hubbell industrial controls, inc.

Instructions
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SERVICE AND REPAIR PARTS

NEMA SIZE 3, SINGLE POLE, NORMALLY OPEN, P/N 59331 & 59335 SERIES
NEMA SIZE 4, SINGLE POLE, NORMALLY OPEN, P/N 59341 & 59345 SERIES

INSTALLATION AND ADJUSTMENT

Mount the contactor vertically on a rigid support. Refer to Figure 1 for proper clearances above the top of the contactor, dimension A, and in front of the Arc Shield, dimension B, for arcing clearance, or Arc Shield removal. Check nameplate data for correct equipment. Check that the contactor operating coils (31) is the correct voltage. With all power removed, pivot the Arc Shield upwards and operate the contactor by hand. The contact tips (8) should meet SQUARELY. If they do not, align them by the procedure in the Contact Tip Adjustment. Pivot the Arc Shield back to its proper position. CAUTION: DO NOT OPERATE THE CONTACTOR UNDER LOAD UNLESS THE ARC SHIELD IS PIVOTED TO THE FULLY DOWN POSITION.

CONTACTOR TIP ADJUSTMENT

1. With all power removed, pivot the arc shield upward.
2. Check that the movable contact tip is against the ledge located on the movable contact holder (36) (Fig. 2).
3. Make sure that the stationary contact bracket located on the blowout coil assembly. (Fig. 2).
4. The contact tip surfaces must be aligned both vertically and horizontally (Fig. 2).
5. Pivot the Arc Shield back to its proper position.

CONTACT TIP REPLACEMENT

The contact tips should be replaced when the contacts are worn down to dimensions shown if Figure 2.

1. With all power removed, remove the Arc shield.
2. Remove the movable contact tip by removing the Stainless Steel cap screw and lockwasher located on movable contact holder (36).
3. Remove the stationary contact tip by removing the Stainless Steel cap screw and lockwasher located on stationary contact bracket (30).
4. Install the new stationary contact tip using the Stainless Steel screw and lockwasher
5. Install the new movable contact tip using the Stainless Steel Screw and lockwasher.
6. Manually operate the contactor and check the contact tips for alignment. Align the contact tips to meet squarely.
7. Pivot the Arc Shield back to its proper position.

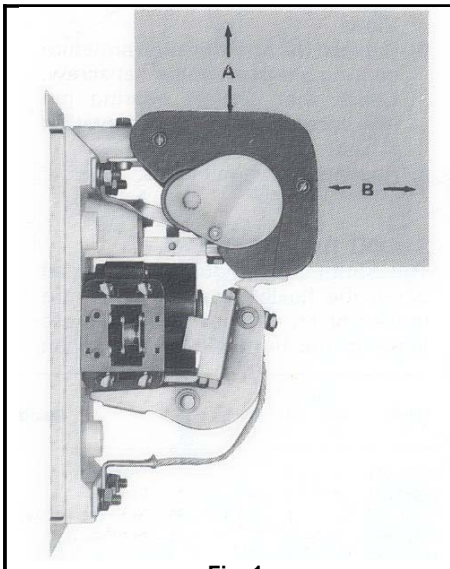


Fig. 1

ELECTRICAL CLEARANCES

Note: Shaded area for arcing clearances to ground, uninsulated enclosure or other control devices.

NEMA SIZES

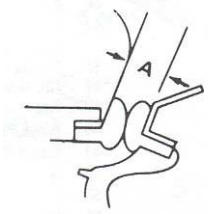
DIM.	1	2
A	4 ¼"	4 ¼"
B	2 ¾"	2 ¾"

WARNING: ALL METAL PARTS OF THE CONTACTOR MAY BE AT LINE VOLTAGE. ALL POWER MUST BE DISCONNECTED FROM THE CONTACTOR BEFORE PERFORMING ANY ADJUSTMENT, MAINTENANCE OR TROUBLE-SHOOTING PROCEDURES.

CAUTION: FAILURE TO CONNECT THE OPERATING COIL TO THE PROPER VOLTAGE MAY RESULT IN IMPROPER CONTACTOR OPERATION OR DAMAGE TO THE COIL.

Fig. 2

SIZE 3, 4 N.O.



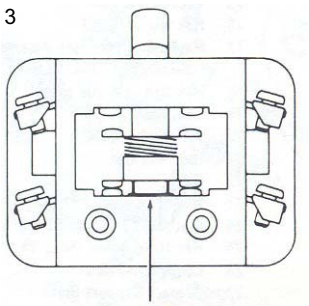
CONTACTOR SIZE		A MATED DIMENSION	
		NEW	REPLACE
3	N.O.	9/16"	5/16"
4	N.O.	9/16"	5/16"

AUXILIARY ELECTRICAL CONTACTS

1. With all power removed, check that auxiliary contact (62) has the proper follow-up. With new auxiliary contacts, the correct operating height is as shown in Fig. 3 when the armature (46) is FULLY Closed.
2. If adjustment is needed bend the lower portion of the Knockers (44) (65).

The Auxiliary Electrical Contacts should be replaced when inspection of the contacts shows that they are Burned or badly Pitted. It is necessary that the entire auxiliary block be replaced as a unit.

Fig. 3



PROPER OPERATED HEIGHT
The snap ring on plunger is even with bottom edge of cover opening.

1. With all power "OFF", loosen terminal screws and remove terminal leads. NOTE POSITION OF LEADS so they can be replaced properly.
2. Remove Contact Assembly by removing slotted screws (60).
3. Install NEW CONTACT ASSEMBLY as shown in the exploded view.
4. Manually operate the contactor and check the moving contacts for proper follow-up in Fig. 3.
5. Replace terminal leads.

COIL REPLACEMENT

1. With all power removed, disconnect the coil leads.
2. Remove the armature bearing pin (45) by loosening the set screw (50).
3. Remove the armature assembly (46).
4. Remove the brass screw (35) on the front of the magnet core and remove non-magnetic spacer (34), core cap (33) and coil (31).
5. Install the new coil using the core cap, non-magnetic spacer and tighten the brass screw. Note that the steel core cap, which is thicker than the non-magnetic phosphor bronze spacer, must be installed against the coil. (See Exploded View).
6. Replace the armature and armature bearing pin and tighten set screw.
7. Check that contact bearing pin (48) is centered and set screw (37) is tight.
8. Reconnect the coil leads.

SHUNT REPLACEMENT

The shunt (36) should be replaced when the flexible braided wires are broken or burned or if the wires are loose in the terminal connectors on either end of the shunt:

1. With all power removed, disconnect the bottom end of the shunt (39) by removing hex head screw, lockwasher, washer and shunt.
2. Disconnect the top end of the shunt by removing hex nut (38), lockwasher and the shunt.
3. Check that contact bearing pin (48) is centered and set screw (37) is tight.
4. Install the new shunt. Connect the top end of the shunt by replacing lockwasher and hex nut.
5. Connect the bottom end of the shunt by replacing the shunt, washer, lockwasher and hex head screw.

CAUTION: SHUNT MUST BE DIRECTLY AGAINST MOVABLE CONTACT (33) OR ARC HORN (34) AT THE TOP END AND DIRECTLY AGAINST THE WIRE TERMINAL AT THE BOTTOM.

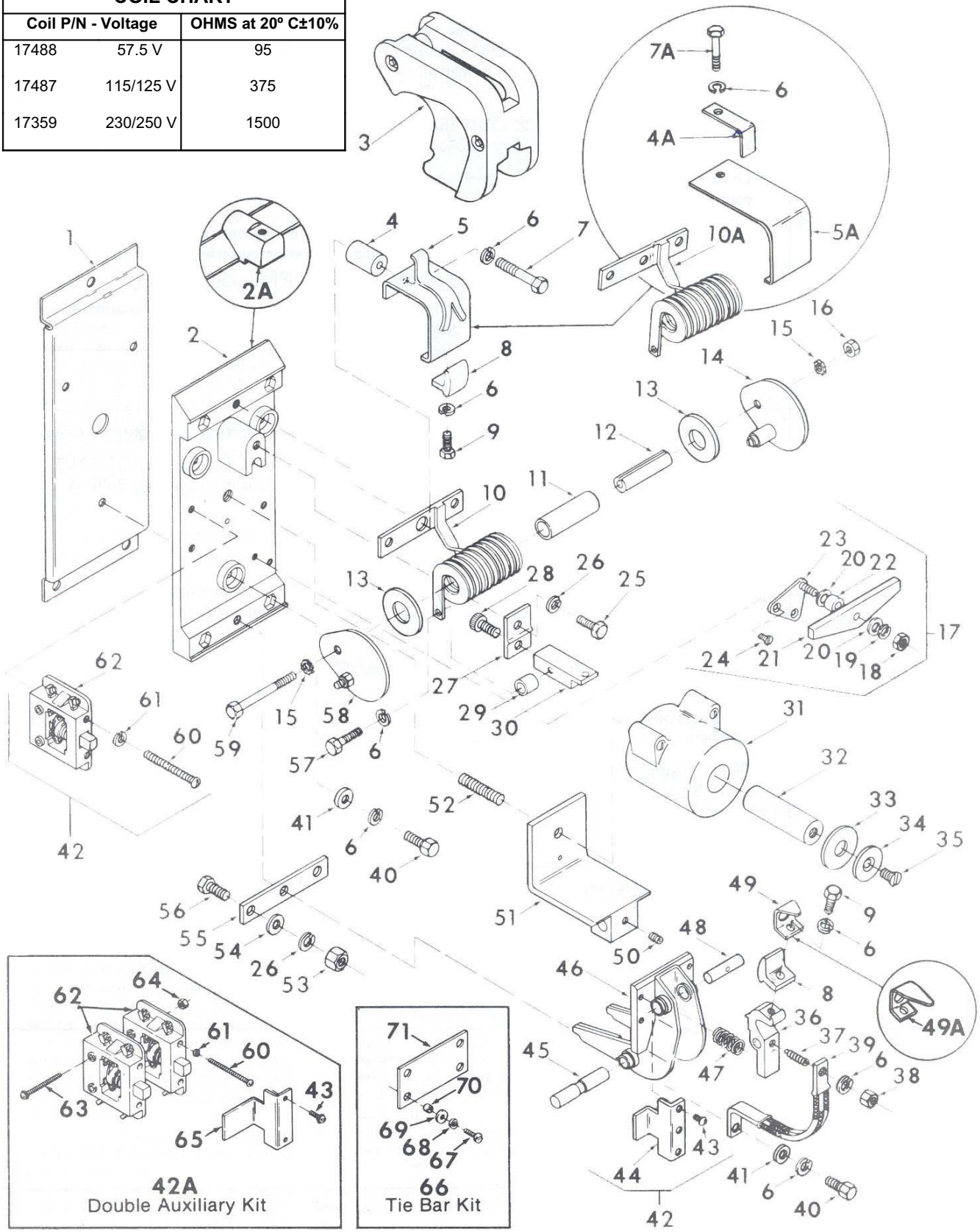
Item No.	Description	Part No.	Qty. Size 3	Qty. Size 4
1	Mounting Pan	68005-001	1	1
2	Base	67995-001	1	1
2A	Base	67995-002	1	1
* 3	Arc Shield Assembly	16973-000	1	
	Arc Shield Assembly	16993-000		1
4	Spacer (Blowout Guard Mounting)	66870-015	1	1
4A	Arc Shield Retainer	59653-100	1	1
5	Blowout Coil Guard Assembly	16922-000	1	
	Blowout Coil Guard Assembly	17370-000		1
5A	Blowout Coil Guard Assembly	68054-001	1	
	Blowout Coil Guard Assembly	68054-002		1
6	Lockwasher (1/4")	47252-038	9	9
7	Hex Head Screw (1/4-20 x 1-3/4")	47246-070	1	1
7A	Hex Head Screw (1/4-20 x 1-1/4")	47246-068	1	1
* 8	Contact Tip (Standard)	16924-000	2	
	Contact Tip (Standard)	17279-000		2
	Contact Tip (Silver)	16924-001	2	
	Contact Tip (Silver)	17279-001		2
9	Hex Head Cap Screw – Stainless (1/4-20 x 5/8")	47779-063	2	2
100	Blowout Coil Assembly (Standard)	67998-001	1	
	Blowout Coil Assembly (Standard)	67998-002		1
	Blowout Coil Assembly (550 Volts)	67998-003	1	
	Blowout Coil Assembly (550 Volts)	67998-004		1
10A	Blowout Coil Assembly (Standard)	67998-005	1	
	Blowout Coil Assembly (Standard)	67998-006		1
	Blowout Coil Assembly (550 Volts)	67998-007	1	
	Blowout Coil Assembly (550 Volts)	67998-008		1
11	Blowout Coil Core Insulator	16962-000	1	
	Blowout Coil Core Insulator	17351-000		1
12	Blowout Coil Core	17348-000	1	
	Blowout Coil Core	17349-000		1
13	Blowout Coil Insulator Washer	16961-000	2	2
14	Flux Plate Assembly (R.H.)	16964-000	1	1
15	Lockwasher (1/4" External Tooth)	47303-008	2	2
16	Hex Nut (1/4-20)	47253-201	1	1
17	Mechanical Interlock Assembly Kit (Consists of items 18 thru 24)	68041-003	1	1
18	Hex Nut (1/4-20)		1	1
19	Lockwasher (1/4")		1	1
20	Flat Washer (1/4")		2	2
21	Interlock Bar		1	1
22	Collar		1	1
23	Mounting Plate Assembly		1	1
24	Flat Head Screw (8-32 x 3/8")		2	2
25	Hex Head Screw (5/16-18 x 1/2")	47246-007	1	1
26	Lockwasher (5/16")	47252-039	5	5
27	Contact Support Bracket	67999-000	1	1
28	Socket Head Screw (5/16-18 x 3/4")	47100-088	1	1
29	Blowout Coil Spacer	16971-000	1	1
30	Stationary Contact Bracket	58665-001	1	1
* 31	Operating Coil (230/250 Volts)	17359-000	1	1
	Operating Coil (115/125 Volts)	17487-000	1	1
	Operating Coil (57.5 Volts)	17488-000	1	1

Item No.	Description	Part No.	Qty. Size 3	Qty. Size 4
32	Stator Core	58664-001	1	1
33	Core Cap	16940-000	1	1
34	Non-Magnetic Spacer – Brass	19683-001	1	1
35	Flat Head Screw – Brass (1/4-2 x 1/2")	47665-108	1	1
36	Movable Contact Holder	16927-000	1	1
37	Set Screw (1/4-20)	47103-022	1	1
38	Hex Nut (1/4-20)	47253-021	1	1
39	Shunt Assembly	68000-001	1	
	Shunt Assembly	68000-002		1
40	Hex Head Screw (1/4-20 x 3/4")	47246-064	4	4
41	Flat Washer (1/4")	47250-502	4	4
42	Auxiliary Contact Assembly Kit (Consists of items 43, 44, 60, 61 and 62)	68040-001	1	1
42A	Double Auxiliary Contact Assembly Kit (Consists of items 43, 60, 61, 62, 63, 64 [two required], and 65)	68040-002	1	1
43	Sems Screw (8-32 x 5/16")		2	2
44	Auxiliary Knocker		1	1
45	Armature Bearing Pin	58843-000	1	1
46	Armature Assembly	17354-000	1	1
47	Contact Spring	16960-000	1	
	Contact Spring	17556-000		1
48	Contact Bearing Pin	16968-000	1	1
*49	Arc Horn	16925-000	1	1
*49A	Arc Horn	68056-000	1	1
50	Hinge Pin Screw (10-24 x 3/8")	47103-005	1	1
51	Stator Assembly	17356-000	1	1
52	Stud (3/8-16 x 1-5/8")	66475-014	1	1
53	Hex Nut (5/16-18)	47253-602	4	4
54	Flat Washer (5/16")	47250-505	4	4
55	Bottom Terminal	67997-002	1	1
56	Hex Head Screw (5/16-18 x 3/4")	47246-079	4	4
57	Hex Head Screw – Stainless (1/4-20 x 1")	47779-066	1	1
58	Flux Plate Assembly (L.H.)	16965-000	1	1
59	Hex Head Screw (1/4-20 x 2-1/2")	47246-073	1	1
60	Screw (8-32 x 2-1/16")		2	2
61	Lockwasher (No. 8)		2	2
*62	Auxiliary Contact Block	67976-001	1	1
63	Sems Screw (6-32 x 1-1/2")		2	2
64	Nut (6-32)		2	2
65	Knocker, Double		1	1
66	Tie Bar Kit (Consists of items 67 thru 71)	59400-004	1	1
67	Round Head Screw (8-32 x 1/2")		4	4
68	Lockwasher (No. 8)		4	4
69	Washer (No. 8)		4	4
70	Spacer		4	4
71	Tie Bar		1	1

* Recommended Parts for Maintenance

Parts 2A, 4A, 7A, 10A and 49A are used with Part Number Series 59335 and 59345

COIL CHART		
Coil P/N - Voltage		OHMS at 20° C±10%
17488	57.5 V	95
17487	115/125 V	375
17359	230/250 V	1500



TROUBLE SHOOTING

TROUBLE	POSSIBLE CAUSE	SOLUTION
Contacts will no operate or operation is sluggish.	1. Improper or defective operating coil.	1. Check coil part number resistance to determine if coil is defective.
	2. Low control circuit voltage.	2. Check that control circuit voltage is a minimum of 80% of rated coil voltage. If it is zero, the problem is elsewhere in the circuit.
	3. Loose connection in control circuit.	3. Check connections and tighten if loose.
	4. Mechanical interference or binding.	4. Check for mechanical interference or bindings: 4a. Check mechanical interlock interference. 4b. Manually close the contact arm, check that the armature hinge pins are not binding. 4c. Manually close the contactor, check that the armature bearings are not binding.
Contacts will not open.	1. Core cap spacer damaged or missing.	1. Inspect core cap spacer.
Contact tips overheating, short contact tip life.	1. Loose connections.	1. Check contact tips and shunt connections and tighten if loose.
	2. Movable or stationary contact tip not properly aligned	2. Align contact tips by the procedure listed in the ADJUSTMENT-Contact Tip Alignment instructions in this Service Bulletin. Check for positive contact pressure from spring (31).
	3. Foreign matter on contact surfaces.	3. Remove foreign matter.
	4. Contact tips worn beyond recommended limits.	4. Check for contact war by the procedure listing in the MAINTENANCE-Contact Tip Replacement instructions in this Service Bulletin.
	5. Contact surfaces severely scored or burned	5. Inspect contact surfaces and dress with a file as required.
	6. Arc shield not properly installed	6. Check that arc shield is pivoted to the fully down position.
	7. Normal load currents below 5% of rated current of contactor.	7. Use a smaller size contactor to improve blowout action.
	8. Excessive current.	8. Check that load currents are within contactor rating.
Operating Coil Overheats.	1. Improper or defective	1. Check coil part number and resistance to determine if coil is defective.
	2. High voltage condition on coil.	2. Check that control circuit voltage does not exceed 110% of rated coil voltage for extended periods.
	3. Loose connection at coil terminals.	3. Check connection and tighten if loose.

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