

AIR COMPRESSOR REPAIR (CANTRAC S-652-0630) This course provides maintenance and repair skills training on air compressors in the fleet. The curriculum includes practical and theory instruction in safety precautions; precision measuring instruments; and troubleshooting, disassembly, repair, reassembly, and testing of low-, medium-, and high-pressure oil-lubricated and oil-free air compressors. Courses are tailored for each IMA and the types of air compressors that are normally repaired at that IMA. *Class Size: 6-12. Training Period: 3 Weeks. CEU Award: 12 Units.*

BATTLE FORCE IMA (BFIMA) TRAINING PROGRAM AIR COMPRESSOR REPAIR COURSE OUTLINE

BFIMA Air Compressor Repair courses are tailored to the needs of individual activities. All activities are supplied with Unit 1. Other units are supplied as required for training at specific commands.

UNIT 1 PREREPAIR TRAINING

- Lesson 1. Introduction
- Lesson 2. Precision Measuring Instruments
- Lesson 3. Tag-Out Procedures
- Lesson 4. Blueprint Reading
- Lesson 5. Safety Precautions
- Lesson 6. Air Compressor Theory
- Lesson 7. Planning the Repair of an Air Compressor
- Lesson 8. Troubleshooting Procedures

UNIT 2 DRESSER-RAND HIGH-PRESSURE OIL-FREE FIVE-STAGE UNITS

- Lesson 1. Introduction to the IRN20NL High-Pressure Air Compressor
- Lesson 2. Air Valves
- Lesson 3. High-Pressure Cylinder Heads, Cylinders, and Liners
- Lesson 4. High-Pressure Pistons and Seals
- Lesson 5. Low-Pressure Piston Rods, Pistons, and Rings
- Lesson 6. Piston Rod Packing Assemblies
- Lesson 7. Oil Wipers
- Lesson 8. Low-Pressure Cylinder Block, Head, and Liners
- Lesson 9. Crossheads, Connecting Rods, and Bearings
- Lesson 10. Crankshaft and Main Bearings
- Lesson 11. Oil Systems

- Lesson 12. Cooling Systems (IRN20NL Models 7 through 11)
- Lesson 13. Cooling Systems (IRN20NL-12 and Newer Models)
- Lesson 14. Condensate Drain Systems (IRN20NL Models 7 through 10)
- Lesson 15. Demand-Based Condensate Drain Systems (IRN20NL-12 and Newer Models)
- Lesson 16. Unloading Systems and Miscellaneous Accessories
- Lesson 17. Monitoring Systems
- Lesson 18. Operational Testing and Adjustments

UNIT 3 DRESSER-RAND HIGH-PRESSURE OIL-FREE SIX-STAGE UNITS

- Lesson 1. Introduction to the IR30NL-3 High-Pressure Air Compressor
- Lesson 2. Air Valves
- Lesson 3. High-Pressure Cylinder Heads, Cylinders, and Liners
- Lesson 4. Fifth- and Sixth-Stage Pistons and Seals
- Lesson 5. Pistons, Rods, and Rings (First through Fourth Stage)
- Lesson 6. Piston Rod Packing Assemblies
- Lesson 7. Oil Wipers
- Lesson 8. Cylinder Block, Head, and Liners
- Lesson 9. Crossheads, Connecting Rods, and Bearings
- Lesson 10. Crankshaft and Main Bearings
- Lesson 11. Oil Systems
- Lesson 12. Belt Drive
- Lesson 13. Cooling Systems
- Lesson 14. Miscellaneous Accessories
- Lesson 15. Demand-Based Condensate Drain System
- Lesson 16. Monitoring Systems
- Lesson 17. Operational Testing and Adjustments

UNIT 4 WORTHINGTON HIGH-PRESSURE OIL-LUBRICATED FOUR-STAGE UNITS

- Lesson 1. Disassembly Procedures
- Lesson 2. Gage Board and Miscellaneous Piping Repair
- Lesson 3. Air Flow Systems
- Lesson 4. Cooling Water System
- Lesson 5. Suction and Discharge Valve Repair
- Lesson 6. Air Cooler and Separator Repair
- Lesson 7. Cylinder and Cylinder Head Repair
- Lesson 8. Piston and Connecting Rod Repair
- Lesson 9. Crankshaft and Main Bearing Repair
- Lesson 10. Motor Repair

- Lesson 11. Cylinder Lubrication (Manzel)
- Lesson 12. Lubricating Oil Pump and System
- Lesson 13. Barksdale Automatic Drain Valve
- Lesson 14. Drain Manifold and Unloader
- Lesson 15. Final Discharge and Cooling Water Valves
- Lesson 16. Accessory Valves
- Lesson 17. Temperature Monitor
- Lesson 18. Operational Testing and Adjustments

UNIT 5 DRESSER-RAND LOW-PRESSURE OIL-FREE TWO-STAGE RECIPROCATING UNITS

- Lesson 1. Disassembly Procedures
- Lesson 2. Air Coolers and Moisture Separators
- Lesson 3. Suction and Discharge Valves
- Lesson 4. Belts and Sheaves (Pulleys)
- Lesson 5. Pistons, Piston Rods, and Piston Rings
- Lesson 6. Cylinder Liners
- Lesson 7. Air Rod Packing Assemblies
- Lesson 8. Oil Wiper Assemblies
- Lesson 9. Connecting Rods, Connecting Rod Bearings, and Crossheads
- Lesson 10. Crankshaft Main Bearings and Oil Seals
- Lesson 11. Monitor Assembly
- Lesson 12. Accessory Valves
- Lesson 13. Lubricating Oil Systems and Pumps
- Lesson 14. Cooling Water Systems
- Lesson 15. Operational Testing and Adjustments

UNIT 6 WORTHINGTON LOW-PRESSURE OIL-FREE TWO-STAGE UNITS

- Lesson 1. Disassembly Procedures
- Lesson 2. Gage Panel and Tubing Removal and Replacement
- Lesson 3. Coolers
- Lesson 4. Belts and Sheaves (Pulleys)
- Lesson 5. Valve and Cylinder Head Removal, Cleaning, Inspection, and Installation
- Lesson 6. Piston and Cylinder Removal, Replacement, and Adjustment
- Lesson 7. Guide Piston, Link, and Connecting Rod Removal
- Lesson 8. Oil and Water Pumps
- Lesson 9. Crankshaft and Main Bearing Removal, Replacement, and Adjustment

- Lesson 10. Unloading System Repair
- Lesson 11. Accessory Valves
- Lesson 12. Operational Testing and Adjustments

UNIT 7 DRESSER-RAND HIGH-PRESSURE OIL-FREE FIVE-STAGE RECIPROCATING UNITS

- Lesson 1. Disassembly Procedures
- Lesson 2. Air Flow System
- Lesson 3. Suction and Discharge Valves
- Lesson 4. Cylinder Head, Cylinder Liners, and Pistons
- Lesson 5. Piston Rod Packing
- Lesson 6. Frame Oil Heads
- Lesson 7. Crankshafts, Bearings, and Oil Seals
- Lesson 8. Lube Oil System
- Lesson 9. Fresh Water Cooling System
- Lesson 10. Accessory Valves
- Lesson 11. Automatic Separator Drain System
- Lesson 12. Manual Drain System
- Lesson 13. Speed Reducer
- Lesson 14. Temperature Monitor
- Lesson 15. Connecting Rods and Crossheads
- Lesson 16. Seawater Cooling System
- Lesson 17. Preoperational Procedures

UNIT 8 RIX HIGH-PRESSURE AIR COMPRESSORS

- Lesson 1. Introduction to High-Pressure Air Compressors
- Lesson 2. Valves
- Lesson 3. High-Pressure Cylinder Heads, Cylinders, and Liners
- Lesson 4. High-Pressure Pistons and Seals
- Lesson 5. Swashplate Removal and Installation
- Lesson 6. Oil Systems
- Lesson 7. Cooling Systems