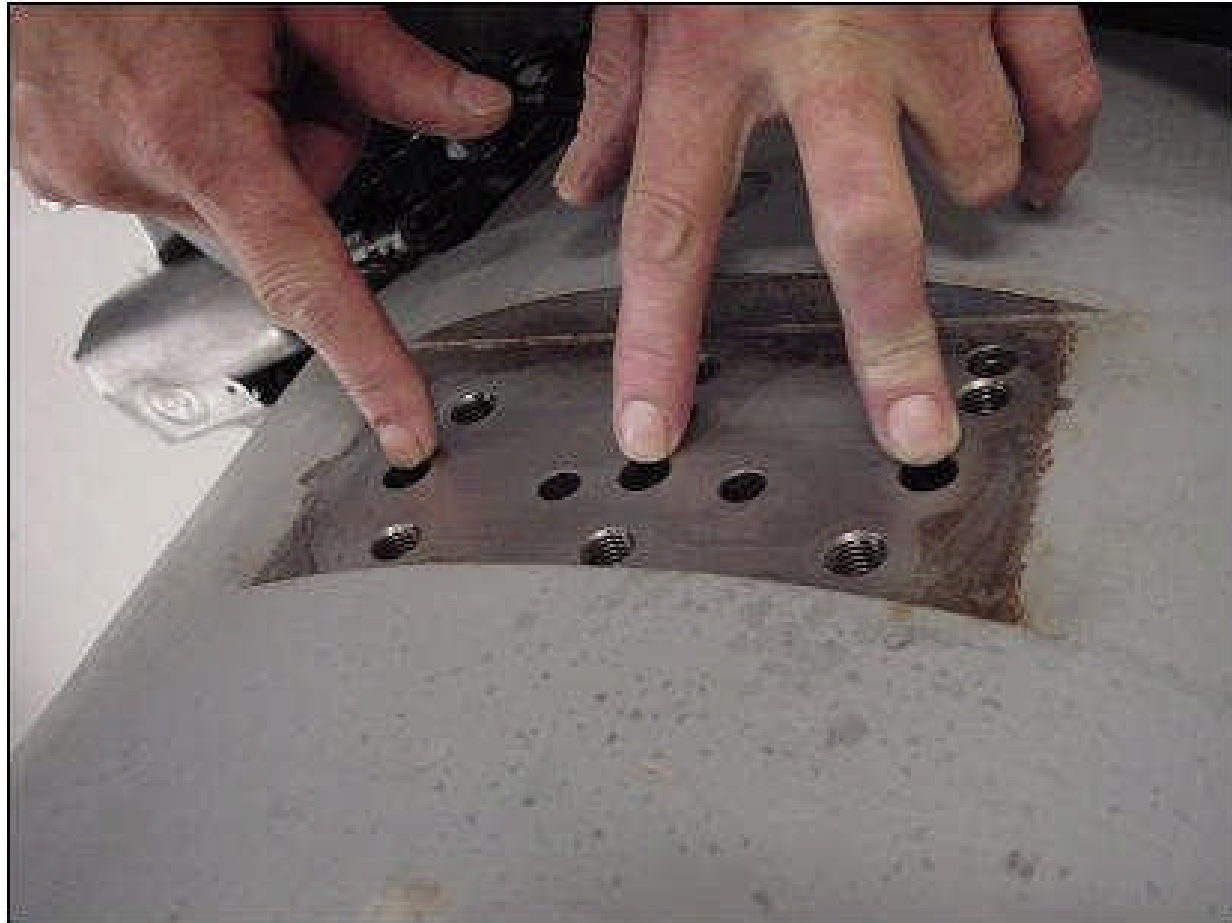
Choke Orifice
Diameter = 0.48 mm
(.019 in)

Lubrication Block Orifices

Oil Metering Orifice
Diameter = .587 mm
(.0231 in)



Oil Distribution Passages



Summary

- Oil Line between Oil Filter and Compressor Must be kept Clean to Protect Small Compressor Oil Orifices
- Control Panel Must Be Removed before Compressor Removal
- Lifting Points are M30 Threaded Holes
- Do not Disassemble Failed Compressors under Warranty
 - Send any failed compressors to Carlyle
- 23XR Disassembly and Assembly Requires Special Tools

Summary

- End Wall Clearance must Set Carefully
- Bearing Cover has High Counterthrust Spring Pre-Load
 - M10 Bearing Cover Bolts Must be Removed First
 - M20 Bearing Cover Bolts Must be Removed Last