



Westinghouse

DESCRIPTION • MAINTENANCE

INSTRUCTIONS

I. L.
11-800-1

A-C GENERAL PURPOSE STARTERS

Class 11-800 & 11-890 for Star-Delta Motors

DESCRIPTION

If a 3-phase motor, designed for running with its 3-phases connected in **DELTA**, is started with its windings connected in **STAR**, we are, in effect, starting the motor on reduced voltage without the use of starting resistors, reactors, or auto-transformer.

The motor starting characteristics, as compared with full voltage delta-connected starting, are approximately as follows:

- 58% of line voltage across each motor phase.
- 33 $\frac{1}{3}$ % of starting torque.
- 33 $\frac{1}{3}$ % of current from the line.

Classes 11-800 and 11-890 starters include the necessary main contactors and auxiliary devices, which, upon operation of the start button, or master switch, will automatically complete the following sequence:

1. Connects the motor windings in "Star" and applies line voltage for starting.
2. After an accelerating time (adjustable to suit the drive) reconnects the motor winding in delta across line voltage.

Reconnection of the motor windings from star-to-delta, may take place either with, or without, momentarily interrupting the power to the motor. That is, the transition may be open (Class 11-800) or closed (Class 11-890). Closed transition requires additional devices and a transition resistor, but it has the advantage of going through the transfer without interruption of motor driving torque.

Figure 1 shows main switching and motor connections for both open and closed transition. Figures 2 and 3 are typical elementary diagrams for control circuits required to produce the sequence shown in Figure 1. Interposing relays and other non-essentials have been omitted from the diagrams.

MAINTENANCE

Refer to wiring diagram and to reference leaflets listed below.

1. **Caution:** Open (and lock open) disconnect devices to de-energize all circuits before working on control.
2. Keep equipment clean and uncluttered.
3. Replace badly worn contacts and maintain proper spring pressures.
4. Do not oil contactor and relay parts.
5. Use file when dressing contacts. Do not use emery. Keep metal particles out of insulation.
6. Keep connections tight. This applies particularly to overload relay heaters and resistors.

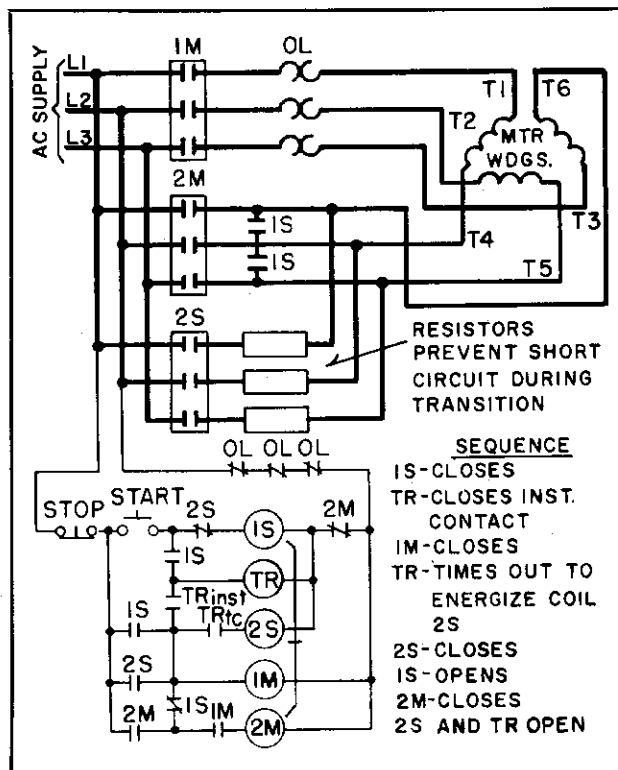
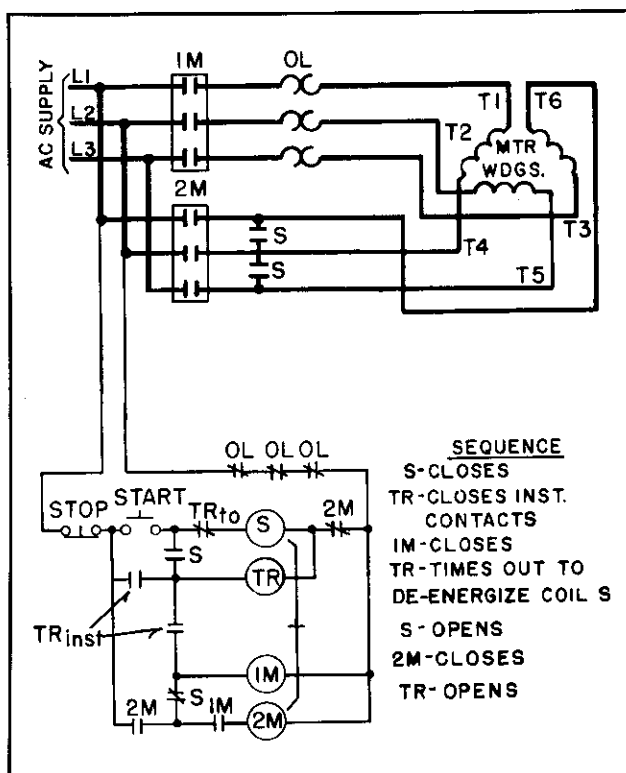
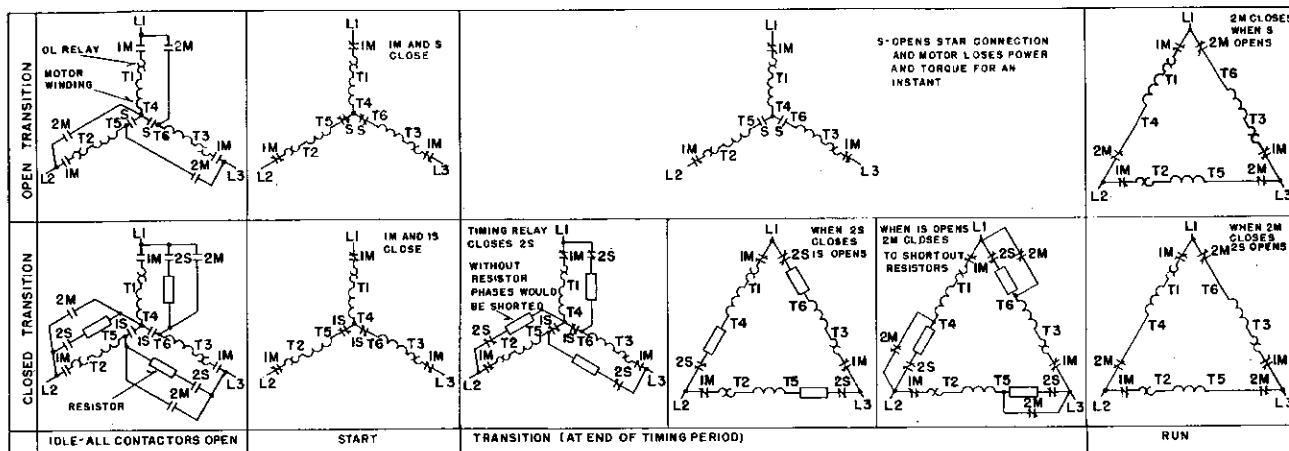
Some Possible Sources of Trouble

1. Power supply failure, open disconnect, blown fuses.
2. Overload relay tripped.
3. Loose connections, open circuit, sneak circuit.
4. Poor contacts due to dirt, wear, mechanical condition, or low spring pressure.
5. Operating coil failure.

Reference Leaflets

- | | |
|---------------|--------------------------------------|
| I.L. 4330 | —Storage & Handling |
| I.L. 4332 | —Unpacking |
| I.L. 7000-2 | —Installation |
| I.L. 7000-1 | —Inspection and Maintenance |
| I.L. 11192 | —Type NH Auxiliary Relays |
| I.L. 10234 | —Type AM Timing Relay |
| I.L. 15827-15 | —Type AMB Timing Relay |
| I.L. 12633 | —Type MW31, MW41, Overload Relays |
| I.L. 15827-10 | —Type MW-52, Overload Relay |
| I.L. 4230 | —Type MG, Overload Relay |
| I.L. 12479 | —NEMA Size 1 Contactor |
| I.L. 12481 | —NEMA Size 2 Contactor |
| I.S. 10711 | —NEMA Size 3, 4 Contactors |
| I.L. 15825-5 | —NEMA Size 5 Contactor |
| I.L. 15825-6 | —NEMA Size 6 Contactor |
| I.L. 15825-7 | —NEMA Size 7-8 Contactors |
| I.L. 15825-8 | —NEMA Size 7-8 DC Oper. Cont'rs |
| I.L. 11956 | —Aux. Contacts for Size 1, 2 Cont'rs |
| I.L. 10708 | —Aux. Contacts for Size 3, 4 Cont'rs |
| I.L. 15829-2 | —Aux. Contacts for Size 5, 6 Cont'rs |
| I.L. 15829-1 | —Aux. Contacts for Size 7, 8 Cont'rs |

A-C GENERAL PURPOSE STARTERS



WESTINGHOUSE ELECTRIC CORPORATION
BUFFALO PLANT • MOTOR AND CONTROL DIVISION • BUFFALO 5, N.Y.

printed in U.S.A.