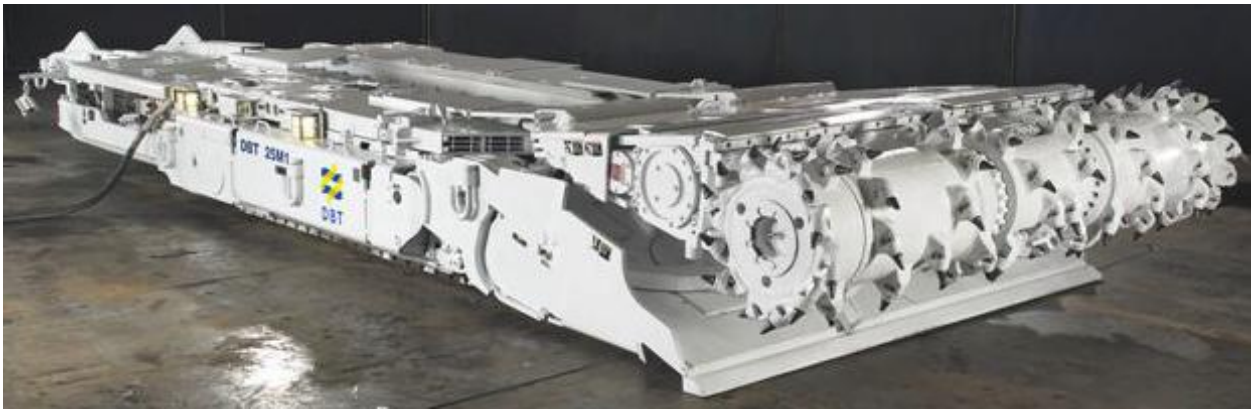
Operation Manual

DBT- CONTINUOUS MINER ®
Model - 25M Series

Doc. No.: 03-29-05



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About this manual
This chapter contains important information, which will simplify work with this manual for you. In addition, it contains information about the structure of the manual and on the characters and symbols used.

right operating manual

Before starting work
If you use an operating manual which has not been written for your conveyor type, you will endanger yourself and others. Ensure that the data on the Continuous Miner corresponds to those in this operating manual.

type

This operating manual belongs to:

DBT America—Dash Series Continuous Miner
Serial No.: 02-14-05

The operating manual is to be used only for the Dash Series Continuous Miners.

new operating manual

An operating manual for the conveyor must always be available at the place of operation.
Send for a new manual immediately if the present manual is no longer complete or has become illegible.

Who is this operating manual intended for?
This operating manual is intended for all persons working with or on the Continuous Miner
.
All persons working at the face, at the edge of the face or in the entry must have read this operating manual.

This includes persons:
- responsible for transport,
- developing the raise,
- carrying out erection / disassembly,
- operating the conveyor,
- eliminating faults,
- carrying out daily routine work at the face or in the entry,
- carrying out maintenance operations,
- carrying out repairs.

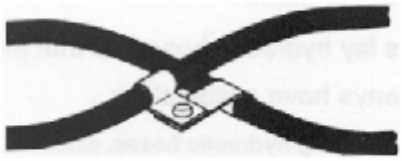
supervisory persons:
- instructing and/or
- supervising

the above activities.

- always have a little slack.

Fig. 5: Laying hydraulic hoses, crossing

Right



Wrong

- are not kinked.
- do not have to withstand tensile strains.
- are protected against thermal radiation.
- are accessible at all times.

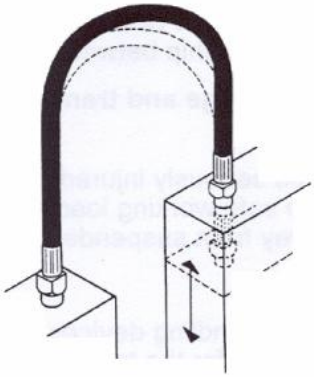
Push hydraulic hoses into the sockets only by hand. Never try to drive the hydraulic hoses in with a tool as this will damage the connections.

When installing the hydraulic hoses, ensure that they cannot be:

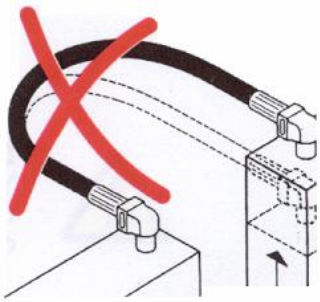
- torn out,
- kinked,
- crushed,
- driven over or
- twisted by movement of the machine.

Fig. 6: Laying hydraulic hoses, connections on moving parts

Right



Wrong



Installation

Points to observe prior to installation

Who is allowed to carry out installation?

Installation is only allowed to be carried out by personnel having received adequate training to perform this task.

Work on:

the safety components (pressure relief valves, fire extinguishing equipment etc.)

the electrical equipment (control units, signaling devices, etc.)
And

the hydraulic equipment (cylinders, directional control valves, hoses etc.)

should only be carried out by DBT America service engineers or by specially trained personnel.

Which tools are required for installation?

special tools

No special tools are required to put the Continuous Miner ® into service.

The receptacles come with a special wrench for connecting and disconnecting receptacles.

In addition, various items of auxiliary equipment and machines may be required at the point of installation.

These include i.e.:

- Blocking
- Hammer
- Screwdriver
- Retaining ring pliers
- Pliers
- Wire cutters
- Pry bar
- Chisel
- Punch
- Rose gun
- Welding equipment
- Chain falls

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.
7. VIEW B - Tighten the jackbolts in the star pattern to 50% of the target jackbolt
   torque value.
8. VIEW C - Change to a circular pattern and torque the jackbolts to 75% of the
   target jackbolt value.
9. VIEW C - Continue one more pass in the above circular pattern with 10% more
   torque than that of the target jackbolt torque value.
10. VIEW C - Long bolts will stretch, so by the time you get back to the first jackbolt, it will be loose again.
11. VIEW C - Set the torque wrench for the final torque value and continue to repeat the circular pattern until all jackbolts are torqued to the same value. do not exceed the torque value stamped on the tensioner without specific approval from SUPERBOLT, Inc.

loosening procedures

Jackbolts should be loosened with care. For longer bolts and studs, this procedure is even more important. Loosening can be accomplished quickly, but do not rush to completely loosen individual jackbolts. Remember that the intent is to slowly release the preload force. All jackbolts should be loosened uniformly, and usually there is no need to remove any jackbolt from the tensioner body during loosening.

1. Turn the first jackbolt counter-clockwise until it feels loose (no more than one half turn). The idea is just to unload each jackbolt, not to completely loosen it.
2. Move in a circular pattern to the next jackbolt and repeat step 1.
3. Continue repeating until all jackbolts have been unloaded.
4. By the time you get back to the first jackbolt, it will be tight again. Repeat the
   process moving in a circular pattern.
5. Usually after two or three passes, the tensioner can be spun off the bolt or stud by hand. Long bolts or studs that stretch more may require extra passes.

shear cylinder dash-0, dash-1 & dash-2

1. Advance the conveyor chain so that a conveyor flight does not block the shear cylinder piston end pin access plate in the conveyor bed.

2. VIEW A -Remove covers to access both ends of the shear cylinder.
3. VIEW B -At the Cutter boom clevis remove two capscrews and lock washers and remove the retaining plate.
4. VIEW B -Using the slide hammer with a 1”-8 adapter pull the pin from the clevis bushing.
5. Connect electrical power to the miner.

CAUTION

Stand clear of the blocked cutter head assembly during contraction of the shear cylinders..

6. Slowly contract the shear cylinder until the rod comes free from its cutter boom clevis.

CAUTION

Remove and lout-out the electrical power ti the miner.

7. Raise and lower the shear cylinder control lever to release any pressure from the shear cylinder.

8. VIEW C -At the tractor frame clevis, remove the two capscrews and lock washers that secure the pin retaining plate to the frame. Remove the retaining plate.

CAUTION

The shear cylinder is very heavy. Verify its weight can be supported.

9. VIEW C -Using the slide hammer with a 1”-8 adapter pull the pin from the clevis busing.

10. Mark for reconnection then disconnect and cap the hoses to the shear cylinder.
11. The shear cylinder can now be removed.
12. To install a shear cylinder - reverse the above procedure.

gear case dash –2-3 installation / removal See figures—21 & 22

1. Remove the center cutter drum and the end cutter drum - follow that procedure.
2. VIEW A - On the rear of the cutter drum drive motor, locate the clutch housing and the motor shaft access cover plate.
3. VIEW A - Remove the four capscrews that secure the motor shaft access cover plate to the clutch housing. Remove the access cover plate to expose the end of the motor drive shaft.
4. VIEW A - Remove the retaining ring that secures the motor shaft in the clutch assembly.
5. VIEW A - Pull the motor shaft from the motor and clutch assembly.
6. Store the motor shaft in a clean, safe place.
7. To protect the clutch from damage and dirt, replace the access cover plate. .
8. Securely block the cutter drum drive gear case to support it when it becomes separated from the boom.
9. VIEW B -Remove the strapping from the twenty-one capscrews securing the gear case to the boom using a cutting torch.
10. VIEW C - Remove the twenty-one 1 1/4” hex head capscrews that secure the cutter drum drive gear case to the cutter boom.
11. Connect electric power to the miner.
12. Slowly tram the miner in reverse away from the blocked gear case.
13. Remove the three face keys and save for installation.
14. To install a gear case -reverse the above procedure except for the following steps.
15. VIEW D -Insert four 1 1/4” dowel guides into the cutter boom face, spacing them equally over the boom face.
16. VIEW D -Mark the holes on the exterior of the gear case mounting brace that correspond to the positions of the guides on the boom face.
17. VIEW D -Apply RTV silicon sealer to the gear case center alignment key and install the key into the boom face. Also install the gear case’s two larger side alignment keys into the boom face.
18. VIEW C -Torque the twenty-one capscrews to 1850 lb.-ft. beginning with the inner capscrews and working to the outside.

Remember to fill the gear case with approved lubricant.

CAUTION

Position the conveyor tail section level with the floor. Lower the gathering head to the floor. Raise and block-up the cutter head assembly. Allow for removal of the cutter drums. Remove and lock-out the electrical power to the miner.

CAUTION

The gear case is very heavy. Verify the supports can handle its weight. Stand clear of the gear case and the miner when tramming

DANGER

Never work under any raised assembly without proper blocking.

CAUTION

Follow welding safety procedures.

tram primary planetary gear Installation / removal see figure—3

1. VIEW A - Remove the tram motor. (Follow that procedure) The tram primary planetary gear is located behind the tram motor.
2. VIEW B - Remove the sixteen capscrews that secures the motor adapter plate and the primary gear ring to the tram case.
3. Remove the motor adapter plate from the gear case.
4. Carefully slide the primary planetary carrier assembly out of the primary gear ring and remove the assembly from the tram case.
5. Carefully slide the primary gear ring out of the tram case.
6. Installation of the primary planetary gear set - Reverse the above procedure using the following installation steps.
7. VIEW B - Insert alignment dowels inserted into four (4) of the sixteen (16) capscrew holes in the tram case.
8. VIEW B -Mark the mounting holes of the primary planetary gear ring that correspond to the holes in which the alignment dowels were placed.
9. VIEW B - Carefully insert the primary planetary gear assembly into the gear ring. Be sure that the extension of the sun gear faces out from the center of the miner and that the internal gear teeth of the primary carrier are seated securely onto the tram drive pinion gear. Orient the adapter plate with the adapter dowels along the bottom edge.
10. VIEW B - Install and tighten the sixteen 3/4” capscrews to 230 lb.-ft. Remove the alignment dowels as you proceed.

CAUTION

Lower the gathering head and the cutter head to the floor. Lower the conveyor tail section. Remove and lock-out electrical power to the miner.

IMPORTANT

Recommended to replace input seal.

conveyor assembly installation / removal See figures 38 & 39

1. VIEW A -Position the conveyor tail section level with the floor and straight. Advance the conveyor chain until a connecting link moves onto the tail section slide pan.
2. VIEW B - Using the procedure outlined in CHAIN TENSION, loosen the conveyor chain as much as possible.
3. VIEW C - Remove the two retaining rings and the connecting link.
4. VIEW D - Connect a wire rope to the bottom side of the conveyor chain. Note, this rope will assist in threading the chain through the new conveyor assembly.
5. Connect electrical power to the miner.
6. Raise the conveyor tail section and remove the blocking.
7. VIEW E - Move a shuttle car or scoop directly behind the miner and under the conveyor tail section. Lower the conveyor tail section and secure it to the vehicle.
8. Follow the procedure outlined in LIFT CYLINDER, to detach the rod ends of the lift cylinders from the tail section.
9. VIEW F -Locate the right conveyor pivot pin at the front of the conveyor assembly. Remove the grease hose.
10. VIEW G -Remove the two capscrews that secure the retaining plate to the conveyor.
11. VIEW G - Using the slide hammer with a 1”-8 adapter pull the conveyor pin.
12. Repeat Steps 9, 10 and 11 to remove the left conveyor pivot pin.
13. VIEW H - The conveyor assembly is now free and can be removed. Slowly tram the vehicle and conveyor assembly away from the miner. Make sure that the conveyor chain and the guide rope smoothly slide out of the conveyor’s return slide channel.
14. Installation of the new conveyor assembly is basically the reverse of the above removal procedure.
15. VIEW I - While moving the new conveyor assembly forward into position, use the guide ropes to pull the conveyor chain through the return slide channel and up the bed of the new conveyor assembly.
16. After complete installation, follow the procedure in CHAIN TENSION to adjust the chain tension and check out operation of the new conveyor assembly.

CAUTION

Lower the gathering head and the cutter head to the floor. 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.

The cutter motors and the gathering head / conveyor motors are subject to starting under load, jam ups, and stalls. Instantaneous overloads are used to detect those conditions and stop the motors. They are designated OL-1, OL-3, OL-5, and OL-7.

While called “instantaneous” overloads the current sensing relays have an adjustable start-up delay after which they operate as soon as the motor current exceeds the preset level. The instantaneous overloads have normally open contacts in the motors’ control circuit which close when controlled voltage is applied. The instantaneous overloads protect the motors from stall currents and also help teach the miner operator how far he can “push” the miner for best production.

Motor Control

The two DC tram motors each have an SCR drive with solid state reversing. The schematic shows a circuit breaker, CB-T, for over current protection. Some miners may have fuses instead of the circuit breaker.

All of the Dash Series miners have a power transformer to reduce the three phase voltage to the SCR drives.

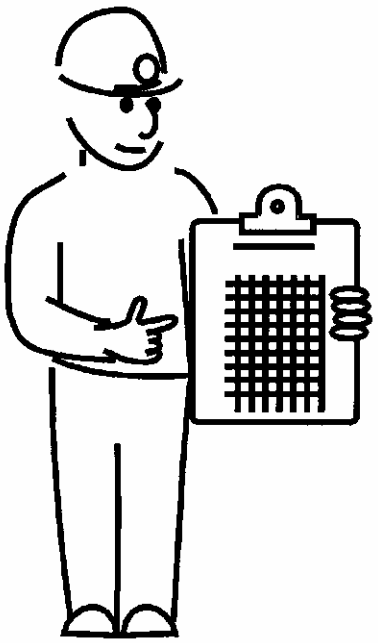
See figure—67

All of the motor contactors are vacuum type except for the scrubber fan motor, contactor E, which is a standard contactor. The pump motor contactor, F, also connects power to the tram. The gathering head / conveyor motors have forward and reverse contactors, CF and CR.

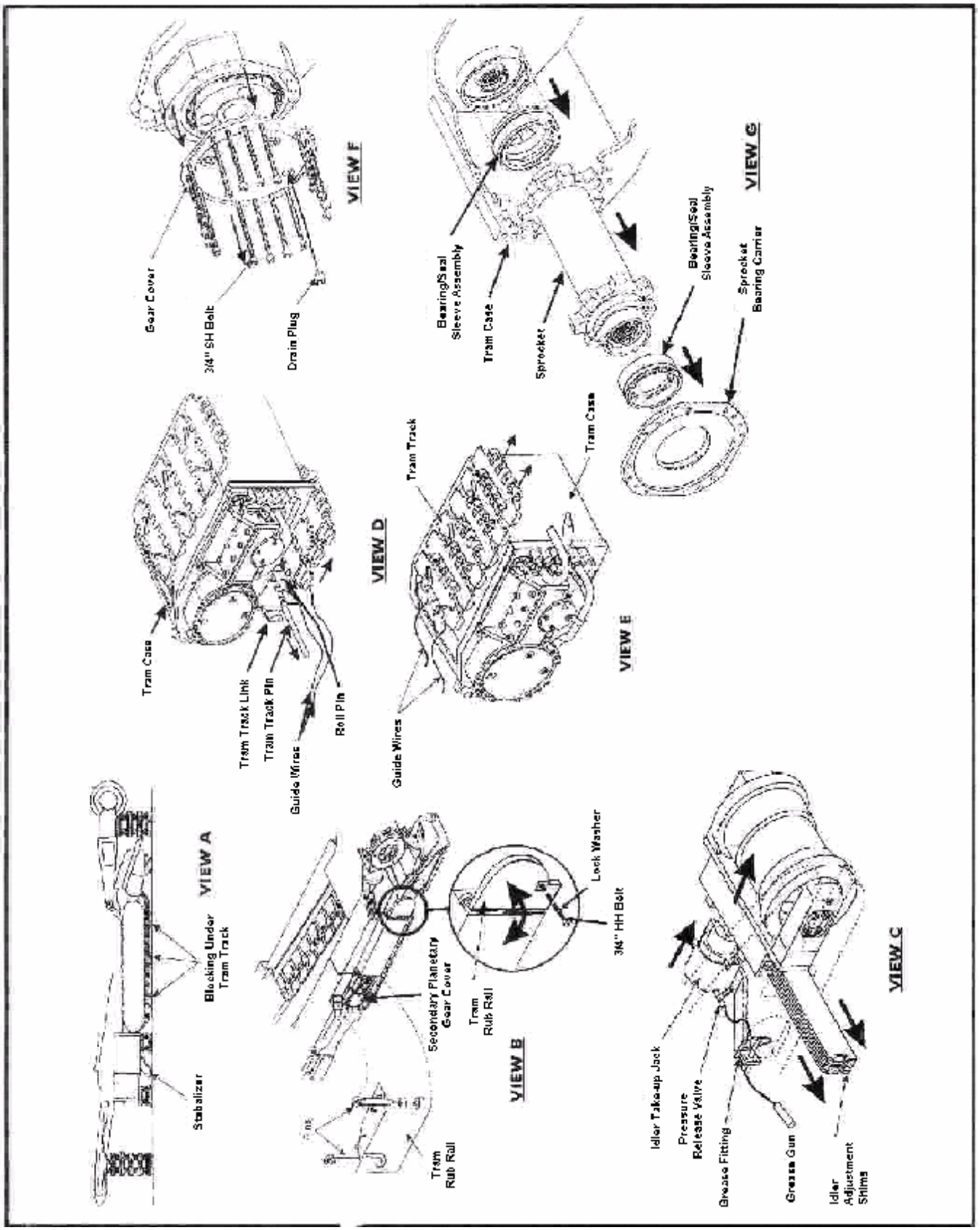
Cutter Motor Feedback

The miner operator has control over the tram speed when the cutter motors are not running. The Dash Series miners have a feedback circuit from the cutter motors to the tram motors so that when the cutter motors are running the maximum forward tram speed is determined by the load on the cutter motors. This is accomplished by monitoring the phase current for one of the cutter motors and feeding this current level to the tram control circuit. The amount of phase current on a cutter motor is a measure of the load on the motor. When the current is low then the cutting work is low like during a place clean up and when the current is high then the cutting work is high like sumping into the face.

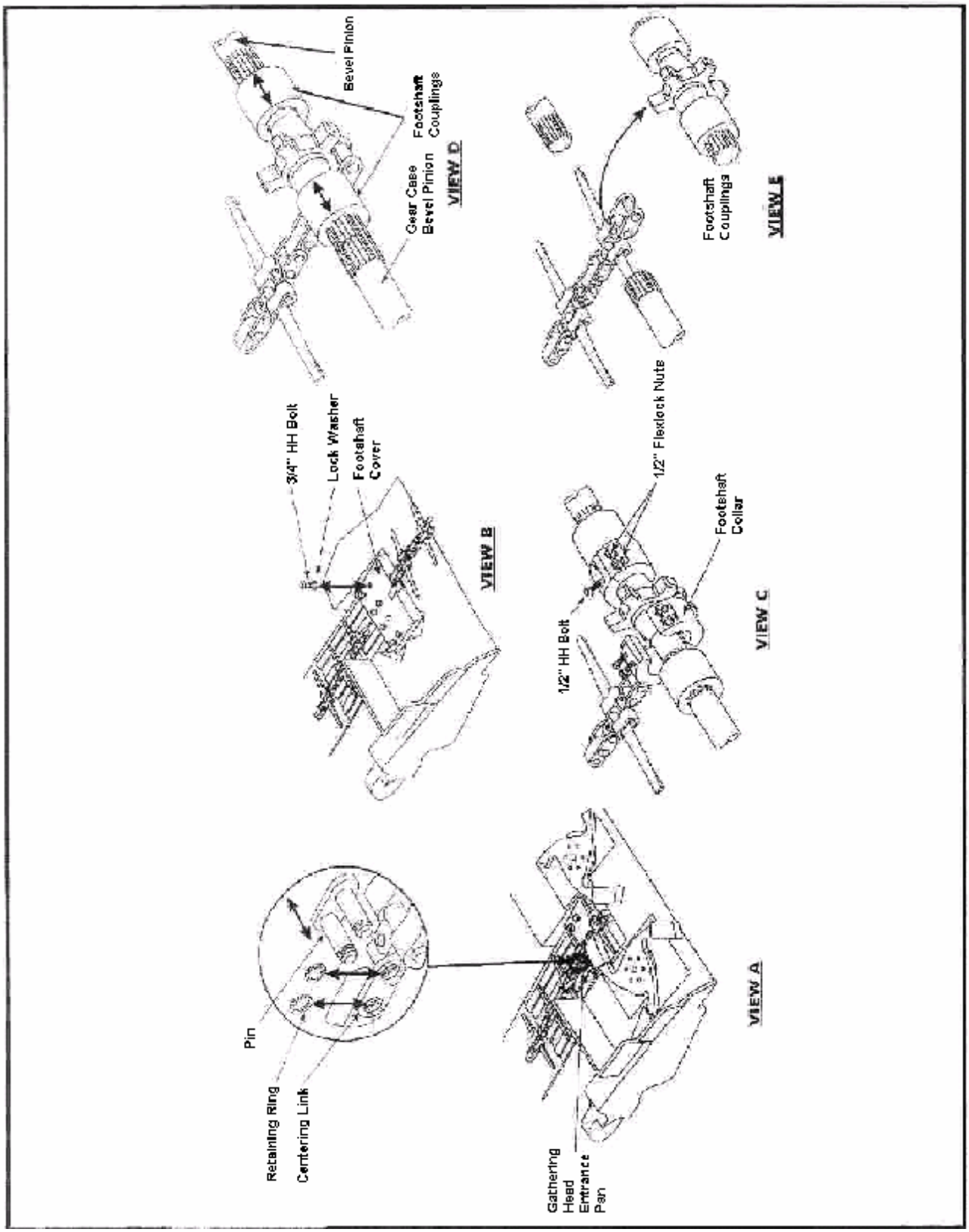
6 Technical data



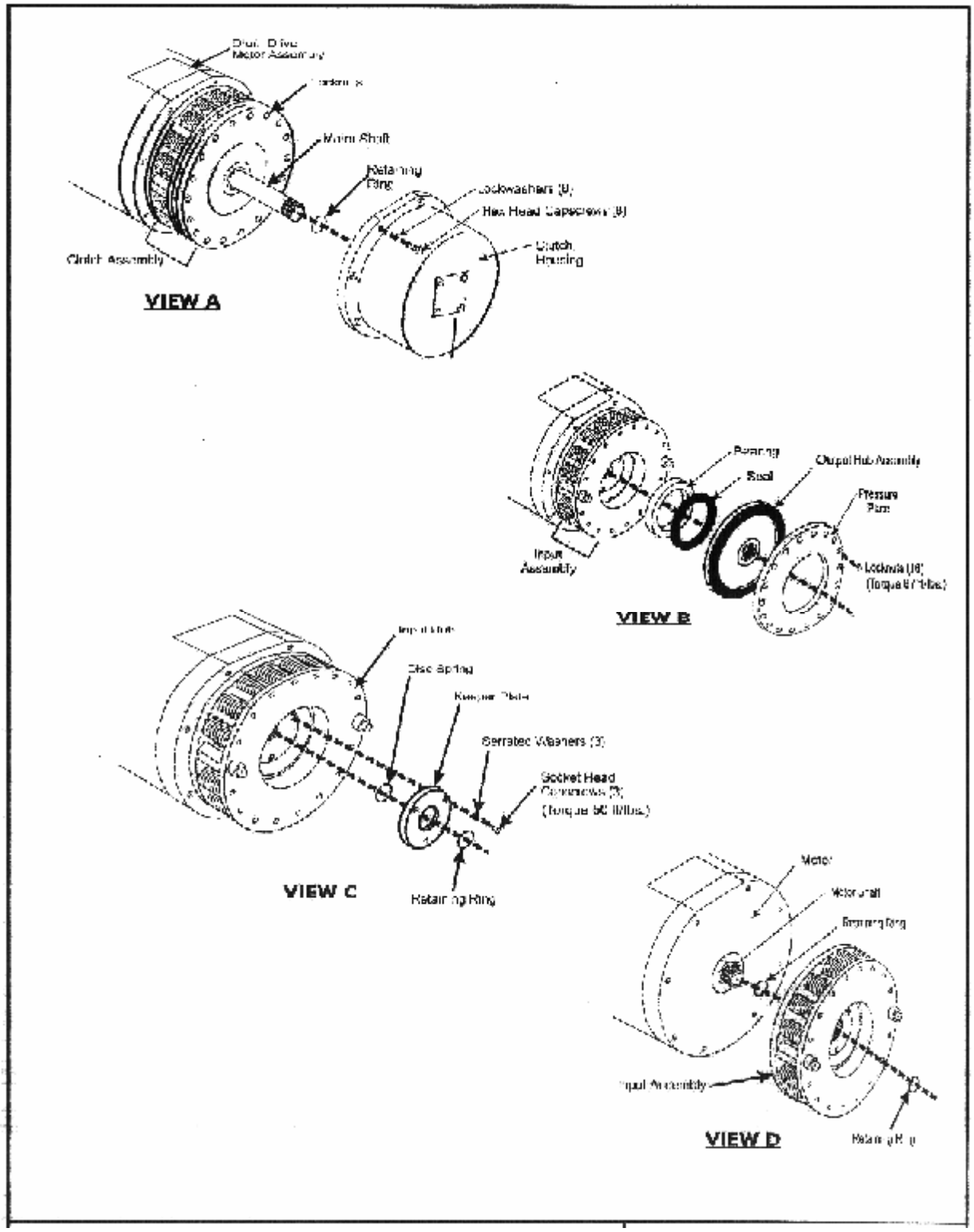
tram sprocket—figure—8



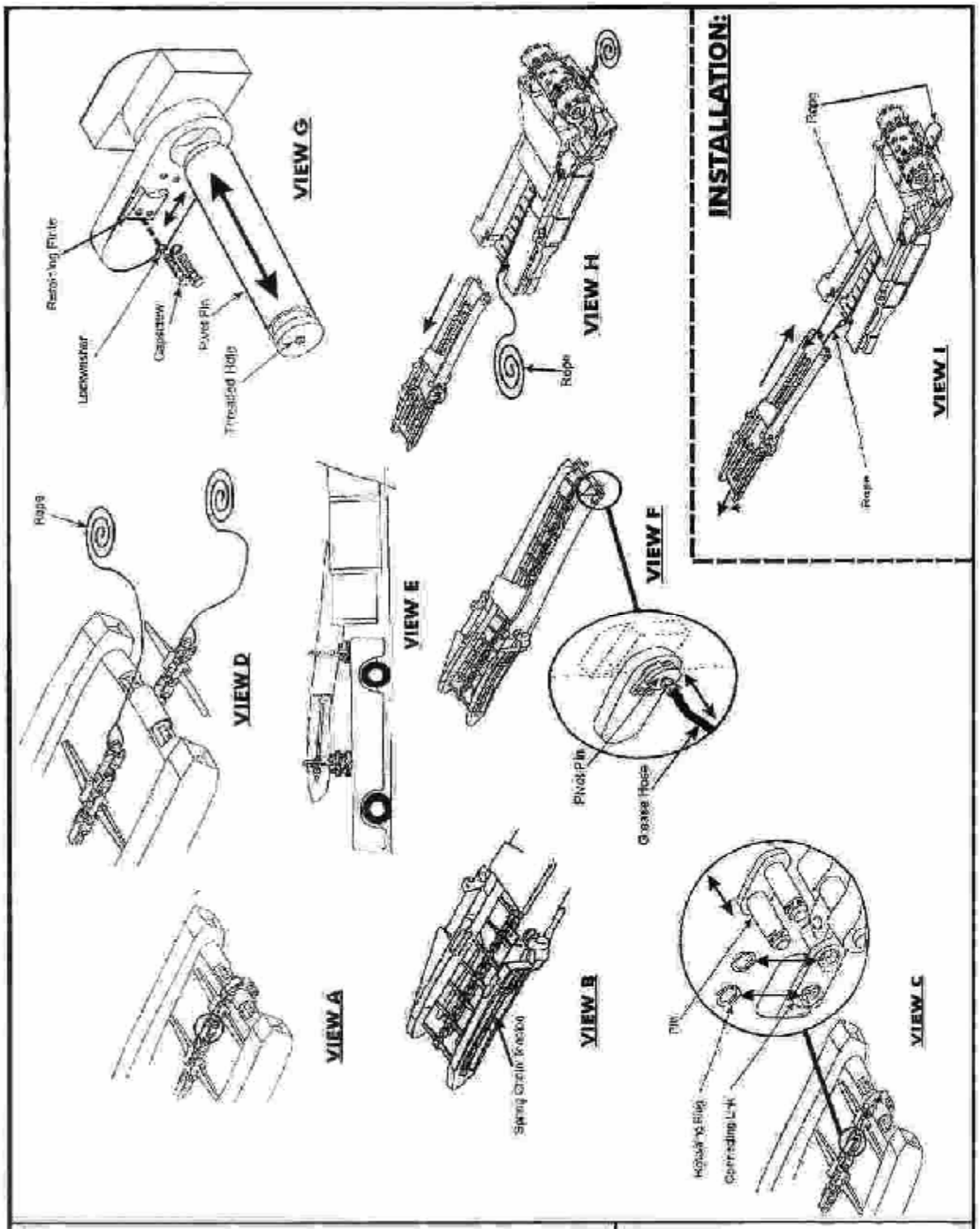
gathering head foot shaft installation / removal—figure—18



cutter head dash-2, 3 drum drive
torque
Limiting clutch
Figure—28



conveyor—figure 39



Forced Potato

Simpson Remote Control System
(DBT 25M Miner Version)

Operator's Manual

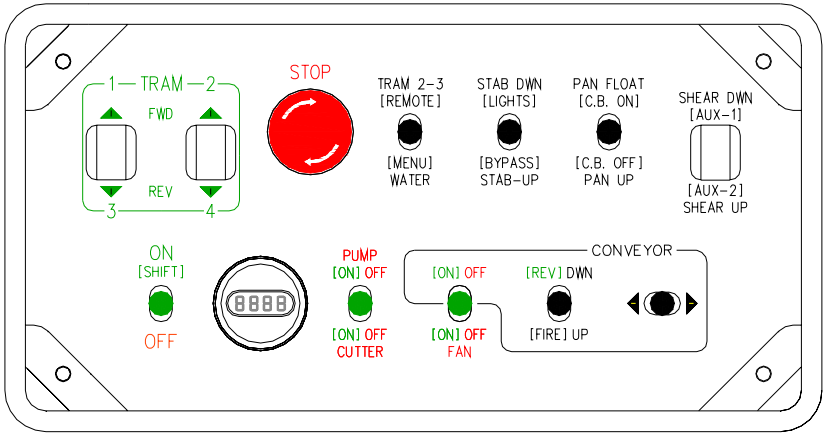
Issue: FA1901.B

“Traction Unit”
(controls machine tramming)

“Miner Display”
(Miner Diagnostic Display)

“Antenna”
(Standard Radio Data Antenna)

(9) Using the Remote Control



Single Key Functions

Functions activated by a single key press.

Two Key Functions

Functions marked in "[]" brackets require the [SHIFT] key also be used to operate that function. Motor starts are generally Two Key Functions for added safety.

Pump Motor Start

Two Key Function. Pump Motor must be started before other motors, tramming or hydraulics can be controlled.

Hydraulics

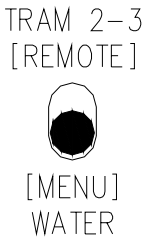
Single Key Functions control hydraulic cylinders on the Miner.

Tramming

Transmitter provides 3 tram speeds. Speed selected by pressing [TRAM 2-3] whilst tramming levers are engaged and the machine is tramming.

Remote Console – Water Sprays Control

The control system has the possibility of turning cutter water sprays on and off from a key on the remote console. However, this function is normally not available due to the wiring configuration of most miner electrical systems. Check with DBT or mine staff if remote control of water sprays is a necessary requirement for your particular mining operation.



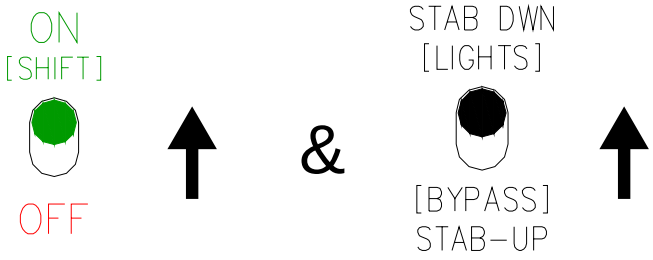
Press and release the **WATER** key to turn on or off the water sprays. Water sprays are typically turned on automatically when cutter motors are started.

Remote Console – Head Lights Control

Head lights can be turned on and off from the remote console at any time that the system is in REMOTE MODE and the remote console is on,

Press the **[SHIFT]** and **[LIGHTS]** keys together. The lights will turn on.

To turn off the lights press the **[SHIFT]** and **[LIGHTS]** keys together again.



Methane Monitor Override Option

Normally, the methane monitor system on the miner will disable the pump, tramming and all other electrical circuits if the methane sensor is faulty. This can pose a problem for mine staff if the machine is inaccessible or under a section of roof that has not be properly secured and supported.

The Methane Monitor Override Option has been designed to allow the operator to start the pump motor and tram the machine if the methane monitor is reporting a fault condition.

This option is only available on machines that feature the General Monitors S800 Methane Monitor and have been fitted with additional wiring. Please contact mine management or DBT for information about the availability of this feature on your continuous miner.

This option can be turned on and off in the non-password protected section of the system setup menu (See Section 17).

The override must be activated by the operator using the radio remote control handset.

To activate the methane monitor override:

Ensure that the methane monitor is in fault condition. This will be reported by the control system diagnostic display.

Press and hold the **[SHIFT]** and **[AUX-2]** keys together for a 5 seconds.

After holding the keys for 5 seconds, the system should enter the methane override mode for 120 seconds. During this time, the pump may be started and the machine can be trammed in SPEED 1 only. Hydraulic functions can also be controlled whilst the override mode is active. It is not possible to start any other motors – including the cutter – in this mode.

1 - Methane Monitor Override

Default Value	DISABLED
Minimum Value	DISABLED
Maximum Value	ENABLED

This option allows the Methane Monitor Override facility to be enabled or disabled (See Section 11).

2 - Fan Before Cutter Option

Default Value	DISABLED
Minimum Value	DISABLED
Maximum Value	ENABLED

When this option is set to ENABLED, the control system will not allow cutter motors to be started unless the scrubber fan is first started and run for a full 3 second period (See Section 11).

29 – Latching AUX 2 Output

Default Value	DISABLED
Minimum Value	DISABLED
Maximum Value	ENABLED

Allows the user to specify if the Auxiliary Output #2 is to operate in a "Latching" or "Non-Latching" fashion. If this option is ENABLED, the Auxiliary Output #2 will remain on after keys are released and the output can be switched off by re-asserting the keys.

Restore Default Settings

In cases where an overwhelming number of setup options have been changed, or possibly tampered with, it is sometimes useful to revert to factory default settings. This can be achieved with the DEFAULT SETTINGS option.

Note that this option also restores the non-password-protected setup parameters to their default values.

To restore default settings, first access the DEFAULT SETTINGS page, the Remote Setup, and then assert **[SHIFT]** for 5 seconds.

Simpson Battery Backup Power Supply Connector X5 – 8 Pin Burndy Female		
Pin No.	**Signal Name**	**Signal Type**
X5-A	Door Switch Input	Link
X5-B	Door Switch Output	Link
X5-C	Main Supply O/P 24V+	24V+ Output
X5-D	Main Supply O/P 0V	0V Output
X5-E	N/C	
X5-F	RS485-A	Coms
X5-G	RS485-B	Coms
X5-H	RS485-COM	Coms

Simpson Battery Backup Power Supply Connector X6 – 8 Pin Burndy Male		
Pin No.	**Signal Name**	**Signal Type**
X6-A	110V AC Neutral	Supply Input
X6-B	Earth	Supply Earth Connection
X6-C	110V AC Line	Supply Input
X6-D	N/C	
X6-E	0V DC	Output 110 VDC
X6-F	110V DC +	Output 110 VDC
X6-G	N/C	
X6-H	N/C	

Simpson Display Unit Terminal Connections J3, J4		
Pin No.	**Signal Name**	**Signal Type**
24V+	Auxiliary Supply I/P 24V+	24V Input
0V	Auxiliary Supply I/P 0V	0V Input
A	Display RS485 - A	External Communications
B	Display RS485 - B	External Communications
COM	Display RS485 - Common	External Communications

Diagnostics
The Remote Control Battery Charger permits the operator to verify that all switches are operating as expected. Similarly, it provides a secondary means of determining the operating frequency.

Power Up
Turn the RC on by asserting and holding the ON [SHIFT] key for two-seconds. This startup requirement has been introduced to reduce the likelihood of incidental activation.

After the two-second period has expired, the RC will show the operating frequency via the LED display. The available operating frequencies for the L0KN2601 (DBT UHF) are as follows:

Indicated Frequency	Actual Frequency
UHF1	458.500MHz
UHF2	458.525MHz
UHF3	458.550MHz
UHF4	458.575MHz