



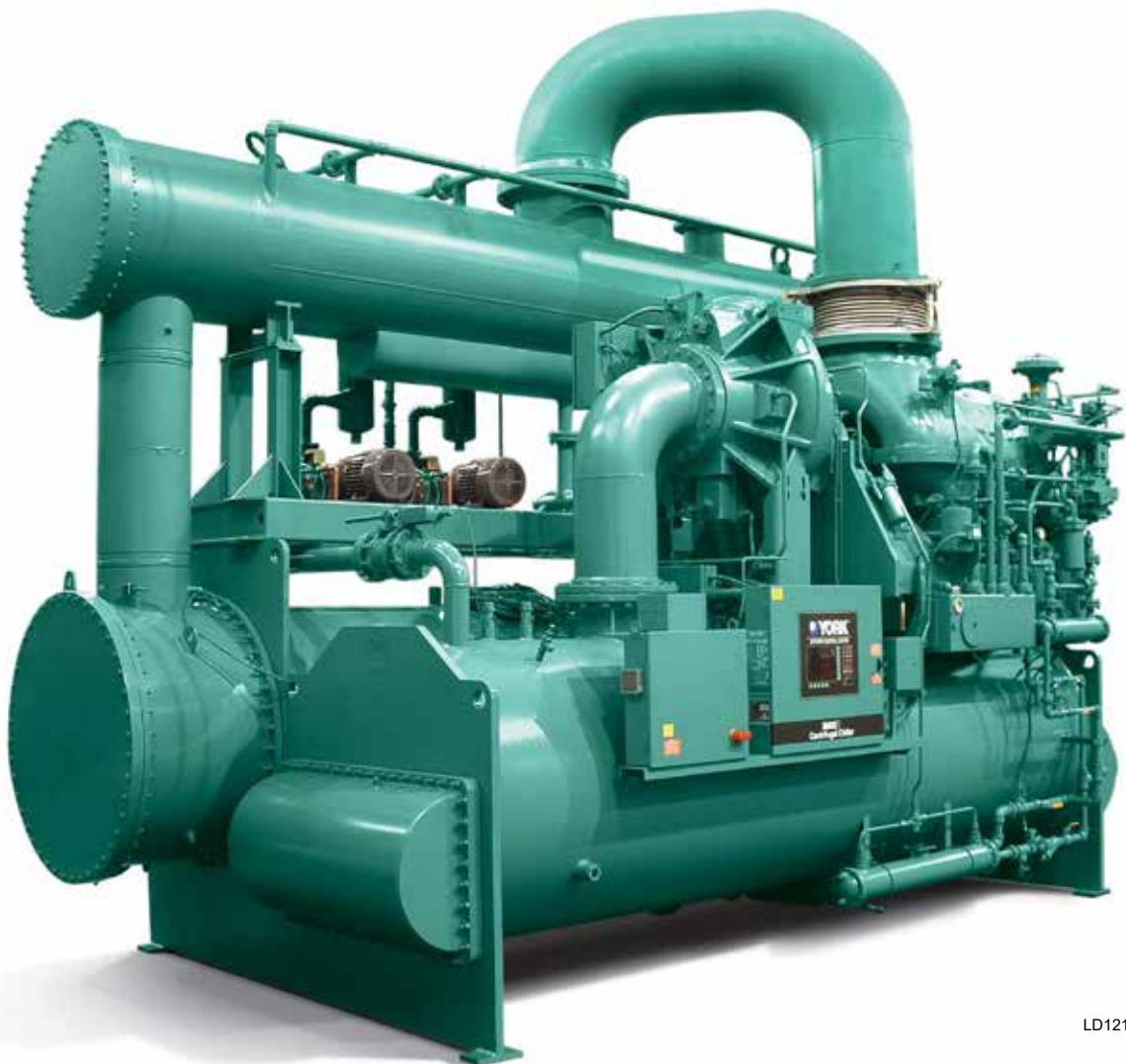
MODEL YST CENTRIFUGAL LIQUID CHILLERS

RENEWAL PARTS

Supersedes: 160.67-RP2 (1108)

Form 160.67-RP2 (314)

CONTROLS AND INSTRUMENTATION MODEL YST STEAM-TURBINE DRIVE CENTRIFUGAL LIQUID CHILLER



LD12189



Issue Date:
March 25, 2014



IMPORTANT!

READ BEFORE PROCEEDING!

GENERAL SAFETY GUIDELINES

This equipment is a relatively complicated apparatus. During installation, operation maintenance or service, individuals may be exposed to certain components or conditions including, but not limited to: refrigerants, materials under pressure, rotating components, and both high and low voltage. Each of these items has the potential, if misused or handled improperly, to cause bodily injury or death. It is the obligation and responsibility of operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment and the property in

which it is situated, as well as severe personal injury or death to themselves and people at the site.

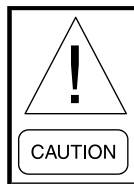
This document is intended for use by owner-authorized operating/service personnel. It is expected that these individuals possess independent training that will enable them to perform their assigned tasks properly and safely. It is essential that, prior to performing any task on this equipment, this individual shall have read and understood this document and any referenced materials. This individual shall also be familiar with and comply with all applicable governmental standards and regulations pertaining to the task in question.

SAFETY SYMBOLS

The following symbols are used in this document to alert the reader to specific situations:



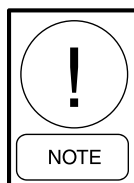
Indicates a possible hazardous situation which will result in death or serious injury if proper care is not taken.



Identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution if proper care is not taken or instructions are not followed.



Indicates a potentially hazardous situation which will result in possible injuries or damage to equipment if proper care is not taken.



Highlights additional information useful to the technician in completing the work being performed properly.



External wiring, unless specified as an optional connection in the manufacturer's product line, is not to be connected inside the control cabinet. Devices such as relays, switches, transducers and controls and any external wiring must not be installed inside the micro panel. All wiring must be in accordance with Johnson Controls' published specifications and must be performed only by a qualified electrician. Johnson Controls will NOT be responsible for damage/problems resulting from improper connections to the controls or application of improper control signals. Failure to follow this warning will void the manufacturer's warranty and cause serious damage to property or personal injury.

CHANGEABILITY OF THIS DOCUMENT

In complying with Johnson Controls' policy for continuous product improvement, the information contained in this document is subject to change without notice. Johnson Controls makes no commitment to update or provide current information automatically to the manual owner. Updated manuals, if applicable, can be obtained by contacting the nearest Johnson Controls Service office or accessing the Johnson Controls Knowledge Exchange website at <https://docs.johnson-controls.com/chillers/>.

Operating/service personnel maintain responsibility for the applicability of these documents to the equipment.

If there is any question regarding the applicability of these documents, the technician should verify whether the equipment has been modified and if current literature is available from the owner of the equipment prior to performing any work on the chiller.

CHANGE BARS

Revisions made to this document are indicated with a line along the left or right hand column in the area the revision was made. These revisions are to technical information and any other changes in spelling, grammar or formatting are not included.

HOW TO USE RENEWAL PARTS MANUALS

Johnson Controls offers an assortment of replacements parts for Johnson Controls, YORK and DS units. Each replacement part is manufactured and fitted for a specific model. This Replacement Parts Manual is for standard Johnson Controls units. Chiller units built with special options, modifications, or conversions are not covered in this manual.

This Replacement Parts Manual provides Johnson Controls chiller replacement parts by part numbers, descriptions, quantities and drawing figures. To determine the correct replacement part, locate the item on drawing figure and refer to the parts list for the part number, description and quantity.

NOTE: Provide a unit model number, unit serial number and part number when requesting a quotation or placing an order. Failure to include this information may delay processing of your request.

Model and Serial Number Locations:

- **Unit** - Namplate on side of Control Panel
- **Compressor** - Namplate on Compressor Housing
- **VSD** - Namplate on VSD Panel

Contact the following sources to order parts.

For North America, contact the following:

- YORK Chiller Parts Center Baltimore
Telephone: +1 800 932 1701
Email: chillerparts@jci.com
- YORK Chiller Parts Center Houston
Telephone: +1 833 278 7991
Email: chillerpartsHouston@jci.com
- YORK Chiller Parts Center NOLA
Telephone: +1 833 283 3738
Email: chillerpartsNOLA@jci.com
- YORK Chiller Parts Center Toronto
Telephone: +1 905 488 3642 or +1 905 488 3641
Email: chillerpartstoronto@jci.com

For parts availability and ordering YORK HVAC Parts within North America and Europe, use the following link:

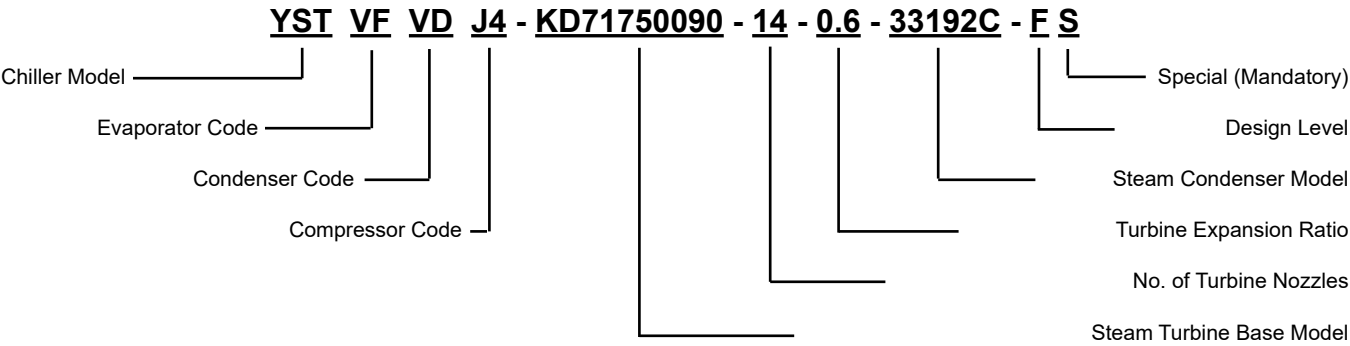
[Parts Navigator \(solutionnavigator.com\)](http://solutionnavigator.com)

ASSOCIATED LITERATURE

MANUAL DESCRIPTION	FORM NUMBER
Unit Installation - Model YST Units Manufactured Before December 2006	160.67-N1
Unit Installation - Model YST Units Manufactured After December 2006	160.67-N2
Optiview Control Center - Operation Manual	160.67-O1
Wiring Diagram - Model YST	160.67-PW6

NOMENCLATURE

The model number denotes the following characteristics of the unit.



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SECTION 1 - OPTIVIEW™ CONTROL CENTER

1

377-12421-101 (NEMA 1)

377-12421-102 (NEMA 1 WITH COMPRESSOR VGD)

377-15243-101 (NEMA 4/12)

377-15243-102 (NEMA 4/12 WITH COMPRESSOR VGD)

MODEL YST



LD10097

CONTROL CENTER COMPONENTS**TABLE 1 - CONTROL CENTER COMPONENTS**

ITEM	DESCRIPTION	PART NO.	QUANTITY	FIGURE
1	Analog Input/Output Board	031-02472-000	1	1/4
2	Kit, Digital Input/Output Board	371-04182-000	1	1/4
2A	AC Output Module	025-37818-000	16	1/4
2B	AC Input Module	025-37817-000	8	1/4
3	Terminal Block	025-38517-000	1	1/4
4	Input/Output Board	031-01743-002	1	1/4
5	Microprocessor Board (See Notes 2&4) Includes Microprocessor Board 031-02430-004 and Latest Version of Program Card 031-02501-001.	331-02430-607	1	1/4
6	Power Supply	025-34111-000	1	1/4
7	Transformer	025-39569-000	1	1/4
8	Switch, Keypad, OptiView™ Panel, NEMA 1	024-30993-000	1	2
8	Switch, Keypad, OptiView™ Panel, NEMA 4/12 and CE	024-30994-000	1	5
9	Fuse, 7A (See Note 3)	025-29905-000	2	1/4
9A	Fuse, 10A (See Note 3)	025-09662-000	2	1/4
9B	Fuse, 5A (See Note 3)	025-14019-000	2	1/4
10	Fuse Holder (See Note 3)	025-13991-000	2	1/4
11	Fastener, Pawl Adjustable (NEMA 1)	021-17252-000	1	3
12	Switch, Rocker (NEMA 1)	024-23143-000	1	3
12A	Switch, Knob Operated (NEMA 4/12)	024-30931-000	1	6
12B	Contact, Block (NEMA 4/12)	024-30932-000	2	6
12C	Buss Bar (Gnd) (NEMA 4/12)	025-34122-000	1	4
13	Strip Neoprene	028-07533-000	2.8 ft.	3/6
14	Kit, Display (See Note 1) Contains items, 26 thru 32	331-01771-000	1	3/6
15	Cover, Display	071-02264-346	1	3/6
16	Harness, Door Wiring (NEMA 1)	571-02772-281	1	3/6
17	Cable, Ribbon (NEMA 1)	031-01772-000	1	3
17	Cable, Ribbon (NEMA 4/12)	031-02015-000	1	6
18	Cable, Ribbon	031-01779-000	1	1/4
19	Terminal Block	025-38518-000	1	1/4
20	Fuse, Microfuse 5 amp (See Note 3)	025-34592-000	1	1/4
21	Mount, Anti-Vibration	021-19191-000	4	1/4
22	Suppressor (See Note 3)	031-00808-000	6	
23	Fuse Holder	025-34565-000	1	1/4
24	Fuse, 5A (See Note 3)	025-15759-000	3	1/4
25	Fuse, 4A (See Note 3)	025-34566-000	2	1/4
26	Display, Color	(See Note 1)	1	3/6
27	Control, Display Interface Board	(See Note 1)	1	3/6
28	Inverter Circuit Board	(See Note 1)	1	3/6
29	Cable, Assembly Inverter	(See Note 1)	1	3/6
30	Adapter Plate	(See Note 1)	1	3/6
31	Plate, Mounting	(See Note 1)	1	3/6
32	Ribbon Cable, Display	(See Note 1)	1	3/6
33	IC, BRAM-U38 (32K x 8) (See Note 2)	031-02431-000	1	1/4
33A	IC, BRAM-U38 (128K X 8) (See Note 3)	031-02565-000	1	1/4

CONTROL CENTER COMPONENTS (CONT'D)

1

TABLE 1 - CONTROL CENTER COMPONENTS (CONT'D)

ITEM	DESCRIPTION	PART NO.	QUANTITY	FIGURE
34	EPROM, BIOS (U37) FPU Enabled	031-02429-002	1	1/4
35	VGD Board	031-02418-001	1	1/4
36	Cable, VGD	571-04118-401	1	1/4

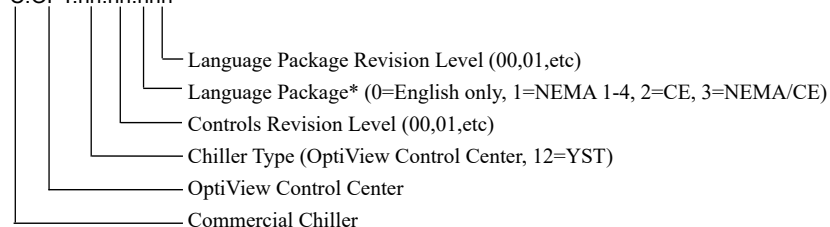
NOTES:

- The replacement Liquid Crystal Display supplied by YORK might not be by the same manufacturer as the original Display. Each Display requires a specific Display Interface Board (Item 27), Inverter Circuit Board (Item 28), and Display Ribbon Cable (Item 32). Therefore, the Color Display is not available separately. Service replacement Displays or supporting components must not be arbitrarily selected! Non-compatibility of components will result in incorrect operation! To assure compatible supporting components, the Display is supplied as a kit (331-01771-000), which contains a replacement Display and all compatible supporting components on a mounting plate. For future reference, a label attached to the side of the mounting plate (Fig. 3/6) lists the YORK part numbers of these compatible components and the required configuration of the Microboard Program Jumpers. These Program Jumpers must be configured for this Display by a qualified Service Technician following instructions in YORK Service manual 160.67-M3. The contents of the kit are as follows:

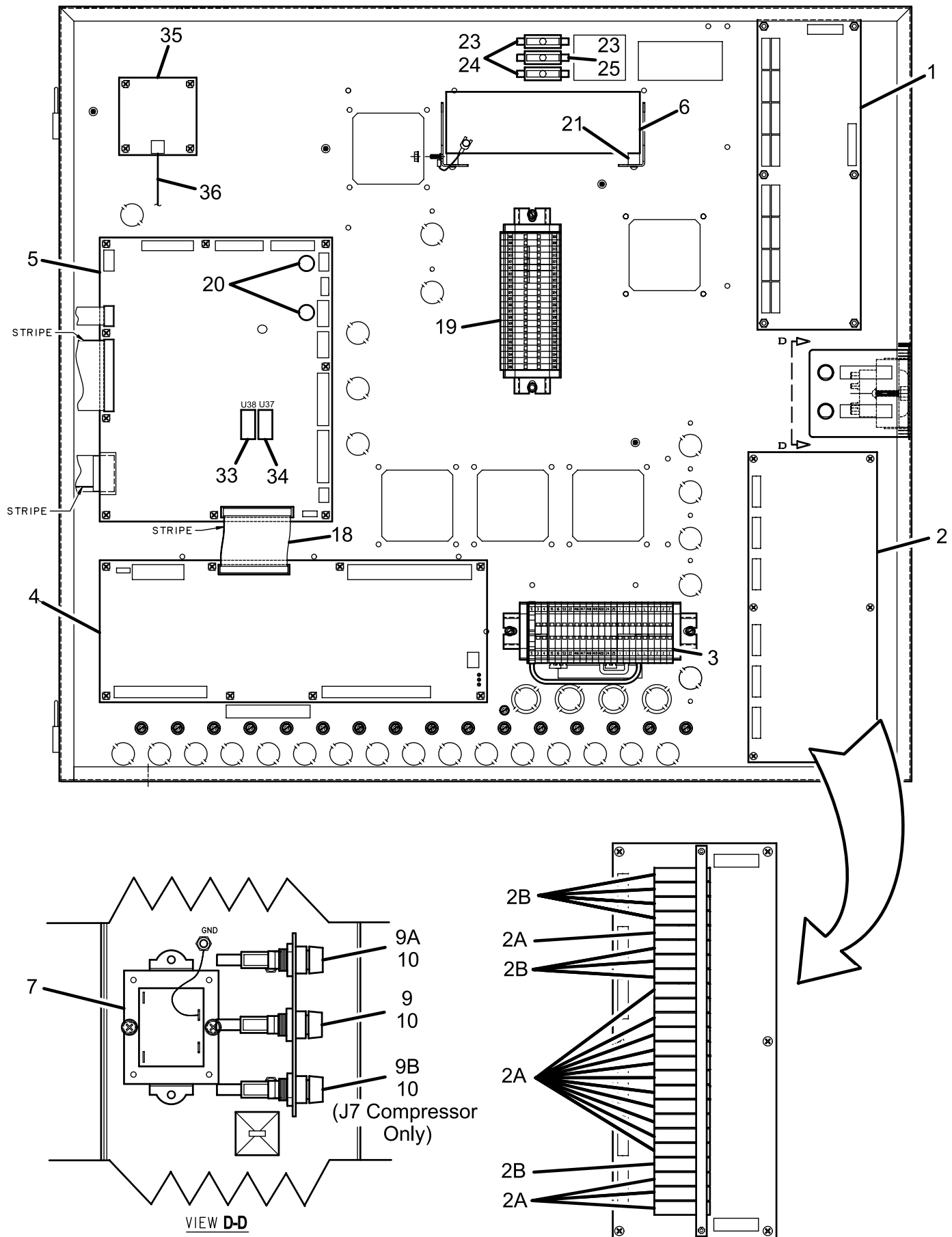
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|--|-------------------------------------|
| a. Color Display | f. Mounting Plate |
| b. Appropriate Display Interface Board | g. Appropriate Display Cable Ribbon |
| c. Inverter Circuit Board | h. All Mounting Hardware |
| d. Inverter Cable Assembly | j. Installation Instructions |
| e. Adapter Plate | |

- Replacement Microboards maybe supplied with either of the part numbers shown in items 33 and 33A BRAM (U38). The BRAM from the defective board can be transferred to the replacement board, if desired to avoid re-programming of Setpoints. Return all unused Devices with Warranty return boards.
- Spare Suppressors and Fuses are shipped in cloth bag. They are applied at all Coils connected to the I/O Boards. Item 9B and additional fuseholder is required only on chillers with J7 compressors.
- Program Card version analysis:

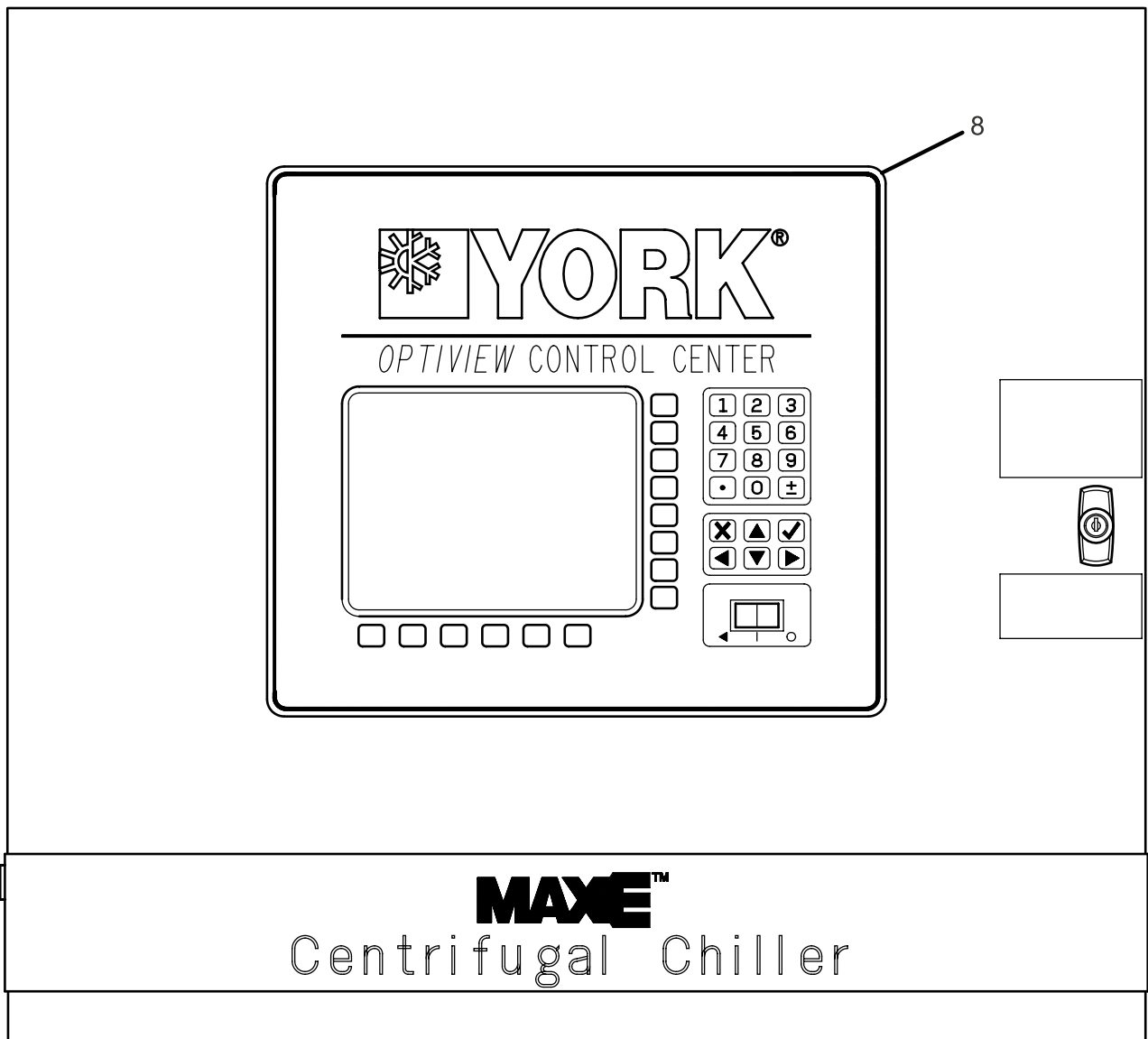
C.OPT.nn.nn.nnn



- *= Supplied in new NEMA 1-4 OptiView Control Centers.
- = Supplied in new CE (European Community) OptiView Control Centers.

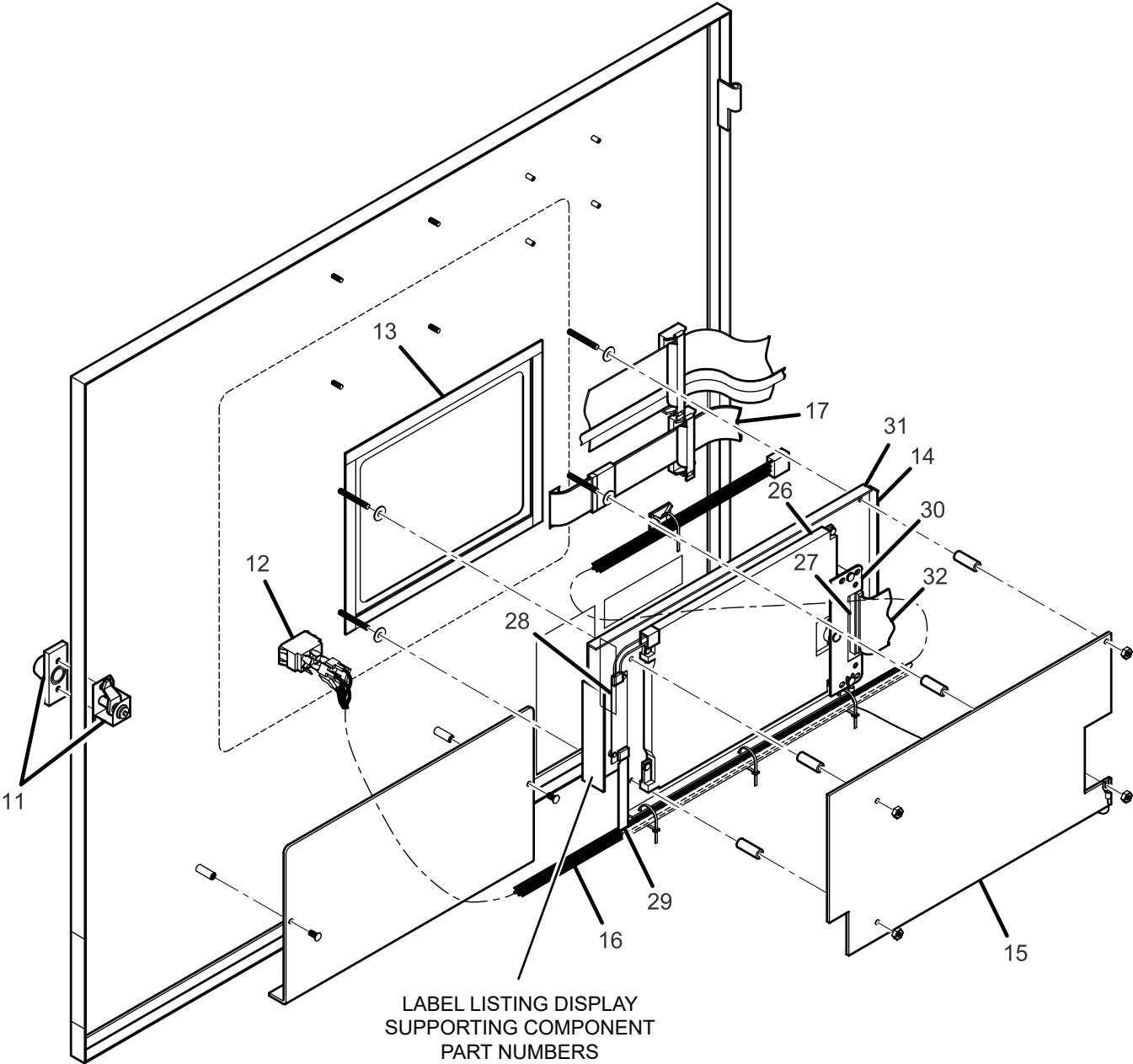
**FIGURE 1 - INSIDE OF OPTIVIEW™ CONTROL PANEL-NEMA 1**

LD12627



LD12628

FIGURE 2 - FRONT VIEW OF DOOR-NEMA 1



LD12629

FIGURE 3 - INSIDE OF DOOR AND DISPLAY- NEMA 1

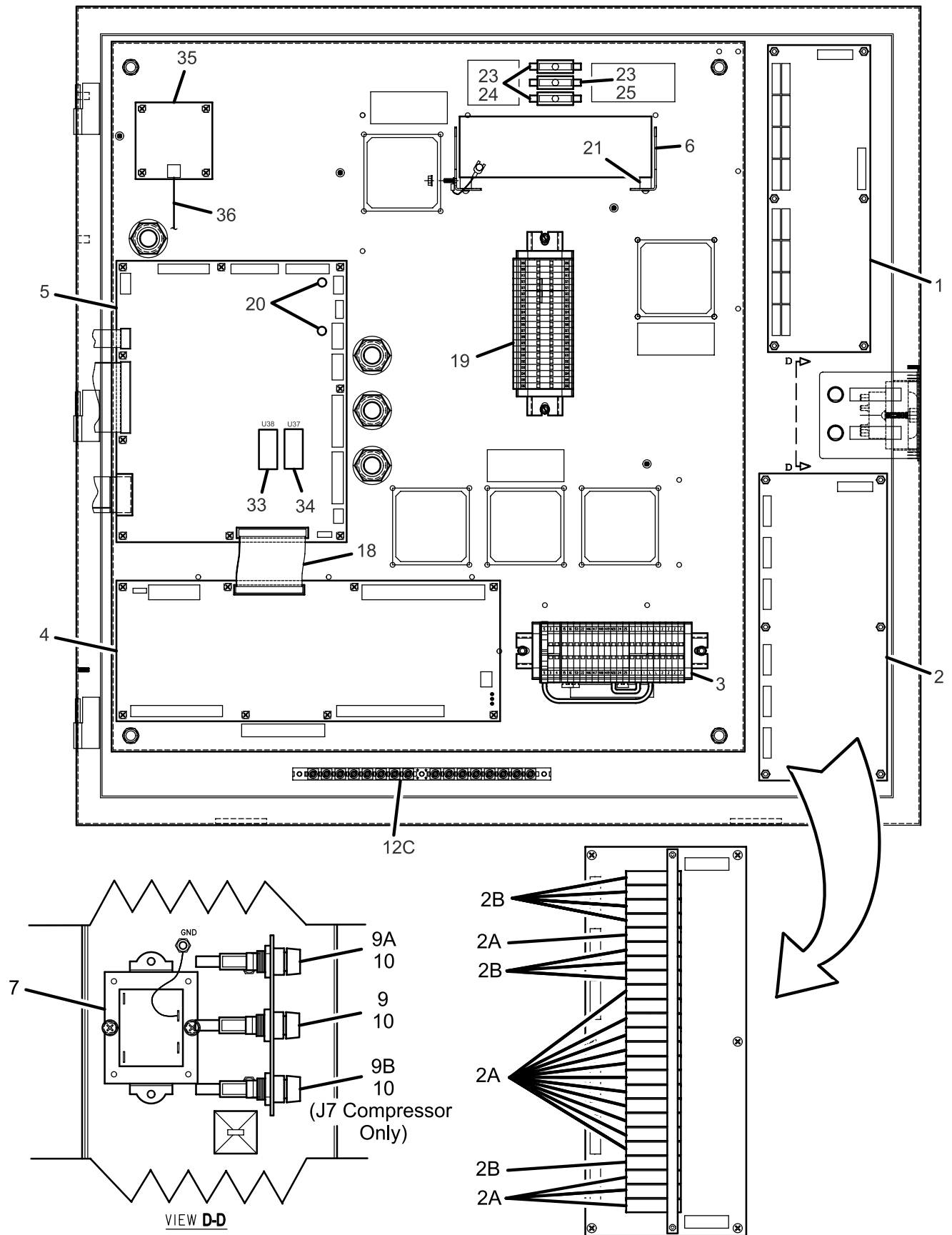
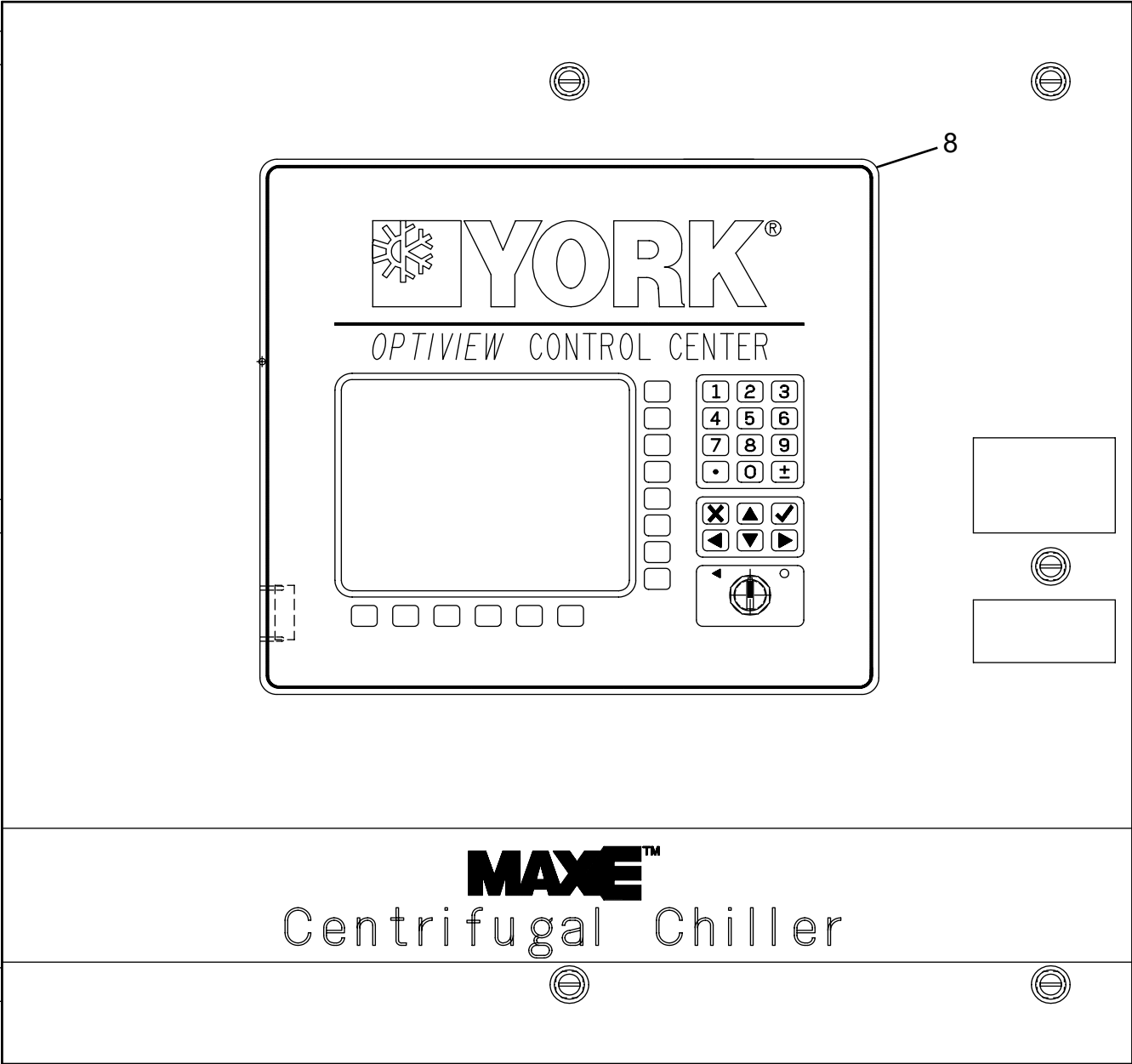
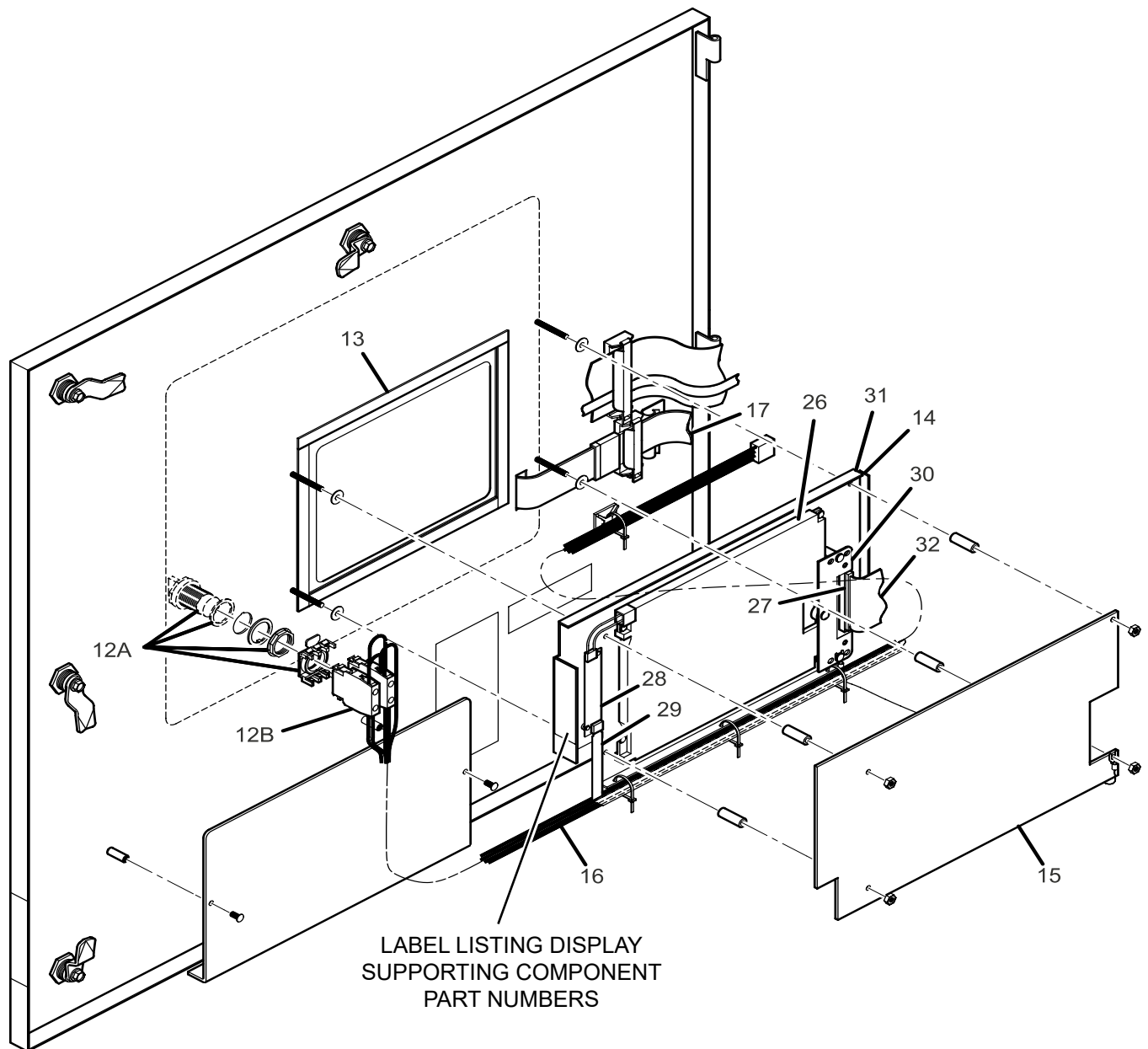


FIGURE 4 - INSIDE OF OPTIVIEW™ CONTROL PANEL-NEMA 4/12



LD10106

FIGURE 5 - FRONT VIEW OF DOOR-NEMA 4/12



LD12631

FIGURE 6 - INSIDE OF DOOR AND DISPLAY-NEMA 4/12

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SECTION 2 - POWER PANEL

TABLE 2 - POWER PANEL COMMON PARTS

ITEM	DESCRIPTION	YORK P/N	QUANTITY
1	Box, Elec. Power Panel	377-14043-311	1
2	Rail, Mounting 35mm x 7.5mm	025-29167-000	1
3	O-ring, Seal	028-12961-021	1
4	Switch, HPCO	025-37890-200	1
5	Clamp, DIN Rail	025-29189-000	4
6	Heatsink	071-02766-301	1
7	Terminal Block	025-37649-000	6
8	End Cover	025-34440-000	1
9	Sealing Ring, 1/2	025-09613-000	1
10	Label, Ground	030-15990-000	1
11	Label ,Warning German	035-11929-000	1
12	Label, Warning	035-03908-000	1
13	Zack Strip	025-36911-000	1
14	Compound, Heat Conductive	013-02997-000	.01
15	Locknut, Conduit, 1/2	025-05701-000	1
16	Contactora (M1)	024-25522-000	1
17	Screw, Tapping #6-32unc	021-19152-000	2
18	Adapter, Bulkhead	023-20859-000	1
19	Lockwasher, Th External 1/4	021-02507-000	8
20	Horn, 120VAC	025-22378-000	1
21	Fuseblock, 1 Pole, 600v	025-37862-000	1
22	Fuseblock, 2 Pole, 600v	025-37864-000	1
23	Fuseblock, 3 Pole, 600v	025-37863-000	1
24	Kit, Door Mounting, Disconnect	024-34016-000	1
25	Terminal, Ground	025-33267-000	1
26	Nut/Washer Assy #10-24	021-18024-000	8
27	Screw, Mach. Pan Head, 1-1/4-20 x 1/2	021-01853-000	8
28	Fuse, Cartridge Type, 20 Amp (FU7)	025-35908-000	1
29	Partition Plate	025-35620-000	1
30	Jumper	025-37650-000	1
31	Strap, Ground	525-32508-000	1
32	Nut, Kep #8-32	021-17664-000	2
33	Buss, Bar Terminal Block	029-23434-000	1
34	Bracket, Inductor, Mounting	377-14043-315	1
35	Screw, Mach. Rd. Hd. #8-32 x 1-3/4 LG.	021-17386-000	2
36	Nut, Hex Mach. Screw #8-32	021-08661-000	2
37	Screw, Hex 1/4-20 x 5/8 LG.	021-09224-000	4

TABLE 3 - POWER PANEL VARIABLE PARTS (R134a) KG TURBINE PACKAGE

		POWER PANEL VARIABLE PARTS (R-134A) KG TURBINE PACKAGE							
		STANDARD: 1 HOTWELL PUMP, 1 VACUUM PUMP				OPTIONAL: 2 HOTWELL PUMPS, 2 VACUUM PUMPS			
		280 VAC		460 VAC		280 VAC		460 VAC	
		377-14043-101		377-14043-102		377-14043-103		377-14043-104	
ITEM	DESCRIPTION	PART #	QTY.	PART #	QTY.	PART #	QTY.	PART #	QTY.
100	Common Parts	377-14043-010	1	377-14043-010	1	377-14043-010	1	377-14043-010	1
101	Variable Speed Oil Pump Drive	024-30468-001	1	024-30468-002	1	024-30468-001	1	024-30468-002	1
102	Fuse, Cartridge (FU8, FU9)	025-35907-000	2	025-35902-000	2	025-35907-000	2	025-35902-000	1
103	Motor, Starter Manual Buss Bar	024-27270-000	2	024-27270-000	2	024-34490-000	2	024-34490-000	2
104	Contactors (M2)	-	-	-	-	-	-	-	-
105	Contactors (M3)	024-25526-000	1	024-25522-000	1	024-25526-000	1	024-25522-000	1
106	Contactors (M4)	-	-	-	-	024-25526-000	1	024-25521-000	1
107	Contactors (M5)	024-25584-000	1	024-25521-000	1	024-25584-000	1	024-25521-000	1
108	Contactors (M6)	-	-	-	-	024-25584-000	1	024-25521-000	1
109	Motor Protector (OL1)	024-27281-000	1	024-27280-000	1	024-27281-000	1	024-27280-000	1
110	Motor Protector (OL2)	-	-	-	-	-	-	-	-
111	Motor Protector (OL3)	024-27283-000	1	024-27281-000	1	024-27283-000	1	024-27281-000	1
112	Motor Protector (OL4)	-	-	-	-	024-27283-000	1	024-27281-000	1
113	Motor Protector (OL5)	024-27284-000	1	024-27268-000	1	024-27284-000	1	024-27268-000	1
114	Motor Protector (OL6)	-	-	-	-	024-27284-000	1	024-27268-000	1
115	Inductor	025-37860-000	1	025-37861-000	1	025-37860-000	1	025-37861-000	1
116	Switch, Disconnect	024-34871-000	1	024-34870-000	1	024-34871-000	1	024-34870-000	1
117	Fuse, Cart., (FU10, FU11, FU12)	025-35905-000	3	025-35901-000	3	025-35905-000	3	025-35901-000	3
118	Main Harness	377-14043-201	1	377-14043-203	1	377-14043-205	4	377-14043-207	1
119	Kit Transformer	375-48198-001	1	375-48198-003	1	375-48198-001	1	375-48198-003	1

TABLE 4 - POWER PANEL VARIABLE PARTS (R134a) KD TURBINE PACKAGE

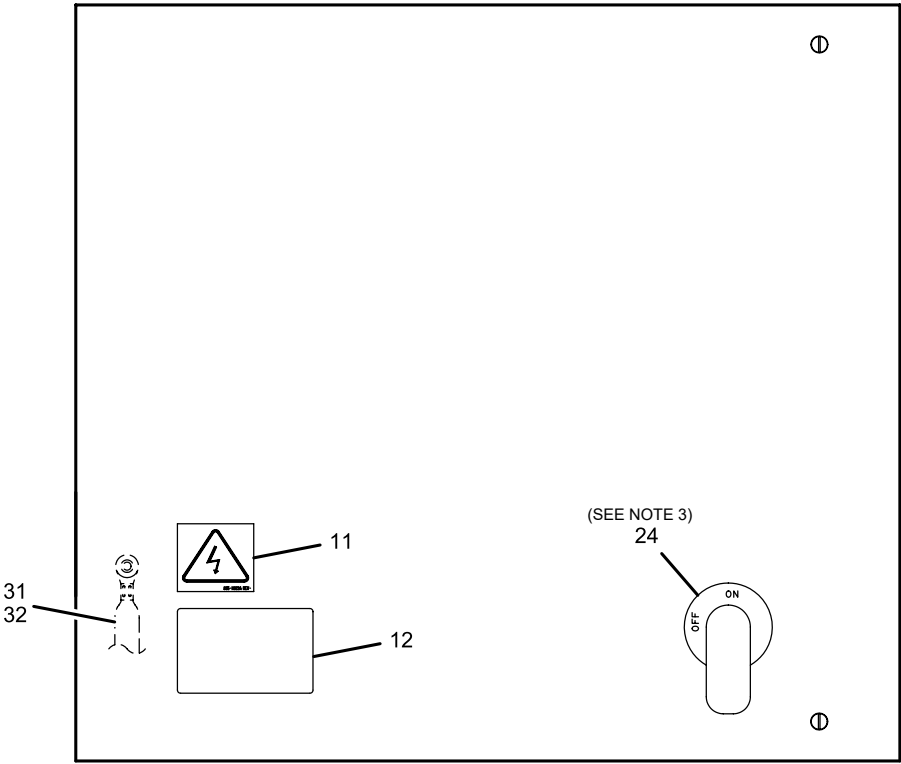
		POWER PANEL VARIABLE PARTS (R-134A) KD TURBINE PACKAGE							
		STANDARD: 1 HOTWELL PUMP, 1 VACUUM PUMP				OPTIONAL: 2 HOTWELL PUMPS, 2 VACUUM PUMPS			
		280 VAC		460 VAC		280 VAC		460 VAC	
		377-14043-111		377-14043-112		377-14043-113		377-14043-114	
ITEM	DESCRIPTION	PART #	QTY.	PART #	QTY.	PART #	QTY.	PART #	QTY.
100	Common Parts	377-14043-010	1	377-14043-010	1	377-14043-010	1	377-14043-010	1
101	Variable Speed Oil Pump Drive	024-30468-001	1	024-30468-002	1	024-30468-001	1	024-30468-002	1
102	Fuse, Cartridge (FU8, FU9)	025-35907-000	2	025-35902-000	2	025-35907-000	2	025-35902-000	2
103	Motor, Starter Manual Buss Bar	024-34490-000	2	024-34490-000	2	024-34490-000	2	024-34490-000	2
104	Contactor (M2)	024-25522-000	1	024-25522-000	1	024-25522-000	1	024-25522-000	1
105	Contactor (M3)	024-25526-000	1	024-25522-000	1	024-25526-000	1	024-25522-000	1
106	Contactor (M4)	-	-	-	-	024-25526-000	1	024-25522-000	1
107	Contactor (M5)	024-25584-000	1	024-25521-000	1	024-25584-000	1	024-25521-000	1
108	Contactor (M6)	-	-	-	-	024-25584-000	1	024-25521-000	1
109	Motor Protector (OL1)	024-27281-000	1	024-27280-000	1	024-27281-000	1	024-27280-000	1
110	Motor Protector (OL2)	024-27280-000	1	024-27278-000	1	024-27280-000	1	024-27278-000	1
111	Motor Protector (OL3)	024-27283-000	1	024-27281-000	1	024-27283-000	1	024-27281-000	1
112	Motor Protector (OL4)	-	-	-	-	024-27283-000	1	024-27281-000	1
113	Motor Protector (OL5)	024-27284-000	1	024-27268-000	1	024-27284-000	1	024-27268-000	1
114	Motor Protector (OL6)	-	-	-	-	024-27284-000	1	024-27268-000	1
115	Inductor	025-37860-000	1	025-37861-000	1	025-37860-000	1	025-37861-000	1
116	Switch, Disconnect	024-34871-000	1	024-34870-000	1	024-34871-000	1	024-34870-000	1
117	Fuse, Cart., (FU10, FU11, FU12)	025-35905-000	3	025-35901-000	3	025-35905-000	3	025-35901-000	3
118	Main Harness	377-14043-209	1	377-14043-211	1	377-14043-213	4	377-14043-215	1
119	Kit Transformer	375-48198-001	1	375-48198-003	1	375-48198-001	1	375-48198-003	1

TABLE 5 - POWER PANEL VARIABLE PARTS (R134a) KG TURBINE PACKAGE

		POWER PANEL VARIABLE PARTS (R-134A) KG TURBINE PACKAGE							
		STANDARD: 1 HOTWELL PUMP, 1 VACUUM PUMP				OPTIONAL: 2 HOTWELL PUMPS, 2 VACUUM PUMPS			
		280 VAC		460 VAC		280 VAC		460 VAC	
		377-14043-121		377-14043-122		377-14043-123		377-14043-124	
ITEM	DESCRIPTION	PART #	QTY.	PART #	QTY.	PART #	QTY.	PART #	QTY.
100	Common Parts	377-14043-010	1	377-14043-010	1	377-14043-010	1	377-14043-010	1
101	Variable Speed Oil Pump Drive	024-30468-001	1	024-30468-002	1	024-30468-001	1	024-30468-002	1
102	Fuse, Cartridge (FU8, FU9)	025-35907-000	2	025-35902-000	2	025-35907-000	2	025-35902-000	1
103	Motor, Starter Manual Buss Bar	024-34490-000	1	024-34490-000	1	024-34490-000	2	024-34490-000	2
104	Contactor (M2)	024-25522-000	1	024-25522-000	1	024-25522-000	1	024-25522-000	1
105	Contactor (M3)	024-25526-000	1	024-25522-000	1	024-25526-000	1	024-25522-000	1
106	Contactor (M4)	-	-	-	-	024-25526-000	1	024-25522-000	1
107	Contactor (M5)	-	-	-	-	024-25584-000	1	024-25521-000	1
108	Contactor (M6)	-	-	-	-	-	-	-	-
109	Motor Protector (OL1)	024-27281-000	1	024-27280-000	1	024-27281-000	1	024-27280-000	1
110	Motor Protector (OL2)	-	-	-	-	-	-	-	-
111	Motor Protector (OL3)	024-27283-000	1	024-27281-000	1	204-27283-000	1	024-27281-000	1
112	Motor Protector (OL4)	-	-	-	-	024-27283-000	1	024-27281-000	1
113	Motor Protector (OL5)	-	-	-	-	024-27284-000	1	024-27268-000	1
114	Motor Protector (OL6)	-	-	-	-	-	-	-	-
115	Inductor	025-37860-000	1	025-37861-000	1	025-37860-000	1	025-37861-000	1
116	Switch, Disconnect	024-34871-000	1	024-34870-000	1	024-34871-000	1	024-34870-000	1
117	Fuse, Cart., (FU10, FU11, FU12)	025-35905-000	3	025-35901-000	3	025-35905-000	3	025-35901-000	3
118	Main Harness	377-14043-217	1	377-14043-219	1	377-14043-221	4	377-14043-223	1
119	Kit Transformer	375-48198-001	1	375-48198-003	1	375-48198-001	1	375-48198-003	1

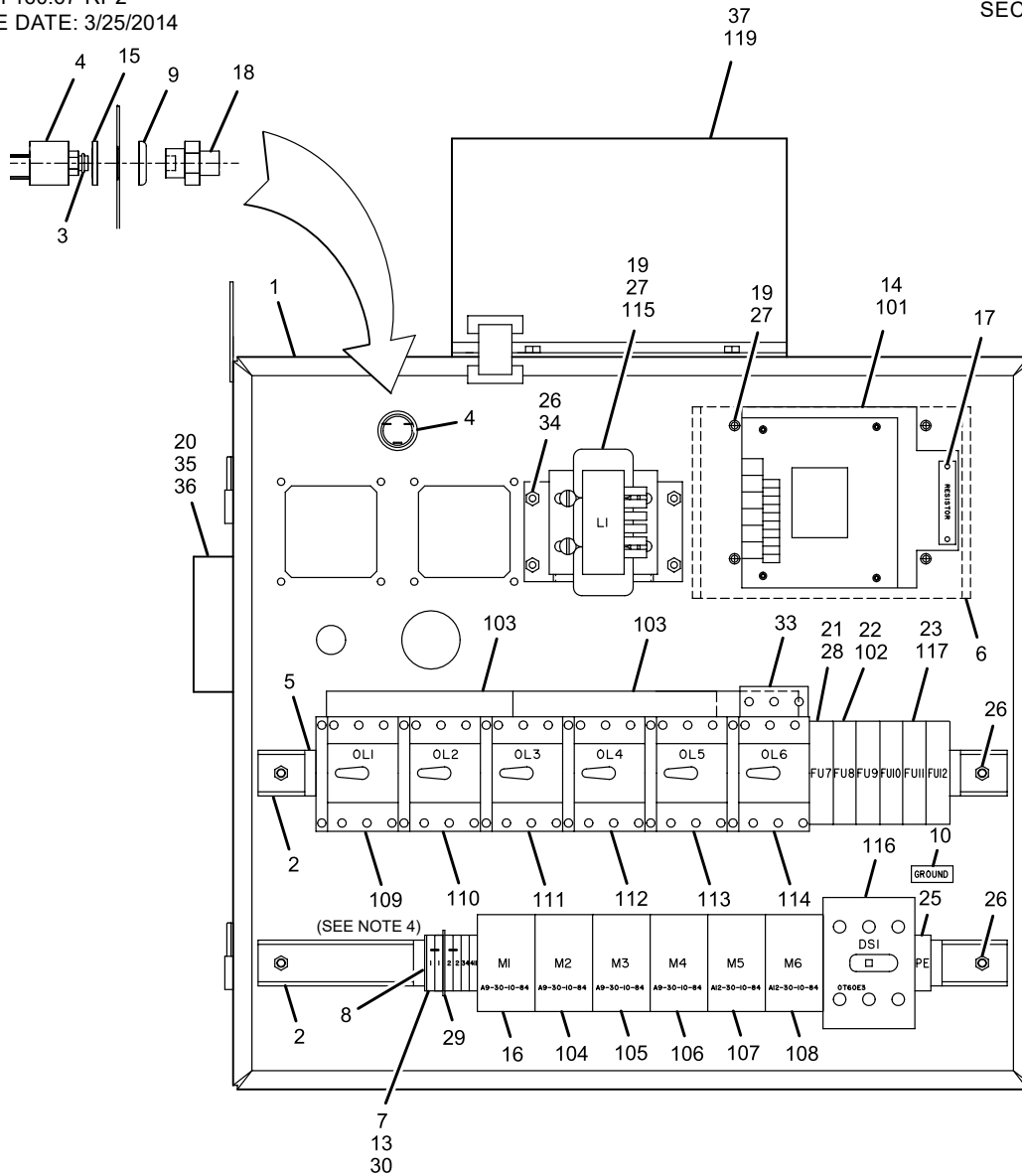
TABLE 6 - POWER PANEL VARIABLE PARTS (R134a) KD TURBINE PACKAGE

		POWER PANEL VARIABLE PARTS (R-134A) KD TURBINE PACKAGE							
		STANDARD: 1 HOTWELL PUMP, 1 VACUUM PUMP				OPTIONAL: 2 HOTWELL PUMPS, 2 VACUUM PUMPS			
		280 VAC		460 VAC		280 VAC		460 VAC	
		377-14043-121		377-14043-122		377-14043-123		377-14043-124	
ITEM	DESCRIPTION	PART #	QTY.	PART #	QTY.	PART #	QTY.	PART #	QTY.
100	Common Parts	377-14043-010	1	377-14043-010	1	377-14043-010	1	377-14043-010	1
101	Variable Speed Oil Pump Drive	024-30468-001	1	024-30468-002	1	024-30468-001	1	024-30468-002	1
102	Fuse, Cartridge (FU8, FU9)	025-35907-000	2	025-35902-000	2	025-35907-000	2	025-35902-000	2
103	Motor, Starter Manual Buss Bar	024-27270-000	1	024-27270-000	1	024-34490-000	1	024-34490-000	1
104	Contactor (M2)	-	-	-	-	-	-	-	-
105	Contactor (M3)	024-25526-000	1	024-25522-000	1	024-25526-000	1	024-25522-000	1
106	Contactor (M4)	-	-	-	-	024-25526-000	1	024-25522-000	1
107	Contactor (M5)	-	-	-	-	024-25584-000	1	024-25521-000	1
108	Contactor (M6)	-	-	-	-	-	-	-	-
109	Motor Protector (OL1)	024-27281-000	1	024-27280-000	1	024-27281-000	1	024-27280-000	1
110	Motor Protector (OL2)	-	-	-	-	-	-	-	-
111	Motor Protector (OL3)	024-27283-000	1	024-27281-000	1	024-27283-000	1	024-27281-000	1
112	Motor Protector (OL4)	-	-	-	-	024-27283-000	1	024-27281-000	1
113	Motor Protector (OL5)	-	-	-	-	024-27284-000	1	024-27268-000	1
114	Motor Protector (OL6)	-	-	-	-	024-27284-000	1	024-27268-000	1
115	Inductor	025-37860-000	1	025-37861-000	1	025-37860-000	1	025-37861-000	1
116	Switch, Disconnect	024-34871-000	1	024-34870-000	1	024-34871-000	1	024-34870-000	1
117	Fuse, Cart., (FU10, FU11, FU12)	025-35905-000	3	025-35901-000	3	025-35905-000	3	025-35901-000	3
118	Main Harness	377-14043-217	1	377-14043-219	1	377-14043-221	4	377-14043-223	1
119	Kit Transformer	375-48198-001	1	375-48198-003	1	375-48198-001	1	375-48198-003	1



LD10133

FIGURE 7 - FRONT VIEW OF POWER PANEL DOOR



LAYOUT SHOWN FOR 377-14043-114

(SEE NOTE 2)

NOTES:

1. Using Roller (Hunt Speedball Brayer No.49P Or Equiv.) Apply Heat Conductive Compound (Item14) To The Bottom Surface Of The Drive (Item 101). Before Attaching To The Heatsink.
2. Aux. Turbine Oil Pump Contactor (M2) And Motor Protector (OI2) Are Supplied On Chillers With Kd
3. Turbine Packages Only. Hotwell Pump And Vacuum Pump Contactors (M4) And (M6) And Motor Protectors (OI4 & OI6) Are Supplied Only On Chillers With Dual Pumps.
4. Modify Operating Shaft By Cutting The Length To Suit At Assembly.
5. Set All Overloads Per Table 7.

FIGURE 8 - INSIDE OF POWER PANEL

TABLE 7 - MOTOR PROTECTOR SETPOINT CHART

208VAC 101, 103, 111, & 113 ONLY		460VAC 102, 104, 112, & 114 ONLY	
DESCRIPTION	SETPOINT	DESCRIPTION	SETPOINT
OL1	8.33 AMPS	OL1	3.8 AMPS
OL2	3.1 AMPS	OL2	1.4 AMPS
OL3	16.8 AMPS	OL3	7.6 AMPS
OL4	16.8 AMPS	OL4	7.6 AMPS
OL5	24.3 AMPS	OL5	11.0 AMPS
OL6	24.3 AMPS	OL6	11.0 AMPS

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SECTION 3 - TURBINE BOX

TABLE 8 - TURBINE BOX COMMON PARTS

ITEM	DESCRIPTION	PART #	QTY.
1	Switch, Speed	025-38776-000	1
2	Converter, Frequency to Analog	025-38775-000	2
3	Rail, Mounting, 35mm x 7.5mm	025-29167-000	1
4	Connr, Cable Str. 1/2	025-08301-000	2
5*	Transmitter, Temp.	025-39696-000	2
6**	Transmitter, Temp.	025-39696-001	1

NOTES:

* Used for Turbine Bearing Temperature or Turbine Oil Temperature

** Used for Inlet Steam Temperature

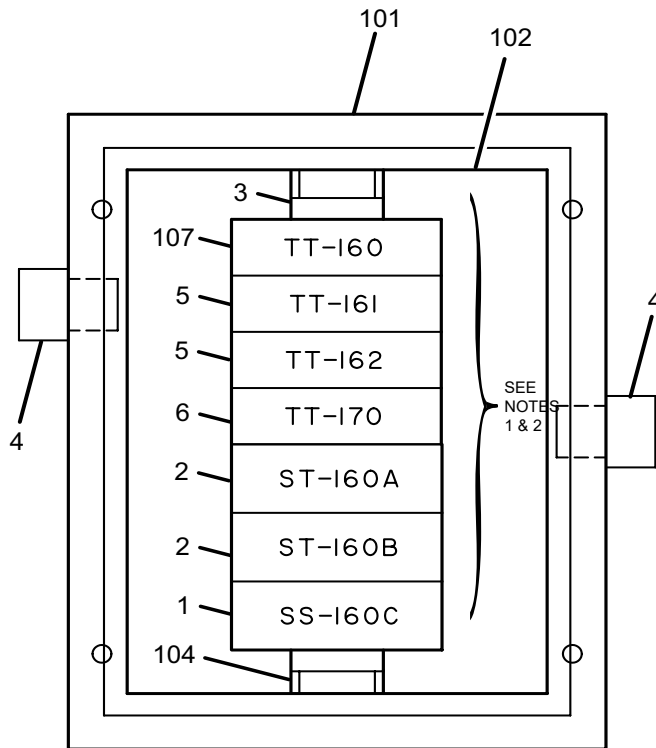
TABLE 9 - TURBINE BOX VARIABLE PARTS

		MANUAL START (KD) FIG. 9		AUTO START (KD) FIG. 10	
ITEM	DESCRIPTION	PART #	QTY.	PART #	QTY.
100	Common Parts	377-14057-000	1	377-14057-000	1
101	Box, Electrical	028-39567-000	1	025-39568-000	1
102	Panel , Mounting	025-39657-001	1	025-39568-001	1
103	Transmitter, Vibration	-	-	025-38782-000	4
104	Clamp, DIN Rail	025-34439-000	2	025-34439-000	4
105	Locknut, 1/2 NPT	-	-	025-34090-000	4
106	Fitting, 1/2 NPT	-	-	025-28720-000	4
107*	Transmitter, Temp.	025-39696-000	1	025-39696-000	1

NOTE:

* Used for Turbine Bearing Temperature or Turbine Oil Temperature

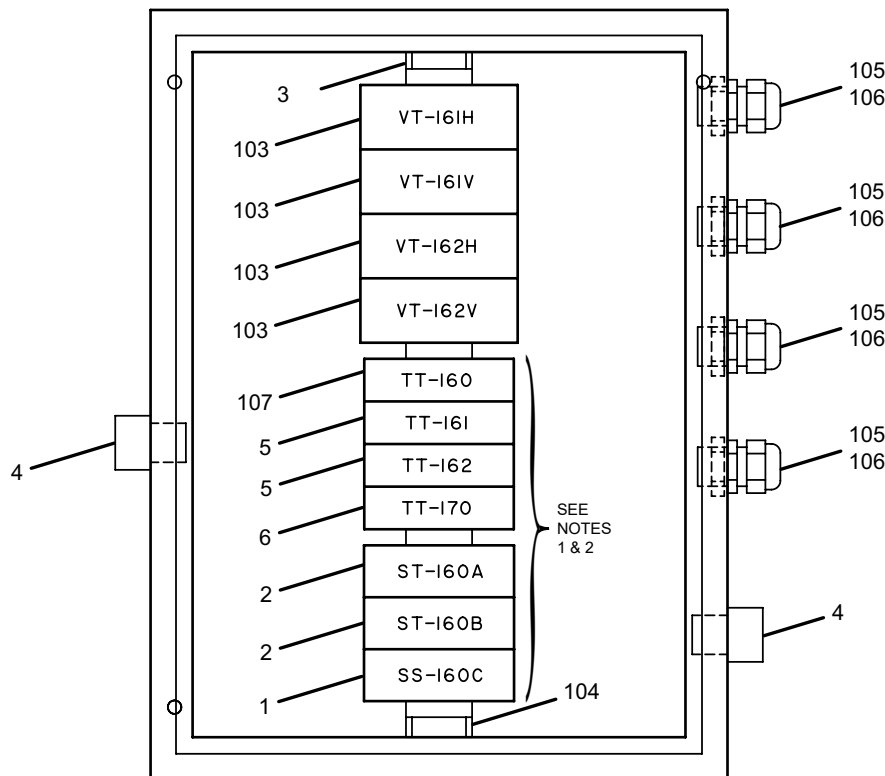
		MANUAL START (KG) FIG. 9		AUTO START (KG) FIG. 10	
ITEM	DESCRIPTION	PART #	QTY.	PART #	QTY.
100	Common Parts	377-14057-000	1	377-14057-000	1
101	Box, Electrical	028-39567-000	1	025-39568-000	1
102	Panel , Mounting	025-39657-001	1	025-39568-001	1
103	Transmitter, Vibration	-	-	025-38782-000	4
104	Clamp, DIN Rail	025-34439-000	2	025-34439-000	4
105	Locknut, 1/2 NPT	-	-	025-34090-000	4
106	Fitting, 1/2 NPT	-	-	025-28720-000	4



LAYOUT SHOWN FOR MANUAL START 377-14057-101

FIGURE 9 - INSIDE OF MANUAL START TURBINE BOX

LD10136



LAYOUT SHOWN FOR AUTO START 377-14057-102

LD10134

NOTES:

1. BEFORE INSTALLING REPLACEMENT PARTS VERIFY THAT THE DIP SWITCH SETTINGS AND CALIBRATED RANGES ARE THE SAME AS THE ORIGINAL PART. (SEE FORM 160.67-M3 FOR CALIBRATION PROCEDURES)
2. TT-160 IS SUPPLIED ON CHILLERS WITH KD TURBINE PACKAGES ONLY.
3. VT-161 H/V AND VT-162 H/V MAY ALSO BE SUPPLIED AS OPTIONAL EQUIPMENT ON MANUAL START CHILLERS.

FIGURE 10 - INSIDE OF AUTO START TURBINE BOX

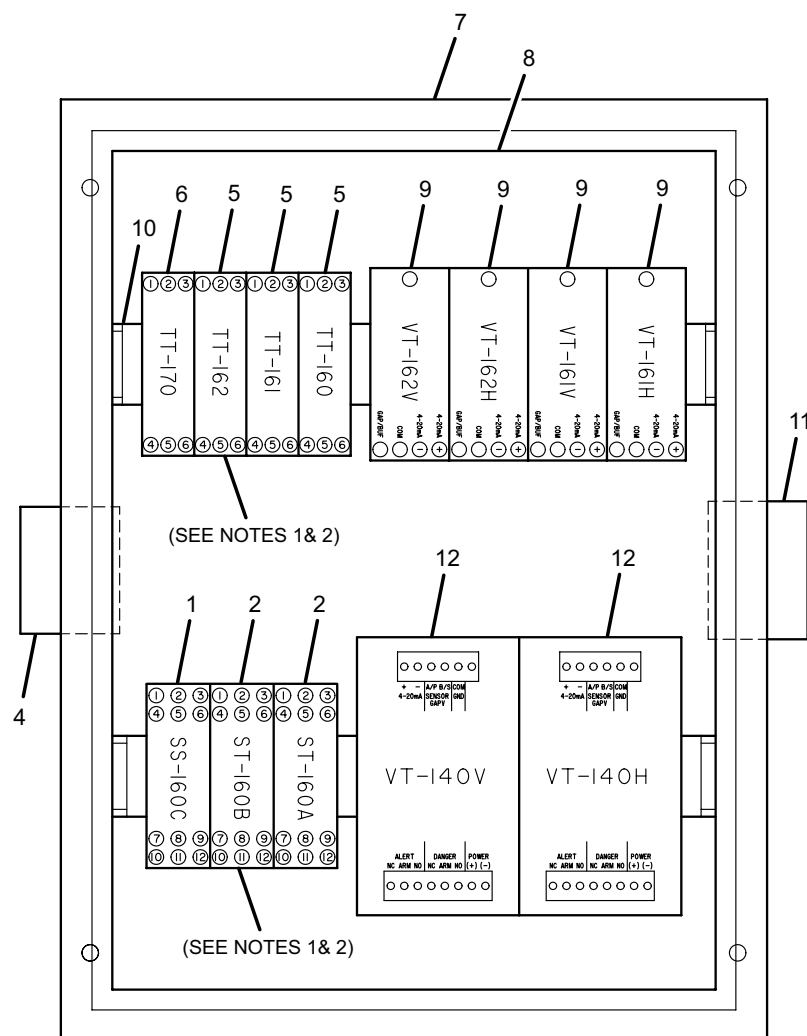
TABLE 10 - PARTS FOR TURBINE BOX W/ OPTIONAL TURBINE AND COMPRESSOR VIBRATION TRANSMITTERS

ITEM	DESCRIPTION	PART #	QTY.
1	Switch, Speed	025-38776-000	1
2	Converter, Frequency to Analog	025-38775-000	2
3	Rail, Mounting, 35mm x 7.5mm	025-29167-000	1
4	Connr, Cable Str. 1	025-12282-000	1
5*	Transmitter, Temp.	025-39696-000	3
6**	Transmitter, Temp.	025-39696-001	1
7	Box, Electrical	025-39568-000	1
8	Panel ,Moutning	025-39568-000	1
9	Transmitter, Vibration	025-38782-000	4
10	Clamp, DIN Rail	025-34439-000	6
11	Connr, Cable Str. 1-1/4	025-15981-000	1
12	Transmitter, Acceleration	025-39941-000	2

NOTES:

* Used for Turbine Bearing Temperature or Turbine Oil Temperature

** Used for Inlet Steam Temperature



LD10138

FIGURE 11 - INSIDE OF TURBINE BOX W/ OPTIONAL TURBINE AND COMPRESSOR VIBRATION TRANSMITTERS

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SECTION 4 - UNIT MOUNTED DEVICES

TABLE 11 - UNIT MOUNTED SENSORS AND CONTROL DEVICES

ITEM	DESCRIPTION	PART NUMBER	FIGURE	QTY.
1	Transducer, Pressure-Condenser Refrigerant, Compressor High and Low Oil	025-28678-006	13/15/17	3
2	Transducer, Pressure-Evaporator Refrigerant	025-28678-112	12	1
3	Transducer, Pressure-Compressor Stall-VGD Compressors only (Some rewiring may be required. Refer to Form 160.67-M3)	025-40088-000	14	1
4	O-ring, Seal-for Pressure Transducers, items 1, 2, and 3	028-12961-002	12/14/15/17	5
5	Sensor, Temperature (Thermistor) - Chilled and Condenser Water Return and Leaving, Drop Leg Refrigerant Liquid	025-29964-000	12/14	5
6	Well, Thermo - For Chilled and Condenser Water Return and Leaving Temperature Sensors	026-32328-000	12	4
7	Sensor, Temperature (Thermistor) - Evaporator Refrigerant Liquid (3/4-16UNF-2A)	025-34159-000	14	1
8	Sensor, Temperature (Thermistor) - Compressor Oil and Refrigerant Discharge (3/4-16UNF-2A)	025-33288-000	14	2
9	O-ring, Seal-for Temperature Sensors, for items 7 and 8	028-12961-004	14	3
10	Sensor, Level - Subcooler Liquid Refrigerant	025-35144-000	14	1
11	Gasket, Seal - for item 10	028-04836-000	14	1
12	Sensor, Flow - Chilled and Condenser Water	025-43553-001	12	2
13	Valve, Solenoid - Compressor Oil Return	025-35150-001	14	1
14	Valve, Solenoid - Compressor Liquid Injection (J Compressor Only)	025-35150-002	14	1
15	O-ring, Seal - for Solenoid Valves, items 13 and 14	028-12961-012	14	4
16	Valve Assembly, Ball - Compressor (H & P Compressors Only) and Turbine Oil Cooler Water (See Note 1)	025-41560-003	12/19	2
17	Valve Assembly, Ball - Compressor Oil Cooler Water (U and J Compressors Only) (See Note 1)	025-41560-005	12	1
18	Actuator, Electric - Hot Gas Bypass Valve	025-38180-000	12	1
	Actuator, Electric - Hot Gas 120 vac, 4 -20 ma			
	ABZ-6-102SC	025-42245-006		
	ABZ-9-102SC	025-42245-009		
	ABZ-15-102SC	025-42245-015		
19	Actuator, Electric - Subcooler Level Control Valve Actuator 24 vac, 0-10 VDC	025-40648-001	14	1
	Actuator, Electric - Subcooler Level Control 120 vac, 4 - 20 ma			
	ABZ-6-102SC	025-42245-006		
	ABZ-9-102SC	025-42245-009		
	ABZ-15-102SC	025-42245-015		
	ABZ-19-102SC	025-42245-019		
19a	Actuator DC motor assembly for 24 vac, 0 -10 vdc actuator only	RE-GM	-	1
20	Actuator, Electric - Oil Cooler Water Ball Valve	025-44501-000	12/19	2
21	Probe, Proximity (Sensor) - Compressor Thrust (U and J Compressors Only) (See Note 2)	025-40496-001	15/16	1
21A	Probe, Proximity (Electronics Module) (See Note 2)	025-40496-002	15/16	1
21B	Probe, Proximity (Connecting Cable) (See Note 2)	025-40496-003	15/16	1
22	O-ring, Seal - for Compressor Thrust Probe, item 21	028-12209-000	15/16	1
23	Switch, Pressure - Compressor Thrust (H & P Compressors Only)	025-40136-000	17	1

TABLE 11 – UNIT MOUNTED SENSORS AND CONTROL DEVICES (CONT'D)

ITEM	DESCRIPTION	PART NUMBER	FIGURE	QTY.
24	Actuator, with Pre-wired Plug - Compressor PRV & VGD, H9, J1 - J5, K1 - K4	375-49340-103	15/16	2
	Actuator, with Pre-wired Plug - Compressor PRV & VGD, J7, K7	375-49340-105		
25	Actuator, with Pre-wired Plug - Compressor PRV & VGD, P8	375-49340-101	17	1
26	Kit, PRV Position (complete assembly)	371-02012-001	18	1
27	Pot, 2500Ohms (part of item 26)	025-32570-000	18	1
***28	Kit, Accelerometer - Compressor Horizontal and Vertical (includes cable and mounting screw)	025-39942-000	15/16/17	2
29	Transmitter, Pressure - Steam Exhaust (Fixed Range - 14.7 to 30 PSIG)	025-38549-000	20	1
30	Transmitter, Pressure - Turbine Supply Oil (Fixed Range - 0 to 30 PSIG)	025-38550-000	20	1
31	Transmitter, Pressure - Steam Inlet (Fixed range - 0 to 300 PSIG)	025-38551-000	160.67-N2 Figure 12	1
	Transmitter, Pressure - Steam Inlet (Fixed range - 0 to 500 PSIG)	025-42586-000		
32	Transmitter, Pressure - Turbine First Stage (Fixed Range - 0 to 100 PSIG) - Condensing Turbine	025-39542-000	20	1
	Transmitter, Pressure - Turbine First Stage (Fixed Range -14.7 To 100 PSIG)	025-45092-000		
33	Transmitter, Pressure - Turbine First Stage (Fixed Range - 0 to 150 PSIG) - Non-Condensing Turbine	025-39680-000	20	1
34	Magnetic Pick-up - for Speed Switch (5/8 - 18 UNF - 2A)	025-35232-000	22/24	1
35	Cable, Magnetic Pick-up - for item 34	025-35233-000	22/24	1
36	Magnetic Pick-up for Analog Speed Signals (3/4 - 20 UNEF-2A)	025-39543-000	22/24	2
37	Cable, Magnetic Pick-up - for item 36	025-39544-000	22/24	2
38	Sensor, Temperature (100 Ohm Platinum RTD/DIN 43760) - Turbine Shaft End and Governor End Bearings	025-38784-000	22/24	2
39	Holder, Fluid Seal, Spring Loaded - for Turbine Bearing Temperature Sensors item 38	025-38785-000	22/24	2
40	Sensor, Temperature (100 Ohm Platinum RTD/DIN 43760) - Turbine Supply Oil - KD Turbine Only	025-36755-000	160.67-N2 Figure 12	1
41	Sensor, Temperature (100 Ohm Platinum RTD/DIN 43760) Steam Inlet (includes Thermowell)	025-39545-000	20	1
42	Transducer, Current to Pneumatic - Turbine Governor Valve	025-40246-000	20	1
43	Valve, Solenoid - Turbine Vacuum Breaker	025-40282-000	20	1
44	Valve, Solenoid - Turbine Trip	025-40285-000	20	1
45	Switch, SPDT - Trip Valve Limit Switch (Replacement switch module only)	025-40286-000	20	1
46	Probe, Vibration, 8 MM - Turbine Shaft End and Governor End Horizontal and Vertical	025-38783-000	22/24	4
47a	Cable, Turbine Vibration, 4.5 Meter Total Length - for item 46	025-39453-000	22/24	4
47b	Cable, Turbine Vibration, 8.5 Meter Total Length - for item 46	025-40577-000	22/24	4
48	Valve, Solenoid - Steam Ring Drain	025-40283-000	26	1
49	Valve, Solenoid - Turbine Nozzle Valve Air Dump	025-40284-000	26	2
****50	Transmitter, Level - Steam Condenser Level Control (Penberthy)	025-40247-000	27	1
	Transmitter, Level - Steam Condenser Level Control (Innovative Solution)	025-44941-CAP		
****51	Switch, Level - Steam Condenser Hotwell High and Low Level (Penberthy)	025-40248-000	-	-
	Switch, Level - Steam Condenser Hotwell High and Low Level (Innovative Solution)	025-44941-SWT		
52	Transducer, Current to Pneumatic - Steam Condenser Level Control	025-40249-000	14	1
53	Valve, Solenoid - Vacuum Pump Sealing Water	025-40316-000	14	1
54	Switch, Flow - Vacuum Pump Sealing Water	024-35101-00	14	1

TABLE 11 – UNIT MOUNTED SENSORS AND CONTROL DEVICES (CONT'D)

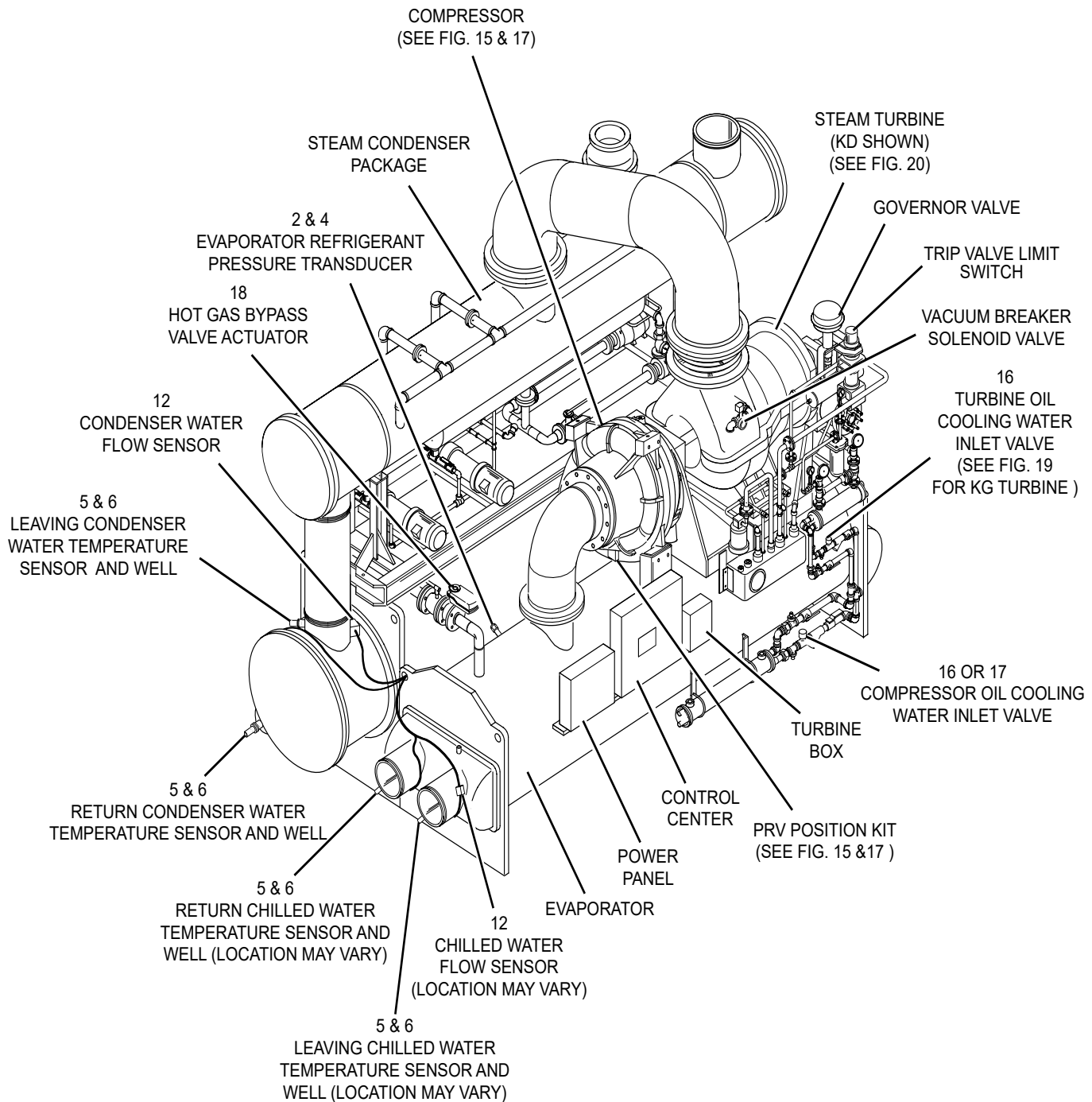
ITEM	DESCRIPTION	PART NUMBER	FIGURE	QTY.
55	Tachometer	025-40250-000	28	1
56	Siphon - Used for all Steam Pressure Transmitters	026-35995-000	20/21	3
57	Valve, Ball - Used for all Pressure Transmitters	022-09299-000	20/21	4
58	Temperature Sensor, Surface Condenser Outlet	025-36054-005	14	1

***Indicates Optional Equipment

**** Reference *Figure 27 on page 44* to determine if Penberthy or Innovation Solution

NOTES:

1. Chillers manufactured after June 2006 are supplied with an electrically actuated ball valve. In lieu of replacing the solenoid valve on older chillers, it is recommended that the strainer be removed and the solenoid valve be replaced with an appropriate ball valve.
2. Chillers manufactured after June 2006 are supplied with the two-piece probe. The one-piece probe originally supplied on older chillers will no longer be available for replacement. Refer to Form 160.67-M3, Section 13, for additional details on installing the new probe.



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FIGURE 12 - CHILLER UNIT MOUNTED DEVICES

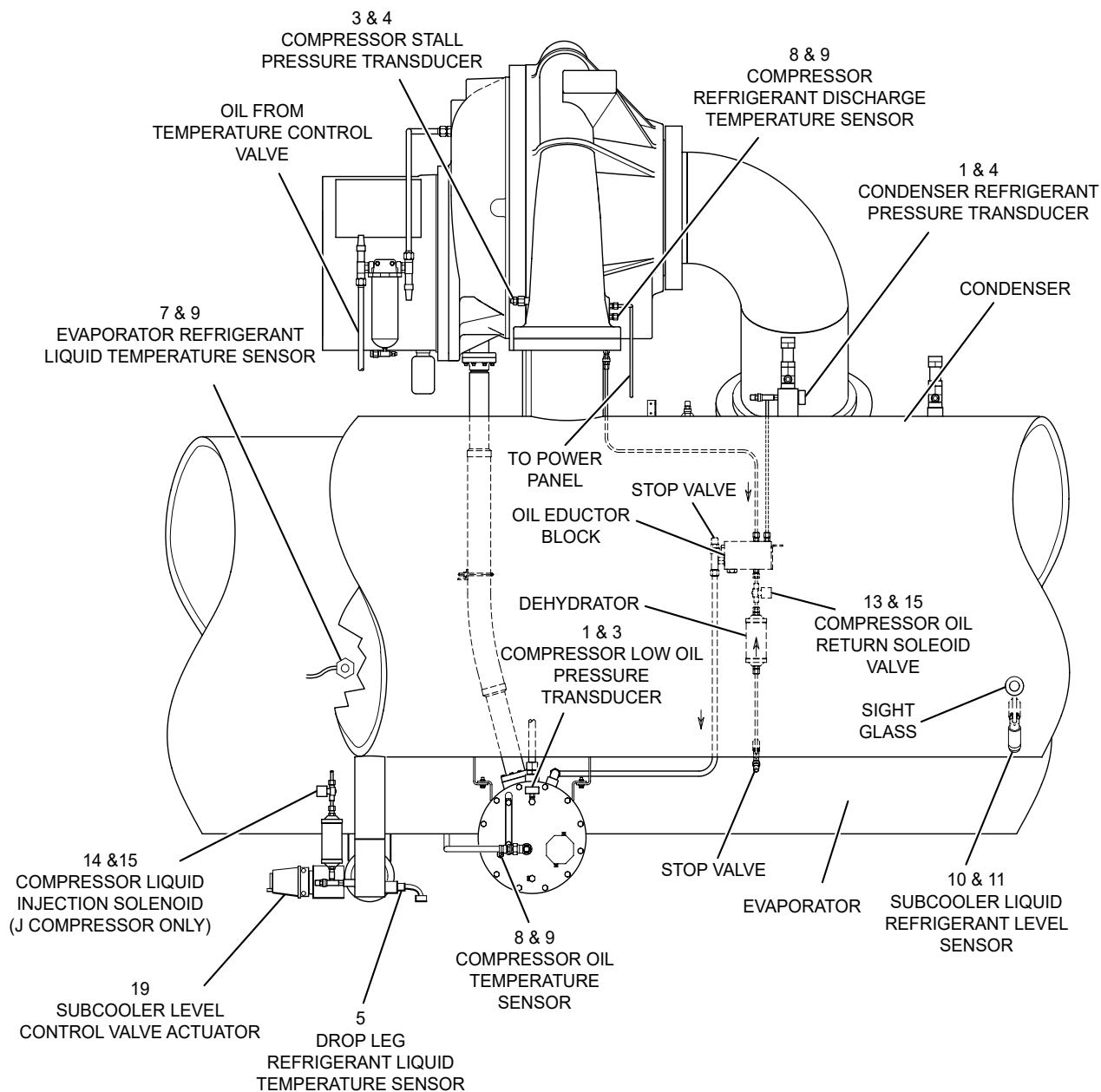
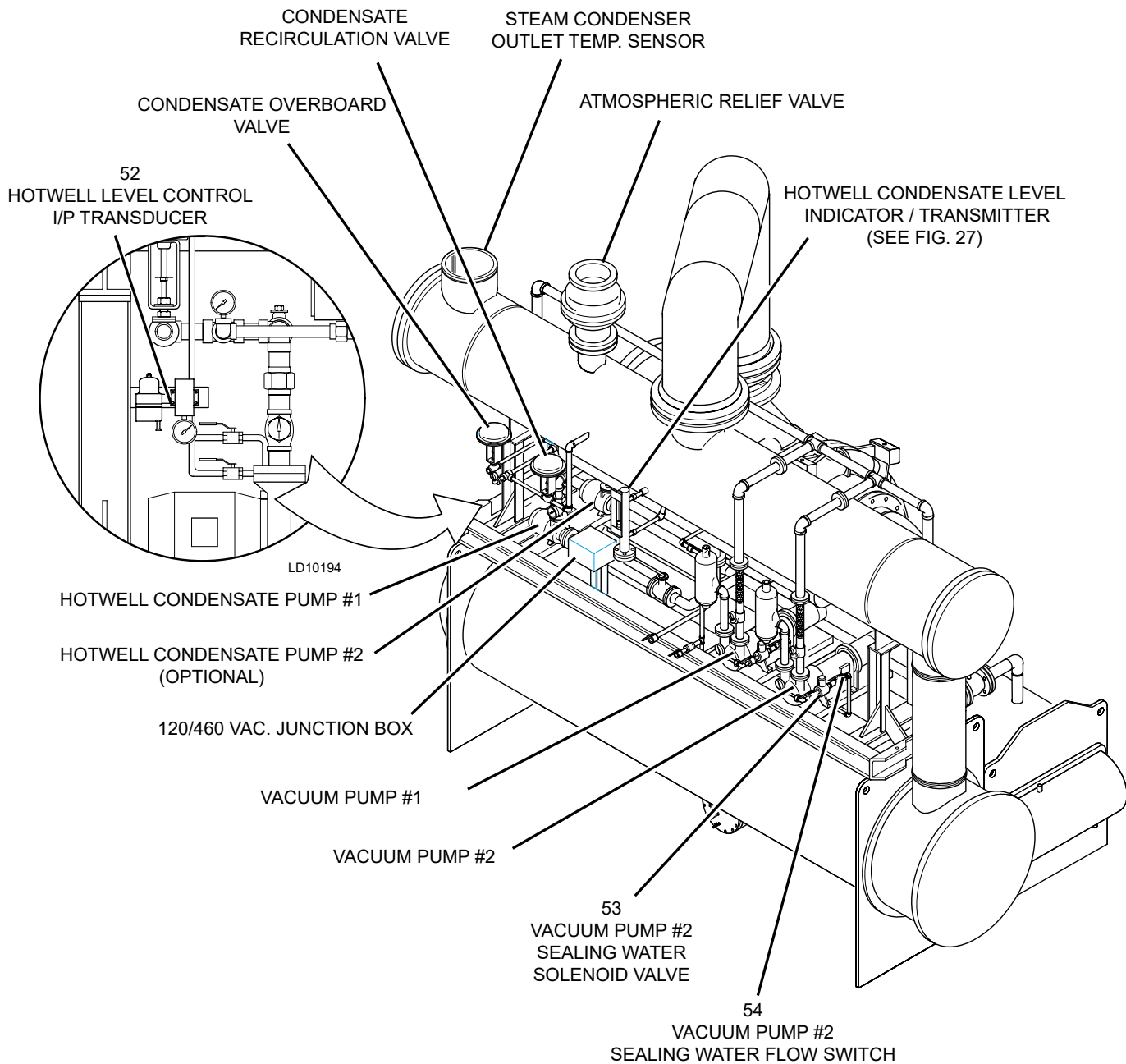


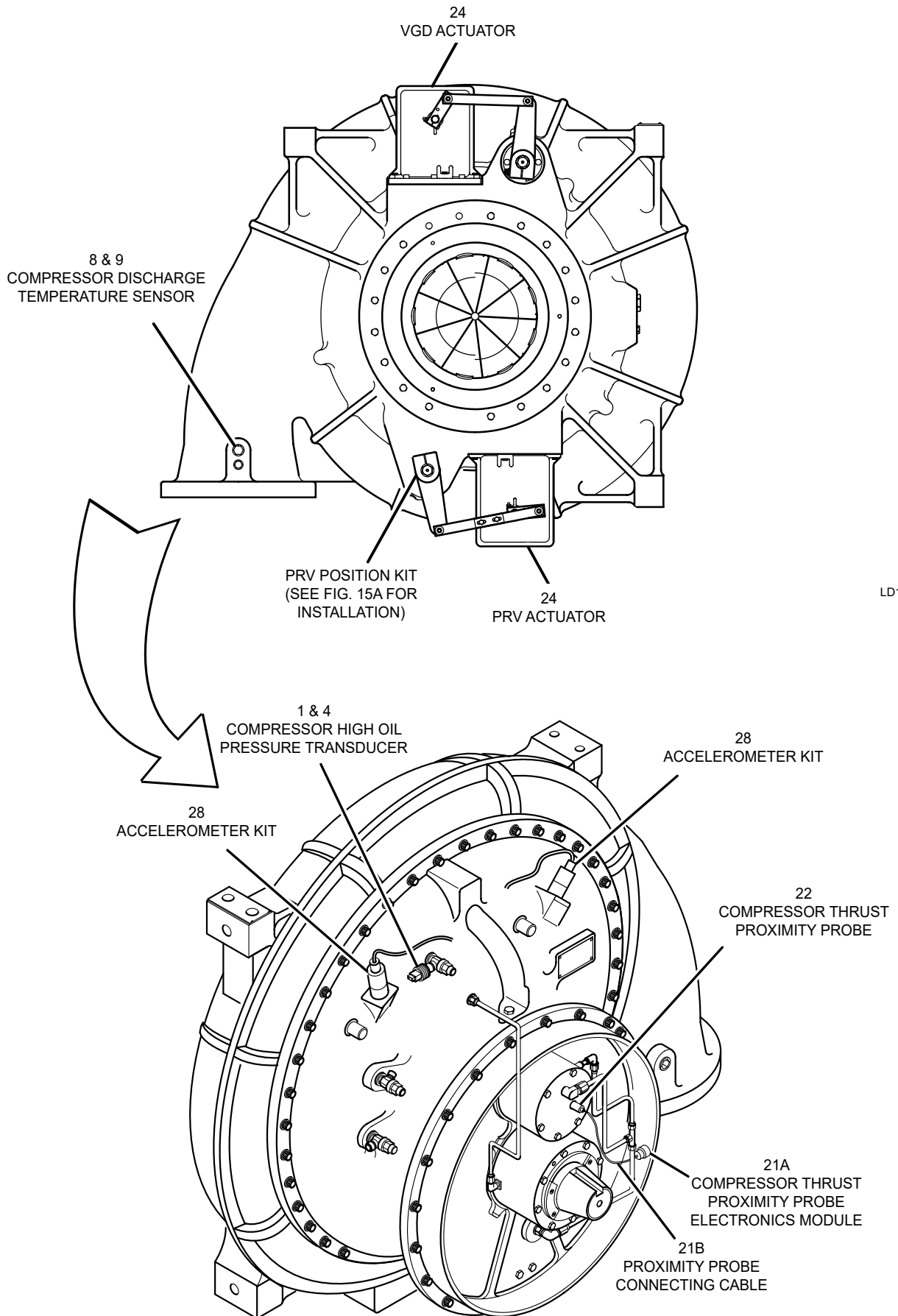
FIGURE 13 - CHILLER UNIT MOUNTED INSTRUMENTS

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LD10192

FIGURE 14 - STEAM CONDENSER MOUNTED DEVICES



LD10202

LD12632

FIGURE 15 - J4 & J5 COMPRESSORS

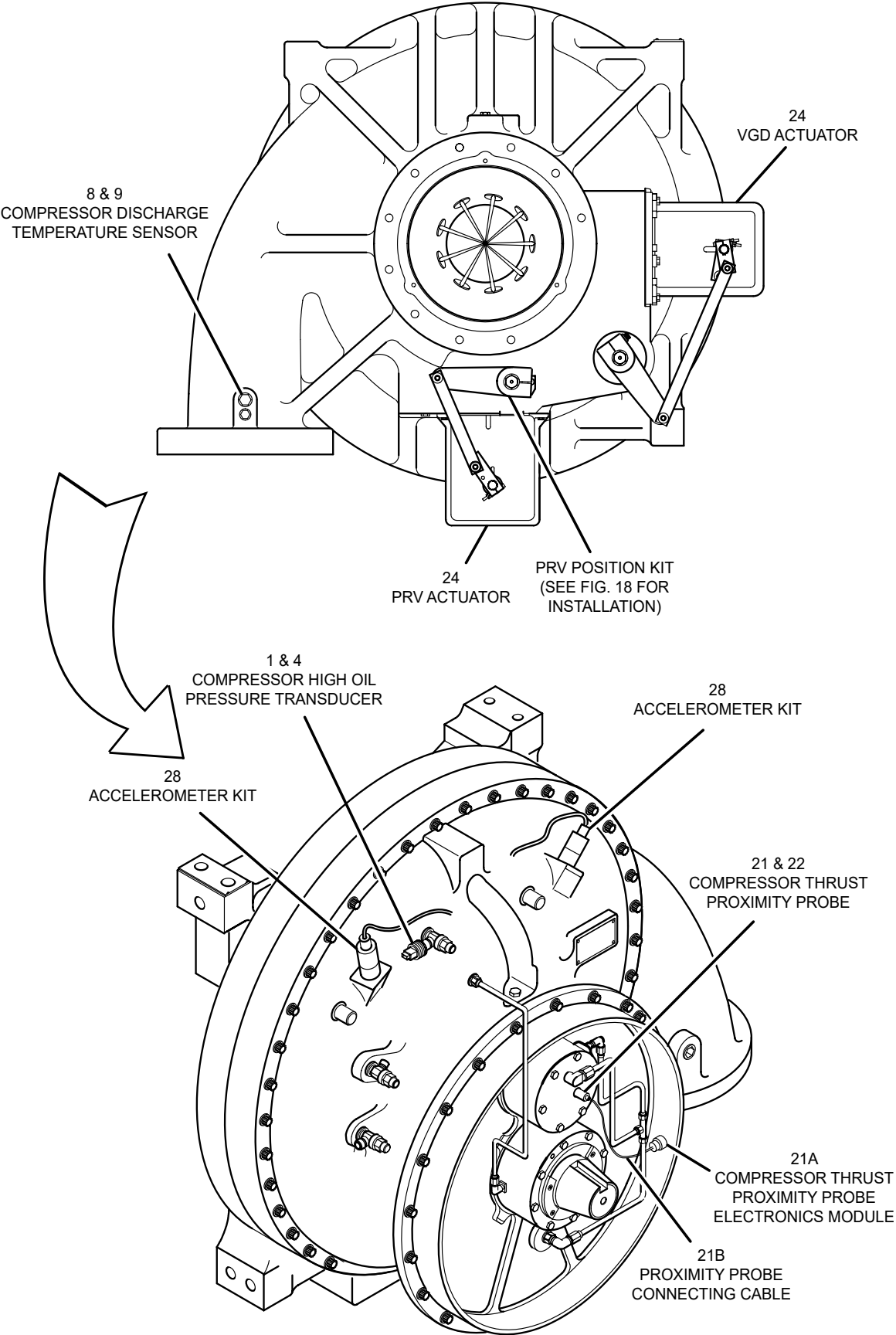
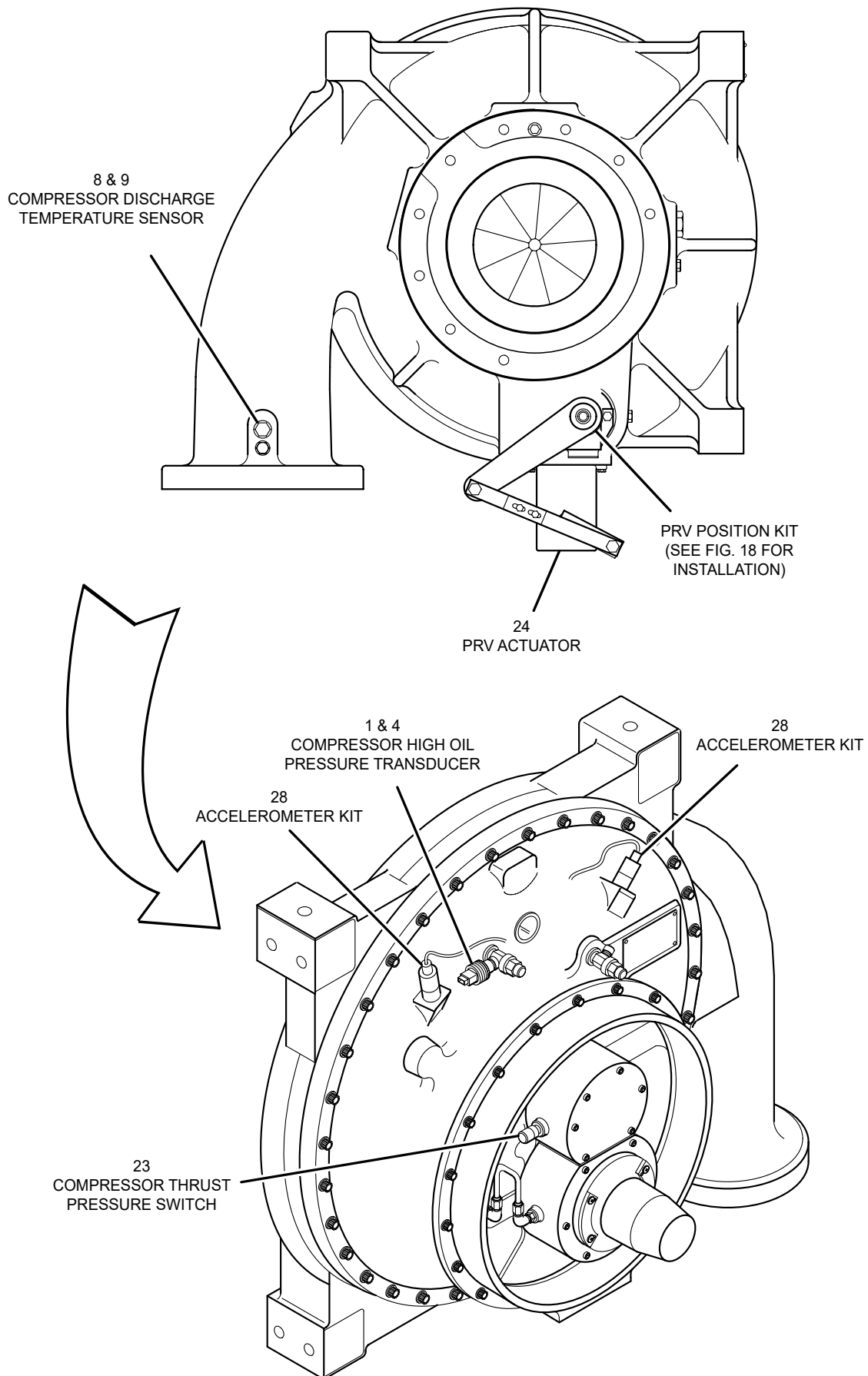


FIGURE 16 - J1 / J2 & U COMPRESSORS

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LD10204

FIGURE 17 - H & P COMPRESSORS

LD10201

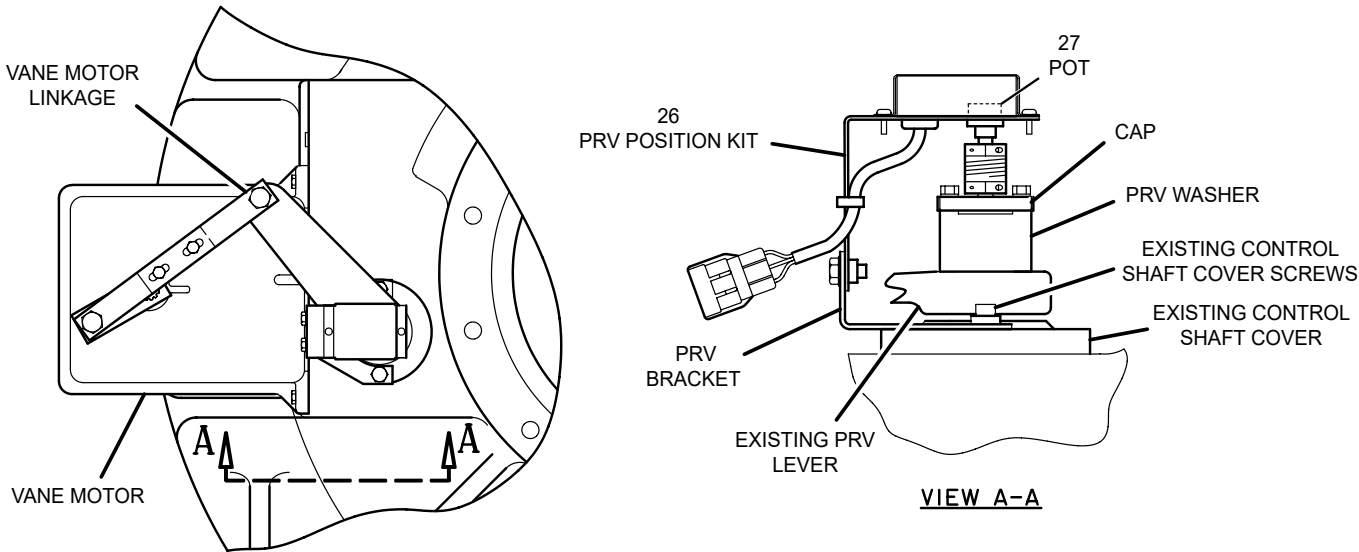


FIGURE 18 - PRV POSITION KIT

LD10205

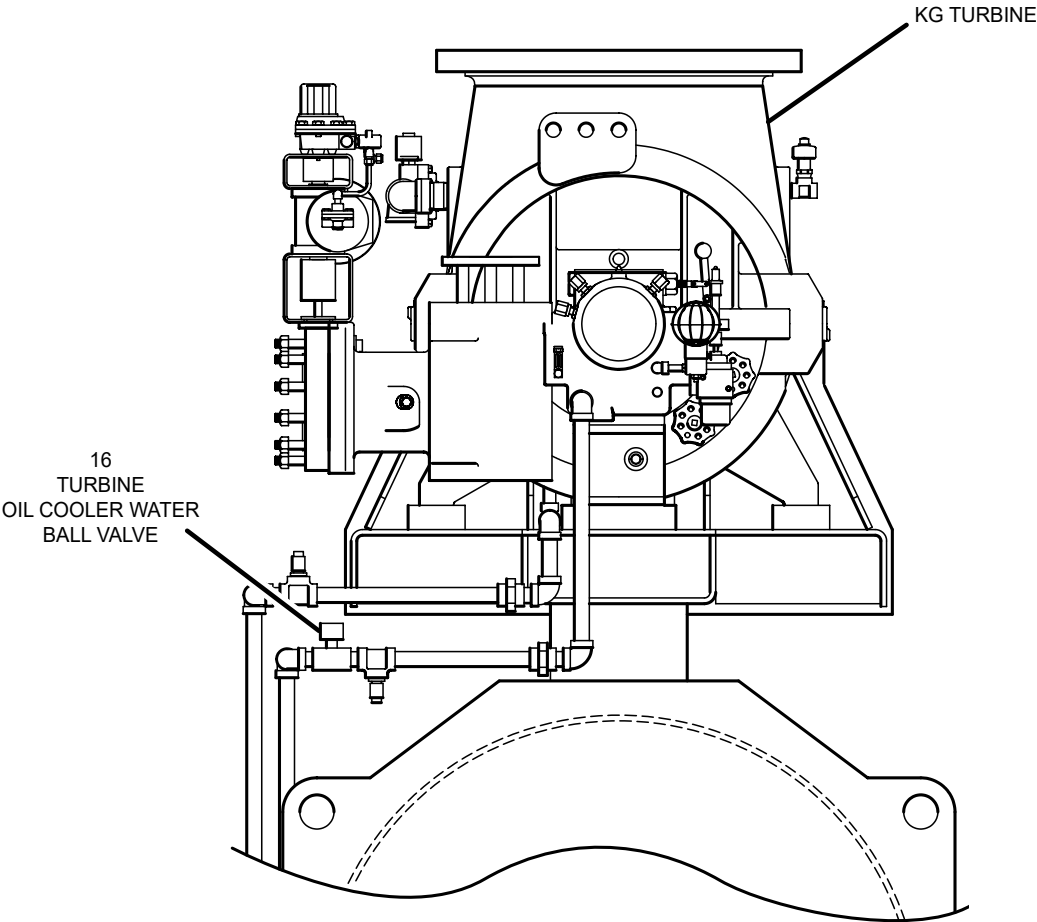


FIGURE 19 - KG TURBINE OIL COOLER WATER PIPING

LD10207

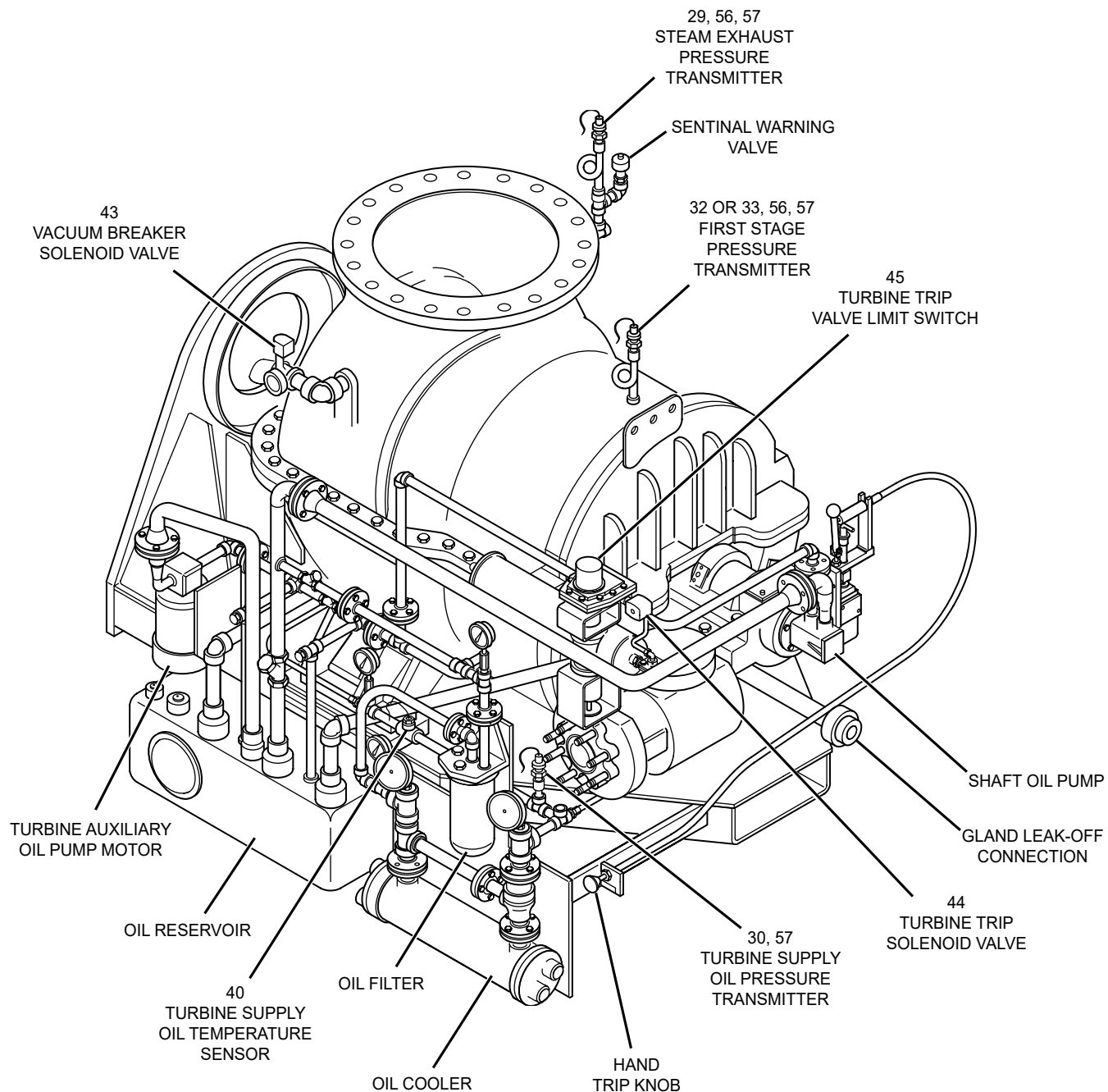
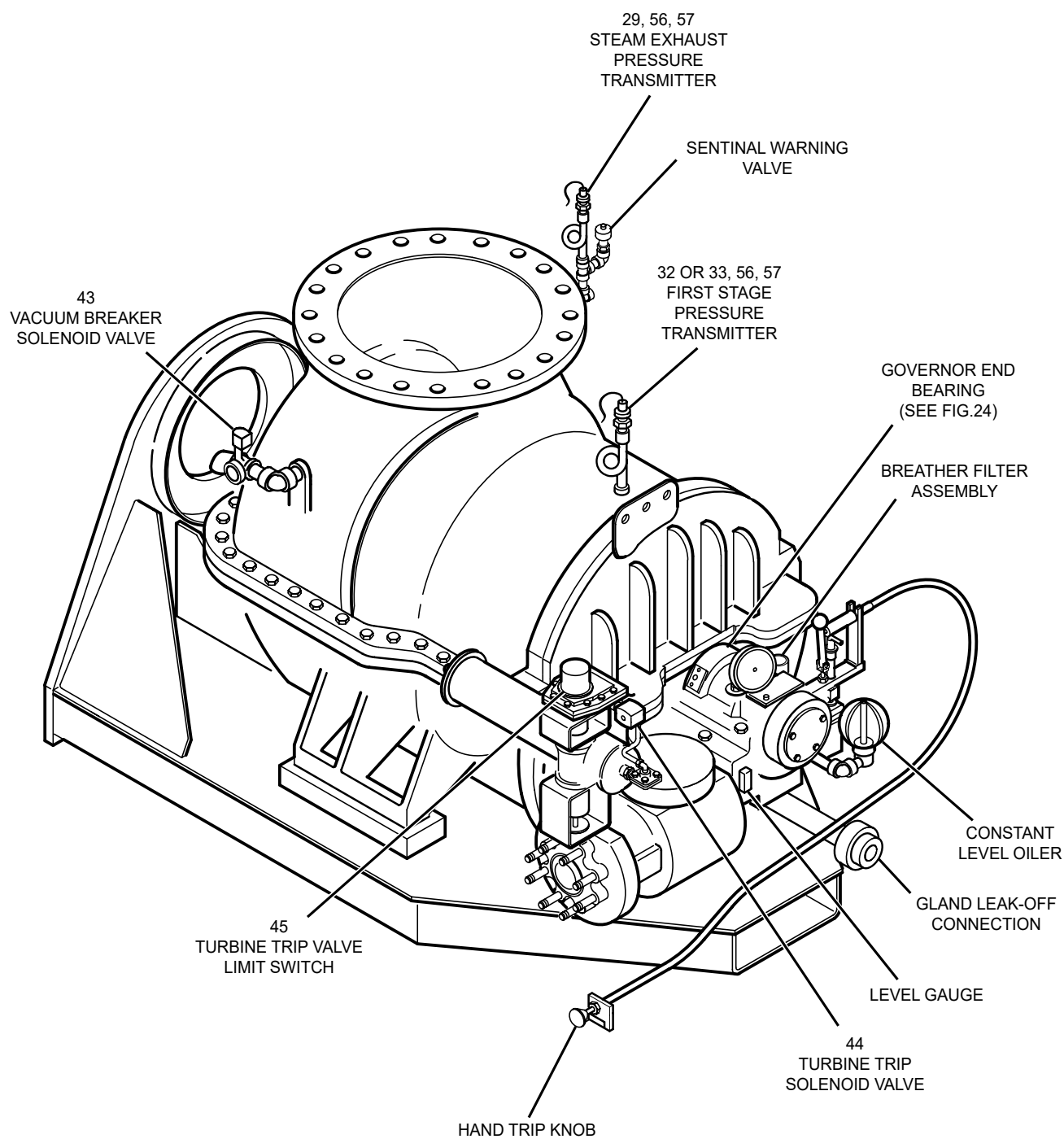
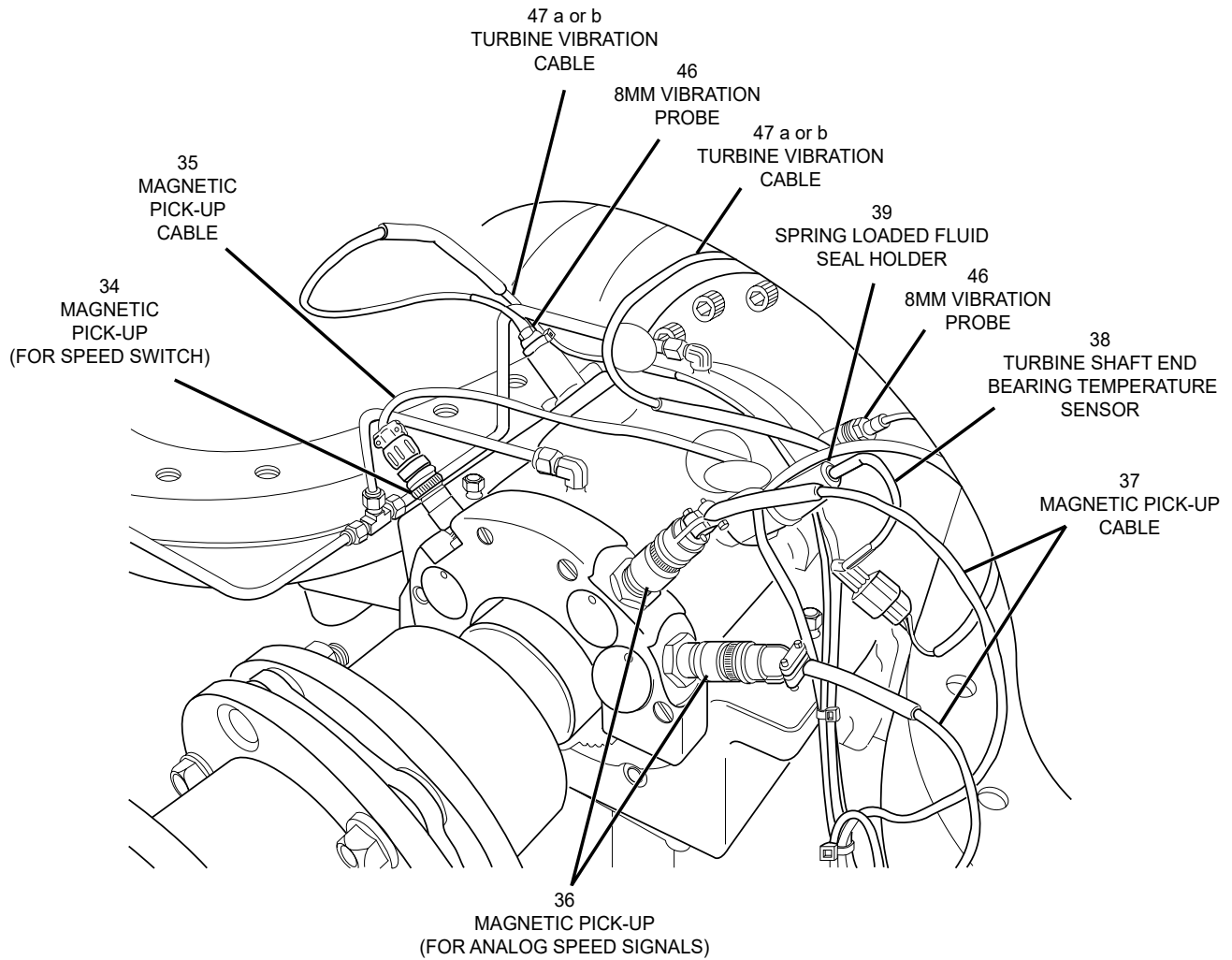


FIGURE 20 - KD TURBINE

LD12634

**FIGURE 21 - KG TURBINE**

LD10209



4

FIGURE 22 - KD TURBINE SHAFT END BEARING

LD10214

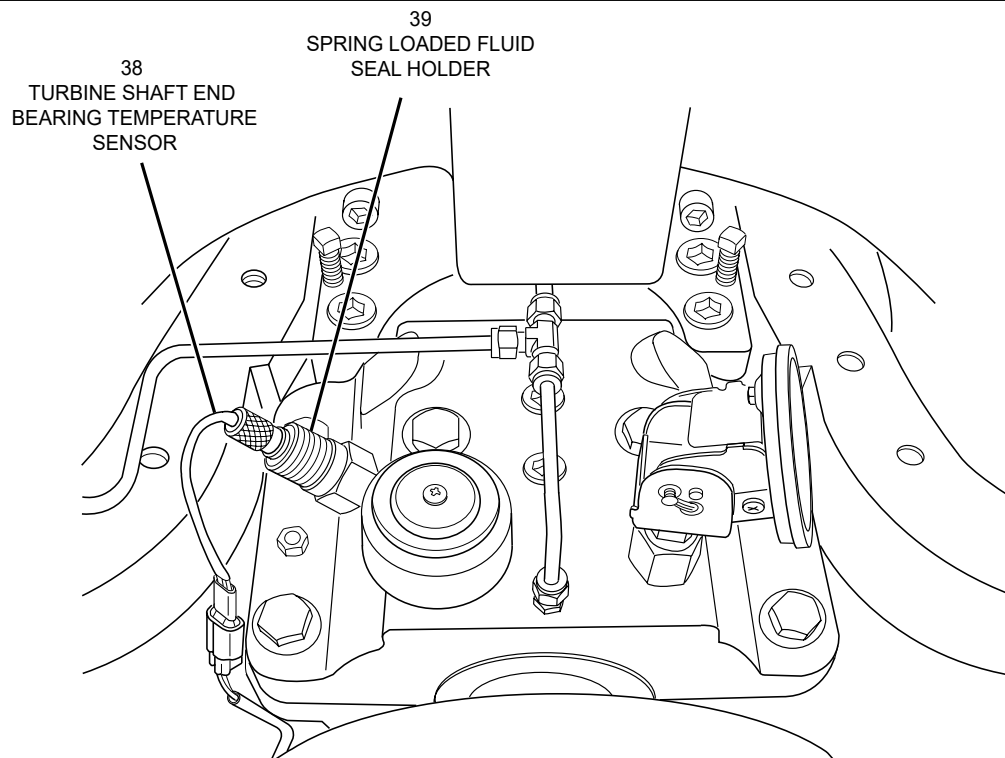
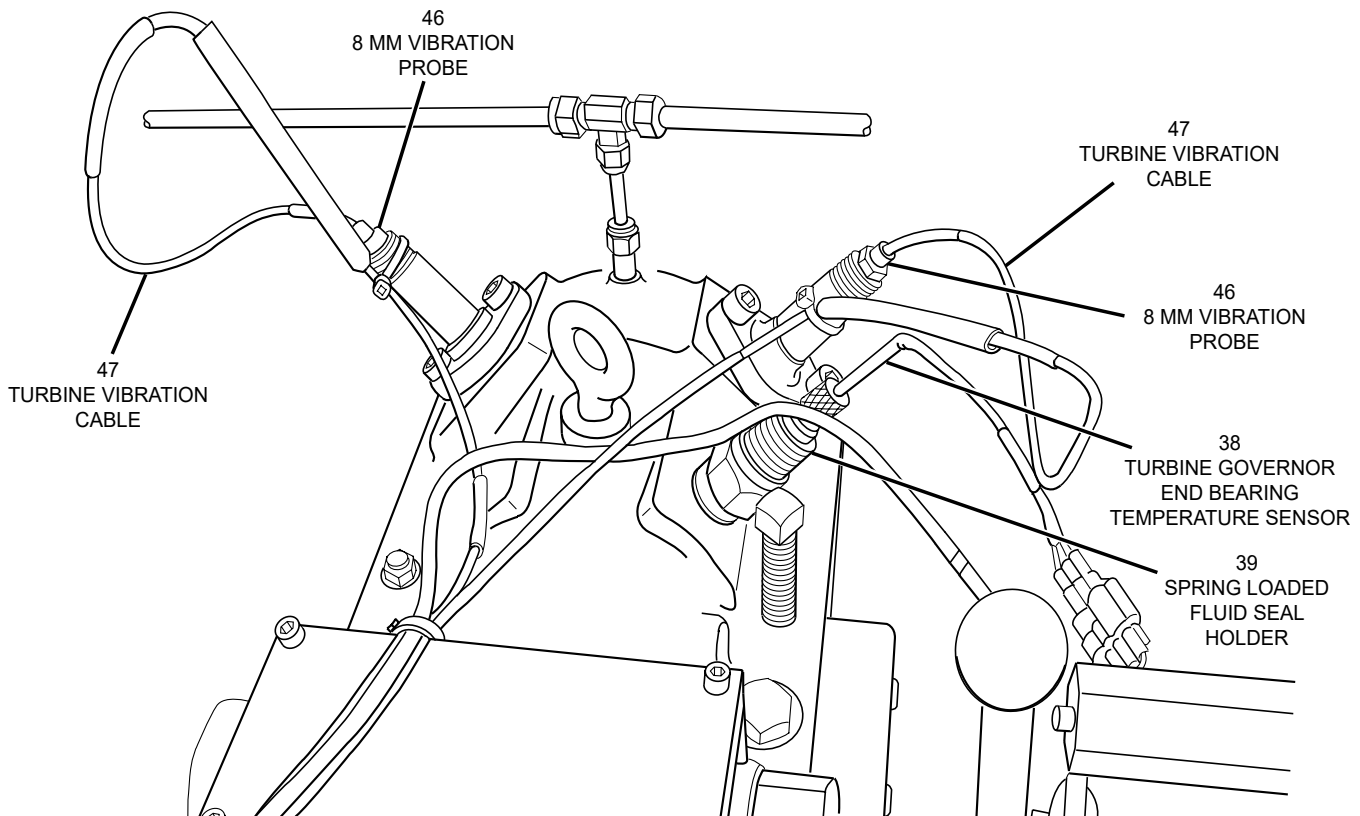
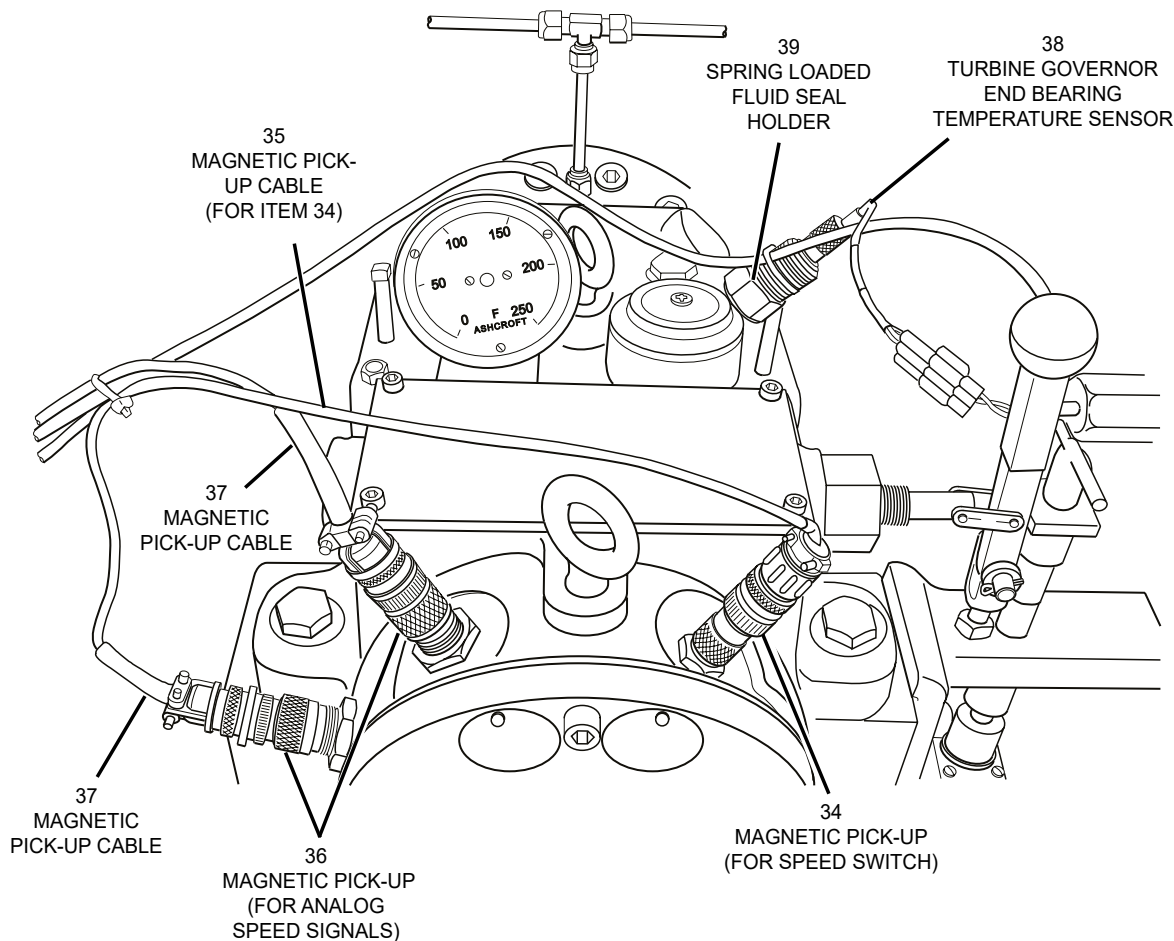


FIGURE 23 - KG TURBINE SHAFT END BEARING

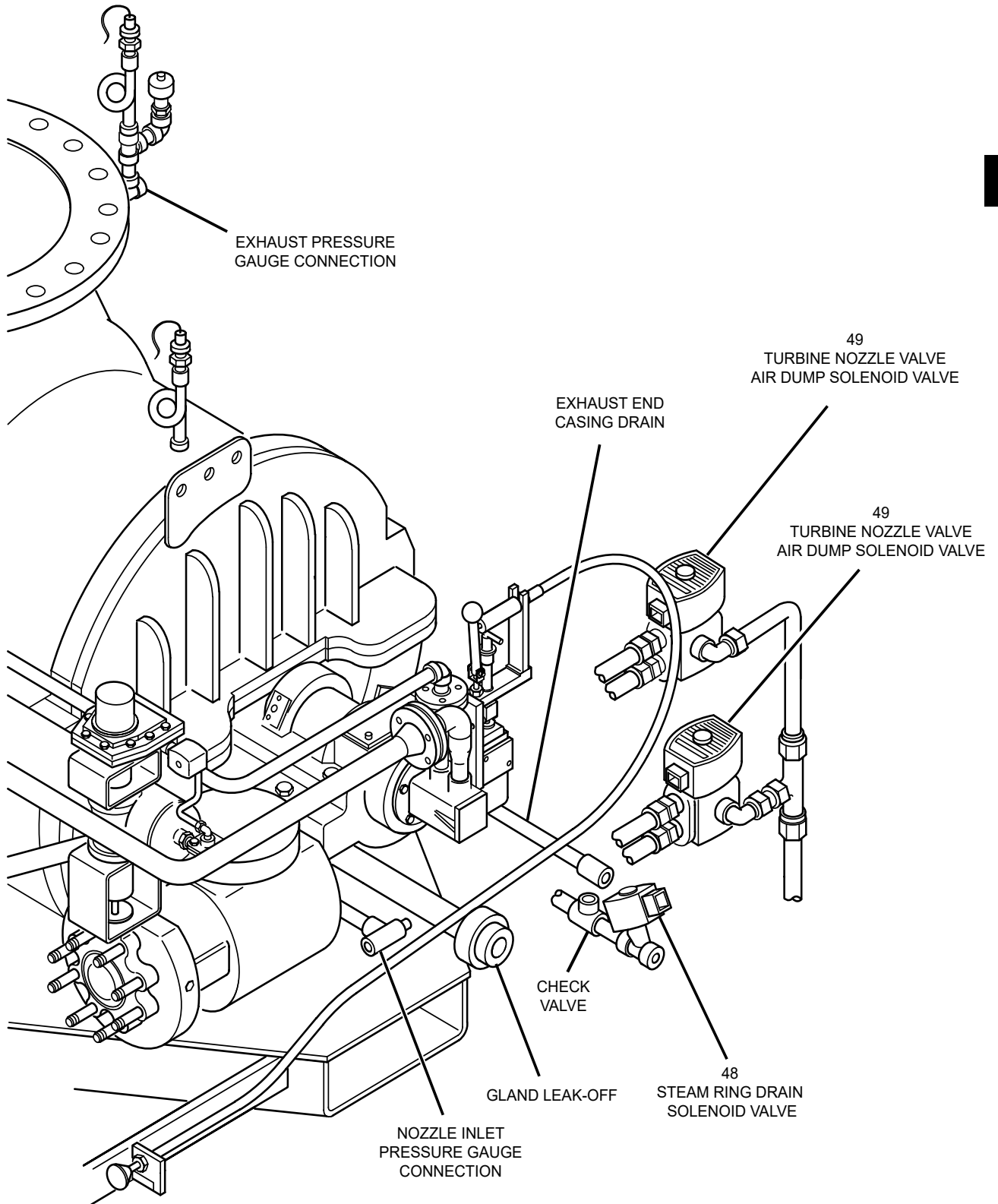
LD10215

**FIGURE 25 - KD TURBINE GOVERNOR END BEARING**

LD10216

**FIGURE 24 - KG TURBINE GOVERNOR END BEARING**

LD10217



LD12636

FIGURE 26 - TURBINE STEAM RING DRAIN & NOZZLE VALVE AIR DUMP SOLENOID VALVES

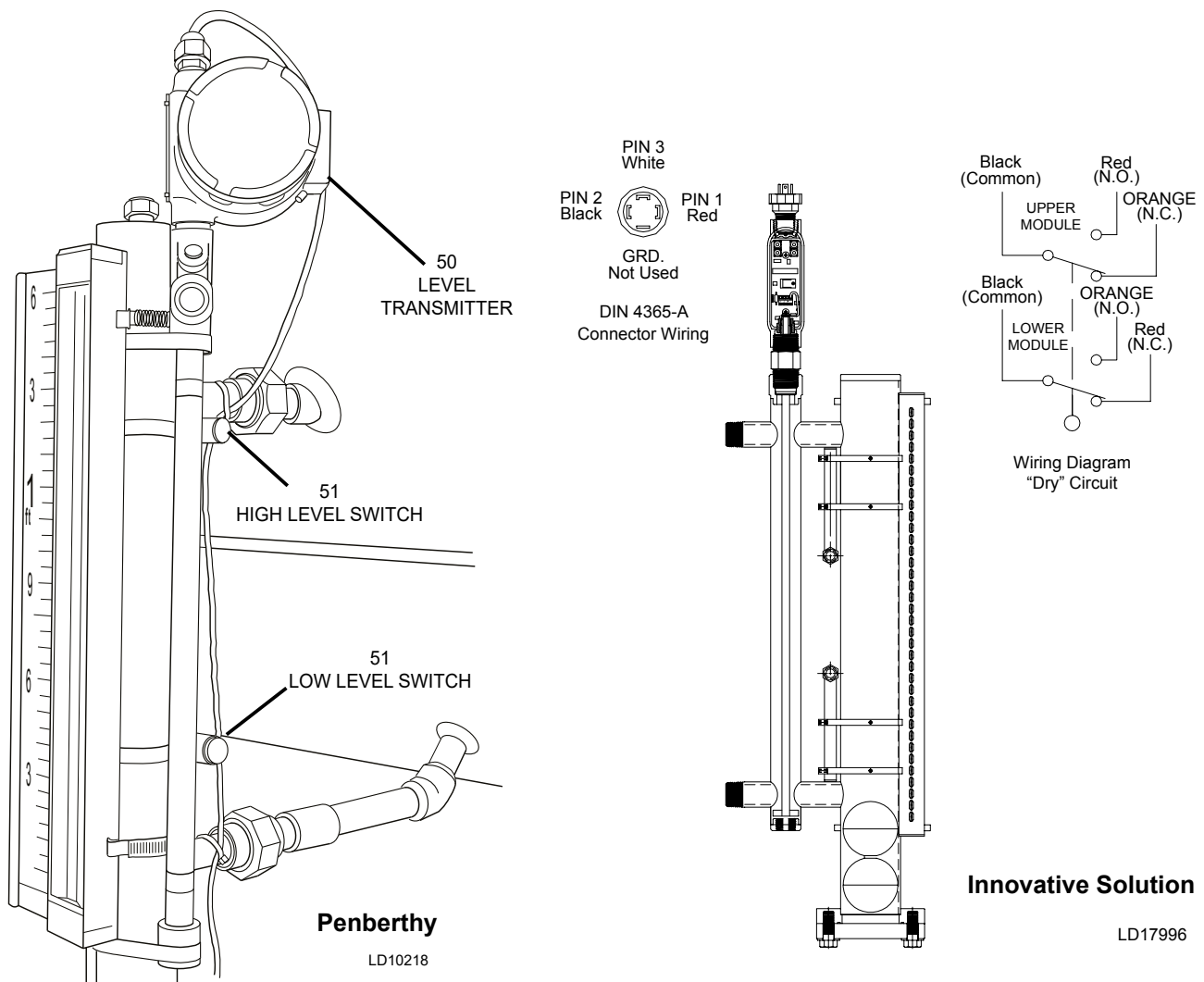


FIGURE 27 - STEAM CONDENSER HOTWELL LEVEL TRANSMITTER AND SWITCHES (PENBERTHY)
STEAM CONDENSER HOTWELL LEVEL TRANSMITTER AND SWITCHES (INNOVATIVE SOLUTIONS)

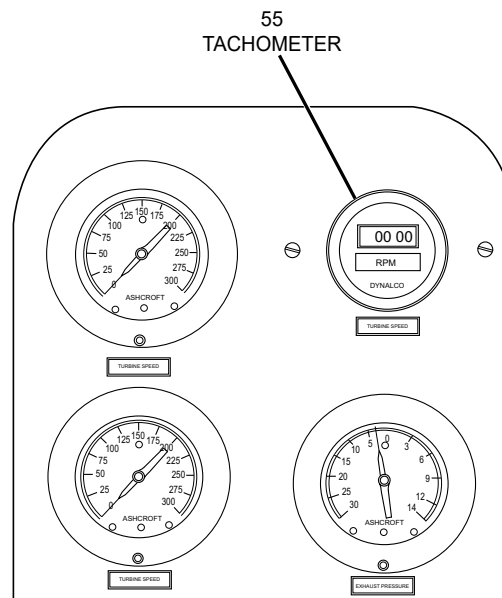


FIGURE 28 - OPTIONAL TURBINE GAUGE BOARD

LD10219

NOTES



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