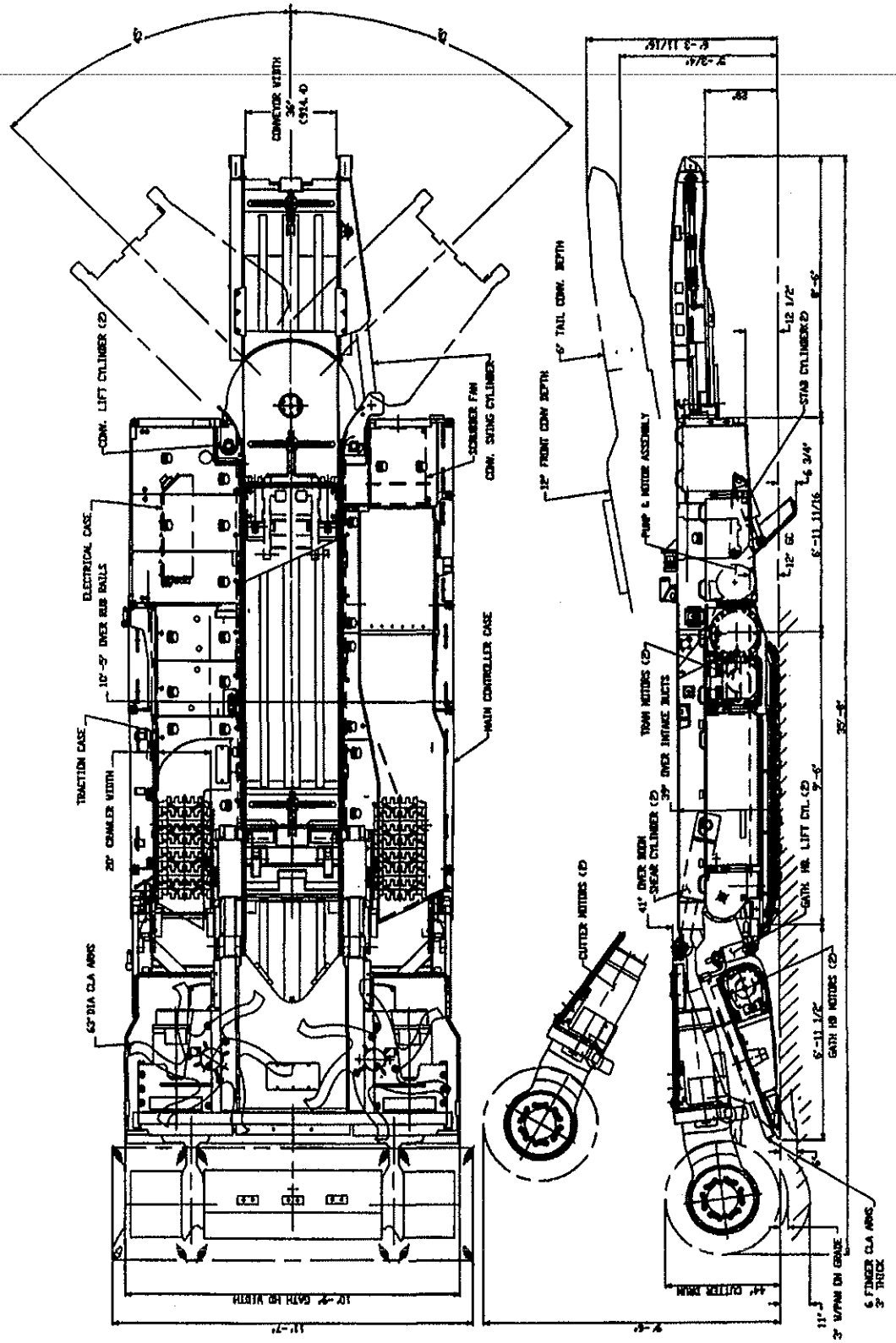

# Technical Manual

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EIMCO LLC
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GENERAL ARRANGEMENT
DASH TWO

| GENERAL SECTION | DASH SERIES MINER MANUAL | FIGURE G-4 |
|---|---|---|

## OPERATING PROCEDURES

The dash series miners are typically radio remote control. Manual operation is not allowed for production operation unless the miner has an operator's pit and canopy. Manual operation generally is for troubleshooting and maintenance under roof support.

The radio transmitter unit, see Fig. S-3, has switches, also called "keys", for all the operating functions.

Ensure that your position and the position of others is not in a "Red Zone", see Fig. S-4.

### Starting the Pump Motor

- Turn the main circuit breaker to the on position. The breakers are located on the right side of the machine near the rear.
- Select radio at the operator's controller case on the miner.
- Turn power switch on radio transmitter to the on position. This is done by pressing the **ON/OFF** key to the on position for 1 second.

When starting the miner warn **"ALL CLEAR"** to ensure no personnel are working on or near the machine.

**- CAUTION -**
WHEN SHOUTING **"ALL CLEAR"**,
GIVE FELLOW WORKERS A CHANCE TO REPLY.
DO NOT SHOUT "ALL CLEAR" AND AT THE
SAME TIME START THE PUMP MOTOR.

- Start the pump motor by pressing the **[SHIFT]** key for 1/4 second then press the **[PUMP ON]** key while holding the **[SHIFT]** key on.

  IMPORTANT: Release **[PUMP ON]** key first. If the [SHIFT] key is released first the pump will be shut down.

- The pump motor requires cooling water to prevent damage.

### Stopping the pump motor

Pump stop is a single key operation

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# SAFETY ALERT

**May 10, 2000**
**Bulletin # 20002**

A safety consideration has been brought to EIMCO's attention associated with continuous miners having the Forced Potato Radio Control System installed. The danger being that the potential for two transmitters to be in close proximity to an energized machine may cause unplanned machine movements creating a hazardous condition to personnel and or other equipment that may be located in the area. The potential danger will be created if one transmitter is turned off and a second transmitter turned on and switches activated, (i.e. transmitter test, transmitter demonstration, new operator instruction, etc.).

It is recommended that transmitters be taken underground in an appropriate transport case.

The following procedure should be used for transporting transmitters to and from active machines.

1. Transmitters shall be in the "**OFF**" position and placed into an appropriate transport case prior to taking transmitter underground. Transport case to be provided by mine.
2. Transmitter must remain in transport case until machine operator arrives at machine intended for operation.
3. If machine has been idle from production prior to replacement operator arriving; machine and surrounding area shall be checked and cleared by machine operator or shift supervisor prior to removing transmitter from transport case.
4. If the machine is in production (i.e. shift change) the discharged transmitter shall be turned off and placed in transport case at the same time the replacement transmitter is removed from transport case.
5. The discharged transmitter shall remain in the transport case until it reaches the surface and placed on charge.

**At no time shall two transmitters (On or OFF) be allowed to be within 1000' of an energized machine unless at least one is within an approved transport case.**

**This is a temporary measure and should be closely followed. Failure to comply with the above listed recommendations may result in serious injury or death.**

**EIMCO has brought this issue to Forced Potato's attention and any additional information or instructions will follow, as they become available.**

EIMCO personnel will contact mine management at mines operating an EIMCO supplied Forced Potato Radio System. Mine management will designate one trainee to be trained in the transport procedure. It will be the responsibility of the mine to train additional personnel.

A Sandvik company

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**SUPERBOLT Installation** **Reference: Fig. M-1**

**Specifications**

- Thread Diameter 1 1/4"
- Jackbolt Diameter 5/16"
- Jackbolt Socket Size 1/4"
- Required Jackbolt Torque 35 (lb./ft.)

**General Tightening Procedure**

Read all these instructions completely before you begin.

This procedure is typical for the majority of SUPERBOLT products. Specific installation procedures that are shipped with all products may supersede this general procedure. Use the appropriate instructions shipped with the product you are installing. Contact SUPERBOLT, Inc. at (412) 279-1149 with any questions.

**NOTE:** Air or electric power wrenches of the appropriate size may be used for running up jackbolts. Attempt to tighten as consistently as possible and remove the power wrench frequently; do not tighten all at once. Use a standard torque wrench to verify final torque values.

1. SUPERBOLT products are designed for use with hardened surface washers. Slide the washer onto the bolt or stud first.

2. VIEW A - Check the base of the tensioner(s) and verify that all jackbolts are flush with the bottom of the tensioner body.

3. VIEW A - Clear any dirt or chips from the threads of the bolt or stud and from the main internal thread of the tensioner.

4. VIEW A - Spin the tensioner body down on the main thread of the bolt or stud by hand. The tensioner body should be in light contact with the hardened washer.

5. Determine the target jackbolt torque value for the desired preload, either from the installation sheets shipped with the product or the catalog tables, or by calling SUPERBOLT, Inc. The jackbolt torque value stamped on the tensioner is a standard value for that part, and may not be appropriate for your specific application. Since jackbolt torque is directly proportional to the tension load, you can easily figure other values as required (e.g., 1/2 preload = 1/2 jackbolt torque).

6. Start by snugging the jackbolts to 10% of the target jackbolt torque value from step 5. This seats the thread and eliminates clearances. The star pattern shown in VIEW B should be used for this initial tightening sequence.

THE REMAINING CLUTCH ASSEMBLY IS VERY HEAVY.
BE PREPARED TO SUPPORT ITS WEIGHT.

11. VIEW D - Remove the retaining ring from the motor shaft. The input assembly of the clutch is unattached and can be slipped off the motor shaft.

12. VIEW D - Remove the final retaining ring from the motor shaft.

13. To install the Drum Drive Torque Limiting Clutch - reverse the above procedure.

**DRUM DRIVE MOTOR, Dash Zero & Dash One**

**Removal / Installation** **Reference: Fig. CH - 6**

**- CAUTION -**
POSITION THE CONVEYOR TAIL LEVEL WITH THE FLOOR.
LOWER THE GATHERING HEAD TO THE FLOOR.
RAISE AND BLOCK UP THE CUTTERHEAD ASSEMBLY.

REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

**- DANGER -**
NEVER WORK UNDER ANY RAISED ASSEMBLY
WITHOUT PROPER BLOCKING.

1. VIEW A - Remove brackets and covers to access the drum drive motor.

2. VIEW B - Remove the capscrews and lockwashers that secure the cover for the drive shear shaft. Remove the cover and o-ring.

3. VIEW B - Remove the retaining ring, the plug and the o-ring. Pull the drive shaft out of engagement with the gearcase. Replace the shaft cover. Keep the shear shaft in a clean place.

4. VIEW C - Remove the capscrews on the motor junction box cover and remove the cover and o-ring.

5. VIEW D - Mark the motor and power cable leads and disconnect the leads.

6. VIEW E - Remove the stuffing box clamp and slide the power cables out of the motor junction box.

7. Disconnect the cooling water hoses from the motor. Plug the motor and hose ends to keep them clean.

THE STRUT AND HUB ASSEMBLY IS VERY HEAVY.
BE PREPARED TO SUPPORT ITS WEIGHT.

5. Slide the strut and hub assembly from the gearcase over the two studs.

**- CAUTION -**
THE MAIN CUTTER DRUM IS VERY HEAVY.
BE PREPARED TO SUPPORT ITS WEIGHT.

6. VIEW B - Remove the capscrews from the main cutter.

7. VIEW C - The cutter can now be removed from the output shaft by sliding it off the hub and two dowel pins.

8. To install the main cutter drum reverse the above procedure. Torque capscrews to 500 lb.-ft. If never size is used reduce the torque value to 300 lb.-ft. ( If locktite is used reduce the torque value to 425 lb.-ft. )

9. Tack weld the lock ring and capscrew retainer.

**- CAUTION -**
FOLLOW WELDING SAFETY PROCEDURES.

**CUTTER DRUMS, Dash Two - Removal / Installation Reference: Fig. CH - 12**

**- CAUTION -**
POSITION THE CONVEYOR TAIL SECTION
LEVEL WITH THE FLOOR.
LOWER THE GATHERING HEAD UNTIL TO THE FLOOR.
RAISE AND BLOCK UP THE CUTTERHEAD ASSEMBLY.
ALLOW FOR REMOVAL OF THE CUTTER DRUMS.

**- DANGER -**
NEVER WORK UNDER ANY RAISED ASSEMBLY
WITHOUT PROPER BLOCKING.

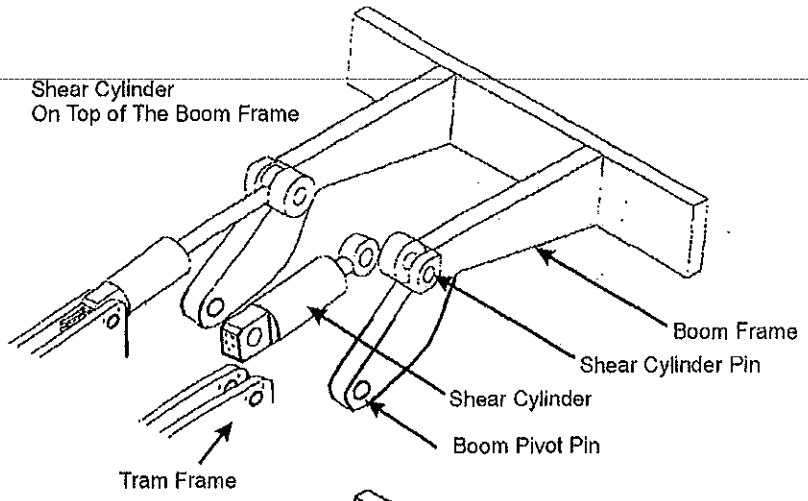
**- CAUTION -**
REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

1. Manually rotate the cutterhead drums slowly until the center drum connecting flanges are parallel to the mine floor.

**- CAUTION -**
THE CUTTER DRUMS ARE EXTREMELY HEAVY.

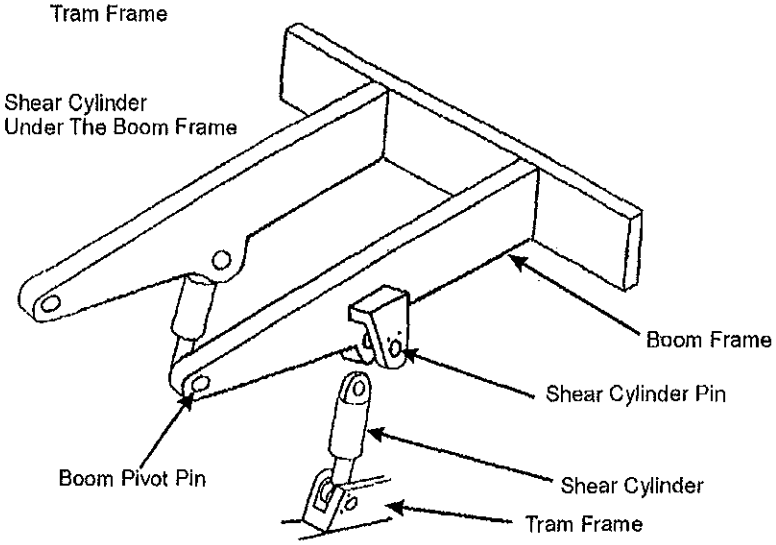
**VIEW A**

DASH ZERO
DASH ONE
DASH TWO

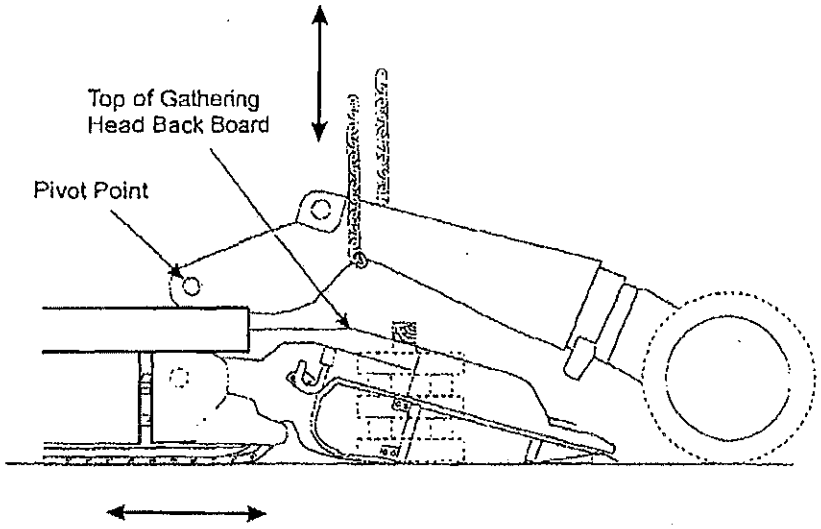



**VIEW A**

DASH THREE




**VIEW B**

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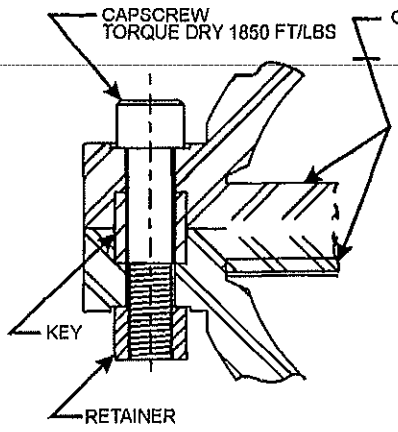
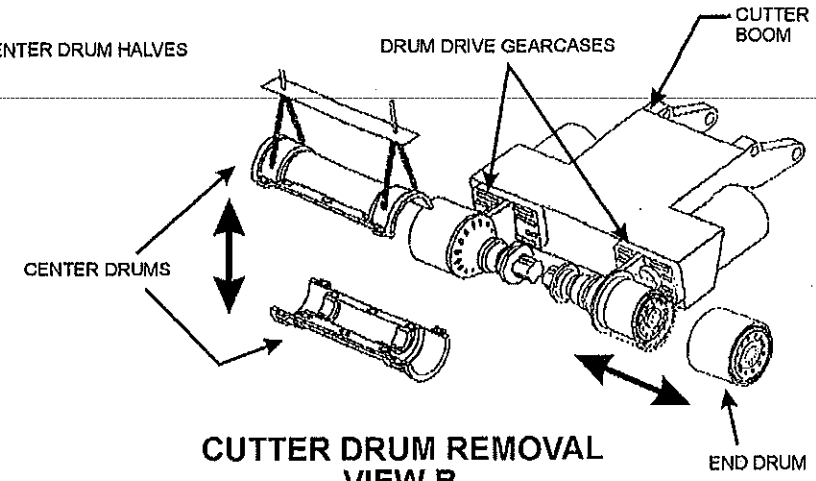
CUTTERHEAD
BOOM ASSEMBLY
REMOVAL / INSTALLATION

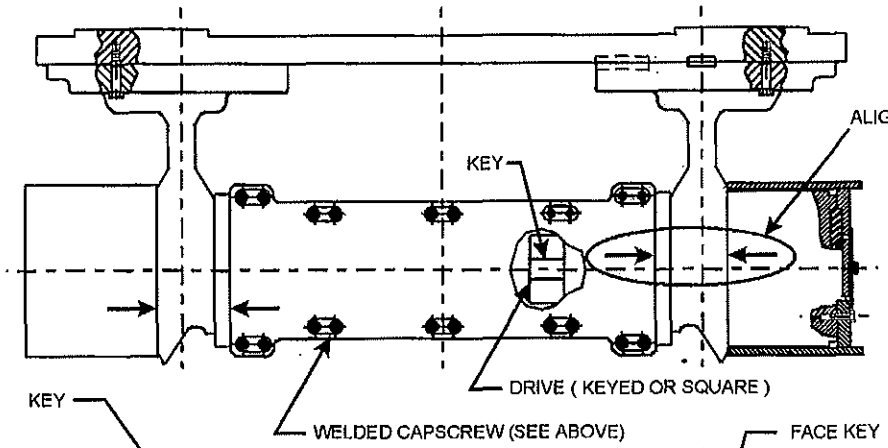
| MECHANICAL SECTION | DASH SERIES MINER MANUAL | FIGURE CH-2 |
|---|---|---|



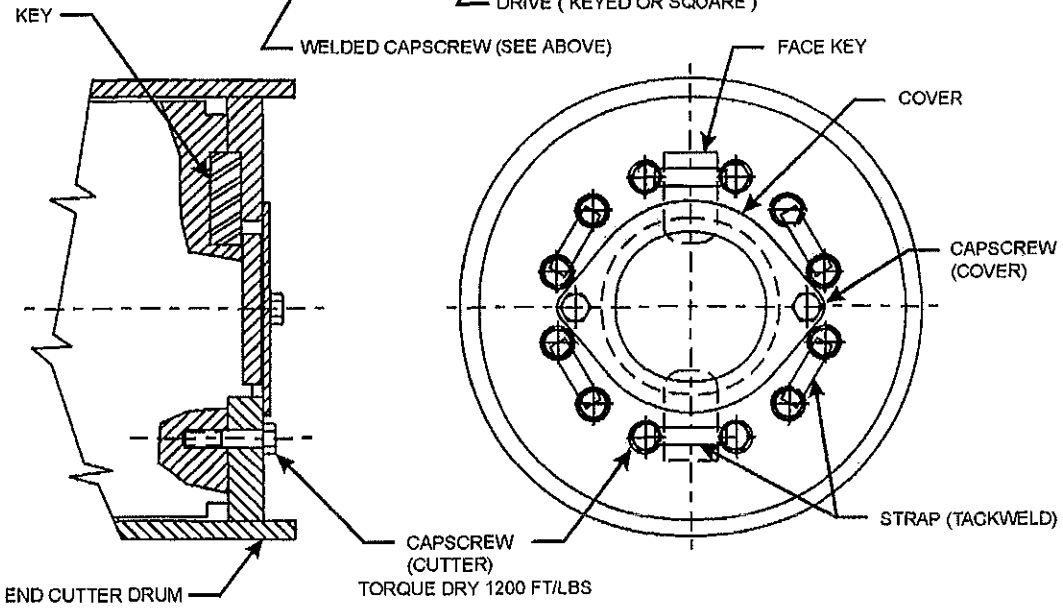

**CAPSCREWS AT SPLIT**
**VIEW A**




**CUTTER DRUM REMOVAL**
**VIEW B**




**VIEW C**




**VIEW D**

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CUTTERBOOM DASH TWO
CUTTER DRUMS
REMOVAL / INSTALLATION

| MECHANICAL SECTION | DASH SERIES MINER MANUAL | FIGURE CH-12 |
|---|---|---|

3. View A - Remove the conveyor chain connecting link.

4. View B - Remove the eight 3/4" capscrews and lockwashers securing the footshaft cover to the gathering head.

5. View C - Remove the four 1/2" capscrews from each of the two collars and remove the collars from the footshaft.

6. View D - Slide the two couplings from the ends of the footshaft toward the center sprocket on the footshaft.

7. View E - The footshaft can now be removed.

8. To install the footshaft - reverse the above removal procedure.

9. Be sure to readjust the conveyor chain tension.

**GEARCASE Removal / Installation** **Reference. Fig. GH-7**

**- CAUTION -**
LOWER THE CONVEYOR TAIL UNTIL
IT IS LEVEL WITH THE FLOOR.
RAISE AND BLOCK UP THE CUTTERHEAD ASSEMBLY.
RAISE AND BLOCK UP THE GATHERING HEAD ASSEMBLY.

REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

**- DANGER -**
NEVER WORK UNDER ANY RAISED ASSEMBLY
WITHOUT PROPER BLOCKING.

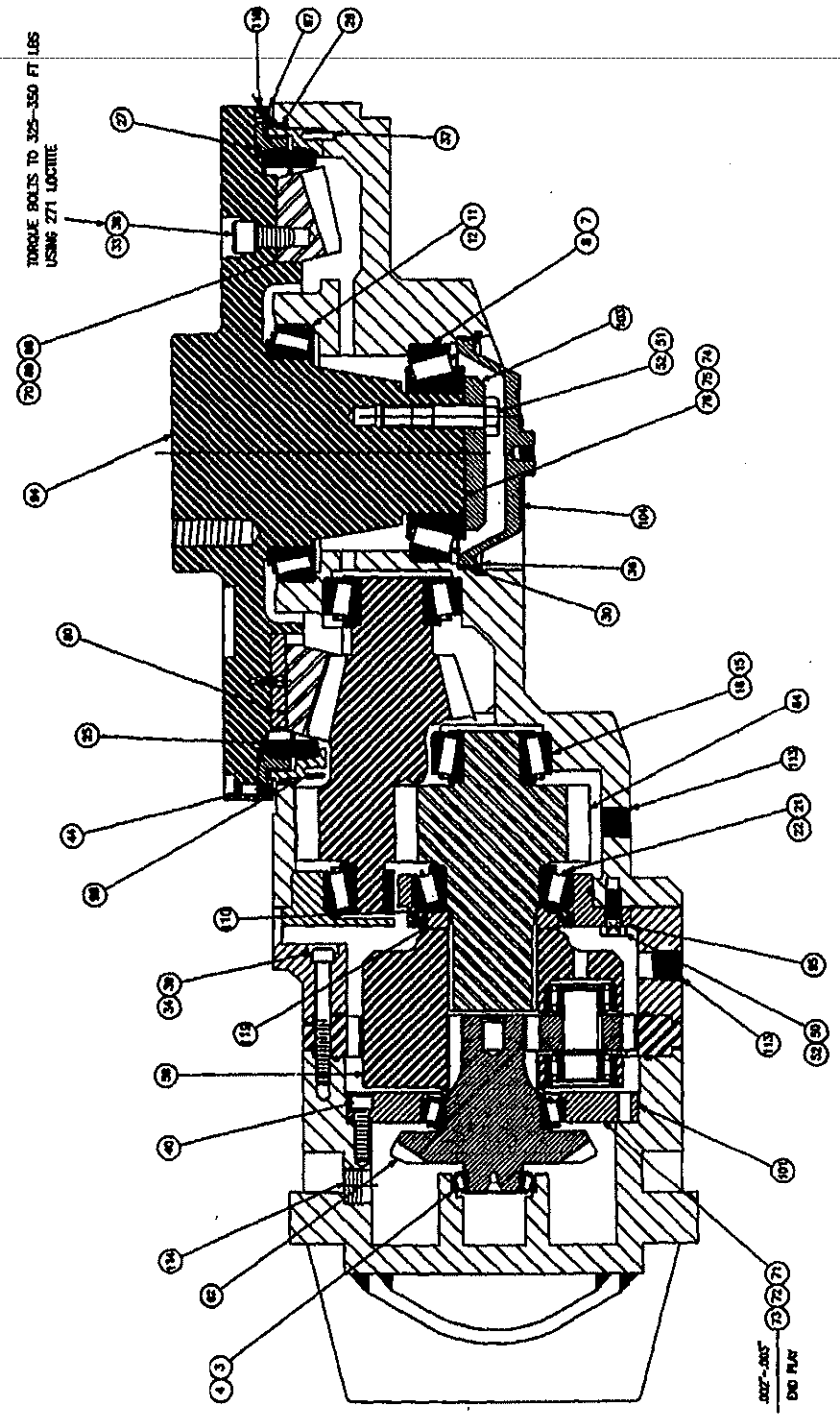
1. Completely drain the gearcase lubricant by removing the two 3/4" plugs located on the underside of the gearcase. Replace the drain plugs.

2. Reconnect electrical power and lower the gathering head assembly to the floor. NOTE: The cutterhead assembly should be still blocked up.

**- CAUTION -**
REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

3. Remove the CLA ( Follow that procedure. )

4. Remove the drive motor. ( Follow that procedure. )




| ITEM NO. | QTY | U/M | DESCRIPTION |
|---|---|---|---|
| 81 | 3 | ea | SHIM .007 |
| 82 | 3 | ea | SHIM .005 |
| 83 | 3 | ea | SHIM .020 |
| 84 | 3 | ea | SHIM .007 |
| 85 | 3 | ea | SHIM .005 |
| 86 | 3 | ea | SHIM .020 |
| 87 | 3 | ea | SHIM .007 |
| 88 | 3 | ea | SHIM .005 |
| 89 | 3 | ea | SHIM .020 |
| 90 | 3 | ea | SHIM .007 |
| 91 | 3 | ea | SHIM .020 |
| 92 | 3 | ea | SHAFT |
| 93 | 1 | ea | INT. SPUR GEAR |
| 94 | 1 | ea | TURN TABLE |
| 95 | 1 | ea | CARRIER |
| 96 | 1 | ea | CARRIER |
| 97 | 1 | ea | CARRIER |
| 98 | 1 | ea | CARRIER |
| 99 | 1 | ea | CARRIER |
| 100 | 1 | ea | CARRIER |
| 101 | 1 | ea | CARRIER |
| 102 | 1 | ea | CARRIER |
| 103 | 1 | ea | CAP |
| 104 | 1 | ea | CAP |
| 105 | 6 | ea | HHCS 1/2-13X 1 1/2 GR8 |
| 106 | 6 | ea | SHCS 3/8-18X 1 |
| 107 | 17 | ea | SHCS 5/8-11X 2 1/4 |
| 108 | 6 | ea | LOCK WASHER |
| 109 | 17 | ea | LOCK WASHER |
| 110 | 1 | ea | O-RING 1/8X3 |
| 111 | 1 | ea | ADAPTER PLATE |
| 112 | 1 | ea | O'RING 1/8X 9 3/4 |
| 113 | 6 | ea | 3/4" PLUG |
| 114 | 2 | ea | 1" PLUG |
| 115 | 6 | ea | STR. ROLLER BEARING |
| 116 | 1 | ea | SEAL OIL |
| 117 | . | . | . |
| 118 | 2 | ea | PIN DOWEL, 3/16 x 3/4 |
| 119 | 1 | ea | DTL. SPACER |

SH-1

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GATHERING HEAD
GEARCASE ASSEMBLY

| MECHANICAL SECTION | DASH SERIES MINER MANUAL | FIGURE GH-8 |
|---|---|---|

7. VIEW D - Attach heavy wires to the end of the crawler track link that passes through the tram case and over the tram sprocket.

8. If the tram drive is operational reconnect electrical power to the miner.

**- CAUTION -**
STAND CLEAR OF THE MINER WHEN USING
THE TRAM MOTOR TO REMOVE
THE TRAM TRACK FROM THE SPROCKET.

9. VIEW E - Slowly operate the tram motor forward to rotate the sprocket so that the end of the tram track that passes through the case and rolls off the sprocket.

**- CAUTION -**
REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

10. VIEW E - Pull the tram track from the front of the miner ( near the idler ) so that the free end of the tram track is pulled clear of the tram case exit opening.

11. VIEW F - Remove the two 1-1/4"x 3-3/4" lg. Superbolts from the sprocket side of the tram case and the two 1-1/4"x 3-3/4" Superbolts from the motor side of the tram case. Follow the SUPERBOLT installation / removal procedures.

12. VIEW F - Remove the two 1-1/4"x 5" Superbolts from the sprocket side of the tram case and the two 1-1/4"x5" Superbolts from the motor side of the tram case. Remove the two capscrews from the sprocket side of the tram case.

13. Follow the TRAM MOTOR removal procedure to disconnect the tram motor power cable and cooling water hoses.

**- CAUTION -**
THE ASSEMBLED TRAM CASE IS VERY HEAVY.
BE PREPARED TO SUPPORT THE TRAM CASE BEFORE
REMOVING IT FROM THE TRACTOR FRAME.

14. VIEW G - Slide the tram case out from the tractor frame onto blocking. Pull the tram track guide wires out of the tram case exit opening and secure the wires to the tractor frame.

15. To install the tram case - reverse the above procedure.

6. VIEW E - Mark the three wires, strip off the insulation tape and disconnect the three power cable lugs from the three motor lugs.

7. VIEW F - Remove the capscrews holding the half moon clamp to the junction box. Slide the stuffing box out of the junction box.

**- CAUTION -**
THE PUMP MOTOR IS VERY HEAVY.

8. VIEW G - Take care as the motor is slid out from the tractor frame on to blocking.

9. To install the pump motor - reverse the above procedure. Be sure to jog the motor on and off to determine correct rotation.

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TRACTOR FRAME
TRAM TRACK FRONT IDLER
REMOVAL / INSTALLATION

| MECHANICAL SECTION | DASH SERIES MINER MANUAL | FIGURE TF-9 |
|---|---|---|

5. VIEW C & VIEW D - Lower the conveyor until the conveyor front section rests on the tractor frame blocking which removes the 2" gap. The slotted shims should fall out.

**- CAUTION -**
REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

6. VIEW E - Replace and add shims to align the conveyor tail section with the front section. Tighten the shim retainer.

7. Connect electrical power to the miner. Remove the blocking and check the adjustment.

**LIFT CYLINDER Removal / Installation** **Reference: Fig. CV-7**

**- CAUTION -**
LOWER THE GATHERING HEAD AND
THE CUTTERHEAD TO THE FLOOR.

RAISE THE CONVEYOR TAIL SECTION TO ITS HIGHEST POINT.
PLACE BLOCKING BETWEEN THE CONVEYOR AND
THE TRACTOR FRAME.
BLOCK UP THE CONVEYOR TAIL SECTION.

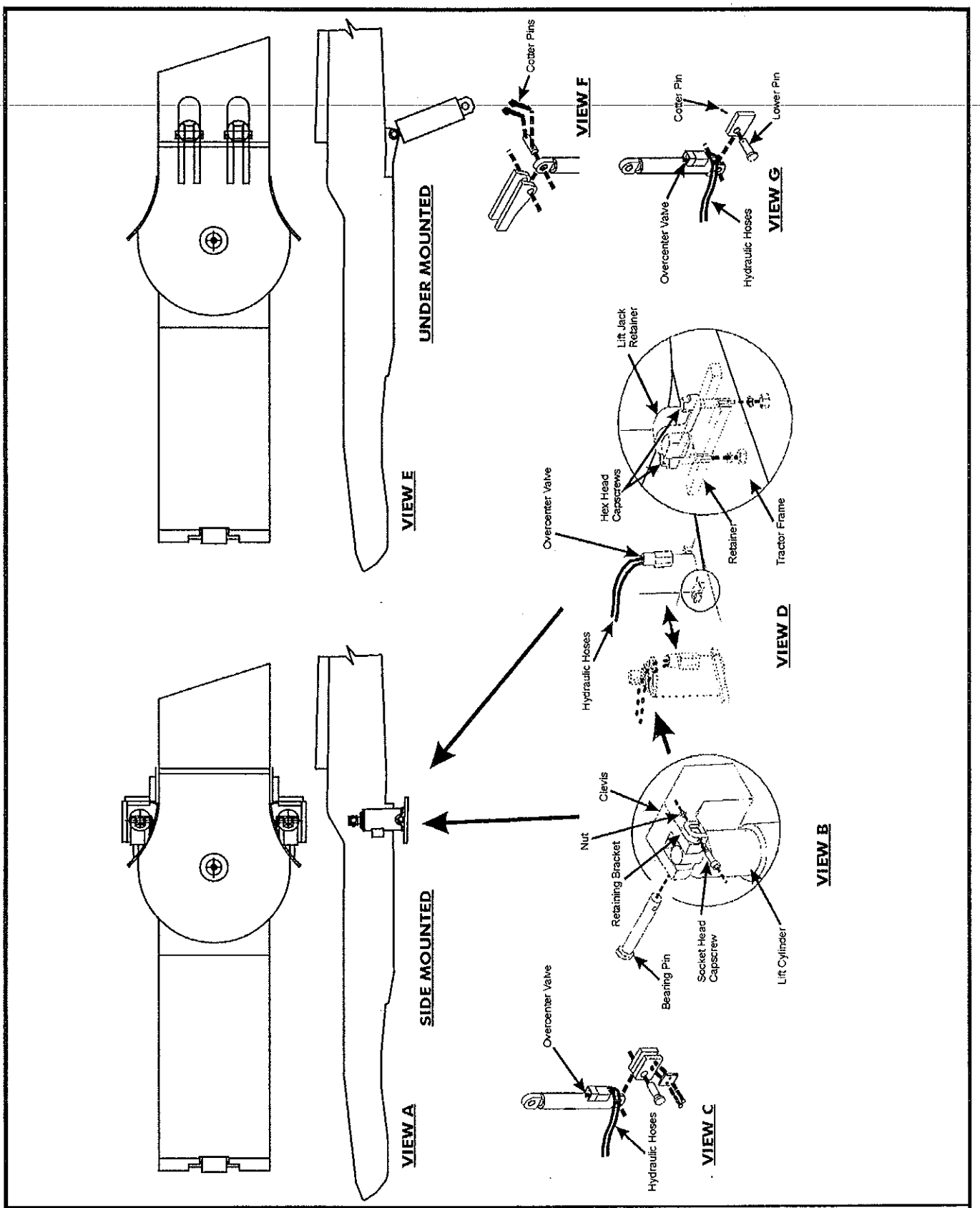
REMOVE AND LOCK-OUT ELECTRICAL
POWER TO THE MINER.

**- DANGER -**
NEVER WORK UNDER ANY RAISED ASSEMBLY
WITHOUT PROPER BLOCKING.

For lift cylinders side mounted.- see VIEW A
For lift cylinders mounted under the conveyor - see VIEW E

1. Move the conveyor lift cylinder control valve up and down to release any pressure in the cylinder.

2. Remove the overcenter valve. The overcenter valve is a cartridge valve mounted on the cylinder.

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CONVEYOR
LIFT CYLINDER
REMOVAL / INSTALLATION

| MECHANICAL SECTION | DASH SERIES MINER MANUAL | FIGURE CV-7 |
|---|---|---|

# SECTION 8 - ELECTRICAL

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### Dual Systems

Take advantage of the miner's "dual" systems - two cutterhead motors, two conveyor / gathering head motors, and two tram motors. Remember the two cutterhead motors and the two gathering head motors share their common loads. The "hot" motor may not be the problem but is simply doing more than its share of the work. The left and right tram drives and motors are independent when the tracks are off of the ground. But when tramming there is a certain amount of sharing since they are moving the same load.

Take and note ammeter readings and voltmeter readings when there are no problems for comparison later when there is a problem.

Of course the dual control modes, manual and radio remote, will allow you to quickly close in on a problem area. For example if you can raise the conveyor tail assembly manually but not by radio then the problem is not the conveyor lift cylinder or the main hydraulic valve. The problem is either in the radio system or in the hydraulic pilot control such as the solenoid control valve.

### Diagnostic Display

Use the radio system diagnostic display at the right rear of the miner to check out the operation of the radio system and review stored fault messages. See Fig. E-14.

### Component Change Out

The tram drive system units and the radio system units are not field serviceable; they must be exchanged and returned for check out and repair.

# TRAM INTERFACE TERMINALS

| | |
|---|---|
| 10 | 120 VAC INPUT COMMON (RADIO AND MANUAL) |
| 13V | +13 VDC OUTPUT TO RADIO |
| 14E | 120 VAC INPUT (RADIO AND MANUAL) |
| 19 | COMMON -13 VDC TO MACHINE UNIT |
| 39 | +13 VDC DEAD MAN INPUT FROM RADIO |
| 40 | +3 VDC OUTPUT TO LEFT MANUAL TRAM (I.S. CIRCUIT) |
| 41 | +0 TO 2.5 VDC OUTPUT REFERENCE VOLTAGE FOR LEFT TRAM DRIVE |
| 42 | COMMON FROM LEFT MANUAL TRAM (I.S. CIRCUIT) |
| 43 | +5 VDC OUTPUT LEFT TRAM DRIVE FORWARD |
| 44 | +5 VDC OUTPUT LEFT TRAM DRIVE REVERSE |
| 46 | +9 VDC INPUT FROM LEFT MANUAL FORWARD TRAM SWITCH (I.S. CIRCUIT) |
| 50 | +3 VDC OUTPUT TO RIGHT MANUAL TRAM (I.S. CIRCUIT) |
| 51 | +0 TO 2.5 VDC OUTPUT REFERENCE VOLTAGE FOR RIGHT TRAM DRIVE |
| 52 | COMMON FROM RIGHT MANUAL TRAM (I.S. CIRCUIT) |
| 53 | +5 VDC OUTPUT RIGHT TRAM DRIVE FORWARD |
| 54 | +5 VDC OUTPUT RIGHT TRAM DRIVE REVERSE |
| 56 | COMMON FROM RIGHT TRAM DRIVE (JUMPER TO D52) |
| 59 | +9 VDC INPUT FROM RIGHT MANUAL FORWARD TRAM SWITCH (I.S.) |
| 60 | +9 VDC INPUT FROM RIGHT MANUAL REVERSE TRAM SWITCH (I.S.) |
| 61 | +9 VDC INPUT FROM LEFT MANUAL REVERSE TRAM SWITCH (I.S.) |
| 63 | 120 VAC INPUT MANUAL DEAD MAN SWITCH |
| 114 | 120 VAC INPUT (MANUAL MODE ONLY) |
| 141 | +0 TO 2.5 VDC INPUT FROM LEFT MANUAL TRAM SWITCH (I.S.) |
| 151 | +0 TO 2.5 VDC INPUT FROM RIGHT MANUAL TRAM SWITCH (I.S.) |
| 179 | 120 VAC INPUT COMMON (MANUAL MODE ONLY) |
| 196 | C.T. INPUT FROM CUTTER HEAD FEEDBACK |
| 197 | C.T. INPUT FROM CUTTER HEAD FEEDBACK |
| 200 | +9 VDC OUTPUT MANUAL TRAM SWITCHES (I.S.) |
| 201 | +9 VDC COMMON FOR I.S. CIRCUITS |
| 202 | NOT USED |
| 203 | NOT USED |
| 204 | NOT USED |
| 205 | NOT USED |
| D42 | +5 VDC LEFT DRIVE COMMON |
| D52 | +5 VDC RIGHT DRIVE COMMON |
| R | RADIO DIRECTIONAL INPUT COMMON |
| R-48 | +0 TO 10 VDC INPUT FROM RADIO LEFT TRAM (PROPORTIONAL) |
| R-49 | +13 VDC INPUT FROM RADIO LEFT FORWARD |
| R-58 | +0 TO 10 VDC INPUT FROM RADIO RIGHT TRAM (PROPORTIONAL) |
| R-59 | +13 VDC INPUT FROM RADIO RIGHT FORWARD |
| R-60 | +13 VDC INPUT FROM RADIO RIGHT REVERSE |
| R-61 | +13 VDC INPUT FROM RADIO LEFT FORWARD |
| X | COMMON RADIO INPUTS |

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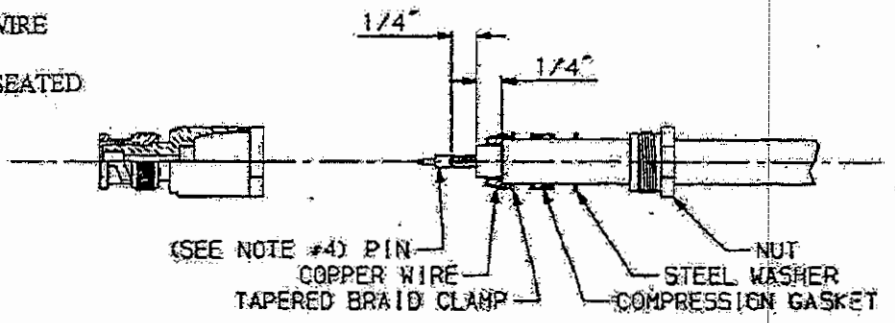
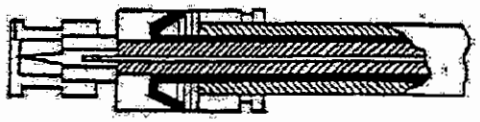
# *INSTALLATION OF R.F. CONNECTOR*

## CO-AX CABLE END

1. CUT DAMAGED CABLE END OFF SQUARE
2. SLIDE SCREW GLAND (NUT) ON CABLE
3. SLIDE STEEL WASHER ON CABLE
4. SLIDE COMPRESSION GASKET (RUBBER) ON CABLE
5. REMOVE 1/2" OUTER JACKET--DO NOT REMOVE BRAIDED SHIELDING
6. REMOVE 1/4" INNER JACKET AND SHIELDING FROM CENTER WIRE
7. SLIDE BEVELED WASHER ON OVER SHIELDING UNTIL FULLY SEATED AGAINST OUTER JACKET
8. TURN SHIELDING BRAID DOWN OVER BEVELED WASHER
9. CLIP OFF EXCESS BRAID AT END OF BEVELED WASHER
10. INSTALL CENTER PIN ON CENTER WIRE
11. SOLDER PIN IN PLACE THRU HOLE IN CENTER PIN--IF SOLDER IS NOT AVAILABLE THE PIN MAY BE CRIMPED TO THE WIRE (CRIMPING WILL NOT HOLD AS WELL AS SOLDER)
12. INSTALL OUTER PART OF CONNECTOR UNTIL CENTER PIN IS FLUSH WITH SWIVEL NUT
13. HOLD OUTER PART IN PLACE AND TIGHTEN NUT INTO IT UNTIL CONNECTOR IS SECURELY ATTACHED



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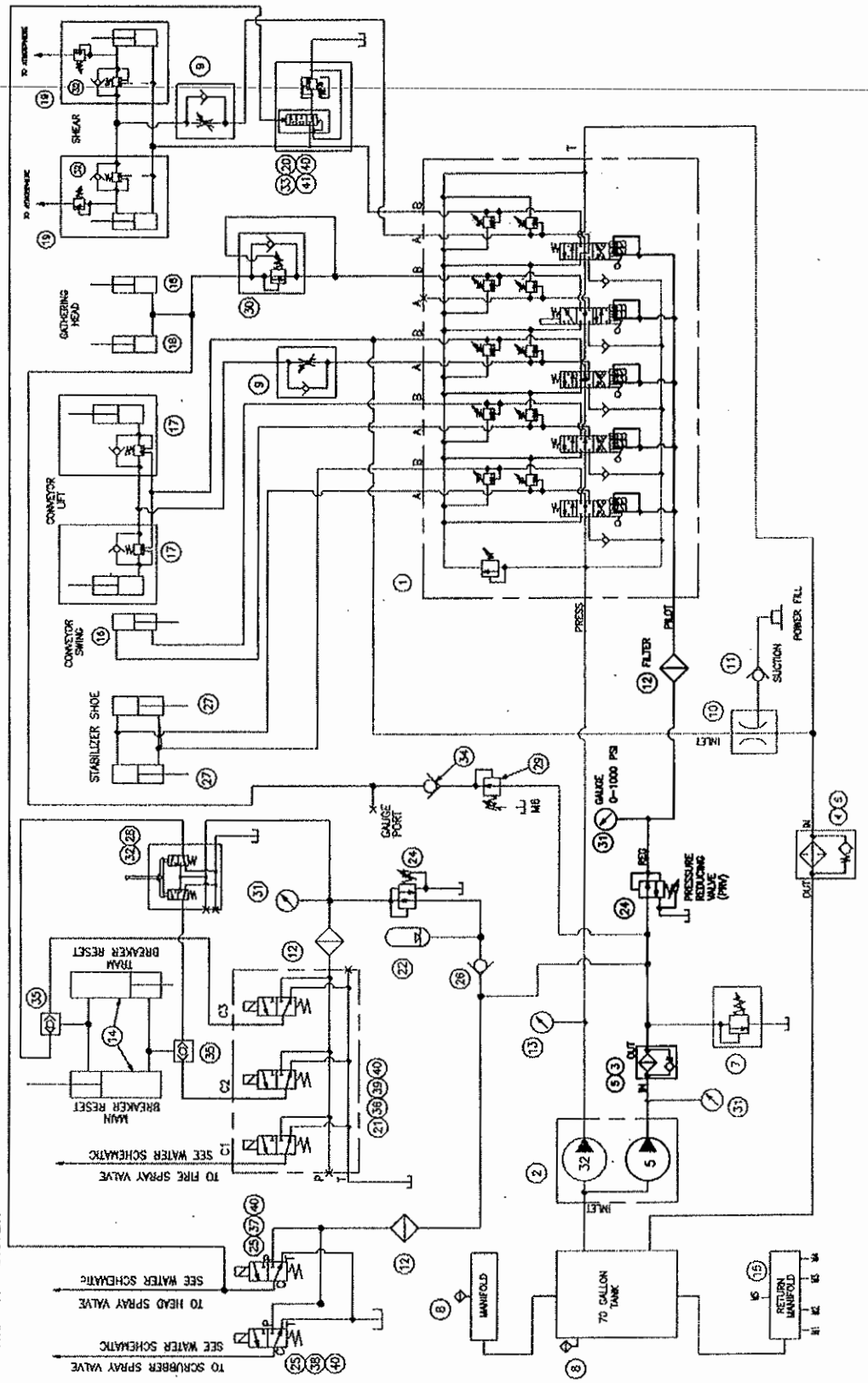


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HYDRAULIC SCHEMATIC
VALVE BANK PILOT CIRCUIT

| HYDRAULIC SECTION | DASH SERIES MINER MANUAL | FIGURE H-2 |
|---|---|---|

## SCUBBER SPRAY OPERATION Reference: Fig. W- 4

Fig. W-4 highlights the water circuit for the optional dust scrubber system. When the blower motor for the scrubber is energized the SS solenoid energizes to provide hydraulic pressure to the pilot operated water valve in the scrubber system. Water is connected to the scrubber sprays and also to a jet pump to pump the spay water out of the sump. Note the Dash Three miner uses a hydraulic driven sump pump instead of a jet pump.

## WET HEAD

The "Wet Head" miner is an optional method of dust suppression which puts water sprays at the cutter bits.

The wet head miner requires a special cutterhead design which is not included in this manual.

## WATER SUPPLY

The water supply to the miner must have a minimum flow of 30 GPM at a minimum pressure of 250 PSI. A minimum one inch diameter water supply hose will be needed. The maximum static water pressure is 500 PSI.

## WATER FILTER

Incoming water is filtered with a single 260 Micron element. The element can be washed and reused. A ball valve with wash down hose is connected to the end of the filter housing. When washing down the miner flush the filter element. If the supply water to the miner is highly contaminated, it is recommended that a water filter be installed on the mine's incoming water supply line.

# SECTION 11 - LUBRICATION

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LUBRICATION SERVICE TIPS ..... 1

RETURN FILTER ELEMENT SPECIFICATIONS ..... 2

GEARCASE OIL CAPACITIES ..... 2

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