



GE Type QL and Type QL-C Transformers

Application of Connectors

SECTION 1 SELECTION

There are a number of commercially available connectors which may be applied to GE Type QL and QL-C transformers. Table 3 provides a listing of several types of UL-listed connectors which may be used. The actual connector should be selected on the basis of the type of cable and cable size to be used for the specific job.

SELECTION PROCEDURE UTILIZING TABLES

1. Determine if copper or aluminum cable is to be used.
2. Determine high-voltage cable size from either Column 3 or 4 in Table 4.

The cable size and type shown in Table 4 are based upon the following:

- Nameplate voltage
- Ampacity at 125% of nameplate KVA
- 75°C rated cable
- National Electrical Code

3. Determine quantity of high-voltage connectors required by multiplying the number of high voltage terminals (Column 2) times the number in parentheses in Column 3 or 4. If no parentheses are shown, the number is one per terminal.
4. Determine low-voltage cable size from either Column 6 or 7.
5. Determine quantity of low-voltage connectors required by multiplying Column 5 times the number in parentheses in Column 6 or 7. If no parentheses are shown, the number is one cable per terminal.
6. Select a connector type from Table 3 and then select specific part numbers which will accept the cable sizes determined in Steps 2 and 4 above.
7. Obtain bolts, flat washers and lock washers as required for the various types. The size of bolt holes and the number of holes per terminal pad can be determined by referring to Table 4 and Figure 1.

EXAMPLE

Connectors in Table 1 and 2 were selected by using Table 3 and 4 with IlSCO TA series UL listed for copper or aluminum.

TABLE 1 SINGLE-PHASE CONNECTORS

KVA	HV Connectors*			LV Connectors*		
	Qty	IlSCO No.	Connector Range	Qty.	IlSCO No.	Connector Range
25	2	TA250	6-250	4	TA250	6-250
37.5	4	TA250	6-250	4	TA250	6-250
50-75	4	TA250	6-250	8	TA350	6-350
100	4	TA500	4-500	8	TA500	4-500
167	8	TA350	6-350	12	TA500	4-500

TABLE 2 THREE-PHASE CONNECTORS

KVA	HV Connectors*			LV Connectors		
	Qty.	IlSCO No.	Connector Range	Qty.	IlSCO No.	Connector Range
15	3	TA2/0	14-2/0	4	TA2/0	14-2/0
30-50	3	TA250	6-250	4	TA250	6-250
75	3	TA250	6-250	8	TA350	6-350
112.5	3	TA350	6-350	8	TA350	6-350
150	3	TA350	6-350	8	TA500	4-500**
225	6	TA350	6-350	16	TA350	6-350
300	6	TA350	6-350	16	TA350	6-350
400-500	9	TA350	6-350	24	TA500	4-500

*Each connector requires one bolt: DIAMETER LENGTH
TA2/0 1/4" 1"
TA250 3/16" 1"
TA350, TA500 3/8" 1 1/4"
Other equivalent connectors use 1/2" dia. bolts

**208Y / 120 only. 240V LV uses TA350

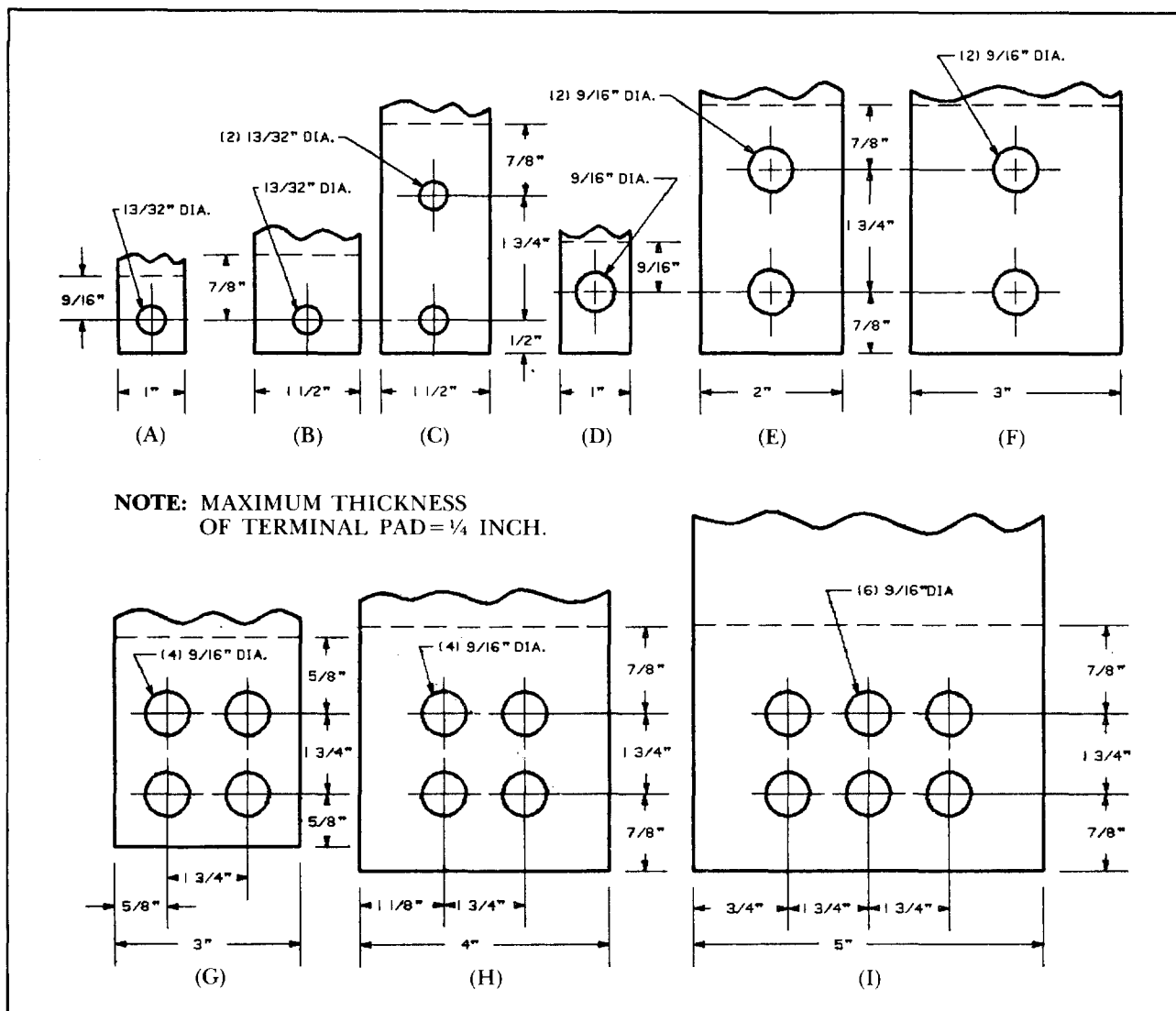


Figure 1. Terminal pad dimensions

TABLE 3 UL LISTED CONNECTORS

Mfg. Name	Copper Cable		Aluminum Cable	
	Screw Type	Crimp Type	Screw Type	Crimp Type
Thomas & Betts	Series 71000 Series 31000	Series 54100	Series 62200	Series 60100
Penn-Union	Type PNL Type SLU Type SAU		Type LA	
Burndy	Type KA	Type YA	Type KA-U	Type YA-A
IlSCO	Type LO Type LA		Type TA	Type ACL

TABLE 4 GUIDE FOR CABLE TERMINATION SELECTIONS

KVA	1	2		3	4	5		6	7
	Model Number	HIGH VOLTAGE				LOW VOLTAGE			
		Number of HV Terminals	Terminal Pad Dimensions Fig 1.	Cable Size per Terminal		Number of LV Terminals	Terminal Pad Dimensions Fig. 1	Cable Size per Terminal	
				Copper	Aluminum			Copper	Aluminum

SINGLE PHASE

25	9T23B2671	2	A	#4	#3	4	A	#1	2/0
	9T23B2681	2	A	#6	#4	4	A	#1	2/0
37.5	9T23B2662	4	A	#2	1/0	4	B	3/0	250
	9T23B2672	4	A	#2	1/0	4	B	3/0	250
	9T23B2682	2	A	#3	#2	4	B	3/0	250
50	9T23B2663	4	A	1/0	3/0	4	B	300	(2)2/0
	9T23B2673	4	A	1/0	3/0	4	B	300	(2)2/0
	9T23B2683	2	A	#1	1/0	4	B	300	(2)2/0
75	9T23B2674	4	B	4/0	300	4	C	(2)3/0	(2)250
	9T23B2684	2	B	2/0	4/0	4	C	(2)3/0	(2)250
100	9T23B2675	4	D	350	500	4	E	(2)300	(2)400
	9T23B2685	2	D	250	350	4	E	(2)300	(2)400
167	9T23B2676	4	F	(2)250	(2)350	4	H	(3)350	(3)500
	9T23B2686	2	F	(2)3/0	(2)250	4	H	(3)350	(3)500

THREE PHASE

15	9T23B3091	3	A	#6	#4	4	A	#6	#4
	9T23B3801	3	A	#6	#4	4	A	#10	#10
	9T23B3811	3	A	#6	#4	4	A	#6	#4
	9T23B3851	3	A	#10	#8	4	A	#10	#10
	9T23B3871	3	A	#10	#8	4	A	#6	#4
	9T23B3881	3	A	#10	#8	3	A	#8	#6
	9T23B3891	3	A	#10	#10	4	A	#6	#4
30	9T23B3872	3	A	#6	#4	4	A	#2	1/0
	9T23B3882	3	A	#6	#4	3	A	#3	#1
	9T23B3892	3	A	#8	#6	4	A	#2	1/0
45	9T23B3873	3	A	#4	#2	4	A	2/0	4/0
	9T23B3883	3	A	#4	#2	3	A	1/0	3/0
	9T23B3893	3	A	#6	#4	4	A	2/0	4/0
50	9T23B3864	3	A	#4	#2	4	A	2/0	4/0
75	9T23B3874	3	A	#1	2/0	4	A	300	400
	9T23B3884	3	A	#1	2/0	3	A	4/0	300
	9T23B3894	3	A	#2	0	4	A	300	400
112.5	9T23B3875	3	D	3/0	250	4	E	(2)3/0	(2)250
	9T23B3885	3	D	3/0	250	3	E	(2)2/0	(2)4/0
	9T23B3895	3	D	2/0	3/0	4	E	(2)3/0	(2)250
150	9T23B3876	3	D	250	400	4	E	(2)300	(2)300
	9T23B3886	3	D	250	400	3	E	(2)4/0	(2)300
	9T23B3896	3	D	4/0	250	4	E	(2)300	(2)400
225	9T23B3877	3	D	(2)3/0	(2)250	4	G	(3)300	(4)250
	9T23B3887	3	D	(2)3/0	(2)250	4	G	(3)4/0	(3)400
300	9T23B3878	3	E	(2)250	(2)400	4	G	(4)300	(4)400
	9T23B3888	3	E	(2)250	(2)400	4	G	(4)4/0	(4)300
400	9T23B3866	3	G	(2)400	(3)300	4	J	(4)500	(5)500
500	9T23B3879	3	G	(3)300	(3)500	4	J	(5)500	(6)500
	9T23B3889	3	G	(3)300	(3)500	3	J	(4)500	(5)500

Note: Connectors for 9T23 models may be used for any group number variation of the basic model number. For example, the proper connectors for Model 9T23B2672 are also proper for 9T23B2672G14.

Note: Primaries of the series multiple single phase transformers listed above are connected for 480 volts, secondaries for 120/240 three wire service. Recommended connectors and cables listed above are selected for these connections.

SECTION 2 INSTALLATION OF CONNECTORS

ALUMINUM CABLE TERMINATION PROCEDURES

CAUTION: TO HELP GUARD AGAINST OVER-HEATING, THE PROCEDURES LISTED IN STEPS 1 THROUGH 6 ARE RECOMMENDED WHEN CONNECTING ALUMINUM WIRE.

1. Strip the wire of its insulation to the desired length, without ringing or nicking the wire.
2. Apply a suitable joint compound, such as Penetrox A, Alnox-UG, or T&B21059, to the exposed conductor and wirebrush through it to remove the oxide film from the outer strands.
3. Thoroughly coat the exposed conductor with joint compound.
4. Insert the wire into the connector, making certain all strands are contained, and tighten the wire retaining screw securely per Table 5. This operation should result in compound oozing out from between the individual strands of the wire. If this does not happen, it is an indication that an insufficient quantity of compound was used.
5. Wipe the excess compound from the area adjacent to the wire connection because some compounds contain metallic particles which could reduce the dielectric strength of the insulating material employed.
6. After a few seconds, retighten the wire retaining screw per Table 5.

COPPER CABLE TERMINATION PROCEDURES

The procedures used for aluminum cable are applicable except the use of the joint compound may be omitted.

TABLE 5

Wire Size	Torque (In.-Lbs.)	Wire Size	Torque (In.-Lbs.)
14-8	75	3/0-200	200
6-4	100	250-400	250
3-1	125	500-750	300
1/0-2/0	150		

CABLE RETAINING SCREW TORQUE

The wire retaining screw should be tightened in accordance with Table 5 for both copper and aluminum wire. A few seconds after the initial tightening, the retaining screw should be retightened to ensure a good connection. This retightening procedure is of particular importance when aluminum wire is used.

CONNECTION TO TRANSFORMER TERMINAL

NOTE: Terminals must be clean. Clean contact area if necessary. If transformer is installed outdoors or in harsh environmental area, seal the connections with a copper aluminum joint compound such as GE-G-624 Silicone. Apply this after the bolts have been tightened.

Bend the cable so that the hole in the connector mates with the hole in the terminal and the contact surfaces are in good contact alignment.

With a flat washer under the head, insert the bolt through the hole in the terminal and the connector and add a flat washer, lockwasher, and nut.

SAFETY INFORMATION

CAUTION: TO GUARD AGAINST OVER-HEATING THERE MUST NOT BE ANY WASHERS BETWEEN THE TERMINALS AND THE CONNECTORS.

Align the cables so that adequate electrical clearances per NEC-373-11 are maintained. Tighten per Table 6 below.

A minimum of one inch clearance is required between exposed electrical connections and all case parts. Check clearance to front cover after connections are complete.

If electrical clearances are questionable, the exposed electrical connection should be insulated with electrical tape.

TABLE 6

Bolt Size	Torque (In.-Lbs.)
1/4"	80
5/16"	180
3/8"	240
1/2"	480

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the GE Company.



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