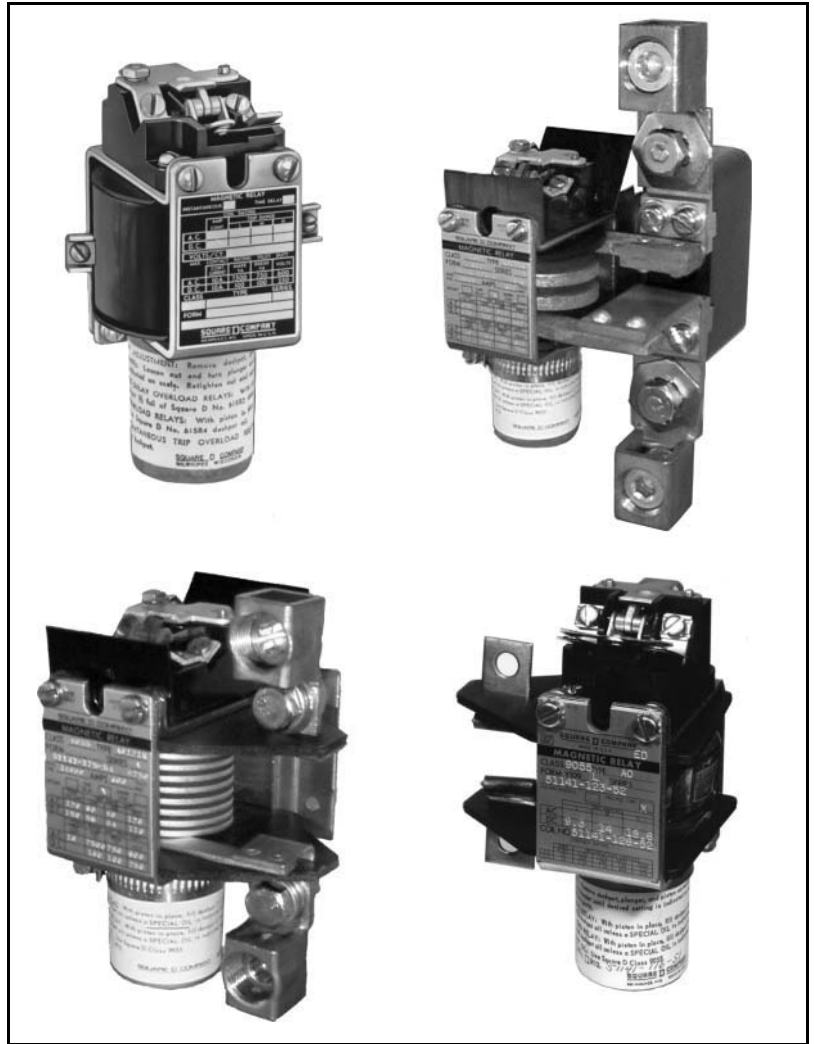


Crane Control Class 9055

Catalog

03



CRANE CONTROL
CLASS 9055

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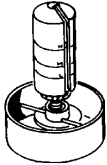
The Electric Controller and
Manufacturing Company, LLC

Crane Control Class 9055

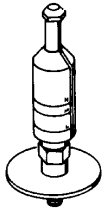
Magnetic Current Overload Relays



Type AO101-AO116



Type A



Type N



Type AO117-AO121



Type AO122-AO126



Type AO167-AO176

APPLICATION DATA

General

All Class 9055 magnetic current relays use the same basic frame. This frame supports a contact mechanism on the top and a dashpot on the bottom. When the relay picks up, a plunger is drawn upward into the coil until it stops against an insulated trip pin which operates a set of contacts.

The distance the plunger travels is adjustable by means of threading the plunger up or down on a threaded stud. Changing the distance between the pole piece and the plunger affects the current at which the relay will pick up. Relays are designed to be adjustable over a 2 to 1 range.

Coils range from tapewound versions with many turns of insulated wire to one with a single turn of bare copper busbar. In the lower current ranges, up to a continuous current of 20 amperes AC, coils are all tapewound with self-supporting terminals one on each side of coil (See AO101-AO116).

In higher current ranges, coils are designed either to have their terminals supported by insulating washers standing free of the mounting panel (See AO117-AO121 and AO122-AO126), or to have their terminals flush with the mounting surface of the relay so that they can be bolted onto an insulating panel and wired from the back of the panel (See AO167-AO176).

Inverse Time Delay Type A

A time delay which decreases in proportion to the amount of overcurrent is provided by means of a piston attached to the plunger which is submerged in oil in the dashpot. When the current through the coil becomes sufficient to pick up the plunger, the motion of the plunger is retarded while the oil flows around the piston as it moves towards the top of the dashpot. This time delay can be adjusted by changing the rate of flow of the oil through and around the piston. This is done by rotating a disk in the bottom of the piston so that one or more holes of various diameters are uncovered. The piston is equipped with a 1-way ball valve which opens when the piston drops through the oil so that drop out is almost instantaneous.

Several types of dashpot oil are available for these relays with different viscosities to produce different tripping times.

Type A relays are used to provide motor running overcurrent protection in applications where exceptionally long time delays are required or exceptionally high currents are encountered. Once the Type A relay has tripped, current must be reduced to a very low value before reset occurs.

Standard devices are supplied with a single normally closed contact which opens on increasing current and closes automatically when the current goes to zero.

Instantaneous Trip Type N

Type N relays do not have a piston on the end of the plunger and do not use dashpot oil. The bottom of the piston is equipped with a disc which guides the piston within the dashpot to maintain its vertical position.

Standard devices are equipped with a single normally closed contact which opens upon increasing current. Contacts reset automatically at approximately 80% of the trip current setting on AC, and approximately 67% on DC.

Instantaneous trip relays are normally used in applications where mechanical overloads are expected to occur with relative frequency or where motor circuits need to be protected from brief overload currents in excess of those detected by motor running overcurrent protection.

Application Data

Magnetic Current Relays, particularly in the lower current ranges, have a relatively high impedance. Because of this, a minimum horsepower rating of 1 1/2 HP is recommended for 3-phase motors and 1/2 HP for 1-phase motors. This recommendation is made to avoid the possibility of excessive voltage drop across the magnetic current relay which could interfere with the operation of the motor.

For Crane Control Applications:

Inverse time delay Type A relays are typically set @ 125% of motor full load current.

Instantaneous trip Type N relays are typically set @ 200% of motor full load current.

Crane Control Class 9055 Magnetic Current Overload Relays

GENERAL INFORMATION

Maximum Continuous Current		Trip Current Adjustment Range Auto or Hand Reset		Type A ◆		
				Open Type ●		
AC	DC	AC	DC	Steel Panel Mounting Type	Insulating Panel Mounting Type	
0.38 0.48 0.54 0.70	0.47 0.60 0.67 0.87	0.19-0.38 0.24-0.48 0.27-0.54 0.35-0.70	0.18-0.35 0.23-0.45 0.25-0.50 0.32-0.64	AO101 AO102 AO103 AO104		
0.74 1.04 1.4 2.0	0.92 1.30 1.75 2.5	0.37-0.74 0.52-1.04 0.7-1.4 1.0-2.0	0.34-0.68 0.48-0.96 0.65-1.3 0.93-1.8	AO105 AO106 AO107 AO108		
3.2 4.0 4.8 7.0	4.0 5.0 6.0 8.7	1.6-3.2 2.0-4.0 2.4-4.8 3.5-7.0	1.5-3.0 1.8-3.7 2.2-4.5 3.3-6.5	AO109 AO110 AO111 AO112		
8.0 10 12 20	10.0 12.5 15 25	4.0-8.0 5.0-10.0 6.0-12.0 10.0-20.0	3.7-7.5 4.7-9.3 5.6-11.1 9.3-18.6	AO113 AO114 AO115 AO116		
32 48 60	40 60 75	16.0-32.0 24.0-48.0 30.0-60.0	15.0-30.0 22.0-45.0 28.0-56.0	AO117R AO118R AO119R	AO167R AO168R AO169R	
80 120 160	100 150 200	40.0-80.0 60.0-120.0 80.0-160.0	37.0-75.0 56.0-110.0 75.0-150.0	AO120R AO121R AO122R	AO170R AO171R AO172R	
210 320	260 400	107.0-210.0 160.0-320.0	100.0-195.0 150.0-300.0	AO123R AO124R	AO173R AO174R	
420 640	525 800	210.0-420.0 320.0-640.0	200.0-400.0 300.0-600.0	AO125R AO126R	AO175R ▲ AO176R ▲	

Maximum Continuous Current ■		Trip Current Adjustment Range Auto Reset ■		Trip Current Adjustment Range Hand Reset ■		Type N		
						Open Type ●		
AC	DC	AC	DC	AC	DC	Steel Panel Mounting Type	Insulating Panel Mounting Type	
0.38 0.48 0.54 0.70	0.47 0.60 0.67 0.87	0.26-0.54 0.33-0.69 0.36-0.76 0.47-0.98	0.27-0.60 0.35-0.76 0.38-0.84 0.5-1.1	0.17-0.34 0.22-0.44 0.24-0.48 0.31-0.62	0.21-0.41 0.26-0.53 0.29-0.58 0.38-0.75	NO101 NO102 NO103 NO104		
0.74 1.04 1.4 2.0	0.92 1.30 1.75 2.5	0.5-1.1 0.7-1.5 0.9-2.0 1.4-2.9	0.53-1.2 0.75-1.6 1.0-2.2 1.5-3.1	0.33-0.65 0.46-0.92 0.62-1.24 0.9-1.8	0.4-0.8 0.56-1.12 0.75-1.5 1.1-2.2	NO105 NO106 NO107 NO108		
3.2 4.0 4.8 7.0	4.0 5.0 6.0 8.7	2.2-4.6 2.8-5.8 3.3-7.0 4.8-10.0	2.3-5.0 2.9-6.2 3.5-7.5 5.0-11.0	1.45-2.9 1.8-3.6 2.1-4.3 3.1-6.2	1.75-3.5 2.2-4.4 2.6-5.2 3.8-7.6	NO109 NO110 NO111 NO112		
8.0 10 12 20	10.0 12.5 15 25	5.6-11.6 7.0-14.5 8.4-17.5 14.0-29.0	5.8-12.4 7.3-15.5 8.8-18.7 15.0-32.0	3.6-7.2 4.5-9.0 5.4-10.8 9.0-18.0	4.4-8.8 5.4-10.8 6.5-13.0 11.0-22.0	NO113 NO114 NO115 NO116		
32 48 60	40 60 75	23.0-47.0 34.0-69.0 40.0-83.0	24.0-50.0 35.0-74.0 42.0-92.0	14.0-29.0 21.0-43.0 26.0-52.0	18.0-35.0 26.0-52.0 32.0-64.0	NO117R NO118R NO119R	NO167R NO168R NO169R	
80 120 160	100 150 200	56.0-117.0 82.0-170.0 110.0-220.0	59.0-125.0 85.0-182.0 115.0-230.0	36.0-72.0 52.0-104.0 72.0-144.0	44.0-88.0 64.0-128.0 88.0-176.0	NO120R NO121R NO122R	NO170R NO171R NO172R	
210 320	260 400	147.0-286.0 230.0-470.0	152.0-292.0 230.0-540.0	96.0-192.0 144.0-287.0	117.0-234.0 175.0-350.0	NO123R NO124R	NO173R NO174R	
420 640	525 800	290.0-610.0 435.0-915.0	308.0-674.0 480.0-950.0	191.0-383.0 287.0-575.0	233.0-466.0 350.0-700.0	NO125R NO126R	NO175R ▲ NO176R ▲	

- Relays rated 32 A and above (A, or NO 117R and higher) have both coil terminals on the right hand side as standard. Relays with right hand coil terminals can be field converted to the left hand side. Relays with left hand coil terminals can be ordered from the factory by changing the "R" in the type number to "L". Example: Class 9055 Type NO 117L.
- ▲ DC continuous ratings shown for these relays apply when coil terminals are front connected with suitable lugs. When back connected, DC ratings of Types 175 and 176 are 420 and 640 A, respectively.
- These relays should normally be adjusted to trip at a current value less than the listed maximum continuous current. In special applications requiring the use of a higher trip setting, care should be taken that the coil is not subjected to current in excess of its maximum continuous rating for any prolonged period.
- ◆ For crane applications use Type C2U dashpot oil and dashpot locking strap 750D107G1.

Ordering Information Required:

1. Class 2. Type 3. Form 4. Current setting (AC or DC)

CP9B		Discount Schedule
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

**CRANE CONTROL
CLASS 9055**



Crane Control Class 9055 Magnetic Current Overload Relays

INFORMATION AND APPLICATION DATA Maximum

Current Ratings for Control Circuit Contacts

Relay Type	Contact Arrangement	AC							DC			
		Volts	Inductive 35% Power Factor				Resistive 75% P.F.	Volts	Inductive and Resistive			
			Make		Break				Cont. A	Make and Break		Cont. A
			A	VA	A	VA				A	VA	
A, N	 or  (Standard) (Form Y44)	120	60	7200	6	720	10	10	125	0.8	100	10
		240	30	7200	3	720	10	10	250	0.4	100	10
		480	15	7200	1.5	720	10	10
		600	12	7200	1.2	720	10	10

Maximum coil voltage all types 600 VAC 60Hz or 600 VDC.

Additional Dashpot Oil (Order by Class 9055 and Type Number)

1 oz Bottle (Sufficient for one relay)		1 Pint Container	
Type		Type	
C2U ●		C2P ●	
R2U ▲		R2P ▲	
R10U		R10P	
R11U		R11P	

- ▲ Supplied as standard with type A relays.
- Recommended for crane applications.

Recommended Minimum Horsepower Ratings

To avoid excessive voltage drop, which may be encountered when using these magnetic relays with small motors, the following minimum horsepowers are recommended.

Motor Type	Minimum HP
3-Phase	1-1/2
1-Phase	1/2

Factory Modifications and Forms

Class 9055 Magnetic Current Relays

Description of Special Features	Form Letters		
Hand Reset:			
On open type relay	H3		
Substitute normally-open contact for normally-closed	Y44		
Double break contacts	Y45		

Accessories

Description	Part Number
Dashpot locking strap. (Recommended on all crane applications or when subject to vibration.)	750D107G1
Mounting Bracket (Allows Types 101 thru 121 to be mounted from the front of panel)	750X103

CRANE CONTROL CLASS 9055

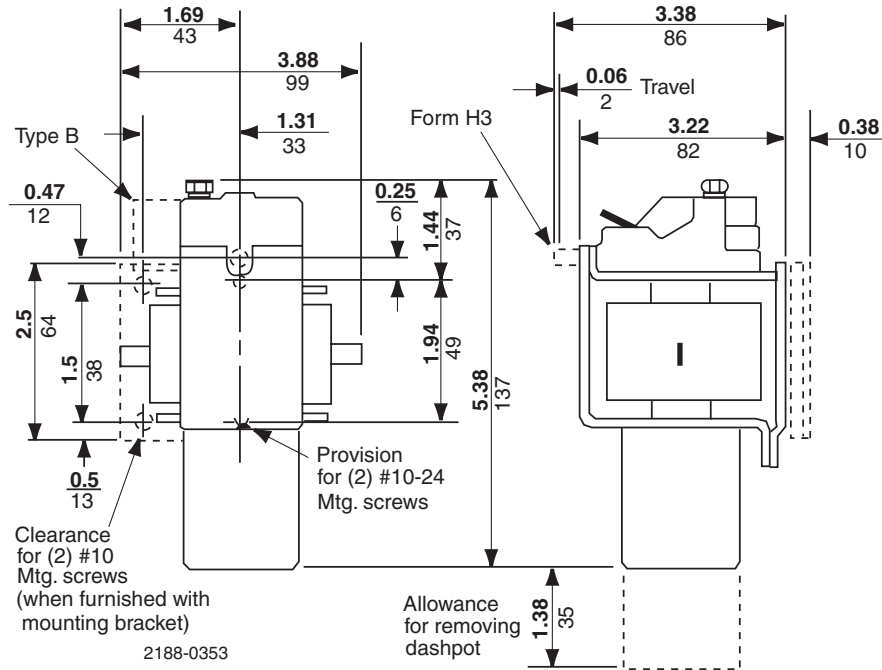
CP9B CP9C Discount Schedule

★ = CP9B
◇ = CP9C

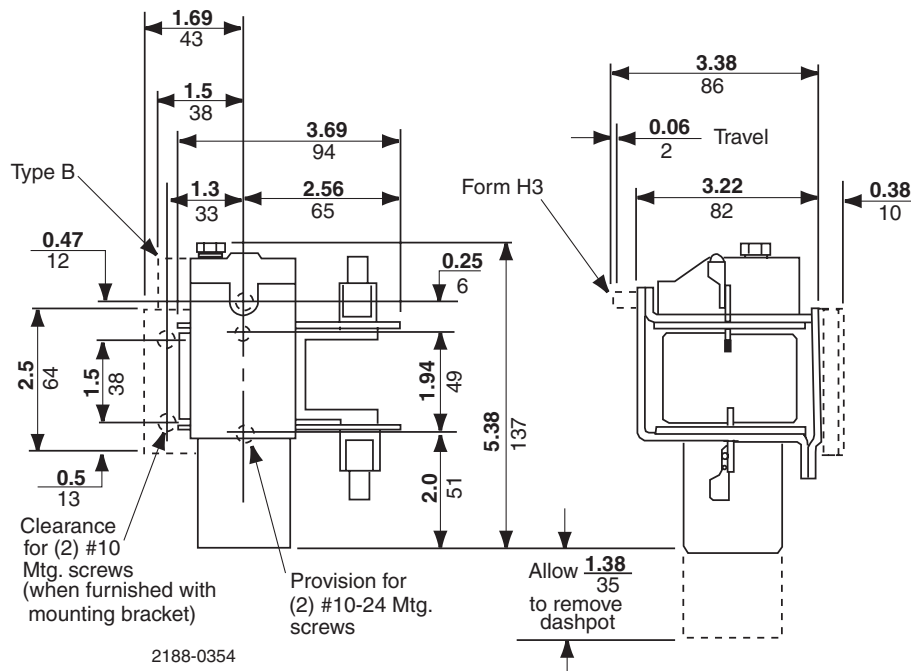


Crane Control Class 9055 Magnetic Current Overload Relays

APPROXIMATE DIMENSIONS AND WEIGHTS



Types AO101 thru 116, 191 thru 116
Weight – 4 lb (1.8 kg)



Types AO117R thru 121R, 117R thru 121R
Weight – 4 lbs (1.8 kg)

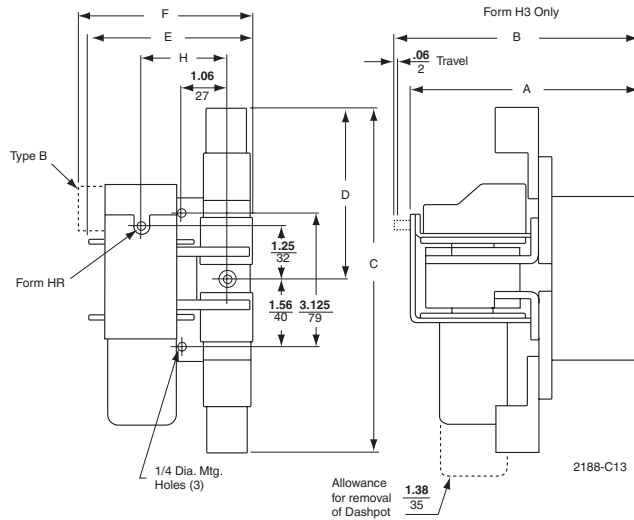
NOTE: Only right hand versions are shown. Dimensions also apply to left hand versions, except that all parts are assembled opposite to position shown. Dimensions to left and right of vertical centerline, therefore would be reversed.

CRANE CONTROL
CLASS 9055

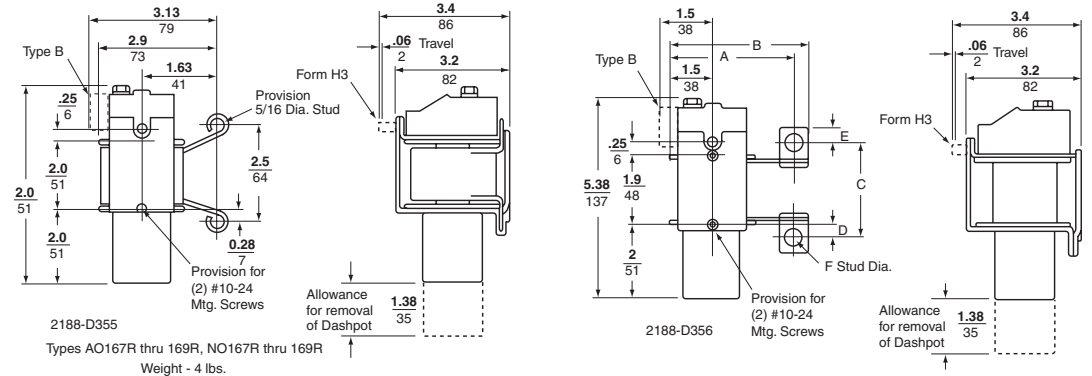


Crane Control Class 9055 Magnetic Current Overload Relays

APPROXIMATE DIMENSIONS AND WEIGHTS



Type ▲	Dimension								Shipping Weight lbs (kg)
	A	B	C	D	E	F	G	H	
AO122R	5.41 137	5.59 142	8.38 213	4.19 106	3.81 97	...	0.56 14	2.0 51	5 (2.3)
NO122R	5.41 137	5.59 142	8.38 213	4.19 106	3.81 97	...	0.56 14	2.0 51	5 (2.3)
AO123R	5.41 137	5.59 142	8.38 213	4.19 106	3.81 97	...	0.56 14	2.0 51	5 (2.3)
NO123R	5.41 137	5.59 142	8.38 213	4.19 106	3.81 97	...	0.56 14	2.0 51	5 (2.3)
AO124R	5.38 137	5.59 142	9.5 241	4.75 121	4.19 106	...	0.94 24	2.0 51	6 (2.7)
NO124R	5.38 137	5.59 142	9.5 241	4.75 121	4.19 106	...	0.94 24	2.0 51	6 (2.7)
AO125R	5.63 143	5.84 148	9.5 241	4.75 121	4.19 106	...	0.94 24	2.0 51	6 (2.7)
NO125R	5.63 143	5.84 148	9.5 241	4.75 121	4.19 106	...	0.94 24	2.0 51	6 (2.7)
AO126R	5.88 149	6.06 154	13.69 348	6.84 174	4.94 125	...	1.19 30	2.5 54	8 (3.6)
NO126R	5.88 149	6.06 154	13.69 348	6.84 174	4.94 125	...	1.19 30	2.5 54	8 (3.6)



Type ▲	Dimension						Shipping Weight lb (kg)
	A	B	C	D	E	F	
AO170R THRU 173R	2.88 73	3.25 83	2.5 64	0.28 7	0.38 10	0.38 10	4 (1.8)
NO170R THRU 173R	2.88 73	3.25 83	2.5 64	0.28 7	0.38 10	0.38 10	4 (1.8)
AO174R, NO174R	3.25 83	3.88 98	3.0 76	0.53 13	0.56 14	0.5 13	5 (2.3)
AO175R, NO175R	3.25 83	3.88 98	5.0 127	0.53 13	0.56 14	0.5 13	5 (2.3)
AO176R, NO176R	3.75 95	4.5 114	5.0 127	1.53 39	1.25 32	0.75 19	5 (2.3)

▲ Only right hand versions are shown. Dimensions also apply to left hand versions, except that all parts are assembled opposite to position shown. Dimensions to left and right of vertical centerline, therefore, would be reversed.



CRANE CONTROL CLASS 9055