2 TO 4 POLES • NORMALLY OPEN and CLOSED

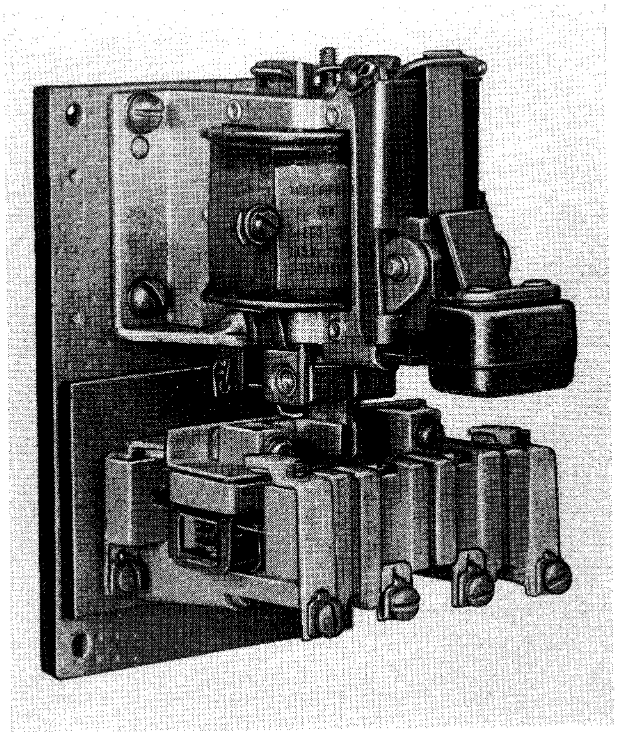


Fig. 1—Type IDN Relay with 2 Normally Open and 2 Normally Closed Contacts

## APPLICATION

The Type IDN-K00 Relay of Fig. 1 is a 4 pole A.C. solenoid operated auxiliary type relay for use in Navy control applications. The device is designed and tested to meet requirements of relay spec, Mil-R-2033; H.I. shock spec, Mil-S-901; and environmental vibration spec Mil-Std #167.

## RATING

The relay is designed for continuous duty. It will carry and interrupt 10 amperes at 440 volt 60 cycles. The coil will operate satisfactorily from 80% to 110% of rated voltage at rated frequency. All parts are insulated for 500 V. A.C.

## CONSTRUCTION

Relay identification numbers, with arrangement of contact assemblies shown, are listed in Fig. 2. Fig. 3 tabulates repair parts data. Details of the assembly are identified in Fig. 4.

The relay assembly consists of a steel mounting plate, a molded plastic base assembled with 4 pole double break stationary contacts, a laminated insulation plate, a molded plastic cross bar assembled with 4 pole moving contacts, a solenoid type armature, an operating magnet and coil, an inertia shock latching mechanism, an armature kick-out and contact pressure attachment, and necessary hardware. All parts are made of corrosion resisting material or are suitably protected against corrosion.

Four .213 diameter holes are provided in the steel plate for mounting the relay to an insulated or steel panel.

For the double break type current carrying contact assemblies, the contact buttons are fine silver. The contact support members are silver plated steel.

Molded plastic items are types MAI-60 or MAI-30 materials as listed in Military specification Mil-M-14. Laminated items are made of glass base plastic material bonded with melamine resin in accordance with Military specification Mil-P-15037.

Wire retainer and screw type terminals provide for front connections.

## OPERATION

1. **NORMAL**—Applying the proper value of an A.C. voltage to the coil (4) of the relay shown in Fig. 4, will cause the armature (24) and cross bar (21) to be lifted vertically. The pole face of the armature (24) will seal against the pole face of the stationary magnet (8). The moving contact assemblies (18) then bridge the stationary contacts (13) to complete the circuit for each normally open pole as shown in Fig. 6.

From the point where the moving contact button touches the normally open stationary contact button, continued upward movement of the armature to seal with the magnet provides 3/16″ over-travel of the saddle (17) attached to the cross bar (21). The over-travel compresses the contact springs (16) to provide sufficient contact pressure between the moving and stationary contacts.

For contacts normally closed, the moving contact assemblies will have separated from the stationary contacts (14) to open the circuit of each normally closed pole as shown in Fig. 8.

Upon removal of voltage from the coil, the kick-out attachment (27) forces the armature (24) and cross bar (21) downward to the full-out position.

The position of the moving contacts to the stationary contacts, for normally open or normally closed contacts, is as shown in Fig. 5 and Fig. 7.

**2. UNDER SHOCK**—The inertia latching device consists of a vertical latch lever (26) pivoted about a bearing at the top of the magnet (8), a latch weight (25) pivoted about a bearing at the front of the magnet (8), and a latch slider (23) which function only during the period that the base or mounting plate (3) is subjected to a shock or impact force. The latch weight (25) is an unbalanced weight system with respect to its bearing pin and is normally biased to the position shown in either Fig. 5 or 6. A shock from any direction applied to the base plate (3) will rotate the latch weight (25). Rotation of this weight in either direction will push the vertical latch lever (26) towards the magnet (8). Any movement of this lever (26) will in turn, push the slider (23) into a slot in the armature (24). As shown by Fig. 9 and 10, the engagement of the slider (23) with the slot in the armature (24) will maintain the armature and contacts in their position noted prior to shock. When the shock has subsided, the latch parts will return to their normal position and the relay is then free to operate normally.

## INSTALLATION—MAINTENANCE—REPLACEMENT OF PARTS

**1. GENERAL**—General instructions for installation and maintenance can be found in Instruction Leaflet 6000-1. It is important that the four mounting bolts through the base holes (1) on Fig. 4 and the four screws (2) which mount the magnet (8) to the base plate (3) be as tight as possible.

Any loose wires or parts that might interfere with the operation of the latch mechanism should be fastened down. There should not be any obstructions within 1 inch of the front of the latch mechanism.

**2. MAGNET AND ARMATURE**—The stationary magnet assembly, consisting of the magnet (8), coil (4), inertia latch mechanism (23,25,26) and kick-out attachment (27) is easily removed. Disconnect the wire leads to the terminals (5) of coil (4). Unscrew the four magnet mounting screws (2). Pull the upper part of the magnet slightly forward to disengage it from the dowel pins in the steel mounting plate (3). Lifting the magnet will then free it from the armature (24).

The armature is removed by unscrewing the two screws (32) attaching the armature (24) to the cross bar (21).

Note: When re-assembling the armature (24), the slots for engagement of the latch slider (23) must be toward the front of the magnet. The latch slider, if removed, must be re-assembled with the beveled edge faced upward. Similarly, the cross bar insulation (9) must be correctly re-installed with the short side towards the back to cover the steel carriage bar attached to the armature.

**3. OPERATING COIL**—After the armature (24) has been removed from the magnet assembly (8), the coil (4) may be taken out by (a) loosening the single screw at the top of the magnet and removing the spring clip which holds the armature guides and coil supports (7) in place, (b) removing a spring snap ring on the bearing pin about which the latch weight (25) rotates, (c) sliding out the weight bearing pin and removing the latch weight (25) from the magnet, (d) pulling the latch slider (23) slightly forward, (e) pulling the armature guides (7) out of the magnet (8) and coil (4), and (f) sliding the coil sideways out of the magnet frame.

**4. KICK-OUT ATTACHMENT**—To remove a damaged spring (28) of the kick-out attachment (27), undo the cotter pin to pull out the bearing bar for release of the lever and spring. To install the new spring, compress the two ends and tongue of the spring under 90° torsion and place within the lever and bracket. Insert a 1/16 in. diameter leader pin, approximately 1½ inches long, through the bracket and lever holes and spring coils. Follow through with the bearing bar. Attach the cotter pin to the bearing bar.

**5. STATIONARY CONTACTS**—With the armature disassembled from the cross bar, the stationary contact molded base (20) may be removed from the steel mounting plate (3) by backing out the three (3) mounting screws (11 and 32). Unscrewing the contact mounting screws (12) permits removal of the stationary contacts (13 and 14).

3 Poles and 4 Poles • NORMALLY OPEN

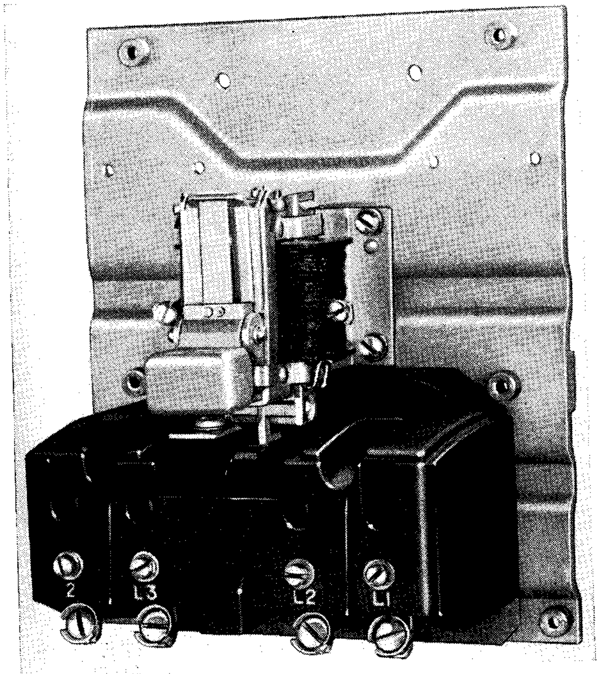



Fig. 1—Type IDN Contactor Mounted on a Large Base Plate

## APPLICATION

The Type IDN Contactors are a-c solenoid operated contactors suitable for a-c motor starting or switching service. They have been specifically designed and are recommended for application on Navy Service A controllers per Mil-C-2212B.

## RATING

This type of contactor is suitable for full voltage starting of motors and has ampere and maximum hp ratings as tabulated in Fig. 2.

| SIZE | 8-HOUR OPEN RATING OF CONTACTOR AMPERES | MAXIMUM HORSEPOWER | | | | | |
|---|---|---|---|---|---|---|---|
| | | 110 V. | 115 V. | 220 V. | 230 V. | 440 V. | 440 V. |
| | | THREE PHASE | SINGLE PHASE | THREE PHASE | SINGLE PHASE | THREE PHASE | SINGLE PHASE |
| 0 | 20 | 2 | 1 | 3 | 2 | 5 | 3 |
| 1 | 30 | 3 | 2 | 7½ | 3 | 10 | 5 |

Fig. 2—Rating Table

The operating coils are suitable for continuous duty at the rated voltage. A coil and magnet will operate a contactor satisfactorily from 80% to 110% of the rated voltage at rated frequency.

The contact parts and coil are insulated from the base and have sufficient creepage and arcing distances for 500 volt enclosed applications.

## CONSTRUCTION

A Type IDN Contactor mounted on a large base plate is shown sectionally by Figs. 5 and 6. It consists essentially of an arc box and stationary contact assembly, a moving cross-bar and contact assembly, an operating magnet and coil, an inertia latching mechanism, and a steel mounting or base plate. The arc box is made from an inorganic material which will not carbonize from arcing or shatter when subjected to a high impact shock. All parts are protected against corrosion. The moving and stationary contact buttons are fine silver; the interlock moving contact is stainless steel with silver contact buttons.

The 3 Pole Contactor has 3 main pole contacts. The normally open interlock contact which may be used in a coil holding circuit is the pole at the extreme left-hand side of the arc box. The moving contact (16) of the interlock is made of lighter material than that used in the main moving contact (14) and should not be used in any circuit except a control circuit.

The 4 Pole Contactor has 4 main poles and all moving contacts are the same. It is similar to the contactor shown by Fig. 5 except the interlock assembly is replaced by a main pole contact.

These contactors are for front connection only. The steel mounting bases are suitable for mounting on either steel or insulating supports. Figs. 1-5-6 show the contactor mounted on a large size base plate which has sufficient space to accommodate and mount two overload relays and a terminal block. The contactor is also available mounted on a small size base plate. The small base plate is just large enough to mount the contactor and provide three mounting holes.

## OPERATION

1. **NORMAL**—When an a-c voltage that is within the operating limits is applied to the coil (4), the armature (10) and moving contact assembly are lifted vertically upward until the armature seals itself against the upper surface of the magnet (7). The moving contacts (14 and 16) bridge the stationary contacts (21) and complete the circuit for each pole. The contact saddle (15) which is attached to the insulating cross-bar (19) moves up 9/64 inch for

the main and 17/64 inch for the interlock contact from the point where the respective contacts touch the stationary contacts. This extra movement provides overtravel and permits the contact spring (17) to exert and maintain sufficient contact pressure between the moving and stationary contacts for the current that is to be carried. Figs. 7 and 8 show the relative position of the moving contact and armature for both open and closed contactor operation.

**2. UNDER SHOCK**—The inertia latching device consists of a vertical latch lever (8) pivoted about a bearing at the top of the magnet (7), a latch weight (9) pivoted about a bearing at the front of the magnet (7), and a latch slider (11) which function only during the period that the base or mounting plate (3) is subjected to a shock or impact force. The latch weight (9) is an unbalanced weight system with respect to its bearing pin and is normally spring biased to the position shown in either Fig. 7 or 8. A shock from any direction applied to the base plate (3) will tend to rotate the latch weight (9). Rotation of this weight in either direction will push the vertical latch lever (8) towards the magnet (7). Any movement of this lever (8) will in turn push the slider (11) into a slot in the armature (10). As shown by Figs. 9 and 10, the engagement of the slider (11) with the slot in the armature (10) will either hold the armature in the open or closed position, depending upon its position prior to the shock. When the shock has subsided, the latch parts will return to their normal position and the contactor is then free to operate normally.

## INSTALLATION—MAINTENANCE—REPLACEMENT OF PARTS

**1. GENERAL**—General instructions and suggestions for installation and maintenance can be found in Instruction Leaflet 6000-1. A periodic inspection should be made to insure that all screws and bolts are tight. For proper operation of this contactor on shock, it is very important that the six mounting bolts through the base holes (1) on Figs. 5 and 6 and the four screws (2) which mount the magnet (7) to the base plate (3) be as tight as possible.

When the contactor is mounted on a small base plate, it has holes for three mounting bolts; all of the mounting bolts should be tightened firmly.

Any loose wires or parts that might interfere with the operation of the latch mechanism should be fastened down. There should be no obstructions within 1 inch of the front of the latch mechanism.

To facilitate repair and replacement of parts, it is suggested that the contactor be removed from the enclosure.

**2. MOVING CONTACT ASSEMBLY**—The cross-bar (19) which carries the moving contact assemblies may, for inspection and repair, be removed from the armature by taking out the two mounting screws (18). The moving contacts (14 or 16) may be removed from the saddle (15) by depressing them until the contact spring (17) is solid and then turning them 90°.

CAUTION—WHEN THE MOVING CROSS-BAR AND CONTACT ASSEMBLY IS REPLACED, THE INTERLOCK CONTACT (16) MUST BE ON THE LEFT-HAND SIDE AS SHOWN BY FIG. 5.

**3. STATIONARY CONTACTS**—After the moving contact and cross-bar assembly has been removed, the stationary contacts (21) may be removed by taking out the mounting screws (22).

**4. MAGNET ASSEMBLY**—After the cross-bar assembly has been removed, the complete magnet assembly which consists of the magnet (7), coil (4), armature (10), and inertia latch mechanism (8, 9, 11) can be removed by disconnecting the coil leads and removing the four mounting screws (2). After the mounting screws (2) have been removed, the magnet assembly should be pulled slightly forward to disengage it from the dowel pins in the base; an upward movement will then remove it from the arc box. The armature (10) can now be slid out of the magnet assembly.

CAUTION—WHEN REPLACING THE ARMATURE (10), THE NOTCHES FOR LATCH SLIDER (11) MUST BE TOWARD THE FRONT OF THE MAGNET AS SHOWN BY FIGS. 6 TO 10.

The latch mechanism is ineffective on shock if the armature is not re-assembled in this manner. The armature (10) should be kept clean and should move freely in the guides (6). There should be a total clearance of .010 inch to .035 inch between the armature and guides in both directions. The clearance in one direction is shown by Fig. 7.

**5. OPERATING COIL**—After the armature (10) has been removed, the coil (4) may be removed by (a) loosening the single screw at the top of the magnet and removing the spring clip which holds the armature guides (6), (b) removing a spring snap ring on the bearing pin about which the latch weight (9) rotates, (c) sliding out the weight bearing pin and removing the latch weight (9) from the magnet, (d) pulling the armature guides (6) out of the magnet, and (e) sliding the coil sideways out of the magnet frame.

CAUTION—IF THE LATCH SLIDER (11) IS REMOVED, IT SHOULD ALWAYS BE REPLACED WITH THE BEVELED EDGE UPWARD AS SHOWN BY FIG. 8.

**6. CONTACT GAP—OVERTRAVEL—PRESSURE**—The contact operation may be observed by looking through the inspection holes (13) in the front of the arc box. The operator should make certain that the power is off and should move the armature and cross-bar by hand.

The total travel of the armature (10) and cross-bar (19) from the fully open position to the sealed position should be approximately 35/64 inch. This travel may be checked by scribing a mark on the back of the arc box at the open and closed positions of the armature. The distance between the scribed lines may then be measured.

The main contact gap, overtravel, and pressure are shown on Figs. 5, 7 and 8. The gap may be measured by marking the arc box at the armature open position and at the position where the moving contacts touch the stationary contacts. The contact touch position may be observed through the inspection hole in the arc box. The overtravel may be measured similarly by marking the contact touch and fully closed armature position. All main contacts (14) should touch the stationary contacts (21) at approximately the same time. The contact pressures may be measured by using a spring scale and a light string looped over each end of the moving contact (14).

The interlock contact should have approximately 3/64 inch overtravel when the armature is latched in the closed position as shown by Fig. 10. To check this overtravel dimension, the arc box should be marked at the touch position and at the latched position. The armature may be placed in the latched position by raising the armature to the sealed position, rotating the latch weight (9) downward and holding it in that position, and then releasing the armature. The latch slider (11) will then engage the armature as shown on Fig. 10. This overtravel is important as the interlock must usually provide a circuit to the coil so that the armature may be pulled back to the sealed position after the contactor has been subjected to a shock.

The normal interlock overtravel and contact pressures are shown on Fig. 5.

**7. CONTACT MAINTENANCE**—Both the stationary (21) and moving (14) main contacts should be replaced when the overtravel decreases to 1/32 inch. If either the stationary or moving silver contact buttons wear or burn down to 1/32 inch from the brass or stainless steel contact support, the contact should immediately be replaced. Brass and stainless steel are extremely poor contact materials and may cause overheating or contact support welding. In general, burned and blackened silver contacts do not require replacement or dressing as the discolored surface is usually still a good conductor. The moving contacts (14) should operate freely up and down in the contact saddle (15). Any sticking of these parts may prevent the armature from sealing, may cause contact overheating, and will eventually prevent the moving contact from properly bridging the stationary contacts.

If excessive contact burning and pitting takes place, the overtravel and pressures should be checked as previously described.

**8. INERTIA LATCH**—For proper operation, it is very important that all parts of the latching device move freely; lubrication is undesirable and should not be necessary. However, if the finish does become damaged, corrosion may be prevented by applying a very light film of oil and wiping dry. Under no circumstances should the latch parts be painted. When the latch mechanism is in the normal position as shown by Figs. 7 and 8, the armature should slide up and down freely in the guides. There should be a clearance of from 0 to 1/64 inch maximum between the end of the latch slider (11) and the armature (10) when the armature is pushed tight against the front edges of the armature guides (6). The four semi-circular cams on the latch-weight (9) should all be in contact with the vertical latch lever (8). If the armature does not slide freely and the other latch parts are not aligned as described, the entire magnet and latch assembly should be replaced by a new one.

**9. NOISY MAGNET OPERATION**—A-c magnets normally produce a low magnetic hum. If the contactor becomes excessively noisy, an immediate examination may prevent serious damage. The armature should first be checked for proper sealing. Any obstruction between the upper end of the armature and the sealing surface of the magnet or dirt in the armature guides may prevent the armature from properly sealing; this condition would cause the magnet to chatter and may in time overheat the operating coil. The coil voltage should also be checked to see if it is within the limits of the rated value. If these operations do not correct the trouble, the complete magnet assembly should be taken off the base and the operating coil removed. The machined sealing surface at the top of the magnet should be cleaned with a solvent to remove any dirt or sludge that may have collected. The shading coil (5) which is a single copper loop embedded in the sealing surface of the magnet should be carefully inspected for breaks or interference with the proper sealing of the armature. If the shading coil is damaged, the complete magnet should be replaced. Before reassembling the magnet and armature, the sealing surface of the magnet should be coated with a light film of oil and then wiped dry. This treatment will help to prevent rust. The armature (10) is manufactured so that the iron laminations can slide longitudinally; this helps to seat the armature against the magnet. If the armature rivets are so tight that the punchings cannot be moved over each other, the armature should be replaced. Sometimes a light tap on the top of the magnet when the coil is energized will help to seat the armature and reduce the noise.

## WEIGHT OF CONTACTOR AND SPARE PARTS

| DESCRIPTION | NO. PER SET | WEIGHT | |
|---|---|---|---|
| Complete Contactor—Figs. 5-6 | | | |
| On Large Base Plate—Without Coil | . . | 5 lbs.—2½ oz. | |
| On Large Base Plate—With Coil | . . | 5 lbs.—8 oz. | |
| On Small Base Plate—Without Coil | . . | 4 lbs.—6½ oz. | |
| On Small Base Plate—With Coil | . . | 4 lbs.—12 oz. | |
| Spare Parts—Figs. 5-6 | | | |
| Type IDN-030 & 130 | | | |
| Coil (4) | 1 | 5½ oz. | |
| Stationary Contact (21) | 8 | 3½ oz. | |
| Main Moving Contact (14) | 3 | 1 oz. | 10⅛ oz. |
| Auxiliary Moving Contact (16) | 1 | ⅛ oz. | |
| Contact Spring (17) | 4 | . . . . . | |
| Type IDN-040 & 140 | | | |
| Coil (4) | 1 | 5½ oz. | |
| Stationary Contact (21) | 8 | 3½ oz. | 10⅜ oz. |
| Main Moving Contact (14) | 4 | 1⅜ oz. | |
| Contact Spring (17) | 4 | . . . . . | |

Fig. 3—Weight Table

## CIRCUIT DIAGRAM SYMBOL

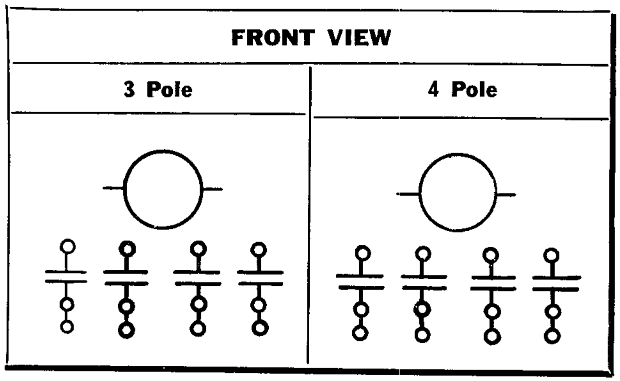



Fig. 4—Wiring Diagram Symbol

**6. MOVING CONTACTS**—The moving contacts cross bar assembly can be withdrawn from the molded base after the front stationary contacts (13) have been removed.

To remove the normally closed moving contact, tilt the contact 45° and withdraw from the saddle. Re-assemble as shown in Figs. 7 and 8.

Normally open moving contacts may be withdrawn from the saddle after the spring retainer and spring have been tilted and removed. Re-assemble as shown in Figs. 5 and 6.

**7. CONTACT GAP — OVERTRAVEL — PRESSURE** — The contact operation may be observed by looking from the side and top of the relay. For close observation the operator should make certain that the power is off and should move the moving contact assembly by hand.

The total travel of the armature (24) and cross bar (21) should be approximately 5/8 inch. This travel may be checked by holding a ruler or scale against the side of the stationary contact assembly and observing the distance between the open and closed contact saddle (17) positions.

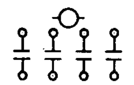
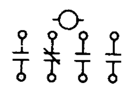
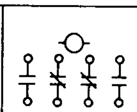
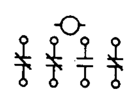
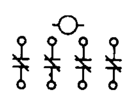
The contact gap, overtravel, and pressure for normally open and normally closed contact assemblies are shown on Figs. 5 to 8. The contact gap may be measured at the end or extreme side contact assembly. It is the distance between the moving contact and stationary contact buttons. The overtravel may be measured by observing the change in position of the contact saddle (17) from the contact button touch position to the fully closed armature position. All moving contacts (18) should touch the stationary contacts (13-14) at approximately the same time. The contact pressures may be measured by using a spring scale and a light string looped over each end of the moving contact (18).

The normally open contacts should have approximately 5/64 inch overtravel when the armature (24) is latched in the closed position as shown by Fig. 10. The latched closed position is acquired by raising the armature to the sealed position, engage the latch slider with armature slot, release the armature until held by slider as shown in Fig. 10.

**8. CONTACT MAINTENANCE**—Both the stationary (13-14) and moving (18) contacts should be replaced when the overtravel decreases to approximately 1/8 inch. If the silver contact buttons wear down to 1/32 inch thick, the contacts should be replaced. In general, burned and darkened silver contacts do not require replacement as the discolored surface is still a good conductor. The moving contacts (18) should always operate freely up and down in the contact saddle (17). Excessive friction between these parts may prevent the armature from sealing with the magnet.

**9. INERTIA LATCH**—For proper operation, it is important that all parts of the latching device move freely; lubrication is undesirable and should not be necessary. Under no circumstances should the latch parts be painted. When the latch mechanism is in the normal position, the armature should slide up and down freely in the guides. There should be a clearance of from 0 to 1/64 inch maximum between the end of the latch slider (23) and the armature (24) when the armature is pushed tight against the front edges of the armature guides (7) as shown in Fig. 5. The semi-circular cams on the latch weight (25) should be approximately in contact with the vertical latch lever (26). If the armature does not slide freely and the other latch parts are not aligned as described, the entire magnet and latch assembly should be replaced by a new one.

**10. NOISY MAGNET OPERATION**—A-c magnets normally produce a low magnetic hum. If the relay becomes excessively noisy, the armature should be checked for proper sealing. Any obstruction between the upper end of the armature and the sealing surface of the magnet; or, dirt in the armature guides, may prevent the armature from properly sealing. This condition may cause the magnet to chatter and may in time overheat the operating coil. The coil voltage should also be checked to see if it is within the limits of the rated value. If these operations do not correct the trouble, the complete magnet assembly should be taken off the base and the operating coil should be removed. The machined sealing surfaces at the top of the magnet and end of the armature should be cleaned with a solvent. The shading coil (6), which is a single copper loop embedded in the sealing surface of the magnet, should be inspected for breaks or interference with the proper sealing of the armature. If the shading coil is damaged, the complete magnet should be replaced. Before re-assembling the magnet and armature, the sealing surface of the magnet should always be coated with a light film of oil and then wiped dry. This treatment will help to prevent rust. The armature (24) is manufactured so that the iron laminations can slide slightly longitudinally; this helps to seat the armature against the magnet. If the armature rivets are so tight that the punchings cannot be moved over each other, the armature should be replaced. Sometimes a light tap on the top of the magnet, when the coil is energized, will help to seat the armature and reduce the noise.

| IDENTIFICATION OF WESTINGHOUSE IDN-K00 RELAYS | | | |
|---|---|---|---|
| WESTINGHOUSE STYLE NO. | COIL VOLTS (60CY) | UNIT WT. LBS. | DIAGRAM SYMBOL |
| IDN-K00 RELAY WITH COIL (4 MAKE CONTACTS) | | | |
| 134A516G01<br>134A516G02<br>134A516G03 | 440<br>220<br>115 | 3½<br>3½<br>3½ |  |
| IDN-K00 RELAY WITH COIL (3 MAKE & 1 BREAK CONTACTS) | | | |
| 134A516G04<br>134A516G05<br>134A516G06 | 440<br>220<br>115 | 3½<br>3½<br>3½ |  |
| IDN-K00 RELAY WITH COIL (2 MAKE & 2 BREAK CONTACTS) | | | |
| 134A516G07<br>134A516G08<br>134A516G09 | 440<br>220<br>115 | 3½<br>3½<br>3½ |  |
| IDN-K00 RELAY WITH COIL (1 MAKE & 3 BREAK CONTACTS) | | | |
| 134A516G10<br>134A516G11<br>134A516G12 | 440<br>220<br>115 | 3½<br>3½<br>3½ |  |
| IDN-K00 RELAY WITH COIL (4 BREAK) | | | |
| 134A516G13<br>134A516G14<br>134A516G15 | 440<br>220<br>115 | 3½<br>3½<br>3½ |  |

NOTE: THE CONTACTS OF STYLE NOS. 134A516G10 TO 134A516G15 WILL OPEN MOMENTARILY WHEN SUBJECTED TO HI-SHOCK.

Fig. 2

| REPAIR PARTS LIST FOR WESTINGHOUSE IDN-K00 RELAY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| PC. NO. | CONTACT ARRANGEMENT | | | | | REPAIR PART | WESTINGHOUSE MFG. INFO. | |
| | 4-MAKE | 3-MAKE 1-BREAK | 2-MAKE 2-BREAK | 1-MAKE 3-BREAK | 4-BREAK | | STYLE NO. | UNIT WT. OZ. |
| | | | | | | IDN-K00 RELAY | | |
| 1 | 4 | 4 | 4 | 4 | 4 | MOVING CONTACT | 314C477G01 | 3/16 |
| 2 | 8 | 6 | 4 | 2 | | STAT. CONTACT (MAKE) | 09B4690G03 | 1/4 |
| 3 | | 2 | 4 | 6 | 8 | STAT. CONTACT (BREAK) | 91B0840G05 | 1/8 |
| 4 | 4 | 4 | 4 | 4 | 4 | CONTACT SPRING | 1072861 | 1/16 |
| 5 | 1 | 1 | 1 | 1 | 1 | TORSION SPRING "(KICK-OUT)" | 314C477H03 | 1/16 |
| 6 | 1 | 1 | 1 | 1 | 1 | COIL (SELECT ONE AS REQ'D) | | |
| A | | | | | | 440 VOLTS 60CY | 1303512 | 5-3/4 |
| B | | | | | | 220 VOLTS 60CY | 1303513 | 5-3/4 |
| C | | | | | | 115 VOLTS 60CY | 1303514 | 5-3/4 |

Fig. 3

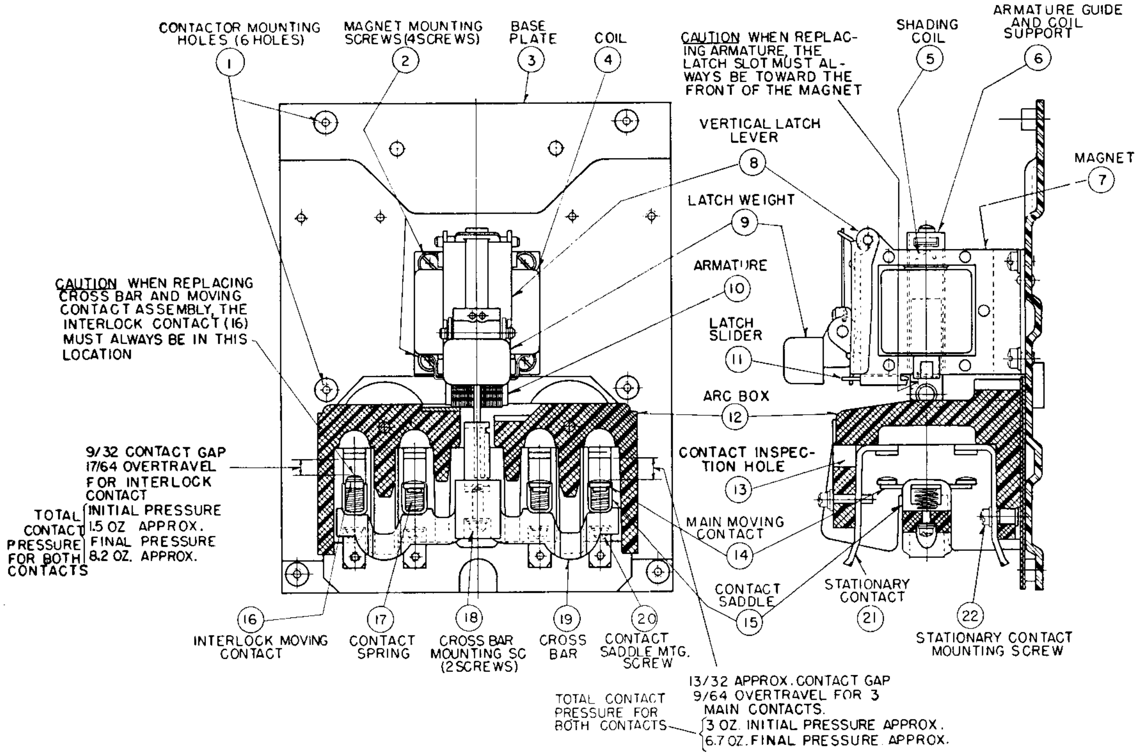



FIG. 5 SECTIONAL VIEW OF TYPE IDN CONTACTOR    FIG. 6 SIDE VIEW

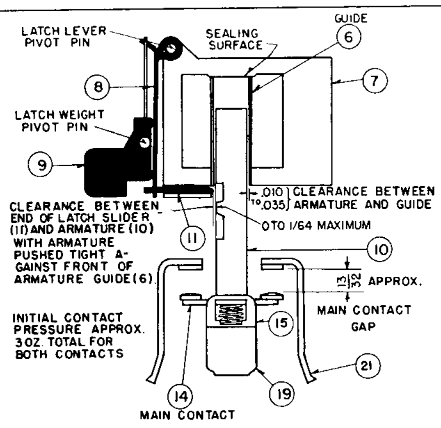
<table>
<tr><th>OPERATION</th><th>CONTACTOR OPEN</th><th>CONTACTOR CLOSED</th></tr>
<tr><td>NORMAL</td><td>


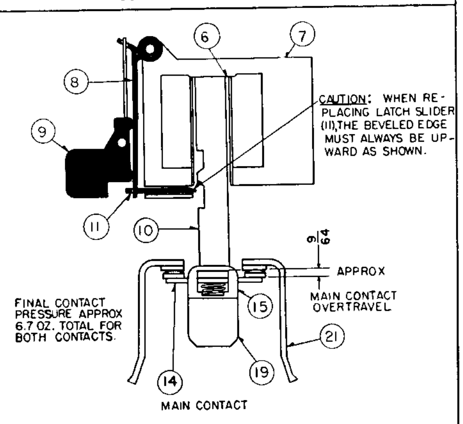
FIG. 7
</td><td>


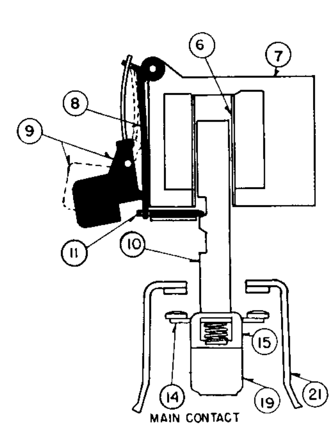
FIG. 8
</td></tr>
<tr><td>UNDER SHOCK</td><td>


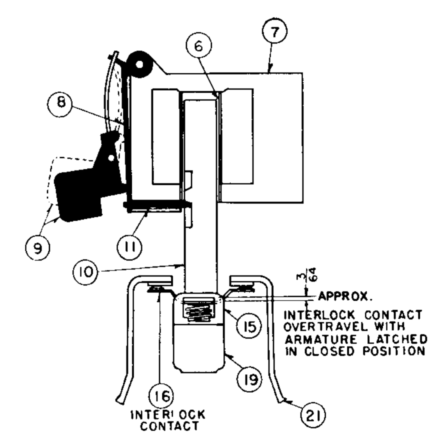
FIG 9
</td><td>


FIG 10
</td></tr>
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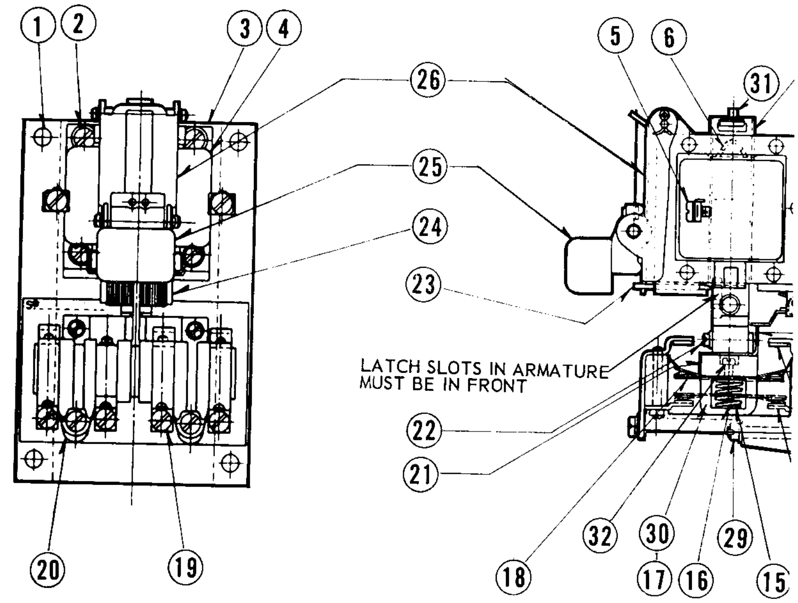
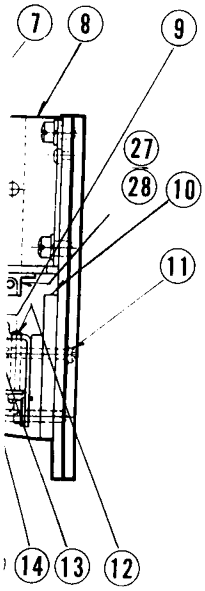



**FIG. 4 - FRONT & SIDE VIEW OF TYPE IDN-KOO RELA**

| Item | Description |
|---|---|
| 1 | .213 Dia. Mtg. Holes (4 Holes) |
| 2 | .190-32 Magnet Mtg. Screws (4 Req'd.) |
| 3 | Steel Mounting Plate |
| 4 | Operating Coil |
| 5 | Coil Terminal |
| 6 | Magnet Shading Coil |
| 7 | Armature Guide and Coil Support |
| 8 | Magnet |
| 9 | Cross Bar Insulation |
| 10 | Base Insulation Plate |
| 11 | .136-32 x 3/4 Base Rear Mtg. Screw (1 Req'd.) |
| 12 | .164-32 Stationary Contact Mtg. Screw (8 Req'd.) |
| 13 | Stationary Contact (Normally Open) |
| 14 | Stationary Contact (Normally Closed) |
| 15 | Spring Holder (for N/O Contacts Only) |
| 16 | Contact Spring |

| Item | Descriptic |
|---|---|
| 17 | Contact Saddle (N/O Cor |
| 18 | Moving Contact Assembl |
| 19 | .136-32 Wire Connection |
| 20 | Molded Plastic Base |
| 21 | Molded Plastic Cross Ba |
| 22 | .136-32 Cross Bar Mtg. S |
| 23 | Latch Slider |
| 24 | Armature |
| 25 | Latch Weight |
| 26 | Vertical Latch Lever |
| 27 | Kick-Out Attachment |
| 28 | Kick-Out Spring |
| 29 | .164-32 Base Front Mtg. |
| 30 | Contact Saddle (N/C Con |
| 31 | Guide Retainer Spring Cl |
| 32 | .136-32 Contact Saddle M |




Y

n

itact)

Terminal (8 Req'd.)

r

crew (2 Req'd.)

Screw (2 Req'd.)

tact)

ip.

tg. Screw (4 Req'd.)

# OPERATION

## NORMAL DUTY

**COIL DE-ENERGIZED, ARMATURE OPEN**

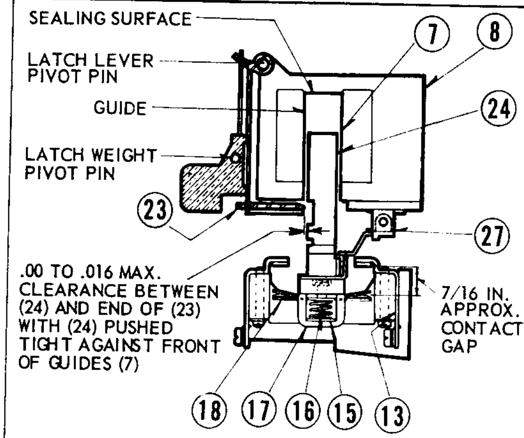



FIG. 5 - NORMALLY OPEN CONTACT

**COIL ENERGIZED, ARMATURE SEALED**

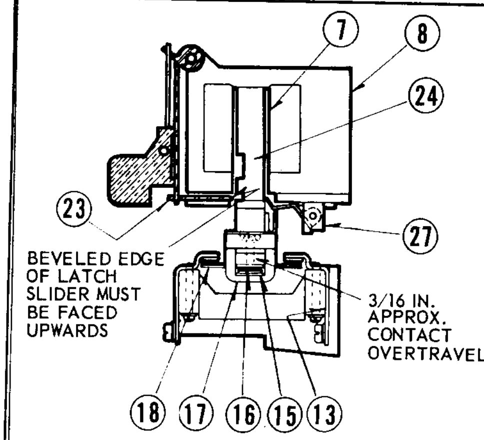



FIG. 6 - NORMALLY OPEN CONTACT

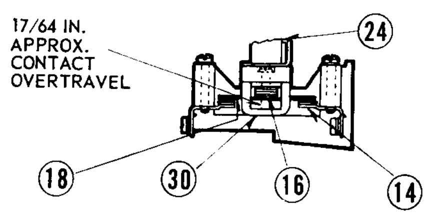



FIG. 7 - NORMALLY CLOSED CONTACT

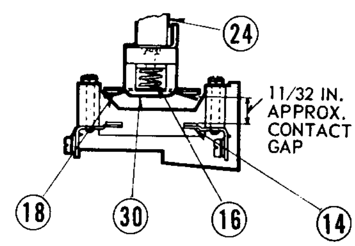



FIG. 8 - NORMALLY CLOSED CONTACT

## UNDER H. I. SHOCK

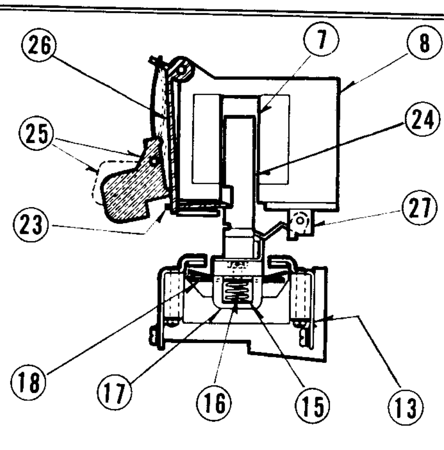



FIG. 9 - NORMALLY OPEN CONTACT

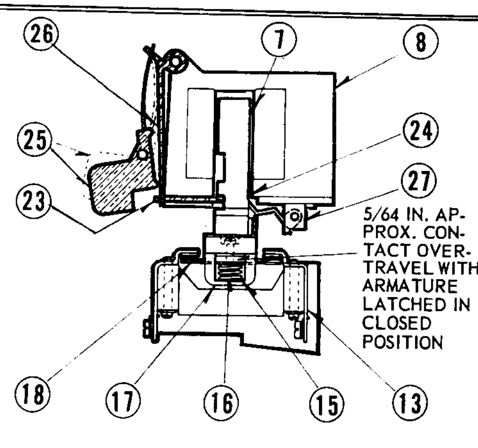



FIG. 10 - NORMALLY OPEN CONTACT