



1370/1379 Contactors - Connection Guide and Parts List

Description

The Bulletin 1370 DC Contactors are electromagnetically held contactors specially designed to switch the armature current from the DC Drive module to a shunt wound DC motor. When used with the appropriate control logic design, these contactors can disconnect the motor armature from the DC Drive module when a stop is initiated or in the event of a power failure. The contactors feature a top-wired design with all power connections at the top of the contactor. This document contains the information needed to install, connect and maintain the Bulletin 1370 DC Contactor.

WARNING: The National Electric Code (NEC) and local codes outline provisions for safely installing electrical equipment. Installation must comply with specifications regarding wire types, conductor sizes, branch circuit protection and disconnect devices. Failure to do so may result in personal injury and/or equipment damage.

CAUTION: Incorrectly applied or installed DC contactors can result in component damage or a reduction in product life. Wiring of application errors, such as improper wire sizing or excessive ambient temperatures may result in a malfunction of these devices.

Bulletin 1370 DC Contactors have the following features:

Contacts - the double break silver cadmium oxide contacts are weld resistant for improved reliability. Movable contacts are wedge shaped, while the stationary contacts have a unique “fold back” design. On contact opening, this “fold back” design generates a strong magnetic field which quickly throws the arc off the contact surface of the chamber.

Coil - The contactor coils are hot pressure molded in thermoset epoxy to protect against mechanical damage and harmful environments. The coil shunt plate is designed to retard the magnetic flux until the voltage applied reaches the “pick up” voltage. Each coil is provided with an exclusive thermal cutout which is designed to open on excessive currents or misapplied voltages.

Magnet - The high efficiency magnet has a permanent air gap. Pole face wear cannot affect the air gap and cause magnetic sticking due to residual magnetism. Each magnet lamination is phosphate coated to provide ample resistance to corrosion.



Specifications

Table A provides the electrical and environmental specifications for the DC Loop Contactors

**Table A
Contactor Specifications**

Contact Rating - N.O.	
Voltage:	56A through 280A - 550V DC maximum, 360A - 500V DC maximum
Full Load Steady State Current:	56A contactor - 56A DC maximum 110A contactor - 110A DC maximum 180A contactor - 180A DC maximum 280A contactor - 280A DC maximum 360A contactor - 360A DC maximum
Contact Break Current(at 550V DC motor load):	56A contactor - 112A DC maximum 110A contactor - 220A DC maximum 180A contactor - 360A DC maximum 280A contactor - 560A DC maximum 360A contactor - 900A DC maximum
Contact Rating - N.C.	
Voltage:	550V DC maximum (500V DC maximum for 360A)
Contact Make Current (at 550V DC motor load):	56A contactor - 112A DC 110A contactor - 220A DC 180A contactor - 360A DC 280A contactor - 560A DC 360A contactor - 900A DC
Auxiliary Contact Rating	
Voltage:	115V AC, 50/60 Hz
Continuous Current (all contactors):	10A AC maximum
Contact Break Current (all contactors):	6A AC maximum
Coil Ratings	
Voltage (all contactors):	115V AC, 50/60 Hz
Operate:	Pickup: 75% of nominal (maximum) Dropout: 55% of nominal (maximum)
Breakdown Voltage	2,100V RMS (all electrical elements to ground)
Ambient Operating Temperature	0 to 65°C (32 to 149°F)
Mounting Orientation	Vertical
Contact Termination	
Line and Load Terminals for N.O. Contact:	56A contactor - 10-32 x 25/64" screw, 35 lb-in torque 110A contactor - 1/4-28 x 3/8" bolt, 45 lb-in torque 180A contactor - 5/16-24 x 1/2" bolt, 150 lb-in torque 280A contactor - 1/2-13 stud with nut, 400 lb-in torque 360A contactor - 4 lugs-#4 AWG to 500 MCM
Dynamic Braking Terminals for N.C. Contact:	56A contactor - 10-32 x 25/64" screw, 35 lb-in torque 110A contactor - 1/4-28 x 3/8" bolt, 45 lb-in torque 180A contactor - 5/16-24 x 1/2" bolt, 150 lb-in torque 280A contactor - 3/8-24 x 5/8 bolt, 240 lb-in torque 360A contactor - 2 lugs-#4 AWG to 500 MCM
Coil Termination	Captive Pressure Plate for 2 - #12 AWG wires maximum
Contact Material	Silver Cadmium Oxide
Auxiliary Contact	with Captive Pressure Plate for 2 - #14 AWG wires maximum

Dimensions

NOMINAL DIMENSIONS AND WEIGHTS - NON-REVERSING CONTACTOR In inches (millimeters) and pounds (kilograms)

Current Rating (Continuous)	Power Poles	Catalog Number	A	B	C	D	E	J	Approximate Weight
56A	2 - N.O. 1 - N.O.	1370-DC56	3.56 (90.4)	6.00 (152.4)	4.47 (113.5)	1.38 (35.0)	5.50 (139.7)	#10(0.5)	3.0(1.4)
56A	2 - N.O.	1370-NC56	3.56 (90.4)	6.00 (152.4)	4.47 (113.5)	1.38 (35.0)	5.50 (139.7)	#10(0.5)	3.0(1.4)
110A	2 - N.O. 1 - N.O.	1370-DC110	3.94 (100.1)	6.81 (173.0)	4.63 (117.6)	1.58 (40.1)	6.31 (160.3)	#10(0.5)	4.0(1.8)
110A	2 - N.O.	1370-NC110	3.94 (100.1)	6.81 (173.0)	4.63 (117.6)	1.58 (40.1)	6.31 (160.3)	#10(0.5)	4.0(1.8)
180A	2 - N.O. 1 - N.O.	1370-DC180	6.13 (155.7)	10.04 (255.0)	6.09 (154.7)	2.75 (69.8)	8.66 (220.0)	3-1/4 (6.4)	12.0(5.4)
180A	2 - N.O.	1370-NC180	6.13 (155.7)	10.04 (255.0)	6.09 (154.7)	2.75 (69.8)	8.66 (220.0)	3-1/4 (6.4)	12.0(5.4)
280A	2 - N.O. 1 - N.O.	1370-DC280	7.00 (177.8)	11.40 (289.6)	7.66 (194.6)	3.16 (80.3)	9.84 (250.0)	3-5/16 (7.9)	22.0(10.0)
280A	2 - N.O.	1370-NC280	7.00 (177.8)	11.40 (289.6)	7.66 (194.6)	3.16 (80.3)	9.84 (250.0)	3-5/16 (7.9)	22.0(10.0)
360A	2 - N.O. 1 - N.O.	1379-DC360	9.50 (241.3)	15.40 (391.2)	7.50 (190.5)	3.50 (88.9)	13.50 (342.9)	3-0.406 (10.3)	45.0(20.5)
360A	2 - N.O.	1379-NC360	9.50 (241.3)	15.40 (391.2)	7.50 (190.5)	3.50 (88.9)	13.50 (342.9)	3-0.406 (10.3)	45.0(20.5)

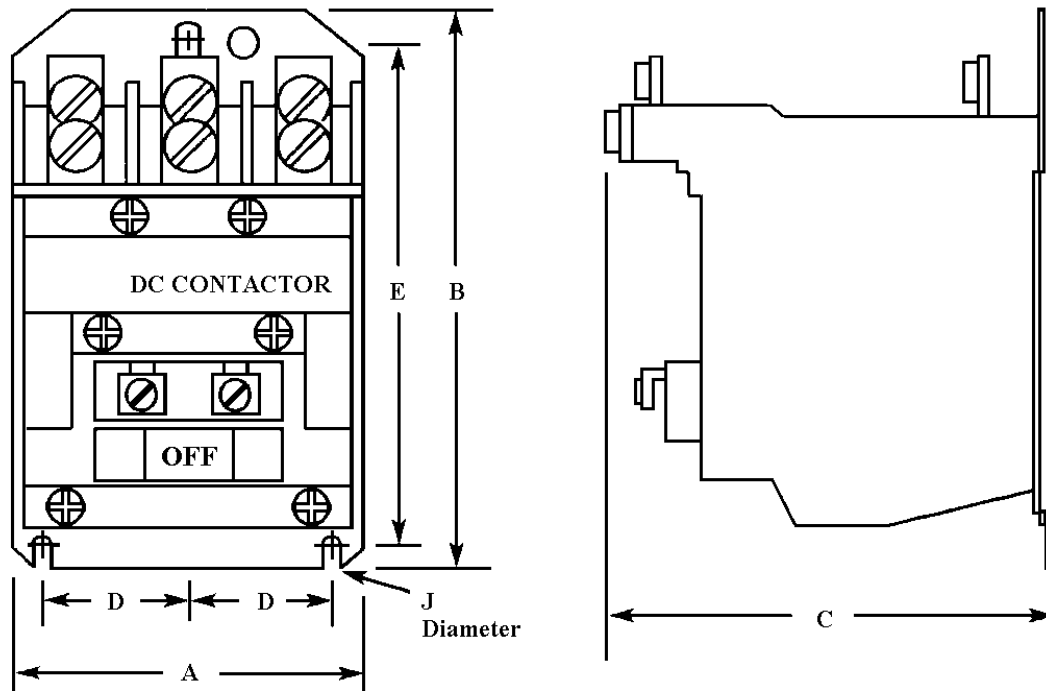


Figure 1 - Non-Reversing Contactor Dimensions

Nominal Dimensions and Weights - Reversing Contactor

In inches (millimeters) and pounds (kilograms)

Current Rating (Continuous)	Power Poles	Catalog Number	A	B	C	D	E	F	J	Approximate Weight
56A	4 - N.O. 2 - N.C.	1370-RC56	8.00 (203.2)	7.59 (192.8)	4.63 (117.6)	7.09 (180.1)	7.09 (180.1)	3.17 (80.5)	#10(0.5)	8.75(3.9)
110A	4 - N.O. 2 - N.C.	1370-RC110	9.06 (230.1)	8.38 (212.9)	4.88 (124.0)	7.88 (200.2)	7.88 (200.2)	4.34 (110.2)	#10(0.5)	11.0(5.0)
180A	4 - N.O. 2 - N.C.	1370-RC180	12.88 (327.2)	10.66 (270.8)	6.31 (160.3)	11.81 (300.0)	9.84 (250.0)	-	4-1/4 (0.64)	30.0(13.6)
280A	4 - N.O. 2 - N.C.	1370-RC280	14.84 (376.9)	12.72 (323.1)	7.94 (201.7)	13.78 (350.0)	11.81 (300.0)	-	4-5/16 (0.79)	47.0(21.3)

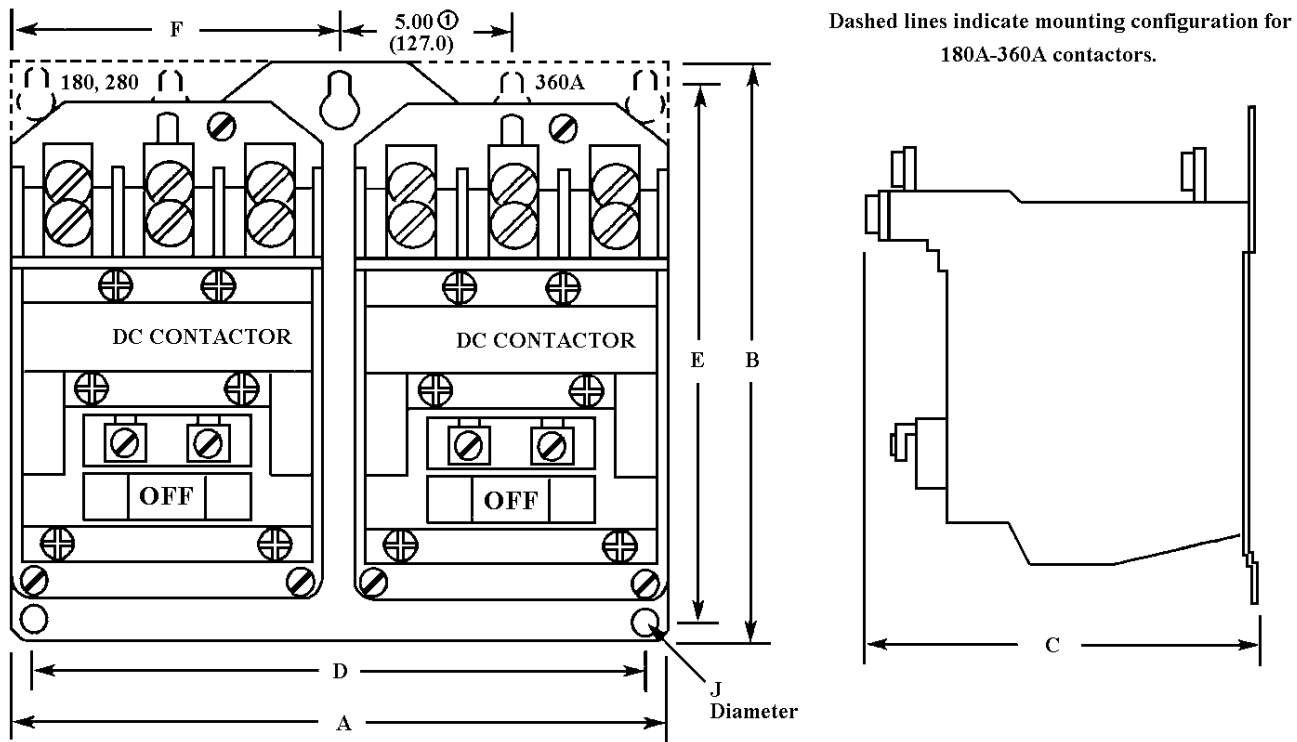


Figure 2 - Reversing Contactor Dimensions

360A	4 - N.O. 2 - N.C.	1370-RC360	19.25 (488.9)	15.38 (390.6)	8.63 (219.2)	17.00 (431.8)	13.50 (342.9)	-	2-.406 ① (10.3)	90.0(40.9)
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① 360a Contactors Only - Key hole (2 plcs.) at top of contactor is 0.188R, 0.750 Dia.



Unpacking and Inspection

Remove all packing material, wedges, or braces form within the contactor. If any part of the equipment will not be installed when it is unpacked, it **must** be stored in a clean, dry place. The storage temperature must be between - 30°C and +65°C (-22°F and + 149°F) and a humidity range of 5% to 95%, non-condensing, to guard against damage to components.

After unpacking, check the material received against the Bill of Lading to assure that the nameplate description of each item agrees with the material ordered. When checking the items received, refer to the Catalog Number Explanations provided in Figures 3 and 4. Inspect the items for physical damage such as cracks in moldings or insulators.

<u>1370</u> First Position	<u>N</u> Second Position	<u>C</u> Third Position	<u>56</u> Fourth Position Current Rating	
Bulletin No.	Type	Contactor	Number	Amperes
	Letter N	Description Non- Reversing	56	56
	D	Non- Reversing w/DB	110	110
			180	180
			280	280
	R	Reversing w/DB	360	360

Figure 3 - Contactor Catalog Number Explanation

<u>1370</u> First Position	<u>LG</u> Second Position	<u>40</u> Third Position Lug Current Rating	Number	Amperes
Bulletin No.	Lug Kit			
			40	40
			52	52
			56	56
			68	68
			92	92
			104	104
			110	110
			120	120
			140	140
			160	160
			180	180
			204	204
			228	228
			248	248
			268	268
			280	280

Figure 4 - Lug Kit Catalog Number Explanation

Operation



When the coil is energized, the magnet closes. The contact carrier moves upward into place and closes the power contacts. Movable contact springs are used to provide proper contact seating. Shock absorbing pads are provided in the cover and base assemblies to reduce the impact of pickup and drop-out.

Installation

The contactor must be vertically mounted in a clean, dry location. Oils, coolants and other debris must be kept from settling on the contactor. The choice of an appropriate NEMA enclosure type for the application is important. Special considerations should also be given to the wire bend radius and wire clearances.

WARNING: The contactor must be mounted in a vertical position. Failure to observe this mounting practice will result in improper operation of the contactor and personal injury.

Refer to the National Electrical Code and Local Codes for specific installation guidelines. The supplied surge suppressor will reduce noise interference that could adversely affect Drive performance. Install the suppressor on the contactor coil using the instructions provided below. Reversing contactors are supplied with factory installed suppressors on each coil.

CAUTION: Component damage may occur if more than 132V AC is applied to the suppressor.

Suppressor Installation

1. Loosen coil terminal clamps.
2. Slide surge suppressor onto coil terminals.
3. Place coil circuit conductors between suppressor terminals and coil terminal clamps.
4. Tighten coil terminal clamps securely.

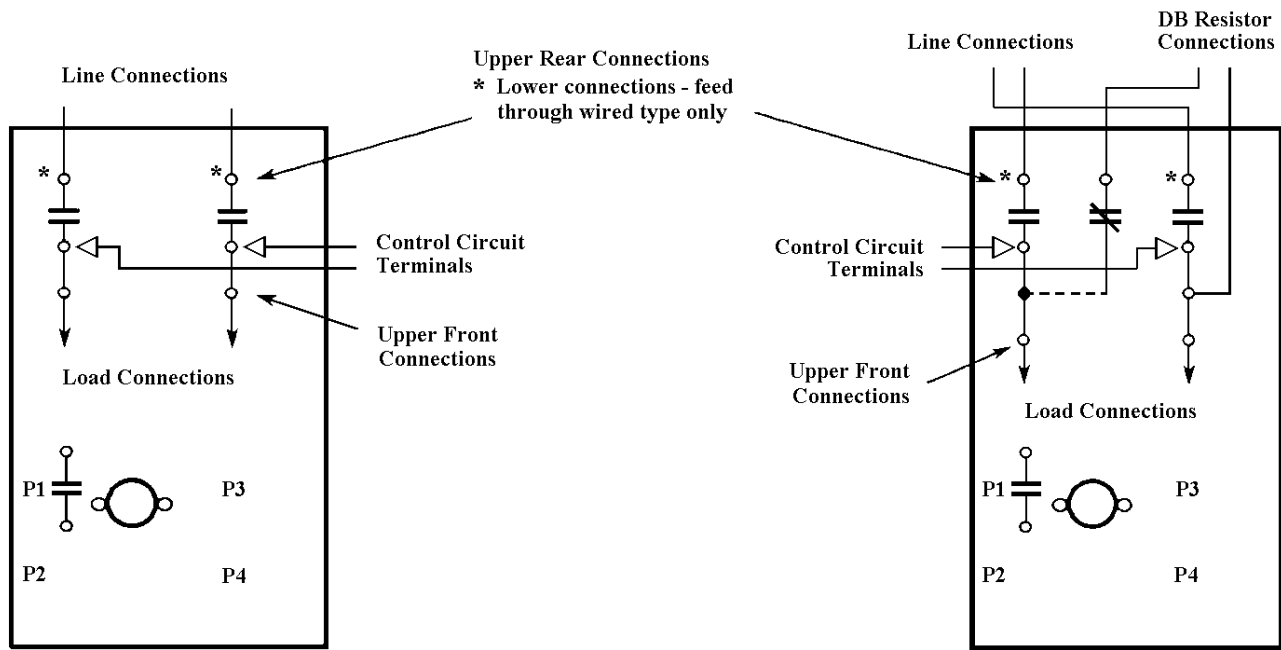
Wiring

Figure 5 shows the typical wiring diagrams for the DC contactors. Refer to Figures 6 and 7 for specific terminal identification. When wiring Dynamic Braking Resistors, use wire with a current capacity at least 1/2 that of the full load current rating of the motor.

IMPORTANT: Consult the National Electrical Code and local codes for specific guidelines on wire size and type for dynamic braking resistor application.

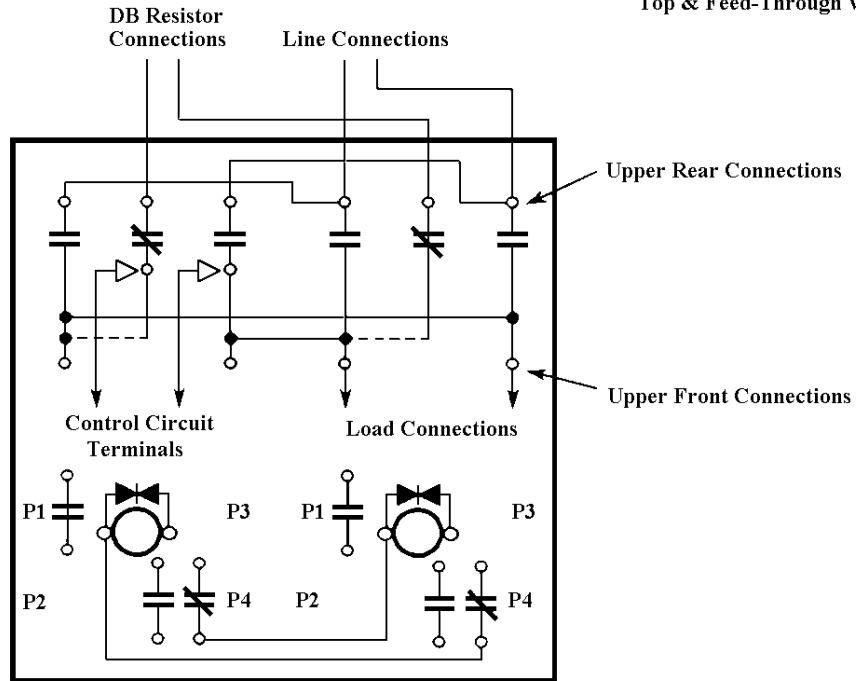
All DC Drive module power connections (Keps-nuts) are to be installed to the following torque settings:

- 1/4 inch bolt - 35 in-lbs.
- 3/8 inch bolt - 75 in-lbs.
- 1/2 inch bolt - 150 in-lbs.
- 3/4 inch bolt - 300 in-lbs.



NON-REVERSING CONTACTORS
 (2) N.O.
 56-280 Ampere Ratings
 Top & Feed-Through Wired

NON-REVERSING CONTACTORS
 (2) N.O. - (1) N.C.
 56-280 Ampere Ratings
 Top & Feed-Through Wired



REVERSING CONTACTORS
 (2) N.O. - (1) N.C.
 56-280 Ampere Ratings
 Top Wired

- NOTES:**
- Indicates jumper strap.
 - ▷ ◁ Indicates auxiliary wire terminals for (2) #14 AWG wires.

Figure 5 - Typical DC Power Wiring Diagrams



Auxiliary Contact Installation

Auxiliary contact assemblies can be used on all contactor ratings, 56 through 280 amperes. The N.O. auxiliary contact is designed to be open when the contactor is de-energized. The N.C. auxiliary contact is designed to be closed when the contactor is de-energized. A (1) N.O. auxiliary contact assembly is supplied on the contactor in position P1 for use with the DC Drive module enable function. Reversing contactors have an additional N.O. and N.C. auxiliary contact position P4. The N.C. contact is used to electrically interlock the forward and reverse contactor coil circuits. The N.O. contact is used with the control circuit forward and reverse selection function to prevent changing the direction once the Drive is in operation.

Additional auxiliary contact assemblies may be installed in positions P2, P3 and P4 on non-reversing contactors. On reversing 180 and 280 ampere contactors, additional contact assemblies may be installed in all P2 and P3 positions. Placement on 56 and 110 ampere contactors will depend on the type of contact assembly that can be installed in the vacant P2 and P3 positions between the forward and reverse contactors.

Installation

WARNING: Open and lock-out main supply disconnect and all other power source disconnects to avoid hazard of electrical shock or injury from unintended actuation of controlled equipment.

1. Turn the Drive circuit breaker OFF and remove cabinet power.
2. Align arrows on the reverse side of the contact and locate the tabs.
3. Insert the auxiliary contact, tabs first, into the appropriate position on the side of the contactor. Push, to lock the contact in place.
4. Select the desired terminals and connect the corresponding wires.

Replacement

Refer to the following steps if replacement of the Auxiliary contact becomes necessary.

1. Turn the Drive circuit breaker OFF and remove cabinet power.
2. Loosen the Coil Cover and pull the auxiliary contact straight out.

Maintenance

The Bulletin 1370 DC Contactors are constructed such that a minimum amount of maintenance is needed. As a result of normal use, the contacts will eventually begin to deteriorate. Periodic inspection of these contacts should be part of any Drive system preventative maintenance program. If contact inspection reveals severe erosion on the power pole contacts, it is recommended that the power poles (if possible) or contactor be replaced. Replacing the contactor will help reduce the effects of uneven and unequal contact closings. If the contactor has not been used for extended period of time, a brief inspection for mechanical integrity and contact corrosion should be made before use.



Bulletin 1370/1379 Drive Contactor Cross Reference Note and Contactor Renewal Parts

The following lists cross reference the catalog number, Mequon part number and the Milwaukee part number for DC contactors. Also included are the renewal parts needed for the contactors.

OBSOLETE CONTACTOR CROSS REFERENCE

Mequon Catalog Number *	Mequon Part Number	Allen-Bradley Catalog Number
1379-NC30	101287	202AC-ZOD-X532
1379-NC56	101288	202AC-ZOD-X533
1379-NC110	101289	202AC-ZOD-X534
1379-NC210	101290	202AC-ZOD-X535
1379-DC30	101277	202AC-ZOD-X537
1379-DC56	101278	202AC-ZOD-X538
1379-DC110	101279	202AC-ZOD-X539
1379-DC210	101280	202AC-ZOD-X540
1379-RC30	101281	202AC-ZOD-X557
1379-RC56	101282	202AC-ZOD-X558
1379-RC110	101283	202AC-ZOD-X559
1379-RC210	101284	202AC-ZOD-X560

* NC = Non-Reversing, DC = Dynamic Braking, RC = Reversing

CURRENT 1379 CONTACTOR KITS (Includes surge suppressor and instructions)

Catalog Number	Kit Number	Contactor Number
1379-NC360	101246	101291
1379-DC360	102251	101300
1379-RC360	102256	101301

CURRENT CONTACTOR CROSS REFERENCE

Catalog Number	Old Mequon Part Number	New Mequon Part Number	Allen-Bradley Part Number
1370-NC56	107753	123142	40411-672-01
1370-NC110	107763	123141	40411-672-02
1370-NC180	107773	123140	40411-672-03
1370-NC280	107783	123139	40411-672-04
1370-NC360	101291	101291	202AC-ZOD-X536
1370-DC56	107748	123146	40411-672-05
1370-DC110	107758	123145	40411-672-06
1370-DC180	107768	123144	40411-672-07
1370-DC280	107778	123143	40411-672-08
1370-DC360	101300	101300	202AC-ZOD-NX12
1370-RC56	113801	123195	40444-616-01
1370-RC110	113802	123196	40444-616-02
1370-RC180	113803	123197	40444-616-03
1370-RC280	113804	123198	40444-616-04
1379-RC360	101301	101301	205AC-NX2



Contactor Spare Parts List

Single Pole N.O. Contact Kit Includes:

One each: front and rear stationary contact, contact spring and movable contact.

Normally Closed Contact(DB Pole) Kit Includes:

Front or rear stationary contact; contact spring, spanner guide, spanner assembly and screws.

56 amp list

Single Pole N.O. Contact Part Kit Number	40410-331-54
Normally Closed Contact (DB Pole) Kit number:	40410-857-01

110 Amp List

Single Pole N.O. Contact Part Kit Number	40420-322-52
Normally Closed Contact (DB Pole) Kit number	40420-850-01

180 Amp List

Single Pole N.O. Contact Part Kit Number	40430-300-52
Normally Closed Contact (DB Pole) Kit number	40430-850-01

280 Amp List

Single Pole N.O. Contact Part Kit Number	40440-325-52
Normally Closed Contact (DB Pole) Kit number	40440-850-01

360 Amp List

Single Pole N.O. Contact Part Kit Number	Z-34042	
Normally Closed Contact (DB Pole) Kit numbers:	40450-319-52	Obsolete: Front Terminal Assembly
	40450-320-52	Obsolete: Rear Terminal Assembly
	40450-318-52	Obsolete: Moveable Contact

Contactor Listing

<u>Catalog Number</u>	<u>Contactor Size</u> (refer to above for contact kit part number)
1370-NC56, 1370-DC56, 1370-RC56	56 Amp
1370-NC110, 1370-DC110, 1370-RC110	110 Amp
1370-NC180, 1370-DC180, 1370-RC180	180 Amp
1370-NC280, 1370-DC280, 1370-RC280	280 Amp
1370-NC360, 1370-DC360, 1370-RC360	360 Amp

AUXILIARY CONTACTS

Part Number	Description	Allen-Bradley Catalog Number
107482	1 N.O. -1 N.C.	Bulletin 595-AB
101905	1 N.O.	Bulletin 595-A
101242	1 N.C.	Bulletin 595-B
115015	2 N.O.	Bulletin 595-AA



Cross Reference by Part Number

Contactor Part Number	Description and Current Rating	Spare Parts Reference
101291	1379-NC360	360 Amp List
101300	1379-DC360	360 Amp List
101301	1379-RC360	360 Amp List
123139	1370-NC280	280 Amp List
123140	1370-NC180	180 Amp List
123141	1370-NC110	110 Amp List
123142	1370-NC56	56 Amp List
123143	1370-DC280	280 Amp List
123144	1370-DC180	180 Amp List
123145	1370-DC110	110 Amp List
123146	1370-DC56	56 Amp List
123148	56 amps; 115v coil, w/o DB	56 Amp List
123149	56 amps; 230v coil, w/o DB	56 Amp List
123152	56 amps, 460v coil, w/o DB	56 Amp List
123154	110 amps, 115v coil, w/o DB	110 Amp List
123155	110 amps, 230v coil, w/o DB	110 Amp List
123158	110 amps, 460v coil, w/o DB	110 Amp List
123160	180 amps, 115v coil, w/o DB	180 Amp List
123161	180 amps, 230v coil, w/o DB	180 Amp List
123164	180 amps, 460v coil, w/o DB	180 Amp List
123166	280 amps, 115v coil, w/o DB	280 Amp List
123167	280 amps, 230v coil, w/o DB	280 Amp List
123170	280 amps, 460v coil, w/o DB	280 Amp List
123172	56 amps, 115v coil, DB	56 Amp List
123173	56 amps, 230v coil, DB	56 Amp List
123176	56 amps, 460v coil, DB	56 Amp List
123178	110 amps, 115v coil, DB	110 Amp List
123179	110 amps, 230v coil, DB	110 Amp List
123182	110 amps, 460v coil, DB	110 Amp List
123185	180 amps, 230v coil, DB	180 Amp List
123188	180 amps, 460v coil, DB	180 Amp List
123190	280 amps, 115v coil, DB	280 Amp List
123191	280 amps, 230v coil, DB	280 Amp List
123194	280 amps, 460v coil, DB	280 Amp List
123195	1370-RC56	56 Amp List
123196	1370-RC110	110 Amp List
123197	1370-RC180	180 Amp List
123198	1370-RC280	280 Amp List
147703	1800 amps, 100vdc coil, w/o DB	C-H Contactor
147704	3000 amps, 100vdc coil, w/o DB	C-H Contactor
163440	180 amps, 115v coil, DB	180 Amp List
170858	360 amps, 115v coil, w/o DB	360 Amp List
170861	360 amps, 115v coil, DB	360 Amp List
172002	1250 amps,	Siemens Contactor



Cross reference by Description

Description and Current Rating	Contactor Part Number	Spare Parts Reference
56 amps, 230v coil, DB	123173	56 Amp List
56 amps, 460v coil, DB	123176	56 Amp List
56 amps, 460v coil, w/o DB	123152	56 Amp List
56 amps, 115v coil, DB	123172	56 Amp List
56 amps; 115v coil, w/o DB	123148	56 Amp List
56 amps; 230v coil, w/o DB	123149	56 Amp List
110 amps, 115v coil, DB	123178	110 Amp List
110 amps, 115v coil, w/o DB	123154	110 Amp List
110 amps, 230v coil, DB	123179	110 Amp List
110 amps, 230v coil, w/o DB	123155	110 Amp List
110 amps, 460v coil, DB	123182	110 Amp List
110 amps, 460v coil, w/o DB	123158	110 Amp List
180 amps, 115v coil, DB	163440	180 Amp List
180 amps, 115v coil, w/o DB	123160	180 Amp List
180 amps, 230v coil, DB	123185	180 Amp List
180 amps, 230v coil, w/o DB	123161	180 Amp List
180 amps, 460v coil, DB	123188	180 Amp List
180 amps, 460v coil, w/o DB	123164	180 Amp List
280 amps, 115v coil, DB	123190	280 Amp List
280 amps, 115v coil, w/o DB	123166	280 Amp List
280 amps, 230v coil, DB	123191	280 Amp List
280 amps, 230v coil, w/o DB	123167	280 Amp List
280 amps, 460v coil, DB	123194	280 Amp List
280 amps, 460v coil, w/o DB	123170	280 Amp List
360 amps, 115v coil, DB	170861	360 Amp List
360 amps, 115v coil, w/o DB	170858	360 Amp List
1250 amps,	172002	Siemens Contactor
1800 amps, 100vdc coil, w/o DB	147703	C-H Contactor
3000 amps, 100vdc coil, w/o DB	147704	C-H Contactor
1370-NC56	123142	56 Amp List
1370-DC56	123146	56 Amp List
1370-RC56	123195	56 Amp List
1370-NC110	123141	110 Amp List
1370-DC110	123145	110 Amp List
1370-RC110	123196	110 Amp List
1370-NC180	123140	180 Amp List
1370-DC180	123144	180 Amp List
1370-RC180	123197	180 Amp List
1370-NC280	123139	280 Amp List
1370-DC280	123143	280 Amp List
1370-RC280	123198	280 Amp List
1379-DC360	101300	360 Amp List
1379-NC360	101291	360 Amp List
1379-RC360	101301	360 Amp List