# Section A

# Introduction and General Description

THIS MANUAL APPLIES TO RLHA-19, RLHA-24, RLHA-28, RLHB-19, RLHB-24, AND RLHB-28 TURBINES. REFER TO A SEPARATE MANUAL FOR RLHA-14 AND RLHB-14 TURBINES.

## A.1 Turbine Description

Standard Coppus RLH Turbines are single-stage, impulse-type turbines with a two-row, velocity-compounded rotor and one row of stationary reversing blades between the rotating blades. The rotor is contained within a horizontally-split (Axially split) casing, with steam inlet and exhaust connections located in the lower half of the casing assembly.

The rotor is supported between two sleeve bearings and positioned axially by a ball thrust bearing (RLHA Turbine), or it is supported and positioned axially between two ball bearings (RLHB Turbine). Other variations of the RLH Turbine include extended inlet pressure & temperature constructions and/or a high backpressure construction termed the RLH HiP2 Turbine. The HiP2 turbine is available in both the RLHA and RLHB configurations.

Steam enters the turbine casing after first passing through the built-in steam strainer, the throttle valve and the overspeed trip valve. The turbine inlet casing incorporates the steam chest, which contains several individual steam nozzles. Some of these nozzles are controlled by handvalves for partial load or overload conditions. Steam flowing through the nozzles expands and is directed at high velocity against the rotating blades of the first row on the turbine rotor. After passing through the first row, stationary reversing blades redirect the steam against a second row of rotating blades. The steam is then discharged into the exhaust casing and from there into the user's exhaust piping.

Optionally, the turbine may be supplied with a single row rotor, in which case stationary reversing blades are not provided.

## A.2 Construction

Coppus RLH Turbines are ruggedly constructed, suitable for a wide range of mechanical drive applications and comply with all basic API-611 and NEMA SM23 requirements.

The casings, valve body, shaft, wheel, blades, nozzles, valve components, and fasteners are constructed of high-grade alloy steel, stainless steel, carbon steel, and cast iron, assuring a long and dependable service life.

Depending on the steam conditions, horsepower, and speed, materials used in turbine construction may vary. Always consult the turbine data sheet or nameplate on the turbine before connecting it to a steam inlet or exhaust supply, to ensure that the turbine is rated for the prospective conditions. Never run the turbine in excess of the maximum allowable speed, maximum inlet or exhaust pressure, maximum inlet temperature, or above the rated horsepower, as specified on the nameplate.

**WARNING**

Materials used in turbine construction (cast iron, steel, stainless steel, special alloys) vary with steam conditions, speed, and power. These materials were selected according to the original rating of the turbine. NEVER attempt to RE-RATE a turbine without the assistance of a Coppus manufacturer's representative and/or the factory. MISAPPLICATION of materials COULD result in serious equipment damage and/or personal injury.

**WARNING**

NEVER connect the turbine to inlet or exhaust sources of UNKNOWN PRESSURE OR TEMPERATURE or to sources whose pressure or temperature EXCEED limits stated on the NAMEPLATE.

Some Coppus turbines can be re-rated for different steam conditions, powers, and speeds. Consult your Coppus manufacturer's representative or the factory for further information.

## A.3 Main Components

Figures A-1, *Coppus RLH Turbine, General View, Non-Drive End,* & A-2, *Coppus RLH Turbine, General View, Drive End,* show major components, as seen on the exterior of a standard turbine. Each major component is described in detail below.

**Inlet Flange.** The standard RLH turbine inlet flange for connection to the steam supply is part of the Combination Overspeed Trip/Throttle Valve (hereinafter termed the Combo Valve). Flange type, size, and material are a function of steam conditions and customer specifications. Refer to the certified drawings in the *Supplemental Documentation* section, supplied at the end of this manual.

**Combo Valve.** The standard RLH turbine includes a Combination Overspeed Trip/Throttle Valve, which is mounted between the turbine casing and the inlet steam line. It normally houses both a throttle valve and an overspeed trip valve. The Overspeed Trip Valve is a mechanically actuated valve that interrupts the supply of steam to the turbine during an overspeed condition or other emergency, thereby bringing the turbine to a complete stop. In the event of overspeed, the valve is activated by the overspeed trip collar, which is attached to the turbine shaft inside the Governor Mounting Housing. In the event of other emergencies, the valve can be activated using the Overspeed Trip Lever, which protrudes from the Governor Mounting Housing.

The **Throttle Valve** is contained in the Combo Valve upstream of the Overspeed Trip Valve. It controls the amount of steam entering the turbine and thereby determines the speed and power produced by the turbine.

Optional constructions may include separate throttle and/or overspeed trip valves or other equipment configurations. Refer to the certified drawings in the *Supplemental Documentation* section, supplied at the end of this manual.

**Trip Linkage (not visible).** This linkage connects the Overspeed Trip Valve to the trip mechanism inside the Governor Mounting Housing. The Trip Linkage is activated by the turbine shaft mounted overspeed trip collar, the manual Overspeed Trip Lever or an optional electric or electric/pneumatic trip actuator

**Governor.** The Governor senses the speed of the turbine and opens or closes the throttle valve, as appropriate, to maintain the set speed. A variety of hydraulic and electronic governors are available for different applications.

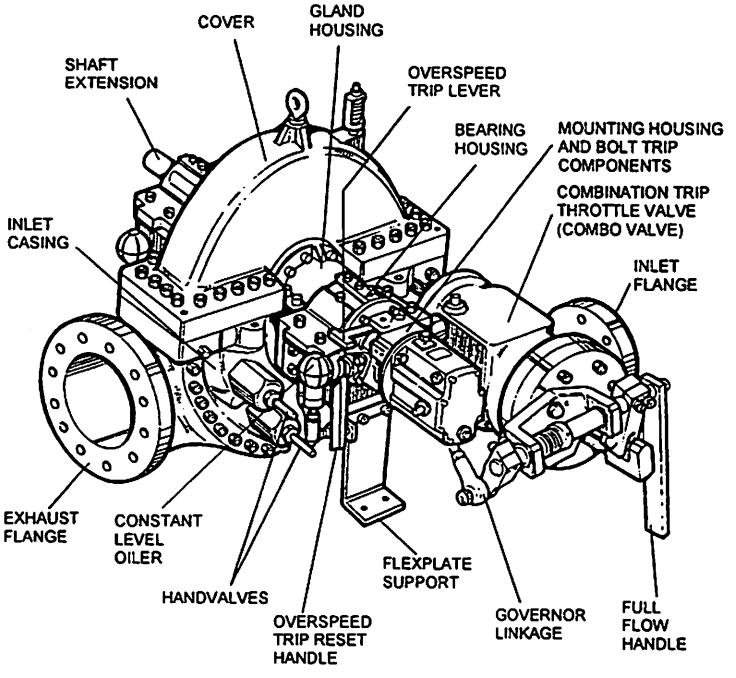



**Figure A-1. Coppus RLH Turbine, General View, Non-Drive End**

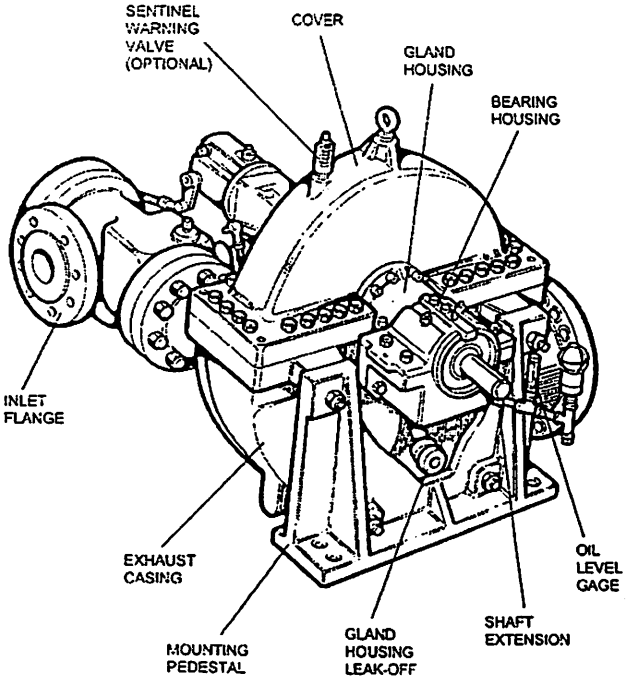



**Figure A-2. Coppus RLH Turbine, General View, Drive End**

**Throttle Linkage**. This is the linkage between the Governor and Throttle Valve.

**Governor Mounting Housing**. This is the structure which supports shaft driven hydraulic Governors and connects it to the Non-Drive End Bearing Housing. The Overspeed Trip Collar, Overspeed Trip Lever, and Governor Drive Coupling are contained within the Governor Mounting Housing.

**Overspeed Trip Lever**. The Overspeed Trip Lever is part of the Trip Linkage, allowing manual activation of the Overspeed Trip Valve. Optional electric or electric/pneumatic trip actuators and/or limit switches may be provided to work in concert with the Overspeed Trip Lever.

**Overspeed Trip Reset Handle**. This handle is used to reset (open) the Overspeed Trip Valve, permitting recovery from an overspeed trip condition. When recovering from a trip condition, the handle is initially opened slightly to permit pilot valve operation, and then is opened fully to reset the valve.

**Full Flow Handle**. This handle is used to close the throttle valve when recovering from an overspeed trip condition. The throttle valve is held against its seat with this handle to reduce incoming steam pressure, and then the overspeed trip reset handle is used to reset the overspeed trip valve.

**Non-Drive End Bearing Housing**. RLHA turbines have one sleeve shaft support bearing and a thrust bearing in this housing. RLHB turbines have one ball bearing serving both purposes in this housing. The standard housing also contains an oil ring, seals, the oil reservoir and the cooling water jacket. Standard construction includes an Oil Level Gauge and Constant Level Oiler mounted on the bearing housing, along with the oil filler/vent, oil drain plug, and plugs for cooling water inlet and outlet openings.

**Drive End Bearing Housing**. This housing is similar to the Non-Drive End Bearing Housing. The RLHA contains one sleeve bearing, while the RLHB utilizes a ball bearing.

**Oil Level Gauge**. The Oil Level Gauge indicates the oil level in the bearing housing. This level corresponds with a mark inscribed on the bearing housing.

**Constant Level Oiler**. The Constant Level Oiler is an oil reservoir that is set to maintain a constant oil level in the bearing housing. For turbines with force feed lubrication or circulating oil cooling systems, oil levels are established by use of stand pipes.

**Gland Housings.** Gland Housings of the standard RLH turbine contain Carbon Ring Seals that prevent steam from leaking along the shaft to atmosphere. Some steam will escape past the carbon rings, lubricating them. This steam is conveyed by the gland leakoff connection to a safe location. Alternate gland housings configurations include combination carbon ring / labyrinth seals, full labyrinth seals or dry gas seal designs.

**Cover.** The Cover (upper exhaust casing) contains exhaust steam and is the turbine component that seals the turbine exhaust casing. It contains an eyebolt, used for lifting the cover during turbine service. The eyebolt must not be used for lifting the entire turbine.

**Inlet Casing.** The Inlet Casing (steam chest) is the casing section containing the high-pressure inlet steam. Steam enters the Inlet Casing from the Combo Valve and travels through nozzles in the Nozzle Block.

**Handvalves (optional).** Handvalves allow the operator to open or close the passages from the steam chest to a portion of the nozzles--thereby turning some nozzles on and off. This permits the operator to improve turbine efficiency at partial load. The reasoning behind this is as follows: the Throttle Valve opens or closes in response to the Governor in an attempt to maintain a constant speed as the load imposed on the turbine varies. At low loads, the Throttle Valve is almost closed, resulting not only in reduced steam flow through the turbine, but in reduced steam pressure in the Steam Chest. When steam pressure in the chest is low, then according to the laws of thermodynamics, turbine efficiency is low. By closing some nozzles, power can be decreased by reducing steam flow, without throttling and reducing pressure. The number of handvalves on the turbine is determined by operating conditions and customer requirements. To avoid steam cutting damage to the handvalve seats, handvalves must be either completely open or completely closed, and never used as a throttle.

**Exhaust Casing.** The Exhaust Casing (lower exhaust casing) contains exhaust steam and is integral with the Exhaust Flange. The Exhaust Casing supports the Drive End Bearing Housing.

**Turbine Pedestal and Flex Plate.** The Turbine Pedestal consists of two legs that are bolted to the Exhaust Casing. The legs are drilled for mounting bolts and dowel pins that hold the turbine in position and help maintain alignment with the driven equipment. The Turbine Pedestal is also provided with tapped holes for use with vertical jacking screws, which are used for initial equipment alignment. The flex plate, mounted to the Non-Drive End Bearing Housing, supports the opposite end of the turbine.

| | | RLHA-19 | | | | RLHA-24/28 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Inches | | Millimeters | | Inches | | Millimeters | |
| | | Min | Max | Min | Max | Min | Max | Min | Max |
| A | Carbon ring inside diameter | 2.257 | 2.259 | 57.33 | 57.38 | 3.0060 | 3.0080 | 76.35 | 76.40 |
| B | Shaft diameter | 2.2525 | 2.2530 | 57.21 | 57.23 | 3.0025 | 3.0030 | 76.26 | 76.28 |
| C | Shaft diameter | 2.2495 | 2.2500 | 57.14 | 57.15 | 2.9995 | 3.0000 | 76.19 | 76.20 |
| D | Bearing diametric clearance | 0.004 | 0.006 | 0.10 | 0.15 | 0.005 | 0.007 | 0.13 | 0.18 |
| E | Labyrinth radial clearance | 0.0170 | 0.0220 | 0.30 | 0.55 | 0.016 | 0.020 | 0.41 | 0.51 |
| F | Axial dimension | 10.351 | 10.357 | 262.92 | 263.07 | 12.342 | 12.354 | 313.49 | 313.79 |
| G | Axial clearance | 0.040 | 0.089 | 1.02 | 2.26 | 0.040 | 0.089 | 1.02 | 2.26 |
| H | Axial clearance | 0.036 | 0.100 | 0.91 | 2.54 | 0.036 | 0.100 | 0.91 | 2.54 |
| J | Axial clearance | 0.050 | 0.130 | 1.27 | 3.30 | 0.050 | 0.130 | 1.27 | 3.30 |
| K | Bolt trip clearance | 0.125 | 0.156 | 3.18 | 3.96 | 0.125 | 0.156 | 3.18 | 3.96 |
| | Shaft endplay | 0.0045 | 0.0127 | 0.01 | 0.32 | 0.0045 | 0.0187 | 0.01 | 0.32 |
| Rotor dynamic unbalance (max.) per plane (in.-oz.) | | RLH-19 | | | | RLH-24 | | RLH-28 | |
| Turbine Trip Speed Setting<br>Up to 2500 RPM | | 0.07 | | | | 0.20 | | 0.27 | |
| 2501-4500 RPM | | 0.035 | | | | 0.11 | | 0.15 | |
| Over 4500 RPM | | 0.03 | | | | 0.07 | | 0.09 | |

**Table B-1. Major Fits, Clearances, & Rotor Balance Criteria - RLHA**

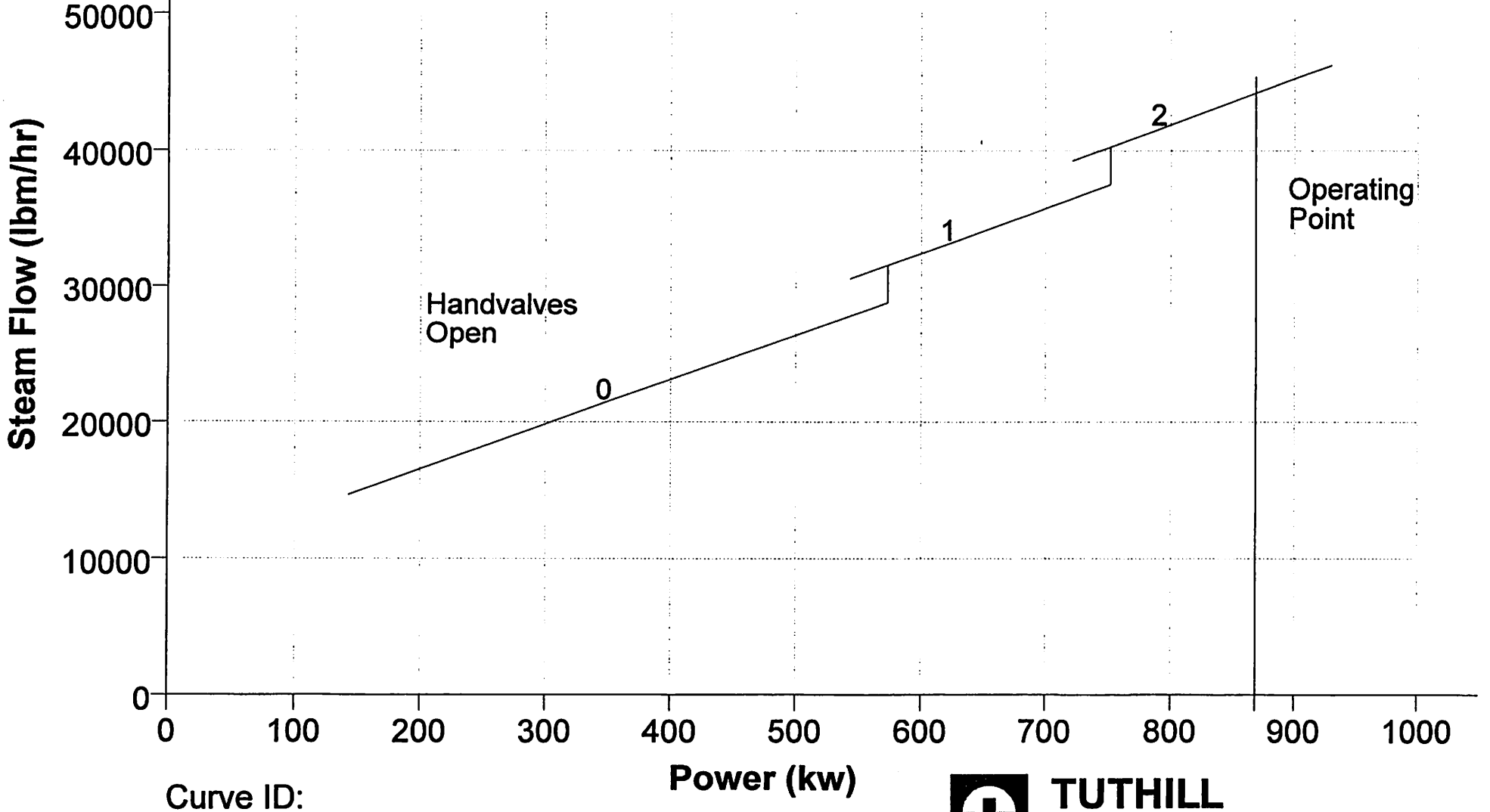
| | | RLHB-19 | | | | RLHB-24/28 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Inches | | Millimeters | | Inches | | Millimeters | |
| | | Min | Max | Min | Max | Min | Max | Min | Max |
| A | Carbon ring inside diameter | 2.257 | 2.259 | 57.33 | 57.38 | 3.0060 | 3.0080 | 76.35 | 76.40 |
| B | Shaft diameter | 2.2525 | 2.2530 | 57.22 | 57.23 | 3.0025 | 3.0030 | 76.26 | 76.28 |
| C | Shaft diameter | 2.249 | 2.250 | 57.12 | 57.15 | 2.9995 | 3.0000 | 76.17 | 76.20 |
| D | Shaft diameter | 1.9684 | 1.9687 | 49.99 | 50.00 | 2.3620 | 2.3623 | 59.99 | 60.00 |
| E | Labyrinth radial clearance | 0.0170 | 0.0220 | 0.30 | 0.55 | 0.016 | 0.020 | 0.41 | 0.51 |
| F | Axial dimension | 7.595 | 7.610 | 192.91 | 193.29 | 9.106 | 9.118 | 231.29 | 231.59 |
| G | Axial clearance | 0.040 | 0.089 | 1.02 | 2.26 | 0.040 | 0.089 | 1.02 | 2.26 |
| H | Axial clearance | 0.036 | 0.100 | 0.91 | 2.54 | 0.036 | 0.100 | 0.91 | 2.54 |
| J | Axial clearance | 0.050 | 0.130 | 1.27 | 3.30 | 0.050 | 0.130 | 1.27 | 3.30 |
| K | Bolt trip clearance | 0.125 | 0.156 | 3.18 | 3.96 | 0.125 | 0.156 | 3.18 | 3.96 |
| | Shaft endplay | 0.0045 | 0.0127 | 0.01 | 0.32 | 0.0045 | 0.0187 | 0.01 | 0.32 |
| Rotor dynamic unbalance (max.) per plane (in.-oz.) | | RLH-19 | | | | RLH-24 | | RLH-28 | |
| Turbine Trip Speed Settings<br>Up to 2500 RPM | | 0.07 | | | | 0.20 | | 0.27 | |
| 2501-4500 RPM | | 0.035 | | | | 0.11 | | 0.15 | |
| Over 4500 RPM | | 0.03 | | | | 0.07 | | 0.09 | |

**Table B-2. Major Fits, Clearances, & Rotor Balance Criteria - RLHB**

# Turbine Performance Curve

Frame Size: RLHA24
No.: 03H7002
Power: 869.0 kw
Flow: 44147.81 lbm/hr
Speed: 3625 rpm

Customer: TURBOSTEAM
Item / Tag No.: 03155-TURB
Inlet: 600.0 psi(g) 600.0 °F
Exhaust: 125.00 psi(g)




Curve ID:
Date: 10-28-03
Engr: M. Godzwon
Version No. 1.11.02 11/18/98

TUTHILL ENERGY SYSTEMS

# SCHWIETZER LEE 03154
## Turbine-Generator Skid Bill Of Material

| Qty. | Part No. | Manufacturer | Description |
|---|---|---|---|
| 2 | 70085-1010-421 | AIRPAX | MAGNETIC PICK UP (PASSIVE STANDARD) |
| 2 | CA79860-17-00 | | 90 DEGREE HARNESS FOR MPU |
| 2 | 8345G1-24VDC | ASCO | SOLENOID VALVE, 4-WAY, 2 POSITION, 5 PORT, BRASS BODY, ¼ NPT PORTS, SINGLE SOLENOID, 24VDC |
| 1 | K17M0242P7150 | ASHCROFT | TRANSMITTER, PRESSURE, 1.0% ACCURACY, ¼ NPT-M, 4-20 mA, ½ NPT-M WITH 72" LEADS, 0-150 PSIG RANGE |
| 2 | K17M0242P7750 | | TRANSMITTER, PRESSURE, 1.0% ACCURACY, ¼ NPT-M, 4-20 mA, ½ NPT-M WITH 72" LEADS, 0-750 PSIG RANGE |
| 1 | 03154-TURB | COPPUS | STEAM TURBINE, RLHA 24, 600 PSIG 600 F INLET, 125 PSIG EXHAUST, 45000 LBS/HR, 3625 RPM, 869 KW, LEFT HAND EXHAUST, 4" COMBO VALVE, 10" EXHAUST, 202 CONSTRUCTION, PROVISIONS FOR 2 MPUS AND A 60 TOOTH GEAR |
| 1 | 03154-TURB_OP1 | | RLHA HIGH EXHAUST PRESSURE SPECIAL CONSTRUCTION FOR 106 TO 175 PSIG. INCLUDES COMBINATION LABYRINITH & CARBON RING SEAL, 300 LB RF EXHAUST FLANGE AND HEAVY BOLTING |
| 2 | 03154-TURB_OP2 | | HANDVALVE |
| 2 | 03154-TURB_OP3 | | PROVISION FOR AUTOMATIC HANDVALVE |
| 1 | 03154-TURB_OP4 | | PROVISION FOR RTD'S, ONE PER BEARING |
| 1 | 03154-TURB_OP5 | | BLANKET LAGGING JACKET FOR RLHA 24 |
| 2 | MK3-.75-1-3-E-V | FABCO-AIR INC. | AIR CYLINDER, 3", .75" STROKE, 1 EXTEND STAGE, 3 RETRACT STAGE, MAGNETIC PISTON, VITOL SEALS, PANCAKE STLY WITH SWITCH GROOVES |
| 4 | 949-000-032 | FABCO-AIR INC. | SWITCH, MAGNETIC, 24 VDC, SINK, FITS IN DOVETAIL GROOVE OF PANCAKE STYLE CYLINDERS |
| 1 | A-1614CH | HOFFMAN | PIANO HINGE JIC BOX |
| 1 | A-16P14 | | PANEL FOR A-1614CH |
| 1 | 26MB20A | INT. RECTIFIER | SINGLE PHASE BRIDGE RECTIFIER. 25A, 200 VOLT |
| 1 | 03154-COUPLS | LOVEJOY | COUPLING, DI 202-6 DISC, 2.50" D WITH .625" KEY, 4.375" D WITH 1" KEY, 3600 RPM, JUMBO |
| 2 | S853PD120Z36 | MINCO | TIP SENSITIVE RTD PROBE, ¼" DIA, 100 OHM PLATINUM, 3 WIRE, STANDARD 36" LEADS, TCR .00385 |
| 2 | FG932 | | SPRING LOADED RTD HOLDER, STAINLESS STEEL, ½" NPT, 2.2" LENGTH FOR ¼" PROBE WITH O RING SEAL |

# SCHWIETZER LEE 03154
## Turbine-Generator Skid Bill Of Material

| Qty. | Part No. | Manufacturer | Description |
|---|---|---|---|
| 4 | 03F5138 | NEWARK | 330 OHM AXIAL LEAD 5 WATT RESISTOR |
| 1 | 03154-CV | NOONEY CONTROLS | VALTEK ACTUATOR, 50 SQIN, FAIL CLOSE, 2.1" STROKE, BETA PNUEMATIC POSITIONER, ABB SENSYCON, NEMA 4 I/P MODULE, CMC 2000 AIR SET, STAINLESS STEEL TUBING AND FITTINGS |
| 1 | 1/2FR120BRT | OGONTZ | VALVE, THERMOSTATIC, ½", REVERSE ACTING, FULL OPEN @ 120 F, ¼" PORT WITH 1/8 GPM LEAKOFF PORT @ 60 PSIG |
| 2 | 3004362 | PHOENIX CONTACT | UK 5 N TERMINAL BLOCK |
| 79 | 3004388 | | UK 5 N BU TERMINAL BLOCK |
| 3 | 1051016 | | USLKG TERMINAL BLOCK |
| 5 | E-NS 35N | | DIN RAIL END ANCHOR |
| 1 | 9007C62GD | SQUARE D | LIMIT SWITCH, STD BOX WITH SIDE ROD |
| 1 | P613-A1V24 | TROMBETTA | SOLENOID, 24 VDC, 1.5" STROKE, 2: DIAMETER, WITH BOOT, 23 LBS PULL, 43 LBS HOLD |
| 4 | 580 4063 | VOGT | VALVE, GLOBE, ¾ SOCKET WELD, 800 CLASS, VOGT SW 12141-3/4 |
| 1 | 03154-GEN | WEG | 840 KW, 3600 RPM, 3 PHASE, 60 HZ, 480 VOLT MOTOR, ODP ENCLOSURE, F INSULATION 80F RISE, 2 RTD PER STATOR WINDING, 1 RTD PER BEARING, ANTIFRICTION BEARINGS, 1.15 SERVICE FACTOR |
| 1 | 03154-GEN_OP1 | | NOISE SUPPRESSOR FOR 03154-GEN FOR 85 DBA OR LESS |
| 1 | 03154-GEN_OP2 | | 120 VAC SPACE HEATER |

# WEG Indústrias S.A - Máquinas

Date: 01/14/2004

## Data Sheet

Nº: FD 28100-2/2003

## Three Phase Induction Motor - Squirrel Cage Rotor

Dimensional Drawing 9301.2425

Customer: WEG ELECTRIC MOTORS CORP.
Customer reference: Turbo Steam Corp - PO# 03241
Product code:
Line: MGP

### Identification

Frame: 6810
Output: 1126 HP
Frequency: 60 Hz
Poles: 2
Rated speed: 3631 rpm
Slip:
Rated voltage: 480 V Connection:D
Rated current: 1200 A
Rotor voltage: Not aplicable
Rotor current: Not aplicable
Locked rotor current: 7440 A
Locked rotor current (p.u.): 6.2
kVA/HP: 5.49
No load current: 168 A
Design: B
Rated torque: 1630 lb.ft
Locked rotor torque: 60 %
Breakdown torque: 200 %

Insulation class: F
Temperature rise: 80 °C
Locked rotor time: 11 s
Service factor: 1.15
Duty: S1
Ambient temperature: 40 °C
Altitude: 3300 ft
Degree of protection: WP-II
Cooling: SELF-VENTILATED (IC 01)
Mounting: F-1
Vibration: NORMAL
Aprox. weight: 8600 lb
Moment of inertia (J=GD²/4): 200 lb.ft²
Noise level: 85 dB(A)
Direction of rotation: COUNTER CLOCKWISE
(Facing the motor drive end shaft)
Starting method: DIRECT ON LINE (100%)
Coupling: DIRECT

### Performance Data

| Output | 50% | 75% | 100% |
|---|---|---|---|
| Efficiency(%): | 94.8 | 95.5 | 95.7 |
| Power factor: | 0.83 | 0.87 | 0.88 |

### Load Data

Load type:
Resistant torque: J(J=GD²/4):
Acceleration time:

### Notes/Accessories

- GROUNDING LUG IN THE FRAME
- GROUNDING LUG IN THE TERMINAL BOX
- SPACE HEATER 120 V, 180 W
- TEMPERATURE DETECTOR : PT100 02 PER PHASE 03 WIRE,
- TEMPERATURE DETECTOR : PT100 01 PER BEARING 03 WIRE,
- VALUES FOR MACHINE AS INDUCTION GENERATOR.
- TEMPERATURE RISE AT S.F. OF 1.15 = 115K.
- ELECTRICALLY INSULATED N.D.E. BEARING

Turbo Steam Corp - PO# 03241.
Job Name: Schweitzer Project # 03154.

### Standards

| | |
|---|---|
| Specification: | MG1 - Part 10 |
| Test: | MG1 - Part 12 |
| Noise: | MG1 - Part 9 |
| Vibration: | MG1 - Part 7 |
| Tolerance: | MG1 - Part 4 |

**CERTIFIED**

WEG MÁQUINAS

### Edition

| Performed | Checked | Date | Site |
|---|---|---|---|
| THIAGOK | CELIONEIB | 12/04/2003 | WM |

### Changes

| | | Performed | Checked | Date |
|---|---|---|---|---|
| 2 | FDI was Preliminary and Aprox. weight was 7275 lb. | EDUARDOT | CELIONEIB | 01/14/2004 |
| 1 | Changed Performance values, add customer reference. | SARTORI | ALEXH | 12/18/2003 |

| | | |
|---|---|---|
| | **WEG Indústrias S.A - Máquinas** | Date: 12/18/2003 |
| | Performance Curves | Nº: 21122-0/2003 |
| | Three Phase Induction Motor - Squirrel Cage Rotor | FD: |

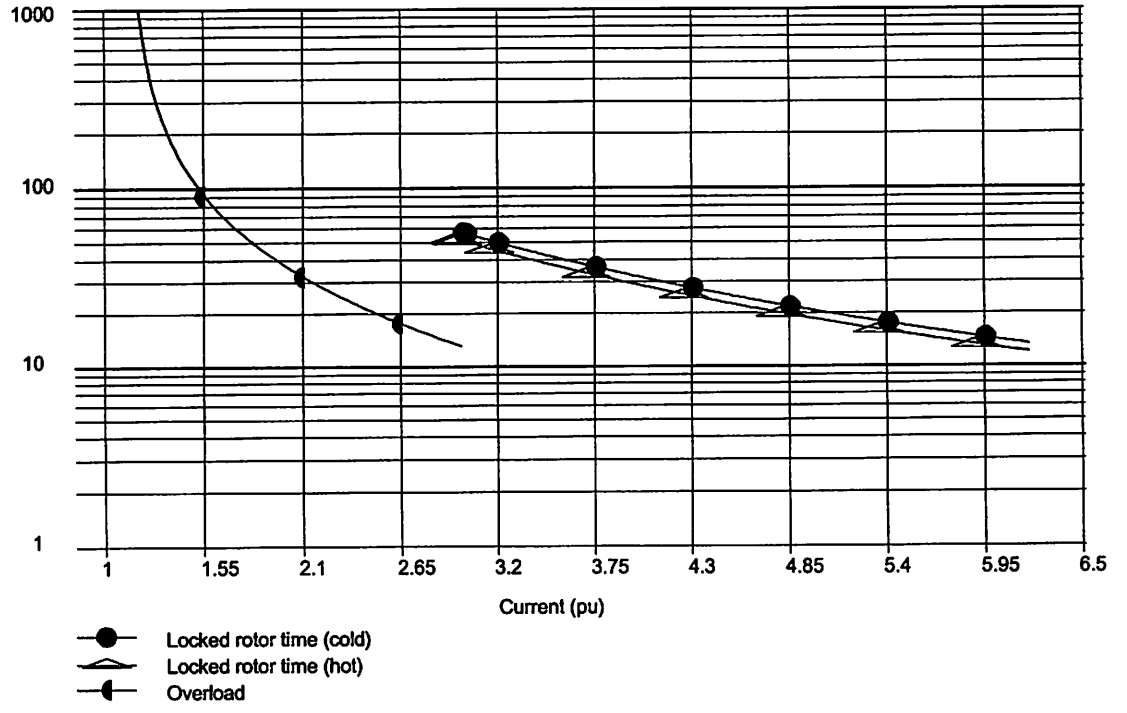
Customer: WEG ELECTRIC MOTORS CORP.
Customer reference: Turbo Steam Corp - PO# 03241
Product code:
Line: MGP

**Identification**

Frame: 6810
Output: 1126 HP
Frequency: 60 Hz
Poles: 2
Rated speed: 3631 rpm
Rated voltage: 480 V
Rated current: 1200 A
Locked rotor current (p.u.): 6.2
Design: B

Locked rotor torque: 60 %
Rated torque: 1630 lb.ft
Breakdown torque: 200 %
Insulation class: F
Service factor: 1.15
Duty: S1
Power factor: 0.88
Efficiency: 95.7 %
Temperature rise: 80 °C

**Thermal Damage**




**Notes**

TEMPERATURE RISE AT S.F. OF 1.15 = 115K.
Turbo Steam Corp - PO# 03241.
Job Name: Schweitzer Project # 03154.

| Edition | | | |
|---|---|---|---|
| Performed | Checked | Date | Site |
| SARTORI | MAURICIOB | 12/18/2003 | WM |

| Changes | Performed | Checked | Date |
|---|---|---|---|
| | | | |