

### Type T and Type TF

Type T transformers are designed with low impedance windings for excellent voltage regulation and can accommodate the high inrush current associated with contactors, starters, solenoids, and relays. Type T transformers are manufactured using the most advanced insulating materials and are the best choice if size and cost are of concern.

Type TF transformers include factory-installed primary and secondary fuse blocks. Type TF transformers consist of two primary fuse blocks and one secondary fuse block. The primary includes rejection-style clips to increase the AIC ratings for the fuses. Since the fuse blocks are mounted on the top of the transformer, Type TF transformers are interchangeable with Type T transformers except for their increased height.

#### Selection Guide

1. Determine the inrush and sealed VA of each coil in the control circuit and the VA of all other components.
2. Total the **sealed** VA of all operating coils and the VA of all other loads. (This determines the minimum VA size required for the circuit.)
3. Total the **inrush** VA of all coils that are starting at the same time and all loads and coils that are running.
4. Locate a value in the VA column of [Table 14.23 Regulation Chart for Type T, page 14-14](#), shown below, that is **equal to** or **greater than** the value calculated in step 2.
5. In the VA row selected in step 4, find the inrush value under the appropriate voltage regulation column of [Table 14.23 Regulation Chart for Type T, page 14-14](#), shown below. If this value is **greater than** the calculated value from step 3, this is the correct transformer VA rating.

If the inrush value on the selected VA row is **not greater than** the calculated value from step 3, use the next higher transformer VA rating, that is, the rating on the next row.

If your supply voltage is stable and fluctuates less than 5%, Schneider Electric recommends you use the 90% secondary voltage column. If your supply voltage is not stable and fluctuates more than 10% we recommend you use the 95% secondary voltage column. We recommend that you never use the 85% secondary voltage column since magnetic devices lose life expectancy if they are continuously started at 85% of rated voltage.

**Table 14.23: Regulation Chart for Type T**

VA	Inrush VA @ 20% power factor			Inrush VA @ 40% power factor		
	95% Secondary Voltage	90% Secondary Voltage	85% Secondary Voltage	95% Secondary Voltage	90% Secondary Voltage	85% Secondary Voltage
50	193	266	339	151	215	282
75	271	396	20	210	318	430
100	339	499	659	266	404	549
150	666	893	1120	529	731	942
200	588	815	1041	459	659	866
250	1416	1910	2388	1057	1494	1936
300	1634	2184	2709	1194	1681	2169
350	1894	2592	3261	1392	2005	621
500	3197	4104	4981	2374	3195	4019
750	3770	5515	7231	2887	4391	5945
1000	6587	9079	11430	4706	6886	9051
1500	19324	23983	28607	15066	19361	23756
2000	31384	38777	6161	24794	31630	38667
3000	26539	39934	52713	19355	30721	42216
5000	53111	85265	116277	39368	66309	93882



**Table 14.28: 240 x 480 V Primary, 120/240 V Secondary; 230 x 460 V Primary, 115/230 V Secondary; 220 x 440 V Primary, 110/220 V Secondary**

VA		Type T	Type TF[2]	Weight	Height				Width		Depth		Accessory Fingersafe Covers
UL/CSA/NOM	CE	Catalog No.			Type T		Type TF		in.	mm	in.	mm	
					in.	mm	in.	mm					
25	25	9070T25D31	9070TF25D31	2.5	2.58	66	4.00	102	3.00	76	3.09	79	FSC1
50	50	9070T50D31	9070TF50D31	2.5	2.58	66	4.00	102	3.00	76	3.09	79	FSC1
75	75	9070T75D31	9070TF75D31	3.8	2.89	73	4.18	106	3.38	86	3.34	85	FSC1
100	100	9070T100D31	9070TF100D31	3.8	2.89	73	4.18	106	3.38	86	3.34	85	FSC1
150	150	9070T150D31	9070TF150D31	5.5	3.20	81	4.50	114	3.75	95	3.59	91	FSC1
200	200	9070T200D31	9070TF200D31	5.5	3.20	81	4.50	114	3.75	95	3.59	91	FSC1
250	160	9070T250D31	9070TF250D31	7.1	3.20	81	4.50	114	3.75	95	5.30	135	FSC2
300	200	9070T300D31	9070TF300D31	8.5	3.84	98	5.13	130	4.50	114	4.74	120	FSC2
350	250	9070T350D31	9070TF350D31	10.5	3.84	98	5.13	130	4.50	114	5.11	130	FSC2
500	300	9070T500D31	9070TF500D31	11.9	3.84	98	5.13	130	4.50	114	5.49	139	FSC2
750	500	9070T750D31	9070TF750D31	11.0	4.51	115	5.80	147	5.25	133	5.61	143	FSC2
1000	630	9070T1000D31	9070TF1000D31	20.6	4.51	115	5.80	147	5.25	133	6.30	160	FSC2
1500	1000	9070T1500D31	9070TF1500D31	34.0	6.17	157	7.46	190	7.06	179	5.92	150	FSC2
2000	1500	9070T2000D31	9070TF2000D31	47.0	6.17	157	7.46	190	7.06	179	7.17	182	FSC2
3000	2000	9070T3000D31	—	60.0	8.75	222	—	—	9.00	229	7.24	184	FSC2
5000	3000	9070T5000D31	—	89.0	8.75	222	—	—	9.00	229	9.15	232	FSC2

**Table 14.29: 600 Vac Primary, 120/240 Vac Secondary**

VA		Type T	Type TF[2]	Weight	Height				Width		Depth		Accessory Fingersafe Covers
UL/CSA/NOM	CE	Catalog No.			Type T		Type TF		in.	mm	in.	mm	
					in.	mm	in.	mm					
25	25	9070T25D37	9070TF25D37	2.5	2.58	66	4.00	102	3.00	76	3.09	79	FSC1
50	50	9070T50D37	9070TF50D37	2.5	2.58	66	4.00	102	3.00	76	3.09	79	FSC1
75	75	9070T75D37	9070TF75D37	3.8	2.89	73	4.18	106	3.38	86	3.34	85	FSC1
100	100	9070T100D37	9070TF100D37	3.8	2.89	73	4.18	106	3.38	86	3.34	85	FSC1
150	150	9070T150D37	9070TF150D37	5.5	3.20	81	4.50	114	3.75	95	3.59	91	FSC1
200	200	9070T200D37	9070TF200D37	5.5	3.20	81	4.50	114	3.75	95	3.59	91	FSC1
250	160	9070T250D37	9070TF250D37	7.1	3.20	81	4.50	114	3.75	95	5.30	135	FSC2
300	200	9070T300D37	9070TF300D37	8.5	3.84	98	5.13	130	4.50	114	4.74	120	FSC2
350	250	9070T350D37	9070TF350D37	10.5	3.84	98	5.13	130	4.50	114	5.11	130	FSC2
500	300	9070T500D37	9070TF500D37	11.9	3.84	98	5.13	130	4.50	114	5.49	139	FSC2
750	500	9070T750D37	9070TF750D37	11.0	4.51	115	5.80	147	5.25	133	5.61	143	FSC2
1000	630	9070T1000D37	9070TF1000D37	20.6	4.51	115	5.80	147	5.25	133	6.30	160	FSC2
1500	1000	9070T1500D37	9070TF1500D37	34.0	6.17	157	7.46	190	7.06	179	5.92	150	FSC2
2000	1500	9070T2000D37	9070TF2000D37	47.0	6.17	157	7.46	190	7.06	179	7.17	182	FSC2
3000	2000	9070T3000D37	—	60.0	8.75	222	—	—	9.00	229	7.24	184	FSC2
5000	3000	9070T5000D37	—	89.0	8.75	222	—	—	9.00	229	9.15	232	FSC2

**Table 14.30: 380/400/415 Vac Primary, 115/230 Vac Secondary**

VA		Type T	Type TF	Weight	Height				Width		Depth		Accessory Fingersafe Covers
UL/CSA/NOM	CE	Catalog No.			Type T		Type TF		in.	mm	in.	mm	
					in.	mm	in.	mm					
25	25	9070T25D33	9070TF25D33	2.5	2.58	66	4.00	102	3.00	76	3.09	79	FSC1
50	50	9070T50D33	9070TF50D33	2.5	2.58	66	4.00	102	3.00	76	3.09	79	FSC1
75	75	9070T75D33	9070TF75D33	3.8	2.89	73	4.18	106	3.38	86	3.34	85	FSC1
100	100	9070T100D33	9070TF100D33	3.8	2.89	73	4.18	106	3.38	86	3.34	85	FSC1
150	150	9070T150D33	9070TF150D33	5.5	3.20	81	4.50	114	3.75	95	3.59	91	FSC1
200	200	9070T200D33	9070TF200D33	5.5	3.20	81	4.50	114	3.75	95	3.59	91	FSC1
250	160	9070T250D33	9070TF250D33	7.1	3.20	81	4.50	114	3.75	95	5.30	135	FSC2
300	200	9070T300D33	9070TF300D33	8.5	3.84	98	5.13	130	4.50	114	4.74	120	FSC2
350	250	9070T350D33	9070TF350D33	10.5	3.84	98	5.13	130	4.50	114	5.11	130	FSC2
500	300	9070T500D33	9070TF500D33	11.9	3.84	98	5.13	130	4.50	114	5.49	139	FSC2
750	500	9070T750D33	9070TF750D33	11.0	4.51	115	5.80	147	5.25	133	5.61	143	FSC2
1000	630	9070T1000D33	9070TF1000D33	20.6	4.51	115	5.80	147	5.25	133	6.30	160	FSC2
1500	1000	9070T1500D33	9070TF1500D33	34.0	6.17	157	7.46	190	7.06	179	5.92	150	FSC2
2000	1500	9070T2000D33	9070TF2000D33	47.0	6.17	157	7.46	190	7.06	179	7.17	182	FSC2
3000	2000	9070T3000D33	—	60.0	8.75	222	—	—	9.00	229	7.24	184	FSC2
5000	3000	9070T5000D33	—	89.0	8.75	222	—	—	9.00	229	9.15	232	FSC2

**Field Installed Fuse Blocks—Design for Line to Line Primary Voltages and Line to Neutral Secondary Voltages**

**Table 14.31: Accessories**

Catalog No.	Voltage Codes			Description	Order Qty
<b>Fuse Kit</b>					
—	D1, D2, D3, D4, D5, D13, D14, D15, D23, D31, D33, D37	D20, D32	D19, D50	—	—
9070FB3A	T25–T200	T25–T150	—	3-pole fuse block for primary and secondary fusing, accommodates 1-1/2 x 13/32 in. midget fuse (2 rejection and 1 non-rejection)	1
9070FB3B	T250–T3000	T250–T2000	T25–T2000	—	1
9070FB2A	T25–T200	T25–T150	—	2-pole fuse block for primary fusing, accommodates 1-1/2 x 13/32 in. midget fuse (2 rejection)	1
9070FB2B	T250–T3000	T250–T2000	T25–T2000	—	1
9070SF25A	T25–T200	T25–T150	—	Secondary fuse clips accommodates 1-1/4 x 1/4 in. fuse	10
9070SF25B	T250–T3000	T250–T2000	T25–T2000	—	10
9070SF41A	T25–T200	T25–T150	—	Secondary fuse clips accommodates 1-1/2 x 13/32 in. fuse	10
9070SF41B	T250–T3000	T250–T2000	T25–T2000	—	10
9070FB1A	T25–T200	T25–T150	—	Secondary fuse block accommodates 1-1/4 x 1/4 in. fuse	1
9070FB1B	T250–T3000	T250–T2000	T25–T2000	—	1
9070FP1	—	—	—	Fuse puller for TF and FB kits	10

[2] TF designed for line to line primary and line to neutral secondary. If secondary connected in series, fuse block should be disconnected.