Heavy Duty Control Auxiliary Contact Configurations

Technical

Heavy Duty Non-Reversing Contactor (Class 40) And Starter Auxiliary Contact Configurations (Class 14)

Size	Standard Contacts at No Additional Price	Extra Contacts In Addition to Standard Contacts for an Additional Price ①	
		Left or Right	
00-1¾ 2-4	1-NO 1-NO	1-NO or 1-NC 2-NO 4-NO 3-NO and 1-NC 2-NO and 2-NC 1-NO and 1-NC	
		Left	**Right**
5,6 7,8	2-NO and 2-NC 1-NO and 1-NC	1-NO and 1-NC 1-NO and 1-NC	1-NO and 1-NC 2-NO and 2-NC

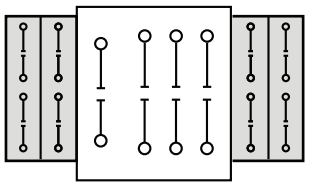
NO - Normally Open
NC - Normally Closed

Unshaded blocks are included. Shaded blocks are optional.

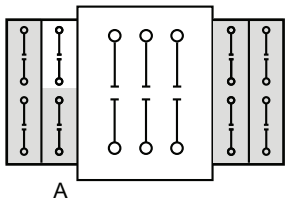
- NO Control Circuit is included.
- AUX Blocks may be 2NO, 2NC, or 1NO and 1 NC.
- AUX Blocks cannot be stacked in field.

If additional auxiliary contacts are required, they can be ordered separately using Kit Numbers (49AB22, 49AB31, 49AB40).

Size 00-1¾



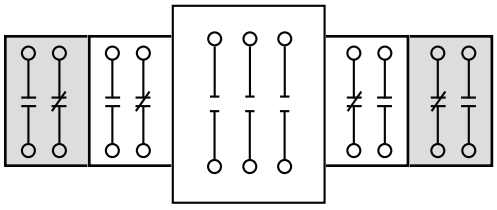
Size 2-4



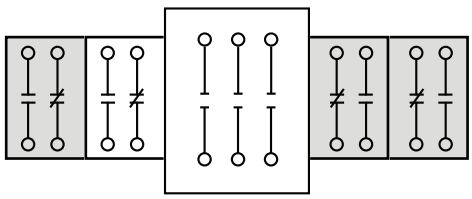
A

- The above holds true for size 2-4 as well for reversing and non-reversing.
- A single N.O. block is included as the control circuit.
- To add the second position (A) Contacts, an entire new AUX Kit must be ordered, since the provided block is of single-pole construction.

Size 5,6



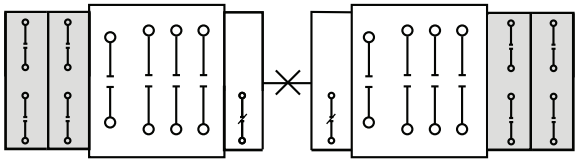
Size 7,8



Heavy Duty Reversing Contactor (Class 43) And Starter Auxiliary Contact Configurations (Class 22)

Size	Standard Contacts Per Contactor at No Additional Price	Extra Contacts Per Contactor In Addition to Standard Contacts for an Additional Price ①	
		Left	Right
00-1¾ Left	1-NO and 1-NC	1-NO or NC 2-NO 4-NO 3-NO and 1-NC 2-NO and 2-NC 1-NO and 1-NC	N/A
00-1¾ Right	1-NO and 1-NC	N/A	1-NO or NC 2-NO 4-NO 3-NO and 1-NC 2-NO and 2-NC 1-NO and 1-NC
2-4 Left	1-NO and 1-NC	1-NO or NC 2-NO 4-NO 3-NO and 1-NC 2-NO and 2-NC 1-NO and 1-NC	N/A
2-4 Right	1-NO and 1-NC	N/A	1-NO or NC 2-NO 4-NO 3-NO and 1-NC 2-NO and 2-NC 1-NO and 1-NC

Size 00-1¾

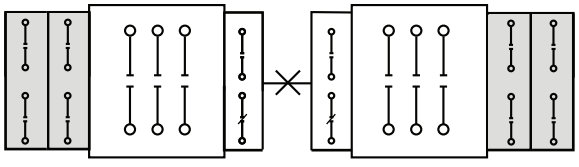


Unshaded blocks are included. Shaded blocks are optional.

- NO & NC Control Circuits are included.
- AUX Blocks may be 2NO, 2NC, or 1NO and 1 NC
- AUX Blocks cannot be stacked in field.

If additional auxiliary contacts are required, they can be ordered separately using Kit Numbers (49AB22, 49AB31, 49AB40).

Size 2-4



Size	Extra AUX	
00-1¾ and 2-4	1-NO or NC 2-NO 4-NO 3-NO and 1-NC 2-NO and 2-NC 1-NO and 1-NC	49AB10 or 49AB01 49AB20 49AB40 49AB31 49AB22 49AB11

07-01-07

① If extra auxiliary contacts are required in addition to the maximum available, add a control relay to the enclosed starter from the factory modifications.

Heavy Duty Control

Control Ratings

Max HP Plugging and Jogging

Ratings shown are for applications requiring repeated interruptions of stalled motor current or repeated closing of high transient currents encountered in rapid motor reversal, involving more than five openings or closings per minute and more than ten in a ten minute period, such as plug stop, plug reverse or jogging duty. Ratings apply to single speed and multi speed controllers.

Continuous Amp Rating, Service Limit

The service limit current represents the maximum RMS current, in amperes, which the controller may be expected to carry for protracted periods in normal service. At service limit current ratings, temperature rises may exceed those obtained by testing the controller at its continuous current rating. The trip current of overload relays or other motor protective devices shall not exceed the service limit current ratings of the controller.

Ballast Type, Tungsten and Other Discharge Type Lighting Loads

The characteristics of ballast type lamps are such that it is not necessary to derate Class 40 contactors below their normal continuous current rating. Class 40 contactors may also be used for controlling tungsten and other discharge type lighting loads. Class 40 contactors are specifically designed for such loads and are applied at their full rating as listed in the Class 40 section.

Resistance Heating Loads

Ratings apply to Class 40 contactors which are employed to switch the load at the utilization voltages of the resistance heating or light producing element with a duty which requires continuous operation of not more than five openings per minute.

Capacitor Switching KVA Rating

When discharged, a capacitor has essentially zero impedance. For repetitive switching by a contactor, sufficient impedance should be connected in series to limit inrush current to not more than 6 times the contactor rated continuous current. In many installations, the impedance of connecting conductors may be sufficient for the purpose. When switching to connect additional banks, the banks already on the line may be charged and can supply additional available short circuit current which should be considered when selecting impedance to limit the current.

The ratings shown for capacitor switching assume the following maximum available fault currents:

Size 2-3: 5,000 Amp RMS Sym

Size 3 ½ -4: 10,000 Amp RMS Sym

Size 5-6: 18,000 Amp RMS Sym

If available fault current is greater than these values, connect sufficient impedance in series as noted in the previous paragraph.

The motor ratings in the table are NEMA standard ratings and apply only when the code letter of the motor is the same as or occurs earlier in the alphabet than is shown in the table below.

Motors having code letters occurring later in the alphabet may require a large controller.

Motor HP Rating	Maximum Allowable Motor Code Letter
1½	L
3-5	K
7½ and above	H

NEMA Electrical/Mechanical Rating

Size	Load Volts	Max HP				Cont Amps	Service Limit Amps	Tungsten & Ballast Type Lamp Amps 480 Volts Max	Resistance Heating kW		Transformer Switching 50-60Hz KVA Rating Inrush Peak Time Continuous Amps				Capacitor KVA Switching Rating 3 Ph KVAR	Mechanical Life
		Normal Duty		Plugging & Jogging Duty							20 Times		20–40 Times			
		1 Ph	3 Ph	1 Ph	3 Ph				1 Ph	3 Ph	1 Ph	3 Ph	1 Ph	3 Ph		
00	115	½	-	-	-	9	11	-	1.15	2.0	-	-	-	-	-	10 million operations
	200	-	1½	-	-	9	11	-	2.0	3.46	-	-	-	-	-	
	230	1	1½	-	-	9	11	-	2.3	4.0	-	-	-	-	-	
	380	-	1½	-	-	9	11	-	-	6.5	-	-	-	-	-	
	460	-	2	-	-	9	11	-	4.6	8.0	-	-	-	-	-	
	575	-	2	-	-	9	11	-	5.8	10.0	-	-	-	-	-	
0	115	1	-	½	-	18	21	20	2.3	4.0	0.6	-	0.3	-	-	10 million operations
	200	-	3	-	1½	18	21	20	4.0	6.92	-	1.8	-	0.9	-	
	230	2	3	1	1½	18	21	20	4.6	8.0	1.2	2.1	0.6	1.0	-	
	380	-	5	-	1½	18	21	20	-	13.1	-	-	-	-	-	
	460	-	5	-	2	18	21	20	9.2	15.9	2.4	4.2	1.2	2.1	-	
	575	-	5	-	2	18	21	-	11.5	19.9	3.0	5.2	1.5	2.6	-	
1	115	2	-	1	-	27	32	30	3.5	6.0	1.2	-	0.6	-	-	10 million operations
	200	-	7½	-	3	27	32	30	6	10.4	-	3.6	-	1.8	-	
	230	3	7½	2	3	27	32	30	6.9	11.9	2.4	4.3	1.2	2.1	-	
	380	-	10	-	5	27	32	30	-	19.7	-	-	-	-	-	
	460	-	10	-	5	27	32	30	13.8	23.9	4.9	8.5	2.5	4.3	-	
	575	-	10	-	5	27	32	-	17.3	29.8	6.2	11.0	3.1	5.3	-	
1P	115	3	-	1½	-	35	42	45	5.8	-	-	-	-	-	-	10 million operations
	230	5	-	3	-	35	42	45	11.5	-	-	-	-	-	-	
13/4	115	-	-	-	-	40	40	45	5.8	9.9	1.6	-	0.8	-	-	10 million operations
	200	-	10	-	5	40	40	45	10	17.3	-	4.9	-	2.4	-	
	230	-	10	-	5	40	40	45	11.5	19.9	3.2	5.75	1.6	2.8	-	
	380	-	15	-	7½	40	40	45	-	32..9	-	-	-	-	-	
	460	-	15	-	7½	40	40	45	23	39.8	6.6	11.2	3.3	5.7	-	
	575	-	15	-	7½	40	40	-	28.8	49.7	8.1	14.5	4.1	7.1	-	

Heavy Duty Control

Control Ratings

NEMA Electrical/Mechanical Ratings

Size	Load Volts	Max HP				Cont Amps	Service Limit Amps	Tungsten & Ballast Type Lamp Amps 480 Volts Max	Resistance Heating kW		Transformer Switching 50-60Hz KVA Rating Inrush Peak Time Continuous Amps				Capacitor KVA Switching Rating 3 Ph KVAR	Mechanical Life
		Normal Duty		Plugging & Jogging Duty							20 Times		20–40 Times			
		1 Ph	3 Ph	1 Ph	3 Ph				1 Ph	3 Ph	1 Ph	3 Ph	1 Ph	3 Ph		
2	115	3	-	2	-	45	52	60	8.1	13.9	2.1	-	1.0	-	-	
	200	-	10	-	7½	45	52	60	14	24.2	-	6.3	-	3.1	-	
	230	7½	15	5	10	45	52	60	16.1	27.8	4.1	7.2	2.1	3.6	8	10 million operations
	380	-	25	-	15	45	52	60	-	46.0	-	-	-	-	-	
	460	-	25	-	15	45	52	60	32.2	55.7	8.3	14	4.2	7.2	16	
	575	-	25	-	15	45	52	-	40.3	69.6	10.0	18	5.2	8.9	20	
2½	115	5	-	-	-	60	65	75	10.4	17.9	3.1	-	1.5	-	-	
	200	-	15	-	10	60	65	75	18	31.1	-	9.1	-	4.6	-	
	230	10	20	-	15	60	65	75	20.7	35.8	6.1	10.6	3.1	5.3	17.5	10 million operations
	380	-	30	-	20	60	65	75	-	59.2	-	-	-	-	-	
	460	-	30	-	20	60	65	75	41.4	71.6	12	21	6.1	10.6	34.5	
	575	-	30	-	20	60	65	-	51.8	89.5	15	26.5	7.6	13.4	43.5	
3	115	7½	-	-	-	90	104	100	14.4	24.8	4.1	-	2.0	-	-	
	200	-	25	-	15	90	104	100	25	43.3	-	12	-	6.1	-	
	230	15	30	-	20	90	104	100	28.8	50.0	8.1	14	4.1	7.0	27	5 million operations
	380	-	50	-	30	90	104	100	-	82.2	-	-	-	-	-	
	460	-	50	-	30	90	104	100	57.5	99.4	16	28	8.1	14	53	
	575	-	50	-	30	90	104	-	71.9	124	20	35	10	18	67	
3½	115	-	-	-	-	115	125	150	18.4	31.8	-	-	-	-	-	
	200	-	30	-	20	115	125	150	32	55.4	-	16	-	8	-	
	230	-	60	-	25	115	125	150	36.8	63.7	11	18.5	5.4	9.5	33.5	5 million operations
	380	-	60	-	30	115	125	150	-	105	-	-	-	-	-	
	460	-	75	-	40	115	125	150	73.6	127	21.5	37.5	11.0	18.5	66.5	
	575	-	75	-	40	115	125	-	92	159	37	47	13.5	23.5	83.5	
4	200	-	40	-	25	135	156	200	39	67.5	-	20	-	10	-	
	230	-	50	-	30	135	156	200	44.9	77.6	14	23	6.8	12	40	
	380	-	75	-	50	135	156	200	-	128	-	-	-	-	-	5 million operations
	460	-	100	-	60	135	156	200	89.7	155	27	47	14	23	80	
	575	-	100	-	60	135	156	-	112	194	34	59	17	29	100	
5	200	-	75	-	60	270	311	-	70	121	-	41	-	20	-	
	230	-	100	-	75	270	311	-	80.5	139	27	47	14	24	80	
	380	-	150	-	125	270	311	-	-	230	-	-	-	-	-	10 million operations
	460	-	200	-	150	270	311	-	161	278	54	94	27	47	160	
	575	-	200	-	150	270	311	-	201	348	68	117	34	59	200	
6	200	-	150	-	125	540	621	-	-	162	-	81	-	41	-	
	230	-	200	-	150	540	621	-	120	210	54	94	27	47	160	
	380	-	300	-	250	540	621	-	-	342	-	-	-	-	-	10 million operations
	460	-	400	-	300	540	621	-	240	415	108	188	54	94	320	
	575	-	400	-	300	540	621	-	300	515	135	234	68	117	400	
7	200	-	-	-	-	810	932	-	-	-	-	-	-	-	-	
	230	-	300	-	-	810	932	-	-	-	-	-	-	-	240	
	380	-	-	-	-	810	932	-	-	-	-	-	-	-	-	3 million operations
	460	-	600	-	-	810	932	-	-	-	-	-	-	-	480	
	575	-	600	-	-	810	932	-	-	-	-	-	-	-	600	
8	200	-	-	-	-	1215	1398	-	-	-	-	-	-	-	-	
	230	-	450	-	-	1215	1398	-	-	-	-	-	-	-	360	
	380	-	-	-	-	1215	1398	-	-	-	-	-	-	-	-	0.5 million operations
	460	-	900	-	-	1215	1398	-	-	-	-	-	-	-	720	
	575	-	900	-	-	1215	1398	-	-	-	-	-	-	-	900	

Max HP 380V 50Hz Ratings

Class	Description	Control Size 3 Phase												
		00	0	1	1 ¾	2	2 ½	3	3 ½	4	5	6	7	8
14, 40	Across The Line	2	5	10	15	25	30	50	60	75	150	300	500	700
30, 32	Var & Const Torque	-	5	10	15	25	30	50	60	75	-	-	-	-
	Constant HP	-	3	7½	10	20	25	40	50	60	-	-	-	-
36, 37	Auto Transformer	-	-	10	15	25	30	50	60	75	150	300	-	-
	Wye Delta	-	-	15	25	40	50	75	100	150	250	500	-	-

Heavy Duty Control

Technical

AC Coil and Operating Information

NEMA AC Coil Data

Controller Size	Sealed Watts	Volts	Hz	Inrush (Open Magnet) Amps	Inrush (Open Magnet) VA	Normal (Sealed Magnet) Amps	Normal (Sealed Magnet) VA	Normal Coil Operating Limits	Typical Drop-Out Volts	Operating Times (msec) Pick-Up	Operating Times (msec) Drop-Out
00 Through 2 ½ Models: F, P, S	8.6	24	60	9.080	218	1.040	25	85% - 110% Of Rated Voltage	50% Of Rated Voltage	19-29	10-24
		120	60	1.820		0.210					
		208	60	1.050		0.120					
		240	60	0.910		0.105					
		277	60	0.790		0.090					
		480	60	0.450		0.052					
		600	60	0.360		0.042					
3, 3½ Models: F,P,S	14	24	60	12.900	310	1.080	26			26-41	14-19
		120	60	2.580		0.217					
		208	60	1.490		0.125					
		240	60	1.290		0.108					
		277	60	1.120		0.094					
		480	60	0.646		0.054					
		600	60	0.516		0.043					
4 Models: G,S,T	22	120	60	4.250	510	0.425	51			18-34	10-12
		208	60	2.450		0.245					
		240	60	2.140		0.215					
		277	60	1.770		0.183					
		480	60	1.080		0.112					
		600	60	0.850		0.085					
5 Model: P	7.4	23-26	50/60	25.652-22.692	590	0.291-0.258	6.7		60% Of Rated Voltage	30-95	40-80
		42-48	50/60	14.048-12.292		0.160-0.140					
		110-127	50/60	5.364-4.646		0.061-0.053					
		200-220	50/60	2.950-2.682		0.034-0.030					
		220-240	50/60	2.682-2.458		0.030-0.028					
		240-277	50/60	2.458-2.130		0.028-0.024					
		380-420	50/60	1.553-1.405		0.018-0.016					
		440-480	50/60	1.341-1.229		0.015-0.014					
		575-600	50/60	1.026-0.983		0.012-0.011					
6 Model: P	10	23-26	50/60	36.087-31.923	830	0.400-0.354	9.2			45-100	60-100
		42-48	50/60	19.762-17.292		0.219-0.192					
		110-127	50/60	7.545-6.535		0.084-0.072					
		200-220	50/60	4.150-3.773		0.046-0.042					
		220-240	50/60	3.773-3.458		0.042-0.038					
		240-277	50/60	3.458-2.996		0.038-0.033					
		380-420	50/60	2.184-1.976		0.024-0.022					
		440-480	50/60	1.886-1.729		0.021-0.019					
		575-600	50/60	1.443-1.383		0.016-0.015					
7: Model: H	4.5	100-250	50/60	8.500-3.400	850	0.120-0.048	12		55% Of Rated Voltage	30-115	25-80
		150-500	50/60	5.667-1.700		0.080-0.024					
8 Model: H	17	100-250	50/60	19.00-7.600	1900	0.480—0.192	48			50-80	35-55

Vacuum Contactor (Class 40)

Technical

Size 4-6 Operating Information

Specifications

Description	Size 4	5	6
Poles 3	3	3	3
Maximum voltage rating	600V	600V	600V
Ampere rating (enclosed)	135A	270A	540A
Frequency, Hz	50/60	50/60	50/60
Maximum closing current [1]	1800A	2400A	4000A
Maximum interrupting current @10 Sec.[1]	1800A	2400A	4000A
Maximum allowable interrupting[2]	750/hr	750/hr	750/hr
Maximum motor horsepower at:			
200V	40 HP	75 HP	150 HP
230V	50 HP	100 HP	200 HP
460V	100 HP	200 HP	400 HP
575V	100 HP	200 HP	400 HP
3 Phase capactive switching (kVAR)			
230V	40 kVAR	80 kVAR	160 kVAR
460V	80 kVAR	160 kVAR	320 kVAR
575V	100 kVAR	200 kVAR	400 kVAR
Transformer switching (kVA)[3]			
Single phase, 2 pole:			
120V	6.8 kVA	14 kVA	27 kVA
240V	14 kVA	27 kVA	54 kVA
480V	27 kVA	54 kVA	108 kVA
600V	34 kVA	68 kVA	135 kVA
Three phase, 3 pole			
240V	23 kVA	47 kVA	94 kVA
480V	47 kVA	94 kVA	188 kVA
600V	59 kVA	117 kVA	234 kVA
Dimensions:			
Length	8.26	8.26	8.42
Width	6.39	6.39	7.48
Depth	8.54	8.54	9.26

Electrical Characteristics Coil Data (AC Supply Rectified)

Burden		Size 4 and 5	6
Inrush VA		630	830
Sealed VA		7.4	9.2
Pick-up at .8 -1.1 of rated voltage	ms	30 – 95	45 – 100
Drop out	ms	40 – 80	60 – 100
Pick-up at rated voltage	ms	35 – 50	50 – 70
Drop out	ms	50 – 80	70 – 100

[1] Thermal Load Capacity Ratings

[2] Cycles per hour rating is based on rated AC-3 Loading of the contactors

[3] For transformers having inrush currents of not more than 20 times the rated full load current.