WESTINGHOUSE TYPE Dn CONTACTORS

Size 3—Frame Nos. 320 (2 poles), 330 (3 poles), 340 (4 poles)
Size 4—Frame Nos. 420 (2 poles), 430 (3 poles), 440 (4 poles)

Instructions

Description—Type Dn Contactors are alternating current contactors which can be supplied either with or without De-ion arc quenchers. The contactors are designed for mounting on steel plate or insulating panels up to 2 inches thick.

When a contactor is mounted on a steel plate, insulation of the shunts is provided by an insulating plate interposed between the contactor and steel plate.

Ratings—The 8 hour open ratings are 100 amperes for the Size 3 Dn Contactor and 150 amperes for the Size 4 Dn Contactor. Insulation is for a maximum of 600 volts.

Unit Assembly—Type Dn Contactors are of unit assembly, with the cross-bar pivoted in bearings integral with the frame, which supports the magnet and stationary contacts. This insures accurate and permanent alignment of parts before leaving the factory.

Interchangeability of parts among Sizes 3 Dn and 4 Dn Contactors is an advantageous feature enabling the user to carry a smaller stock of renewal parts.

Mounting of the contactor to a vertical panel is accomplished by means of three bolts inserted from the front of the frame. These may be held by nuts at the back of the panel or may be threaded into tapped spacers previously secured to the panel. The latter arrangement permits of removing the contactor from the panel for servicing or other attention without necessitating the operator's going to the rear of the panel.

Magnet—The magnet consists of an E-shaped stator and a T-shaped armature. In addition to other advantages, the T-shaped armature is of sufficiently low inertia to accelerate rapidly on opening, affording a quick break of the contacts and consequently less arcing. Movement of the armature is almost vertical, rendering less likely the chance of accidental closing due to shock or impact.

Operating Coil—The coil is designed for continuous duty at 100% of its rating. It will operate the contactor satisfactorily at from 85% to 110% of its rated voltage.

TABLE OF OPERATING COILS

Volts	Cycles	Dn 320 Dn 330 Dn 420 Style No.	Dn 340 Dn 430 Dn 440 Style No.
110	60	897 905	966 743
208	60	944 740	966 744
220	60	874 111	874 107
440	60	919 996	919 995
550	60	943 156	966 745
110	50	966 738	966 747
220	50	966 739	966 748
440	50	966 740	966 749
550	50	966 741	966 750
110	25	874 111	874 107
220	25	919 996	919 995
440	25	966 742	943 146
550	25	895 655	966 751

Contacts—The contact tips are of heavy copper, designed for easy removal and replacement. Movement of the tips on opening and closing produces a slight wiping action which insures a clean contact surface but which is not sufficient to produce undue wear. A "hammer blow" dealt the contacts at the moment of opening increases the speed of separation, thereby decreasing the arcing.

Following the moment at which the contacts meet, the armature and cross-bar have an unusually long overtravel before the magnet seals. This insures that ample contact pressures exist, even when the contacts are worn so far as to require replacement.

The contact springs are unusually long, insuring almost constant pressures as the contacts wear.

The current-carrying contact shunts of flexible copper cable give complete freedom to the cross-bar and have ample capacity to carry the maximum current for which the contactors are rated. The shunts are suspended about the center of rotation of the crossbar, minimizing their flexure and increasing their life to such an extent that their renewal is practically never required.

De-ion Arc Quenchers—The De-ion arc quenchers are of exclusive design functioning to confine, divde and extinguish the arc almost instantaneously, greatly prolonging the contact life. Confinement of the arc is a feature which admits of close spacing of the contactor poles, while at the same time the superior performance of the De-ion principle enables the contactor to maintain a high interrupting capacity.

The arc quenchers are easily removed for inspection of the contacts.

Connections—The contactors may be connected from the front or from the back. See the Renewal Parts List for studs for back-connecting.

Provision for Interlock—Provision is made in two places, on the cross-bar of the contactor for mounting moving contact assemblies of Type L-41 Electrical Interlocks. The stationary members of the interlocks are to be secured to the panel on which the contactor is mounted. For more complete information concerning the Type L-41 Electrical Interlock refer to Instruction Leaflet 2406.

Maintenance

The contactor should be inspected frequently to see that no impairment of electrical or mechanical functioning occurs in service. Accumulations of dust may be removed with a dry cloth or a compressed air jet. Except only when cleaning the magnet sealing surfaces avoid oily cloths, as an oil film quickly attracts dust.

Bearings—Bearing pins are of wear-resistant nitrided alloy steel. They should not be lubricated as oil collects dust, hindering free operation of the contactor.

Magnet—Before shipment, the magnet sealing surfaces are covered with grease to prevent rusting. This should be removed before the contactor is placed in service. The surfaces should be cleaned occasionally with a cloth moistened with a light oil to remove deposits of dirt and prevent rusting.

The magnet armature and the bracket supporting it may be easily removed as a unit by removing the two screws securing the bracket to the cross-bar.

Contacts—The contact tips should not be lubricated, as the slight wear of dry contacts produces a self-cleaning action. Should excessive roughening or burning occur the tips may be dressed with a fine file. Do not use emery cloth, as abrasive granules left imbedded in the contact surfaces may raise the contact resistance and produce a tendency of the contacts to weld.

Chiefly for reasons of mechanical strength it is advisable to replace the contact tips before they have become worn to one-third their original thickness.

Correct contact pressures should be maintained as follows:

Contactor Size No.	Initial Pressure	Final Pressure
3	28 pounds	6 pounds
4	4 pounds	9 pounds

The contact gap, measured at the heels of the contacts in their fully-open position, is 5/8 inch for both the Size 3 Dn and Size 4 Dn contactors.

Operating Coil—To remove the coil, first remove the armature by taking out the two bolts securing its supporting bracket to the cross-bar. Then loosen the bolt which holds the coil to the magnet and separate the rectangular washers until it is possible to lower the coil entirely free of the magnet.

De-ion Arc Quenchers—To remove a De-ion arc quencher, grasp it at its lower end and swing it upward (it will pivot about point P, see Fig. 1), striking its lower corner upward with the palm of the hand to overcome any initial resistance to movement. The arc quencher is then free to be lifted entirely clear of the contactor.

To restore the De-ion arc quencher to its location on the contactor, slide it into the position indicated in Fig. 1, and by striking the upper corner in a direction indicated by the arrow force the arc quencher into the final location shown by the dotted lines.

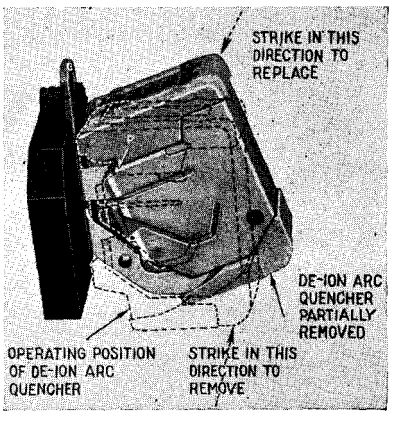
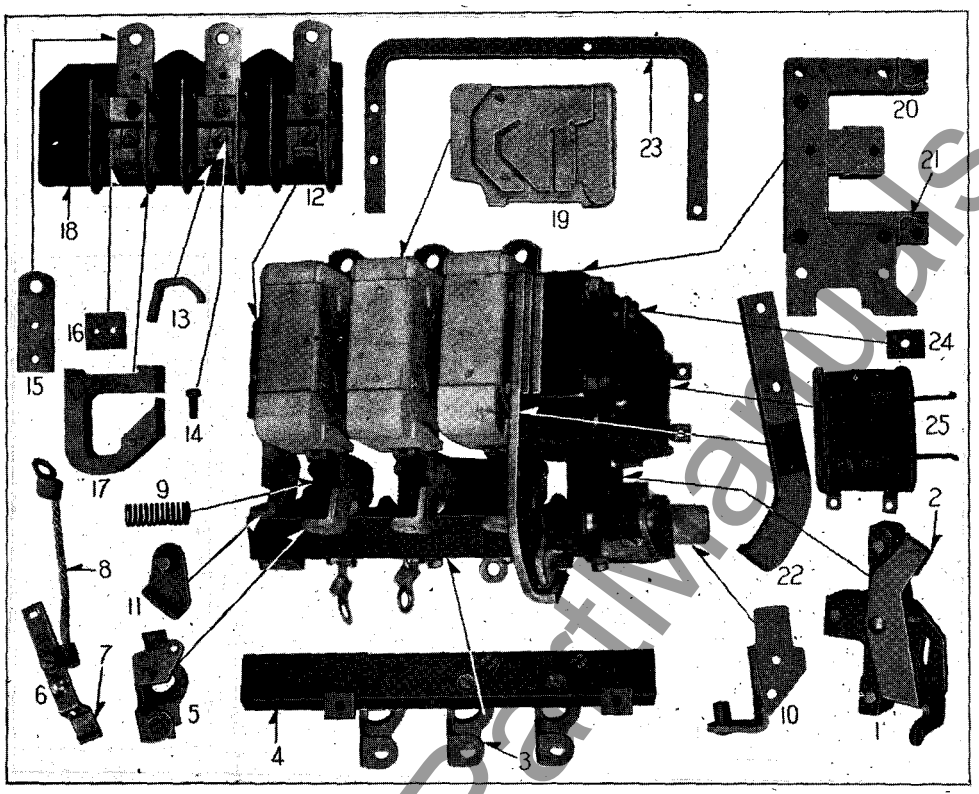


FIG. 1 — DETAIL OF ARC QUENCHER AND ITS SUPPORTING BRACKET, SHOWING EASE OF REMOVAL AND REPLACEMENT.

TYPE Dn CONTACTOR—SIZE 3 AND 4
Frame Numbers 320, 330, 340, 420, 430 and 440.



Frame Size		320	420	330	430	340	440	No. Per Contactor	Contactors in Use	
Ampere Rating		100	150	100	150	100	150		1	5
Contactor Style No.	With Arc Quencher	897 453	897 460,A	897 456	883 370	972 995	972 996		Recommended for Stock	
	Without Arc Quencher	897 454	897 461,A	897 457	897 463	897 459	897 465			
Ref. No.	Description of Part	Style Number of Part								
1	Armature Iron with Mtg. Bracket	884 580	884 580	884 580	884 581	884 581	884 581	1	0	0
2	Non-Magnetic Shim	884 574	884 574	884 574	884 574	884 574	884 574	1	0	1
3	Cross Bar with Mov. Cont. Bracket	884 569	884 569	884 570	884 570	884 571	884 571	1	0	0
4	Cross Bar	884 604	884 604	884 605	884 605	884 606	884 606	1	0	1
5	Moving Contact Bracket	884 594 (2)	884 594 (2)	884 594 (3)	884 594 (3)	884 594 (4)	884 594 (4)	( )	0	0
6	Moving Contact with Shunt	884 567 (2)	884 568 (2)	884 567 (3)	884 568 (3)	884 567 (4)	884 568 (4)	( )	0	1
7	Moving Contact	884 595 (2)	884 595 (2)	884 595 (3)	884 595 (3)	884 595 (4)	884 595 (4)	( )	2	4
8	Shunt	884 613 (2)	884 614 (2)	884 613 (3)	884 614 (3)	884 613 (4)	884 614 (4)	( )	2	4
9	Contact Spring	884 590 (2)	884 591 (2)	884 590 (3)	884 591 (3)	884 590 (4)	884 591 (4)	( )	0	1
10	Bearing Bracket Magnet End	884 575	884 575	884 575	884 575	884 575	884 575	1	0	0
11	Bearing Bracket Left Hand End	884 576	884 576	884 576	884 576	884 576	884 576	1	0	0
12°	Stationary Contact Base Complete	884 564	884 564	884 565	884 565	884 566	884 566	1	0	0
12x	Stationary Contact Base Complete	884 637	884 637	884 638	884 638	884 639	884 639	1	0	0
13	Stationary Contact	884 596 (2)	884 596 (2)	884 596 (3)	884 596 (3)	884 596 (4)	884 596 (4)	( )	2	4
14	Stationary Contact Screw	186 529 (2)	186 529 (2)	186 529 (3)	186 529 (3)	186 529 (4)	186 529 (4)	( )	2	4
15°	Stationary Contact Connector	884 597 (2)	884 597 (2)	884 597 (3)	884 597 (3)	884 597 (4)	884 597 (4)	( )	0	0
†x	Stationary Contact Connector	884 599 (2)	884 599 (2)	884 599 (3)	884 599 (3)	884 599 (4)	884 599 (4)	( )	0	0
16°	Stationary Contact Spacer	884 598 (2)	884 598 (2)	884 598 (3)	884 598 (3)	884 598 (4)	884 598 (4)	( )	0	0
17°	Blowout Coil	884 583 (2)	884 583 (2)	884 583 (3)	884 583 (3)	884 583 (4)	884 583 (4)	( )	0	1
18	Base	884 601	884 601	884 602	884 602	884 603	884 603	1	0	0
19°	Arc Quencher	884 589 (2)	884 589 (2)	884 589 (3)	884 589 (3)	884 589 (4)	884 589 (4)	( )	1	2
†	Stationary Contact Stud	178 553 (2)	178 553 (2)	178 553 (3)	178 553 (3)	178 553 (4)	178 553 (4)	( )	0	1
†	Shunt Stud	361 718 (2)	361 718 (2)	361 718 (3)	361 718 (3)	361 718 (4)	361 718 (4)	( )	0	1
20	Stationary Core	884 560	884 560	884 560	884 562	884 562	884 562	1	0	0
21	Shading Coil	884 558	884 558	884 558	884 559	884 559	884 559	2	0	1
22	Stop	884 551	884 551	884 551	884 551	884 551	884 551	1	0	0
23	Frame	884 547	884 547	884 548	884 548	884 549	884 549	1	0	0
24	Coil Retaining Washer	882 191	882 191	882 191	882 191	882 191	882 191	2	0	0
25	Operating Coil	‡	‡	‡	‡	‡	‡	1	1	1

† Not illustrated.
° Used only on Contactor with Arc Quencher.
x Used only on Contactor without Arc Quencher.
Parts indented are included in the part under which they are indented.
‡ When ordering specify identification number stamped on Coil. See Table for Style Number of Commonly used Coils.
( ) Figures in parentheses indicate the number per contactor.

This list of Renewal Parts is given only as a guide. When continuous operation is a primary consideration, additional insurance against shutdowns is desirable. Under such conditions more renewal parts should be carried, the amount depending upon the severity of the service and the time required to secure renewals.

ORDERING INSTRUCTIONS

Name the part and give its style number. Give the complete nameplate reading. State whether shipment is desired by express, freight or parcel post. Send all orders or correspondence to nearest Sales Office of the Company. Small orders should be combined so as to amount to a value of at least $1.00 net. Where the total of the sale is less than this, the material will be invoiced at $1.00.

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