

INSTRUCTION BOOK NUMBER: IRB-1414

FOR INGERSOLL-RAND COMPRESSOR UNITS

I-R ORDER NUMBER: 028-484-32816

TURBINE-COMPRESSOR SERIAL NUMBERS: TB-2974/5

FURNISHED TO

COLUMBIA GULF TRANSMISSION CO.

~~JANUARY, MISS.~~  
~~DELHI, LOUISIANA~~

This Instruction Book has been prepared to assist all personell associated with the above units in obtaining the optimum in performance and trouble free operation as well as in their installation and maintenance.

It is important that the people who operate and maintain these units have a thorough knowledge of this machinery. They should, therefore, receive a copy of this book and study it carefully.

CUSTOMER'S ORDER NO.: G-87260

APPLICATION: NATURAL GAS TRANSMISSION



**Ingersoll-Rand**

INGERSOLL-RAND COMPANY

INSTRUCTIONS FOR A

POWER TURBINE DRIVEN CENTRIFUGAL PIPELINE COMPRESSOR

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- B. DeLaval Main Lube Oil Pump.....L3131-6 (R-1)
- C. DeLaval Main Seal Oil Pump..... 1806
- D. Cameron Auxiliary Lube Oil Pump.....7765-D
- E. General Electric 20 HP Motor.....GEH-3174A
- F. DeLaval Auxiliary Seal Oil Pump.....A12D-6 (R-1)
- G. Westinghouse 15 HP Motor.....I.L.2930-11T
- H. General Electric Generator.....GEI-65501D, GEK-2400
- I. Ingersoll-Rand Emergency Oil Pump.....7825-F
- J. Marathon 1/4 HP Motor.....
- K. Masoneilan Valve.....1047, 6018E
- L. Fast's Coupling.....1900-18
- M. Jerguson Indicator.....Bulletin F-7
- N. Lonergan Relief Valve.....Manual #81
- O. Hilco Filter.....HF-11A, FC-3296-22  
FC-4664-19, FC-5701-  
14, FC-5706-83
- P. Western Gear Box Assembly..... 1197
- Q. Skinner Solenoid Valve..... D12.5.2  
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- 6. Foxboro Anti-Surge Controller.....*Instructions*

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SERVICE CONDITIONS

FOR INGERSOLL-RAND GAS TURBINE SERIAL NUMBER: T-2974

AMBIENT TEMPERATURE (DEG.F.).....80.0  
PRESSURE DROP IN INLET SYSTEM (IN H<sub>2</sub>O).....2  
PRESSURE DROP IN EXHAUST SYSTEM (IN H<sub>2</sub>O).....2  
HORSEPOWER (NEMA).....20,000  
FUEL.....NATURAL GAS  
EXHAUST GAS TEMPERATURE (DEG.F).....940  
RATED OPERATING SPEED (RPM).....5250  
MAXIMUM CONTINUOUS OPERATING SPEED (RPM).....5500  
OVERSPEED TRIP (RPM).....5750  
HEAT RATE AT LOW HEATING VALUE (BTU/HP-HR).....7720

GAS GENERATOR DATA

RATED OPERATING SPEED (RPM).....9200  
OVERSPEED TRIP (RPM).....9700  
RATED EXHAUST TEMPERATURE.....1363°F

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SERVICE CONDITIONS

FOR INGERSOLL-RAND CENTRIFUGAL COMPRESSOR SERIAL NUMBER: B-2975

GAS HANDLED.....NATURAL GAS  
SPECIFIC GRAVITY (AIR-1).....0.60  
INTAKE PRESSURE (PSIA).....723  
INTAKE TEMPERATURE (DEG.F).....60  
CAPACITY, INTAKE CONDITIONS (CFM).....11,500  
DISCHARGE PRESSURE (PSIA).....1064  
RATED OPERATING SPEED (RPM).....5250  
MAXIMUM CONTINUOUS OPERATING SPEED (RPM).....5500  
APPROXIMATE 1ST. CRITICAL SPEED (RPM).....2600

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Specifications

1. Quantity of Units.....One (1)
2. Arrangement of Units.....Tandem, Series
3. Compressor Serial Number.....B-2975
4. Gas Turbine Serial Number.....T-2974
5. Type of Compressor.....Centrifugal,  
multistage,  
uncooled,  
single flow
6. Type of Gas Turbine.....Two Stage,  
reaction type
7. Class and Size of Compressor.....CDP-230
8. Class and Size of Gas Turbine.....JP-200
9. Number of Compressor Compression Stages.....Two (2)
10. Compressor rotation when facing  
coupling end of compressor.....Counterclockwise
11. Manufacturer and Type of Gas Generator.....General Electric  
Model LM2500
12. Combined Lube and Seal Oil System
  - (a) Lube & Seal Oil Schematic Diagram.....5856E6
  - (b) Main Lube Oil Pump Capacity.....258 GPM @ 50 PSIG
  - (c) Main Seal Oil Pump Capacity.....20.5GPM @ 1000 PSIG
  - (d) Auxiliary Lube Oil Pump Capacity.....185 GPM @ 55 PSIG
  - (e) Auxiliary Seal Oil Pump Capacity.....19.0 GPM @ 685 PSIG

- (f) Driver of Main Lube Oil Pump.....Accessory Gear Box  
driven by turbine  
shaft.
- (g) Driver of Main Seal Oil Pump.....Accessory gear box  
driven by turbine  
shaft.
- (h) Driver of Auxiliary Lube Oil Pump.....General Electric  
20 HP Motor
- (i) Driver of Auxiliary Seal Oil Pump.....Westinghouse  
15 HP Motor
- (j) Compressor Bearing Line Pressure.....20 PSIG
- (k) Gas Turbine Bearing Line Pressure.....20 PSIG

13. Special Devices (Lube and Seal Oil System):

- (a) Low Lube Oil Pressure Shutdown  
and Emergency Lube Oil Pump Control  
Switch, one set of contacts to  
operate at.....11 PSIG decreasing  
pressure, and one  
set of contacts to  
operate at 8 PSIG  
decreasing pressure
- (b) Auxiliary Lube Oil Pump Control Switch,  
set to operate at.....15 PSIG decreasing  
pressure and 18  
PSIG increasing  
pressure
- (c) High Seal Oil Differential  
Alarm Switch, set to operate at.....75 PSIG increasing  
differential
- (d) Low Seal Oil Differential Shutdown  
Switch Set to operate at.....25 PSIG decreasing  
Differential
- (e) Lube Oil Filter Differential Alarm  
Switch, set to operate at.....20 PSID increasing  
Differential

14. Distribution of Weights

- (a) Centrifugal Compressor.....92,000 lbs.
- (b) Power Turbine.....20,000 lbs.
- (c) Main Baseplate (Less oil in reservoir).....22,000 lbs.
- (d) Sub Base (Under silencer and plenum)..... 7,000 lbs.
- (e) Plenum Chamber..... 4,800 lbs.
- (f) Inlet Silencer..... 4,600 lbs.
- (g) Gas Generator..... 4,500 lbs.
- (h) Gas Generator Lube Oil..... 1,000 lbs.
- (i) Lube and Seal Equipment..... 2,500 lbs.
- (j) Exhaust Silencer with Support.....12,600 lbs.
- (k) Heat Exchanger (Dry Weight).....11,600 lbs.
- (l) Exhaust Stack..... 5,000 lbs.
- (m) Turbine & Compressor Lube Oil..... 8,000 lbs.

15. Heaviest Piece Handled During:

- (a) Erection - Compressor.....92,000 lbs.
- (b) Maintenance - Compressor Rotor and Diaphragm with Lifting Rig.....27,000 lbs.

16. For general dimensions, baseplate layout, flange and other connection information, refer to "General Arrangement Drawing".....967N6