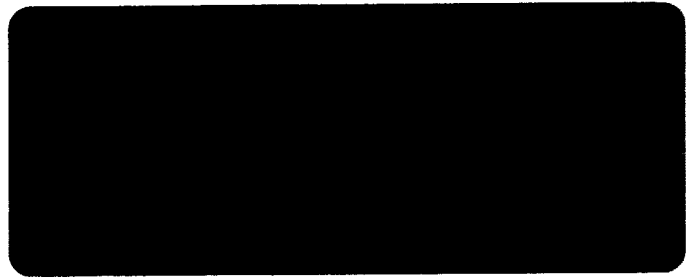


 PIONEER®

Service Manual



This photograph is CT-7R.

ORDER NO.
ARP-001-0

STEREO CASSETTE TAPE DECK

CT-7R

CT-6R

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1. MECHANICAL DESCRIPTIONS

1.1 Mechanism Operation

The various mechanical sections of the recorder are operated using the capstan motor to provide the driving force. The various modes are activated by solenoid L and R, and these are controlled by commands from CPU PD6006.

Both the capstan and reel-motor are direct-drive motors fitted with a Hall sensing element. Reel-motor L and reel-motor R (hereafter called RM L, RM R) are used exclusively for tape take-up in the FF, REW, PLAY, and REC/PLAY modes. The direction of rotation and rotational speed of these motors are controlled by commands from CPU PD6006.

The right side capstan motor is the DD type, and the left side capstan motor is belt-driven by the right side-motor. A sub-rotor acts as the actual capstan. (Refer to Fig. 1-1).

The mechanism forming the right and left-hand side of the unit is essentially symmetrical in configuration, and in forward and reverse (hereafter abbreviated FWD, REV) operations, each side acts together. This description covers the mechanical operations for FWD movement.

Basic Operations of the Mechanism

The mechanism assumes three different states: STOP, PAUSE, and PLAY. Consequently, since it can travel in the FWD and REV direction, there are a total of six states possible. There is also a direction operation for switching between FWD and REV travel. Transition between the FWD and REV state will be described using only one example.

When the mechanism, presently in the FWD-PLAY mode, is switched to the REV-PLAY mode, a direction operation is required, then the mechanism will make the transition following the steps listed below. (Refer to Fig. 1-2).

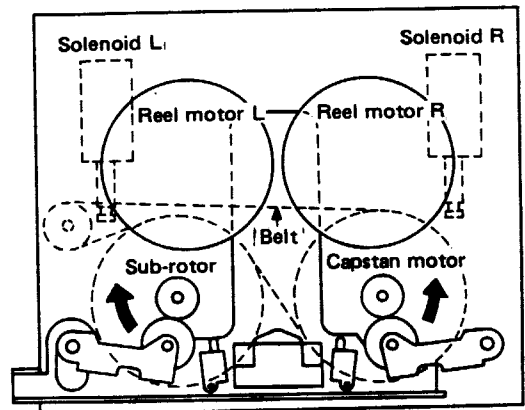


Fig. 1-1 Mechanical construction

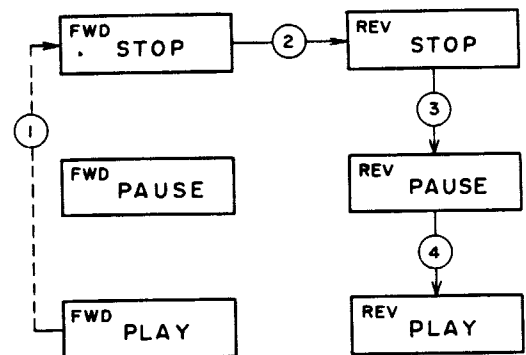


Fig. 1-2 Mechanism mode transition (example)

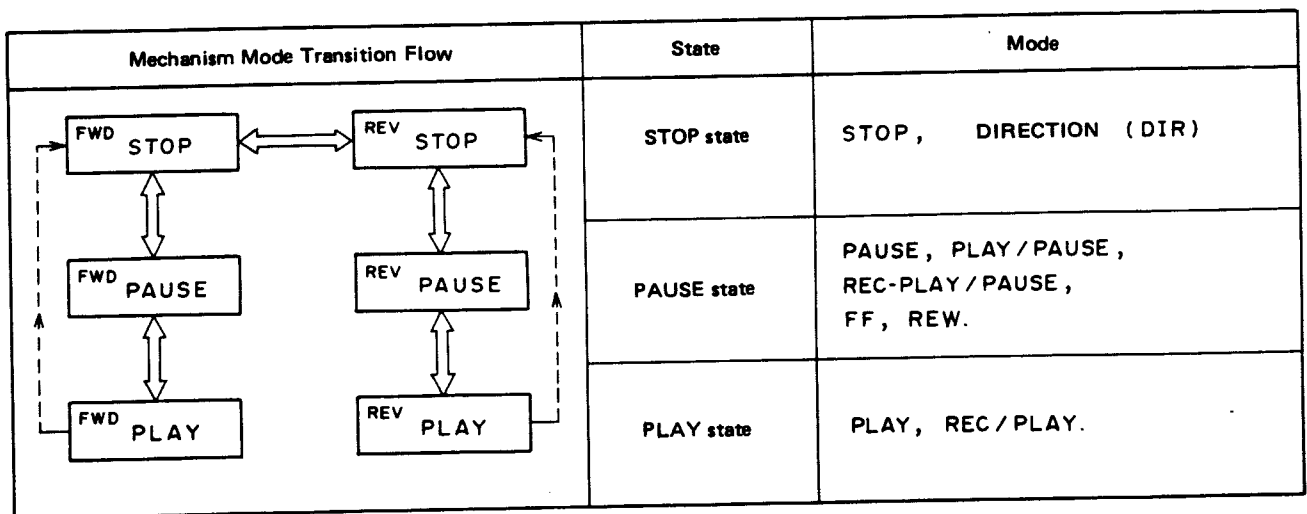


Fig. 1-3 Mechanism mode transition flow and modes

Direction switch ON

1. Instantaneous transit from FWD-PLAY to FWD-STOP.
2. Approx. 500msec after FWD-STOP entered, direction operation effects REV-STOP.
3. Approx. 425msec after REV-STOP entered, REV-PAUSE entered.
4. Approx. 325msec after REV-PAUSE entered,

REV-PLAY entered, thereby concluding the switching operation.

The above operational flow is also shown using interconnecting arrows in Fig. 1-3. This figure additionally shows other mechanism states possible with the various modes.

Next, the mechanism operation when switching between the various states (in the FWD direction) will be described.

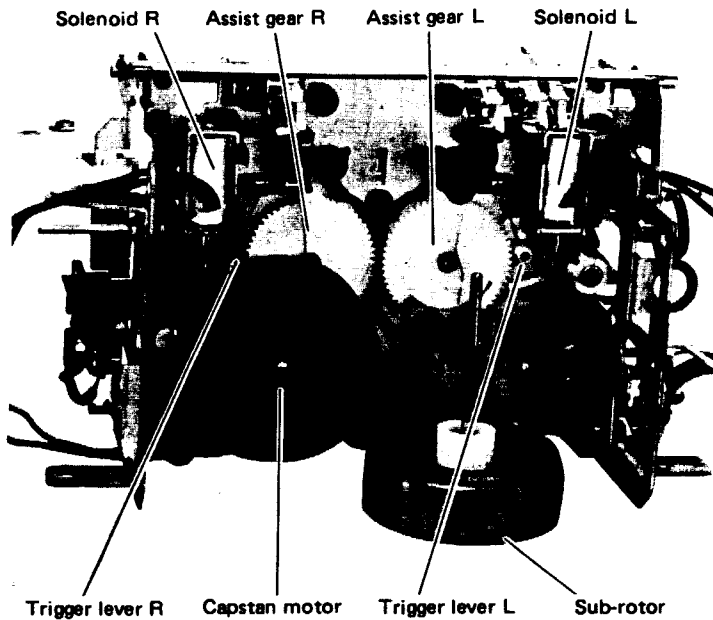


Fig. 1-4 Mechanical construction (Rear view)

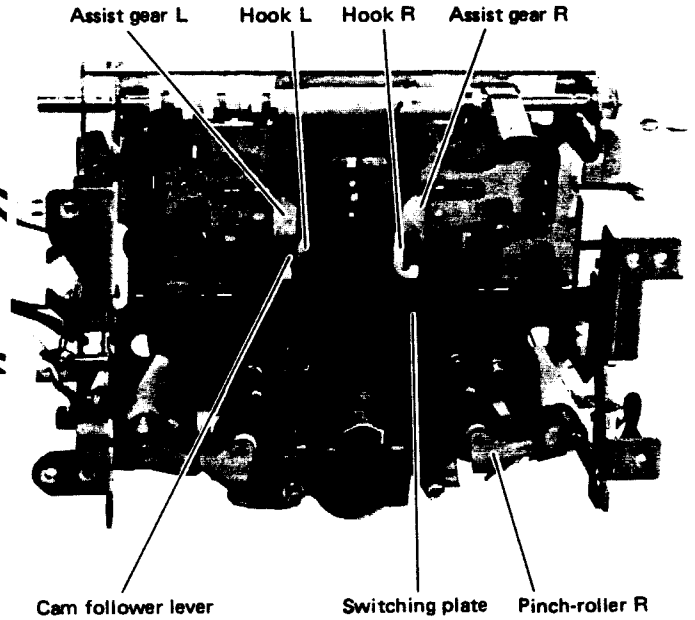


Fig. 1-5 Mechanical construction (Front view)

1. Mechanism Transition from STOP to PAUSE
Mechanism viewed from underneath

1. Upon command transmission from PD6006, solenoid R turns ON (plunger retracted). (Fig. 1-6.)
2. The movement of the solenoid plunger causes the trigger lever R to disengage from the stopper, allowing the assist gear R to turn.

3. Rotation of assist gear R is meshed with the capstan motor.

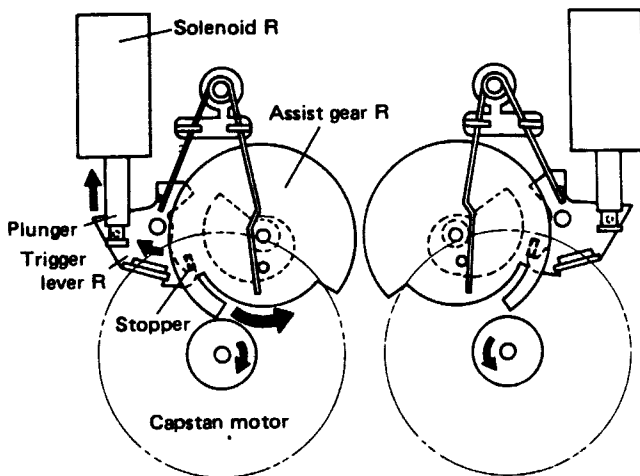


Fig. 1-6 STOP-PAUSE operation 1

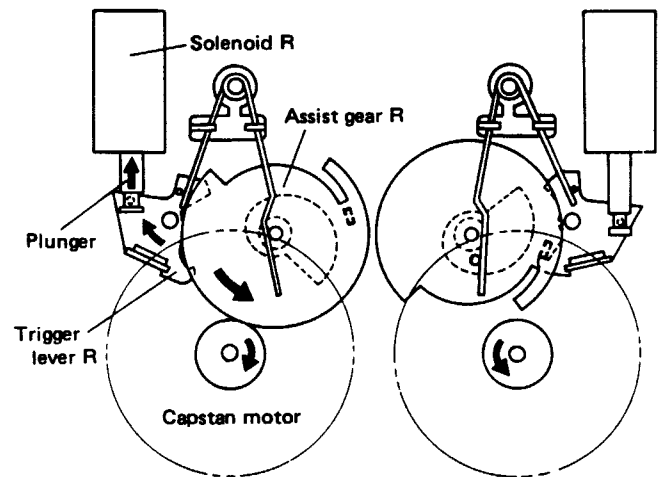


Fig. 1-7 STOP-PAUSE operation 2

4. After assist gear R has turned through about 3/4ths of a revolution, it disengages from the capstan motor.
5. Since solenoid R is in an ON state, the stopper on assist gear R contacts trigger lever R at point A, and stops. The above series of operations covers the events occurring on the back-side of the mechanism. Next, the operations occurring simultaneous to the above, but as viewed from the top of the unit will be given.

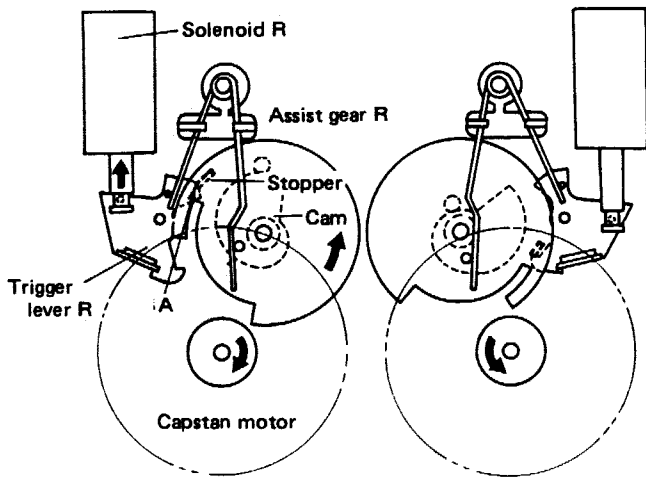


Fig. 1-8 STOP-PAUSE operation 3

Mechanism viewed from the top

1. As assist gear R rotates, its cam drives the B point of the cam follower lever in an upward direction.

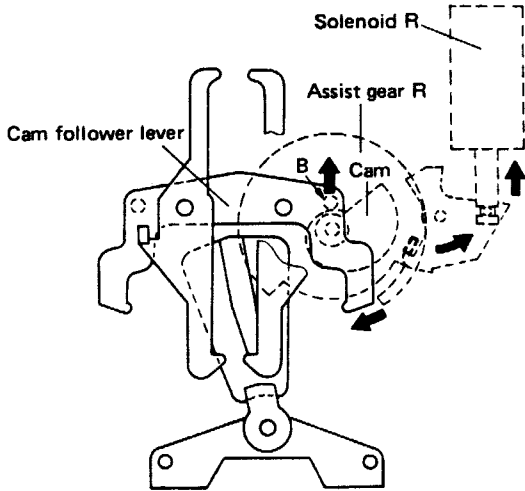


Fig. 1-9 STOP-PAUSE operation 4

2. As the B point is raised, hook R (coupled to B point) is also raised.
3. At point C, hook R catches the coupling plate and continues to rise, carrying the coupling plate and pinch-roller drive-plate with it.
4. The pinch-roller drive-plate continues to rise until the pinch-roller goes into a PAUSE status, then stops.

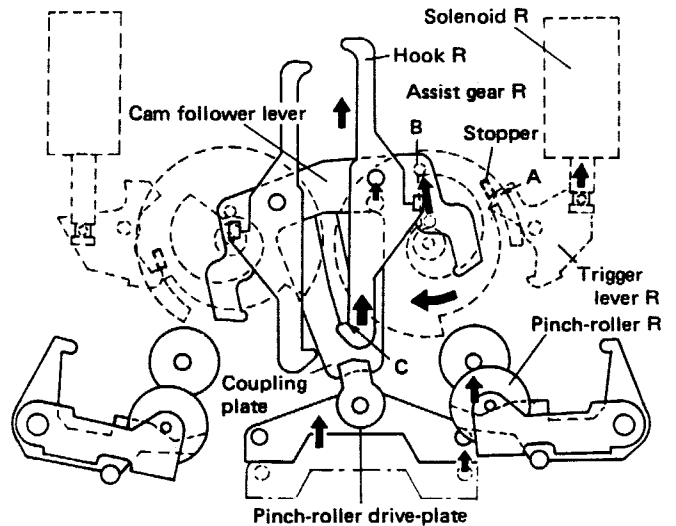


Fig. 1-10 STOP-PAUSE operation 5

2. Mechanism Transition from PAUSE to PLAY
Mechanism viewed from underneath

Solenoid R is presently ON, and the mechanism is in a PAUSE state.

1. Upon command transmission from PD6006, solenoid L turns ON (plunger retracted).
2. The movement of the solenoid plunger causes the trigger lever L to disengage from the stopper, allowing assist gear L to start turning.

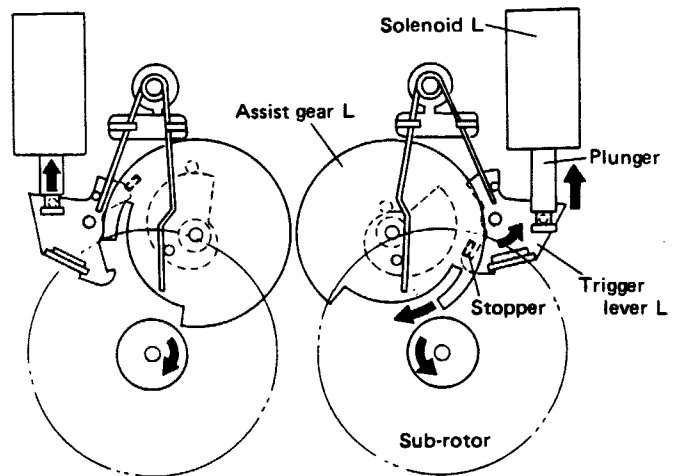


Fig. 1-11 PAUSE-PLAY operation 1

3. Rotation of assist gear L is meshed with the sub-rotor.

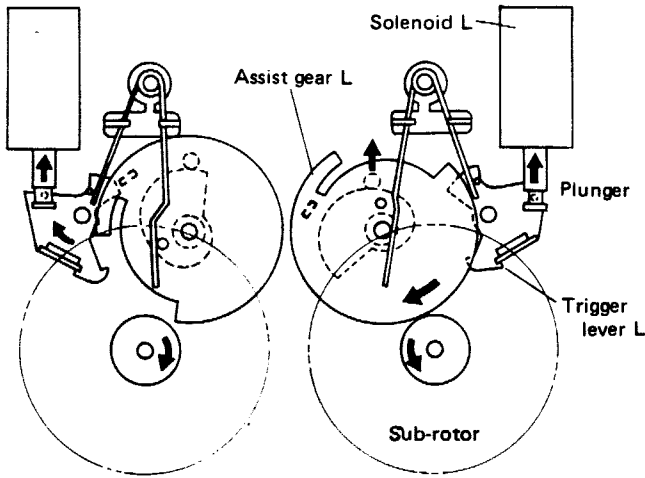


Fig. 1-12 PAUSE-PLAY operation 2

4. After assist gear L has turned through about 3/4ths of a revolution, it disengages from the sub-rotor.
5. Since solenoid L is in an ON state, the stopper on assist gear L contacts trigger lever L at point D, and stops.

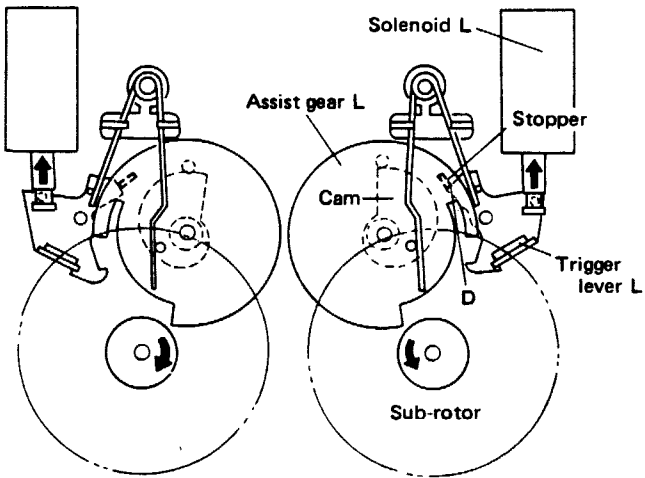


Fig. 1-13 PAUSE-PLAY operation 3

Mechanism viewed from the top

1. As assist gear L rotates, its cam drives the E point of the cam follower lever in an upward direction.
2. As the E point is raised, hook L (coupled to E point) is also raised.

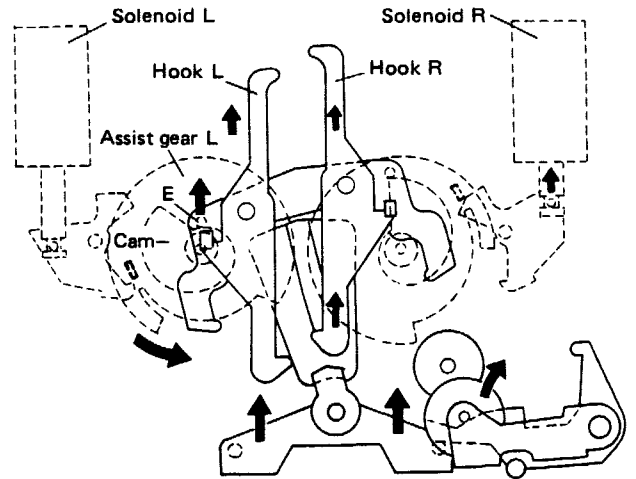


Fig. 1-14 PAUSE-PLAY operation 4

3. When point E reaches the same height as point B, it stops. The head and pinch-roller at this point is shown in Fig. 1-15. Here, since the E point has reached the same height as the B point, the X point rises higher than that of the PAUSE status. Consequently, the head makes contact with the tape, and the tape is pinched between pinch-roller R and the capstan shaft, completing PLAY mode entry.

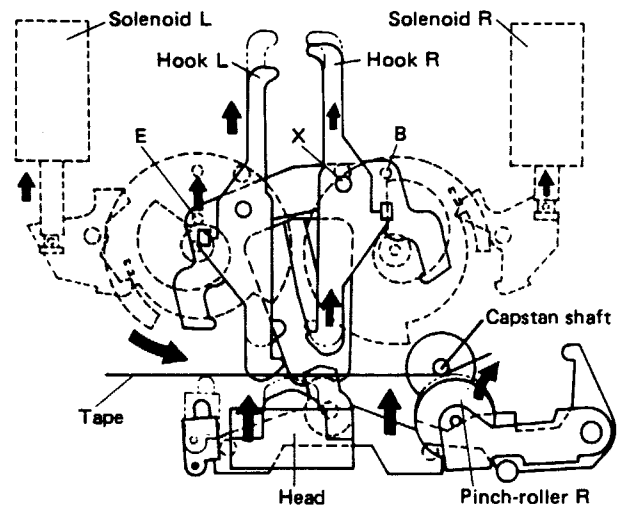


Fig. 1-15 PAUSE-PLAY operation 5

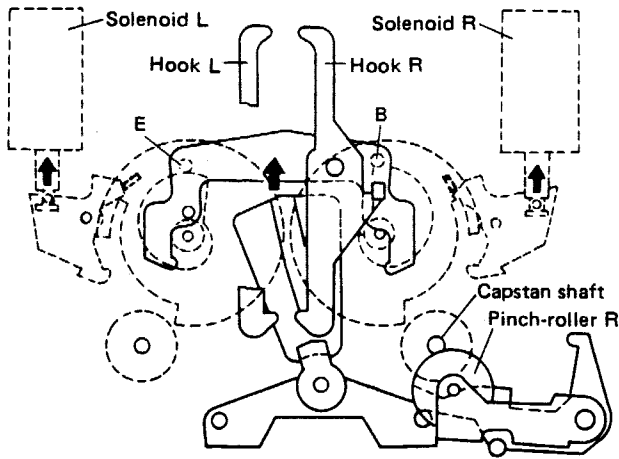


Fig. 1-16 PAUSE-PLAY operation 6

3. Direction Operation

Mechanism viewed from underneath

Mechanism is presently in STOP status

1. Upon command transmission from PD6006, solenoid L turns ON (plunger retracted).
2. The movement of the solenoid plunger causes the trigger lever L to disengage from the stopper, allowing assist gear L to start turning.

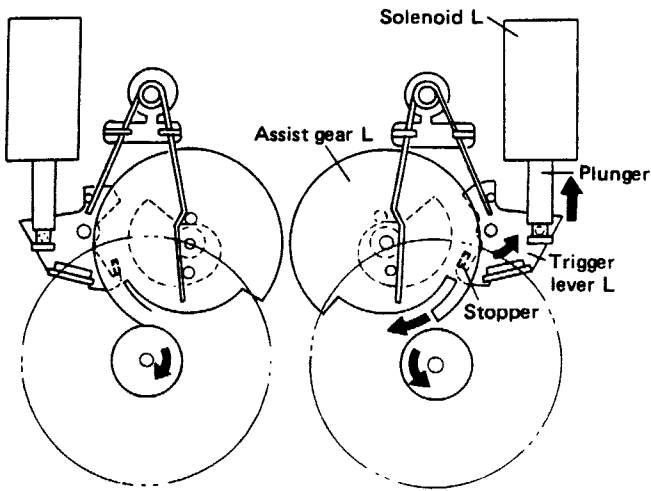


Fig. 1-17 DIRECTION operation 1

3. Solenoid L then goes OFF, returning trigger lever L to its original position.
4. Rotation of assist gear L is meshed with the sub-rotor.

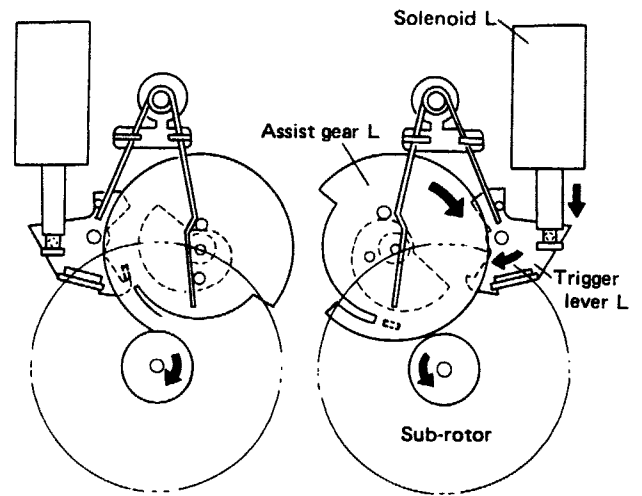


Fig. 1-18 DIRECTION operation 2

5. After assist gear L has turned through about 3/4ths of a revolution, it disengages from the sub-rotor.
6. When the sub-rotor and assist gear L become unmeshed, since the solenoid lever has already returned to its out position, spring tension is allowed to return the assist gear to its original position after making only one revolution. This completes the operation.

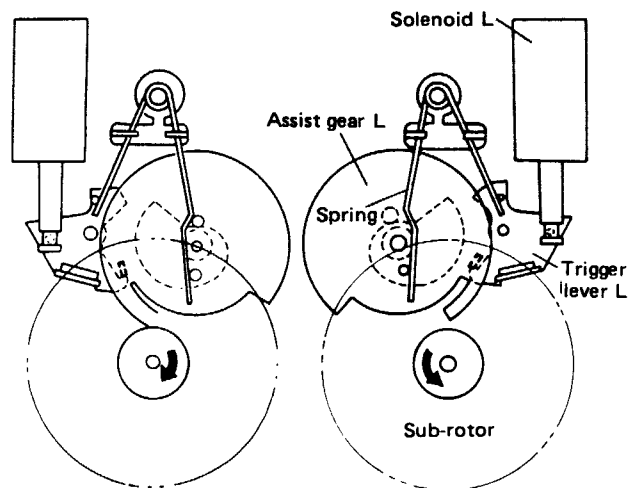


Fig. 1-19 DIRECTION operation 3

Mechanism viewed from the top

1. As assist gear L rotates, its cam drives the G point of the cam follower lever in an upward direction.
2. As the E point is driven upwards, point F on the right-hand side of the cam follower lever starts forcing the switching plate to the left.
3. As the switching plate is forced to the left, it carries the G point on the coupling plate to the left with it.

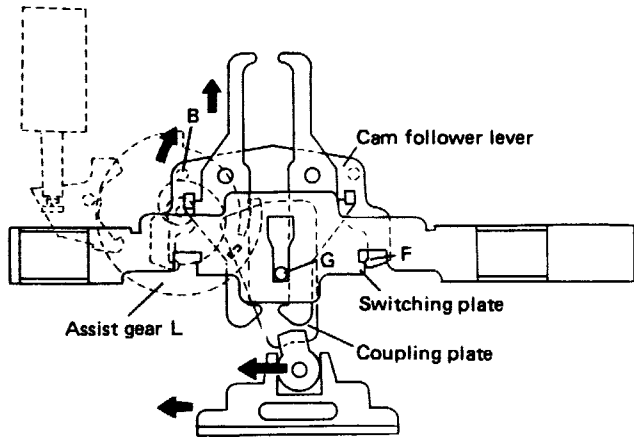


Fig. 1-20 DIRECTION operation 4

4. Since the H point on the coupling plate functions as a support point, as the G point is shifted to the left, the slide plate also moves to the left with the two plates above. This is shown in Fig. 1-21.

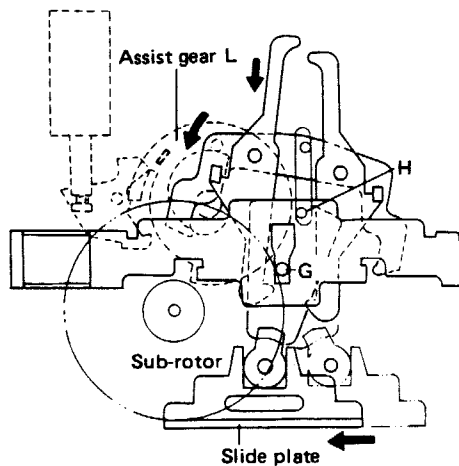


Fig. 1-21 DIRECTION operation 5

5. As the slide plate moves from right to left, the head rotates to the REV direction attitude. (Refer to Fig. 1-23)
6. After assist gear L has turned through about 3/4ths of a revolution, it disengages from the sub-rotor. Spring pressure forces it back to its original state, completing the direction operation, and switching the unit from REV to STOP.

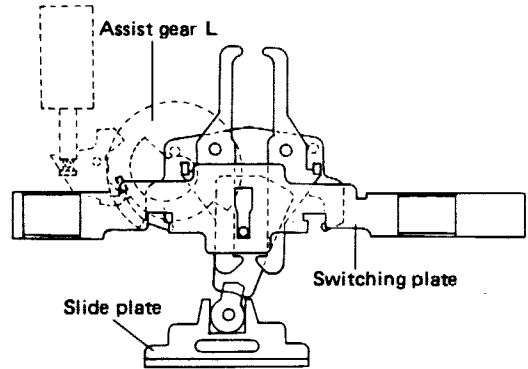


Fig. 1-22 DIRECTION operation 5

4. Head Rotation

As the slide plate moves from right to left in the direction operation (described above), the pin on the sector gear also is forced from right to left. This is shown in Fig. 1-23. As the sector gear pin goes past the center point, the force of the gear spring rotates the sector gear through approximately a 90° angle. This causes the head meshed to sector gear to rotate 180°, placing the unit in a REV state.

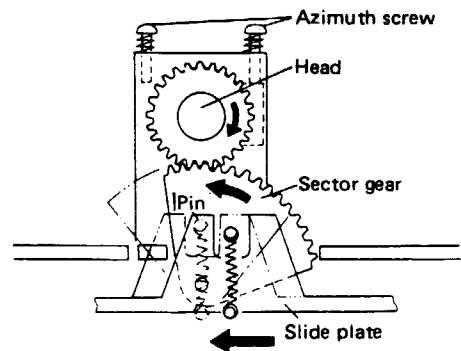


Fig. 1-23 Head rotation operation 1