

Q116U-Q216U and Q117U-Q217U series



TYPE
Q116U

POWERSTAT Variable Transformers of the Q116U-Q216U and Q117U-Q217U Series are available in manually operated assemblies for single and three phase service. The Q116U and Q117U Series operate from 120 volt lines and the Q216U and Q217U Series operate from 240 volt lines. All models have POWERKOTE coils. The rated output for constant current loads is 9 amperes for the Q116U Series; 10 amperes for the Q117U Series; 3.5 amperes for the Q216U Series; and 5 amperes for the Q217U Series. For constant impedance loads, the maximum rated output current at line voltage is increased to 12 amperes for the Q116U Series; 13 amperes for the Q117U Series; 5 amperes for the Q216U Series; and 7 amperes for the Q217U Series. The units are of open construction and have no screening, fuses, line switches, terminal enclosures, input cords or output receptacles. They have removable shafts which can be extended from either end of the assemblies.

As shown in Figure A, Q116U-Q216U Series units can be operated at 50 to 1500 hertz and Q117U-Q217U units between 60 and 1500 hertz without reduction in allowable output current. Except for Q216U and Q217U types operating at the constant current rating, there is a slight reduction between 1500 and 2000 hertz. Figure B shows the regulation curves for units of the Q116U-Q216U and Q117U-Q217U Series operating at full load current. The curves show the voltage drop at any setting when full load is applied. For less than full load, the voltage drop is proportional to the load.

All models can be connected to provide an increasing output voltage with either clockwise or counterclockwise knob rotation. Dials on Types Q117U and Q217U are graduated in volts. All other dials are graduated 0-100. The angle of knob rotation from zero to maximum voltage is 317.5°.

TYPE	Approximate Driving Torque		No-Load Loss at 60 Hertz (Watts)	D-C Resistance per Coil* (Ohms)
	Oz-In	KpCm		
Q116U	20-30	1.4-2.2	6.5	1.1
Q116U-2	60-75	4.3-5.4	13.0	1.1
Q116U-3	100-125	7.2-9	19.5	1.1
Q117U	20-30	1.4-2.2	8.5	0.49
Q117U-2	60-75	4.3-5.4	17.0	0.49
Q117U-3	100-125	7.2-9	25.5	0.49
Q216U	20-30	1.4-2.2	6.5	10.8
Q216U-2	60-75	4.3-5.4	13.0	10.8
Q216U-3	100-125	7.2-9	19.5	10.8
Q217U	20-30	1.4-2.2	8.5	3.9
Q217U-2	60-75	4.3-5.4	17.0	3.9
Q217U-3	100-125	7.2-9	25.5	3.9

*Measured from start to end of winding.

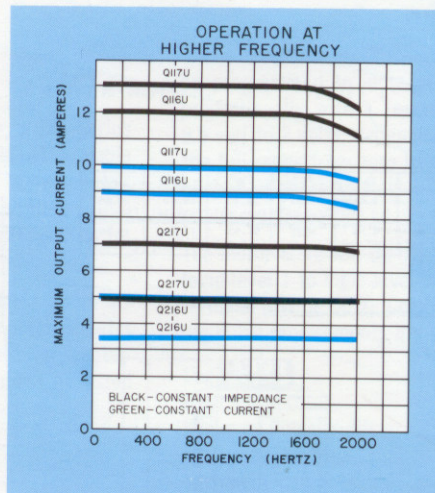


FIGURE A

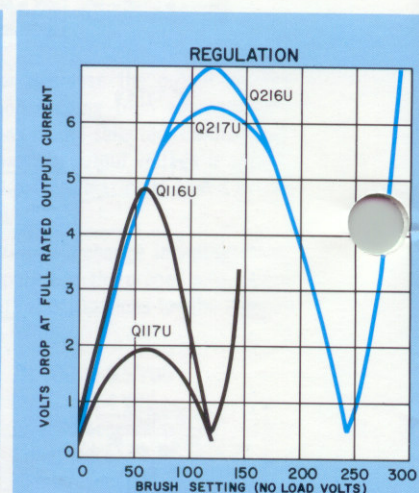
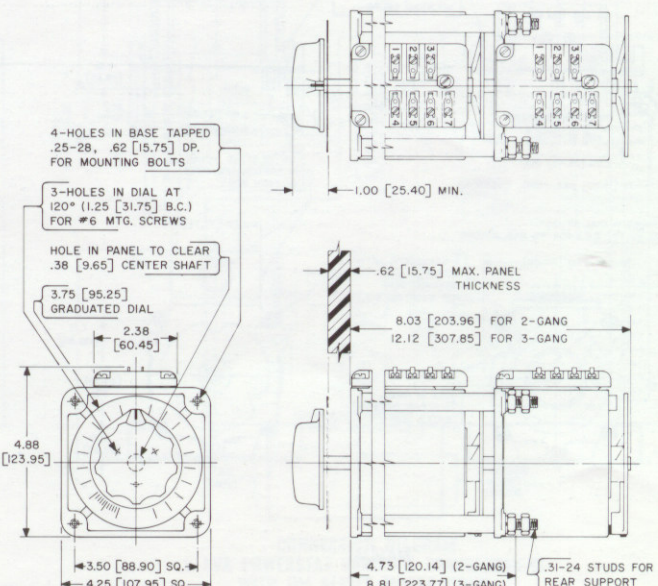
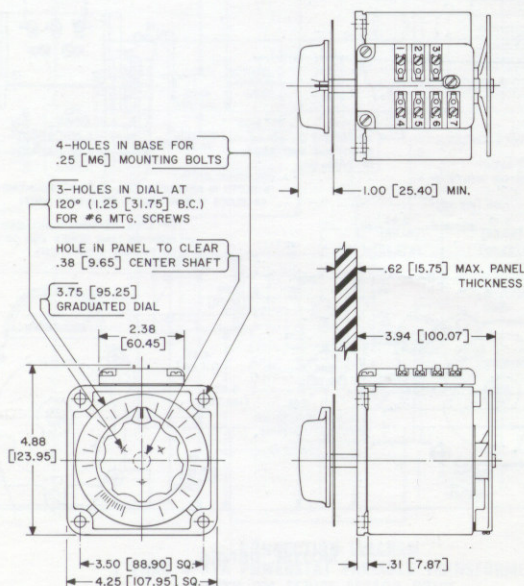
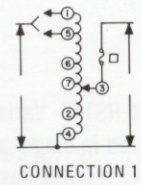


FIGURE B

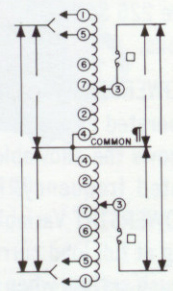


CONNECTIONS AND RATINGS

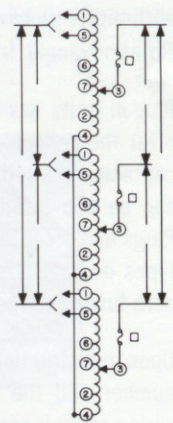
TYPE	CONNECTION	INPUT		OUTPUT				KNOB ROTATION	TERMINALS														
		VOLTS	HERTZ	VOLTS	CONSTANT CURRENT LOAD		CONSTANT IMPEDANCE LOAD		KNOB ON BASE END			KNOB ON RADIATOR END											
					MAX. AMP.	MAX. KVA	MAX. AMP.		MAX. KVA	INPUT	JUMPER†	OUTPUT	INPUT	JUMPER†	OUTPUT								
SINGLE UNITS																							
Q116U Q116UM	#1 Single Phase	120	50/60	0-120	9	1.1	12	1.4	CW	1-4	—	3-4	1-4	—	1-3								
					9	1.3	—	—	CCW	1-4	—	1-3	1-4	—	3-4								
				0-140	9	1.3	—	—	CW	4-5	—	3-4	1-2	—	1-3								
					9	1.3	—	—	CCW	1-2	—	1-3	4-5	—	3-4								
Q117U Q117UM	#1 Single Phase	120	60	0-120	10	1.2	13	1.6	CW	1-4	—	3-4	1-4	—	1-3								
					10	1.2	13	1.6	CCW	1-4	—	1-3	1-4	—	3-4								
				0-240	10	1.2	13	1.6	CW	1-4	—	3-4	1-4	—	1-3								
					10	1.2	13	1.6	CCW	1-4	—	1-3	1-4	—	3-4								
Q216U Q216UM	#1 Single Phase	240	50/60	0-240	3.5	0.84	5	1.2	CW	1-4	—	3-4	1-4	—	1-3								
					3.5	0.84	5	1.2	CCW	1-4	—	1-3	1-4	—	3-4								
				0-280	3.5	0.98	—	—	CW	4-5	—	3-4	1-2	—	1-3								
					3.5	0.98	—	—	CCW	1-2	—	1-3	4-5	—	3-4								
		120	50/60	0-280	3.5*	0.42†	—	—	CW	4-7	—	3-4	1-6	—	1-3								
					3.5*	0.42†	—	—	CCW	1-6	—	1-3	4-7	—	3-4								
				0-240	5	1.2	7	1.7	CW	1-4	—	3-4	1-4	—	1-3								
					5	1.2	7	1.7	CCW	1-4	—	1-3	1-4	—	3-4								
2-GANG ASSEMBLIES																							
Q116U-2 Q116UM-2	#2 1-Phase Series	240	50/60	0-240	9	2.2	12	2.9	CW	1-1	4-4	3-3	4-4	1-1	3-3								
					9	2.2	12	2.9	CCW	4-4	1-1	3-3	1-1	4-4	3-3								
				0-280	9	2.5	—	—	CW	5-5	4-4	3-3	2-2	1-1	3-3								
					9	2.5	—	—	CCW	2-2	1-1	3-3	5-5	4-4	3-3								
	#2 3-Phase Open Delta	120	50/60	0-120	9	1.9	12	2.5	CW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3								
					9	1.9	12	2.5	CCW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3								
				0-140	9	2.2	—	—	CW	5-4-5	4-4	3-4-3	2-1-2	1-1	3-1-3								
					9	2.2	—	—	CCW	2-1-2	1-1	3-1-3	5-4-5	4-4	3-4-3								
Q117U-2 Q117UM-2	#2 1-Phase Series	240	60	0-240	10	2.4	13	3.1	CW	1-1	4-4	3-3	4-4	1-1	3-3								
					10	2.4	13	3.1	CCW	4-4	1-1	3-3	1-1	4-4	3-3								
				0-120	10	2.1	13	2.7	CW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3								
					10	2.1	13	2.7	CCW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3								
	#2 3-Phase Open Delta	120	60	0-240	10	2.4	13	3.1	CW	1-1	4-4	3-3	4-4	1-1	3-3								
					10	2.4	13	3.1	CCW	4-4	1-1	3-3	1-1	4-4	3-3								
				0-120	10	2.1	13	2.7	CW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3								
					10	2.1	13	2.7	CCW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3								
Q216U-2 Q216UM-2	#2 1-Phase Series	480	50/60	0-480	3.5	1.7	5	2.4	CW	1-1	4-4	3-3	4-4	1-1	3-3								
					3.5	1.7	5	2.4	CCW	4-4	1-1	3-3	1-1	4-4	3-3								
				0-560	3.5	2.0	—	—	CW	5-5	4-4	3-3	2-2	1-1	3-3								
		3.5	2.0	—	—	CCW	2-2	1-1	3-3	5-5	4-4	3-3											
		240	50/60	0-560	3.5*	0.85†	—	—	CW	7-7	4-4	3-3	6-6	1-1	3-3								
					3.5*	0.85†	—	—	CCW	6-6	1-1	3-3	7-7	4-4	3-3								
	0-240			3.5	1.5	5	2.1	CW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3									
	#2 3-Phase Open Delta	240	50/60	0-240	3.5	1.5	5	2.1	CCW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3								
					3.5	1.5	5	2.1	CW	5-4-5	4-4	3-4-3	2-1-2	1-1	3-1-3								
				3.5	1.7	—	—	CCW	2-1-2	1-1	3-1-3	5-4-5	4-4	3-4-3									
		120	50/60	0-280	3.5*	0.74†	—	—	CW	7-4-7	4-4	3-4-3	6-1-6	1-1	3-1-3								
					3.5*	0.74†	—	—	CCW	6-1-6	1-1	3-1-3	7-4-7	4-4	3-4-3								
0-280				3.5*	0.74†	—	—	CW	7-4-7	4-4	3-4-3	6-1-6	1-1	3-1-3									
3.5*	0.74†	—	—	CCW	6-1-6	1-1	3-1-3	7-4-7	4-4	3-4-3													
Q217U-2 Q217UM-2	#2 1-Phase Series	480	60	0-480	5	2.4	7	3.4	CW	1-1	4-4	3-3	4-4	1-1	3-3								
					5	2.4	7	3.4	CCW	4-4	1-1	3-3	1-1	4-4	3-3								
	#2 3-Phase Open Delta	240	60	0-240	5	2.1	7	2.9	CW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3								
					5	2.1	7	2.9	CCW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3								
3-GANG ASSEMBLIES																							
Q116U-3 Q116UM-3	#3 3-Phase Wye	240	50/60	0-240	9	3.8	12	5.0	CW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3								
					9	3.8	12	5.0	CCW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3								
			60	0-280	9	4.4	—	—	CW	5-5-5	4-4-4	3-3-3	2-2-2	1-1-1	3-3-3								
					9	4.4	—	—	CCW	2-2-2	1-1-1	3-3-3	5-5-5	4-4-4	3-3-3								
Q117U-3 Q117UM-3	#3 3-Phase Wye §	240	60	0-240	10	4.2	13	5.4	CW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3								
					10	4.2	13	5.4	CCW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3								
				0-480	10	4.2	13	5.4	CW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3								
					10	4.2	13	5.4	CCW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3								
Q216U-3 Q216UM-3	#3 3-Phase Wye	480	50/60	0-480	3.5	2.9	5	4.2	CW	5-5-5	4-4-4	3-3-3	2-2-2	1-1-1	3-3-3								
					3.5	2.9	5	4.2	CCW	2-2-2	1-1-1	3-3-3	5-5-5	4-4-4	3-3-3								
			60	0-560	3.5	3.4	—	—	CW	7-7-7	4-4-4	3-3-3	6-6-6	1-1-1	3-3-3								
		3.5	3.4	—	—	CCW	2-2-2	1-1-1	3-3-3	5-5-5	4-4-4	3-3-3											
		240	60	0-560	3.5*	1.5†	—	—	CW	6-6-6	1-1-1	3-3-3	7-7-7	4-4-4	3-3-3								
					3.5*	1.5†	—	—	CCW	6-6-6	1-1-1	3-3-3	7-7-7	4-4-4	3-3-3								
Q217U-3 Q217UM-3	#3 3-Phase Wye §	480	60	0-480	5	4.2	7	5.8	CW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3								
					5	4.2	7	5.8	CCW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3								



CONNECTION 1



CONNECTION 2



CONNECTION 3

Q116U TYPES DO NOT HAVE TERMINALS 6 OR 7
Q117U-Q217U TYPES DO NOT HAVE TERMINALS 2, 5, 6 OR 7

CONNECTIONS SHOWN ARE FOR CW KNOB ROTATION, KNOB ON BASE END (CCW ROTATION, KNOB ON RADIATOR END)

*Maximum output current in output voltage range from 0 to 25 percent above line voltage. At higher output voltages, output current must be reduced according to rating curve Figure B on page 4.
 †Maximum KVA at maximum output voltage. Maximum KVA at lower output voltages may be calculated from rating curve Fig. B pg. 4.
 ‡Jumper provided in standard common position should be moved or removed as required.
 §Three-wire system only. There must be no neutral connection in input or output.
 ¶Common used as third leg in 3-phase open delta or neutral in 3-wire single phase series and 4-wire 3-phase wye connections; not used in 2-wire series or 3-wire wye connections.
 ☐Fuse recommended, not supplied.