

**8-2.12 Master Controller**

**8-2.12.a Description and Operation**

The master controller (Refer to Figure 8-2-66) is installed in the operator’s console in the driving compartment of the A-end and B-end of the #8 LFC. The master controller provides the operator with the following functions.

1. It allows the operator to lock the controller off with the main handle and reverser switch interlocked for safety.
2. It allows the operator to select the desired direction operating mode (lay-up, standby, operate).
3. It allows the operator to select the desired direction of travel (FORWARD, NEUTRAL, or REVERSE) while in OPERATE mode.
4. It allows the operator to select the amount of tractive effort or braking desired during operation.
5. It incorporates a deadman function with interlocking which provides for immediate shutdown for safe operation if the operator’s hand slips from the main handle.

The key is only removable in the LAYUP and STANDBY positions. The mechanical interlocking is achieved by interlocking the main handle, reverser switch, and transfer switch to produce the desired effects. Table 8-2.9 shows the interlocking configuration used with the master controller.

**Table 8-2.9 Master Controller Interlocking Configuration**

Transfer Switch Position	Reverser Switch Position	Main Handle Position
#Lay-Up	[NEU]	[FSB]
#Standby	[NEU]	[FSB]
Operate	(NEU) FWD, REV	[FSB]
Operate	NEU (FWD) REV	[FSB]
Operate	NEU FWD (REV)	[FSB]
<p>[ ] Locked Position                      ( ) Free to move from position to any other position                      # Key to be removed in this position</p>		

8-2.12.b Specific Safety Precaution

**WARNING: BEFORE OPERATING THE MASTER CONTROLLER, MAKE SURE THAT CATENARY POWER HAS BEEN REMOVED FROM THE PROPULSION SYSTEM, TO PREVENT OPERATION OF THE VEHICLE.**

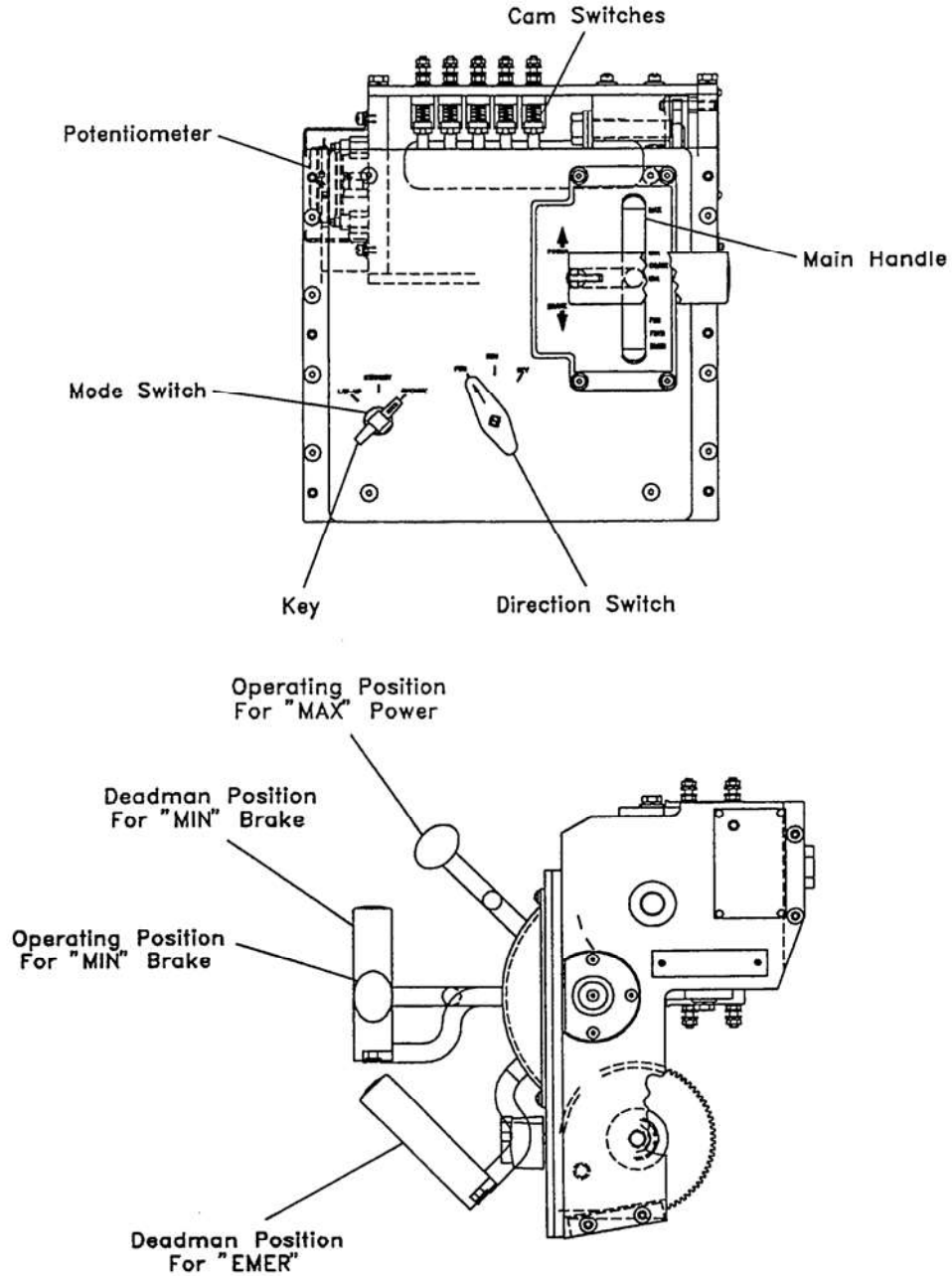


Figure 8-2-66 Master Controller, Type XMA 274

### 8-2.12.c Service, Cleaning and Inspection

#### a) Service

1. Remove the master controller from the operator's control panel (Refer to Figure 8-2-67)
2. Apply a light coating of Molykote M to the mode switch roller assembly shaft where it goes through the brass block in front of the main handle.

#### b) Cleaning

1. Disconnect electrical power from vehicle by lowering pantograph and disconnecting circuit breaker.
2. Clean the master controller external surfaces using compressed air and a soft cloth. Mild detergent dissolved in clean water may be used moderately on painted surfaces. It is recommended to dry using compressed air.

#### c) Inspection

1. Check for general cleanliness.
2. Check for loose hardware and loose electrical connections.
3. Check for damaged wire insulation.
4. Check for damage or creases in shunts on roller switches.
5. Make sure cam rollers do not extend beyond cam by 0.030 inch and are square with the cam.
6. Check cams and stationary contacts for cracks and chips.
7. Rotate the mater controller handle and check for smooth operation of the deadman mechanism.
8. Inspect the deadman switch and cam switches for the following:
  - a. frayed or damaged shunt wires,
  - b. worn contacts,
  - c. broken spring,
  - d. flats on rollers,
  - e. loose mounting hardware, and
  - f. dirt accumulation.
9. Operate the master controller switches through each position and check for smooth operation.
10. Inspection results must be recorded on Defect Report Cards to allow the planning of Maintenance Operations.

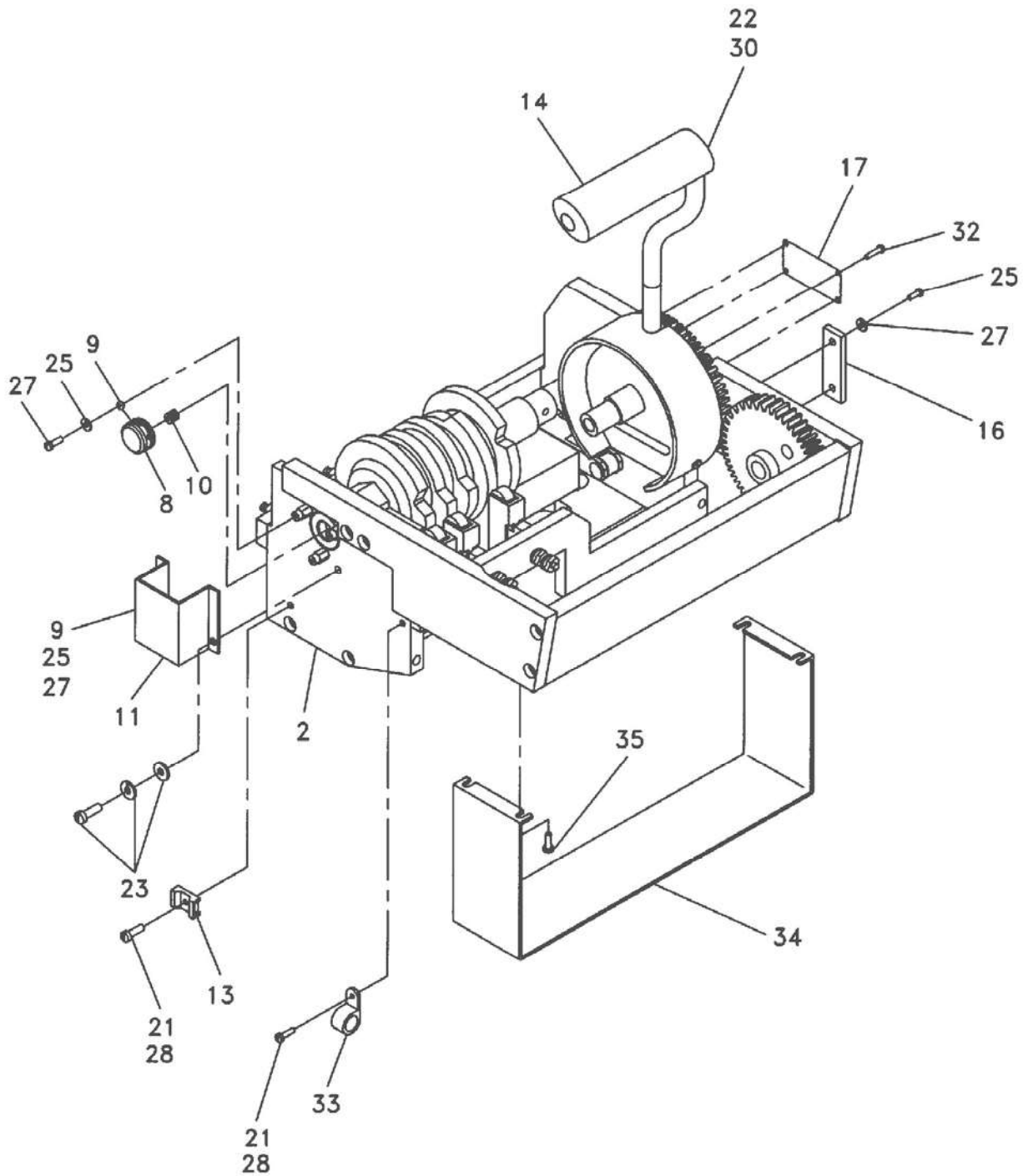


Figure 8-2-67 Master Controller Lubrication (Sheet 1 of 3)

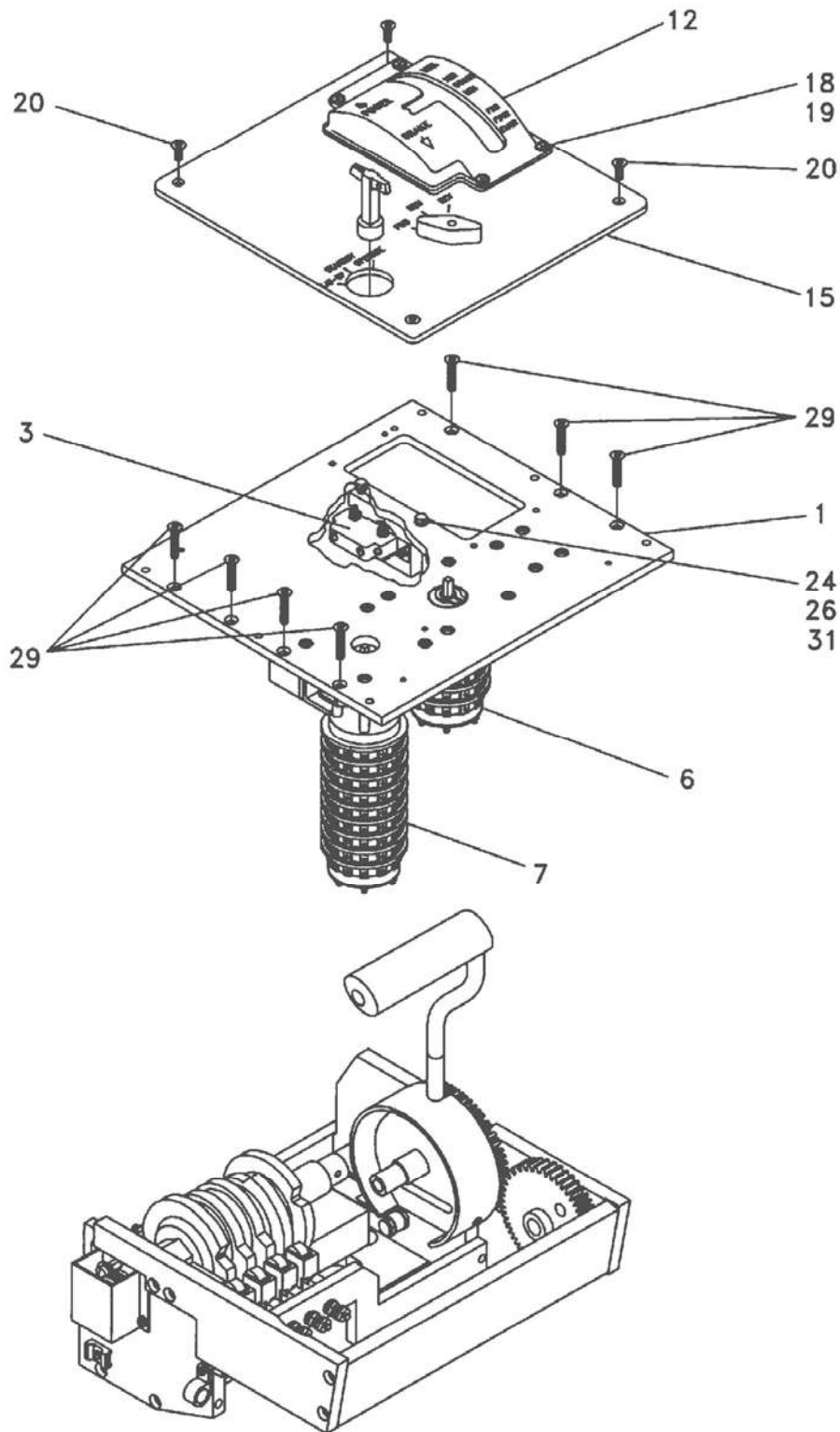


Figure 8-2.63 Master Controller Lubrication (Sheet 2 of 3)

1SUB-PLATE ASSEMBLY	21ADHESIVE
2 MAIN FRAME ASSEMBLY	22ADHESIVE
3 BEARING & SWITCH ASSEMBLY	23JOINT
4 WIRING ASSEMBLY	23A WASHER
5.WIRING ASSEMBLY	23B LOCKWASHER
6 SWITCH, ROTARY	23C SCREW
7 SWITCH, TRANSFER	24 WASHER
8 POTENTIOMETER	25 LOCKWASHER
9 CLEAT, MOTOR MOUNT	26 LOCKWASHER
10 COUPLING, FLEXIBLE	27 SCREW
11 SHIELD	28 SCREW
12 COVER, INDICATOR	29 SCREW
13 MOUNT, CABLE TIE	30 SCREW
14 HANDLE	31 BOLT
15 PLATE, FINISH	32 SCREW
16 TAG, CAPL	33 CLAMP
17 NAMEPLATE	34 SHIELD
18 WASHER	35 JOINT
19 SCREW	35A SCREW
20 SCREW	35B .WASHER
	35C LOCKWASHER

**Figure 8-2-63 Master Controller Lubrication (Sheet 3 of 3)**

**8-2.12.d Adjustment/Test (Not Applicable)**

**8-2.12.e Fault Isolation/Repair**

Master Controller Fault Isolation/Repair is included in the Propulsion System Fault Isolation/Repair procedure. Refer to para 8-2.e.

**8-2.12.f Removal/Installation**

**8-2.12.f a) Master Controller**

**a) Removal**

To remove Master Controller proceed as follows:

1. Remove six hex screw and remove the frame.
2. Disconnect wiring from Master Controller.
3. Remove Master Controller.

**b) Installation**

To install Master Controller proceed as follows:

1. Connect wiring to Master Controller.
2. Install the frame and six hex screw and tighten.

**8-2.12.f b) Finish Plate**

**a) Removal**

To remove Finish Plate proceed as follows (Refer to Figure 8-2-):

1. Remove the .190-32 x .75 button head mounting screw (1) and remove the main handle (2).
2. Remove four .138-32 x .38 screws (3) and remove the indicator cover (4).
3. Loosen the set screw and remove the reverser switch knob (5).
4. Remove four .190-32 x .50 screws (6) and remove the finish plate (7).

**c) Installation**

To install Finish Plate proceed as follows:

1. Install the finish plate (7).
2. Install the four .190-32 x .50 screws (6) and torque them to 40 inch-pounds.
3. Install the reverser switch knob (5) and tighten the set screw.
4. Install the indicator cover (4).
5. Install the four .138-32 x .38 screws (3) and torque them to 8 inch-pounds.
6. Install the main handle (2) and torque the .190-32 x .75 button head mounting screw (1) to 43 inch-pounds.

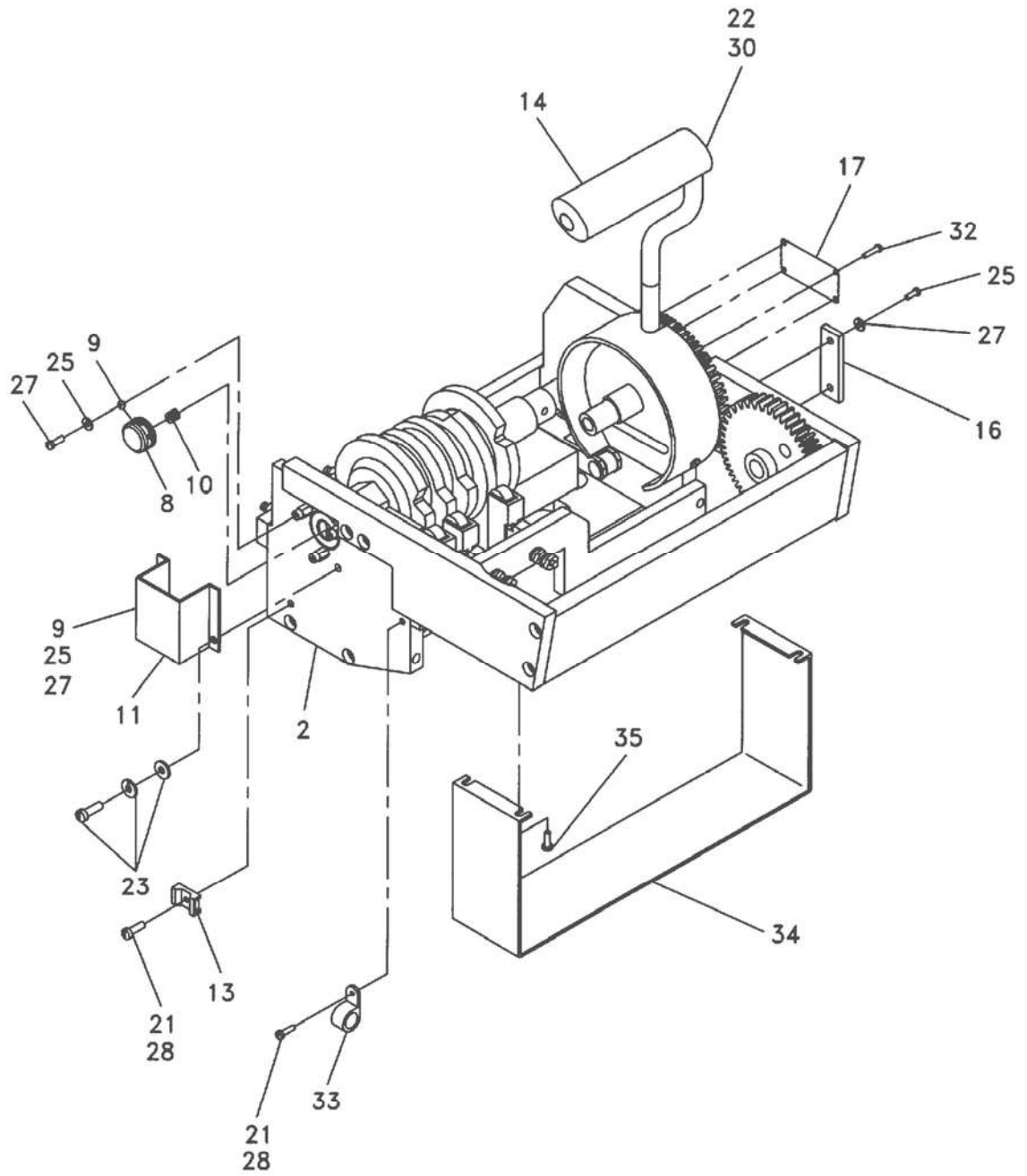


Figure 8-2.64 Master Controller Sheet(1 of 3)



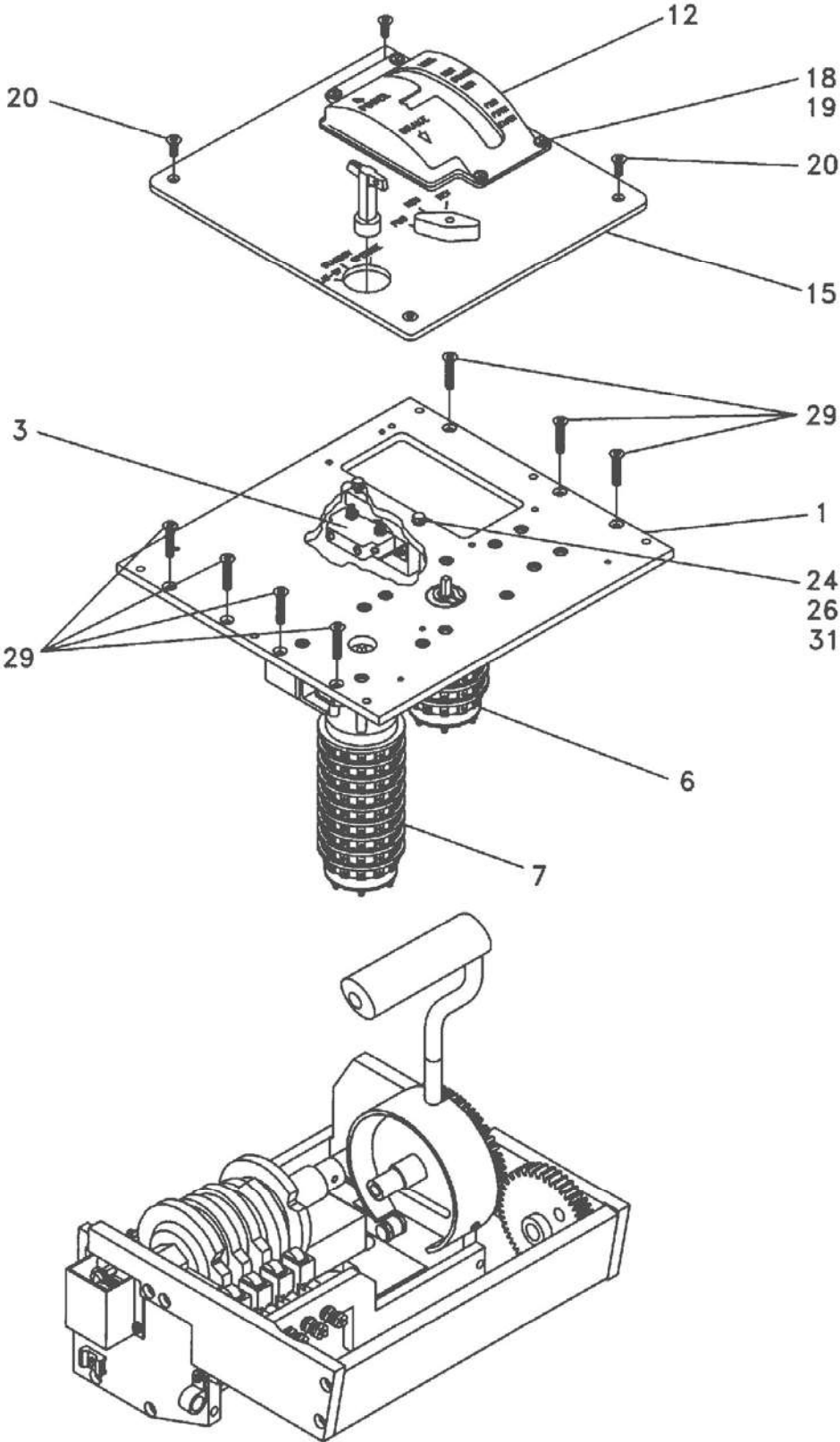


Figure 8-2.64 Master Controller Sheet(2of 3)

1 SUB-PLATE ASSEMBLY	21 ADHESIVE
2 MAIN FRAME ASSEMBLY	22 ADHESIVE
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17 NAMEPLATE	34 SHIELD
18 WASHER	35 JOINT
19 SCREW	35A SCREW
20 SCREW	35B .WASHER
	35C LOCKWASHER

**Figure 8-2.64 Master Controller (Sheet 3 of 3)**

**8-2.12.g DTE and Special Tools (Not Applicable)**

### **8-3 Schematics and Wiring Diagrams**

This chapter includes the following schematics and wiring diagrams:

- 5D79135, System Schematic Diagram, sheets 1-83;
- 1656E28, Control Wiring Diagram, Power Inverter, sheets 1-3;
- 2681F47, Type XMA-274 Master Controller, sheet 1; and
- 2682F01, Power Wiring Diagram, Power Inverter Box Assembly, sheet 1.