

Figure 7-1 Fuel Handling System

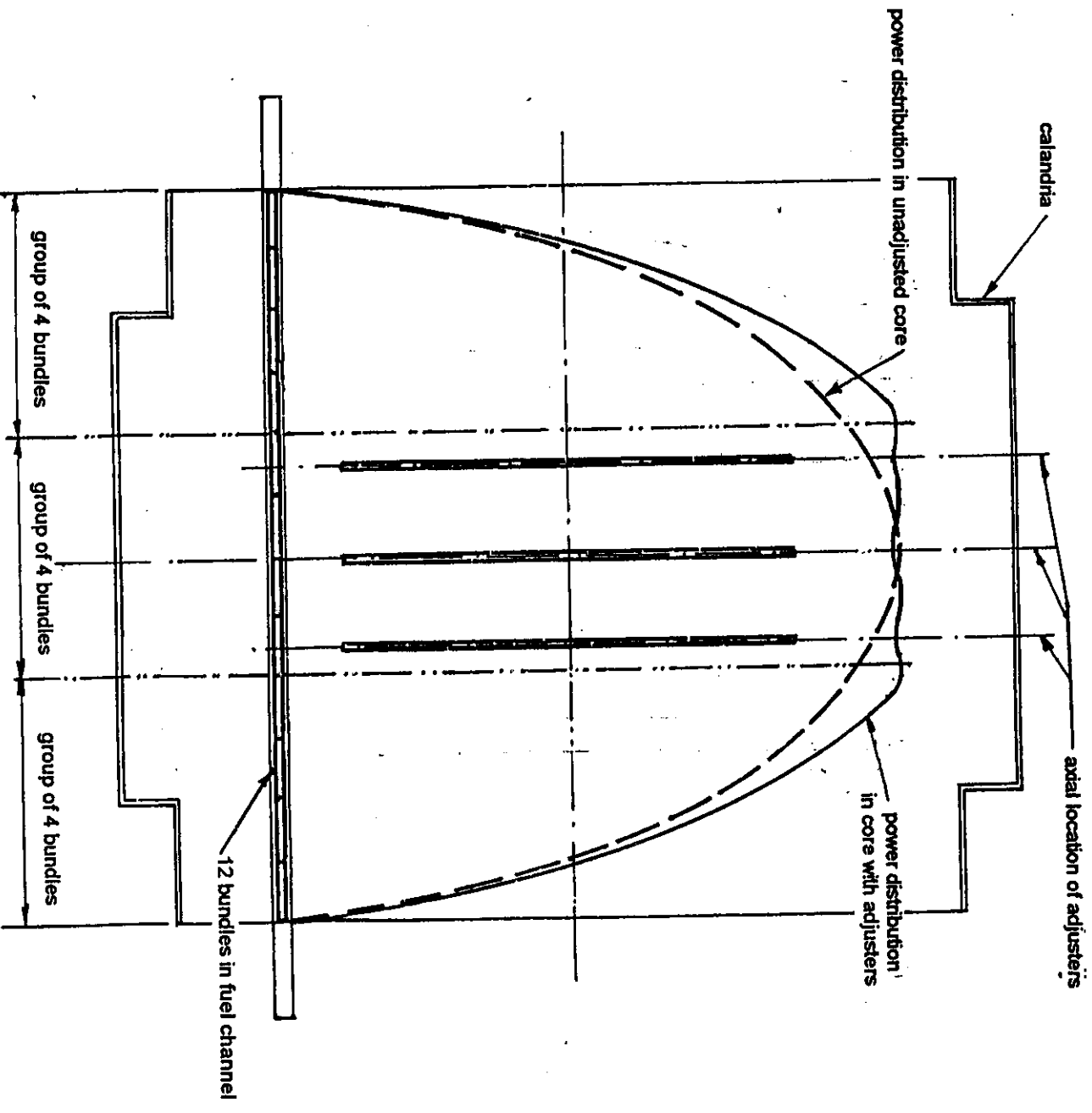


Figure 7-2 Axial Power Distribution in a Fuel Channel

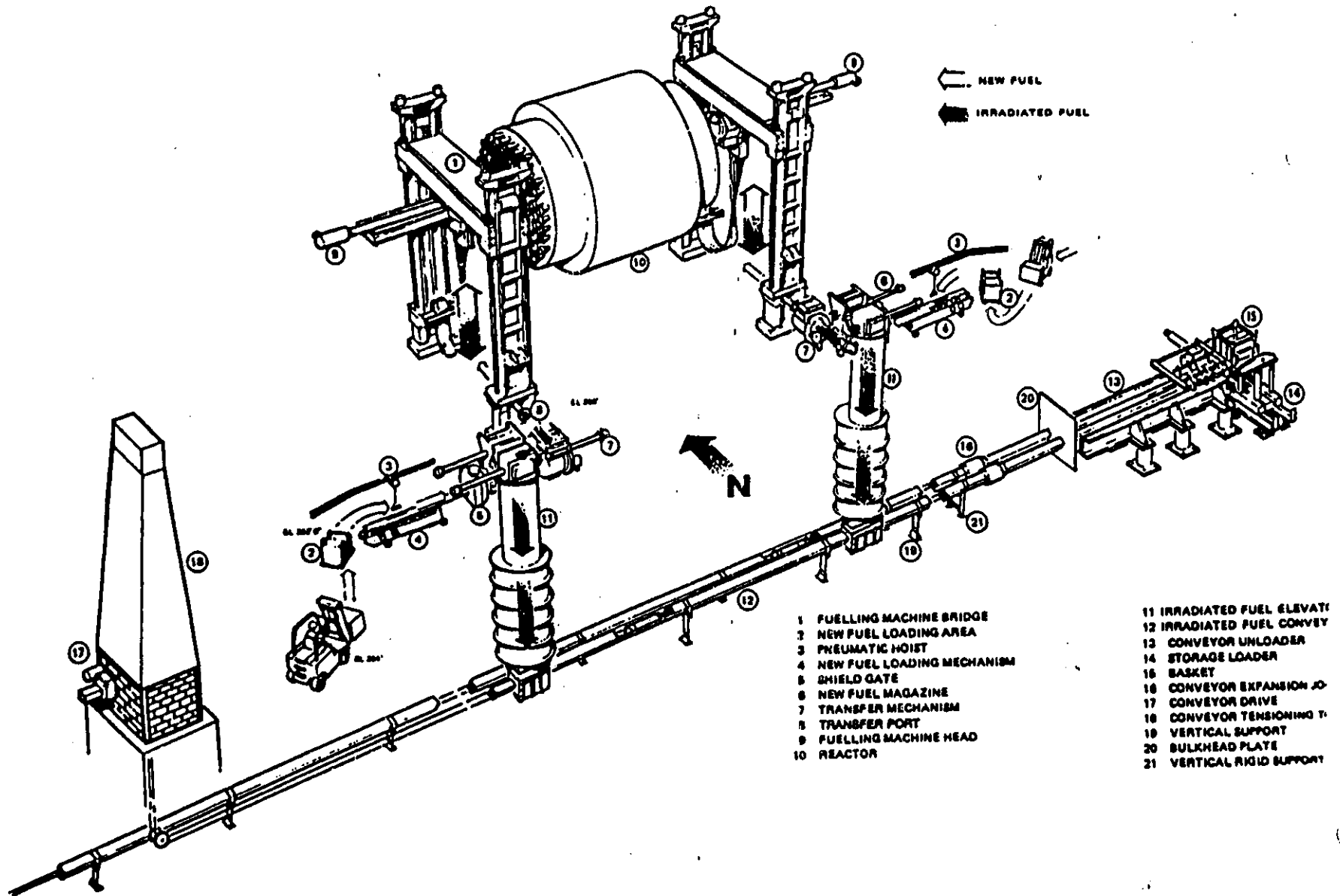


Figure 7-3 Pickering GS 4-Unit Plant and Fuel Handling Lay-out

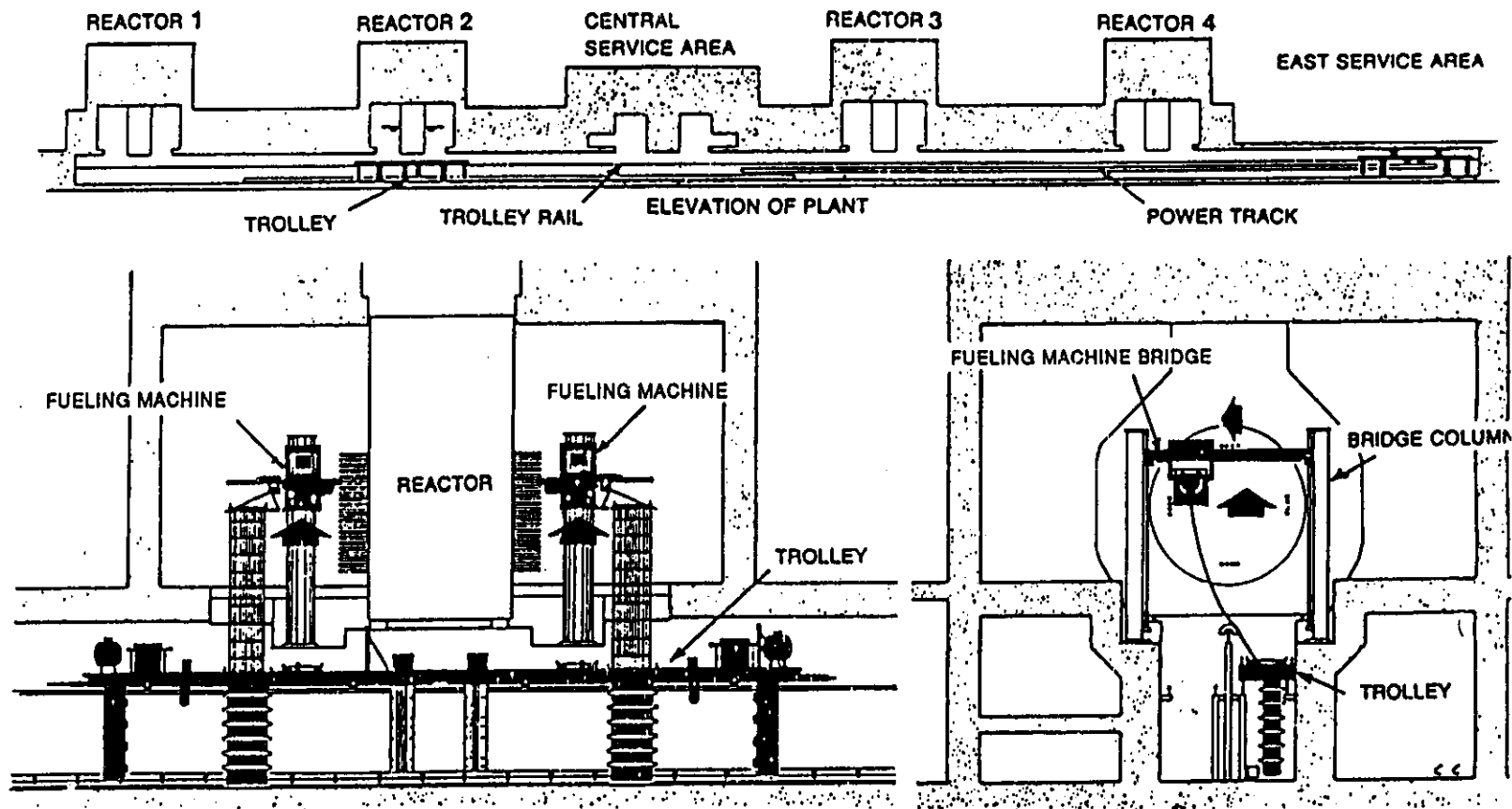
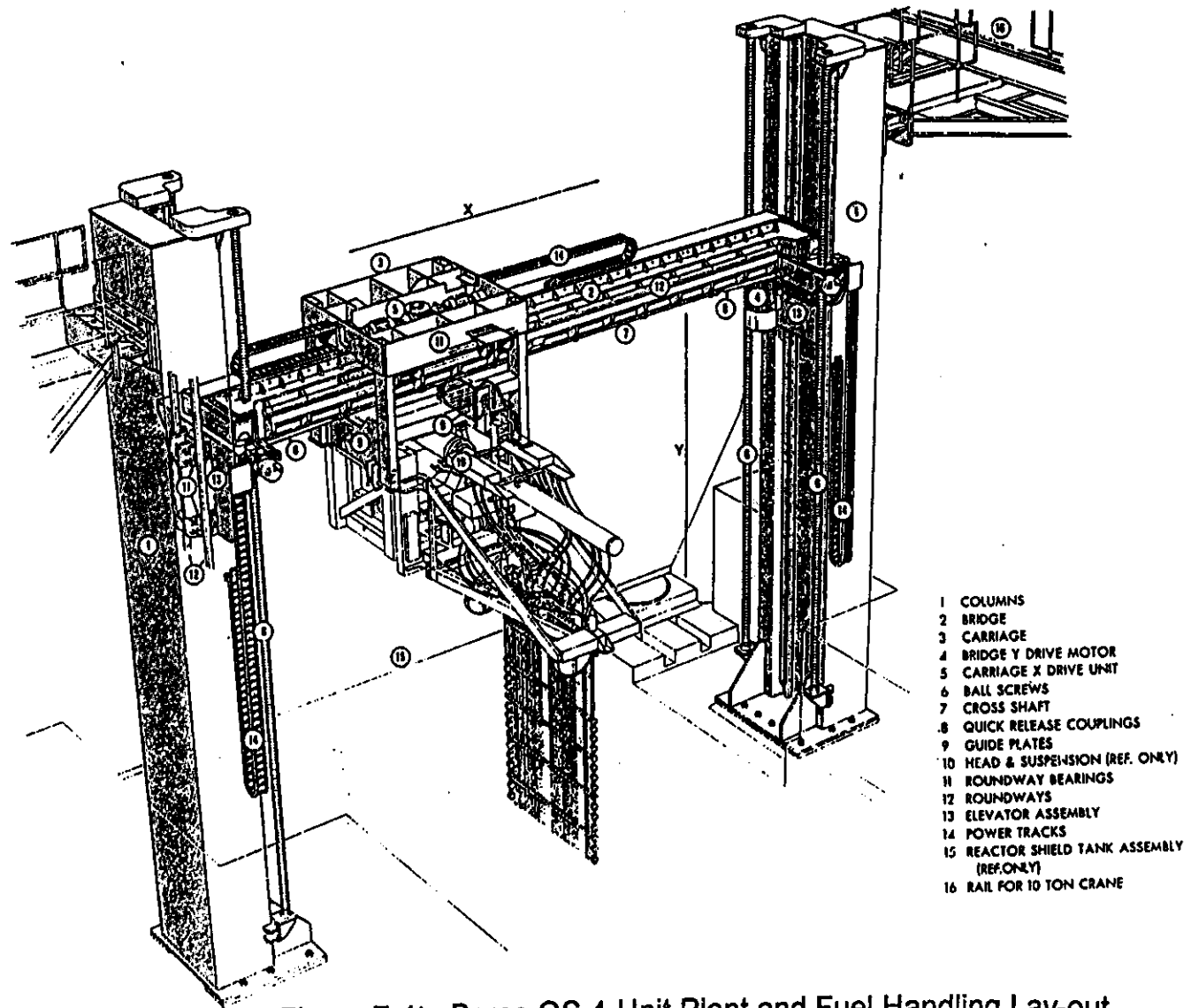


Figure 7-4a Bruce GS 4-Unit Plant and Fuel Handling Lay-out



- 1 COLUMNS
- 2 BRIDGE
- 3 CARRIAGE
- 4 BRIDGE Y DRIVE MOTOR
- 5 CARRIAGE X DRIVE UNIT
- 6 BALL SCREWS
- 7 CROSS SHAFT
- 8 QUICK RELEASE COUPLINGS
- 9 GUIDE PLATES
- 10 HEAD & SUSPENSION (REF. ONLY)
- 11 ROUNDWAY BEARINGS
- 12 ROUNDWAYS
- 13 ELEVATOR ASSEMBLY
- 14 POWER TRACKS
- 15 REACTOR SHIELD TANK ASSEMBLY (REF. ONLY)
- 16 RAIL FOR 10 TON CRANE

Figure 7-4b Bruce GS 4-Unit Plant and Fuel Handling Lay-out

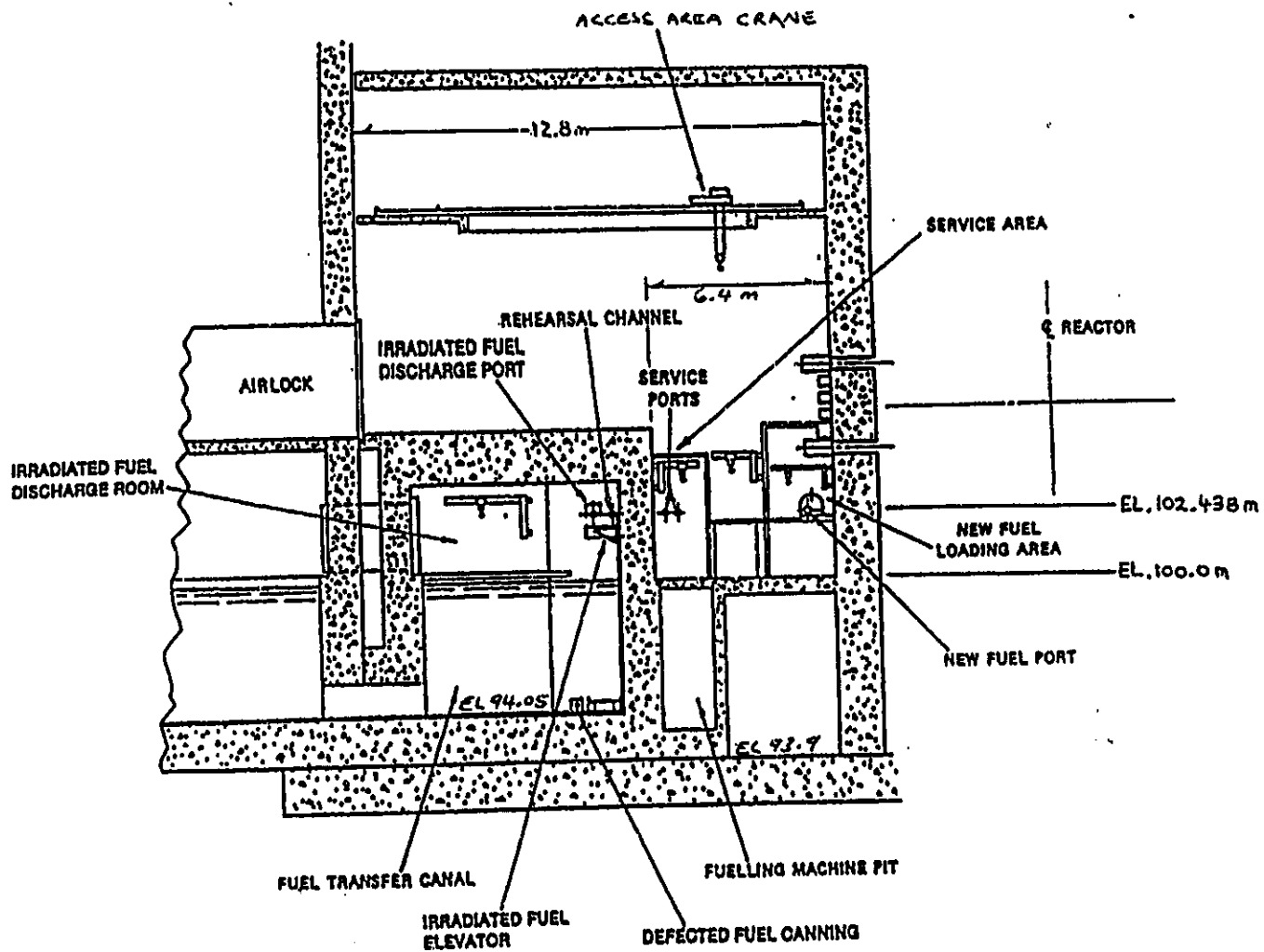


Figure 7-5 Fuel Handling System - Section S1

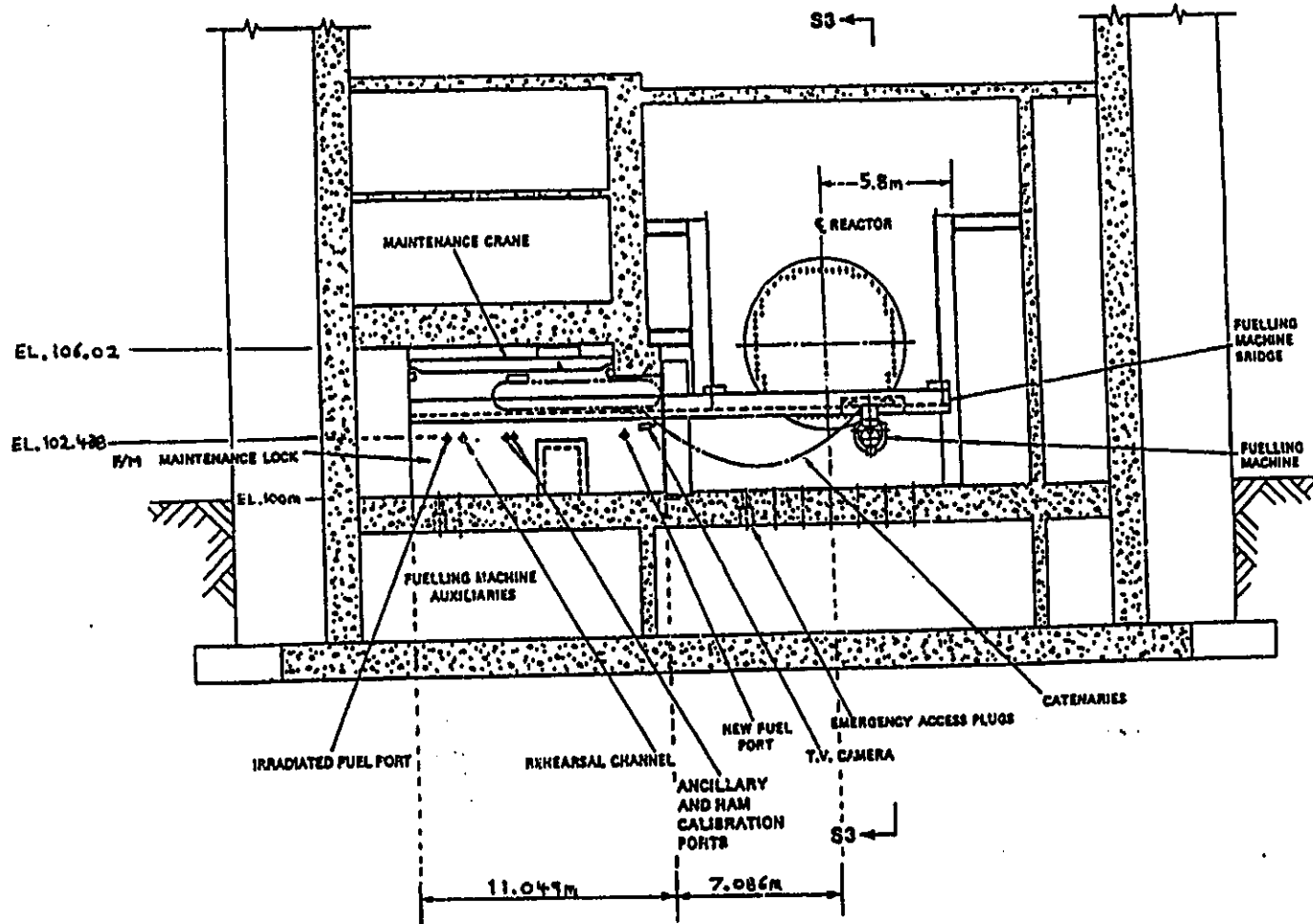


Figure 7-6 Fuel Handling System - Section S2

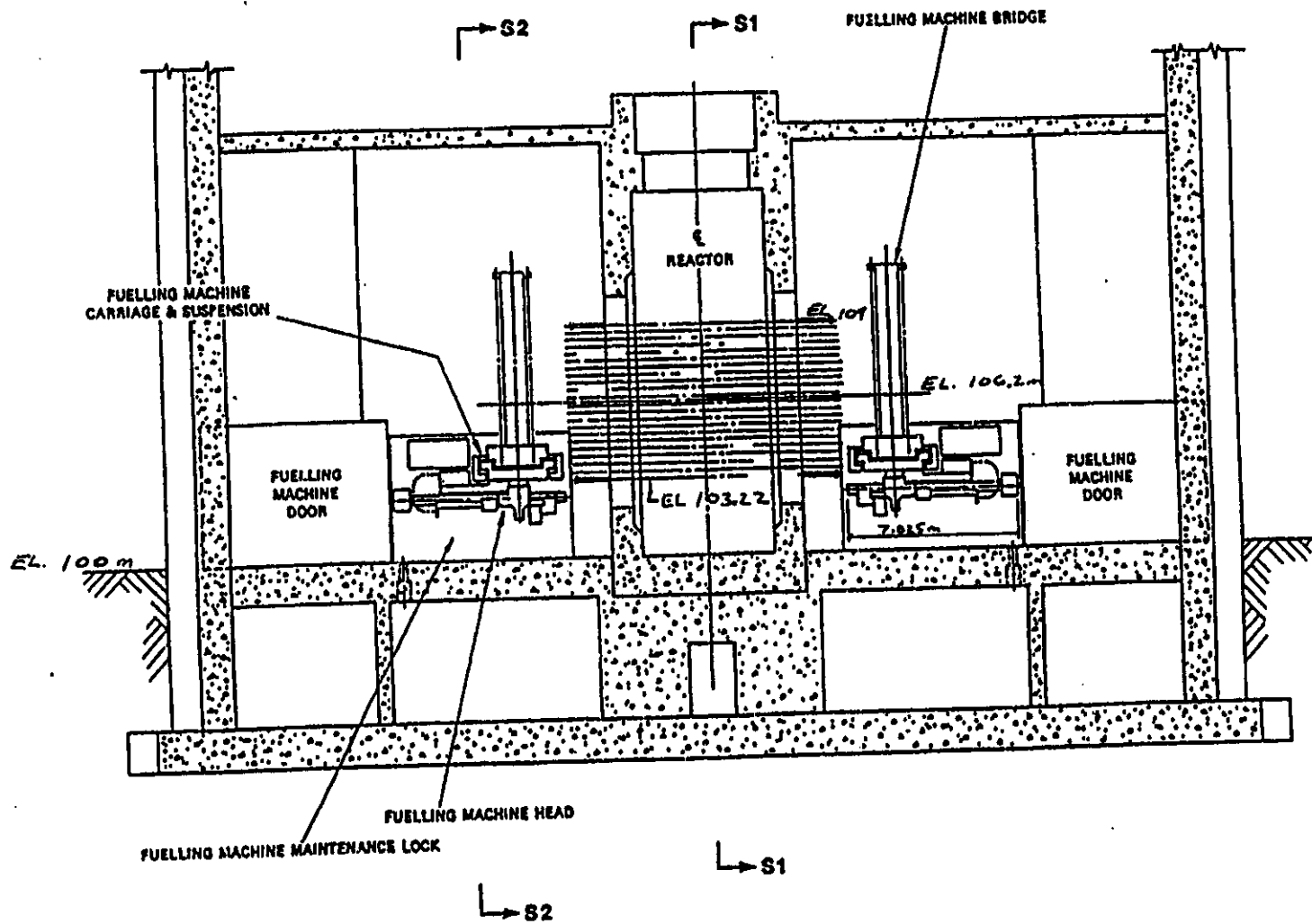


Figure 7-7 Fuel Handling System - Section S3

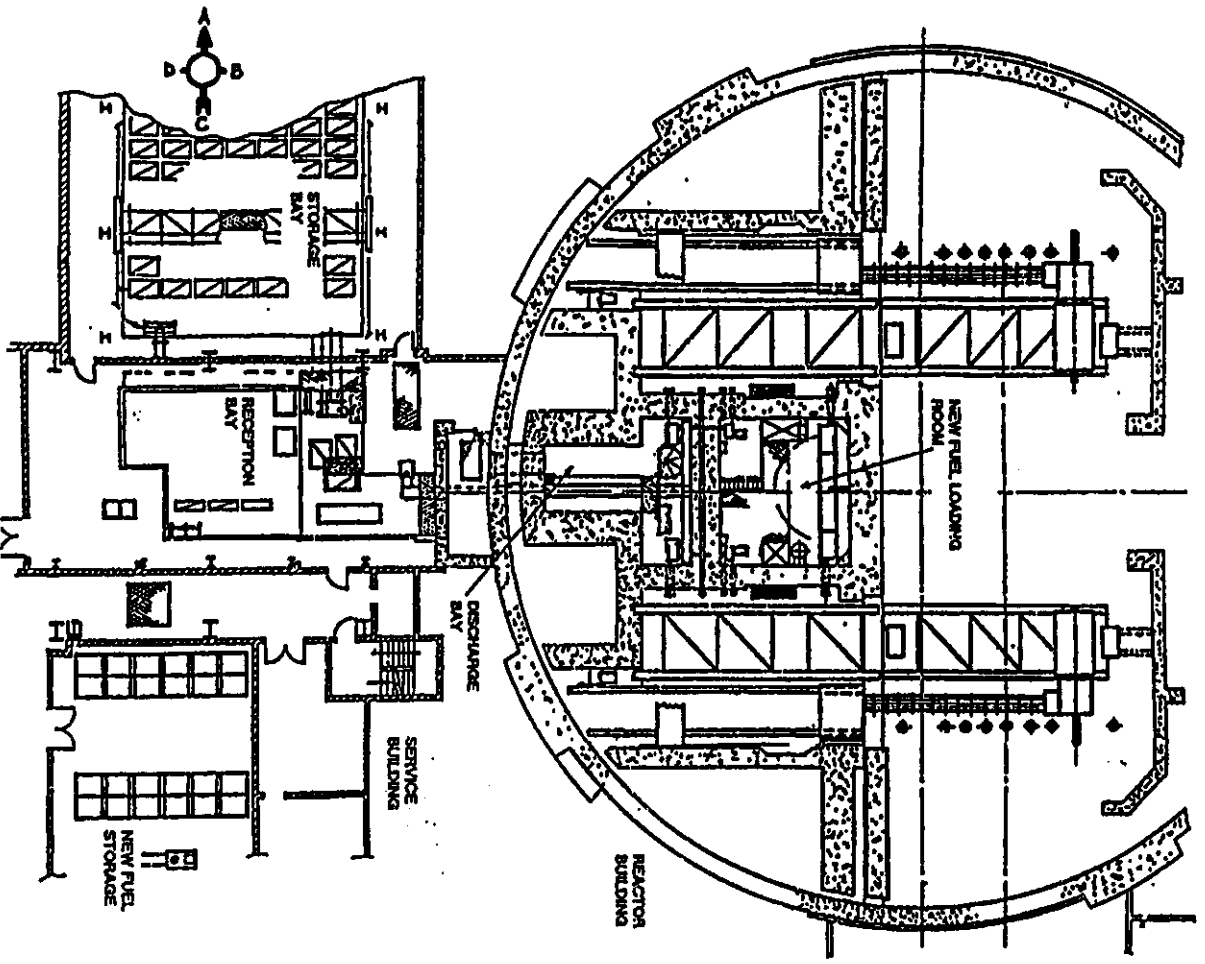


Figure 7-8 New Fuel and Irradiated Fuel Layout

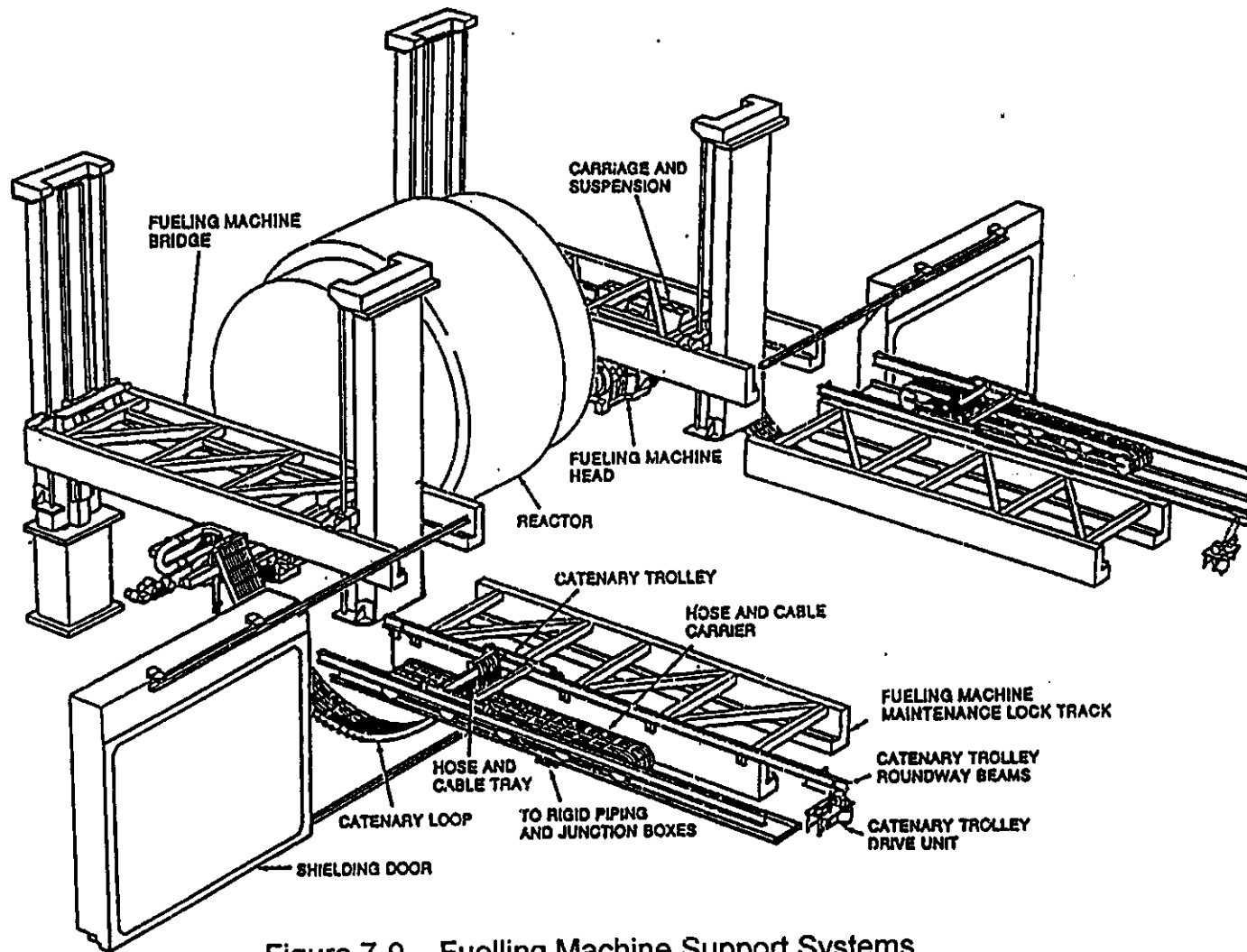


Figure 7-9 Fuelling Machine Support Systems

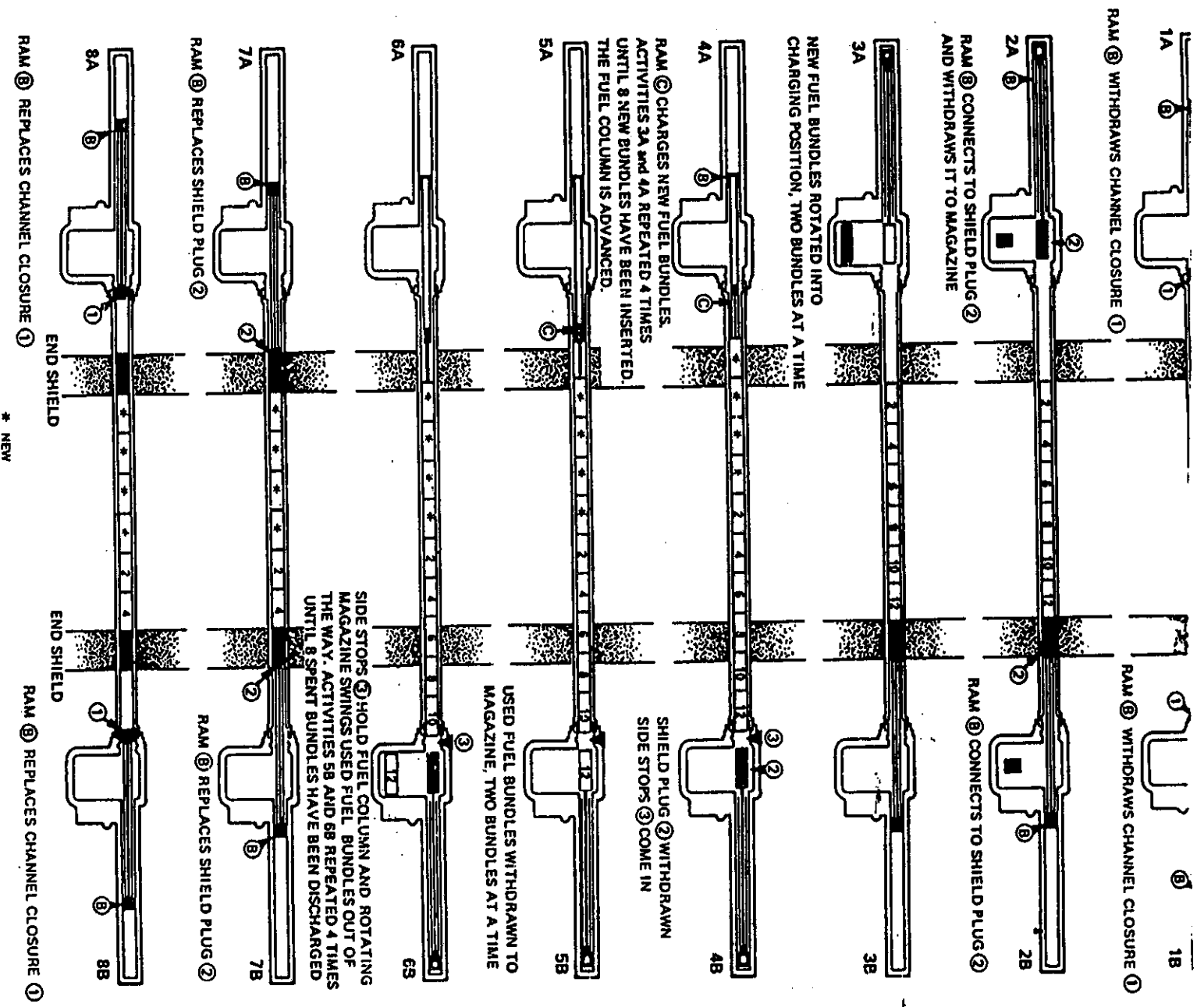


Figure 7-10 CANDU Fueling Sequence for 8-Bundle Replacement

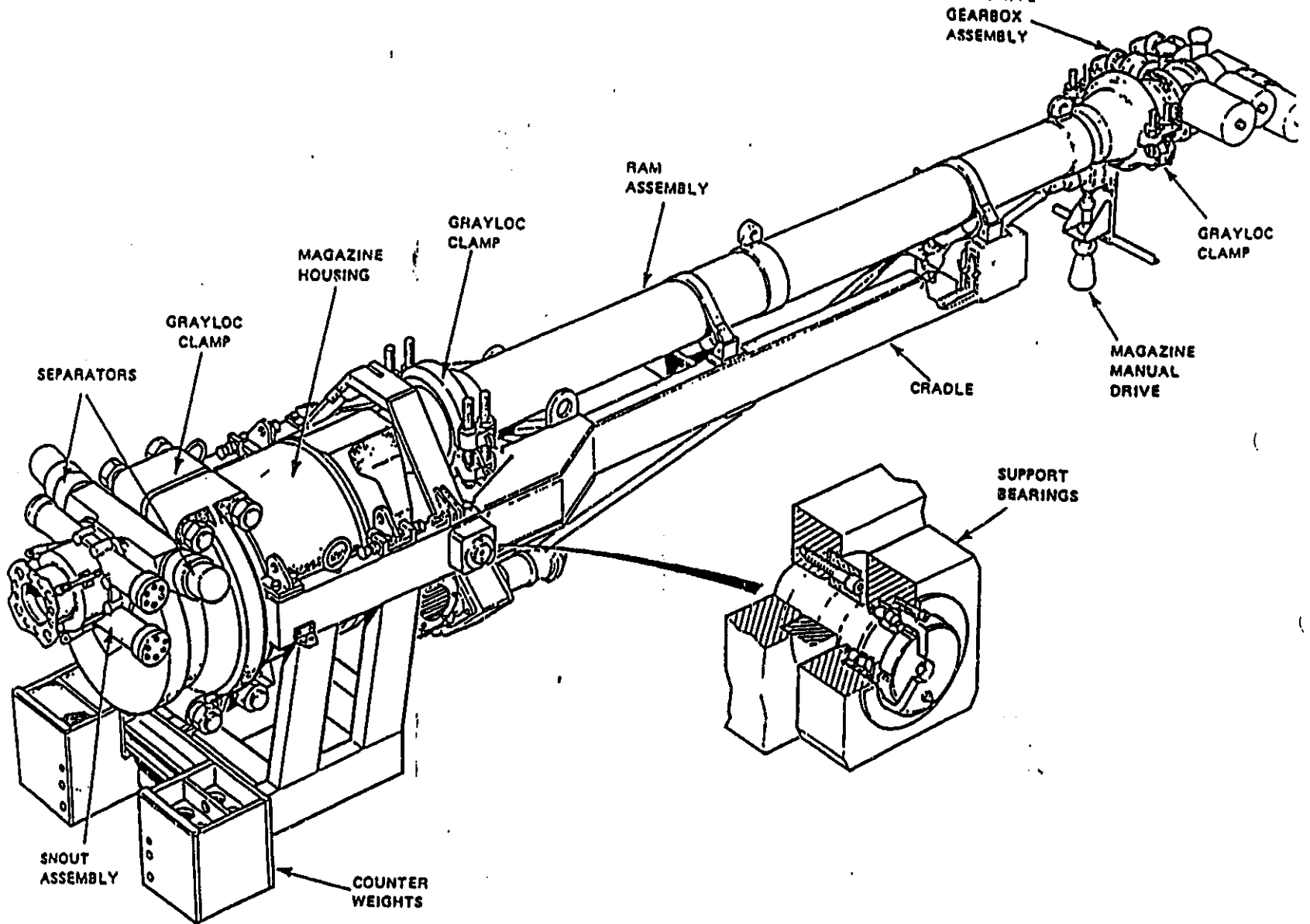


Figure 7-11 CANDU Fuelling Machine Head & Carriage

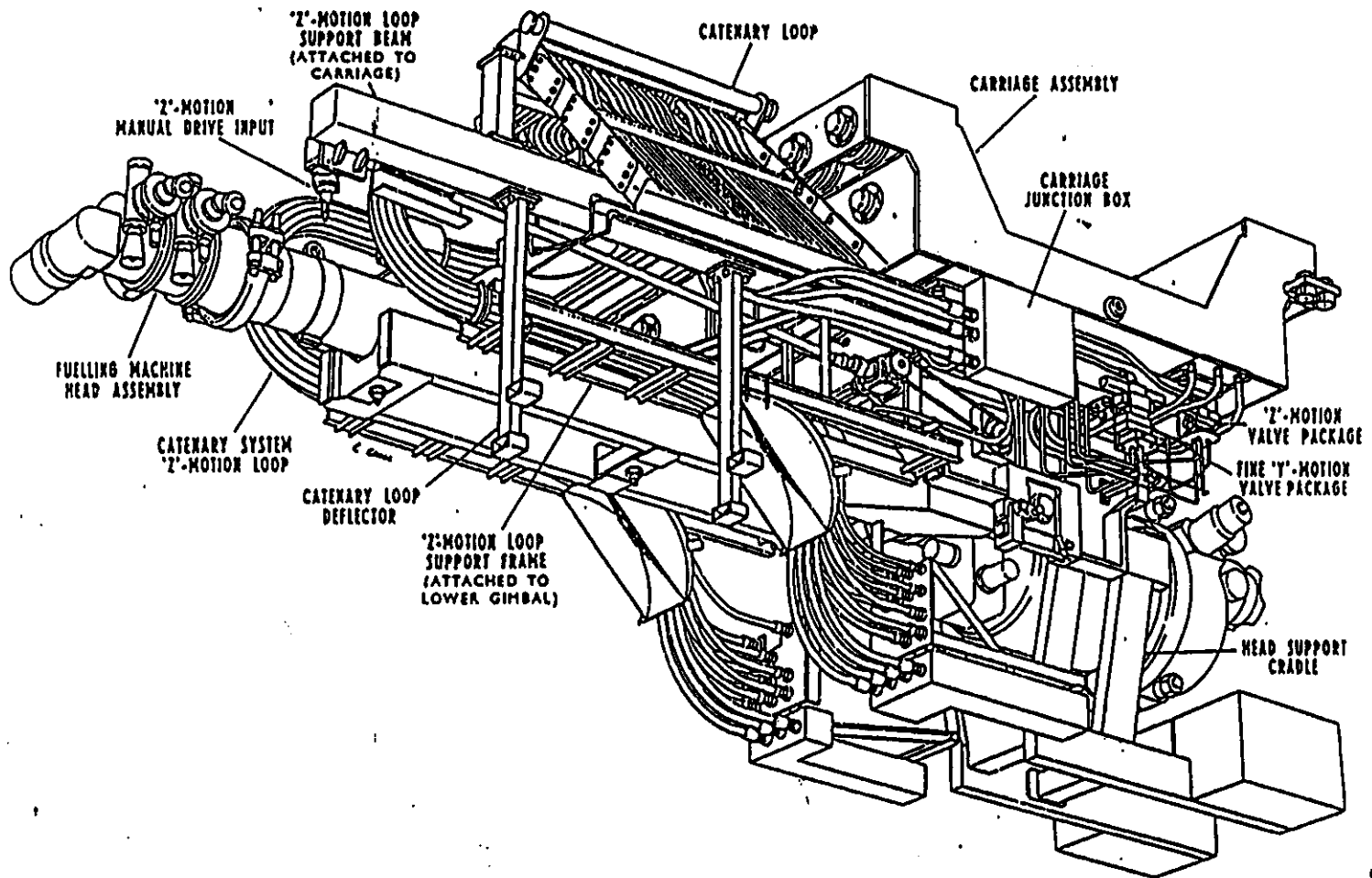


Figure 7-12 Carriage/Fuelling Machine Assembly

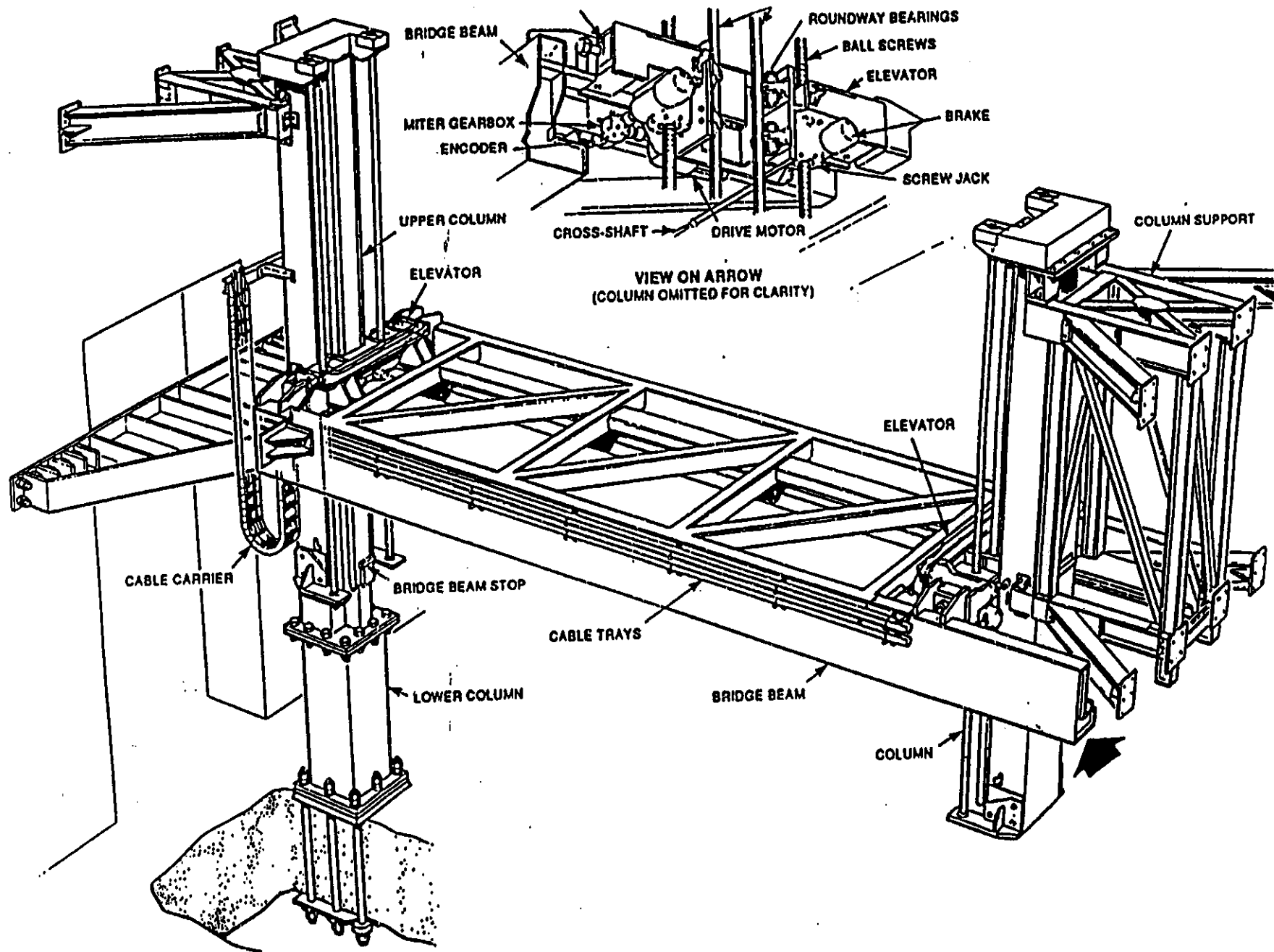


Figure 7-13 Fuelling Machine Bridge Assembly

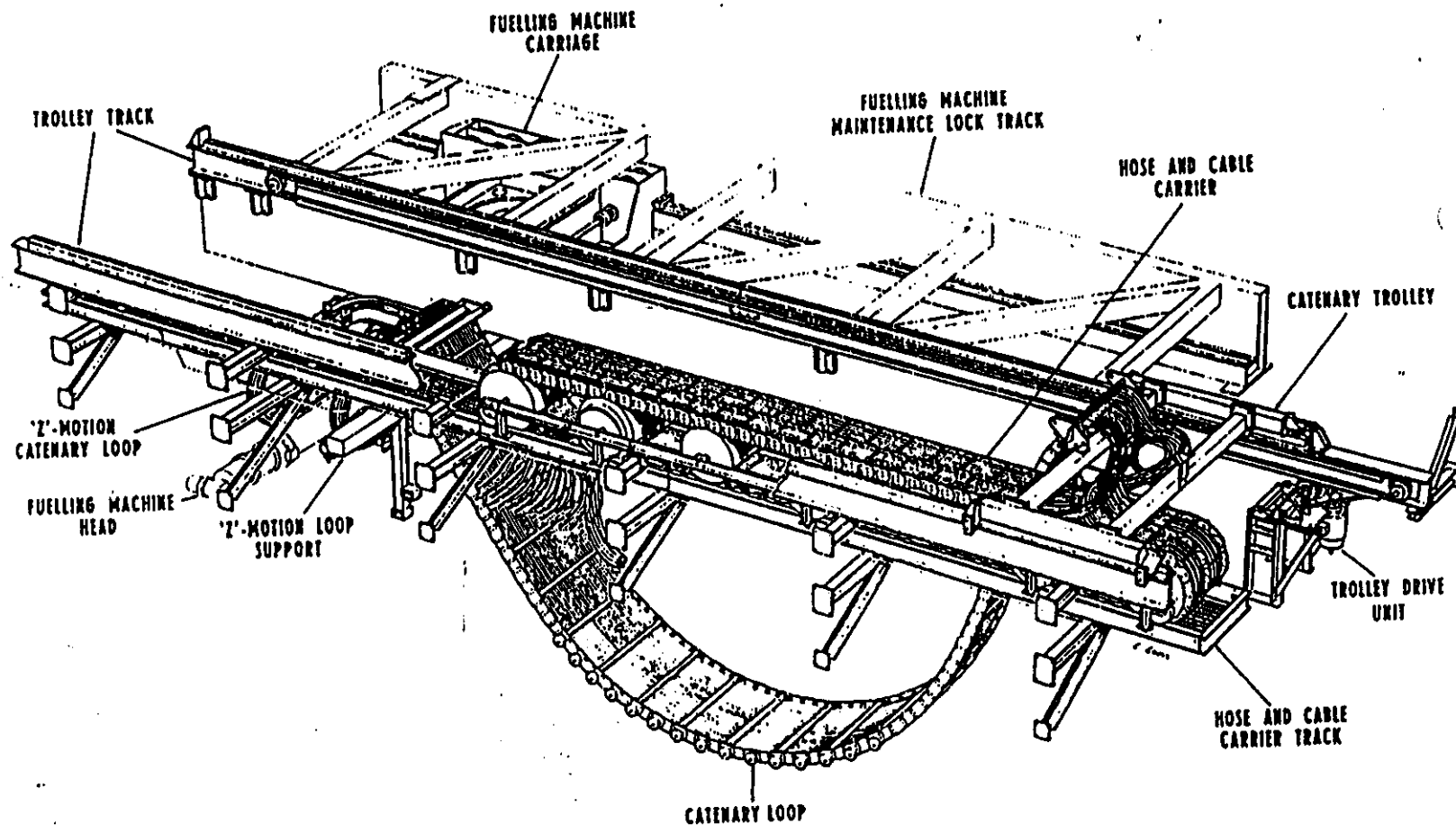


Figure 7-14 Fuelling Machine Catenary System

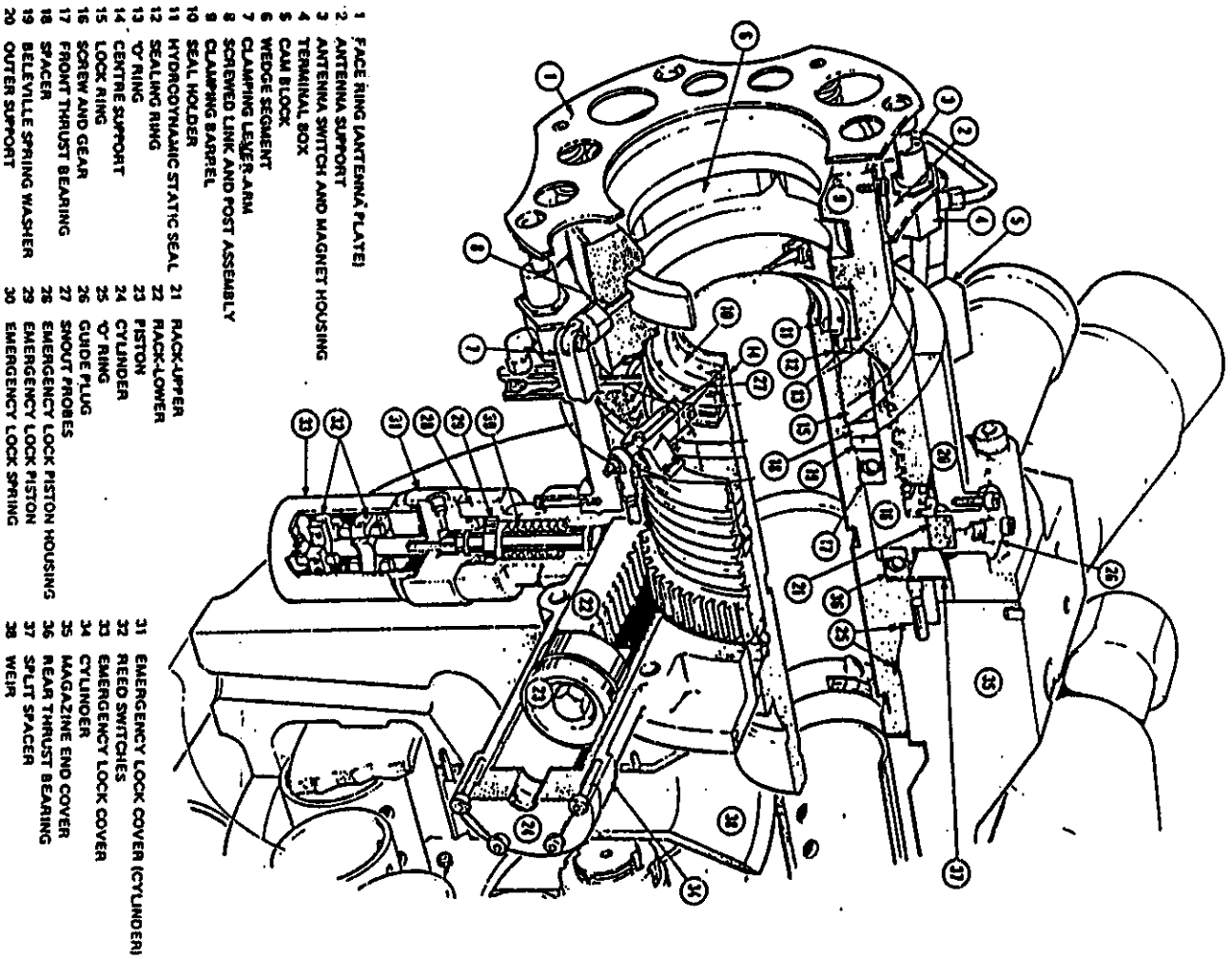


Figure 7-15 Snout Assembly

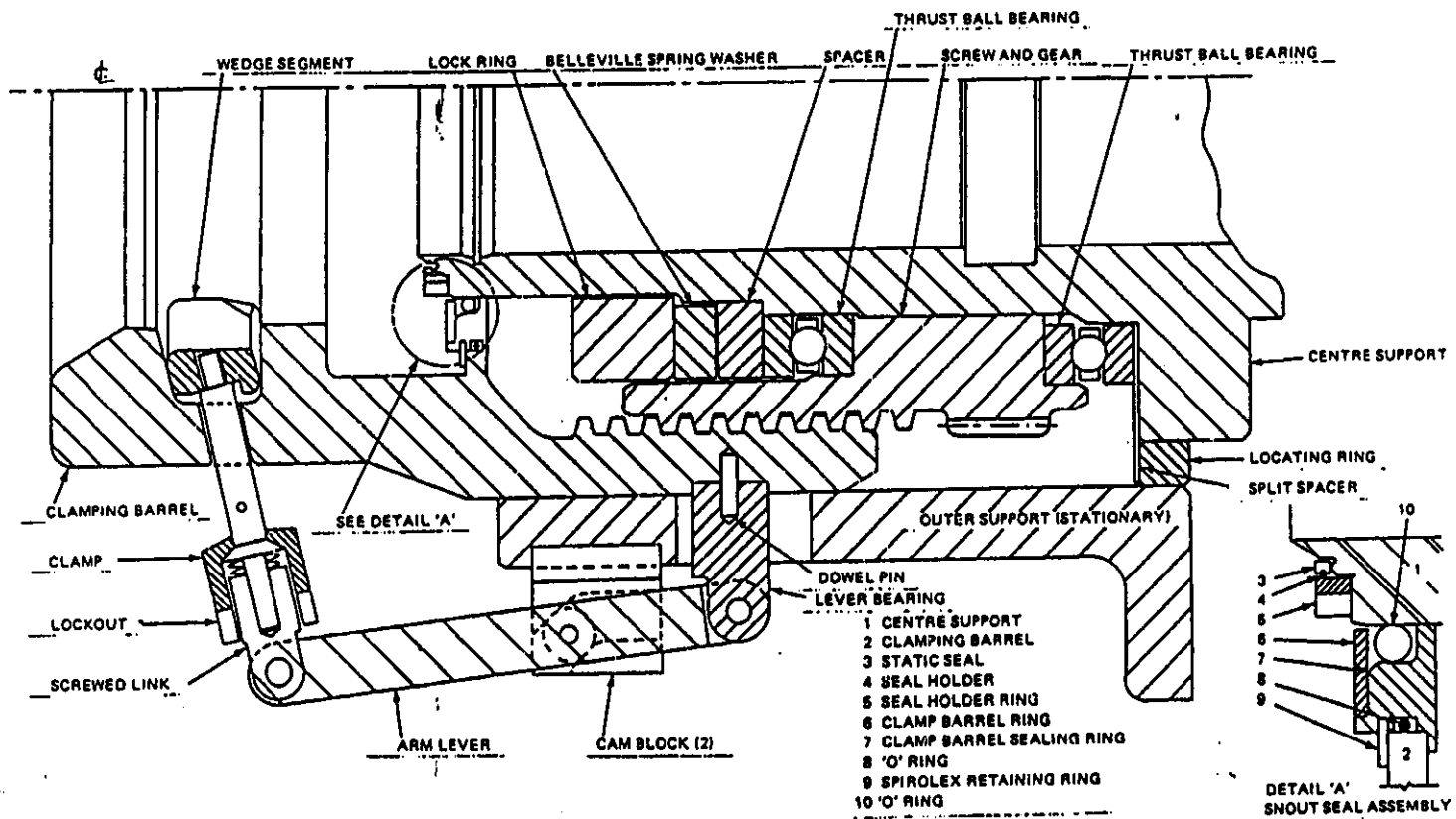


Figure 7-16 Snout Assembly (Sectional View)

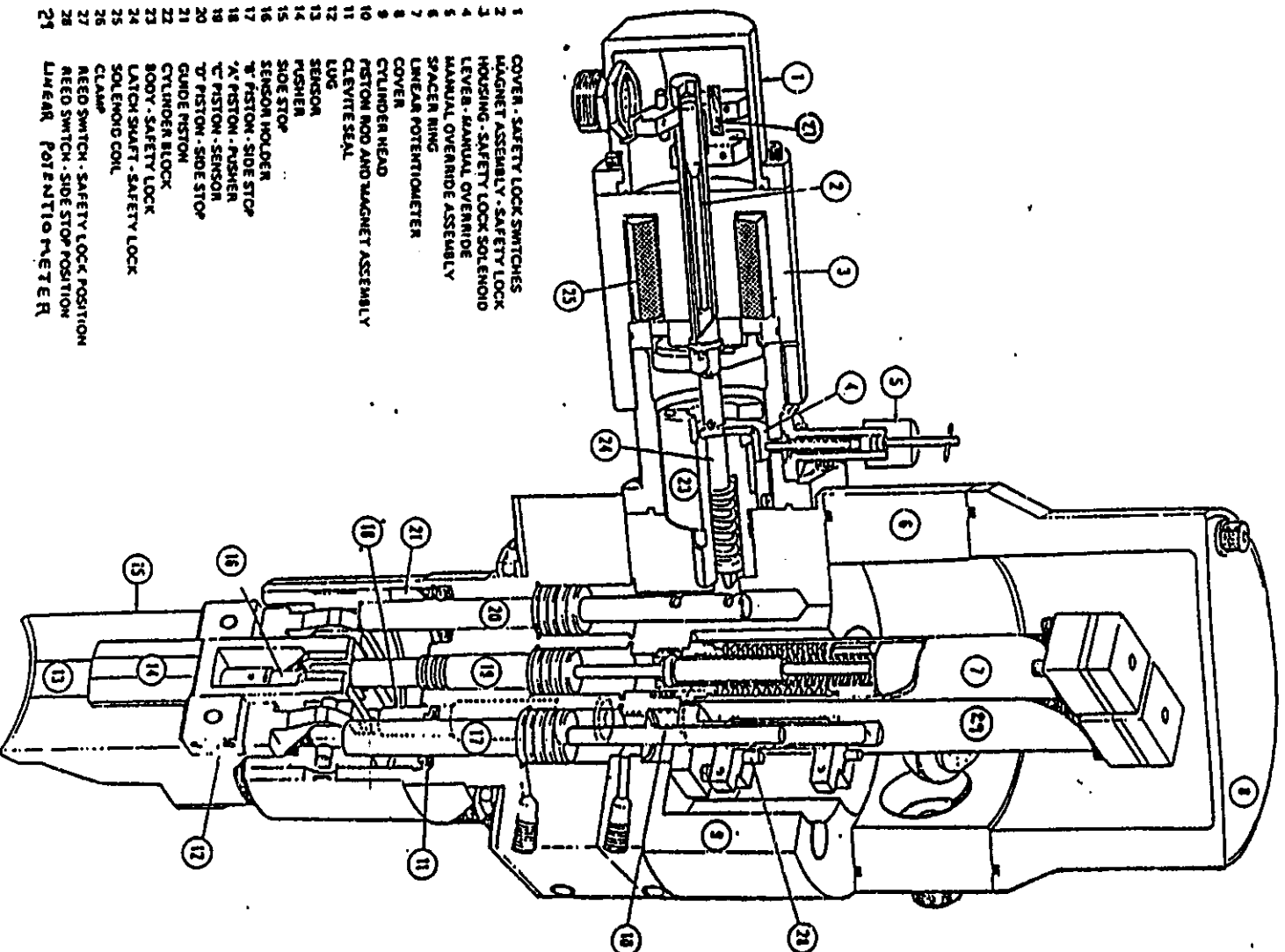


Figure 7-17 Fuelling Machine Separator

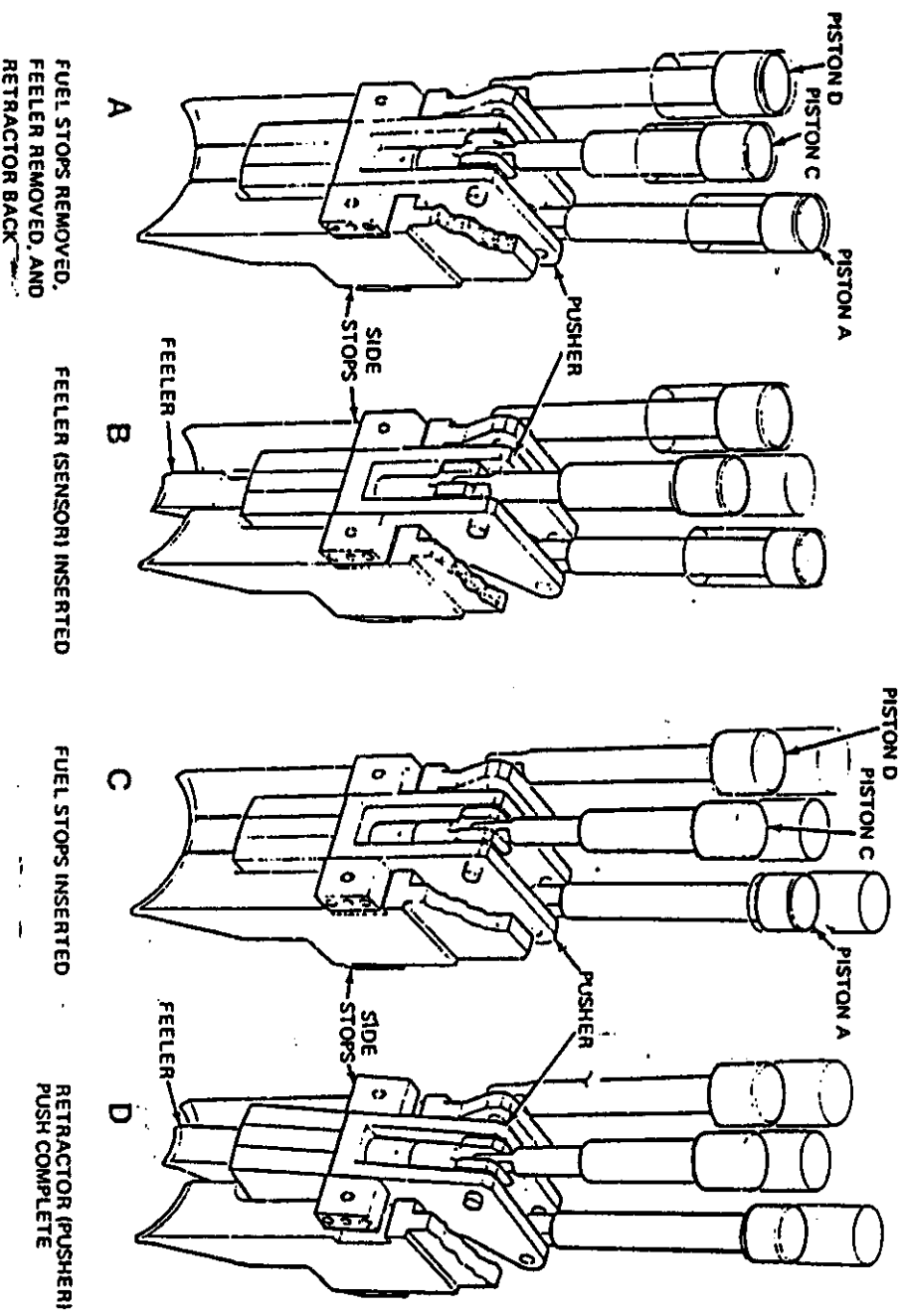


Figure 7-18 Operation of Side Stops, Sensors and Pushers

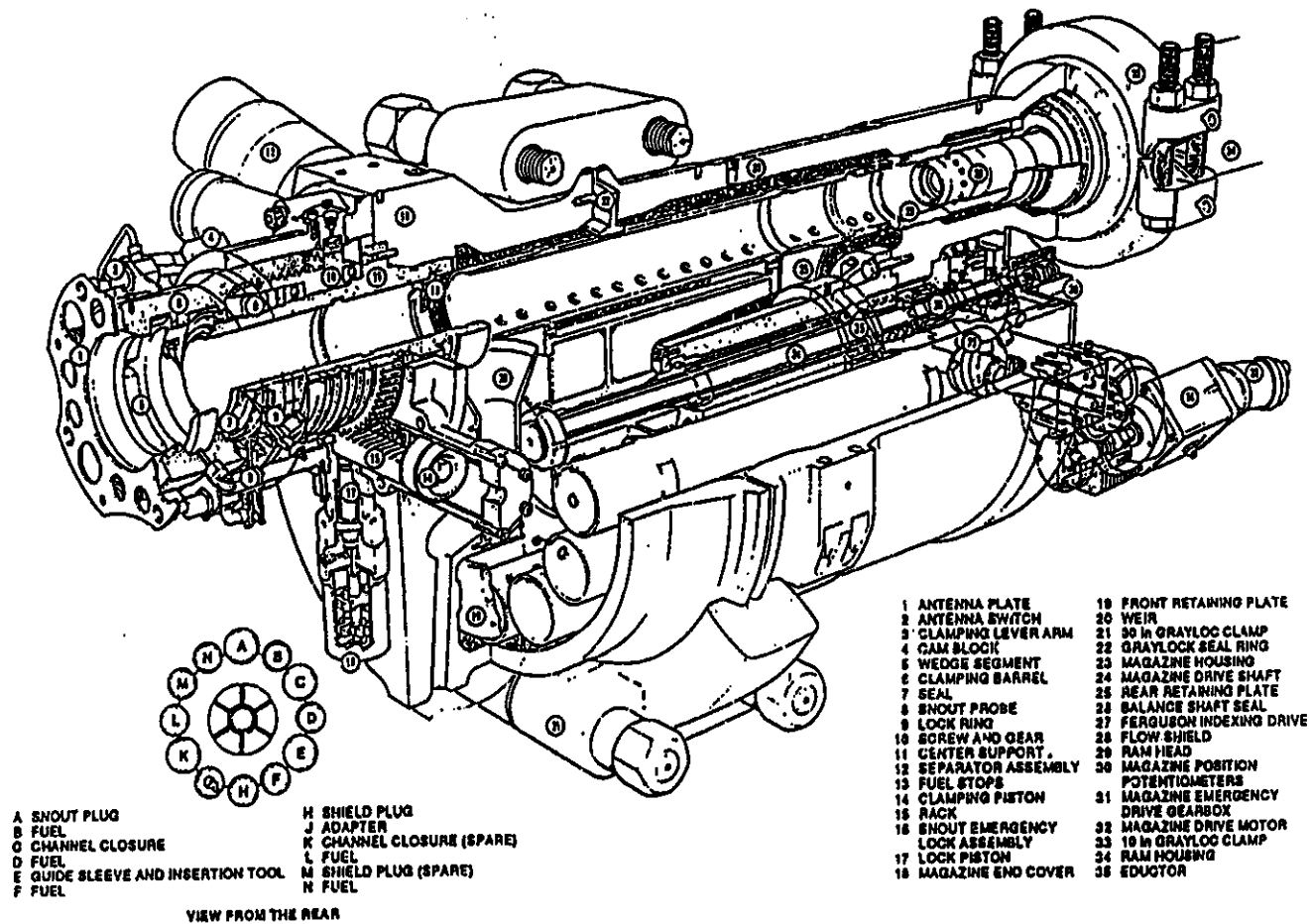


Figure 7-19 Fuelling Machine Head - Magazine Assembly

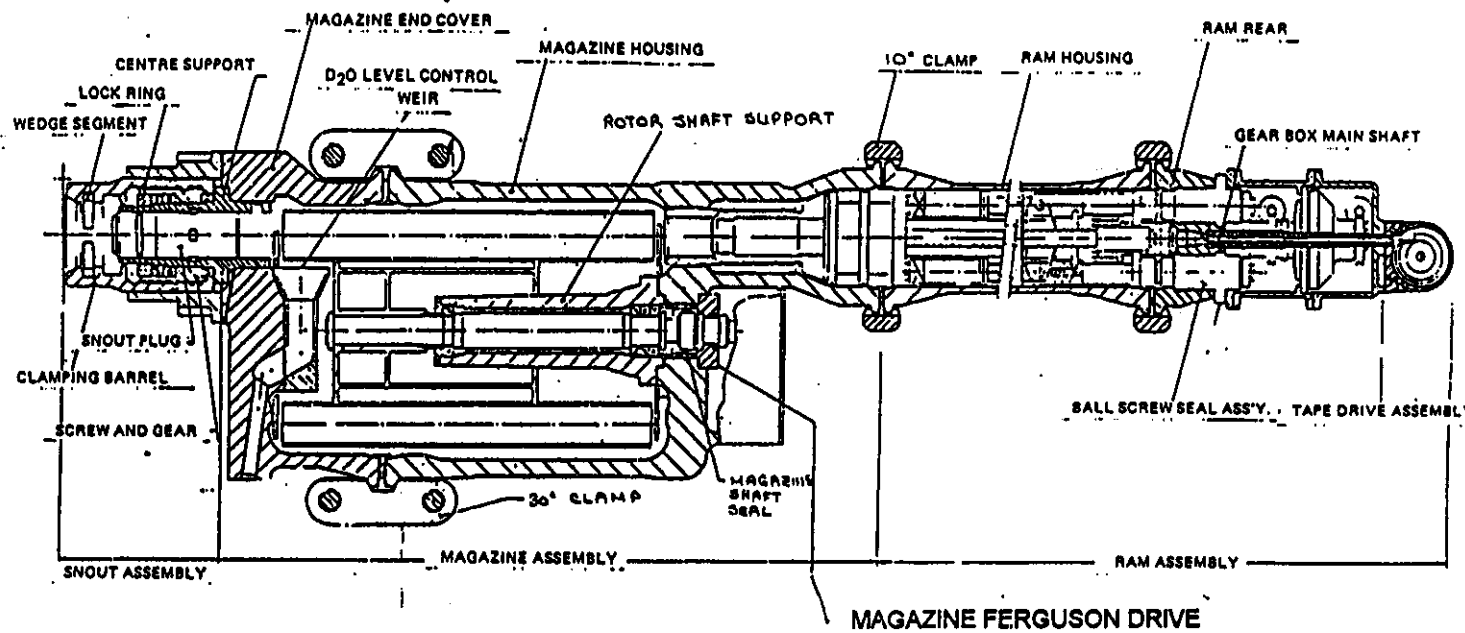


Figure 7-20 F/M Head (Sectional View)

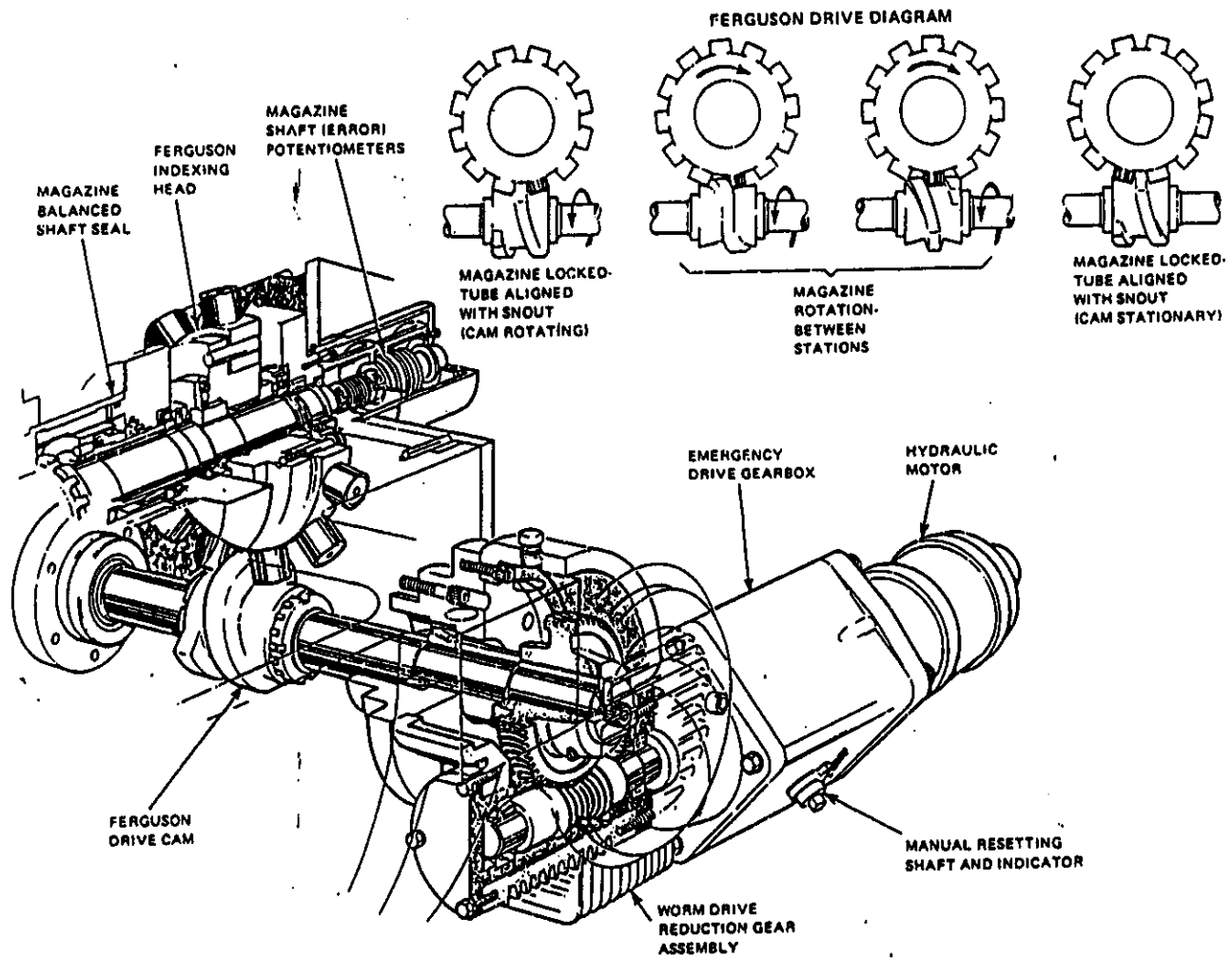


Figure 7-21 Magazine Drive System

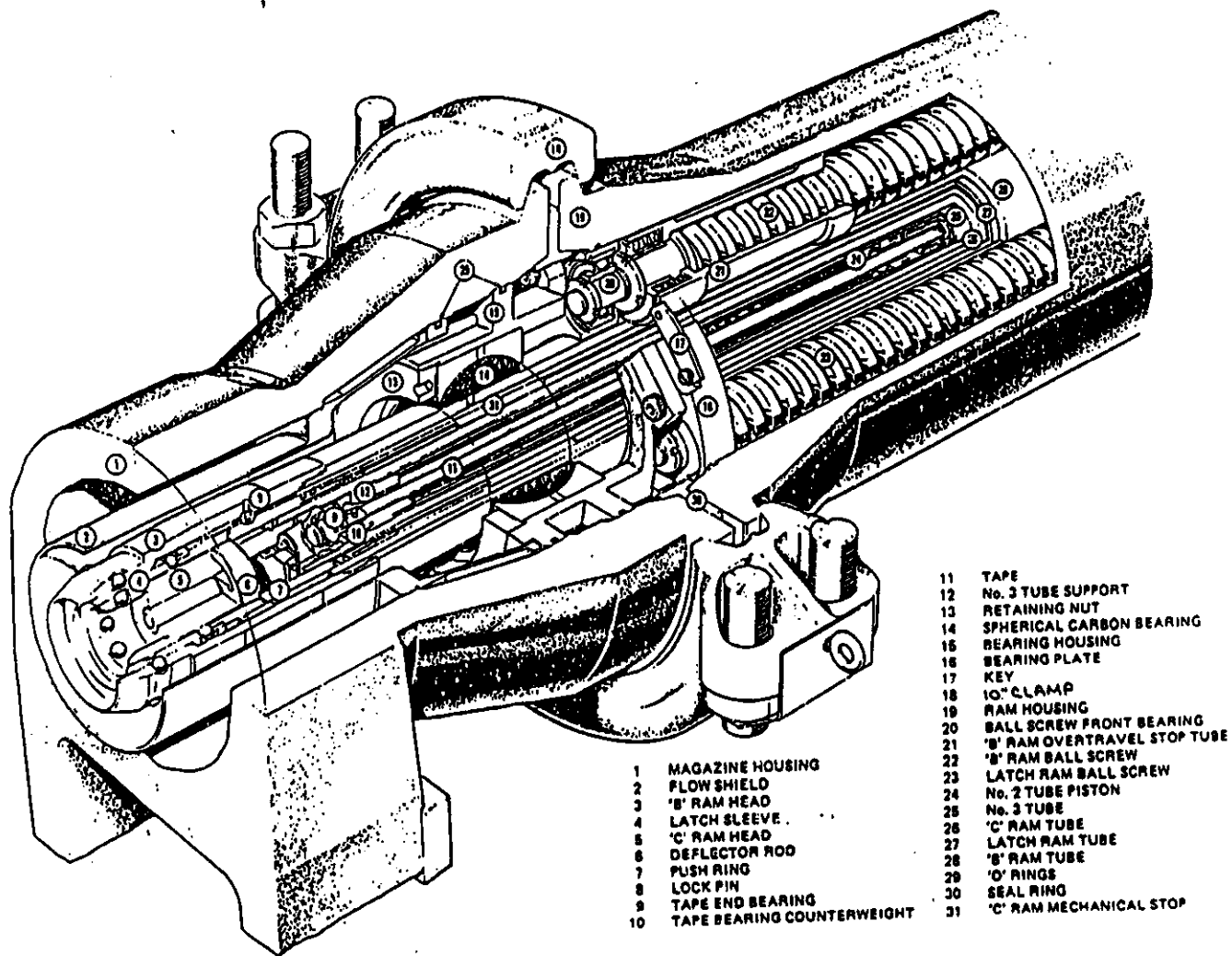
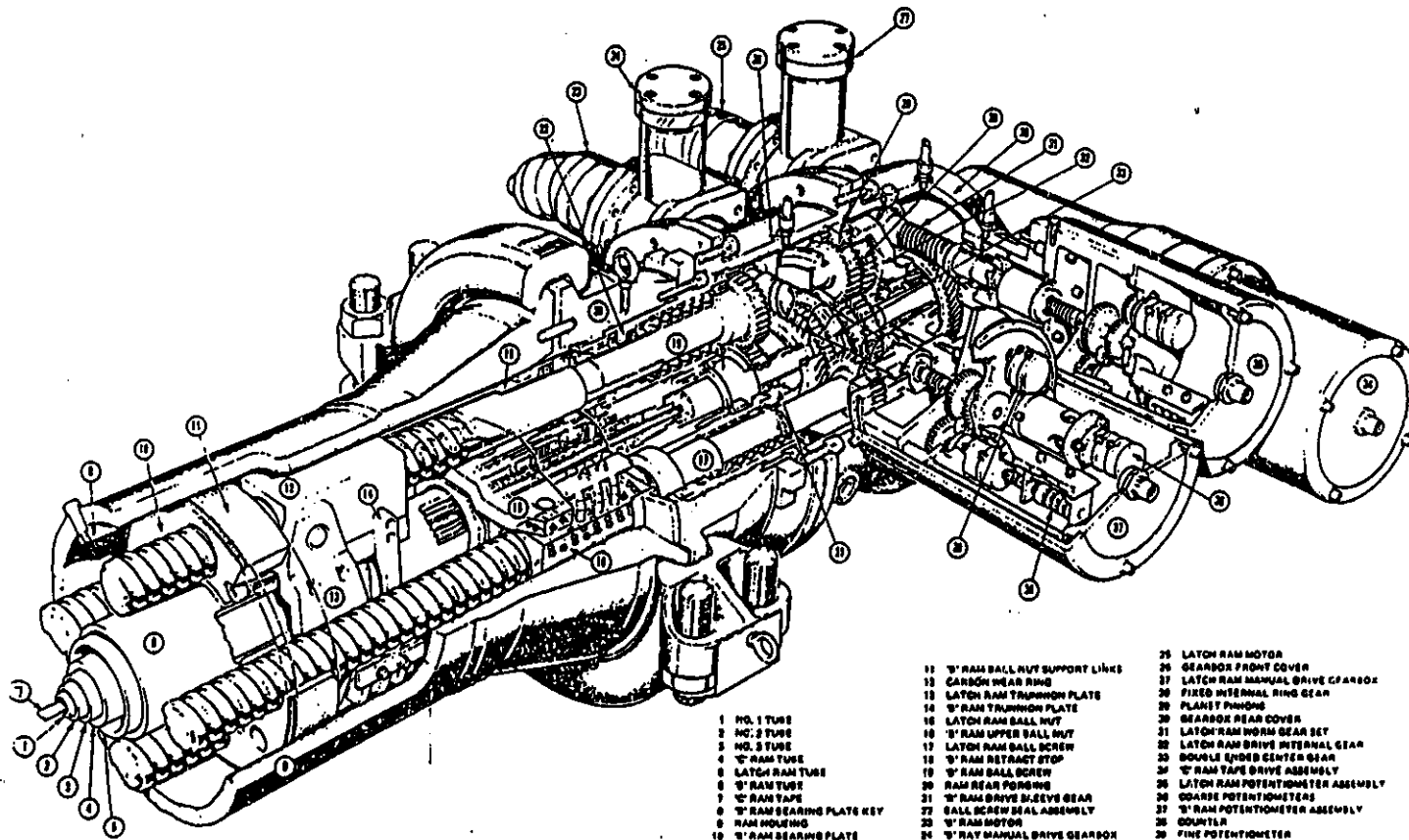


Figure 7-22 Ram Assembly (Front End)



- | | | |
|---------------------------|------------------------------------|-------------------------------------|
| 1 NO. 1 TUBE | 11 1/2" RAM BALL NUT SUPPORT LINKS | 25 LATCH RAM MOTOR |
| 2 NO. 2 TUBE | 12 CARBON WEAR RING | 26 GEARBOX FRONT COVER |
| 3 NO. 3 TUBE | 13 LATCH RAM THIMBON PLATE | 27 LATCH RAM MANUAL DRIVE GEARBOX |
| 4 1/2" RAM TUBE | 14 1/2" RAM THIMBON PLATE | 28 FIXED INTERNAL RING GEAR |
| 5 LATCH RAM TUBE | 15 LATCH RAM BALL NUT | 29 PLANET PINIONS |
| 6 1/2" RAM TUBE | 16 1/2" RAM UPPER BALL NUT | 30 GEARBOX REAR COVER |
| 7 1/2" RAM TUBE | 17 LATCH RAM BALL SCREW | 31 LATCH RAM WORM GEAR SET |
| 8 RAM BEARING PLATE KEY | 18 1/2" RAM RETRACT STOP | 32 LATCH RAM DRIVE INTERNAL GEAR |
| 9 RAM HOUSING | 19 1/2" RAM BALL SCREW | 33 DOUBLE ENDED CENTER GEAR |
| 10 1/2" RAM BEARING PLATE | 20 RAM REAR FORGING | 34 1/2" RAM TAPES DRIVE ASSEMBLY |
| | 21 1/2" RAM DRIVE B-SIZE GEAR | 35 LATCH RAM POTENTIOMETER ASSEMBLY |
| | 22 BALL SCREW BAL ASSEMBLY | 36 COARSE POTENTIOMETER |
| | 23 1/2" RAM MOTOR | 37 1/2" RAM POTENTIOMETER ASSEMBLY |
| | 24 1/2" RAM MANUAL DRIVE GEARBOX | 38 COUNTER |
| | | 39 FINE POTENTIOMETER |

Figure 7-23 Ram Assembly (Rear End)

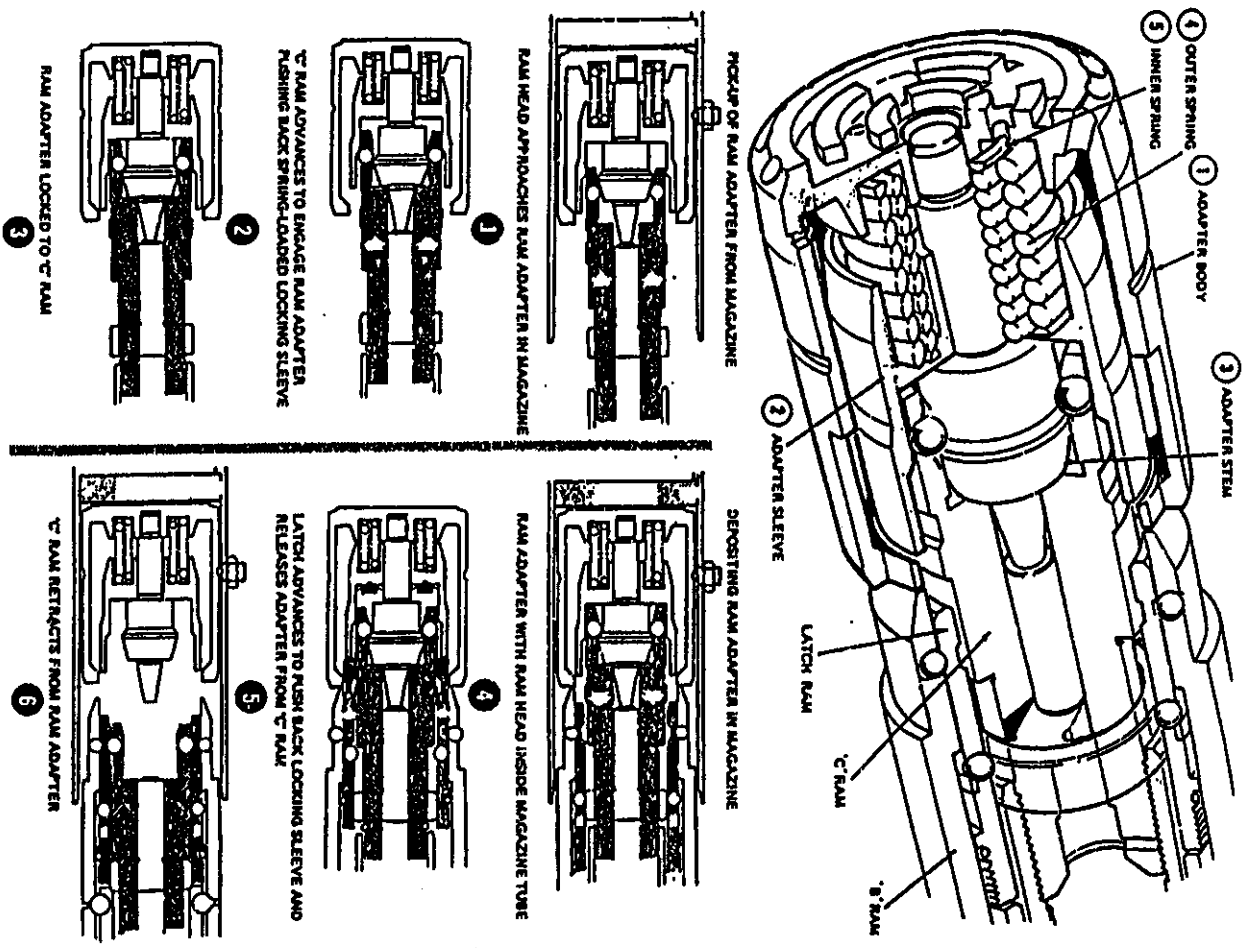


Figure 7-24 Ram Adapter and Operation

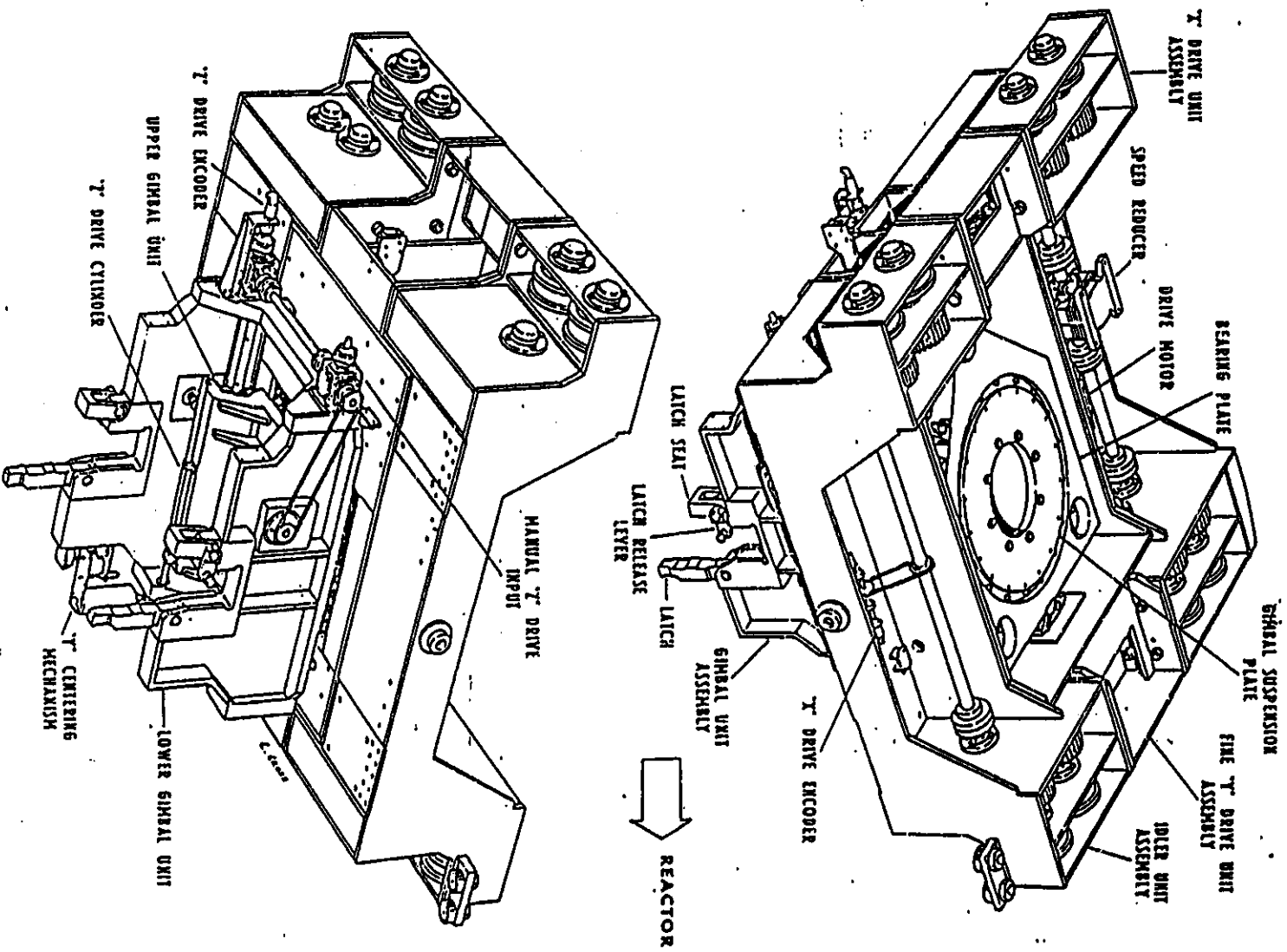


Figure 7-25 Fuelling Machine Carriage Assembly

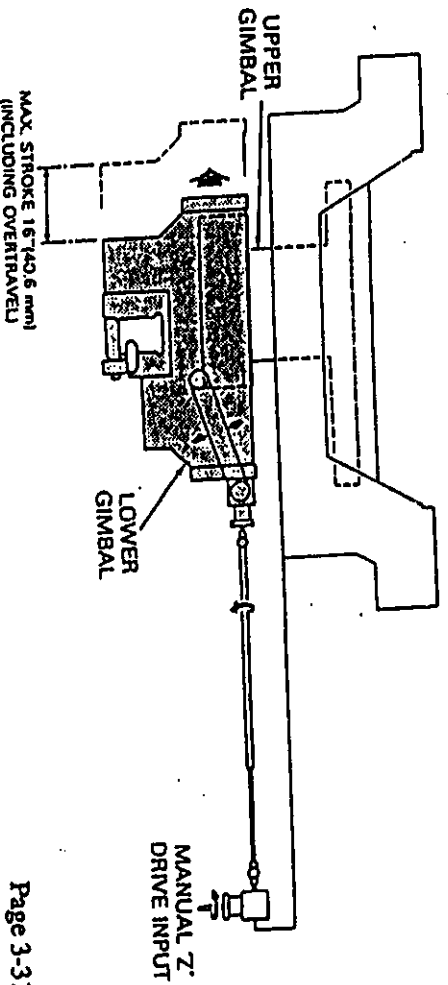
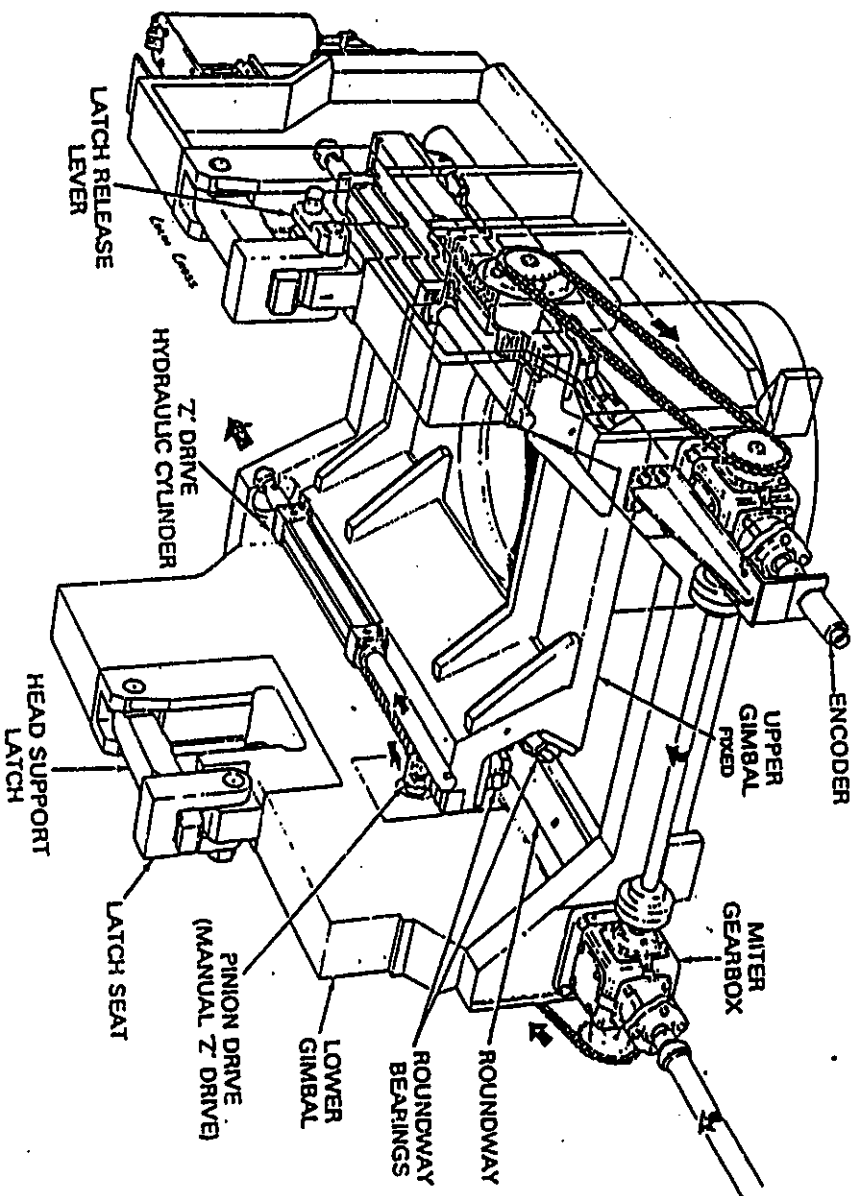


Figure 7-26 'Z' Drive on Carriage Assembly

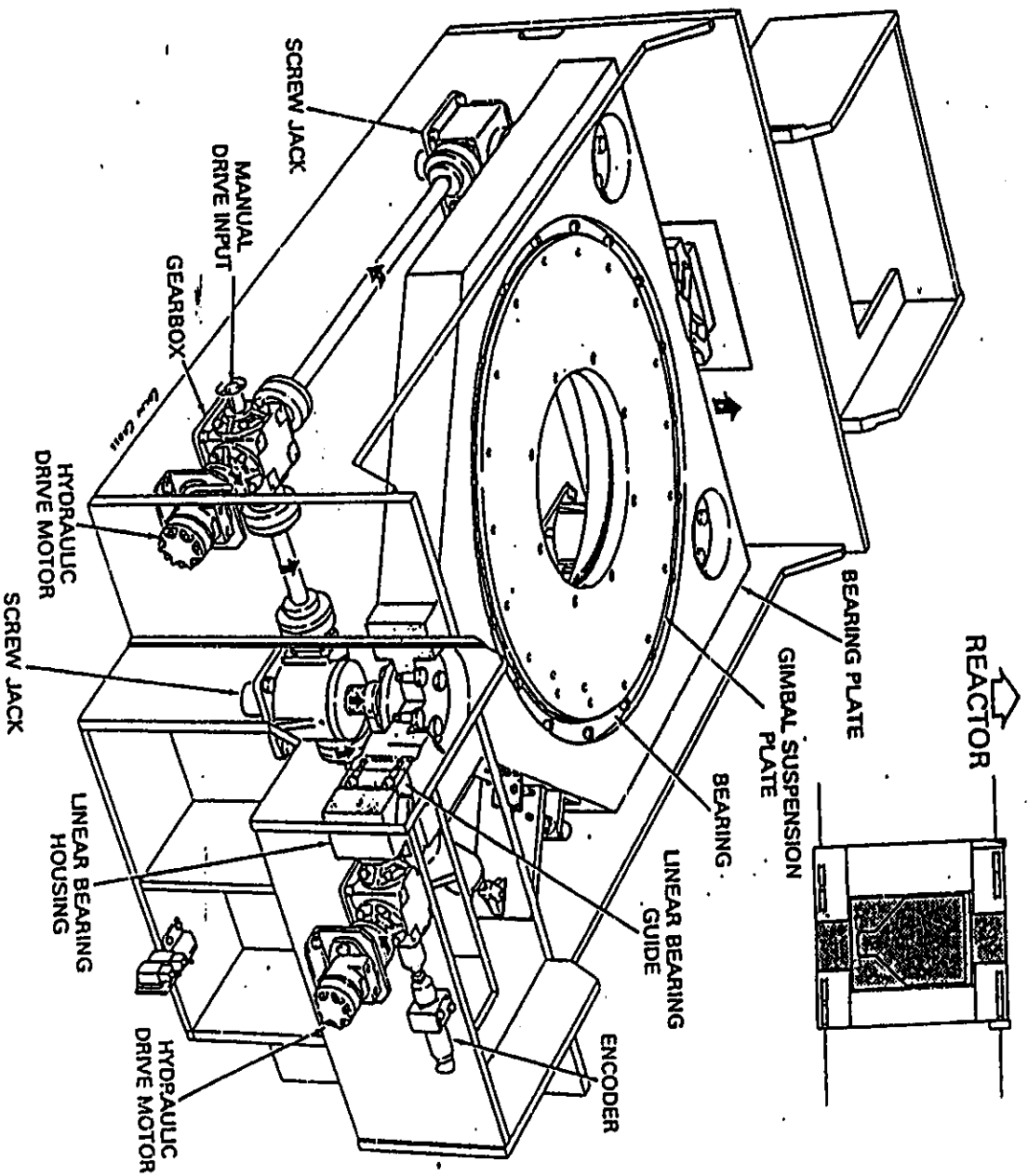


Figure 7-27 Fine Y Drive

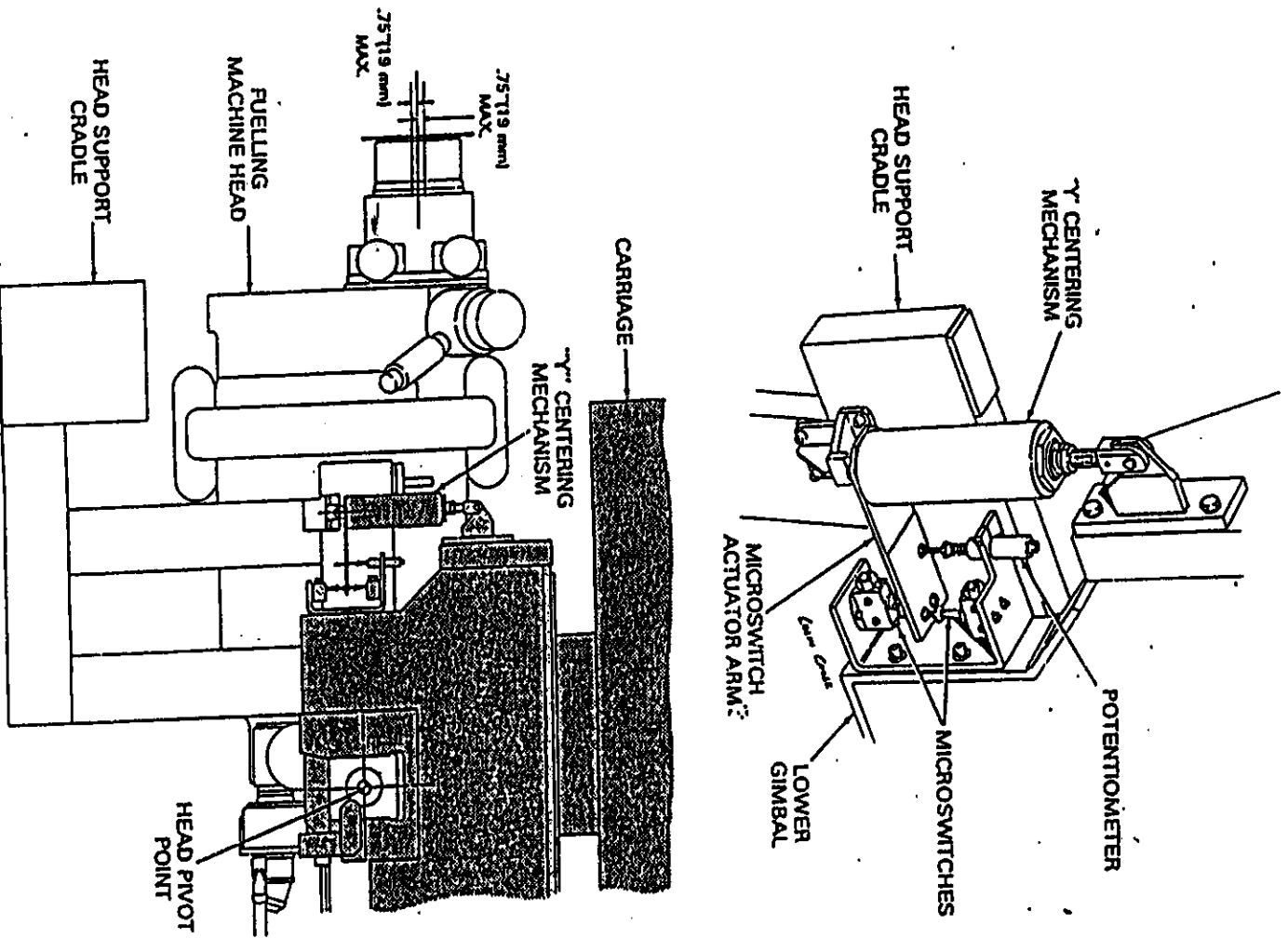


Figure 7-28 Pitch Error Sensing

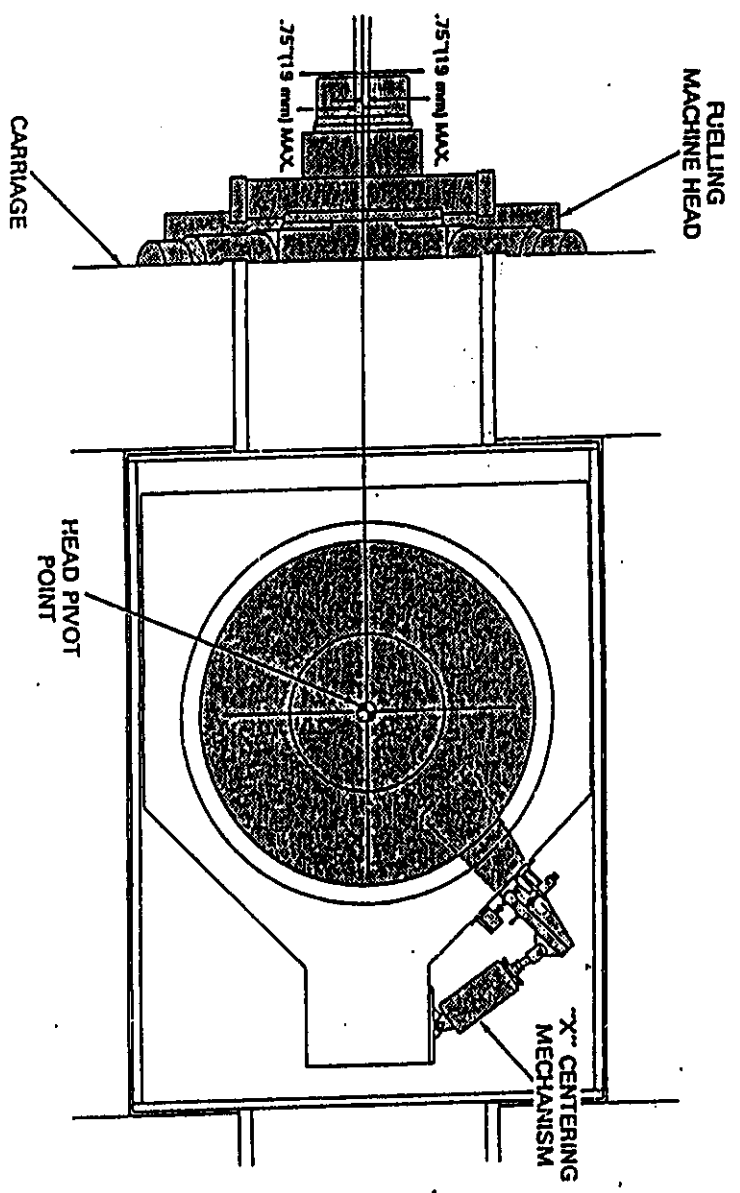
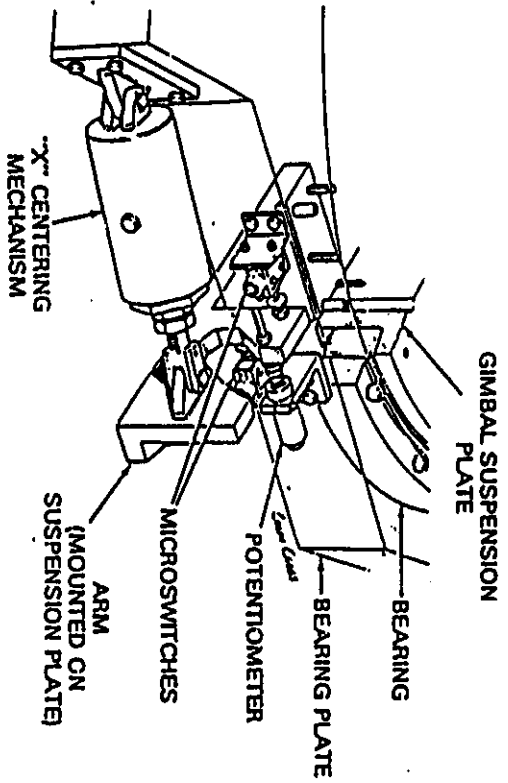


Figure 7-29 Yaw Error Sensing

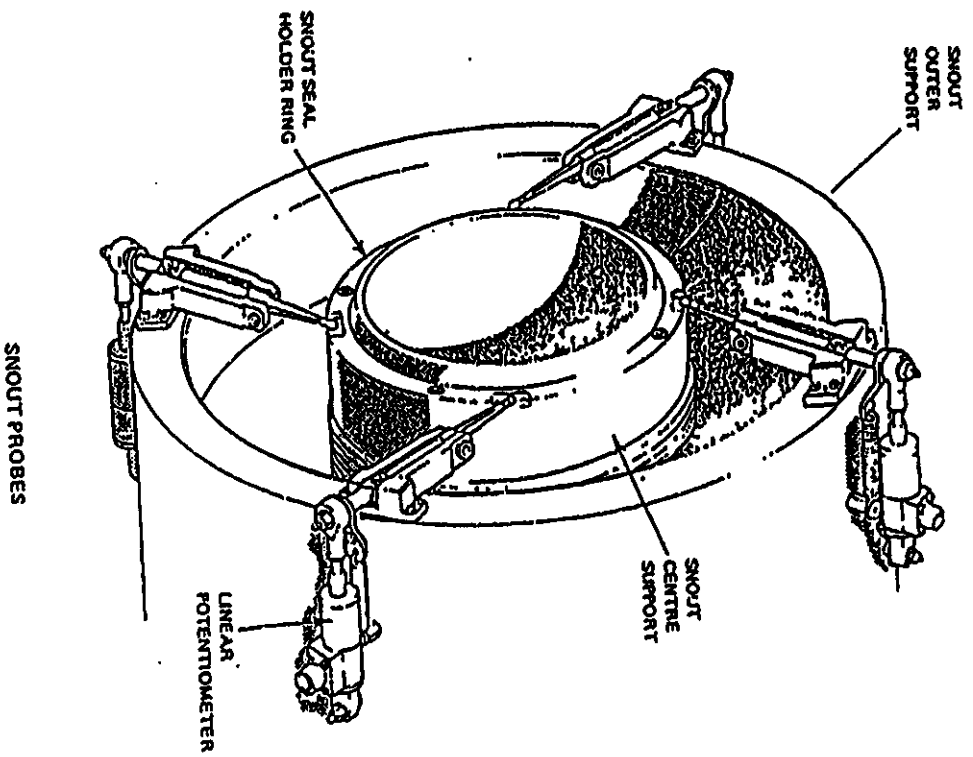
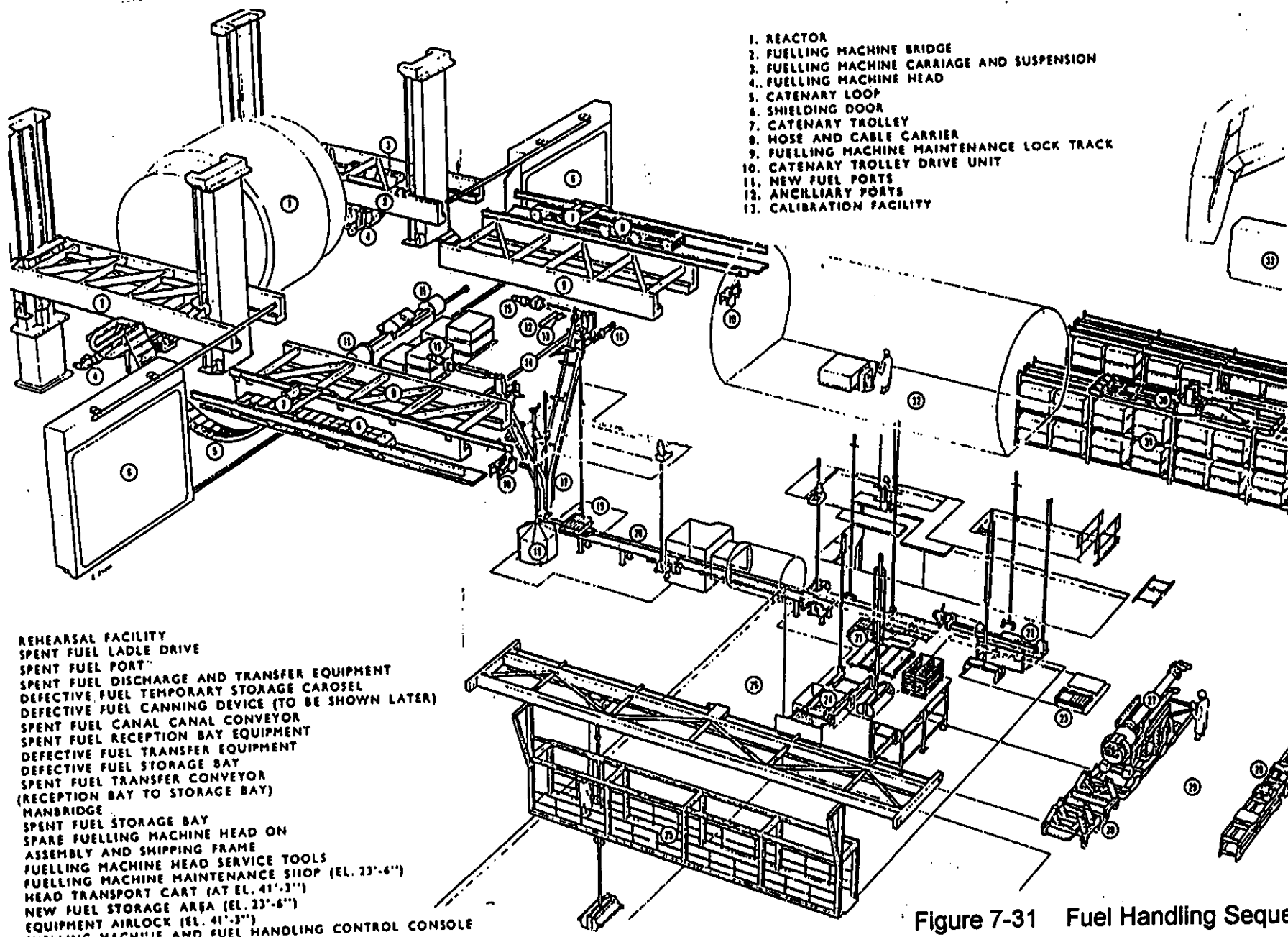


Figure 7-30 Snout Probe Sensors



1. REACTOR
2. FUELLING MACHINE BRIDGE
3. FUELLING MACHINE CARRIAGE AND SUSPENSION
4. FUELLING MACHINE HEAD
5. CATENARY LOOP
6. SHIELDING DOOR
7. CATENARY TROLLEY
8. HOSE AND CABLE CARRIER
9. FUELLING MACHINE MAINTENANCE LOCK TRACK
10. CATENARY TROLLEY DRIVE UNIT
11. NEW FUEL PORTS
12. ANCILLIARY PORTS
13. CALIBRATION FACILITY

- REHEARSAL FACILITY
 SPENT FUEL LADLE DRIVE
 SPENT FUEL PORT
 SPENT FUEL DISCHARGE AND TRANSFER EQUIPMENT
 DEFECTIVE FUEL TEMPORARY STORAGE CAROSEL
 DEFECTIVE FUEL CANNING DEVICE (TO BE SHOWN LATER)
 SPENT FUEL CANAL CONVEYOR
 SPENT FUEL RECEPTION BAY EQUIPMENT
 DEFECTIVE FUEL TRANSFER EQUIPMENT
 DEFECTIVE FUEL STORAGE BAY
 SPENT FUEL TRANSFER CONVEYOR
 (RECEPTION BAY TO STORAGE BAY)
 MANBRIDGE
 SPENT FUEL STORAGE BAY
 SPARE FUELLING MACHINE HEAD ON
 ASSEMBLY AND SHIPPING FRAME
 FUELLING MACHINE HEAD SERVICE TOOLS
 FUELLING MACHINE MAINTENANCE SHOP (EL. 23'-6")
 HEAD TRANSPORT CART (AT EL. 41'-3")
 NEW FUEL STORAGE AREA (EL. 23'-6")
 EQUIPMENT AIRLOCK (EL. 41'-3")
 FUELLING MACHINE AND FUEL HANDLING CONTROL CONSOLE

Figure 7-31 Fuel Handling Sequence

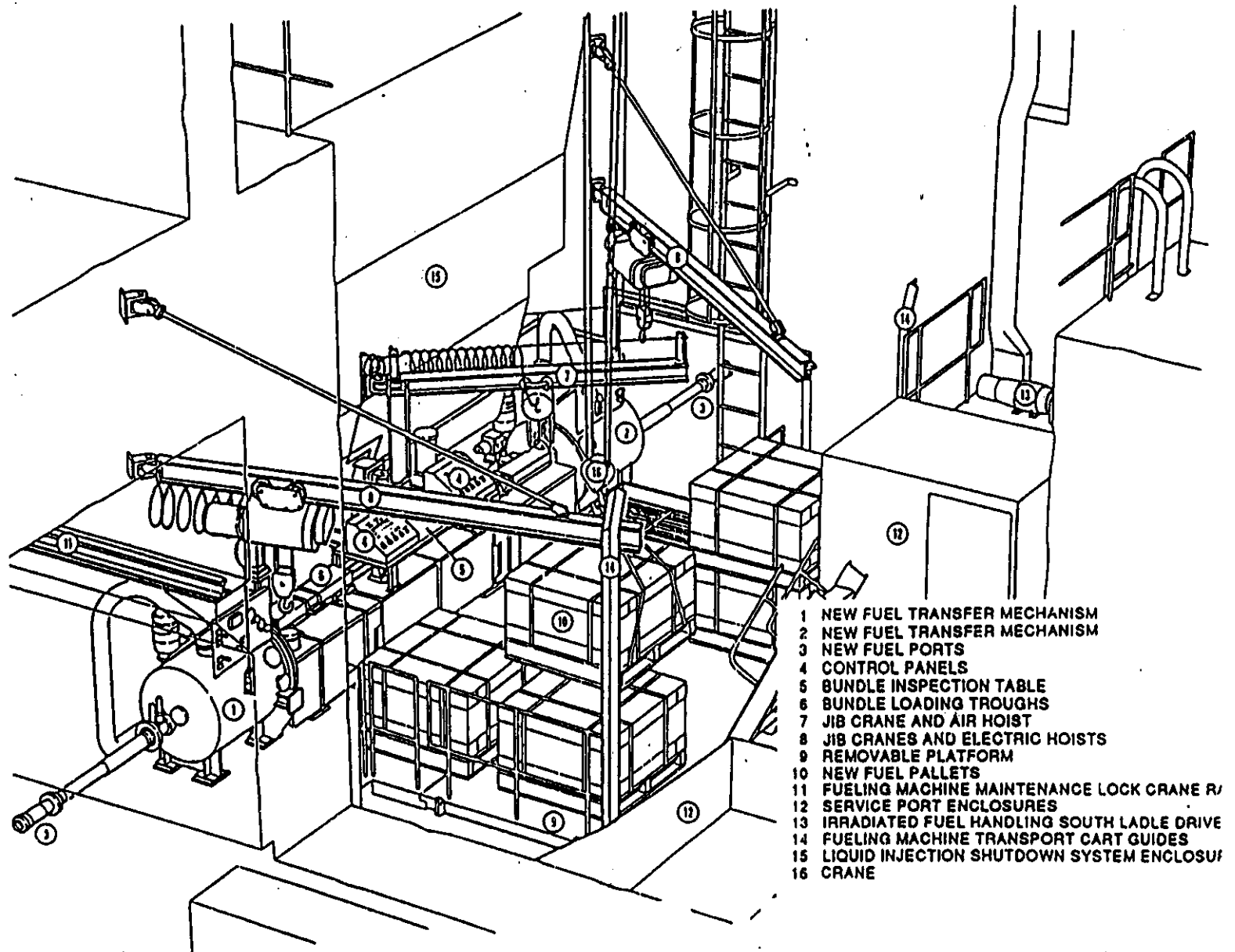


Figure 7-32 CANDU 6 New Fuel Room Equipment Inside Reactor Containment

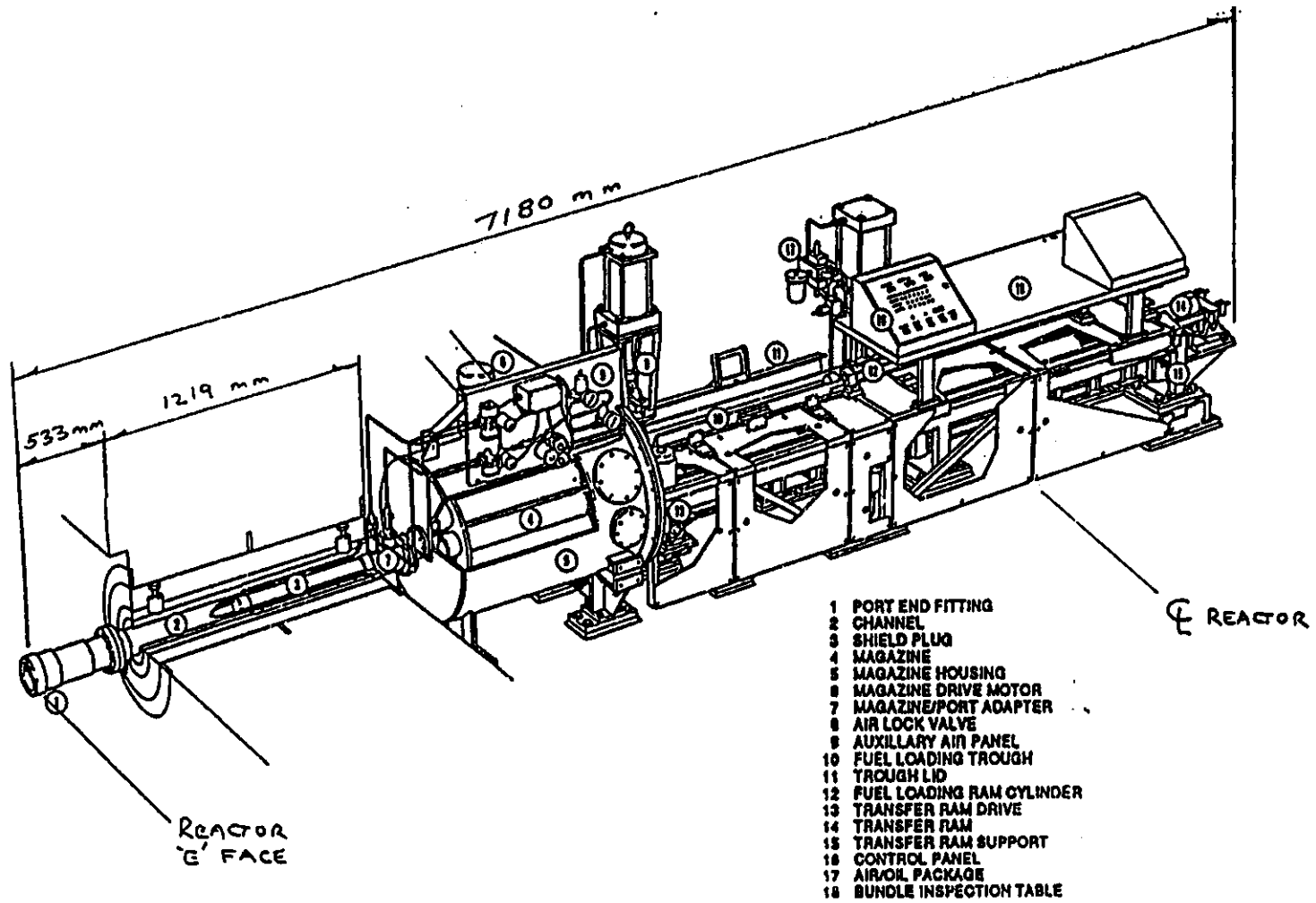
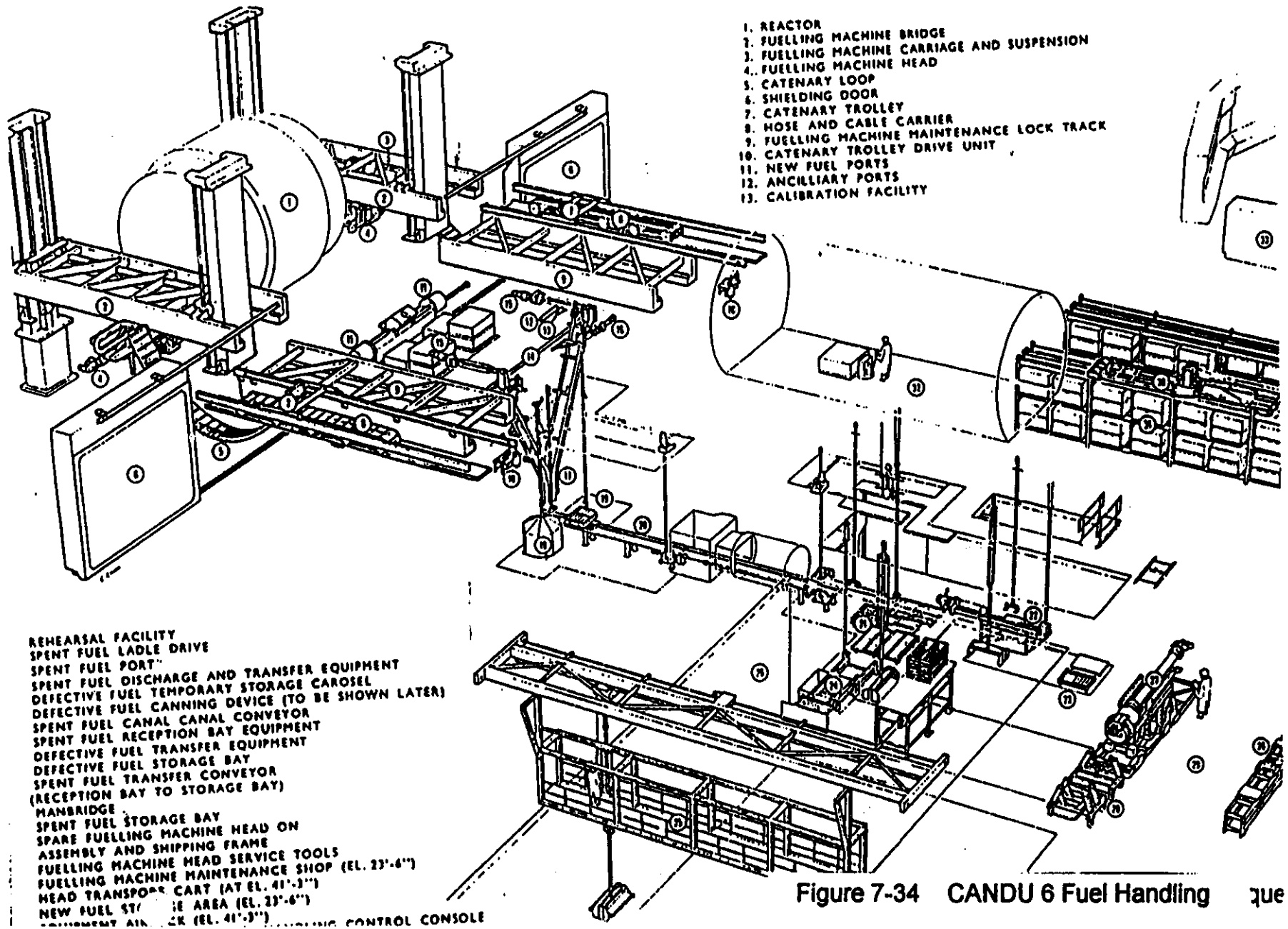


Figure 7-33 New Fuel Transfer Mechanism



1. REACTOR
2. FUELLING MACHINE BRIDGE
3. FUELLING MACHINE CARRIAGE AND SUSPENSION
4. FUELLING MACHINE HEAD
5. CATENARY LOOP
6. SHIELDING DOOR
7. CATENARY TROLLEY
8. HOSE AND CABLE CARRIER
9. FUELLING MACHINE MAINTENANCE LOCK TRACK
10. CATENARY TROLLEY DRIVE UNIT
11. NEW FUEL PORTS
12. ANCILLIARY PORTS
13. CALIBRATION FACILITY

- REHEARSAL FACILITY
 SPENT FUEL LADLE DRIVE
 SPENT FUEL PORT
 SPENT FUEL DISCHARGE AND TRANSFER EQUIPMENT
 DEFECTIVE FUEL TEMPORARY STORAGE CAROUSEL
 DEFECTIVE FUEL CANNING DEVICE (TO BE SHOWN LATER)
 SPENT FUEL CANAL CANAL CONVEYOR
 SPENT FUEL RECEPTION BAY EQUIPMENT
 DEFECTIVE FUEL TRANSFER EQUIPMENT
 DEFECTIVE FUEL STORAGE BAY
 SPENT FUEL TRANSFER CONVEYOR
 (RECEPTION BAY TO STORAGE BAY)
 MANBRIDGE
 SPENT FUEL STORAGE BAY
 SPARE FUELLING MACHINE HEAD ON
 ASSEMBLY AND SHIPPING FRAME
 FUELLING MACHINE HEAD SERVICE TOOLS
 FUELLING MACHINE MAINTENANCE SHOP (EL. 23'-6")
 HEAD TRANSPORT CART (AT EL. 41'-3")
 NEW FUEL STORAGE AREA (EL. 23'-6")
 INSTRUMENT AIR LOCK (EL. 41'-3")
 FUELLING CONTROL CONSOLE

Figure 7-34 CANDU 6 Fuel Handling que

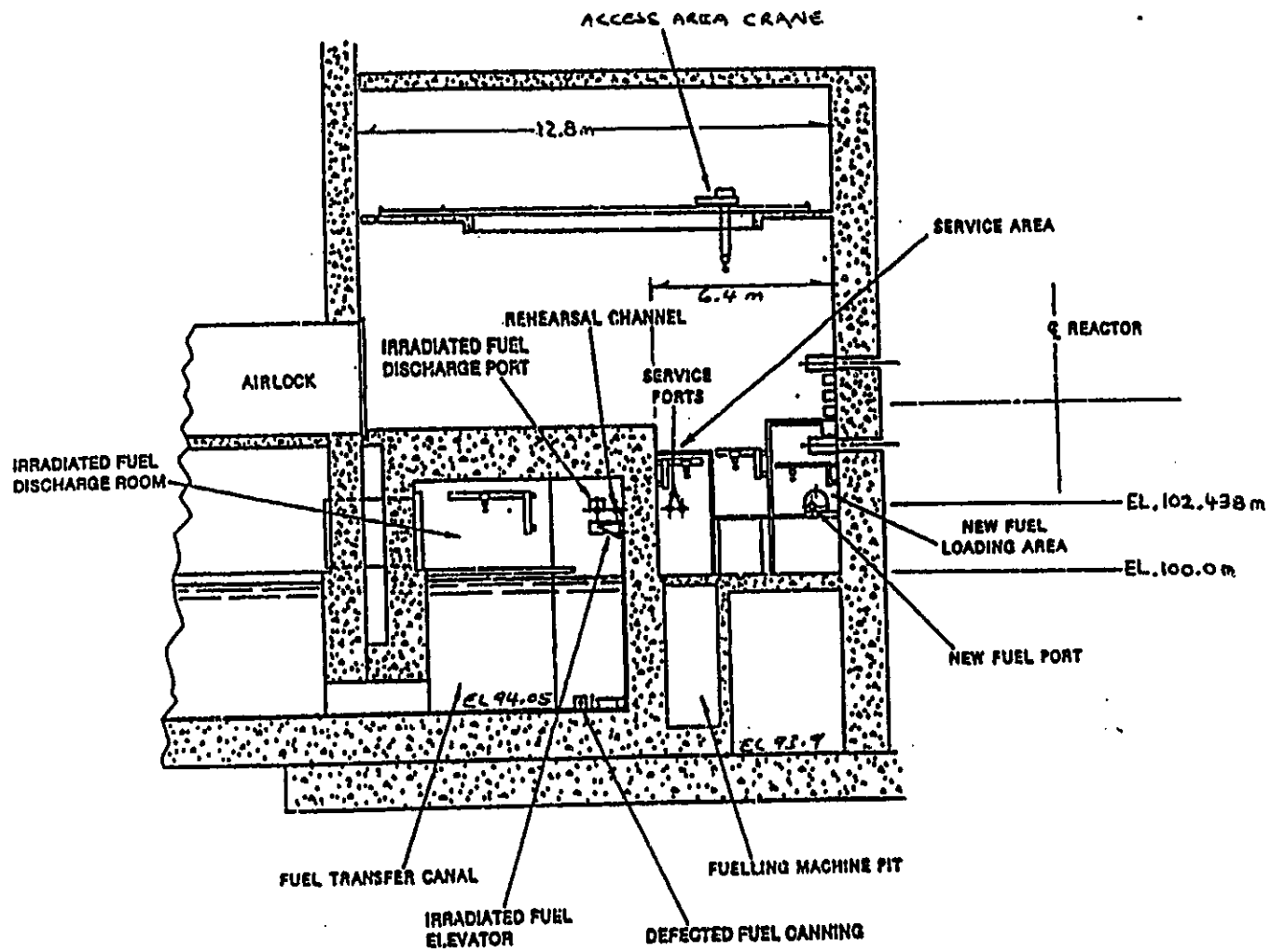


Figure 7-35 Fuel Handling System - Section S1

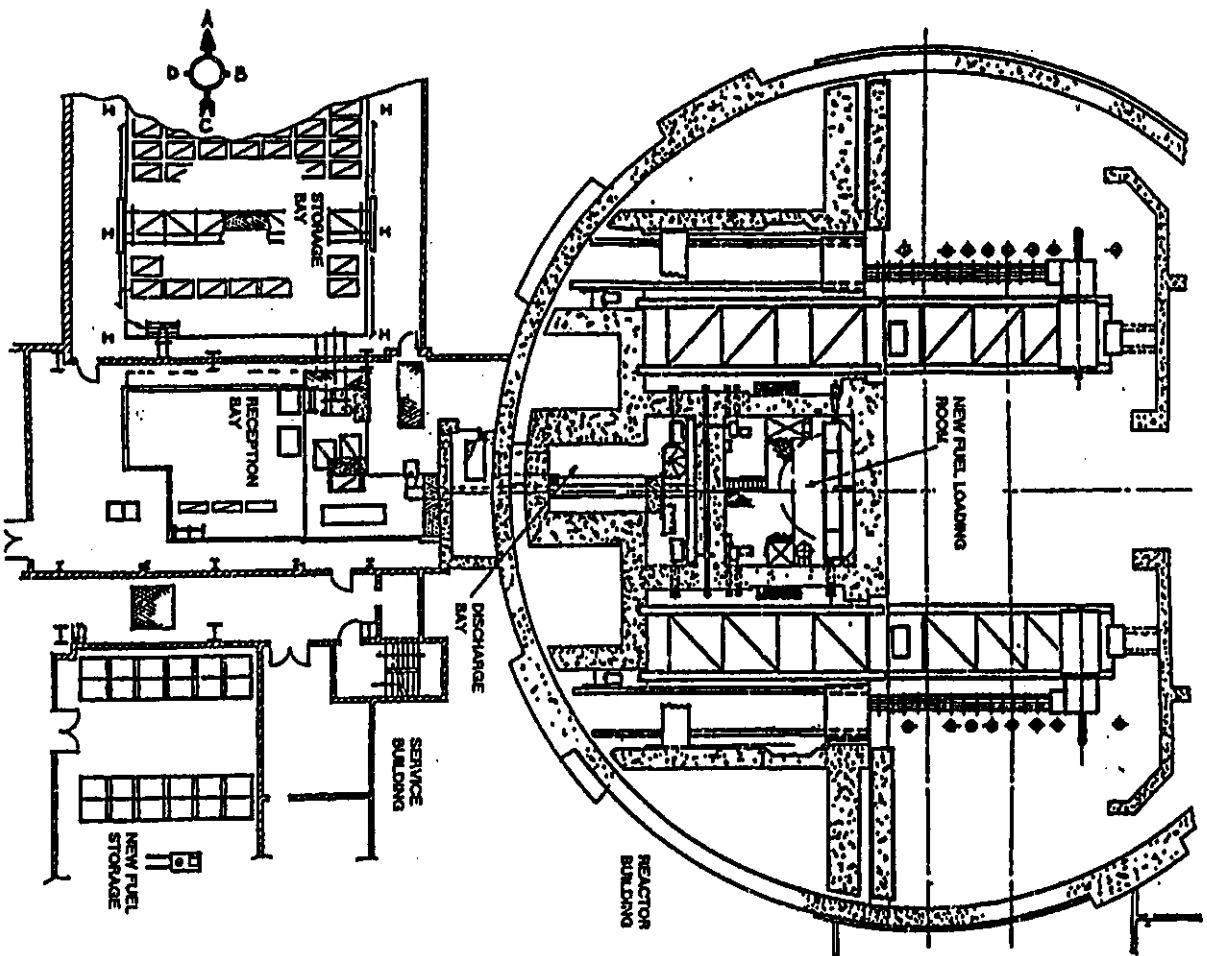
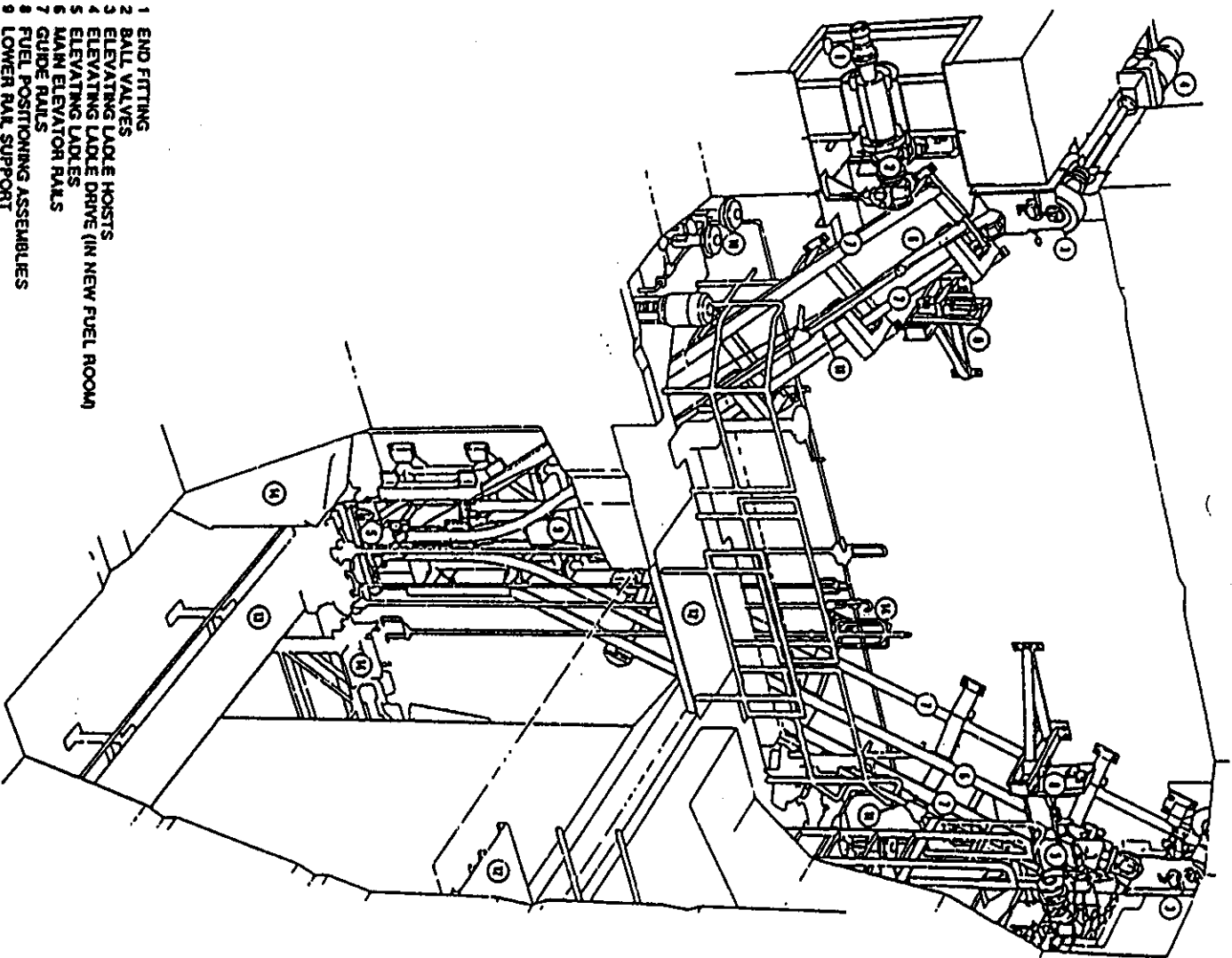


Figure 7-36 New Fuel and Irradiated Fuel Layout



- 1 END FITTING
- 2 BALL VALVES
- 3 ELEVATING LADLE HOISTS
- 4 ELEVATING LADLE DRIVE (IN NEW FUEL ROOM)
- 5 ELEVATING LADLES
- 6 MAIN ELEVATOR RAILS
- 7 GUIDE RAILS
- 8 FUEL POSITIONING ASSEMBLIES
- 9 LOWER RAIL SUPPORT
- 10 AUXILIARIES
- 11 SPRAY HEADERS
- 12 REMOVABLE PLATFORMS
- 13 FUEL TRANSFER EQUIPMENT
- 14 DEFECTED FUEL CANNING EQUIPMENT

Figure 7-37 CANDU 6 Irradiated Fuel Discharge Equipment

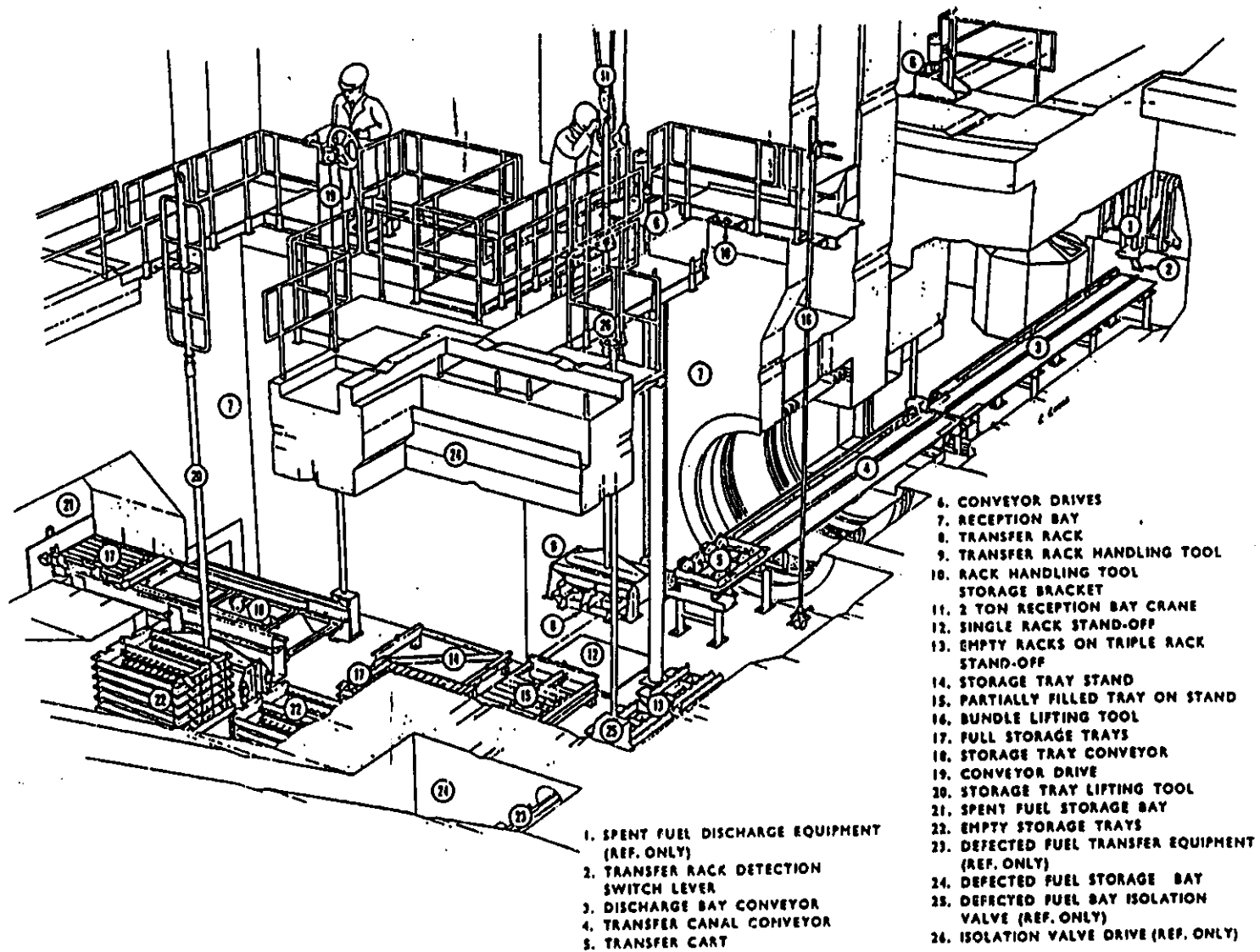


Figure 7-38 Irradiated Fuel Transfer Equipment

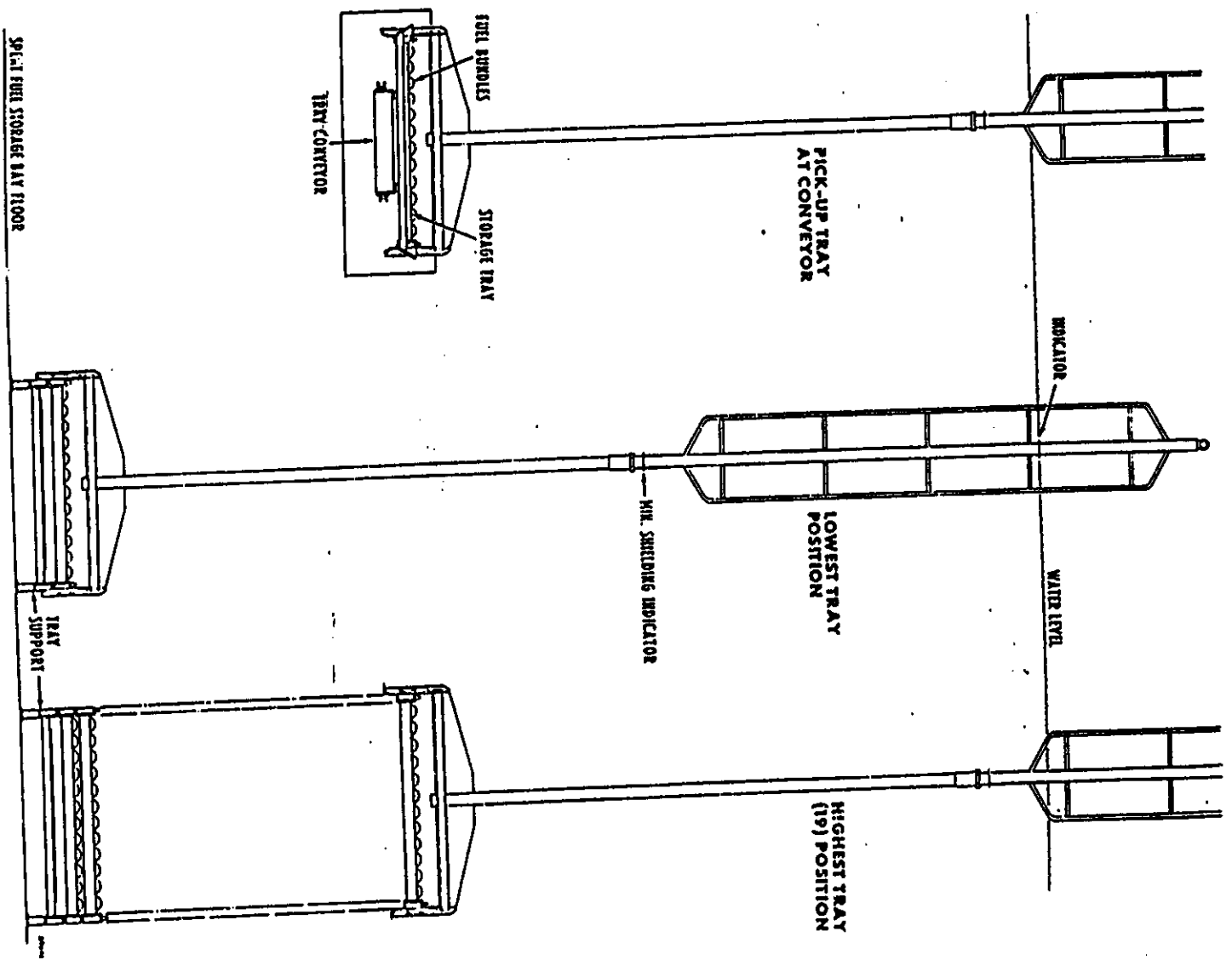


Figure 7-39 Irradiated Fuel Storage Bay Storage Tray Lifting Tool Operation