CLASS 22-529 TRAVEL DRIVE

SYSTEMS TESTS AND ADJUSTMENTS

A. INITIAL ADJUSTMENTS

1. Power OFF
   a. Open main disconnect 1SW.
   b. Master switch in OFF or all pendant buttons released.
   c. Hand operate relays and contactors to check freedom of movement.
   d. Check all connections for tightness.

2. Power ON
   a. Close main disconnect 1SW.
   b. Push RESET button. Master relay MR and main contactor M pick up and seal in.
   c. The drive is now in a standby condition.

B. RUNNING THE DRIVE

When starting the drive, make sure there is no load on the hook, and that the drive is well clear of any travel limits. Move the control to first point forward, and observe that the brake (if used) releases, and that the drive moves at slow speed in the forward direction. If the drive moves in the reverse direction, interchange main line motor leads T1 and T3.

For multi-motor drives, each motor should be checked independently for direction of rotation.

C. STOPPING THE DRIVE

Moving the control to the OFF position will de-energize the directional contactor, and de-energize the motor.

If there is no brake, the drive will coast to a stop.

If there is a time delayed brake, the drive will coast until the timer times out, and the brake sets.

If there is an instantaneous brake, the brake will set, and brake the drive to a stop as soon as the control is moved to the OFF position.

If instantaneous brakes are not used, the drive can be stopped by plugging. If the drive is moving forward, the control can be moved to reverse until the motion is nearly stopped, and then moved to OFF. This will make a much faster stop than coasting to a halt.

D. LIMIT SWITCHES (IF USED)

Run the drive into the forward limit switch at low speed. Drive will de-energize. Return the control to OFF. The drive will not be energized if the control is moved in the forward direction, but will power out of the overtravel if the control is moved in the reverse direction. To be sure of enough mechanical clearance, continue to run the drive into the forward limit switch at ever increasing speeds to maximum speed. This will show the maximum distance required to stop the motion safely.

The reverse limit switch should be set up in the same manner as the forward limit switch.

DESCRIPTION OF OPERATION

The travel drive controller is a Class 22-529 magnetic, reversing, multi-point controller.

The control description that follows is written with respect to the schematic diagram located in the drawing section of this manual.

A. STANDBY CONDITIONS

To place the equipment in a standby condition, ready for normal operation, a certain sequence of operations must be performed, beginning with the assumption that the equipment is completely de-energized with the main disconnect open, and the master switch or pendant buttons in the OFF position.

Close the main disconnect 1SW to apply 460 volt, 3 phase, 60 hertz excitation to control transformer 1T. Depress RESET button to energize master relay MR, main contactor M and the control transformer. Upon closing of the directional contactors, the travel drive motor is energized.

M and MR will remain picked up throughout normal operation of the drive, but will drop out to shut down the control in the event of low voltage or overload of any motor.

The drive may now be considered to be in standby condition, ready for operation.

B. RUNNING THE DRIVE

Moving the control to first point forward energizes the forward directional contactor, and the drive starts with maximum secondary resistance in the circuit. As control is moved further forward, secondary contactors are energized to cut out part of the secondary resistance, and thus increase the speed of the drive. When last point forward is reached, secondary resistance is reduced to the minimum, and drive is running at maximum speed. Timers are provided to be sure that acceleration time is allowed between speed points.

Reverse operation is the same as forward operation, except that the reverse directional contactor is energized, and the drive runs in the reverse direction.

C. STOPPING THE DRIVE

Drives with no brakes are normally stopped by plugging the drive. If the drive is running forward, the control can be moved to reverse to decelerate the drive until it is nearly stopped, then the control is moved to OFF.

If the control is moved immediately to OFF, the drive will coast to a stop.

Drives with time delayed brakes may be plugged as described above. If the control is moved immediately to OFF, the drive will coast until the timer has timed out, and the brake sets.

Drives with instantaneous brakes will brake to a stop if the control is moved to OFF. Wear on the brake can be saved by slowing the drive down at first point before going to OFF.

D. LIMIT SWITCHES (IF USED)

If a limit switch is tripped, return the master switch to OFF, or release pendant button. The drive can be energized only in direction to back out of the overtravel.

E. PROTECTIVE FEATURES

The motors are protected from overload by the overload relays. If an overload occurs, contacts of these relays open, de-energizing the drive.

In the event of undervoltage, master relay MR is de-energized, and must be reset before the drive can be restarted.

Control circuits are protected from overloads by fuses.

TROUBLESHOOTING

A. MAIN CIRCUITS

If motor amperes are appreciably different from normal, check motor and resistor circuit wiring for completeness and agreement with schematic diagram.

B. CONTROL CIRCUITS

1. Main Line contactor M

Main power RESET button depressed, M does not pick up.

Check for:

AC power available.

Crane disconnect switch 1SW open.

MR contact open.

Overload relay contact open.

STOP button contact open.

Fuse blown in M coil circuit (1FU).

115 volt control power from 1T not available.

2. Brakes (if used)

If brake does not release, check for mechanical binding, coil excitation when the brake contactor is picked up, or circuit continuity.

C. GENERAL

If the drive is malfunctioning from none of the above causes, the adjustment procedure outlined in the Systems Tests and Adjustments section should be followed in detail.