

Dry-Type General-Purpose Transformers

For Bucking and Boosting Voltage

GE bucking and boosting transformers provide an economical and convenient means for bucking or boosting voltage, usually no more than $\pm 20\%$ on single- and three-phase circuits. They are compact, relatively light in weight, and can be easily installed for indoor or outdoor service.

Buck-boost transformers are employed primarily for boosting single- and three-phase circuits by connecting them as autotransformers. When connected as an autotransformer, only the low-voltage, high-current capacity secondary windings are required to carry the load. Because this load is only transformed over a small change in voltage, the buck-boost transformer can handle loads many times its nameplate kVA rating.

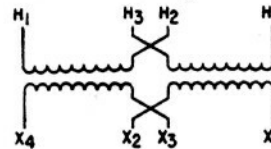
The transformers with series-multiple 12/24, 24/48, or 16/32 Volt secondary windings are suitable for a wide variety of applications. Two or more units can be used in various combinations to obtain many other special voltages.

Application

Efficient operation of electrical equipment requires that line voltage be at or near the nameplate rating of the equipment. In order to match available line voltage (whether it be too high or low) with equipment voltage, buck-boost transformers provide the most convenient and least expensive method.

Do not use buck-boost transformers to solve a fluctuating voltage problem. They should be used to compensate for high- or low-voltage conditions *only* when the available line voltage is reasonably constant. (For fluctuating voltage conditions, refer to Power Conditioning Equipment Products section starting on page 10-26).

Wiring Diagram for Low Voltage Loads



Single-Phase

kVA	Catalog Number		List Price, GO-90B	Catalog Number		Approximate Dimensions (Inches)			Approx. Net. Wt. (Lbs.)
	Primary Volts 120/240			Primary Volts 240/480		Height	Width	Depth	
	Secondary Volts			Secondary Volts					
	12/24	16/32		24/48					
Indoor/Outdoor, Type QB, 60 Hertz									
				UL Listed	C-UL Listed				
.050	9T51B0102	9T51B0122	\$ 97.00	9T51B0202	\$103.00	6.38	5.13	3.25	6
.075	9T51B0103	9T51B0123	96.50	9T51B0203	113.00	6.38	5.13	3.25	6
.100	9T51B0104	9T51B0124	104.00	9T51B0204	127.00	6.38	5.13	3.25	6
.150	9T51B0105	9T51B0125	127.00	9T51B0205	141.00	7.38	6.13	4.25	10
.260	9T51B0107	9T51B0127	153.00	9T51B0207	168.00	7.38	6.13	4.25	10
.500	9T51B0108	9T51B0128	209.00	9T51B0208	231.00	8.38	6.88	4.88	16
.750	9T51B0109	9T51B0129	269.00	9T51B0209	294.00	9.63	7.88	5.50	25
1	9T51B0110	9T51B0130	334.00	9T51B0210	370.00	9.63	7.88	5.50	25
1.5	9T51B0111	9T51B0131	410.00	9T51B0211	449.00	11.13	9.38	6.75	40
2	9T51B0112	9T51B0132	496.00	9T51B0212	548.00	11.13	9.38	6.75	40
3	9T51B0113	9T51B0133	666.00	9T51B0213	735.00	11.13	9.38	6.75	60

Indoor/Outdoor, Type QMS, 60 Hertz									
			List Price, GO-90D						
5	9T21B1037G02	9T21B1040G02	\$878.00	—	—	14.75	10.63	9.50	111

Indoor/Outdoor, Type QMS, 50 Hertz									
			List Price, GO-90D						
5	9T21B1061G02	9T21B1064G02	\$1538.30	—	—	14.75	10.63	9.50	111

NOTE: In addition to bucking or boosting low circuit voltages to related value, these transformers can be used as two winding transformers to supply the rated nameplate low voltages, 12 to 48 Volts, two-wire or 12/24 to 24/48 Volts, three-wire. Also available in 50/60 Hz ratings.

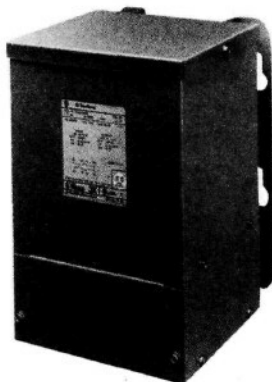


Dry-Type General-Purpose Transformers

Types QB, QMS, QMS 3, and QL
600 Volts and Below



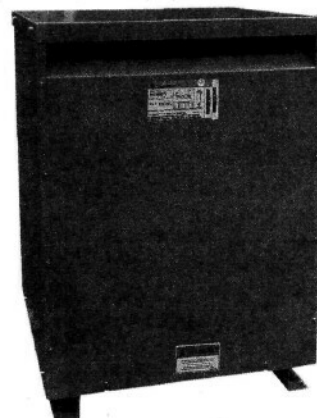
Type QB,
.050 kVA-3 kVA,
Single-Phase



Type QMS,
5 kVA-25 kVA,
Single-Phase



Type QMS 3
3 kVA-15 kVA
Three-Phase



Type QL,
25 kVA-167 kVA,
Single-Phase
15 kVA-1500 kVA,
Three-Phase

10 SPECIALTY TRANSFORMERS

General Information

The complete family of transformers from GE provide quiet, reliable transformer operation.

All of the dry-type transformers through 1,000 kVA are UL listed under the requirements of Standard 506 and 1561. In addition, each transformer meets the requirements of NEMA ST-20, 1992. Type QB, QMS, and QMS 3 models are C-UL listed.

General-purpose transformers are rated 600 Volts and below for supplying appliance, lighting, and power loads from electrical distribution systems. Standard distribution voltages are 600, 480, and 240 Volts; standard load voltages are 480, 240, 208, and 120 Volts. The transformer is used to obtain the load voltage from the distribution voltage. Since no vaults are required for installation, these transformers can be located right at the load to provide the correct voltage for the application. This eliminates the need for long, costly, low-voltage feeders.

Construction

Types QB, QMS, and QMS 3

Core and coils are contained within a NEMA 3R nonventilated weatherproof enclosure. Type QB, QMS, and QMS 3 units feature encapsulated core and coils.

Type QL

Units are enclosed in a NEMA 2 drip-proof metal enclosure with natural-draft ventilation. Core-and-coil assembly is mounted on rubber isolation pads to reduce noise. Weathershield kits are available for conversion to a NEMA 3R enclosure suitable for outdoor service.

How to Select

- Establish phase and frequency
- Determine the primary voltage—the voltage presently available
- Determine the secondary voltage—the voltage needed at the load
- Determine the kVA load, allowing room for expansion
- Using the facts determined in the four steps, locate the transformer model in the listings on the following pages.

Voltage Tap Arrangement

Transformer taps compensate for high or low line voltages. Standard NEMA, ANSI three-phase taps are two 5 percent taps below normal on transformers smaller than 30 kVA. This arrangement provides a 10 percent range of tap voltage adjustment.

Most standard QL units rated 15 through 500 kVA have available six universal voltage taps—four 2½ percent below normal, and two 2½ percent above normal. This arrangement provides a 15 percent range of tap voltage adjustment.

Temperature Class

Industry standards classify insulation systems in accordance with the rating system shown below.

Insulation System Classification			
Ambient	+ Winding Rise	+ Hot Spot	= Temp. Class
40°C	55°C	10°C	105°C
40°C	80°C	30°C	150°C
40°C	115°C	25°C	180°C
40°C	150°C	30°C	220°C

All standard, general-purpose, GE transformers meet all applicable NEMA, ANSI, UL, and IEEE standards.

The design life of transformers having different insulation systems is the same, since the allowable temperature rise of an insulation material system is predicated on a specified life for all insulation. The lower temperature systems are designed for the same life as higher temperature systems.

Termination

Improved termination spacing and wiring compartment room gives greater flexibility in selecting various UL listed connectors for either copper or aluminum cable. A listing of suitable connectors is packaged with each GE transformer.

Dry-Type General-Purpose Transformers

For Bucking and Boosting Voltage

Table 3
115 Volts Output, 60 Hertz, Single-Phase

Catalog Number	Available Line Voltage							
	91	96	101	105	127	130	138	146
Load kVA ⊙								
9T51B0102	—	240	—	.480	.539	—	.290	—
9T51B0122	.180	—	.360	—	—	.410	—	.230
9T51B0103	—	360	—	.720	.800	—	.440	—
9T51B0123	.270	—	.540	—	—	.610	—	.350
9T51B0104	—	480	—	.960	1.1	—	.580	—
9T51B0124	.360	—	.720	—	—	.820	—	.460
9T51B0105	—	720	—	1.5	1.6	—	.870	—
9T51B0125	.540	—	1.1	—	—	1.3	—	.690
9T51B0107	—	1.2	—	2.4	2.7	—	1.5	—
9T51B0127	.900	—	1.8	—	—	2.1	—	1.2
9T51B0108	—	2.4	—	4.8	5.3	—	2.9	—
9T51B0128	1.8	—	3.6	—	—	4.1	—	2.3
9T51B0109	—	3.6	—	7.2	8.0	—	4.4	—
9T51B0129	2.7	—	5.4	—	—	6.1	—	3.5
9T51B0110	—	4.8	—	9.6	10.6	—	5.8	—
9T51B0130	3.6	—	7.2	—	—	8.2	—	4.6
9T51B0111	—	7.2	—	14.4	15.9	—	8.6	—
9T51B0131	5.4	—	10.8	—	—	12.2	—	6.9
9T51B0112	—	9.6	—	19.2	21.2	—	11.5	—
9T51B0132	7.2	—	14.4	—	—	16.3	—	9.2
9T51B0113	—	14.4	—	28.8	31.8	—	17.3	—
9T51B0133	10.8	—	21.6	—	—	24.4	—	13.7
9T21B1061G02	—	24.0	—	48.0	53.0	—	28.8	—
9T21B1037G02	—	24.0	—	48.0	53.0	—	28.8	—
9T21B1064G02	18.0	—	36.0	—	—	41.0	—	22.9
9T21B1040G02	18.0	—	36.0	—	—	41.0	—	22.9
Connection Diagram Page 10-15	C	C	D	D	D	D	C	C

Table 5
230 Volts, 3-Wire Output, 60 Hertz, Three-Phase ⊙

Quantity Required Per Bank	Catalog Number	Available Line Voltage				
		181Y/105	192Y/111	203Y/117	208Y/120	277Y/160
Load kVA ⊙						
3	9T51B0102	—	.830	—	1.7	—
3	9T51B0122	.620	—	1.3	—	—
3	9T51B0202	—	—	—	—	.48
3	9T51B0103	—	1.2	—	2.5	—
3	9T51B0123	.930	—	1.9	—	—
3	9T51B0203	—	—	—	—	.72
3	9T51B0104	—	1.7	—	3.4	—
3	9T51B0124	1.2	—	2.5	—	—
3	9T51B0204	—	—	—	—	.96
3	9T51B0105	—	2.5	—	5.0	—
3	9T51B0125	1.9	—	3.7	—	—
3	9T51B0205	—	—	—	—	1.44
3	9T51B0107	—	4.2	—	8.3	—
3	9T51B0127	3.1	—	6.2	—	—
3	9T51B0207	—	—	—	—	2.4
3	9T51B0108	—	8.3	—	16.6	—
3	9T51B0128	6.2	—	12.5	—	—
3	9T51B0208	—	—	—	—	4.8
3	9T51B0109	—	12.5	—	25.0	—
3	9T51B0129	9.3	—	18.7	—	—
3	9T51B0209	—	—	—	—	7.2
3	9T51B0110	—	16.6	—	33.2	—
3	9T51B0130	12.5	—	25.0	—	—
3	9T51B0210	—	—	—	—	9.6
3	9T51B0111	—	25.0	—	50.0	—
3	9T51B0131	18.7	—	37.0	—	—
3	9T51B0211	—	—	—	—	14.4
3	9T51B0112	—	33.0	—	66.0	—
3	9T51B0132	25.0	—	50.0	—	—
3	9T51B0212	—	—	—	—	19.2
3	9T51B0113	—	50.0	—	100.0	—
3	9T51B0133	37.5	—	75.0	—	—
3	9T51B0213	—	—	—	—	28.8
3	9T21B1037G02	—	83.0	—	167.0	—
3	9T21B1040G02	62.0	—	125.0	—	—
Connection Diagram Pg. 10-15		F	F	G	G	F

⊙ The load kVA is the maximum load at voltages shown when transformers are connected as autotransformers according to the diagram referenced.

Table 4
120 Volts Output, 60 Hertz, Single-Phase

Catalog Number	Available Line Voltage							
	95	100	106	109	132	136	144	152
Load kVA ⊙								
9T51B0102	—	.250	—	.500	.550	—	.300	—
9T51B0122	.190	—	.380	—	—	.430	—	.240
9T51B0103	—	.380	—	.750	.830	—	.450	—
9T51B0123	.290	—	.570	—	—	.640	—	.360
9T51B0104	—	.500	—	1.0	1.1	—	.600	—
9T51B0124	.380	—	.750	—	—	.850	—	.480
9T51B0105	—	.750	—	1.5	1.7	—	.900	—
9T51B0125	.570	—	1.2	—	—	1.3	—	.720
9T51B0107	—	1.3	—	2.5	2.8	—	1.5	—
9T51B0127	.940	—	1.9	—	—	2.2	—	1.2
9T51B0108	—	2.5	—	5.0	5.5	—	3.0	—
9T51B0128	1.9	—	3.8	—	—	4.3	—	2.4
9T51B0109	—	3.8	—	7.5	8.3	—	4.5	—
9T51B0129	2.9	—	5.7	—	—	6.4	—	3.6
9T51B0110	—	5.0	—	10.0	11.0	—	6.0	—
9T51B0130	3.8	—	7.5	—	—	8.5	—	4.8
9T51B0111	—	7.5	—	15.0	16.5	—	9.0	—
9T51B0131	5.7	—	11.3	—	—	12.8	—	7.2
9T51B0112	—	10.0	—	20.0	22.0	—	12.0	—
9T51B0132	7.5	—	15.0	—	—	17.0	—	9.5
9T51B0113	—	15.0	—	30.0	33.0	—	18.0	—
9T51B0133	11.3	—	22.5	—	—	25.5	—	14.3
9T21B1061G02	—	25.0	—	50.0	55.0	—	30.0	—
9T21B1037G02	—	25.0	—	50.0	55.0	—	30.0	—
9T21B1064G02	18.8	—	38.0	—	—	43.0	—	23.8
9T21B1040G02	18.8	—	38.0	—	—	43.0	—	23.8
Connection Diagram Page 10-15	C	C	D	D	D	D	C	C

Table 6
240 Volts, 3-Wire Output, 60 Hertz, Three-Phase ⊙

Quantity Required Per Bank	Catalog Number	Available Line Voltage				
		189Y/109	200Y/115	208Y/120 ⊙	212Y/122	218Y/126
Load kVA ⊙						
3	9T51B0102	—	.870	—	1.7	—
3	9T51B0122	.650	—	1.3	—	—
3	9T51B0202	—	—	—	—	.5
3	9T51B0103	—	1.3	—	2.6	—
3	9T51B0123	.970	—	2.0	—	—
3	9T51B0203	—	—	—	—	.75
3	9T51B0104	—	1.7	—	3.5	—
3	9T51B0124	1.3	—	2.6	—	—
3	9T51B0204	—	—	—	—	1.0
3	9T51B0105	—	2.6	—	5.2	—
3	9T51B0125	2.0	—	3.9	—	—
3	9T51B0205	—	—	—	—	1.5
3	9T51B0107	—	4.3	—	8.7	—
3	9T51B0127	3.2	—	6.5	—	—
3	9T51B0207	—	—	—	—	2.5
3	9T51B0108	—	8.7	—	17.3	—
3	9T51B0128	6.5	—	13.0	—	—
3	9T51B0208	—	—	—	—	5.0
3	9T51B0109	—	13.0	—	26.0	—
3	9T51B0129	9.7	—	19.5	—	—
3	9T51B0209	—	—	—	—	7.5
3	9T51B0110	—	17.3	—	34.6	—
3	9T51B0130	13.0	—	26.0	—	—
3	9T51B0210	—	—	—	—	10.0
3	9T51B0111	—	26.0	—	52.0	—
3	9T51B0131	19.5	—	39.0	—	—
3	9T51B0211	—	—	—	—	15.0
3	9T51B0112	—	35.0	—	70.0	—
3	9T51B0132	26.0	—	52.0	—	—
3	9T51B0212	—	—	—	—	20.0
3	9T51B0113	—	52.0	—	104.0	—
3	9T51B0133	39.0	—	78.0	—	—
3	9T51B0213	—	—	—	—	30.0
3	9T21B1037G02	—	87.0	—	173.0	—
3	9T21B1040G02	65.0	—	130.0	—	—
Connection Diagram Pg. 10-15		F	F	G	G	F

⊙ See Caution page 10-14, footnote ⊙.

⊙ When 208 Y/120 Volts is the available line voltage, the 212 Y/122 column may be used to obtain 236 Volts which should be satisfactory for most applications.