CLASS 22-529 HOIST 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 HOIST, and observe that the holding brake and mechanical load brake are released and that the drive moves in the hoist direction. If the drive moves in the lower direction, interchange main line motor leads T1 and T3.

If drive is lowering, speed must be controlled with the mechanical load brake.

C. STOPPING THE DRIVE

Moving the control to the OFF position will de-energize the directional contactor, and de-energize the motor. The holding brake will set, and brake the drive to a stop.

D. LIMIT SWITCHES (IF USED)

Run the drive into the hoist 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 hoist direction, but will power out of the overtravel if the control is moved in the lower direction. To be sure of enough mechanical clearance, continue to run the drive into the hoist limit switch at ever increasing speeds to maximum speed. This will show the maximum distance required to stop the motion safely.

The lower limit switch should be set up in the same manner as the hoist limit switch.

DESCRIPTION OF OPERATION

The hoist 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 hoist energizes the hoist directional contactor and the drive starts with maximum secondary resistance in the circuit. As control is moved further hoist, 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.

Lower operation is the same as hoist operation except that the lower directional contactor is energized, and the drive runs in the reverse direction. When lowering, the speed of the drive must be reduced by the mechanical load brake.

C. STOPPING THE DRIVE

The holding brake will brake the drive to a stop if the control is moved to OFF. Wear on the brake, when lowering, can be saved by slowing the drive 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. Brake

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.