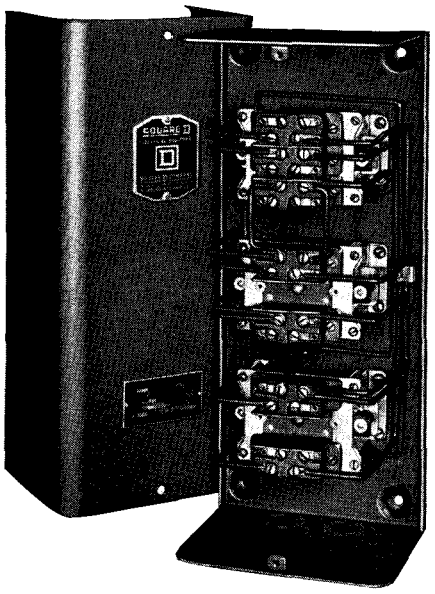
SUPERSEDES:
Class 9039
Price Sheet, Page 1
February, 1951

AC AND DC AUTOMATIC ELECTRIC ALTERNATORS FOR DUPLEX PUMP INSTALLATIONS



Type PG-1 Alternator

Class 9039 alternators are used with two separately enclosed motor starters to alternate the operation of the pump motors of a duplex pump installation. Duplex installations are made to provide a stand-by pump if one set of equipment fails, and to provide additional capacity, if the load becomes too great for a single pump. Pump wear is equalized by automatically alternating the first pump to start on each successive operation.

General Purpose Enclosure **NEMA Type 1**		Drip-Tight Enclosure **NEMA Type 2**		Water-Tight Enclosure **NEMA Type 4**		Dust-Tight Enclosure **NEMA Type 12**		For Hazardous Locations Class I, Group D **NEMA Type 7**		**Open Type**	
Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
AC POWER SUPPLY — 110-600 VOLTS, 25-60 CYCLES AC											
PG-1	**$112.**	PH-1	**$168.**	PW-1	**$212.**	PD-1	**$180.**	PR-1	**$316.**	PO-1	**$110.**
DC POWER SUPPLY — 32-230 VOLTS DC											
PG-2	**$118.**	PH-2	**$174.**	PW-2	**$218.**	PD-2	**$186.**	PR-2	**$322.**	PO-2	**$116.**

APPLICATION DATA

OPERATION

1. The two pilot devices (A and B) must be double pole. Pilot device A is set to close at a lower liquid level than B. (See wiring diagram, Page 2).
2. The alternator operates first one pump and then the other on each successive closing of pilot device A.
3. After pilot device A closes, if the liquid continues to rise and reaches the level at which pilot device B is set, both pumps will operate.
4. With one pump running, if its disconnect switch is opened, an overload relay trips, or the starter is de-energized for any reason, the other pump will automatically be started and continue to operate whenever required, until the de-energized starter is able to function.

CONSTRUCTION

1. The alternator consists of three interwired Class 8501 (or Class 7001 if dc) type P switching relays mounted in an enclosure.
2. External connections are made directly to terminal screws on the snap switch mechanisms.
3. NEMA 1 enclosures have 4 knockouts (2 at the top and 2 at the bottom) each for ½" or ¾" conduit.

RATINGS

Volts	AC Pilot Duty Amperes		DC Pilot Duty Amperes
	Normal	Inrush	
110	15	40	0.5
220	10	20	0.2
440	6	10	....
600	5	8	0.02

The ac pilot duty rating is based on a 35% power factor.
The dc pilot duty rating is for inductive loads such as coils and solenoids.

SERVICE PARTS

MAGNET COIL (one per relay)
Refer to "Class 9998 Section" under Class 8501 Type P for ac or Class 7001 Type P for dc.

SNAP SWITCHES
Class 9007 Type AO-2.

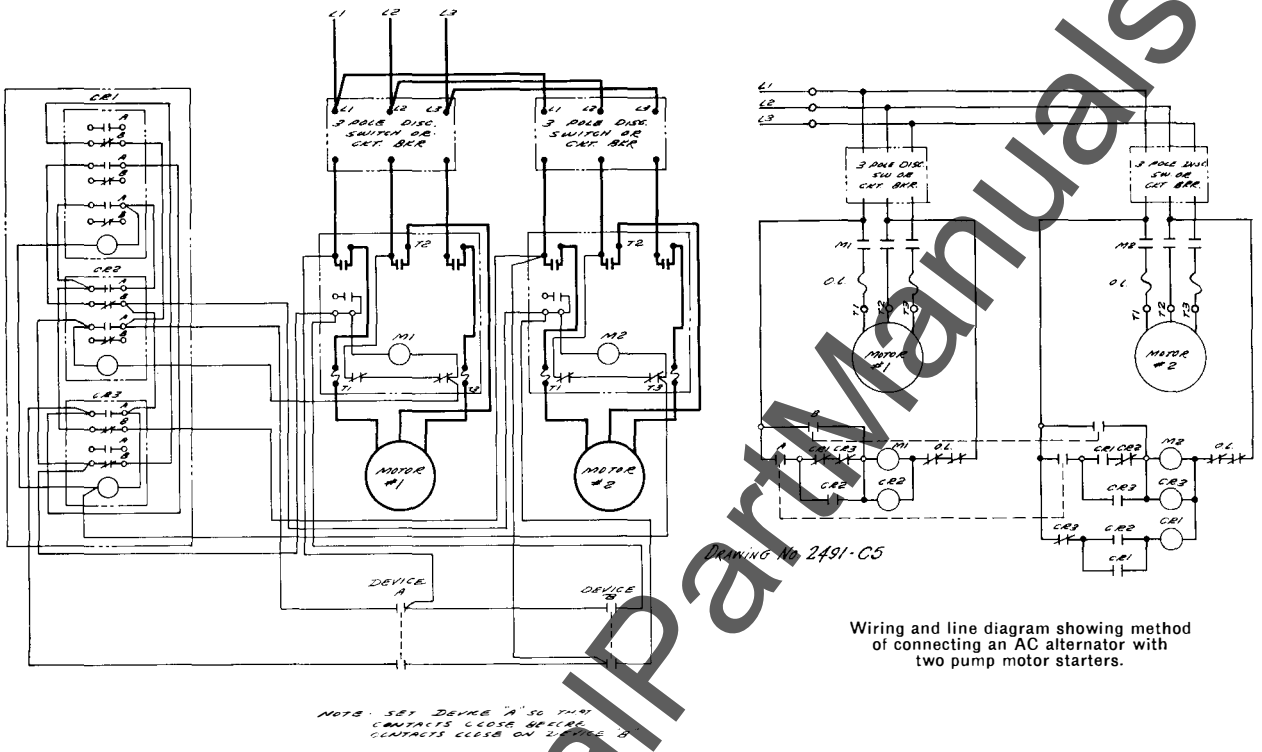
COMPLETE RELAY (total of 3 in alternator)
Class 8501 Type P for ac.
Class 7001 Type P for dc.

ORDERING INFORMATION REQUIRED
1—Class and type number. 2—Voltage. 3—Frequency if ac.

SUPERSEDES:
Class 9039
Descriptive Sheet, Pages 1 and 2
January, 1952

AC AND DC AUTOMATIC ELECTRIC ALTERNATORS FOR DUPLEX PUMP INSTALLATIONS

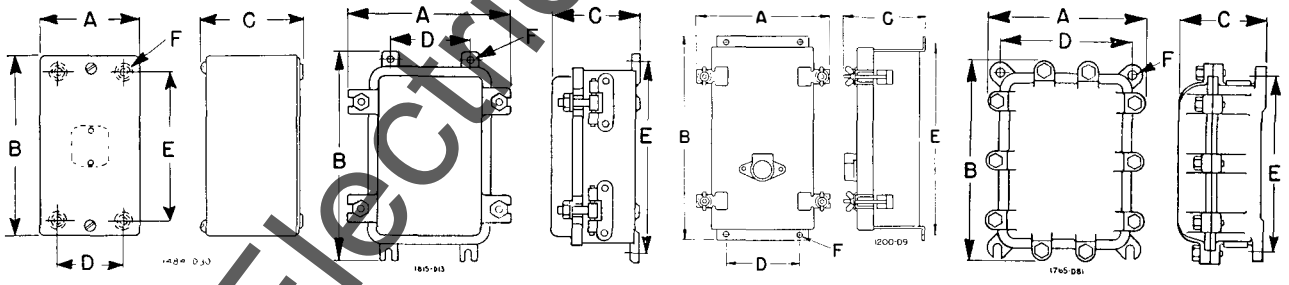
WIRING DIAGRAM



Wiring and line diagram showing method of connecting an AC alternator with two pump motor starters.

NOTE: SEE DEVICE "A" SO THAT CONTACTS CLOSE BEFORE CONTACTS CLOSE ON DEVICE "B"

APPROXIMATE DIMENSIONS



NEMA 1 Enclosure
Types PG-1 and PG-2

NEMA 4 Enclosure
Types PW-1 and PW-2

NEMA 12 Enclosure
Types PD-1 and PD-2

NEMA 7 Enclosure
Types PR-1 and PR-2

Dimension Symbol	Type			
	PG-1 and PG-2 NEMA 1 Enclosure	PW-1 and PW-2 NEMA 4 Enclosure	PD-1 and PD-2 NEMA 12 Enclosure	PR-1 and PR-2 NEMA 7 Enclosure
A	6 3/16	11 3/4	12 7/8	12 3/8
B	14 7/8	16 3/4	16 7/8	17 3/4
C	5	6 3/16	7 1/8	8 9/32
D	4 1/2	7	8 1/2	10 1/2
E	12 7/8	15 3/4	16	15 1/2
F	9/32	7/16	3/8	1/2

All dimensions are in inches.

SUPERSEDES:
Class 9039
Price Sheet, Page 1
February, 1951

AC AND DC AUTOMATIC ELECTRIC ALTERNATORS FOR DUPLEX PUMP INSTALLATIONS

Type PG-1 Alternator

Class 9039 alternators are used with two separately enclosed motor starters to alternate the operation of the pump motors of a duplex pump installation. Duplex installations are made to provide a standby pump if one set of equipment fails, and to provide additional capacity, if the load becomes too great for a single pump. Pump wear is equalized by automatically alternating the first pump to start on each successive operation.

General Purpose Enclosure **NEMA Type 1**		Drip-Tight Enclosure **NEMA Type 2**		Water-Tight Enclosure **NEMA Type 4**		Dust-Tight Enclosure **NEMA Type 12**		For Hazardous Locations Class I, Group D **NEMA Type 7**		**Open Type**	
Type	Price	Type	Price	Type	Price	Type	Price	Type	Price	Type	Price
AC POWER SUPPLY — 110-600 VOLTS, 25-60 CYCLES AC											
PG-1	**$112.**	PH-1	**$168.**	PW-1	**$212.**	PD-1	**$180.**	PR-1	**$316.**	PO-1	**$110.**
DC POWER SUPPLY — 32-230 VOLTS DC											
PG-2	**$118.**	PH-2	**$174.**	PW-2	**$218.**	PD-2	**$186.**	PR-2	**$322.**	PO-2	**$116.**

APPLICATION DATA

OPERATION

1. The two pilot devices (A and B) must be double pole. Pilot device A is set to close at a lower liquid level than B. (See wiring diagram, Page 2).
2. The alternator operates first one pump and then the other on each successive closing of pilot device A.
3. After pilot device A closes, if the liquid continues to rise and reaches the level at which pilot device B is set, both pumps will operate.
4. With one pump running, if its disconnect switch is opened, an overload relay trips, or the starter is de-energized for any reason, the other pump will automatically be started and continue to operate whenever required, until the de-energized starter is able to function.

CONSTRUCTION

1. The alternator consists of three interwired Class 8501 (or Class 7001 if dc) type P switching relays mounted in an enclosure.
2. External connections are made directly to terminal screws on the snap switch mechanisms.
3. NEMA 1 enclosures have 4 knockouts (2 at the top and 2 at the bottom) each for ½" or ¾" conduit.

RATINGS

Volts	AC Pilot Duty Amperes		DC Pilot Duty Amperes
	Normal	Inrush	
110	15	40	0.5
220	10	20	0.2
440	6	10	....
600	5	8	0.02

The ac pilot duty rating is based on a 35% power factor.
The dc pilot duty rating is for inductive loads such as coils and solenoids.

SERVICE PARTS

MAGNET COIL (one per relay)
Refer to "Class 9998 Section" under Class 8501 Type P for ac or Class 7001 Type P for dc.

SNAP SWITCHES
Class 9007 Type AO-2.

COMPLETE RELAY (total of 3 in alternator)
Class 8501 Type P for ac.
Class 7001 Type P for dc.

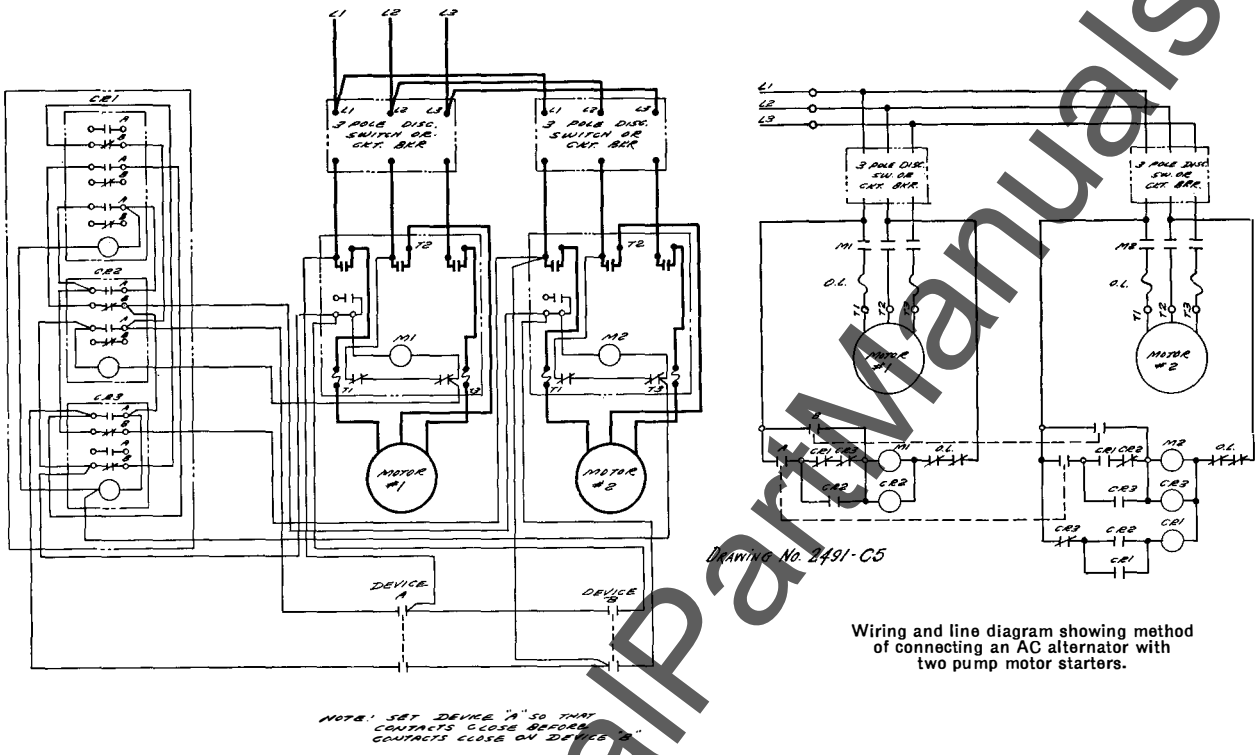
ORDERING INFORMATION REQUIRED

1—Class and type number. 2—Voltage. 3—Frequency if ac.

SUPERSEDES:
Class 9039
Descriptive Sheet, Pages 1 and 2
January, 1952

AC AND DC AUTOMATIC ELECTRIC ALTERNATORS FOR DUPLEX PUMP INSTALLATIONS

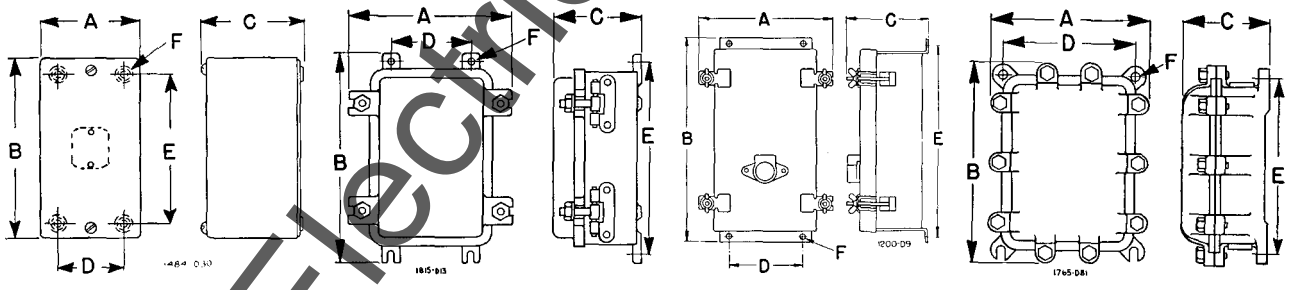
WIRING DIAGRAM



NOTE: SET DEVICE "A" SO THAT CONTACTS CLOSE BEFORE CONTACTS CLOSE ON DEVICE "B"

Wiring and line diagram showing method of connecting an AC alternator with two pump motor starters.

APPROXIMATE DIMENSIONS



NEMA 1 Enclosure
Types PG-1 and PG-2

NEMA 4 Enclosure
Types PW-1 and PW-2

NEMA 12 Enclosure
Types PD-1 and PD-2

NEMA 7 Enclosure
Types PR-1 and PR-2

Dimension Symbol	Type			
	PG-1 and PG-2 NEMA 1 Enclosure	PW-1 and PW-2 NEMA 4 Enclosure	PD-1 and PD-2 NEMA 12 Enclosure	PR-1 and PR-2 NEMA 7 Enclosure
A	6 3/16	11 3/4	12 7/8	12 3/4
B	14 7/8	16 3/4	16 1/8	17 3/8
C	5	6 3/16	7 1/8	8 9/32
D	4 1/2	7	8 1/2	10 1/2
E	12 7/8	15 3/4	16	15 1/2
F	9/32	7/16	3/8	1/2

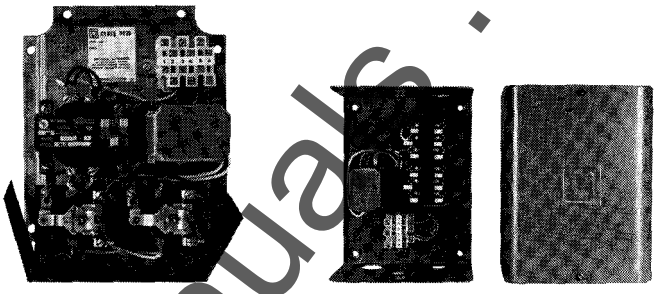
All dimensions are in inches.

ELECTRICAL ALTERNATORS
TYPE H

CLASS 9039

ALTERNATES THE OPERATION OF TWO PUMPS IN DUPLEX PUMP INSTALLATIONS

Class 9039 Alternators are used to alternate the operation of the pump motors of a duplex pump installation. Duplex installations are made to provide a standby pump if one set of equipment fails, and to provide additional capacity if the load becomes too great for a single pump. Pump wear is equalized by automatically alternating the first pump to start on each successive operation.



Type HO-2 Type HG-21

General Duty Applications	Class 9039 Electrical Alternator	AC Power Supply 60 Hz.	Open Type Type HO-2	Open Type Type HO-2 Price	General Purpose NEMA Type 1 Type HG-21	General Purpose NEMA Type 1 Type HG-21 Price
Power Circuit Rating 2 Pole Ratings 120/240 VAC, 1 HP Single Phase Each Motor, 2 HP Total		120/240 V.	HO-1	**$306.**	HG-1	**$332.**
Control Circuit Rating 208 or 240/480 or 600 V., 690 VA 60 Hz.		208 V. 240/480 V. 600 V.	HO-2	**356.**	HG-2	**382.**
Duplex — 2 Power Sources Power Circuit 2 Pole Ratings 120/240 VAC, 1 HP Single Phase Each Motor, 2 HP Total		120/240 V.	HO-21	**306.**	HG-21	**332.**
Duplex — 2 Power Supplies Control Circuit 208 or 240/480 or 600 V., 690 VA 60 Hz.		208 V. 240/480 V. 600 V.	HO-22	**364.**	HG-22	**390.**

◐Specify desired voltage.

APPLICATION DATA

OPERATION

1. **Pilot devices (A and B):**
   Types HO-1, HG-1 (horsepower rated); HO-2, HG-2 — Device A and device B may be single pole.

   Types HO-22 and HG-22 — Device A may be single pole; device B must be double pole.

   Types HO-21, HG-21 (horsepower rated alternator with dual power supplies) — Both devices A and B must be double pole.

   For horsepower rated alternators, both devices, A and B, must be rated for 120 VAC, 3 AMP, 60 HZ or greater. For pilot duty alternators, device A must be minimum rated for standard pilot duty 120 VAC; device B must be minimum rated for standard pilot duty at line voltage.

   Device A contacts must be set to close before device B contacts close.

2. The alternator operates first one pump and then the other on each successive closing of pilot device A.

3. If under peak demand situations, pilot device B contacts close after pilot device A closes, both pumps will operate.

CONSTRUCTION

1. The horsepower rated alternators consist of two definite purpose contactors wired to a stepping relay. Pilot duty rated alternators consist of two control relays wired to the same stepping relay.

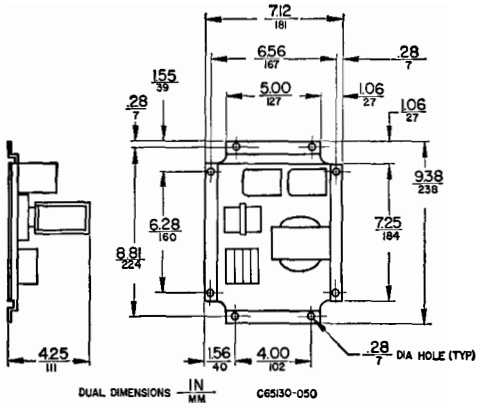
2. On horsepower rated alternators installation connections are made to a terminal board and also directly to terminal screws on the definite purpose contactors. On pilot duty rated alternators all installation connections are made to the terminal board.

3. NEMA type 1 enclosures have three combination knockouts (½″, ¾″ and 1″ conduit) on each end.

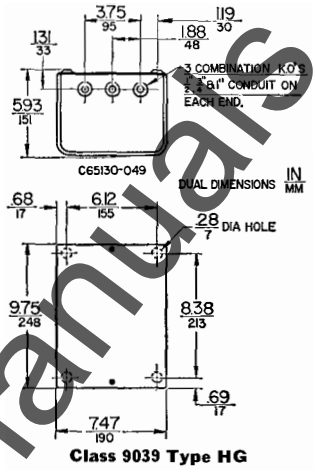
ELECTRICAL ALTERNATOR
TYPE H

JANUARY, 1982
Supersedes Page
Dated January, 1981

APPROXIMATE DIMENSIONS

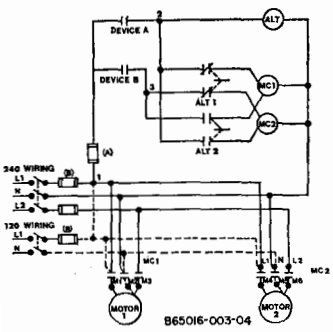


Class 9039 Type HO



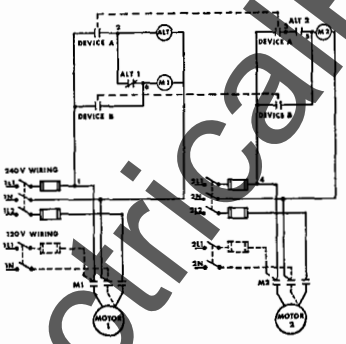
Class 9039 Type HG

WIRING DIAGRAMS



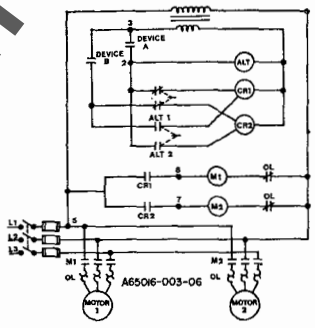
NOTES:
1. Set device A so that its contacts close before device B contacts close.
2. Alt 1 & alt 2 contacts close alternately on successive de-energizations of alt.
3. Control circuit protection (A) required if line overcurrent protection (B) exceeds 45 amps.

Types HG-1 and HO-1



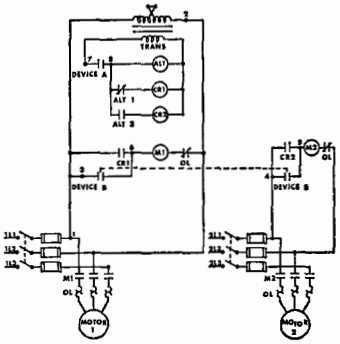
NOTES:
1. Set device A so that its contacts close before device B contacts close.
2. Alt 1 and alt 2 contacts close alternately on successive de-energizations of alt.

Types HG-21 and HO-21



NOTES:
1. Set device A so that its contacts close before device B contacts close.
2. Alt 1 and alt 2 contacts close alternately on successive de-energizations of alt.

Types HG-2 and HO-2



NOTES:
1. Set device A so that its contacts close before device B contacts close.
2. Alt 1 and alt 2 contacts close alternately on successive de-energizations of alt.

Types HG-22 and HO-22

No change since previous issue

TP