



BY JOHNSON CONTROLS

**OPTISPEED™
VARIABLE SPEED DRIVE**

REPLACEMENT PARTS

Supersedes: 160.78-RP3 (513)

Form 160.78-RP3 (1113)

**MODELS
HYP490
HYP744**



LD14681

490 AMPS – 50/60 HZ, 380-460 VAC (P/N 371-05614-XXX)

744 AMPS – 50/60 HZ, 380-460 VAC (P/N 371-05571-XXX)

Issue Date:
November 13, 2013



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 individual 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:



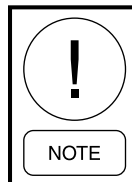
Indicates a possible hazardous situation which will result in death or serious injury if proper care is not taken.



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 QuickLIT website at <http://cgproducts.johnsoncontrols.com>.

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.

NOTES

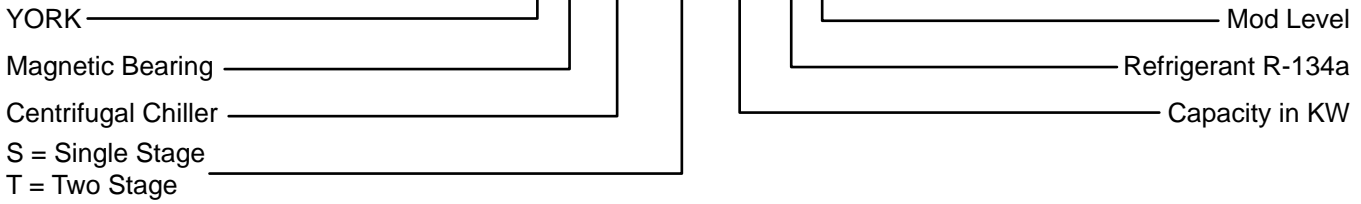
Throughout this parts guide there are special notes calling attention to various parts and ordering instructions for those parts. Please read these notes carefully and follow the instructions to ensure you receive all the replacement parts necessary to complete the service.

ASSOCIATED LITERATURE

MANUAL DESCRIPTION	FORM NUMBER
YMC ² Unit Operations and Maintenance Manual	160.78-O1
YMC ² OptiView™ Control Center Operation Manual	160.78-O2
YMC ² Unit Installation	160.78-N1
YMC ² Unit Wiring and Field Control Modifications	160.78-PW2
YMC ² Unit Renewal Parts	160.78-RP1

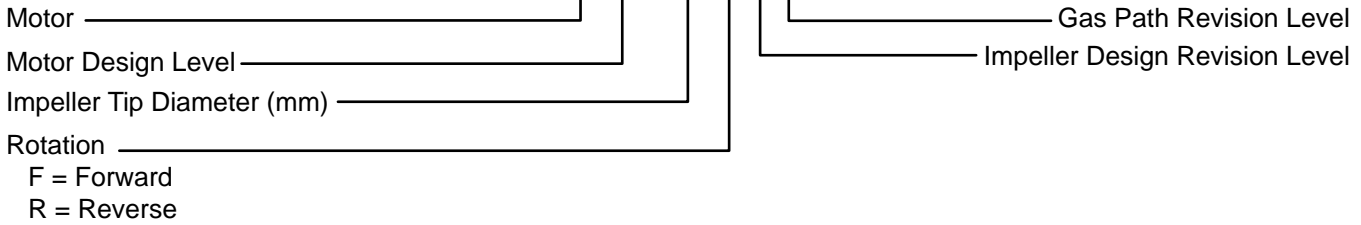
SYSTEM NOMENCLATURE

Y M C 2 - S 1301 A A



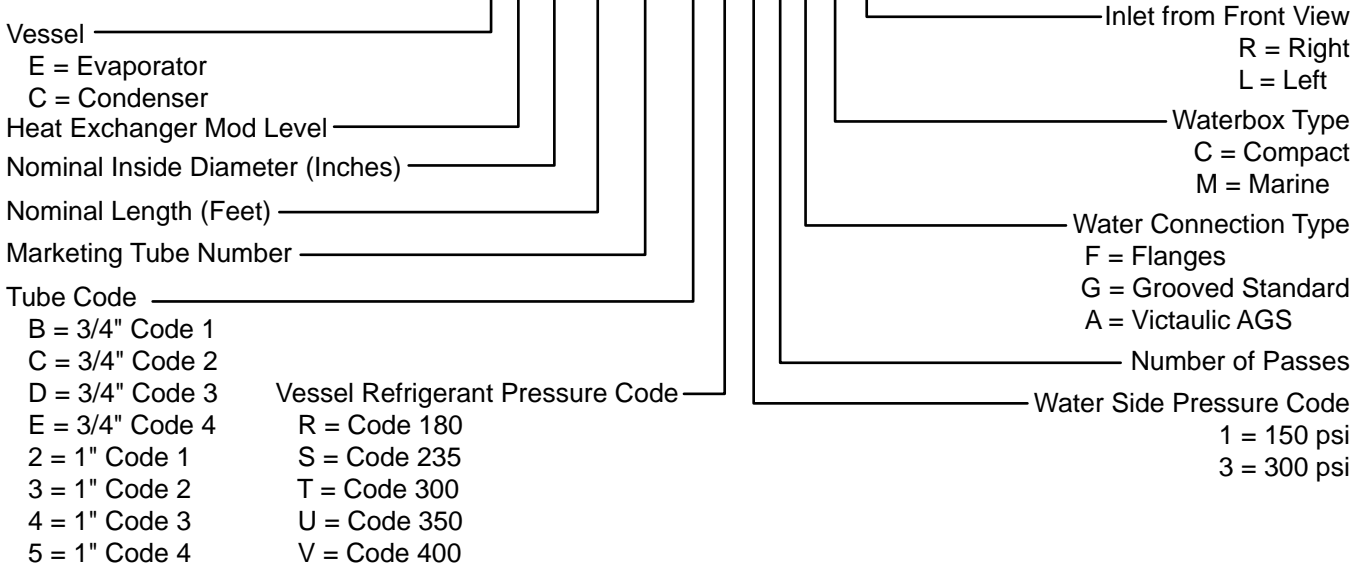
COMPRESSOR NOMENCLATURE

M1 B - 205 F A A



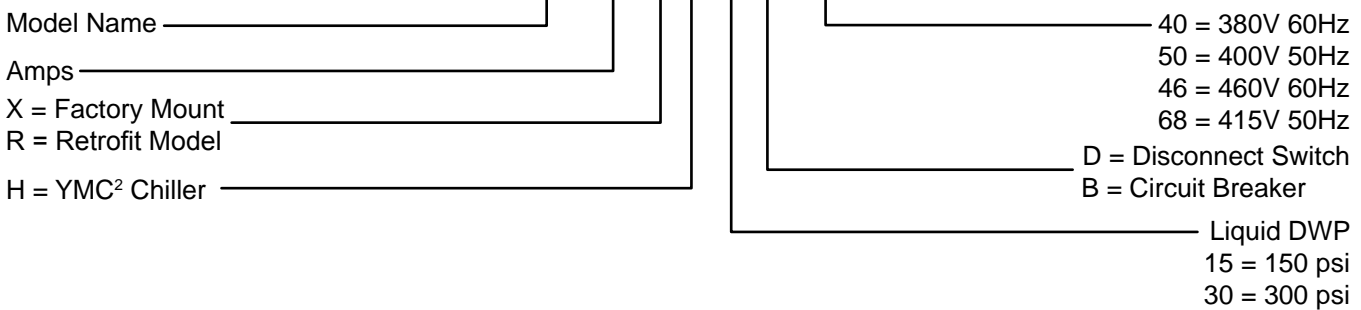
VESSEL NOMENCLATURE

E A 25 10 321 C S 1 2 G C R



VARIABLE SPEED DRIVE NOMENCLATURE

HYP 744 X H 15 D - 46



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490AMP VARIABLE SPEED DRIVE

TABLE 1 - INPUT COMPONENTS (490 AMPS)

ITEM	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Circuit Breaker, Calibrated, 450A	224-37879-000	839940	1	1
1a	Circuit Breaker Handle	024-35429-000	736285	1	1
1	Disconnect Switch	024-37442-000	839733	1	2
1a	Disconnect Switch Lug Kit	025-42181-000	680131	1	2
1b	Handle, Disconnect Switch	024-36614-000	736390	1	2
1c	Ground Lug	025-35173-000	117722	1	5
2	Input Current Transducer (DCCT)	025-42748-000	740133	3	3
3	Input Filter Assembly	371-05614-341	839967	1	4
4	Input Filter Capacitor for Assembly	025-44490-000	839745	6	4
5	Input Filter Capacitor	025-43928-000	740379	1	5
6	Input Inductor (L1/L2)	025-44458-000	835714	1	6
6a	Input Inductor Coolant Hose Elbow	023-25635-000	-	12	6
6b	Input Inductor Coolant Hose	028-16716-000	-	-	6
6c	Input Inductor Coolant Manifold	325-44864-603	-	4	6
6d	Input Inductor Coolant Valve	022-12389-000	-	4	6
7	Input Filter Resistor for Assembly	025-42616-000	740130	3	4
8	Input Voltage Isolator Board	031-02022-000	65064	1	5
9	Resistor, Bleeder	025-42616-000	740130	1	5
10	Resistor Kit (Includes 2 Resistors and Bracket)	025-44887-000	839758	1	7
12	Voltage Transient Board (Fuses are not included)	031-02453-000	743895	1	5

NOTE: Items with an * are NOT represented.

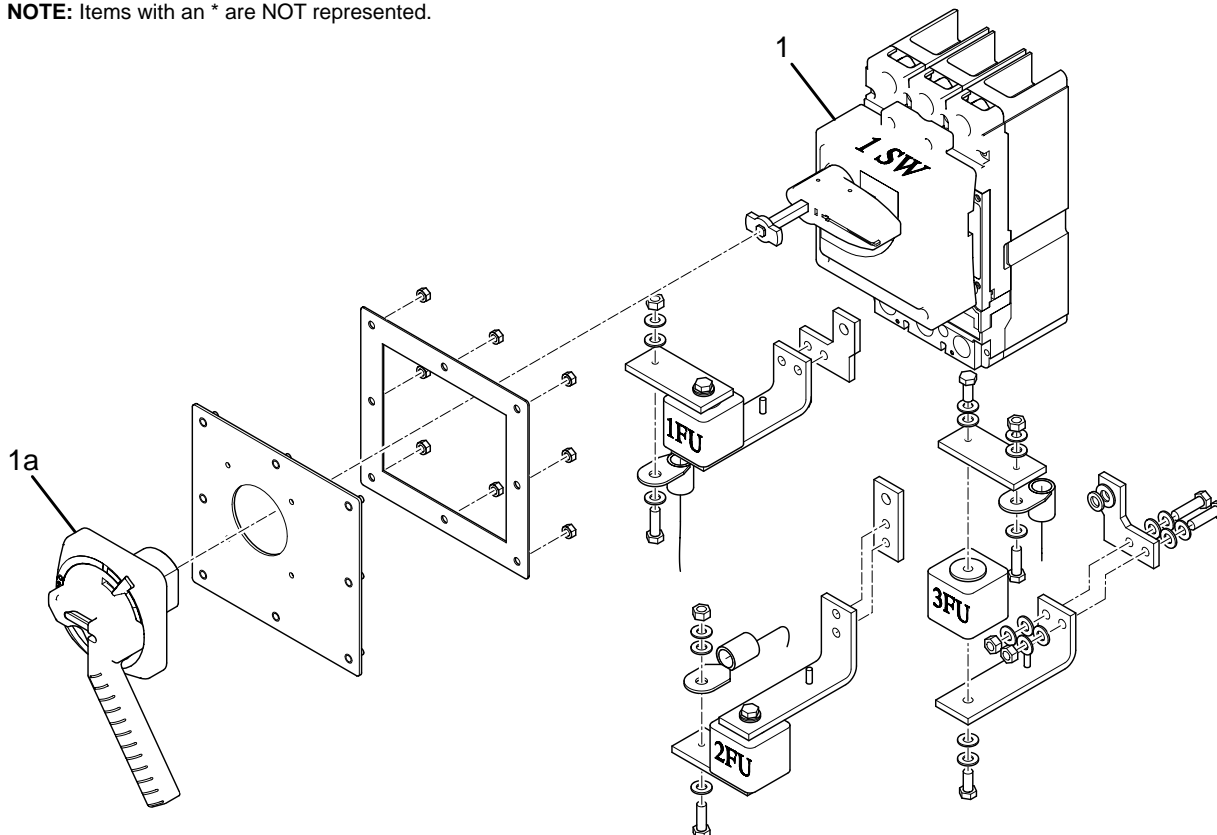
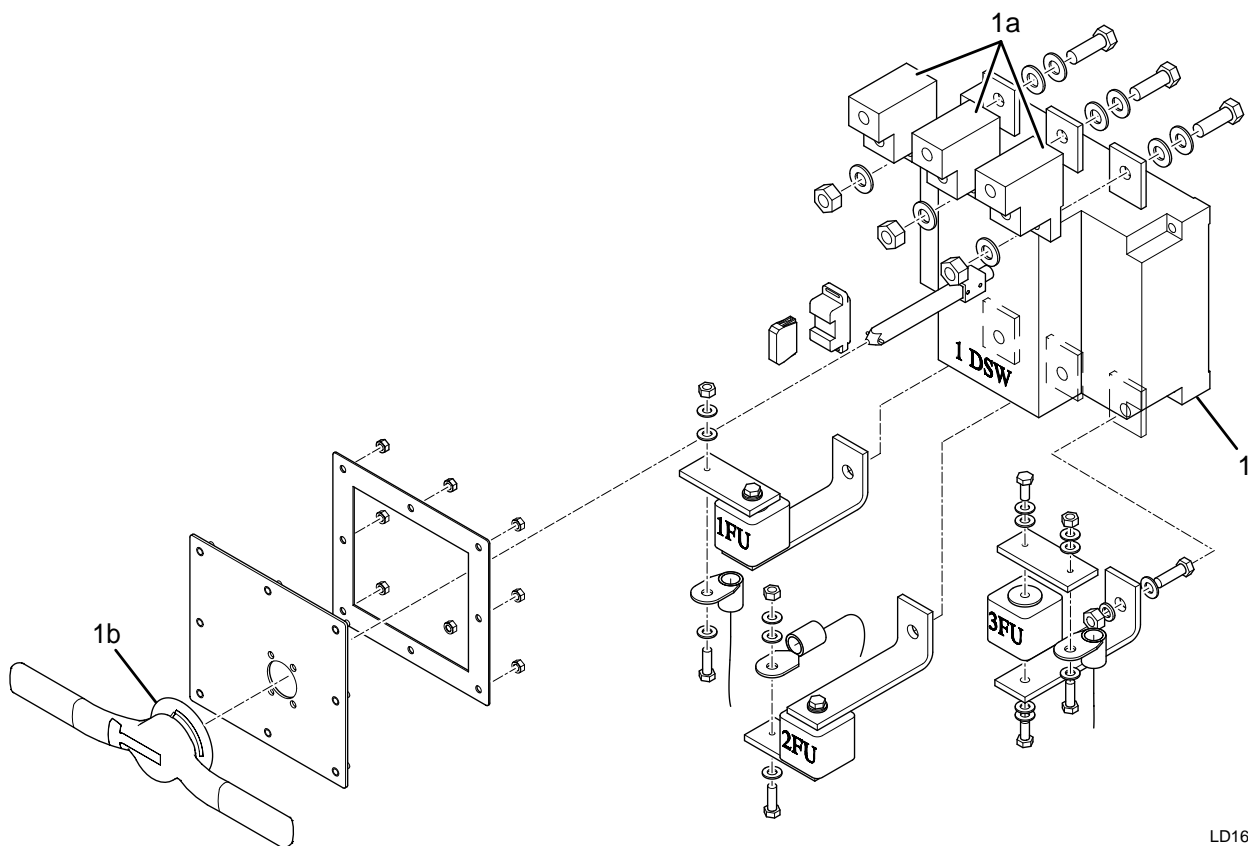


FIGURE 1 - CIRCUIT BREAKER (CB)

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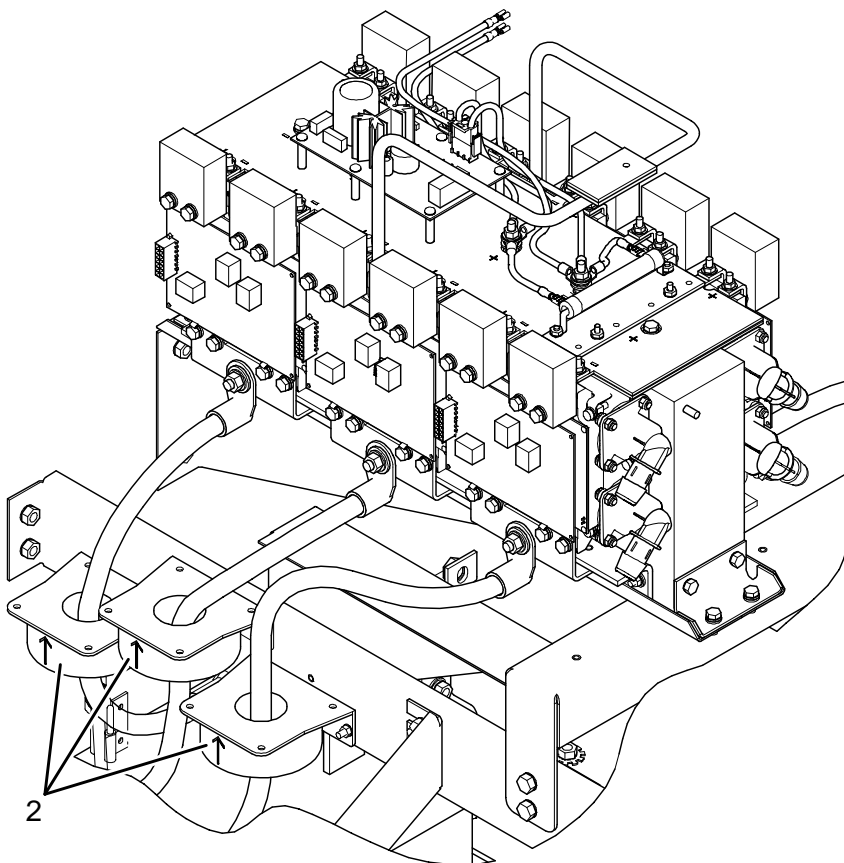
490AMP VARIABLE SPEED DRIVE

1



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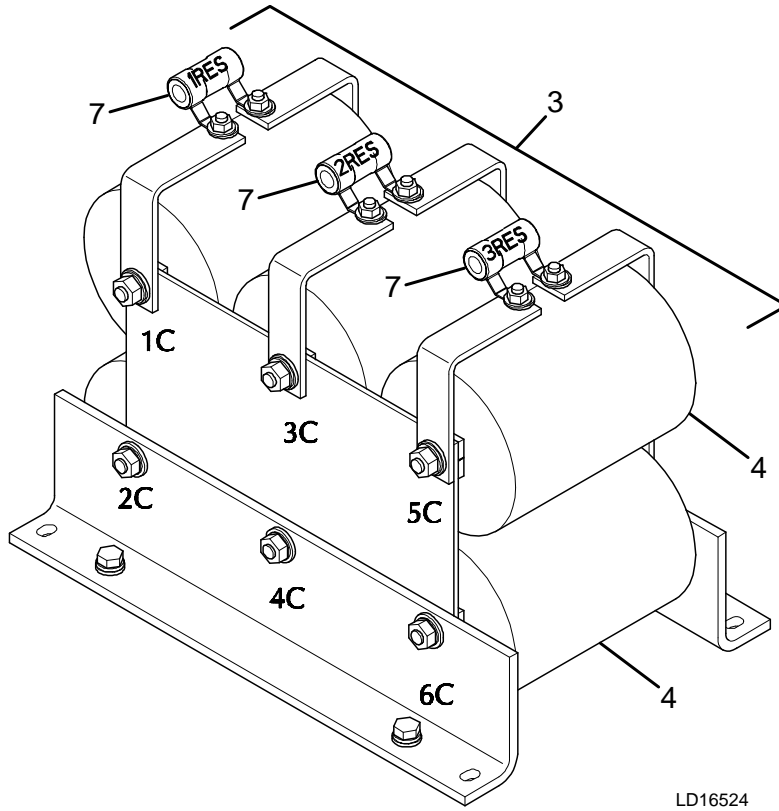
FIGURE 2 - DISCONNECT SWITCH (DS)



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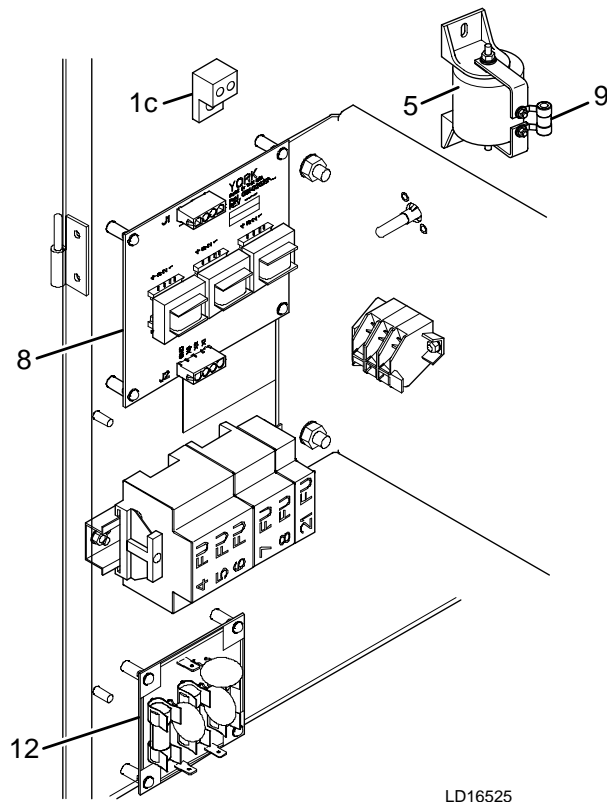
FIGURE 3 - INPUT CURRENT TRANSDUCER (DCCT)

490AMP VARIABLE SPEED DRIVE



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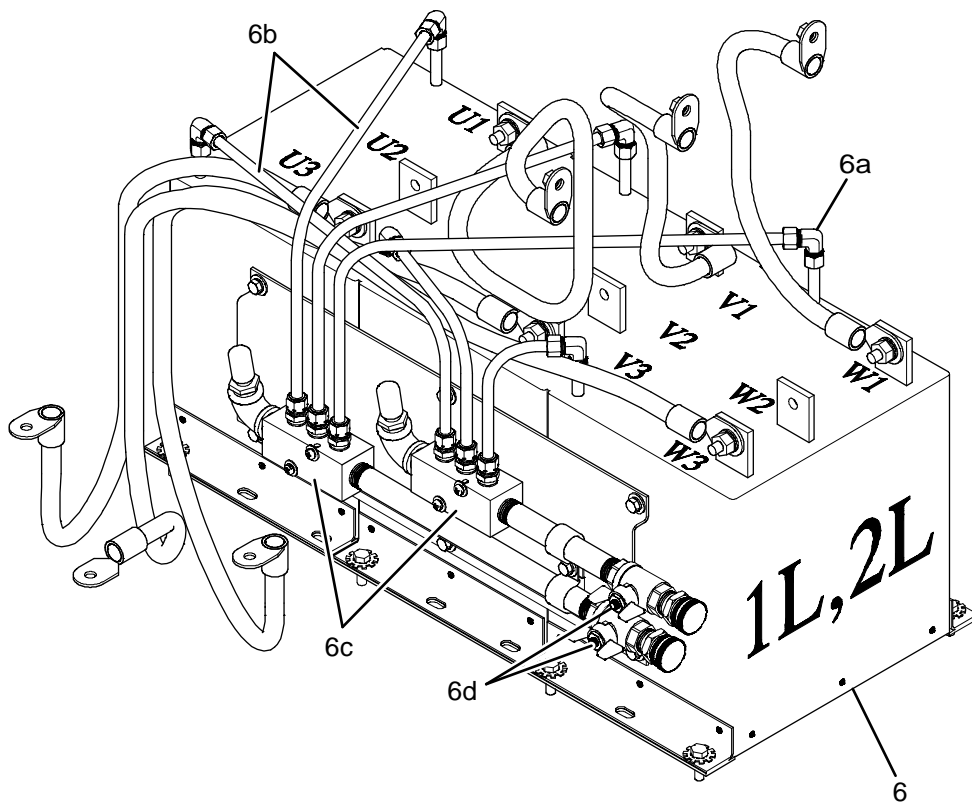
FIGURE 4 - INPUT FILTER CAPACITOR ASSEMBLY



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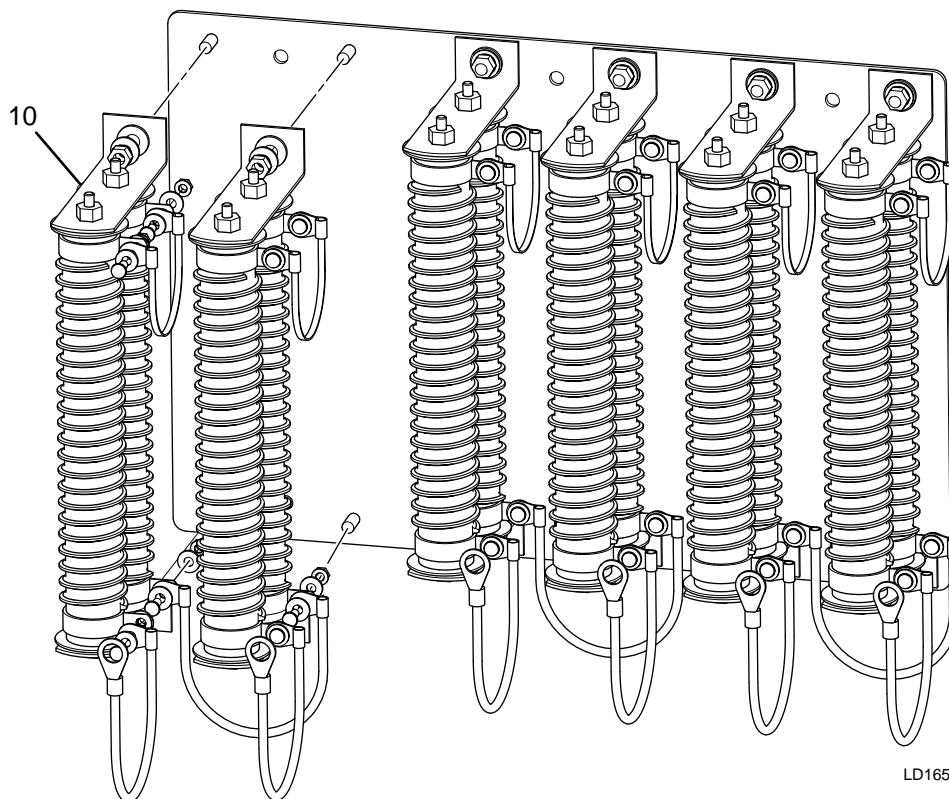
FIGURE 5 - VOLTAGE ISOLATION BOARD

490AMP VARIABLE SPEED DRIVE



LD16526

FIGURE 6 - INPUT INDUCTOR (L1, L2)



LD16538

FIGURE 7 - RESISTOR ASSEMBLY

490AMP VARIABLE SPEED DRIVE

TABLE 2 - FUSE COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Fuse 1 AMP (4FU-6FU / 22FU-24FU)	025-43326-000	740259	6	8
2	Fuse 5 AMP (9FU)	025-35901-000	739233	1	8 / 9
2	Fuse 5 AMP (16-19FU) Voltage Transient Board Fuses	025-38523-000	739590	3	8 / 9
3	Fuse 6 AMP (14FU)	025-35902-000	264466	1	9
4	Fuse 9 AMP (15FU)	025-35904-000	839739	1	9
5	Fuse 10 AMP (25FU and 26FU)	025-43907-000	740371	2	9
6	Fuse 10 AMP (460VAC) (7FU - 10FU)	025-35905-000	739234	6	8
6	Fuse 12 AMP (400-415VAC) (7FU / 8FU)	025-35906-000	739234	2	8
7	Fuse 20 AMP (21FU)	025-35908-000	117823	1	8
8	1 Pole Fuse Holder (14FU / 15FU / 19FU / 21FU)	025-39951-000	359985	4	8 / 9
9	2 Pole Fuse Holder (25FU / 26FU)	025-43899-000	740368	1	9
10	2 Pole Fuse Holder (7FU / 8FU)	025-44520-000	740518	1	8
11	3 Pole Fuse Holder (4FU / 5FU / 6FU)	025-39952-000	343433	2	8
12	Input Power Fuse Kit (All 3,1FU-3FU)	371-05614-601	-	3	10
13	Fuse Clamp End	025-29189-000	-	-	8 / 9
14	Terminal Block Ground	025-35619-000	-	-	9

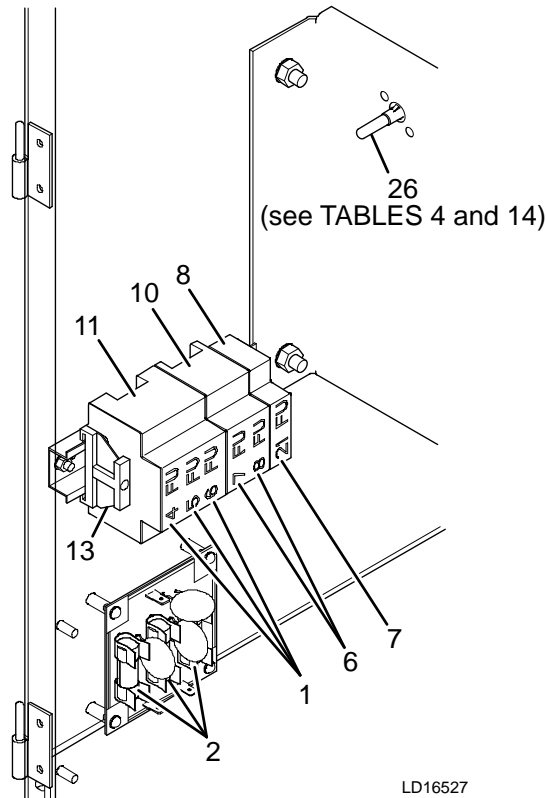


FIGURE 8 - FUSES AND FUSE HOLDERS

490AMP VARIABLE SPEED DRIVE

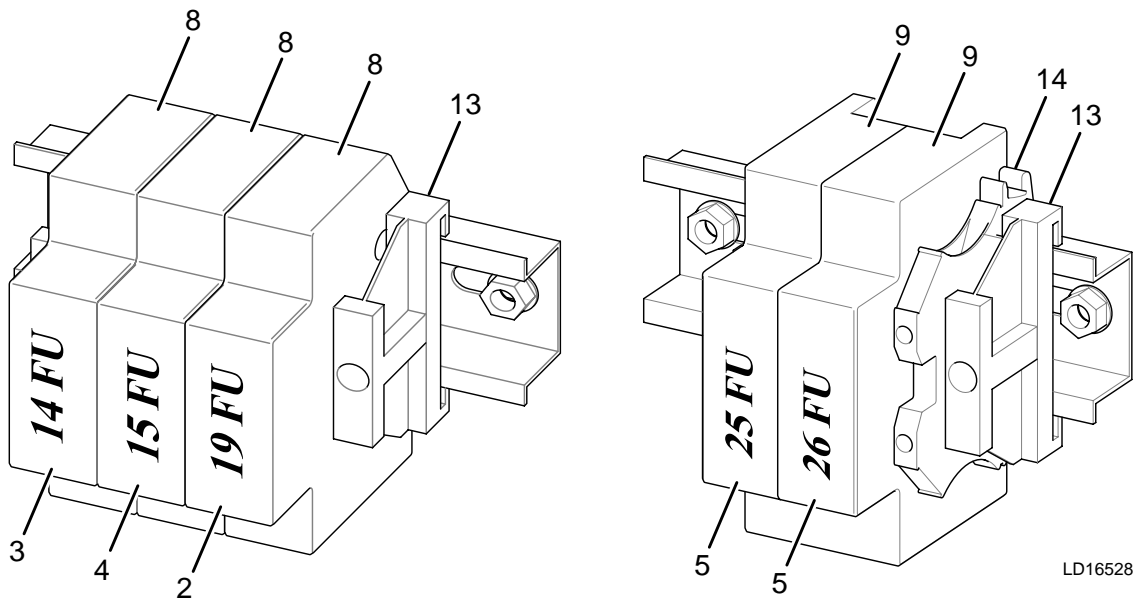


FIGURE 9 - FUSES AND FUSE HOLDERS

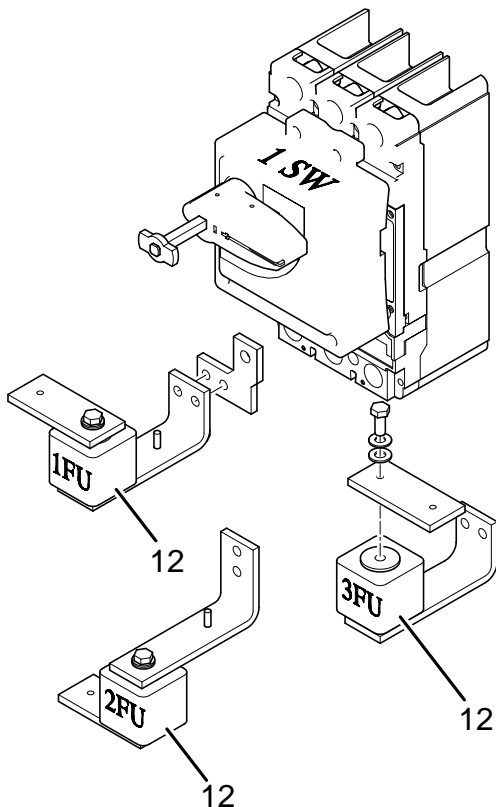


FIGURE 10 - INPUT POWER FUSES

LD16529

490AMP VARIABLE SPEED DRIVE

TABLE 3 - DOOR COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Circuit Breaker Door Mounting Kit	024-35429-000	736285	1	11
2	Disconnect Switch Handle	024-36614-000	736390	1	11
3	Door Ground Strap	525-32508-001	806677		11
4	Door Kit Left, 60Hz (Including all labels and latches)	371-05614-651	-	1	11
4	Door Kit Left, 50Hz w/ EMC (Including all labels and latches)	371-05614-653	-	1	11
5	Door Kit Right, 60Hz (Including all labels and latches)	371-05614-656	-	1	*
5	Door Kit Right, 50Hz w/ EMC (Including all labels and latches)	371-05614-658	-	1	*
6	Door Latch	029-25614-000	743380	2	11
-	Door Stop	029-23420-000	119865	1	*
-	Door Stop Mounting Plate	371-05614-553	840001	1	*
7	Label Front Door JCI Logo	035-23036-000	745608	1	11

NOTE: Items with an * are NOT represented.

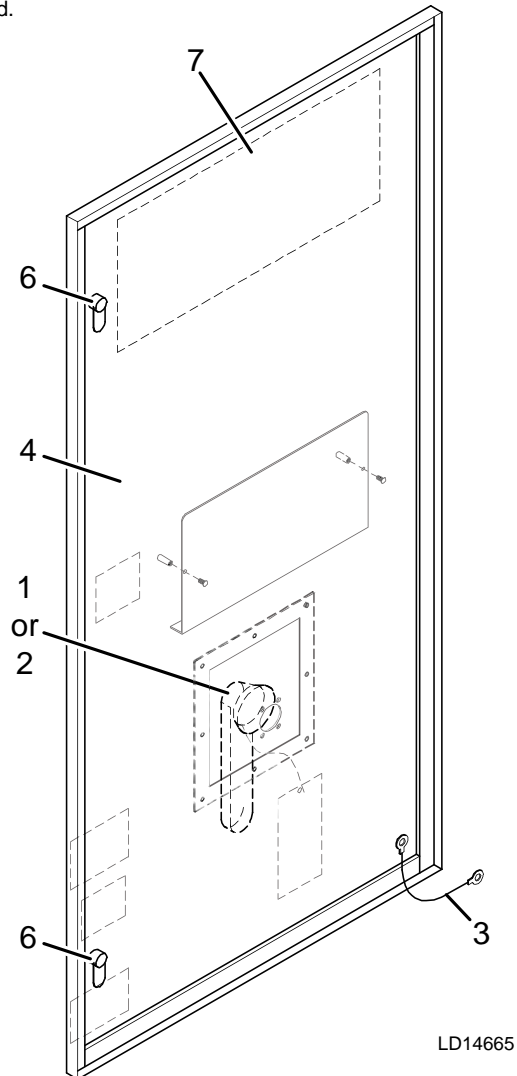


FIGURE 11 - DOOR COMPONENTS

490AMP VARIABLE SPEED DRIVE

TABLE 4 - COOLING SYSTEM COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Adapter, Conduit 90° Angle 1/2"	025-31316-000	839778	2	13
2	Conduit, Pump Power	025-31302-000	618155	1.2'	13
3	Coolant Drain Valve	022-12207-000	839729	1	13
3a	Coolant Drain Valve Cap	023-25526-000	839731	1	13
4	Coolant Hose Barb Straight Kit (hose barbs and hose)	371-05571-626	-	1	*
5	Coolant Hose Barb Elbow Kit (hose barbs and hose)	371-05571-631	-	1	*
6	Coolant Hose Clamp 1"	023-08856-000	617439	22	12
7	Coolant Hose Clamp 2"	021-32226-000	730939	4	13
8	Coolant Hose External 1-1/2"	028-16373-000	742214	18'	13
9	Coolant Hose Internal 3/4" ID by the foot	028-16379-000	742219	-	12
10	Coolant Manifold Kit Inlet	371-05614-636	-	1	12
11	Coolant Manifold Kit Outlet	371-05614-641	-	1	12
11a	Coolant Manifold Clamp	028-16554-000	839771	2	12
12	Coolant Pump	026-33890-000	3590	1	13
13	Coolant Reservoir Fill Plug	028-16378-000	742218	1	13
13a	Coolant Reservoir Hose Clamp	021-19150-000	564227	1	13
14	Coolant Reservoir 3" PVC with Fill Plug Kit	371-05614-671	-	1	13
15	Flow Restrictor	028-16620-000	839778	2	12
16	Inhibitor (per gallon)	013-02987-000	729086	5 gallon	*
17	Internal Cooling Fan	025-32557-000	738735	1	12
18	Internal Cooling Coil	026-46734-000	839767	1	12
19	Relay, Control Fan / Pump (1R)	024-30441-000	664298	1	*
20	Shell and Tube Heat Exchanger 150/300 PSI Condenser 3"	026-37572-000	104160	1	13
21	Shell and Tube Heat Exchanger Head Gaskets (set of two) 3"	371-03716-001	772263	1	*
26	Temperature Sensor with Connector	571-05182-283	807091	2	8

NOTE: Items with an * are NOT represented.

490AMP VARIABLE SPEED DRIVE

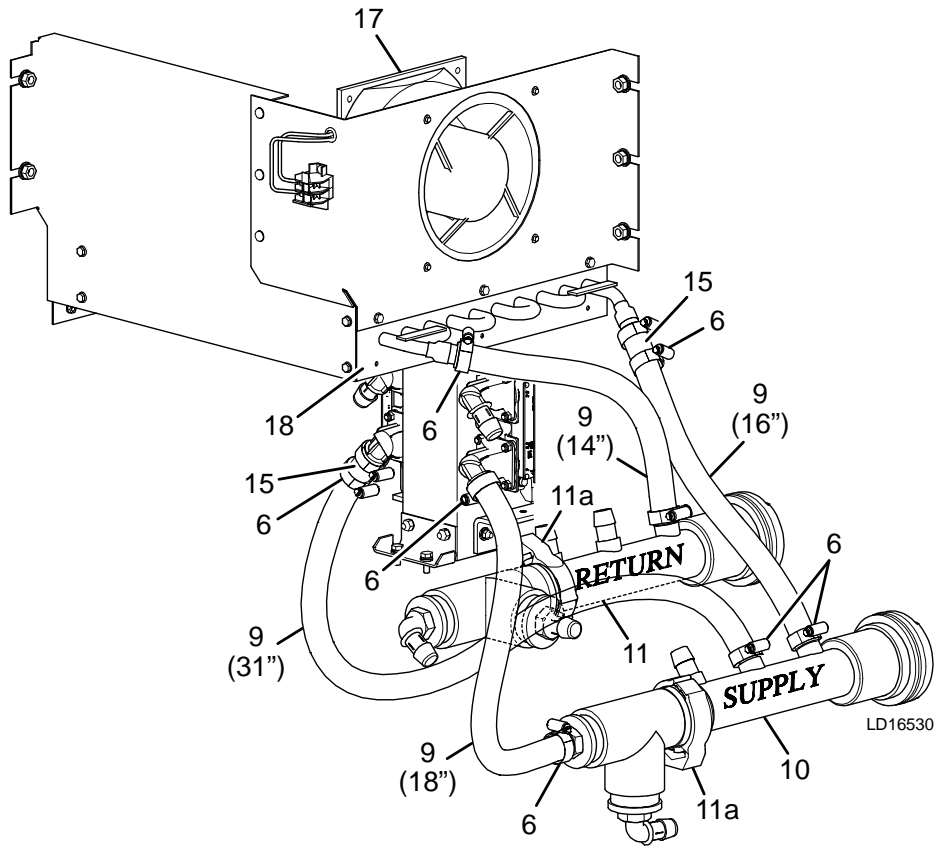


FIGURE 12 - COOLING SYSTEM COMPONENTS

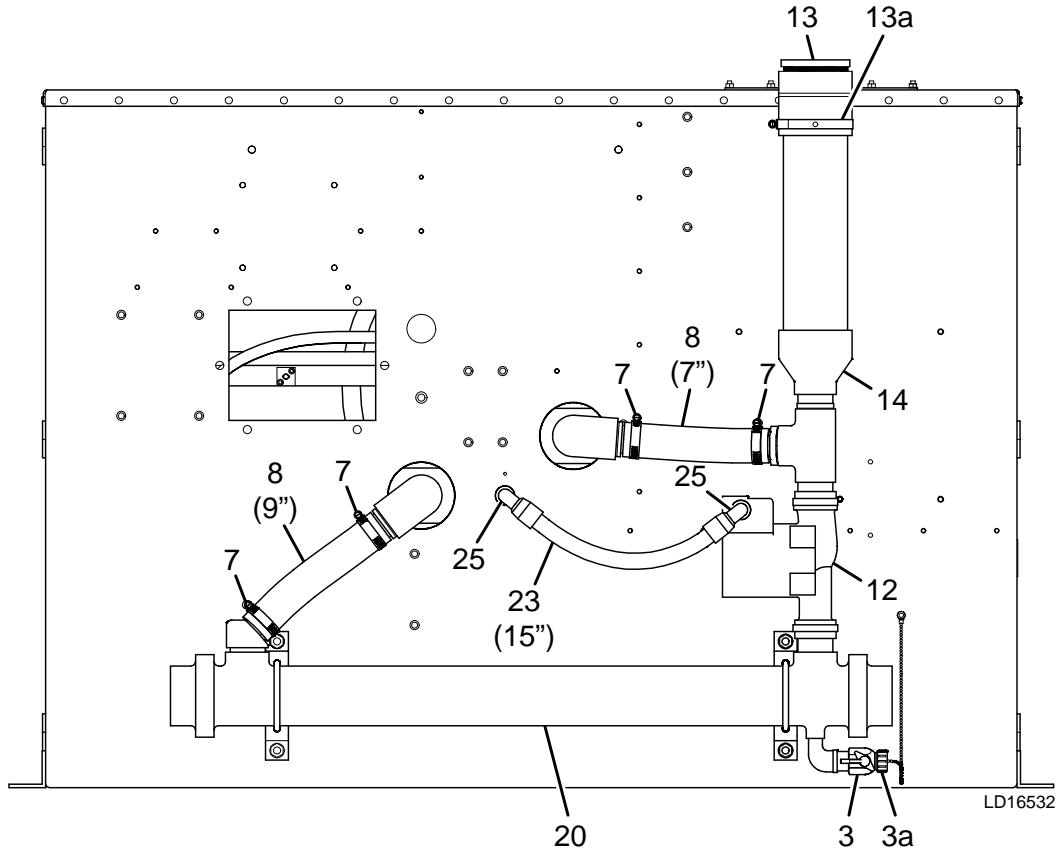
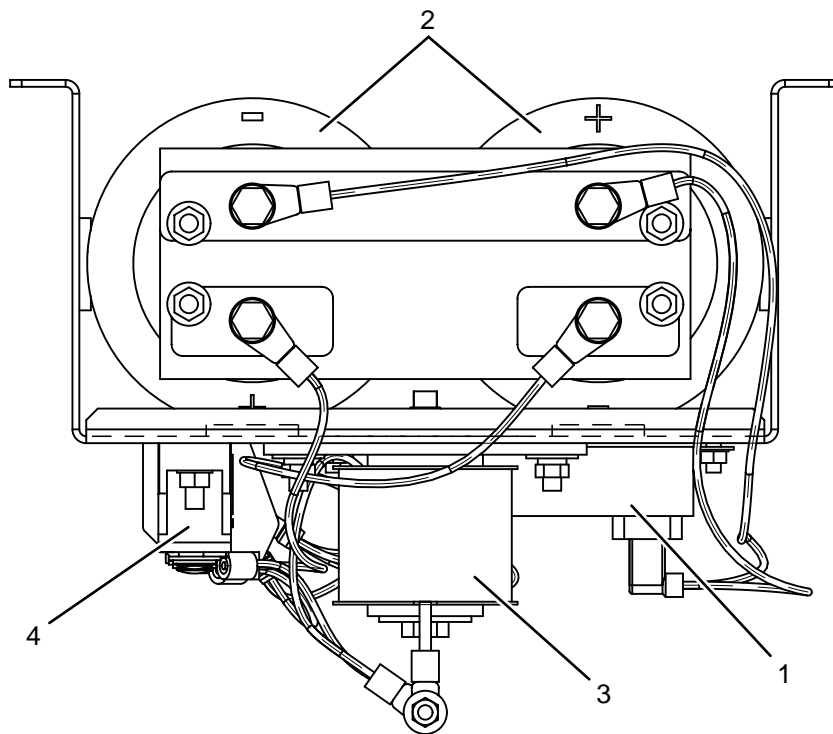


FIGURE 13 - COOLING SYSTEM COMPONENTS

490AMP VARIABLE SPEED DRIVE

TABLE 5 - MAGNET COMPONENTS

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Output Bleeder Resistor	025-40408-000	739825		14
2	Output Capacitor	025-39573-000	739673		14
3	Output Inductor	025-45114-000	839764		14
4	Output Diode	031-01636-000	743789		14
-	Whole Assembly	371-05614-451	839982		*



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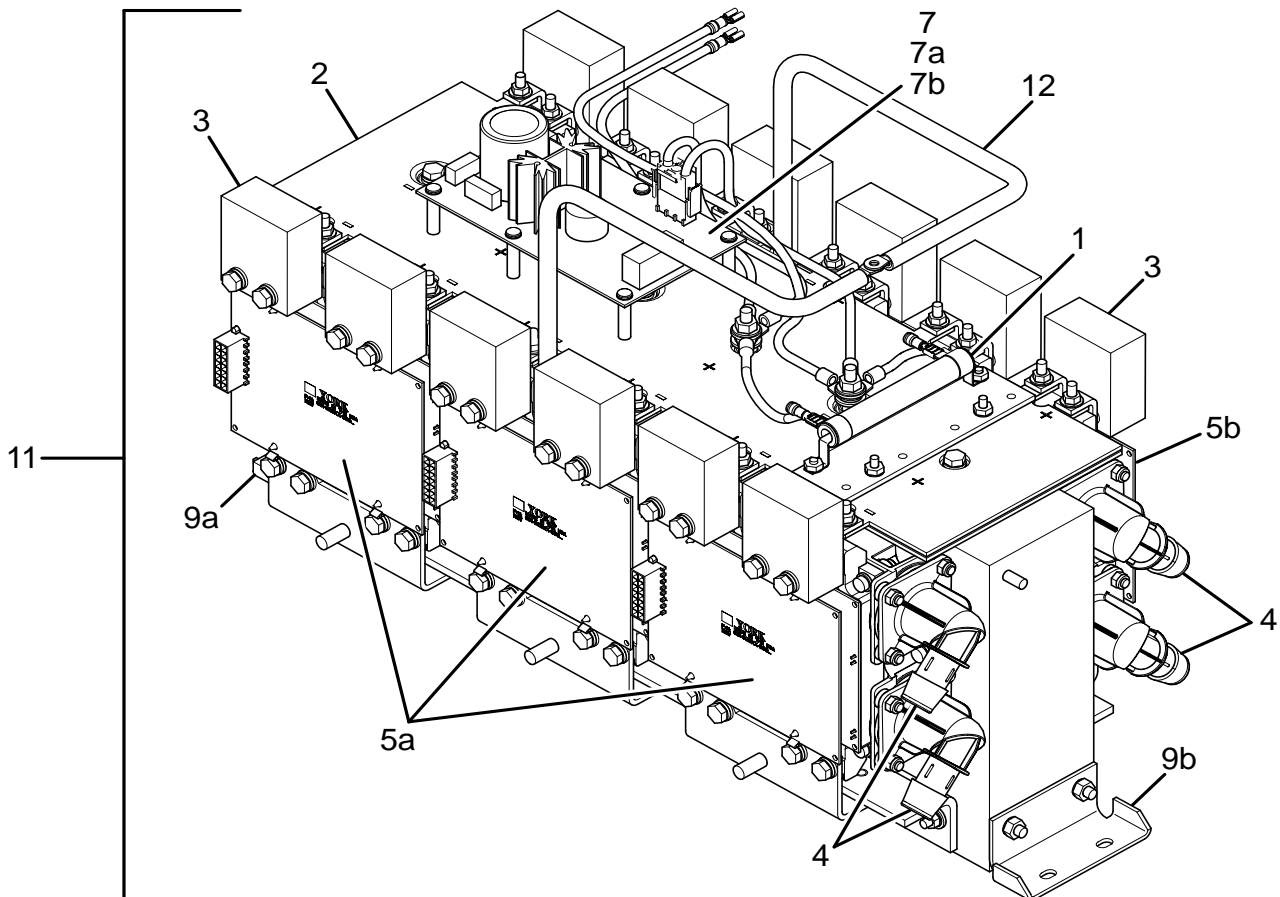
FIGURE 14 - MAGNET COMPONENTS

490AMP VARIABLE SPEED DRIVE

TABLE 6 - POWER ASSEMBLY COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Bus Bleeder Resistor Assembly (ea.)	371-06165-001	840018	1	15
2	Bus Plate Kit, Power Assembly	371-05904-601	-	1	15
3	Bus Snubber Capacitor (ea.)	025-42835-000	740149	12	15
4	Coolant Hose Barb on Power Assembly Kit	071-05526-606	749281	4	15
5a	IGBT Gate Driver Board (Rectifier)	031-02901-003	839194	3	15
5b	IGBT Gate Driver Board (Inverter)	031-02901-004	839195	3	15
6	Inverter Power Module Kit (Complete)	371-05904-611	-	1	*
	Inverter Power Module Kit (1 phase)	371-05904-608	-	-	*
	Inverter Power Module Kit (2 phase)	371-05904-609	-	-	*
7	Power Supply Board	031-02903-001	839199	1	15
7a	Power Supply Daughter Board	031-02905-000	839202	1	15
9a	Power Unit Mounting Foot, Rear	071-05508-310	749268	1	15
9b	Power Unit Mounting Foot, Front	071-05508-312	749269	1	15
10	Rectifier Power Module Kit (Complete)	371-05904-616	-	1	*
	Rectifier Power Module Kit (1 phase)	371-05904-613	-	-	*
	Rectifier Power Module Kit (2 phase)	371-05904-614	-	-	*
11	VSD Rectifier/Inverter Power Unit Complete Kit (IGBT, Capacitors, Heatsink, Coolant)	371-05904-621	-	1	*
12	Strap, Wiring Ground	571-05526-241	807110	1	15

NOTE: Items with an * are NOT represented.



LD16533

FIGURE 15 - POWER ASSEMBLY COMPONENTS

490AMP VARIABLE SPEED DRIVE

TABLE 7 - OUTPUT COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Motor Connection Plate	371-05614-357	839971	1	16
2	Output Current Transducer Kit (w/ Bracket)	371-05614-561	873890	3	16
3	Output Harmonic Filter Capacitor	025-43983-000	-	12	17
4	Output Harmonic Filter Replacement Kit	325-44864-601	-	1	17
	Output Harmonic Filter Assembly	025-44864-000	740611	1	17
4a	Coolant Hose Elbows (used on Inductors)	023-25635-000			17
4b	Coolant Hose (used on Inductors)	028-16716-000			17
4c	Coolant Manifold (used on Inductors)	325-44864-603			17
4d	Coolant Valves (used on Inductors)	022-12389-000			17
7	Output Voltage Isolator Board	031-02022-001	743845	1	18
8	Output Bleeder Resistor (MBC)	025-45189-000	839766	4	*
9	Output Capacitor (MBC)	025-39573-000	739673	2	*
10	Output Inductor (MBC)	025-45114-000	839764	1	*
11	Output Diode (MBC)	031-01636-000	743789	1	*

NOTE: Items with an * are NOT represented.

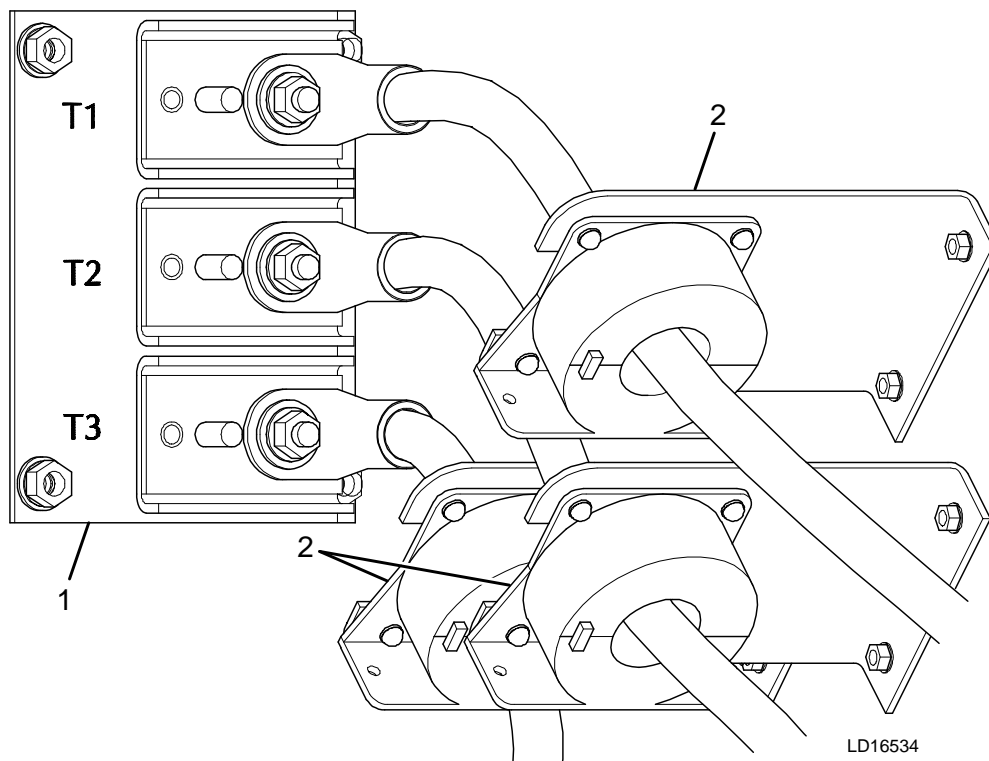


FIGURE 16 - OUTPUT COMPONENTS

490AMP VARIABLE SPEED DRIVE

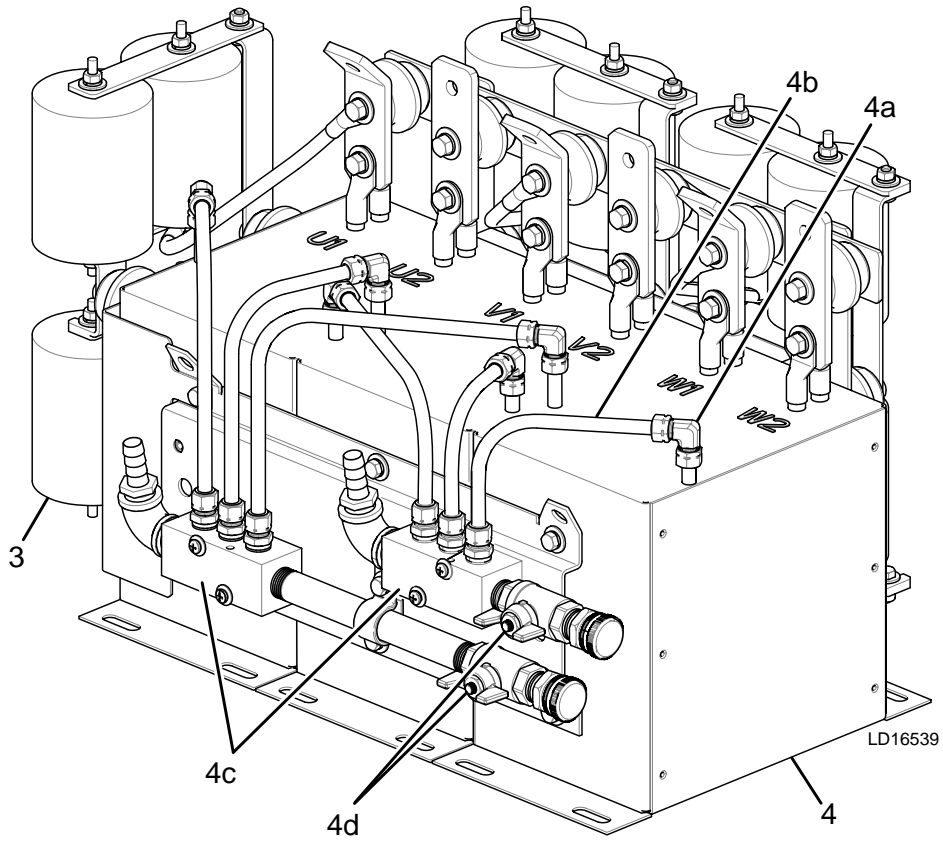


FIGURE 17 - HARMONIC FILTER

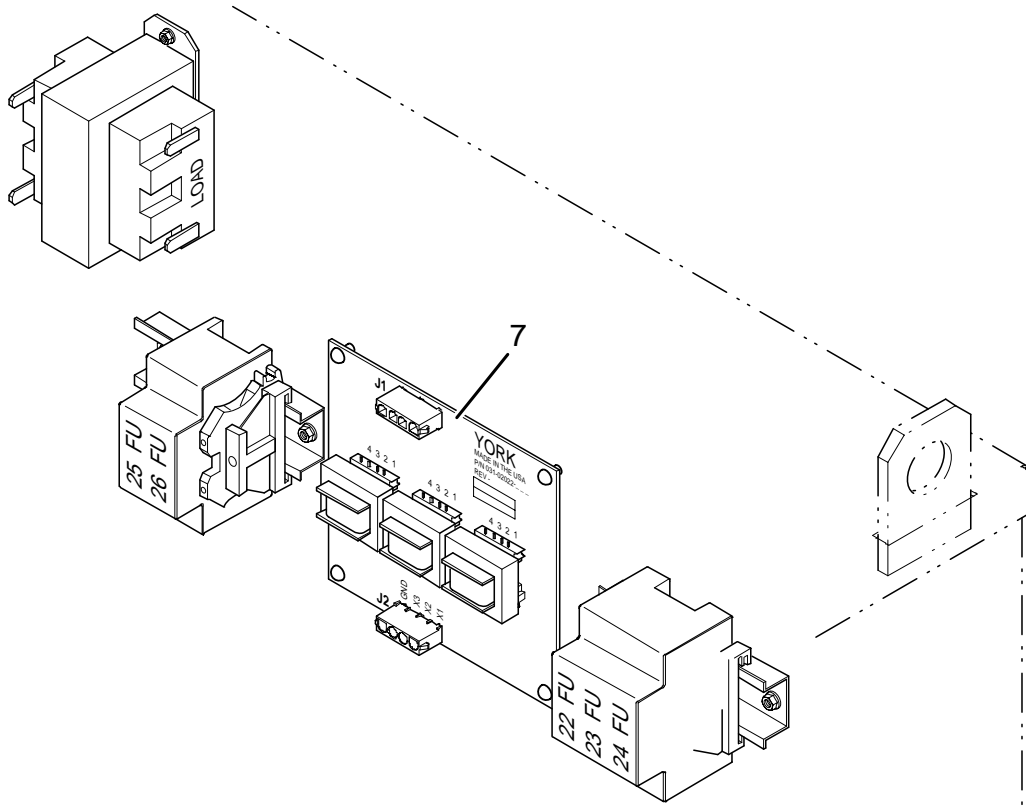
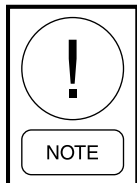


FIGURE 18 - VOLTAGE ISOLATOR BOARD

490AMP VARIABLE SPEED DRIVE

TABLE 8 - DRIVE LOGIC BOARD AND COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	PROM Chip U35 (for 031-02911-003 board) <i>(Both chips must be ordered together)</i>	031-03048-001	744215	1	19
2	PROM Chip U38 (for 031-02911-003 board) <i>(Both chips must be ordered together)</i>	031-03049-001	744216	1	19
3	VSD Logic Board	031-02911-003	839782	1	19
	VSD Logic Board Kit (includes all software)	331-02911-603	-	1	19
4	U66 485 Communications Driver	031-02074-000	743866	1	19



PROM Chips U35 and U38 must be ordered as a set.

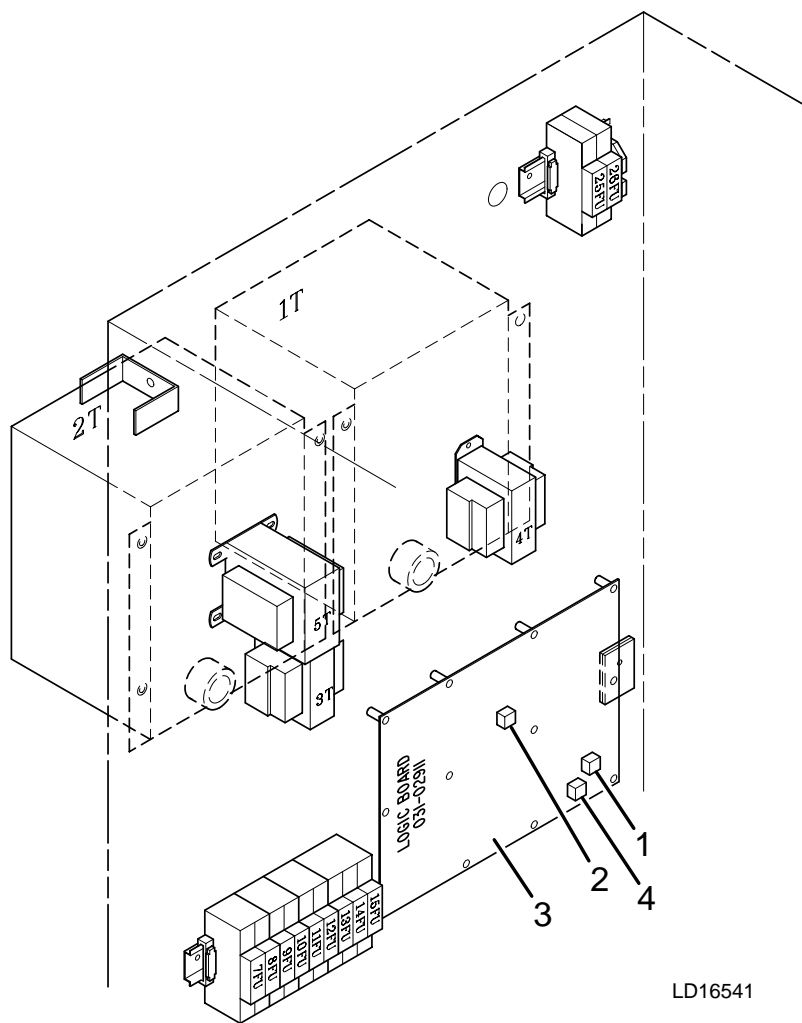


FIGURE 19 - DRIVE LOGIC BOARD AND COMPONENTS

490AMP VARIABLE SPEED DRIVE

TABLE 9 - MISCELLANEOUS COMPONENTS (490 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Control Transformer, 240/480 VAC, 2 KVA	025-44858-000	839757	1	20
1	Control Transformer, 380/400/415 VAC, 2 KVA	025-44972-000	839760	1	20
2	Terminal Block, 3-pole	025-44853-003	839753	1	20
3	Transformer, 24 VAC, 75 VA	025-27911-000	1312	2	20
4	Terminal Block, 8-pole	025-45041-000	839762	1	20

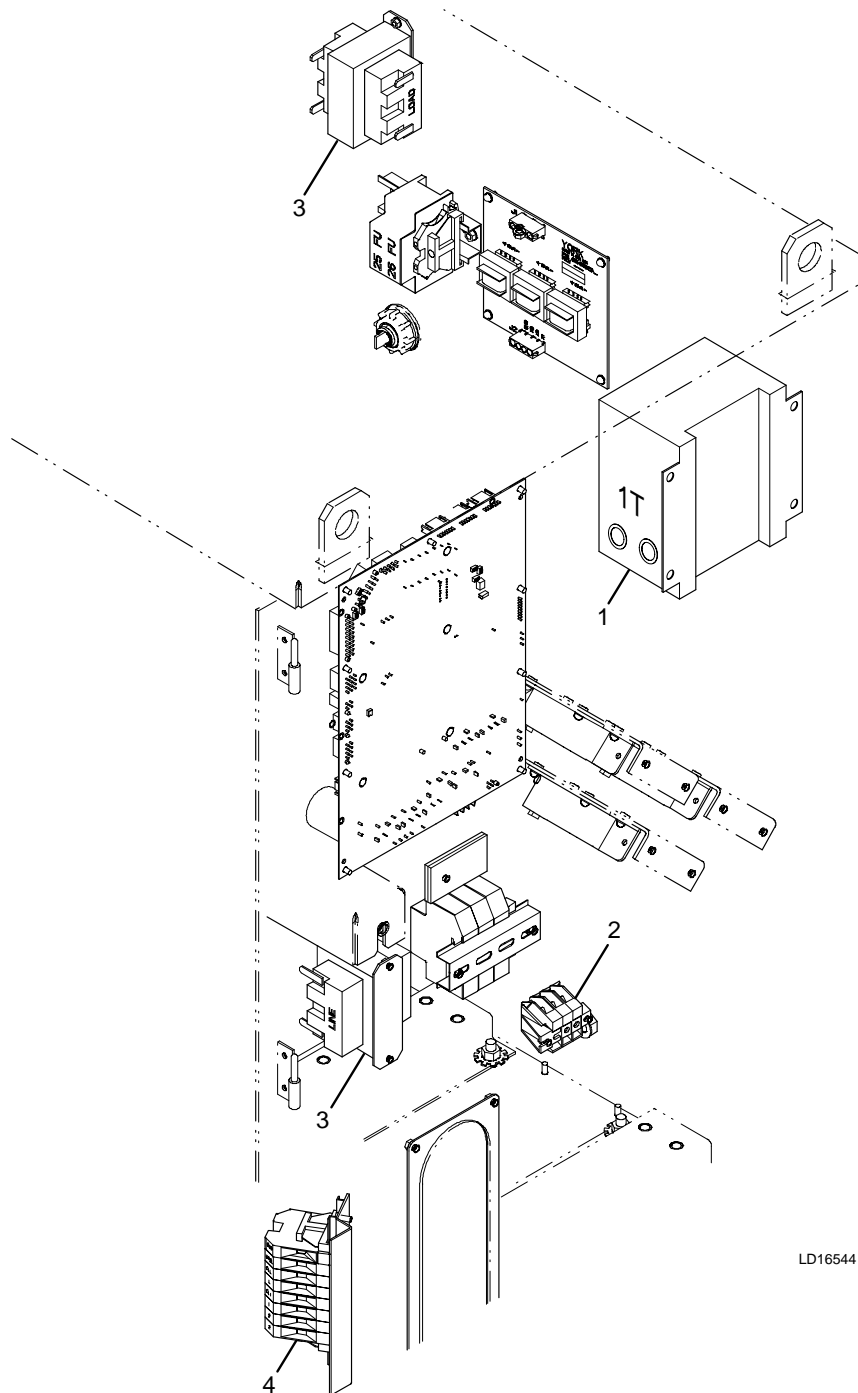


FIGURE 20 - MISCELLANEOUS COMPONENTS

490AMP VARIABLE SPEED DRIVE

TABLE 10 - WIRING HARNESSES AND CONNECTORS (490 AMPS)

BOARD NAME	BOARD PART NUMBER	POSITION	HOUSING PART NUMBER (SAP PART NUMBER)	PIN PART NUMBER (SAP PART NUMBER)
Line Voltage Isolator Board	031-02022-000	J1	025-19671-000 (737534)	025-22215-000 (62701)
Line Voltage Isolator Board	031-02022-000	J2	025-21417-000 (737658)	025-22215-000 (62701)
Output Voltage Isolator Board	031-02022-001	J1	025-21417-000 (737658)	025-22215-000 (62701)
Output Voltage Isolator Board	031-02022-001	J2	025-21417-000 (737658)	025-22215-000 (62701)
Input DC Current Transducer	-	-	025-43356-000 (740274)	025-43357-000 (740275)
Output DC Current Transducer	-	-	025-43356-000 (740274)	025-43357-000 (740275)
Output DC Current Transformer (complete cable)	-	-	571-05571-213 (807121)	-
VSD Logic Board	031-02911-003	J1	025-19672-000 (737535)	025-22215-000 (62701)
VSD Logic Board	031-02911-003	J2	025-42614-000 (740129)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J3	025-35964-000 (739253)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J4	025-28384-000 (737920)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J5	025-28959-000 (738246)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J6	025-28382-000 (737916)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J7	025-35966-000 (550505)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J8 - J13	Assembly # 571-05571-241	N/A
VSD Logic Board	031-02911-003	J14	025-28959-000 (738246)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J15	025-29130-000 (738262)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J17	025-21136-000 (737636)	025-19674-000 (737537)
VSD Logic Board	031-02911-003	J18	Assembly # 571-05571-227 (807122)	N/A
VSD Logic Board	031-02911-003	J19	025-21137-000 (737637)	025-19674-000 (737537)
VSD Logic Board	031-02911-003	J25	025-35966-000 (550505)	025-28386-000 (737925)
VSD Logic Board	031-02911-003	J36	Assembly # 571-05571-291 (807129)	N/A

490AMP VARIABLE SPEED DRIVE

TABLE 9 - WIRING HARNESSSES AND CONNECTORS (490 AMPS) (CONT'D)

BOARD NAME	BOARD PART NUMBER	POSITION	HOUSING PART NUMBER (SAP PART NUMBER)	PIN PART NUMBER (SAP PART NUMBER)
IGBT Gate Driver Board - Rectifier	031-02901-003	J1	025-42614-000 (740129)	025-28386-000 (737925)
IGBT Gate Driver Board - Inverter	031-02901-004	J1	025-42614-000 (740129)	025-28386-000 (737925)
Gate Driver Power Supply Board	031-02903-001	J1	025-29185-000 (62736)	025-19674-000 (737537)
Gate Driver Power Supply Board	031-02903-001	J2	025-44494-000 (839746)	025-28386-000 (737925)
Gate Driver Power Supply Board	031-02903-001	J7	025-19671-000 (737534)	025-11083-000 (737290)
Gate Driver Power Supply Board	031-02903-001	J8	025-19672-000 (737535)	025-22215-000 (62701)
Ambient Temperature at Sensor	-	-	025-29130-000 (738262)	025-28386-000 (737925)
Ambient Temperature at Cable	-	-	025-32564-000 (738737)	025-30999-000 (738540)
CPC Connectors				
Motor Monitoring	-	-	025-44974-000 (828162)	025-40463-000 (873883)
Magnet Bearing Controller	-	-	025-37873-000 (739490)	025-40463-000 (873883)
OptiView Communication	-	-	025-37873-000 (739490)	025-40463-000 (873883)
UPS	-	-	025-44974-000 (828162)	025-37875-000 (739491)
OptiView Power	-	-	025-44974-000 (828162)	025-37875-000 (739491)

Note: All items in Table 9 are NOT shown

744AMP VARIABLE SPEED DRIVE

TABLE 11 - INPUT COMPONENTS (744 AMPS)

ITEM	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Circuit Breaker 800 amp	224-37419-000	769678	1	22
1	Disconnect Switch	024-36974-000	704473	1	22
1	Disconnect Switch Lug Kit	025-43345-000	740272	1	*
2	Input Current Transducer (DCCT)	025-42749-000	740134	3	21
3	Input Filter Assembly	371-05182-341	772950	1	22
4	Input Filter Capacitor for Assembly	025-42834-000	740148	9	22
5	Input Filter Capacitor	025-43928-000	740379	1	22
6	Input Line Inductor (L1)	025-42768-000	740137	1	22
	Inductor Cooling Hose	028-16716-000	-	-	
	Inductor Cooling Hose Elbow	025-25635-000	-	6	
	Inductor Cooling Manifold	325-44864-603	-	2	
	Inductor Cooling Valves	022-12389-000	-	2	
7	Input Filter Resistor for Assembly	025-42616-000	740130	3	22
8	Input Load Inductor (L2)	025-42767-000	740136	1	22
9	Input Voltage Isolator Board	031-02022-000	65064	1	22
10A	Resistor Kit - After 8/11 (Includes 2 Resistors and Bracket)	025-44707-000	740584	1	22
10B	Resistor Kit - Before 8/11 (Includes 2 Resistors and Bracket)	025-44672-000	-	1	22
11	Ground Lug	025-32835-000	738755	4	22
12	Voltage Transient Board (Fuses are not included)	031-02453-000	743895	1	22

NOTE: Items with an * are NOT represented.

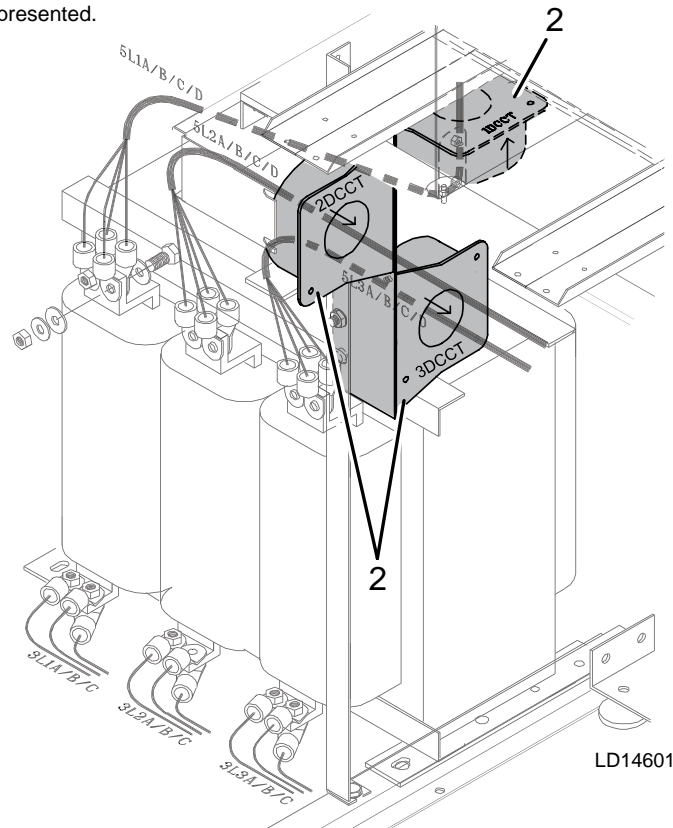
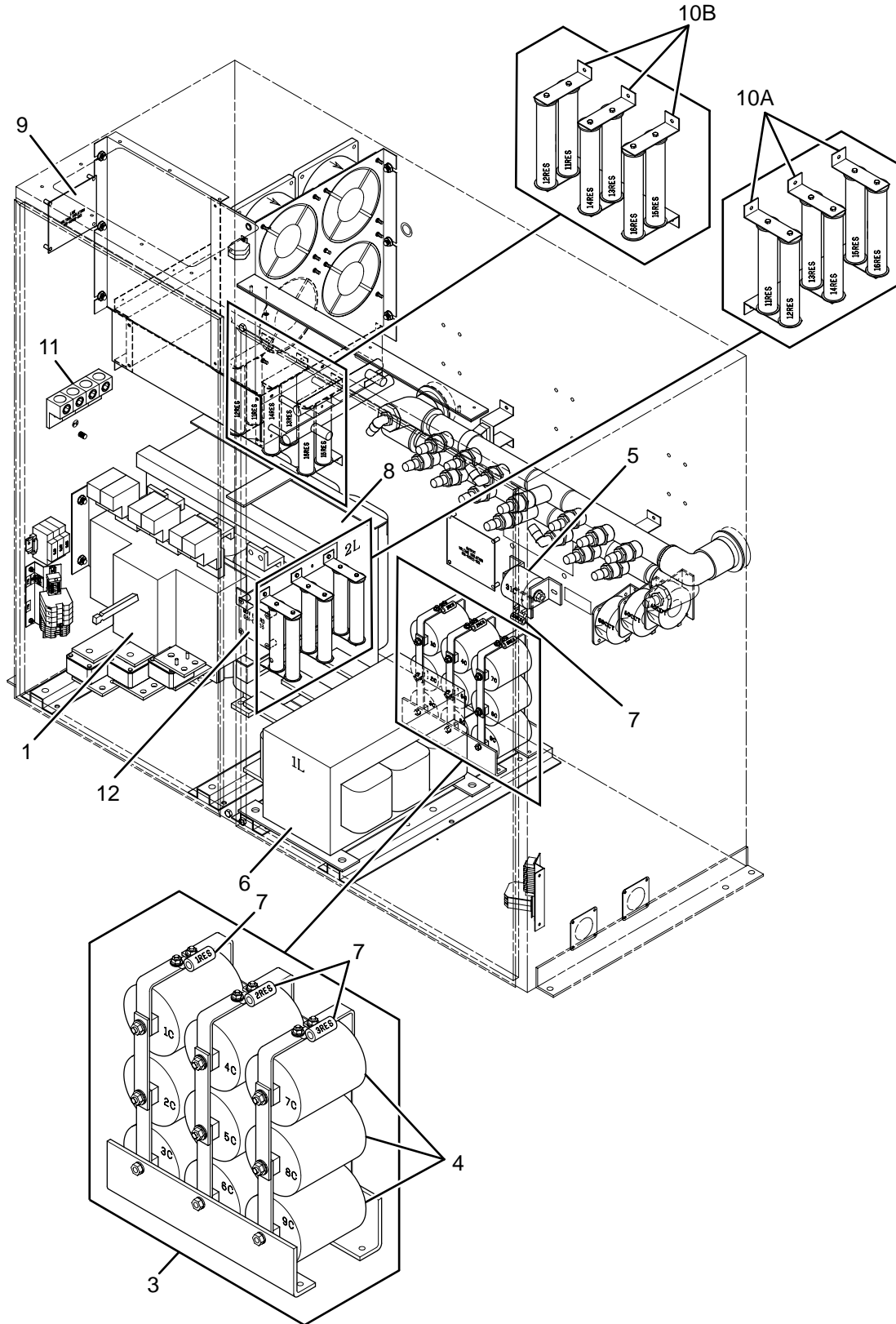


FIGURE 21 - CURRENT TRANSDUCER (DCCT)

744AMP VARIABLE SPEED DRIVE



LD14672a

FIGURE 22 - INPUT FILTER COMPONENTS

744AMP VARIABLE SPEED DRIVE

TABLE 12 - FUSE COMPONENTS (744 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Fuse 1 AMP (19FU-21FU)	025-43326-000	740259	3	24
2	Fuse 5 AMP (16FU-18FU) Voltage Transient Board Fuses	025-38523-000	739590	3	23 , 25
3	Fuse 7 AMP (4FU-6FU and 13FU-15FU)	025-35903-000	117821	6	23
4	Fuse 10 AMP (25FU and 26FU)	025-43907-000	740371	2	25
5	Fuse 10 AMP (7FU-10FU) (460 VAC 60 Hz)	025-35905-000	739234	4	25
5	Fuse 12 AMP (400 VAC 60 Hz, and 400/415 VAC 50Hz, 7FU-10FU)	025-35906-000	652698	4	25
6	Fuse 20 AMP (11FU and 12FU and 27FU)	025-35908-000	117823	3	24, 25
7	2-Pole Fuse Holder (800v) (25FU / 26FU)	025-43899-000	740368	1	25
8	3-Pole Fuse Holder (30A) (4FU-6FU, 13FU-15FU, 19FU-21FU)	025-39952-000	343433	3	23, 24, 25
9	Input Power Fuse Kit (All 3, 1FU-3FU)	371-05571-601	-	1	23
10	1-Pole Fuse Holder (30A) (27FU)	025-39951-000	359985	1	24
11	2-Pole Fuse Holder (30A) (7FU-12FU)	025-44520-000	740518	3	25

2

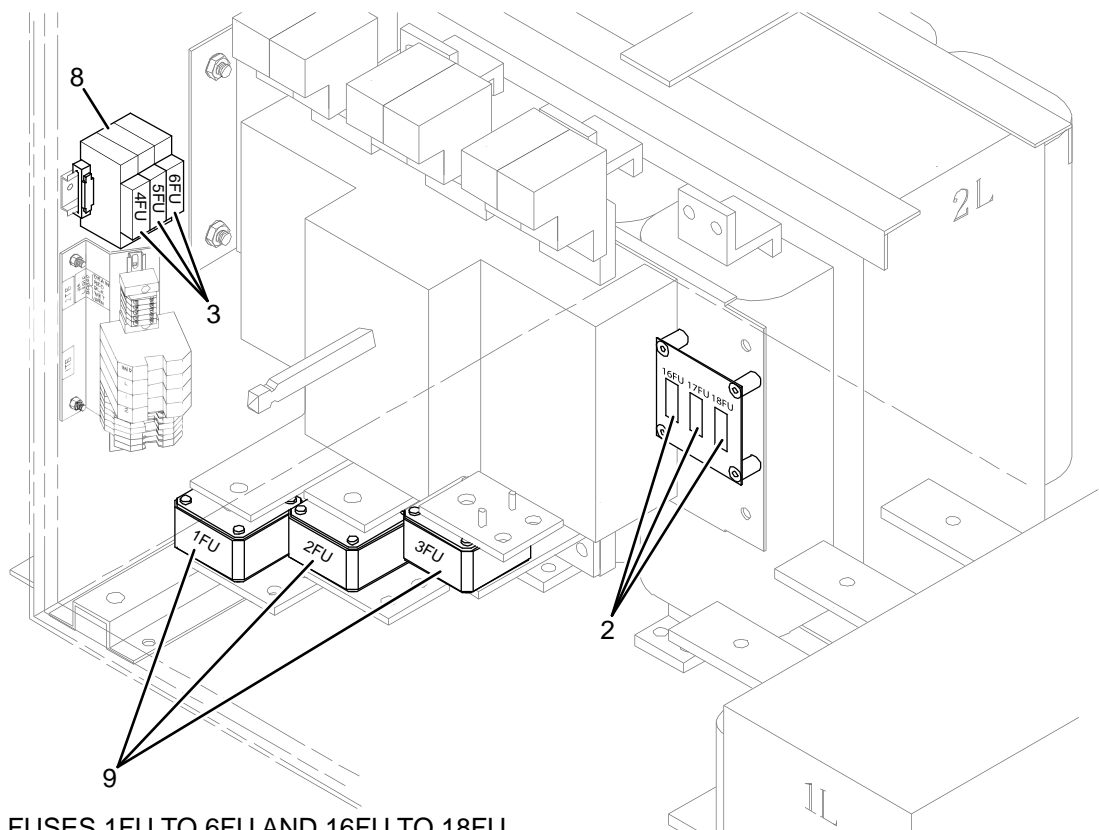


FIGURE 23 - FUSES 1FU TO 6FU AND 16FU TO 18FU

LD14659

744AMP VARIABLE SPEED DRIVE

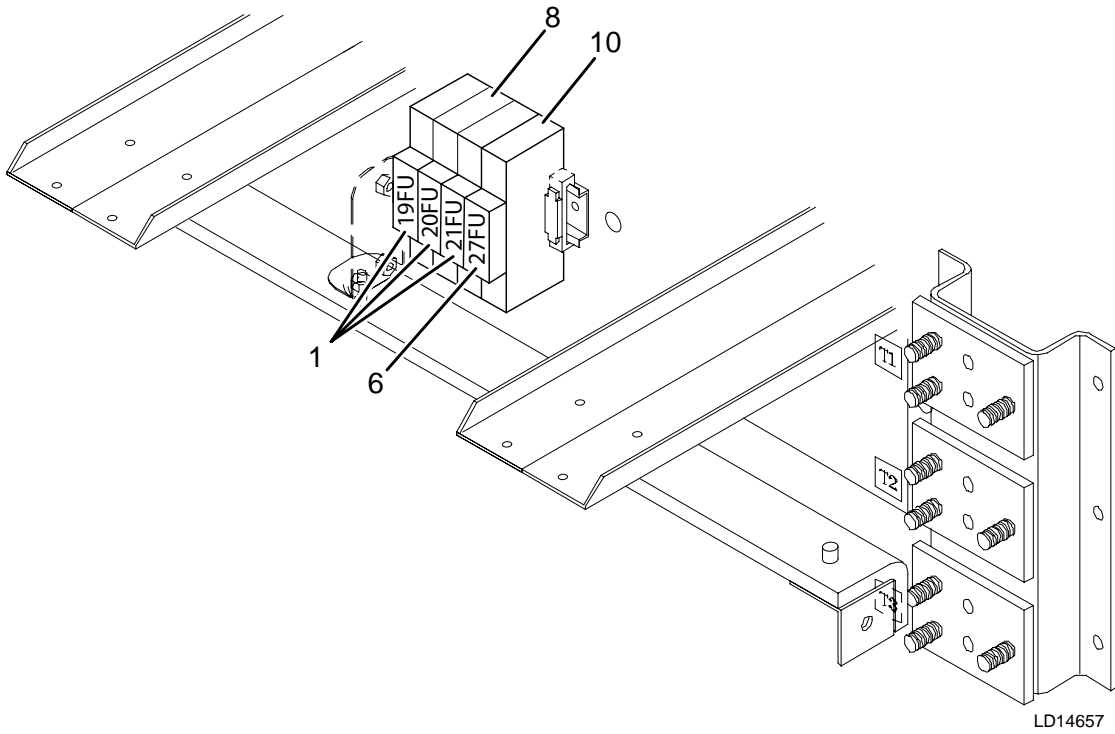


FIGURE 24 - AUXILIARY FUSES 19FU TO 21FU AND 27FU

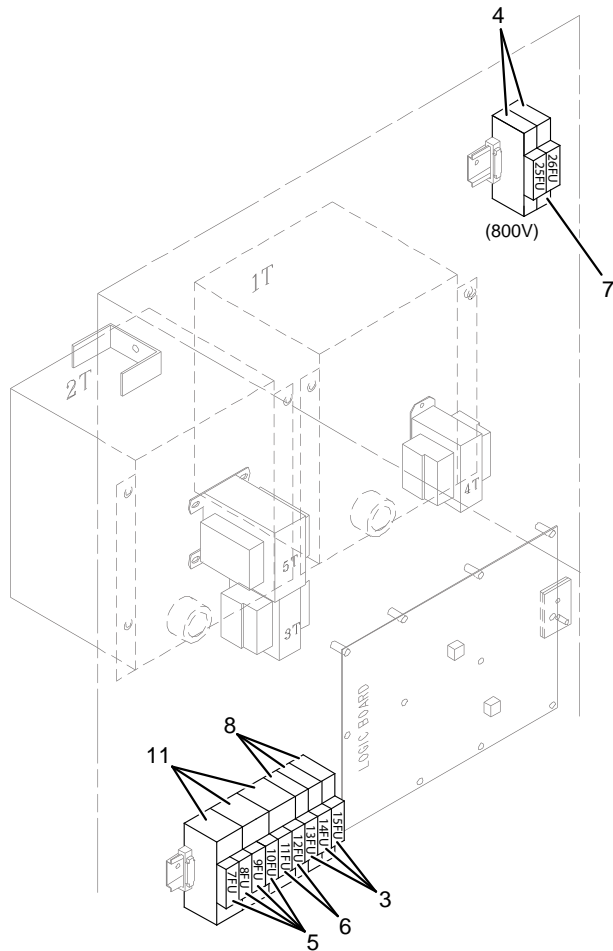


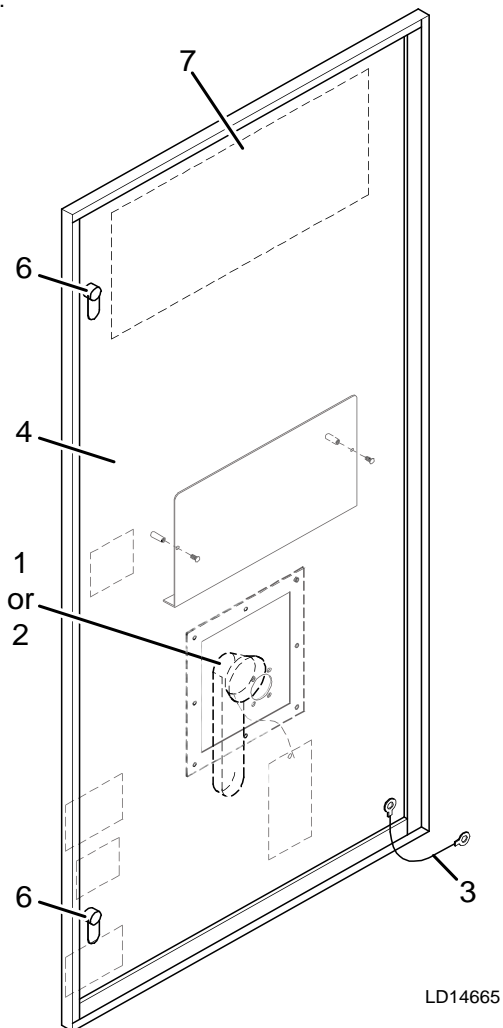
FIGURE 25 - FUSES 7FU TO 15FU AND 25FU TO 26FU

744AMP VARIABLE SPEED DRIVE

TABLE 13 - DOOR COMPONENTS (744 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Circuit Breaker Door Mounting Kit	026-46045-000	741273	1	26
2	Disconnect Switch Handle	024-36614-000	736390	1	26
3	Door Ground Strap (Used on Left And Right Door)	525-32508-001	806677	2	26
4	Door Kit Left 60Hz (Including all labels and latches)	371-05571-651	-	1	26
4	Door Kit Left 50Hz w/ EMC (Including all labels and latches)			1	26
5	Door Kit Right 60Hz (Including all labels and latches)	371-05571-656	-	1	*
5	Door Kit Right 50Hz w/ EMC (Including all labels and latches)			1	*
6	Door Latch (Used On Left And Right Door)	029-25614-000	743380	2	26
	Door Stop	029-23420-000	119865	1	*
7	Label, Front Door Johnson Controls Logo	035-23036-000	745608	1	26
8	EMC Upgrade Kit (Drive side only)	371-05581-000	-	-	*

NOTE: Items with an * are NOT represented.



LD14665

FIGURE 26 - DOOR COMPONENTS

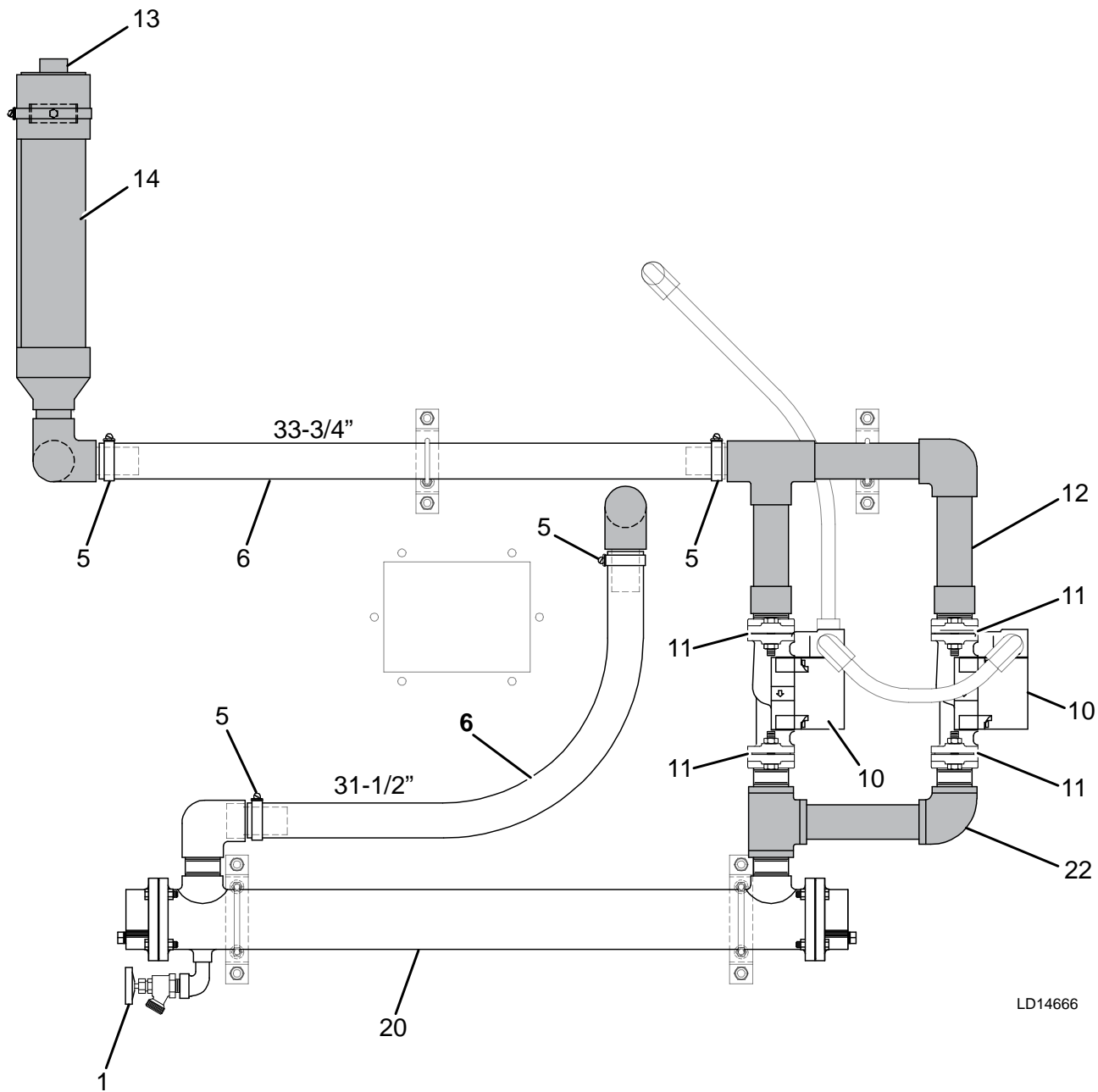
744AMP VARIABLE SPEED DRIVE

TABLE 14 - COOLING SYSTEM COMPONENTS (744 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Coolant Drain Valve	022-10090-000	692414	1	27
2	Coolant Hose Barb Straight Kit (hose barbs and hose)	371-05571-626	-	-	29
3	Coolant Hose Barb Elbow Kit (hose barbs and hose)	371-05571-631	-	-	29
4	Coolant Hose Clamp 1"	023-08856-000	617439	32	28, 29
5	Coolant Hose Clamp 2"	021-32226-000	730939	4	27
6	Coolant Hose External 1-1/2"	028-16373-000	742214	6'	27
7	Coolant Hose Internal 3/4" ID by the foot	028-16379-000	742219	50'	29
8	Coolant Manifold Kit Inlet	371-05571-636	-	-	28
8	Coolant Manifold Kit Inlet (Injection Molded)	371-05571-414	865782	-	28
9	Coolant Manifold Kit Outlet (Coolant Reservoir 3" PVC with Plug Kit)	371-05571-671	-	-	28
9	Coolant Manifold Kit Outlet (Injection Molded)	371-05571-404	865781	-	28
10	Coolant Pump	026-33890-000	3590	2	27
11	Coolant Pump Flange Set	023-20283-000	733193	2	27
12	Coolant Pump Input Assembly Kit 60/50 Hz	371-05571-646	-	-	27
13	Coolant Reservoir Fill Plug	028-16378-000	742218	1	27
16	Inhibitor (per gallon)	013-02987-000	729086	5 gallon	*
17	Internal Cooling Fan	025-32557-000	738735	1	28
18	Internal Cooling Coil	026-45982-000	741251	1	28
19	Relay, Control Fan / Pump	024-30441-000	664298	1	28
20	Shell and Tube Heat Exchanger (150/300 PSI Condenser 3")	026-37572-000	104160	1	27
21	Shell and Tube Heat Exchanger Head Gaskets (set of two) 3"	371-03716-001	772263	1	*
22	Shell and Tube Heat Exchanger Assembly Kit	371-05571-661	-	-	27
23	Valve Ball 3/4" Npt Female	023-25462-000	-	6	28
26	Temperature Sensor with Connector	571-05182-283	807091	2	8

NOTE: Items with an * are NOT represented.

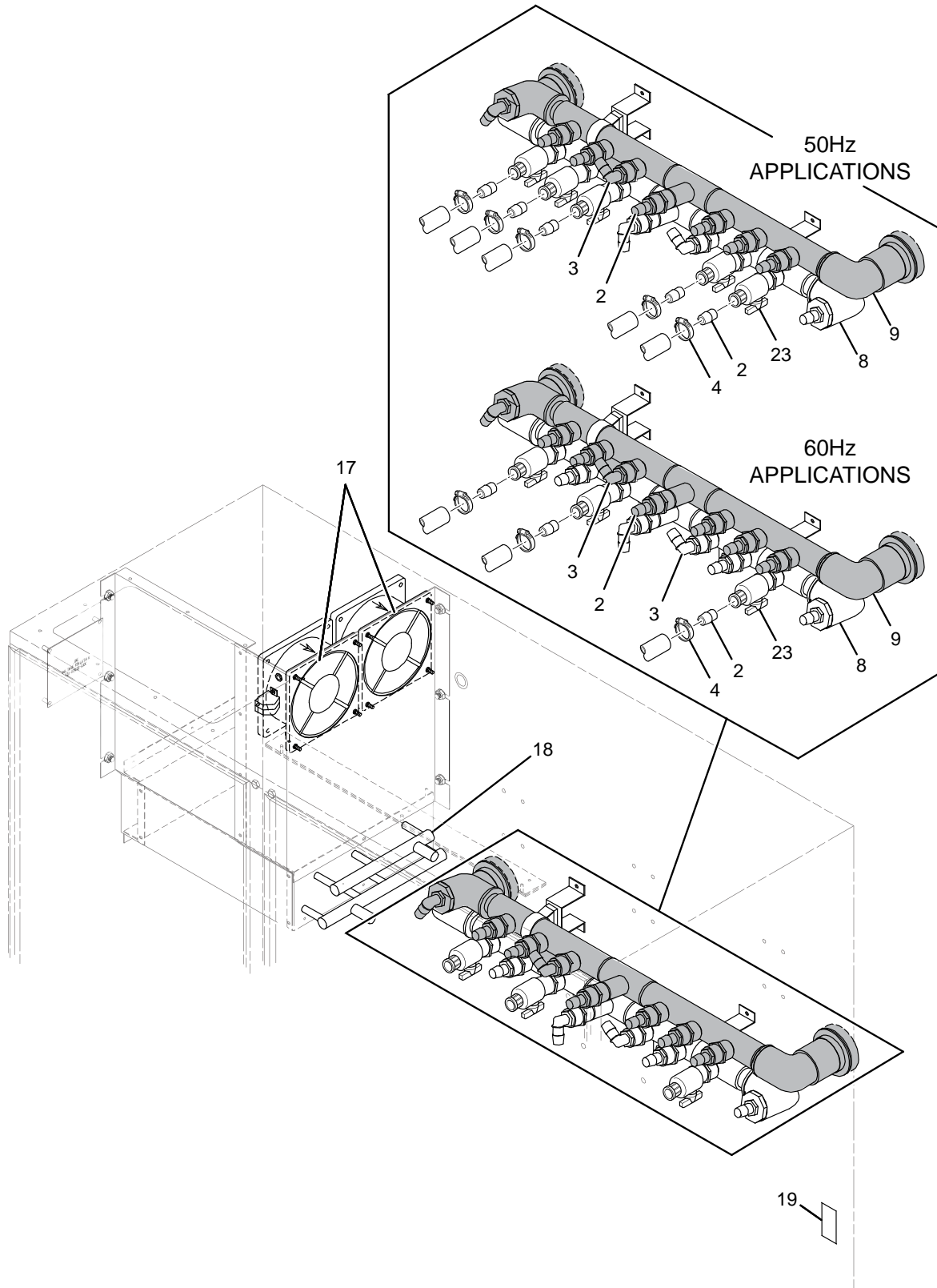
744AMP VARIABLE SPEED DRIVE



LD14666

FIGURE 27 - EXTERNAL COOLANT SYSTEM PIPING

744AMP VARIABLE SPEED DRIVE



LD14667

FIGURE 28 - INTERNAL MANIFOLD HEADER ASSEMBLY

744AMP VARIABLE SPEED DRIVE

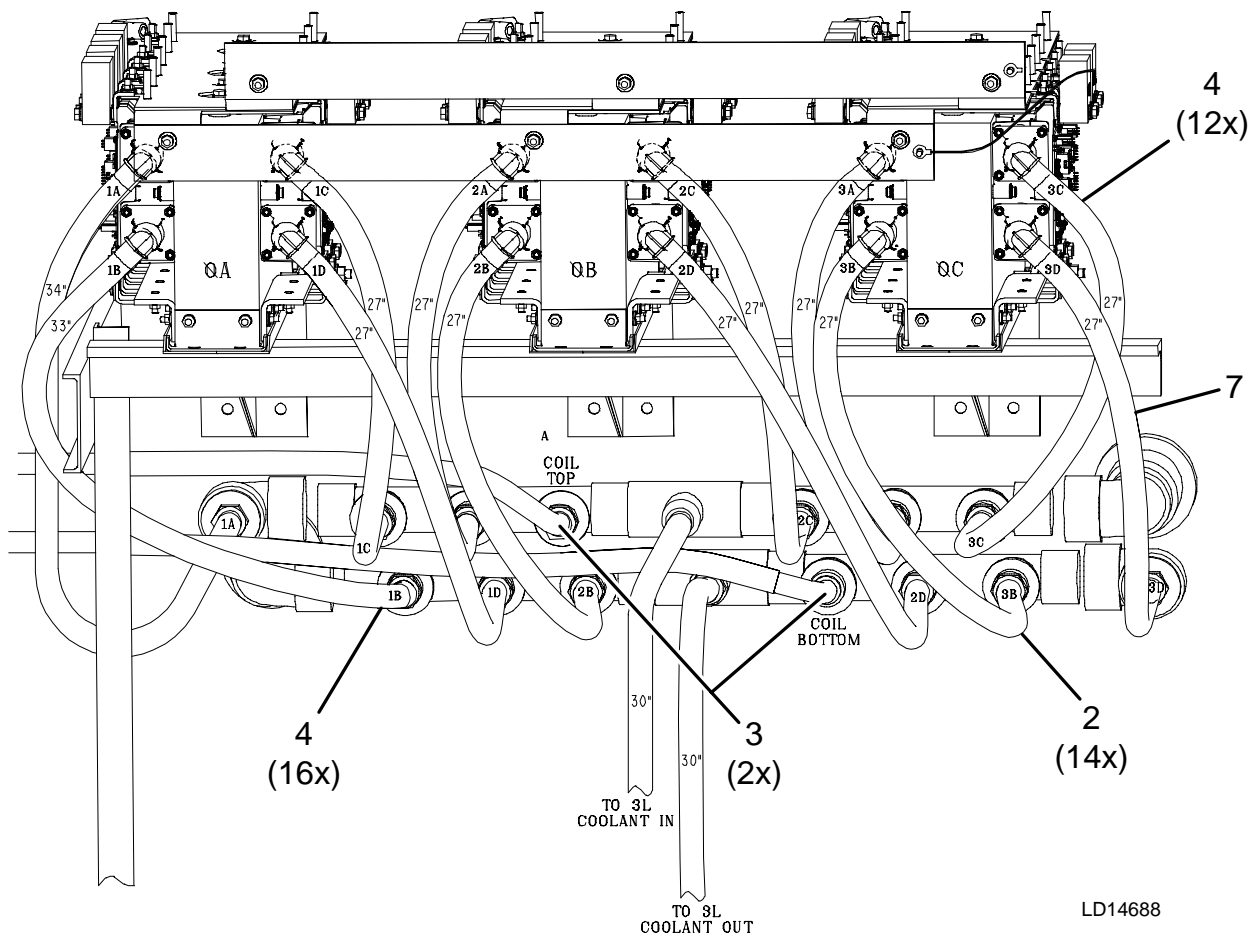


FIGURE 29 - PIPING FROM POWER ASSEMBLY TO MANIFOLD HEADER

744AMP VARIABLE SPEED DRIVE

TABLE 15 - POWER ASSEMBLY COMPONENTS (744 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Bus Bleeder Resistor (ea.)	025-42616-000	740130	2	31
2	Bus Plate Kit for power assembly	371-05526-601	774036	1	31
3	Bus Snubber Capacitor (ea.)	025-42835-000	740149	12	31
4	Coolant Hose Barb on power assembly Kit	371-05526-606	774037	-	31
5	IGBT Gate Driver Board	031-02762-001	744086	1	31
6	Inverter Power Module Kit	371-05526-611	774038	-	31
7A	Negative Bus Plate	071-05571-352	749310	1	30
7B	Positive Bus Plate	071-05571-480	749312	1	30
8	Power Unit Mounting Foot Front	071-05508-312	749269	1	31
9	Power Unit Mounting Foot Rear	071-05508-310	749268	1	31
10	Rectifier Power Module Kit	371-05526-616	774039	-	31
11	VSD Rectifier/Inverter Power Unit Complete Kit (IGBT, Capacitors, Heatsink, Coolant)	371-05526-621	774040	-	30
12	Strap, Wiring Inverter Ground	571-05526-241	807110	6	30

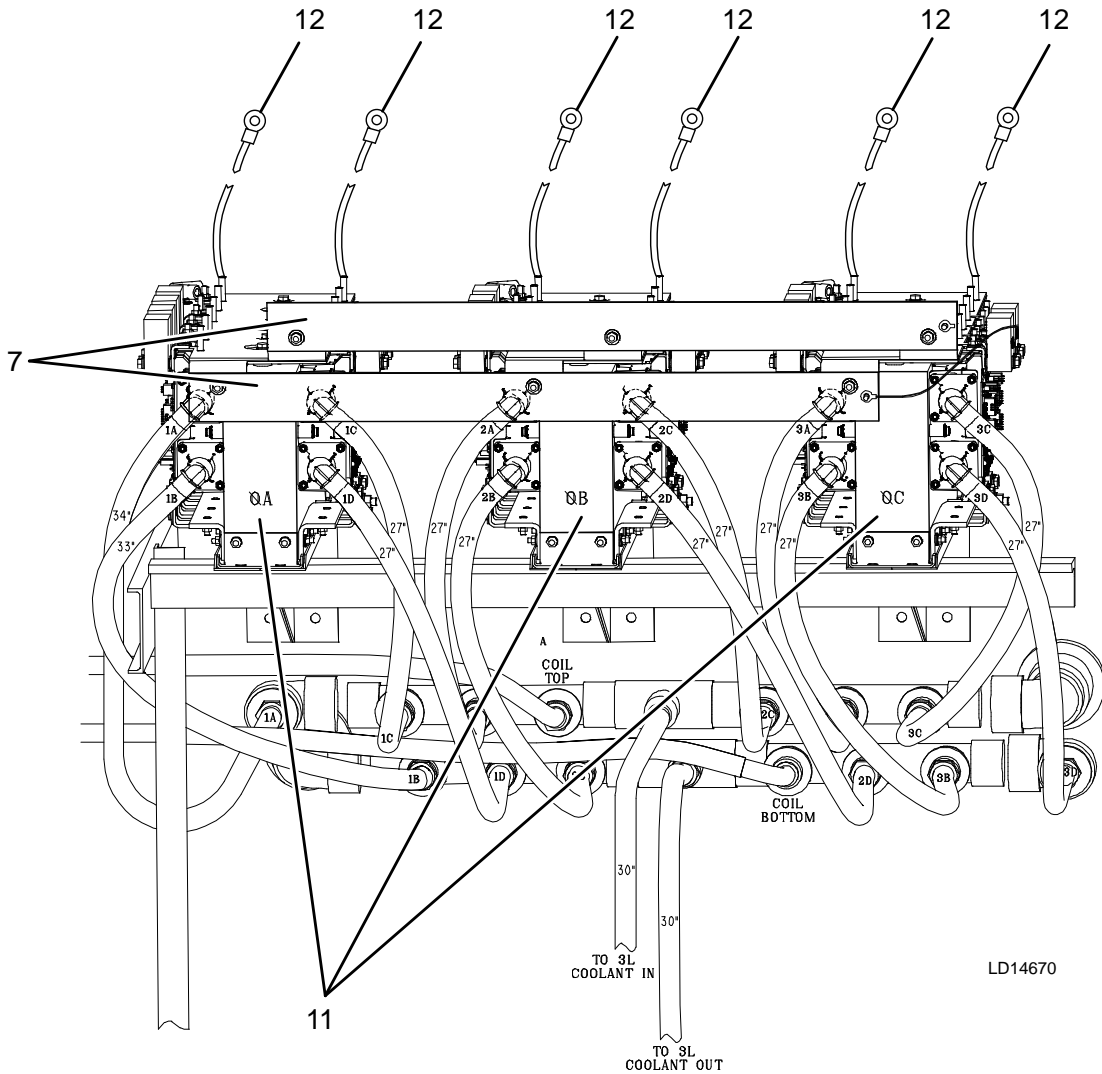
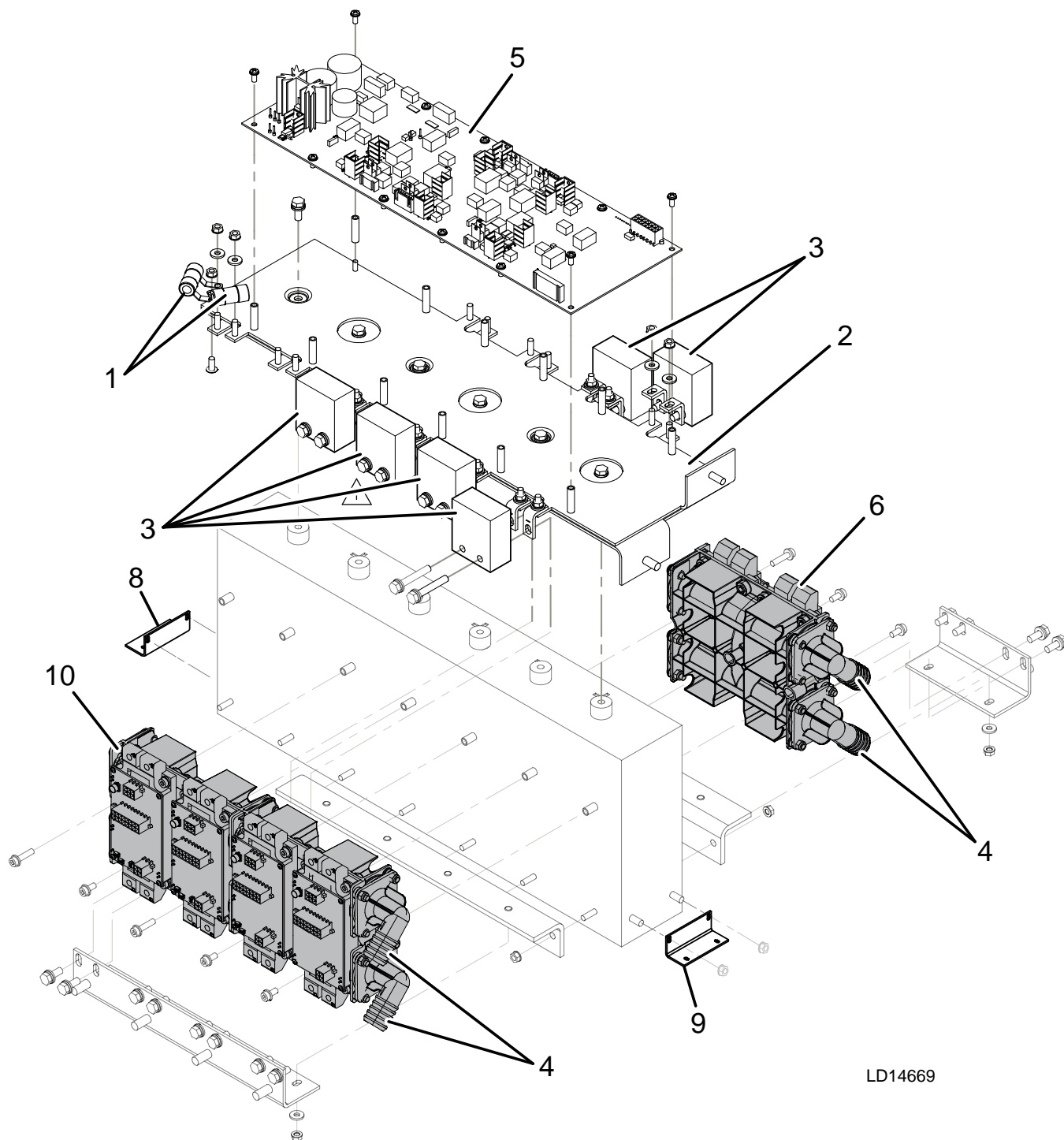


FIGURE 30 - POWER ASSEMBLY COMPONENTS

744AMP VARIABLE SPEED DRIVE

2



LD14669

FIGURE 31 - POWER POLE ASSEMBLY

744AMP VARIABLE SPEED DRIVE

TABLE 16 - OUTPUT COMPONENTS (744 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Motor Connection Plate	371-05571-361	774161	3	33
2	Output Current Transducer (DCCT)	025-42748-000	740133	3	32
3	Output Harmonic Filter Capacitor (used in production until 11/11)	025-45369-000	865769		33
3	Output Harmonic Filter Capacitor (used in production after 11/11)	025-43983-000	-		33
4	Output Harmonic Filter Assembly	025-44864-000	740611	1	33
4	Output Harmonic Filter Assembly Kit*	325-44864-601	-	-	33
4a	Inductor Cooling Hose Elbow	025-25635-000	-	6	33
4b	Inductor Cooling Hose	028-16716-000	-	-	33
4c	Inductor Cooling Manifold	325-44864-603	-	2	33
4d	Inductor Cooling Valves	022-12389-000	-	2	33
5	Output Power Wiring Kit (used before 9/11)	571-05571-236	865794	-	*
5	Output Power Wiring Kit (used after 9/11)	571-05571-238	807124	-	*
8	Output Voltage Isolator Board	031-02022-001	743845	1	32
9	Output Filter Upgrade Kit	325-44864-601	-	-	*

NOTE: If the installed output harmonic filter has a white enclosure and has failed, then replace the output harmonic filter with part numbers 325-44864-601 and 571-05571-238.

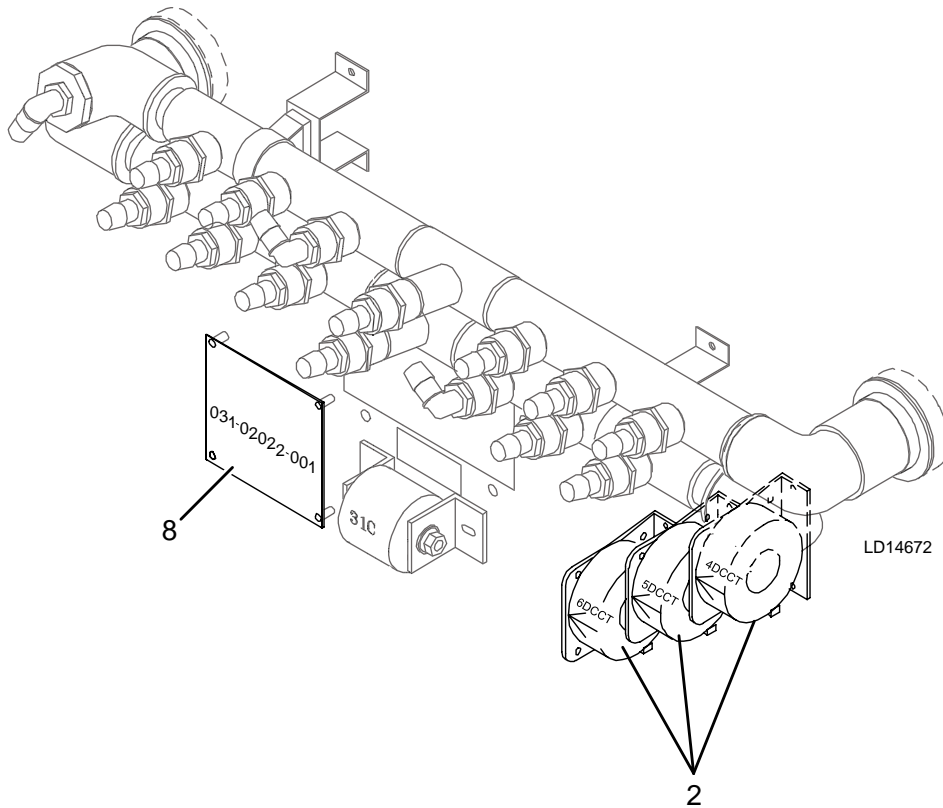
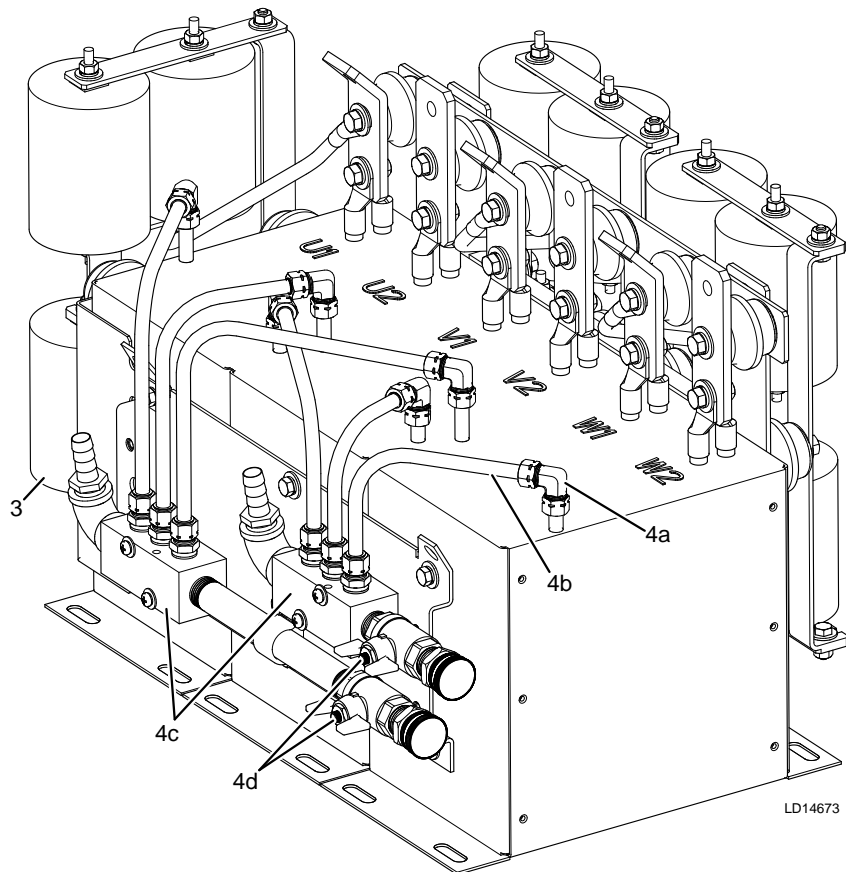
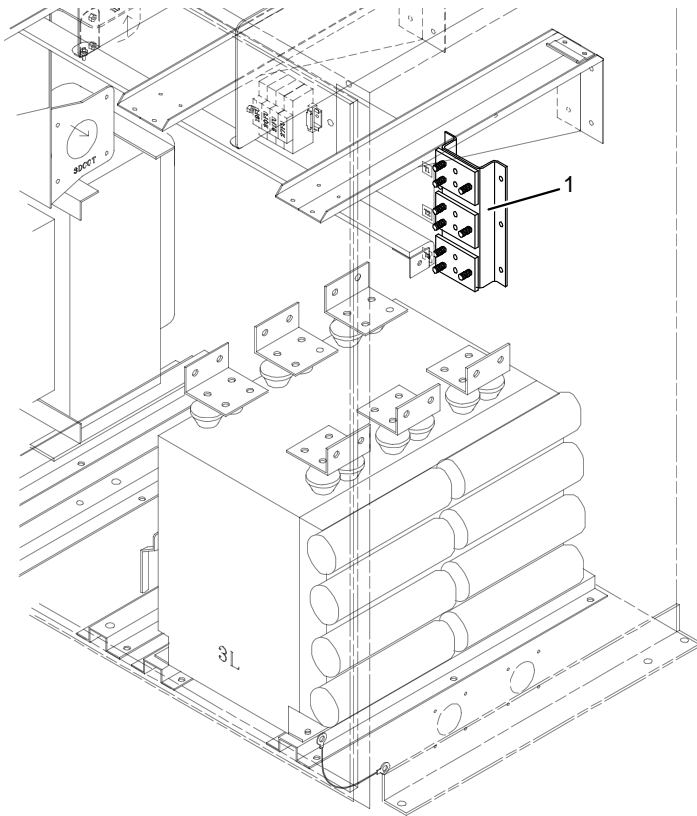


FIGURE 32 - OUTPUT HARMONIC FILTER COMPONENTS #1

744AMP VARIABLE SPEED DRIVE

2



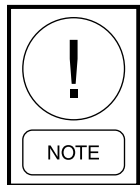
LD14673

FIGURE 33 - OUTPUT HARMONIC FILTER COMPONENTS #2

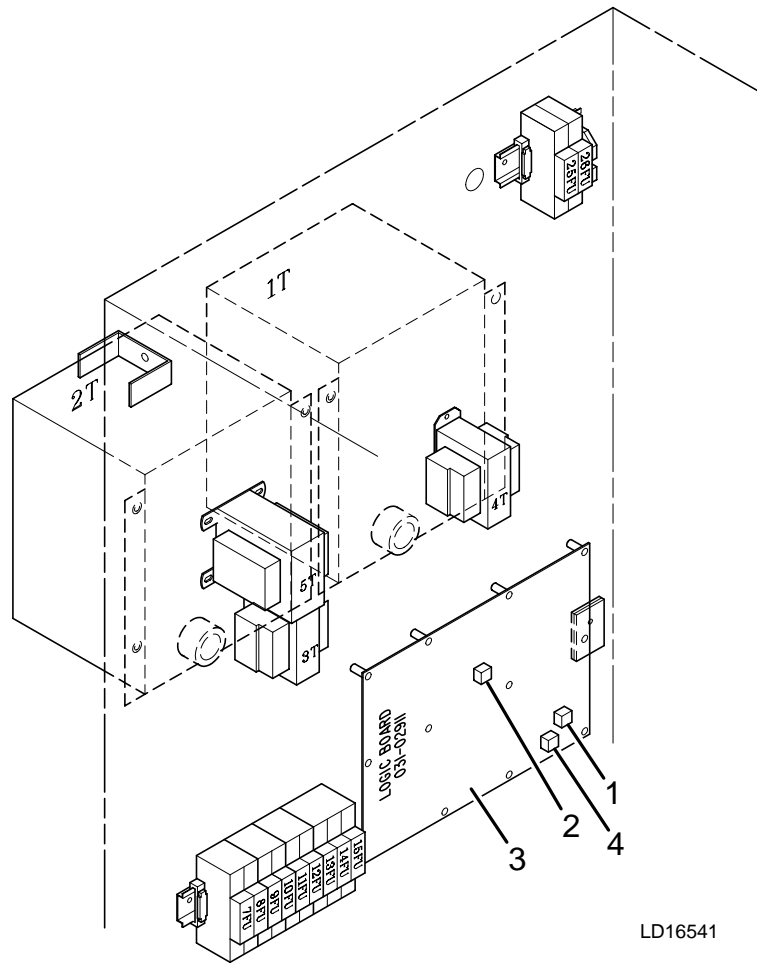
744AMP VARIABLE SPEED DRIVE

TABLE 17 - DRIVE LOGIC BOARD AND COMPONENTS (744 AMPS)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	PROM Chip U35 (for 031-02911-001 board) (NOTE: Both chips must be ordered together)	031-03048-001	744215	1	34
2	PROM Chip U38 (for 031-02911-001 board) (NOTE: Both chips must be ordered together)	031-03049-001	744216	1	34
3	VSD Logic Board	031-02911-001	744204	1	34
	VSD Logic Board kit (includes all software)	331-02911-601	696710	1	34
4	U66 485 Communications Driver	031-02074-000	743866	1	19



PROM Chips U35 and U38 must be ordered as a set.



LD16541

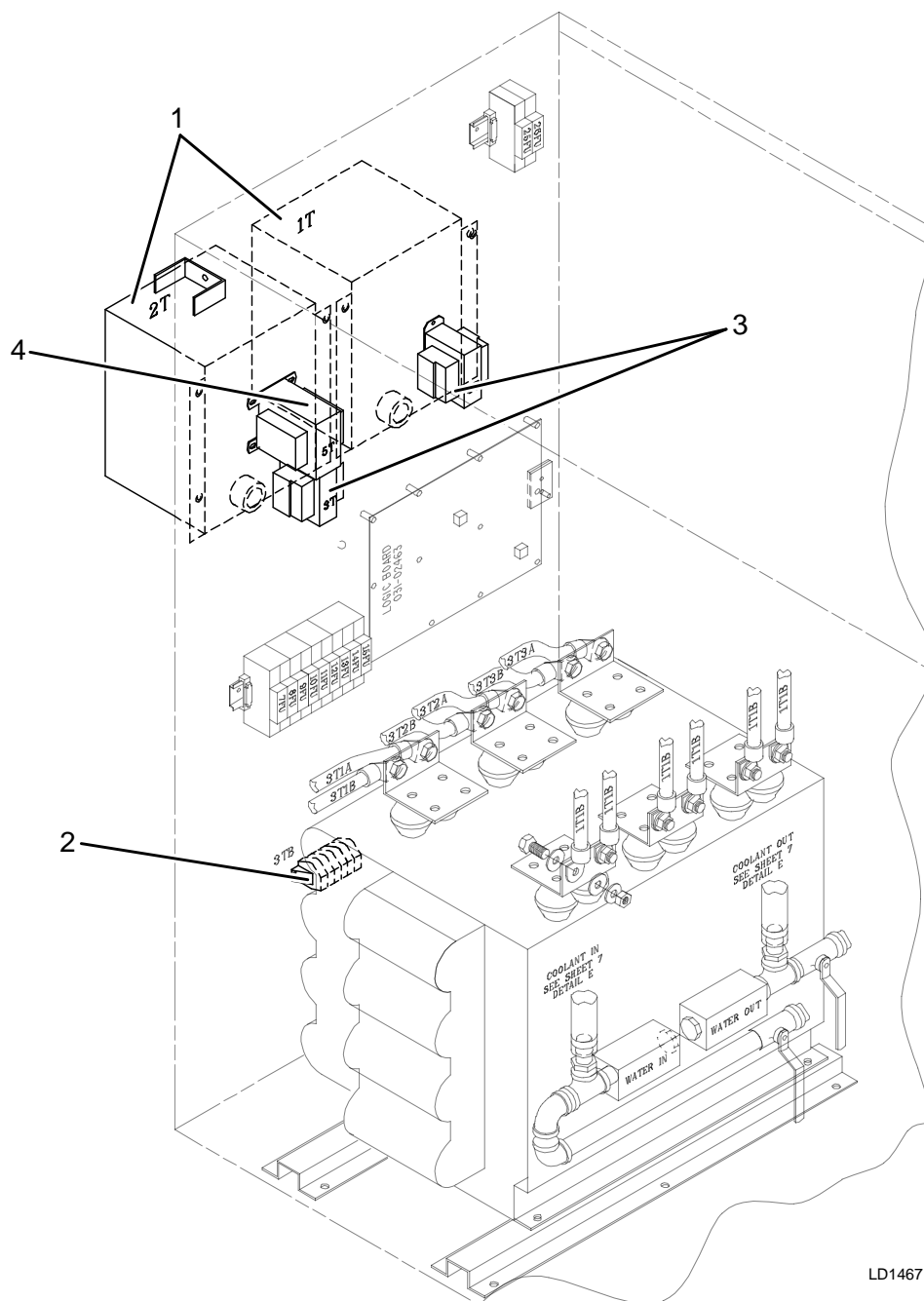
FIGURE 34 - DRIVE LOGIC BOARD AND COMPONENTS

744AMP VARIABLE SPEED DRIVE

TABLE 18 - MISCELLANEOUS COMPONENTS (744)

ITEM NUMBER	DESCRIPTION	YORK PART NUMBER	SAP PART NUMBER	QUANTITY	FIGURE
1	Control Transformer, 240/480 VAC 2 KVA	025-29627-002	117496	1	35
1	Control Transformer, 380/400/415 VAC 2 KVA	025-29627-003	738308	1	35
2	Terminal Block	025-20944-000	62696	6	35
3	Transformer, 24 VAC, 75 VA	025-27911-000	1312	2	35
4	Transformer, 175 VA	025-43339-000	740269	1	35

2



LD14671

FIGURE 35 - MISCELLANEOUS COMPONENTS

744AMP VARIABLE SPEED DRIVE

TABLE 19 - WIRING HARNESSES AND CONNECTORS (744)

BOARD NAME	BOARD PART NUMBER	POSITION	HOUSING PART NUMBER (SAP PART NUMBER)	PIN PART NUMBER (SAP PART NUMBER)
Line Voltage Isolator Board	031-02022-000	J1	025-19671-000 (737534)	025-22215-000 (62701)
Line Voltage Isolator Board	031-02022-000	J2	025-21417-000 (737658)	025-22215-000 (62701)
Output Voltage Isolator Board	031-02022-001	J1	025-21417-000 (737658)	025-22215-000 (62701)
Output Voltage Isolator Board	031-02022-001	J2	025-21417-000 (737658)	025-22215-000 (62701)
Input DC Current Transducer	-	-	025-43356-000 (740274)	025-43357-000 (740275)
Output DC Current Transducer	-	-	025-43356-000 (740274)	025-43357-000 (740275)
VSD Logic Board	031-02911-001	J1	025-19672-000 (737535)	025-22215-000 (62701)
VSD Logic Board	031-02911-001	J2	025-42614-000 (740129)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J3	025-35964-000 (739253)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J4	025-18355-000 (-)	025-19674-000 (737537)
VSD Logic Board	031-02911-001	J5	025-28959-000 (738246)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J6	025-28382-000 (737916)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J7	025-35966-000 (550505)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J8 and J11	Assembly # 571-05571-205 (807117)	N/A
VSD Logic Board	031-02911-001	J9 and J12	Assembly # 571-05571-207 (807118)	N/A
VSD Logic Board	031-02911-001	J10 and J13	Assembly # 571-05571-209 (807119)	N/A
VSD Logic Board	031-02911-001	J14	025-28959-000 (738246)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J15	025-29130-000 (738262)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J17	025-21136-000 (737636)	025-19674-000 (144 774)
VSD Logic Board	031-02911-001	J18	Assembly # 571-05571-227 (807122)	N/A
VSD Logic Board	031-02911-001	J19	025-21137-000 (737637)	025-19674-000 (737537)

744AMP VARIABLE SPEED DRIVE

TABLE 16 - WIRING HARNESSSES AND CONNECTORS (744) (CONT'D)

BOARD NAME	BOARD PART NUMBER	POSITION	HOUSING PART NUMBER (SAP PART NUMBER)	PIN PART NUMBER (SAP PART NUMBER)
VSD Logic Board	031-02911-001	J25	025-35966-000 (550505)	025-28386-000 (737925)
VSD Logic Board	031-02911-001	J36	Assembly # 571-05571-291 (807129)	N/A
IGBT Gate Driver Board	031-02762-001	J1	025-21136-000 (737636)	025-32506-000 (738721)
IGBT Gate Driver Board	031-02762-001	J2	025-42614-000 (740129)	025-28386-000 (737925)
IGBT Gate Driver Board	031-02762-001	J3	025-19671-000 (737534)	025-19673-000 (737536)
IGBT Gate Driver Board	031-02762-001	J4	025-19672-000 (737535)	025-22215-000 (62701)
IGBT Gate Driver Board - Inverter	031-02762-001	J5 and J6	Assembly # 571-05526-201 (807106)	N/A
IGBT Gate Driver Board - Rectifier	031-02762-001	J7 and J8	Assembly # 571-05526-211 (807107)	N/A
IGBT Gate Driver Board - Rectifier	031-02762-001	J9 and J11	Assembly # 571-05526-221 (807107)	N/A
IGBT Gate Driver Board - Inverter	031-02762-001	J10	Assembly # 571-05526-231 (807109)	N/A
Converter Resistor Board	031-02764-001	J1 and J4	Assembly # 571-05526-221 (807108)	N/A
Converter Resistor Board	031-02764-001	J2 and J3	Assembly # 571-05526-211 (807107)	N/A
Inverter Resistor Board	031-02765-001	J1	Assembly # 571-05526-231 (807109)	N/A
Inverter Resistor Board	031-02765-001	J2 and J3	Assembly # 571-05526-201 (807106)	N/A
Ambient Temperature at Sensor	-	-	025-29130-000 (738262)	025-28386-000 (737925)
Ambient Temperature at Cable	-	-	025-32564-000 (738737)	025-30999-000 (738540)

Note: All items in Table 8 are NOT shown

2

NOTES

The following factors can be used to convert from English to the most common SI Metric values.

TABLE 20 - SI METRIC CONVERSION

MEASUREMENT	MULTIPLY ENGLISH UNIT	BY FACTOR	TO OBTAIN METRIC UNIT
Capacity	Tons Refrigerant Effect (ton)	3.516	Kilowatts (kW)
Power	Horsepower	0.7457	Kilowatts (kW)
Flow Rate	Gallons / Minute (gpm)	0.0631	Liters / Second (l/s)
Length	Feet (ft)	0.3048	Meters (m)
	Inches (in)	25.4	Millimeters (mm)
Weight	Pounds (lbs)	0.4538	Kilograms (kg)
Velocity	Feet / Second (fps)	0.3048	Meters / Second (m/s)
Pressure Drop	Feet of Water (ft)	2.989	Kilopascals (kPa)
	Pounds / Square Inch (psi)	6.895	Kilopascals (kPa)

TEMPERATURE

To convert degrees Fahrenheit (°F) to degrees Celsius (°C), subtract 32° and multiply by 5/9 or 0.5556.

Example: $(45.0^{\circ}\text{F} - 32^{\circ}) \times 0.5556 = 27.2^{\circ}\text{C}$

To convert a temperature range (i.e., a range of 10°F) from Fahrenheit to Celsius, multiply by 5/9 or 0.5556.

Example: $10.0^{\circ}\text{F range} \times 0.5556 = 5.6^{\circ}\text{C range}$



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