

The Deck Mate™



Operator's Manual

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The Deck Mate – Owner's Manual

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The Deck Mate™



OVERVIEW

In service since the 1980's, The Deck Mate is a time tested, proven solution to one of the most time consuming and tedious tasks of trailer and truck body manufacturing.

With it, a four-fold increase in floor securing efficiency is easily obtainable. A drilling process that required the back breaking effort of four men can be reduced to one man pushing a button. Similarly, difficult work for two men driving screws can be accomplished with much less effort by one man and the screw driving attachment.

Workers will be freed up for other tasks, and the operators of The Deck

Mate will experience much less fatigue, so they will be more productive performing other tasks once the flooring process is complete. The ergonomic issues of hand drilling and screw driving are resolved, so injuries and down time are reduced. Employee contentment will receive a boost, since the deck crew will now be machine tool operators instead of common laborers.

Added benefits include more accurately placed screws and greatly reduced twist drill and machinery costs. The spindles of The Deck Mate are electrically driven, so if it is replacing air powered drills, much less demand of the shop air supply system will result and a much quieter work environment will be enjoyed by all in the area. Since The Deck Mate is infinitely adjustable, any combination of deck board widths can be accommodated.



Figure 1-1

PRINCIPLES OF OPERATION

The Deck Mate is a simple tool – think of it as a portable drill press for a truck or trailer floor. The *Bridge* is positioned perpendicular to the length of the bed and rolled in place over each of the cross members to be drilled. *Clamps* lock it firmly in place to ensure a straight row of screws and also resist the vertical forces of the drilling process. The optional *Air Clamps* facilitate movement from crossmember to crossmember in a mere 5 to 15 seconds.

One or two *Carriages* carrying **Drill Units** glide along the stainless steel track on the *Bridge*, across the width of the bed. They maintain the vertical and longitudinal position of the drill as well as resolve all of the torque of the drilling and screw driving process – all that's left for the operator is to establish the lateral screw position along the cross member and press a button.

The operator will be busy though; with two drill units he can be drilling a hole every 1.5 seconds or less.

Various adjustments and settings on The Deck Mate optimize cycle time and tooling life. The *Drill Unit's* quill extends and retracts under air pressure that is controlled by a regulator attached to the *Carriage*, providing up to 300 lbs of drilling thrust. Pneumatic flow control valves allow the extension speed and the retraction speed to be controlled independently. A second stage of flow control is hydraulically metered to control the stroke as the twist drill pierces the cross member, but allows for a rapid retraction back to the quill's home position.

Two stroke distance adjustments are used in concert with the first stage pneumatic quill extension speed and the second stage hydraulic controlled speed. A faster feed rate appropriate for the deck material can be set until the twist drill is just above the cross member, and then the rest of the stroke can proceed at a slower hydraulically controlled rate. The final depth can be set to minimize over travel and wasted motion, resulting in the shortest possible cycle time.

The optional **Automatic Screwdriver** attachment provides the same ergonomic advantages of the *Drill Unit* and also places screws at a more uniform depth than can be achieved by hand held processes. The screw driver mounts on the same *Bridge* as the *Drill Units*, so only one setup is required per crossmember.

The aluminum construction of The Deck Mate makes it possible to place it on the floor of a truck or trailer by hand a piece at a time. An assembled Deck Mate can be stored and positioned by a light weight shop mounted jib hoist using the optional **Spreader Bar**, or the optional **Toter**, which provides greater portability.

INITIAL SETUP

Toter

Set the Toter up first so The Deck Mate can then be set up on the Toter.

If you purchased the optional Toter, it is recommended that you assemble it before uncrating The Deck Mate. The Deck Mate components can then be assembled right on the Toter and wheeled to the job.

COMPONENTS OF THE TOTER

- Base
- Column
- Cantilever Arm
- Bridge Support
- Column mounting bolts

SET UP PROCEDURES

1. Place the base on the floor with the casters down.
2. Place the column on the base, install and hand tighten the three 5/8" bolts.
3. Extend the hoist rope from the winch on top of the column to the base.
4. With the Cantilever Arm lying on the base, attach the rope to the loop on the roller end.
5. With only the front Delrin Roller on the Arm, place the Cantilever Arm against the Column and then install the rear Delrin Roller.
6. Place the Bridge Support in the Pocket on the front end of the base.
7. Using the winch on top of the column, crank the Cantilever Arm about two inches above the top of the Bridge Support.
8. Rotate the column so the Cantilever Arm is on a parallel plane to the long member of the base, then tighten the three 3/5" bolts.

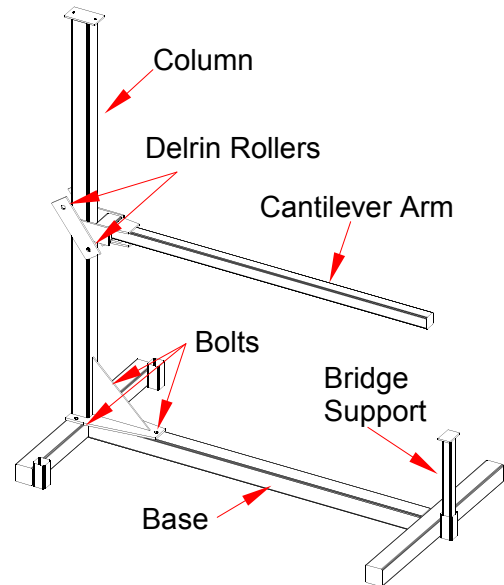


Figure 3-1

SAFETY CONCERNS IN USE.

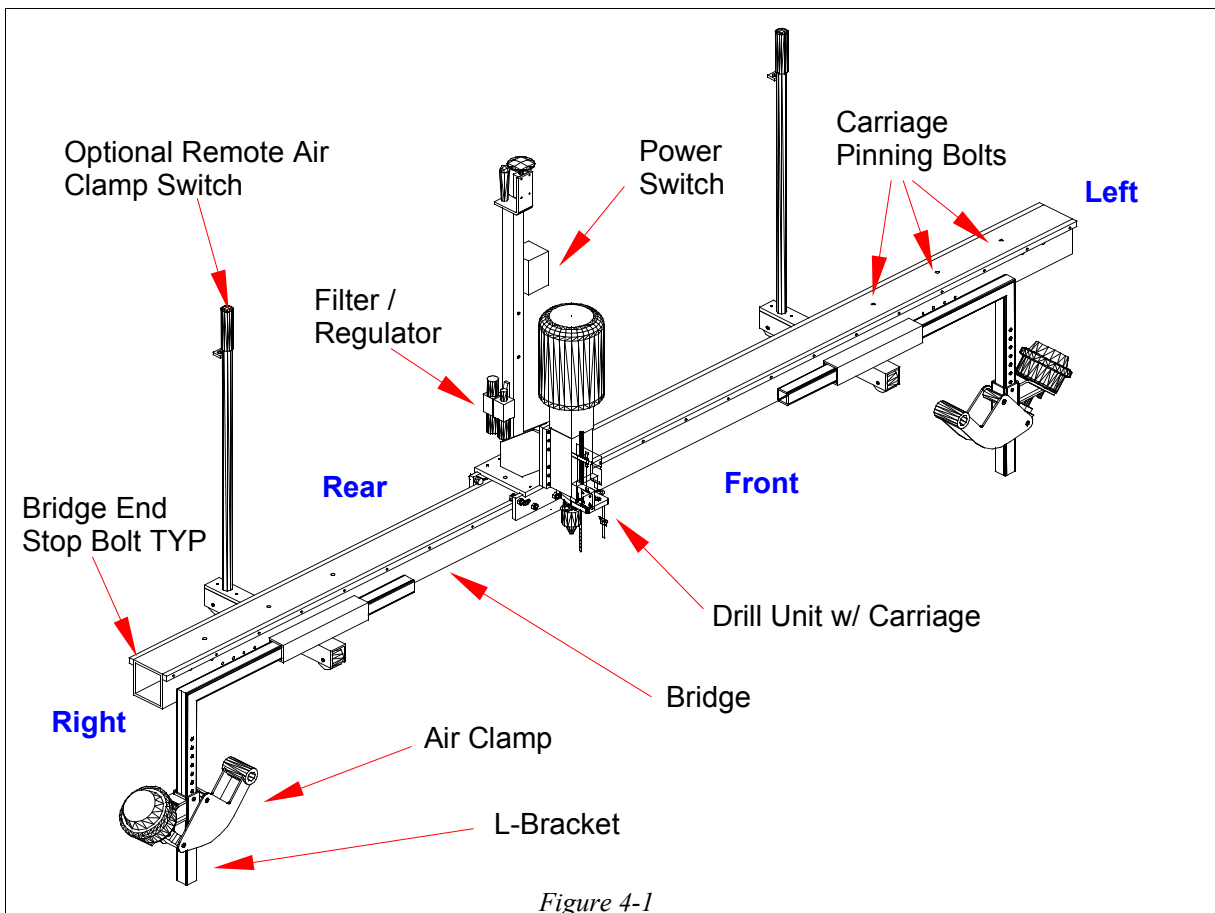
- The Deck Mate bridge must be FULLY ENGAGED by the wedges on the column end of the Cantilever Arm before hoisting. Failure to do so will result in the Bridge rotating around the Cantilever Arm.
- ALWAYS pin the Drill Units and Screwdriver against the Column before raising The Deck Mate off a truck or trailer deck. Failure to do so will result in overloading the Cantilever Arm.
- Before transporting The Deck Mate on the Toter, lower the Bridge so it is contacting the Bridge Support on the front of the Toter. Failure to do so will result in instability which may cause the Toter to upset while moving.
- Use the Toter only on a smooth floor with no obstructions.
- Failure to follow all of these instructions may result in damage to The Deck Mate and serious injury to the operator.

The Deck Mate

If you purchased the optional Toter, set it up first and then install The Deck Mate right on the Toter, otherwise assemble it on the floor or a trailer deck.

COMPONENTS OF THE DECK MATE

- Bridge
- Drill Unit(s) with Carriage(s)
- Optional Screwdriver
- L-Brackets for Air Clamps
- Air Clamps
- Optional Remote Air Clamp Switch Handles
- Optional Spreader Bar
- Drill Chuck Key(s)
- Bridge End Stop Bolts
- Carriage Pinning Bolts



NOTE: There is a newer version of the assembly instructions with the Screwdriver Manual.

ASSEMBLY OF THE DECK MATE COMPONENTS

1. Slide the Bridge onto the Cantilever Arm of the Toter. The inside of the 4" square tube of the Bridge should lock into the wedges on the column end of the Cantilever Arm.
 - *TIP: You may want to consider how the bridge will be oriented on the truck or trailer deck before deciding which end of the Bridge to slide onto the Cantilever Arm. It is usually best to pull The Deck Mate backwards, away from drilled holes, as you advance to the next crossmember.*
 - *NOTE: The front of The Deck Mate Bridge is the side with the sorter wheel trucks.*
2. Lower the Bridge onto the Bridge Support of the Toter before continuing assembly.
3. Slide the Drill Unit Carriage(s) and optional Automatic Screwdriver onto the stainless steel rails of the Bridge.
 - *Remove the Bridge End Stop Bolt first.*
 - *The Drill Unit's chuck should be oriented on the front side of the Bridge (the side with the short wheel trucks.)*
 - *The Automatic Screwdriver should be placed to the right of the Drill Unit(s) when viewed from the rear side of the Bridge.*
4. Pin the Carriage(s) against the Toter column with the Carriage Pinning Bolts and replace the Bridge End Stop Bolt.
5. Plug in air supply hoses.
 - *The right most Carriage, whether an Automatic Screwdriver or Drill Unit, should plug into the quick release socket on the right end of the Bridge and each subsequent Carriage daisy chains to the quick release socket on the preceding Carriage.*
6. Slide the Air Clamps onto the L-Brackets and pin in place with the supplied PTO pins. (The vertical position of the Air Clamp will be determined once The Deck Mate is on a truck or trailer bed.)
 - *The L-Brackets may then be stored in the two pockets on either side of the column.*
7. Drill Unit adjustments should be made at the first use of The Deck Mate. (See Figures 9-1, 10-1, & 11-1.)
8. The lubricator chamber of the filter/regulator mounted on the Carriage column should be filled with a quality pneumatic oil.

SETTING UP THE DECK MATE FOR USE

1. With the Toter lowered to the transport position (with the Bridge resting on the Bridge Support of the Toter), roll the Toter right up to and perpendicular to the deck.
2. Using the winch on the top of the Toter Column, crank The Deck Mate a couple of inches above the deck.
3. Roll the Toter straight toward the deck, avoiding sideways movement, since the Toter is less stable laterally.
4. Lower The Deck Mate so all four wheels are contacting the deck and pull the Toter straight out.
5. Slide the L-Brackets into the Receivers on each end of the Bridge, then plug the red airlines into the small quick couplers on the rear side of the Bridge.
6. The Air Clamps should then be adjusted so the cylindrical end of the clamp is within 2" of the bottom of the deck's siderail.
 - TIP: If there is no siderail, the cylindrical end of the clamp will accept a 1" rod that can be used to span two crossmembers.
7. The indicators on the front of either end of the bridge are about 1/8" behind the drill line. Position them where you want the holes drilled and actuate the Air Clamps with the small toggle switch on the rear of each end of the Bridge.
8. If you have the optional Remote Air Clamp Switch Handles, the switches are at the top of each handle.

DRILL UNIT ADJUSTMENTS

The 4 stages of the stroke

1. Home or Retracted
2. Fast advance through the wood (pneumatic stroke control).
3. Controlled advance through the metal cross member (hydraulic stroke control).
4. Retraction back to home position.

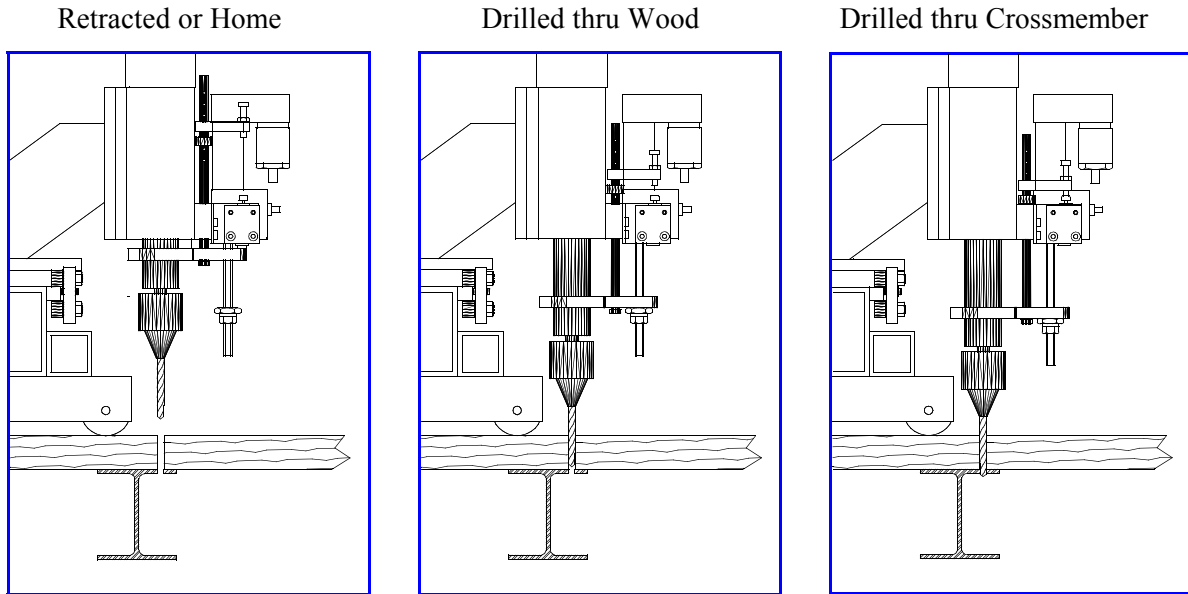


Figure 7-1

Figure 7-2

Figure 7-3

The goal of proper Drill Unit adjustment is to drill holes with:

1. The shortest possible cycle time
2. The longest possible twist drill life.

This requires proper spindle speeds, quill feed force and quill feed rates. The objective is to feed rapidly through the wood, but slow enough to allow for the wood chips to clear the twist drill flutes, and then feed more slowly the last 1/16" or so to and through the crossmember. Retraction should occur as soon as the twist drill is completely through the crossmember. The following instructions will ensure that these objectives are met.

The four required adjustments are:

- Set HydraBrake Depth Nut
- Set Depth Cam and Actuating Screw
- Set Stop Collar
- Set Flow Rates

Drill Unit Adjustments

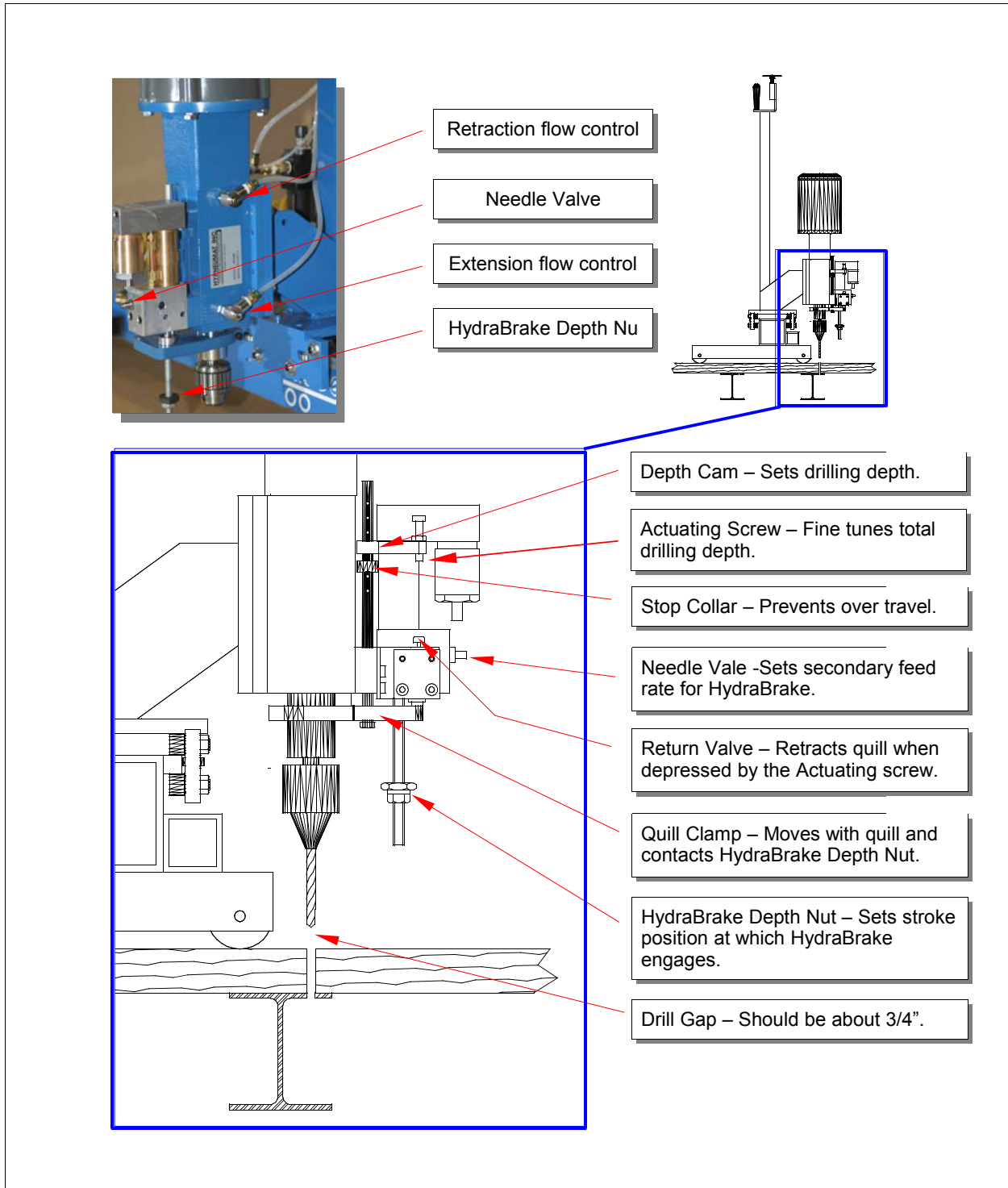


Figure 8-1

Set HydraBrake Depth Nut

1. Prior to installing a twist drill, **cycle the quill feed** at least once by depressing the thumb button on the Carriage Handle. This ensures that the HydraBrake Actuating Rod is properly set up.
2. Install a twist drill so its end is about 3/4" above the deck. Use a guage to ensure the same position each time you change the twist drill. (The chuck key works well for this.)
3. Measure the distance from the end of the twist drill to the top of the crossmember.
4. Set the **HydraBrake Depth Nut** about 1/16" to 1/8" less than that distance from the bottom of the Quill Clamp. The twist drill should then not touch the crossmember before the second stage stroke control engages.

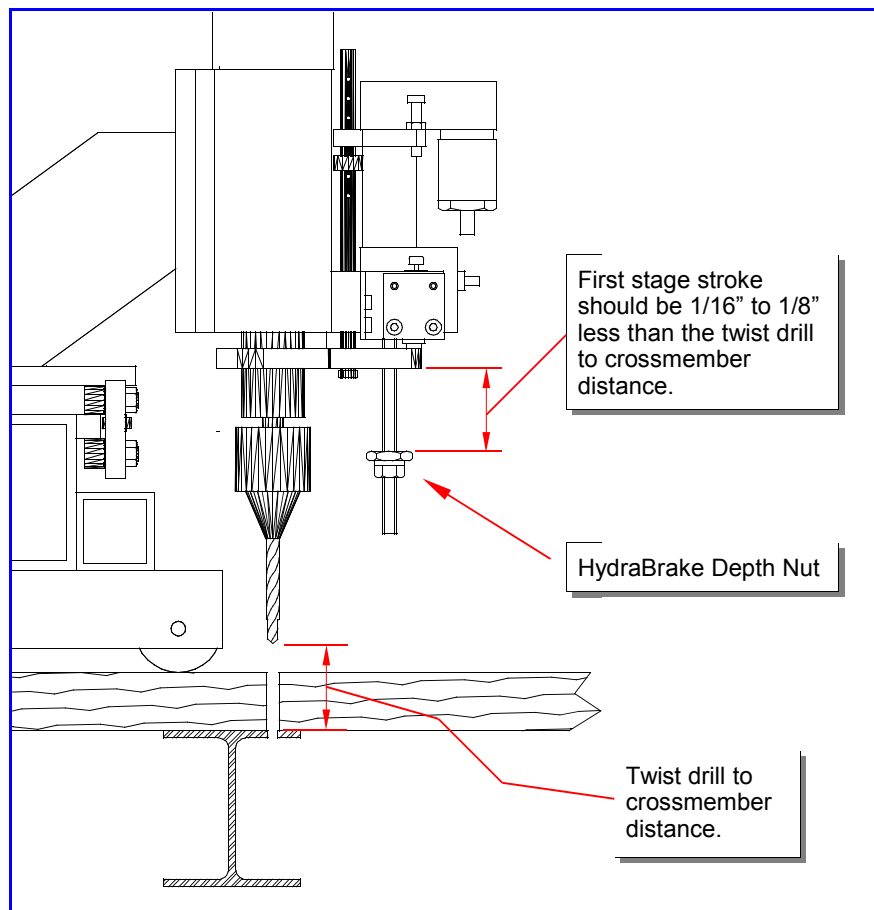


Figure 9-1

Set Depth Cam and Actuating Screw

1. With the twist drill 1/16" to 1/8" above the crossmember, measure how much more travel is needed to **completely drill through the crossmember**.
2. Adjust the **Depth Cam and Actuating Screw**
 - The distance from the Actuating Screw to the Return Valve should equal the above measurement.
3. Set **Stop Collar**
 - The top of the Stop Collar should be set to the same elevation as the bottom of the Actuating Screw.
 - This will prevent over travel of the Actuating Screw and accelerated wear of the Return Valve.

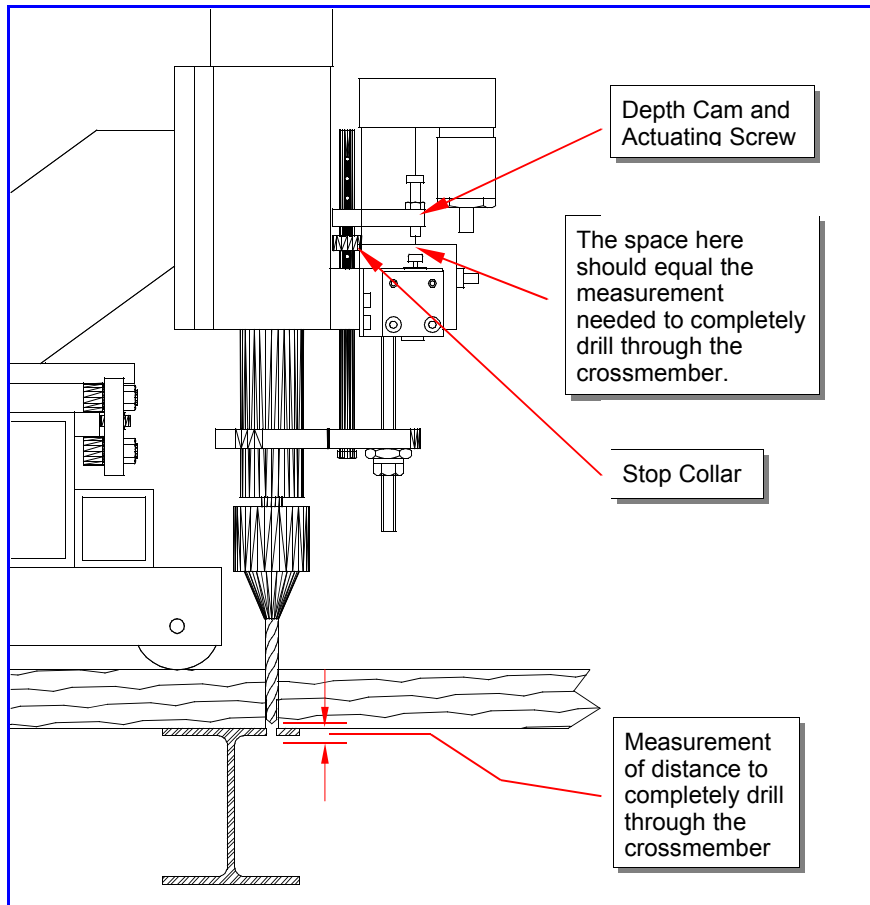


Figure 10-1

Set Flow Rates

The pneumatic and hydraulic flow controls were set at the factory, but you can fine tune them to your specific application as follows.

1. Pneumatic quill extension and retraction rates are controlled through two **Flow Control Valves** built in to the air supply fittings on the left side of the Drill Unit. Turn the adjusting screws clockwise to reduce the air flow and slow the quill travel.
 - The lower fitting controls the extension speed or quill feed rate. Note that while a rapid feed rate is desirable for short cycle times, advancing the twist drill too fast doesn't allow for proper chip evacuation. The twist drill can become clogged with chips, causing overheating and reduced twist drill life.
 - Set the quill retraction rate with the upper fitting.
2. Set second stage quill extension rate is controlled by the HydraBrake. It is adjusted through the **Needle Valve** fitting on the front of the Drill Unit. Proper adjustment prevents the twist drill from “jamming” into the top of the crossmember and punching through the bottom as the hole is completed. It also prevents the Actuating Screw from damaging the Return Valve as the end of the stroke is reached.
3. The system air pressure is controlled by the **Filter / Regulator** mounted on the Carriage Column. You can experiment with various pressures to optimize your conditions, but 80 psi is a good starting point.

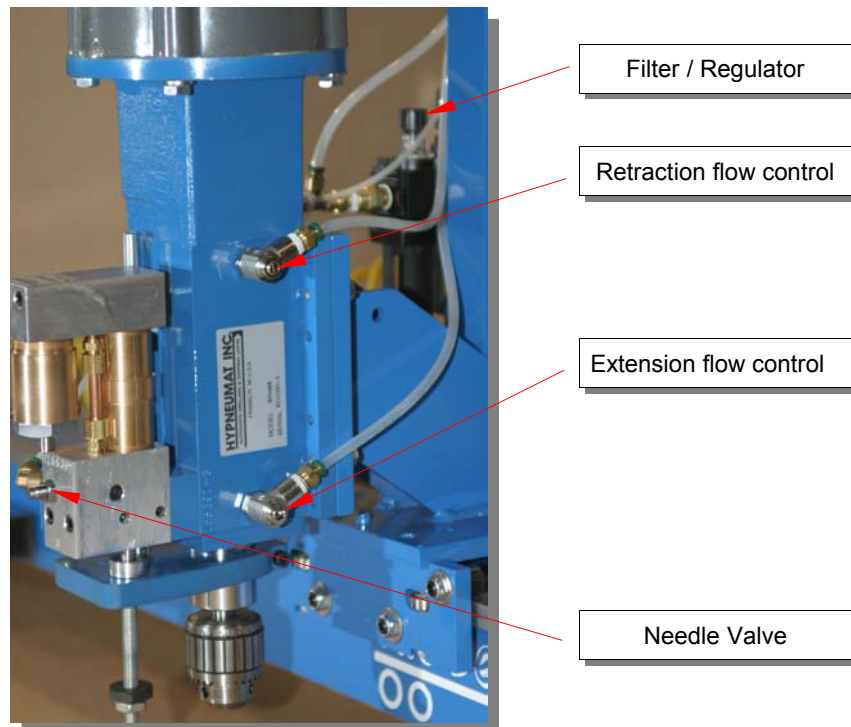


Figure 11-1

OPERATION

If the Drill Units are used in conjunction with an Automatic Screwdriver, start the drilling process with the screwdriver off the right side of the deck and the Drill Units close to one another. In the few seconds it takes the first hole to be drilled, the second Drill Unit should be positioned and actuated by the thumb valve on the top of the Carriage Column.

- The thumb valve will be reset as the quill reaches full extension.
- The quill can be manually retracted at any time by pulling up on the thumb valve.
- The operator should avoid resting his hand on the thumb valve as it could prevent quill retraction.

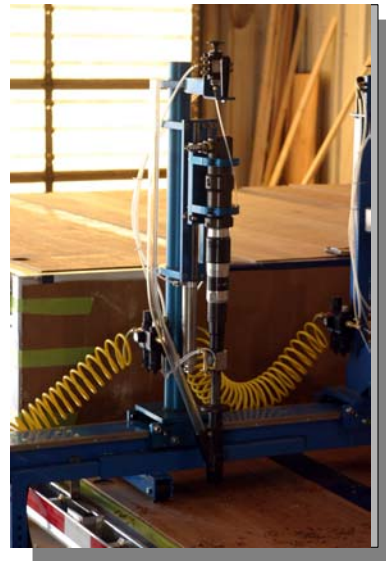


Figure 12-1

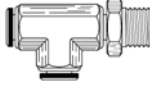

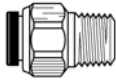


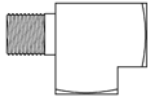
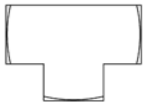







Figure 12-2

If no Automatic Screwdriver is used and two Drill Units are installed, the operator may find it advantageous to start with the right drill on the first hole on the right side of the deck and the left drill 3 to 4 feet to the left, near the center of the bed. He can maintain that spacing across the width of the deck.

PARTS

Fittings

	VD-AI-100-120	Parker W171PL-4-4 ($\frac{1}{4}$ x $\frac{1}{4}$ x $\frac{1}{4}$)	Hyspeco 171PL-4-4
	VD-AI-100-130	Parker 67PPL-5/32-4 ($\frac{5}{32}$ $\frac{1}{4}$ 1.48 .118)	Hyspeco 67PPL5/32-4
	VD-AI-100-150 VD-AI-100-170	Parker W68PL-5/32-2 ($\frac{5}{32}$ x $\frac{1}{8}$) W68PL-4-4 ($\frac{1}{4}$ x $\frac{1}{4}$)	Hyspeco W68PL5/32-2 W68PL-4-4
	VD-AI-100-210	Parker 169PL-5/32-10X32 ($\frac{5}{32}$ x10-32)	Hyspeco W169PL5/32-2
	VD-AI-100-155	Parker W169PL-4-2 ($\frac{1}{4}$ x $\frac{1}{8}$)	Hyspeco W169PL-4-2
	VD-AI-300-165	Parker 2225P-4 ($\frac{1}{4}$ x $\frac{1}{4}$ x $\frac{1}{4}$)	McMaster Carr 50785K222
	VD-AI-300-160	Parker 2203P-4 ($\frac{1}{4}$ x $\frac{1}{4}$ x $\frac{1}{4}$)	McMaster Carr 50785K72
	VD-AI-300-130	Parker 209P-4-2 ($\frac{1}{8}$ x $\frac{1}{4}$)	McMaster Carr 50785K61
	VD-AI-300-110	Parker 215PN-2 -($\frac{1}{8}$ x $\frac{1}{4}$ reducing nipple) 215PN-4 ($\frac{1}{4}$.close nipple)	McMaster Carr 5485K31 50785K152
	VD-AI-300-170	Parker 2202P-4-4 ($\frac{1}{4}$ x $\frac{1}{4}$)	McMaster Carr 50785K43
	VD-AI-100-105 Muffler	P18	McMaster Carr 4450K1
	VD-AI-300-114	Parker 218P4 ($\frac{1}{4}$ pipe)	McMaster Carr 50785K22

Valves, etc.

Image	CZ Part Number	OEM Part Number	Source
	VD-AI-010-065 Filter / Regulator	Wilkerson B08 Series	McMaster 60115K39
	VD-AI-020-080 Valve w/ pilot return	Aro 5040-21	IBT 5040-21
	VD-AI-020-100 Air Valve, toggle	Clippard FTV-3P	IBT FTV-3P
	VD-DU-025-110 Return Valve	Clippard MAV-3 (Button -11916-3)	Hyspeco MAV-3
	VD-AI-030-050 Check Valve	The Specialty Mfg Company (SMC) CHK BRS 460-4M4F, 1#	IBT 46-505
	VD-AI-030-064 Flow Control valve w/ check	Alpha Technologies 88952-04-04	Hypneumat AVJF2
	VD-DU-020-050 HydraBrake Flow control	Hypneumat HB32	Hyspeco HB32
	VD-BE-000-210 Cam Follower	McGill CFE-3/4-B	McMaster 3647K11
	VD-DH-000-250 3/8" chuck w/ #2 Jacobs Taper	Jacobs 11N	

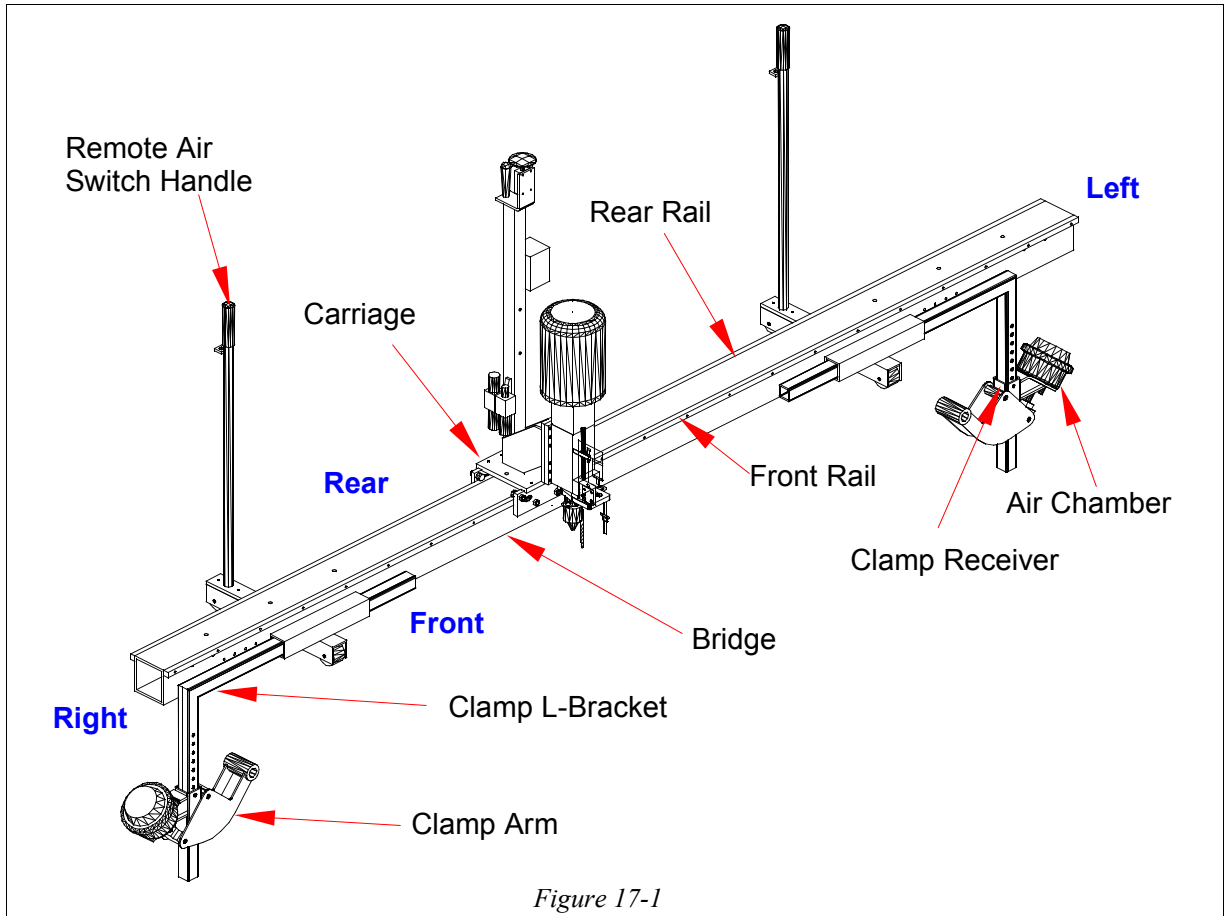
Valves, Etc., continued

Image	CZ Part Number	OEM Part Number	Source
	VD-AI-010-200 1/4" NPT	(common)	IBT – 43220310 McMaster 6534K46
	VD-AI-010-250 1/4" NPT	(common)	IBT – 43222360 McMaster 6536K28
	VD-AI-010-350 1/8" NPT	Dixon "Air Chief" A1F1-B	IBT – A1F1-B McMaster 6534K46
	VD-AI-010-300 1/8" NPT	Dixon "Air Chief" 1AM1-B	IBT – 1AM1-B McMaster 53465K42
	VD-AI-010-422 1/4" NPT to 1/4" hose	Coilhose Pneumatics RK090	McMaster 5644K63
	VD-AI-010-424 1/4" NPT to 1/4" hose	Coilhose Pneumatics R090F	McMaster 5644K72
	VD-AI-010-414 1/8" NPT to 1/8" hose	Coilhose Pneumatics RK082	McMaster 5644K61
	VD-AI-010-420 1/4" Self retracting hose		McMaster 5644K67
	VD-AI-010-410 1/8" Self retracting hose		McMaster 5644K11
	VD-AI-010-100 1/4" nylon tube		McMaster 5548K75
	VD-AI-010-090 5/32" nylon tube		McMaster 5548K75
	VD-AI-200-100 Type 9 service chamber	Haldex SC09	
	VD-MI-020-010 Carriage Handle		McMaster 57455K64

Electrical Components

Image	CZ Part Number	OEM Part Number	Source
	VD-MO-400-120 3 pole single throw 3ph toggle switch 30 amp		McMaster 7657K21
	VD-MO-100-002 3 phase plug - 240v		McMaster 7164K46
	VD-MO-100-002 3 ph receptacle - 240v		McMaster 7164K47
	VD-MO-100-005 3 phase plug - 480v		McMaster 7164K52
	VD-MO-100-003 3 ph receptacle - 480v		McMaster 7164K53
	VD-MO-200-215 18/4 cord - 600v		McMaster 7088K62
	VD-MO-020-250 DC Motor Drive – 90v (For variable speed DC motors.)	KB Electronics www.kbelectronics.com KBMD-240D	IBT KBMD-240D
	VD-MO-020-254 Plug in resistor for KB motor drive .015ohm	KB Electronics www.kbelectronics.com .015 ohm	IBT .015 ohm
	VD-MO-020-256 Fuse for KB motor drive 12 amp	KB Electronics www.kbelectronics.com 12 amp fuse	IBT 12 amp fuse
	VD-MO-020-275 Braking and Reversing switch	KB Electronics www.kbelectronics.com SC-9860	IBT SC-9860

Major Components



Shop Notes

Expressed Warranty

CZ Engineering, Inc., hereinafter referred to as Manufacturer, warrants each new Deck Mate drilling machine to be free from defects in material and workmanship under normal use and service for a period of one (1) year from the date of original sale.

This warranty is expressly in lieu of all other warranties and representations, expressed or implied, and all other obligations or liabilities on the part of the manufacturer.

Manufacturer's liability and obligation is limited to repair, or replacement of the product or a refund of purchase price, at manufacturer's option, provided the purchaser returns the claimed defective product to the manufacturer, with transportation charges prepaid, and an examination by manufacturer discloses the product is defective.

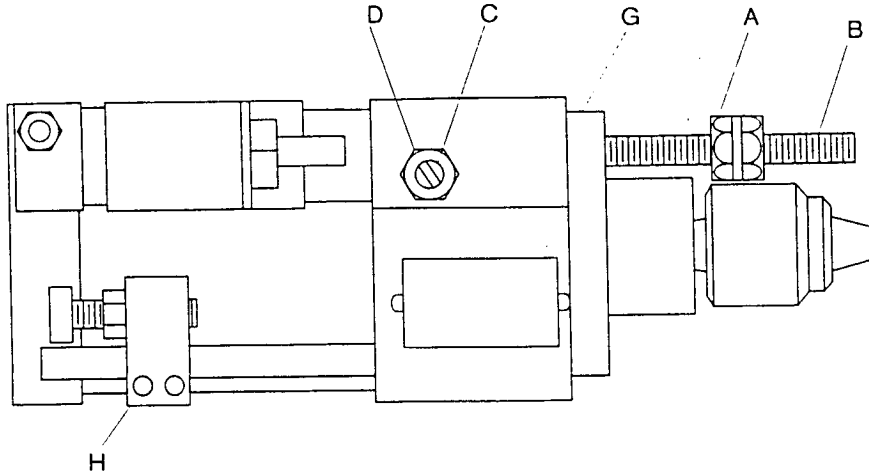
Manufacturer makes no warranty with respect to components not manufactured by manufacturer, as these items are usually warranted specially by the respective manufacturers of those items.

This warranty does not cover any product which has been repaired or altered outside of the factory of manufacturer in any way so as to, in the judgment of the manufacturer, affect the stability, reliability, or performance of the product. This warranty does not cover damage or product failure caused by accident, misuse, negligence, or tampering.

This warranty excludes any and all liability for consequential or incidental damages. Some states do not allow this exclusion or limitation of incidental or consequential damages, so the foregoing limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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The Hypneumat Hydra-Brake is a self contained hydraulic cylinder with an adjustable feed rate through a Needle Valve. The Hydra-Brake is mechanically actuated by the Quill Clamp ("G") of the Hypneumat Stroke Control Assembly. The forward stroke of the Hydra-Brake is controlled through the needle valve ("C"). The return stroke of the Hydra-Brake is not restricted.

1. Set Depth Cam ("H") for proper stroke length. (See 02-SET-UP1).
2. Set Adjusting Nuts ("A") on Actuating Rod ("B") for actuation by Quill Clamp ("G") at the desired point of rapid stroke. Hydra-Brake is reset automatically by the Quill Clamp ("G") on the retract stroke of the Hypneumat unit. Actuating Rod ("B") is replaceable and can be cut off to suit.
3. The feed rate is determined by Needle Valve ("C"). (Slow Feed - Turn Clockwise) (Fast Feed - Turn Counter Clockwise)
4. Locknut ("D") secures Needle Valve setting.

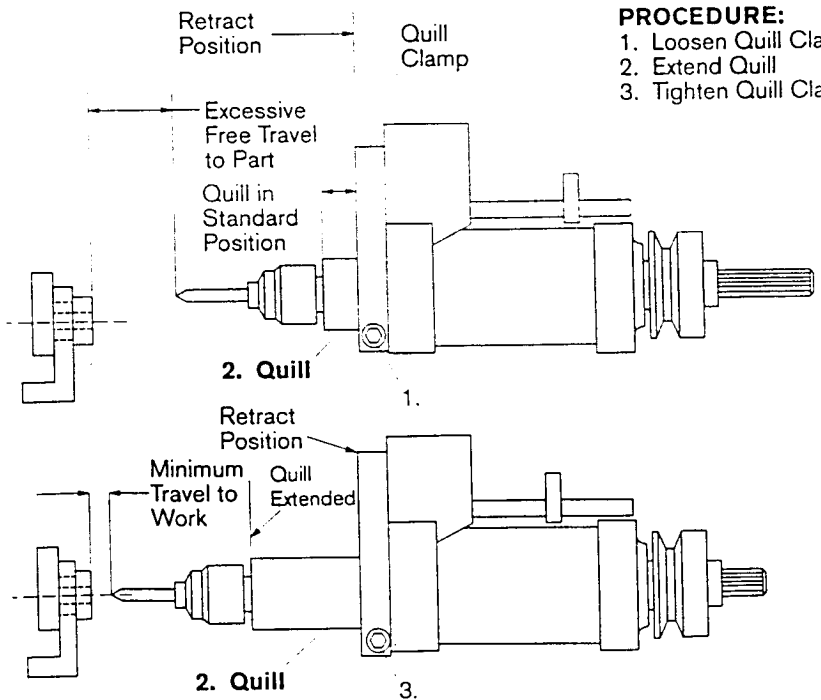
Maintenance consists of maintaining the oil level in Hydra-Brake.

QUILL ADJUSTING INSTRUCTIONS

To bring the drill or tap closer to the part without relocating unit, follow the steps outlined below. Extending the Quill eliminates excessive travel to the part being drilled or tapped. It also allows a closer radial grouping of several Hypneumat units.

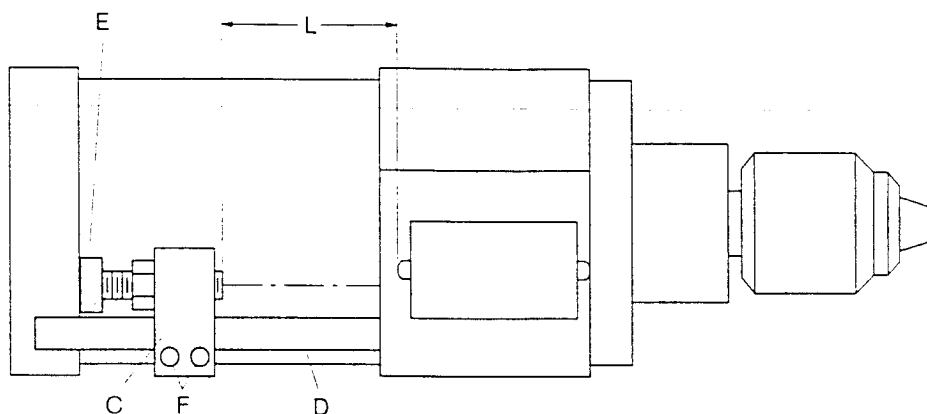
NOTE: The distance the Quill is extended lessens the amount of usable stroke length of the unit.

EXAMPLE: Model 350 - 3 1/2" stroke unit - Quill extended forward 1", remaining stroke length is 2 1/2".



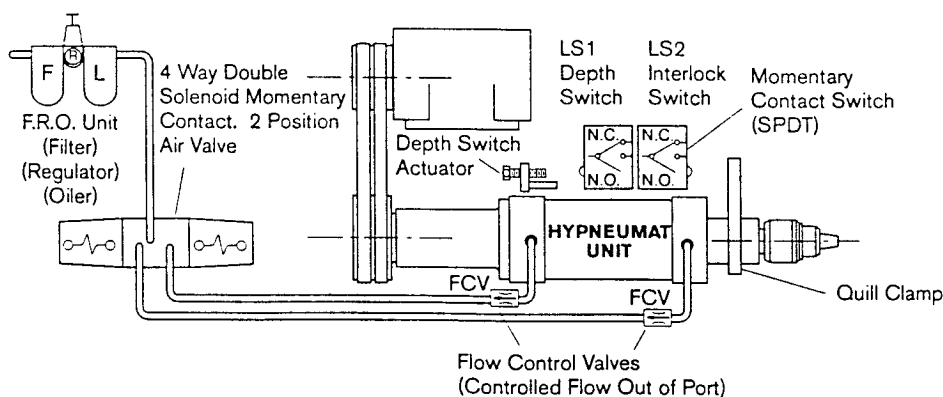
- PROCEDURE:**
1. Loosen Quill Clamp
 2. Extend Quill
 3. Tighten Quill Clamp

SET-UP INSTRUCTIONS UNITS WITH ELECTRIC STROKE CONTROL



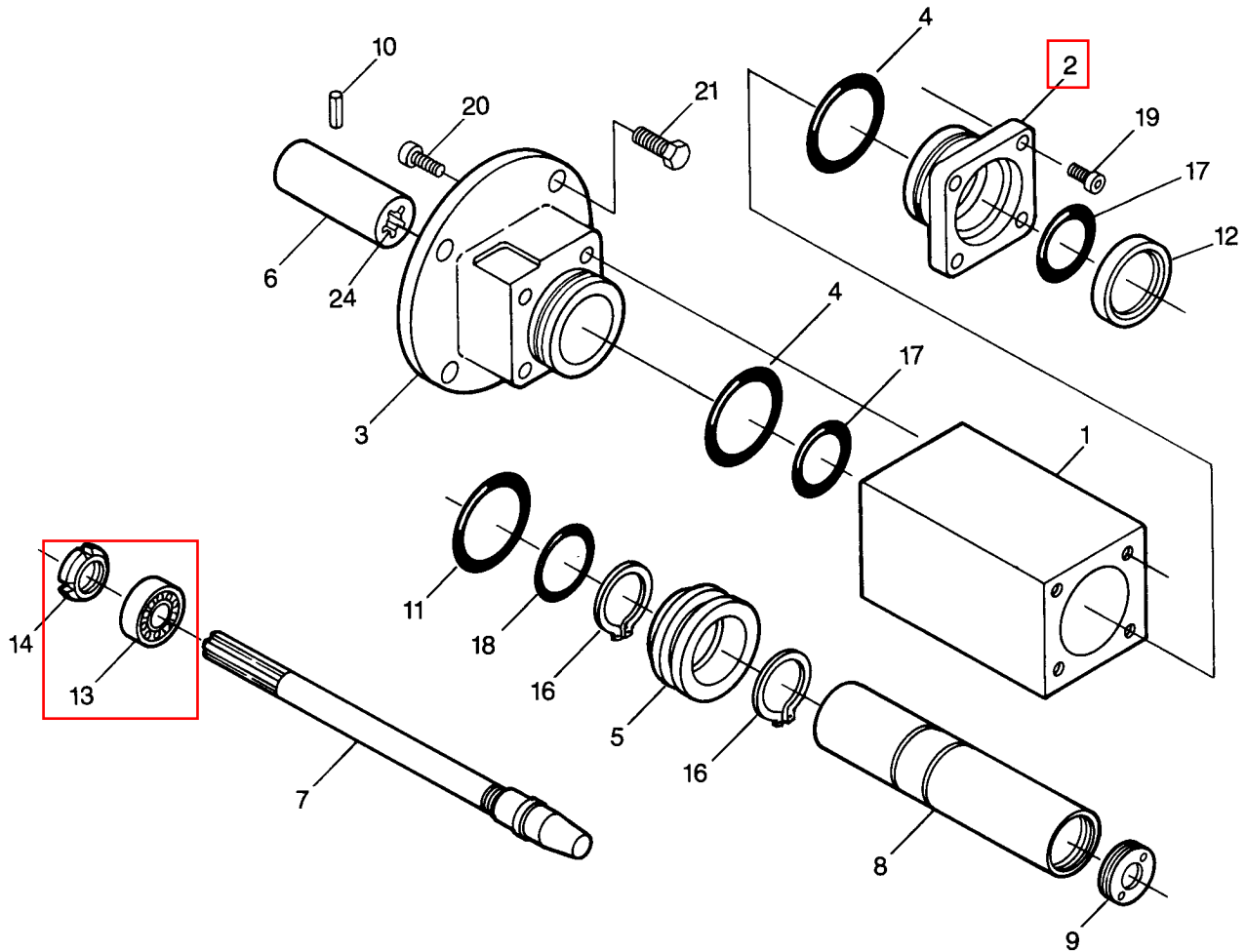
1. Unit in Full Retract position, Interlock Switch is actuated (factory set).
2. To set Depth Switch, loosen Lock Set Screws ("F") – Move Depth Actuating Cam ("C") along Actuating Rod ("D") for approximate Stroke Length ("L"). Lock Set Screws ("F"), Depth Adjusting Screw ("E") for Fine Depth Adjustment. Adjusting Screw is 28 pitch. (One turn equals .036").
4. **Overtravel Protection:**
200 Series Hypneumat Units – A Stop Collar is provided on actuating rod. Set Stop Collar to bottom against stroke control base just after Depth Switch is actuated.
300, 400 & 500 Series Hypneumat Units – Overtravel protection is built into the Depth Cam. Switches supplied are Single Pole-Double Throw. Double Pole-Double Throw Switches are available.

SET-UP PROCEDURE FOR DRILLING



1. Adjust feed flow control valves to allow the tool to approach the work reasonably fast without excessive dive into part. Adjust retract flow control valve for fast retract but slow enough to prevent excessive hammer type action. Speed of a retract also effects chip removal.
2. Hypneumat recommends that for most operations each unit be controlled by its own four-way air valve and regulator and that each system should be equipped with a filter and oiler. Flow control valves should be mounted adjacent to the port of the Hypneumat unit with controlled flow out of the port.

M-24 SERIES UNITS — PARTS LIST



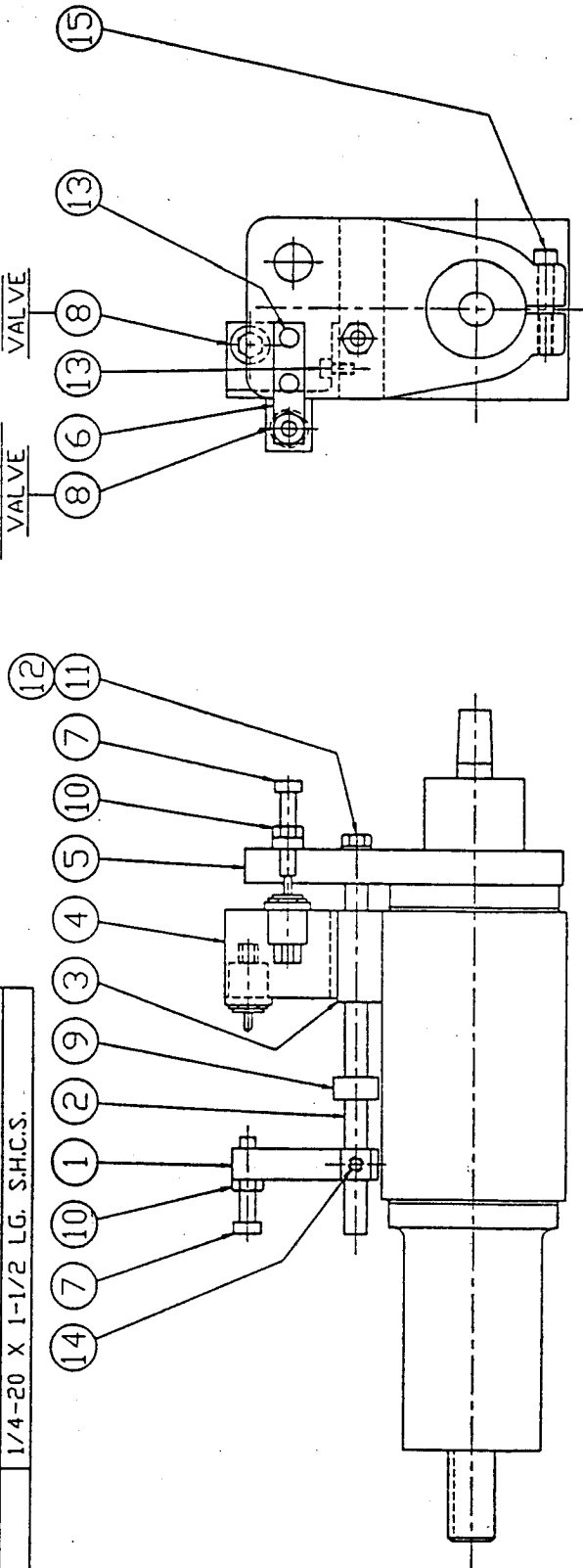
MODEL M-24 BASIC UNIT - 4" STROKE

Item No.	Number Required	Drawing No.	Description	Item No.	Number Required	Description
1	1	1343	Cylinder	10	1	1/4 x 1 Long Roll Pin
2	1	1302	Front Bearing	11	1	O-Ring 6227-32 (2-329)
3	1	5514	Motor Adapter	12	1	Seal (Quill Wiper) 212HM120
4	2		O-Ring (2-035)	13	1	Ball Bearing 5202-Z (Spindle)
5	1	1305-0	Piston	14	1	Bearing Locknut 1302 BH-02
6	1	5478	Drive Tube Assembly (Includes Item 24)	16	2	Snap Ring (Piston) 5100-162
7	1	1346	Spindle	17	2	O-Ring 6227-29 (2-326)
8	1	1345	Quill	18	1	O-Ring 6230-1 (2-223)
9	1	1315	Shedder	19	4	1/4 - 20 x 1/2 SHCS
24	1	1322	Splayed Sleeve (Only)	20	4	1/4 - 20 x 7/8 SHCS
				21	4	3/8 - 16 x 1 Long HHCS

Standard Seal Replacement Kit RK-M2-0



ITEM NO.	NO. REQ'D.	DRAWING NO.	PART DESCRIPTION
1	1	1329-A	DEPTH CAM
2	1	1332-A	ACTUATING ROD
3	1	1331-A	STROKE CONTROL BASE
4	1	1337-BCL	SWITCH BRACKET
5	1	1328-B	QUILL CLAMP
6	1	5270-A	INTERLOCK STRAP
7	2	819-A	ACTUATING SCREW
8	2	MAV-3	CLIPPARD AIR VALVE (3-WAY N.C.)
9	1		STOP COLLAR
10	2		1/4-28 HEX JAM NUT
11	1		1/4-20 HEX JAM NUT
12	1		1/4 LOCKWASHER
13	4		#10-32 X 3/8 LG. S.H.C.S.
14	1		1/4-20 X 3/8 LG. S.H.C.S.
15	1		1/4-20 X 1-1/2 LG. S.H.C.S.

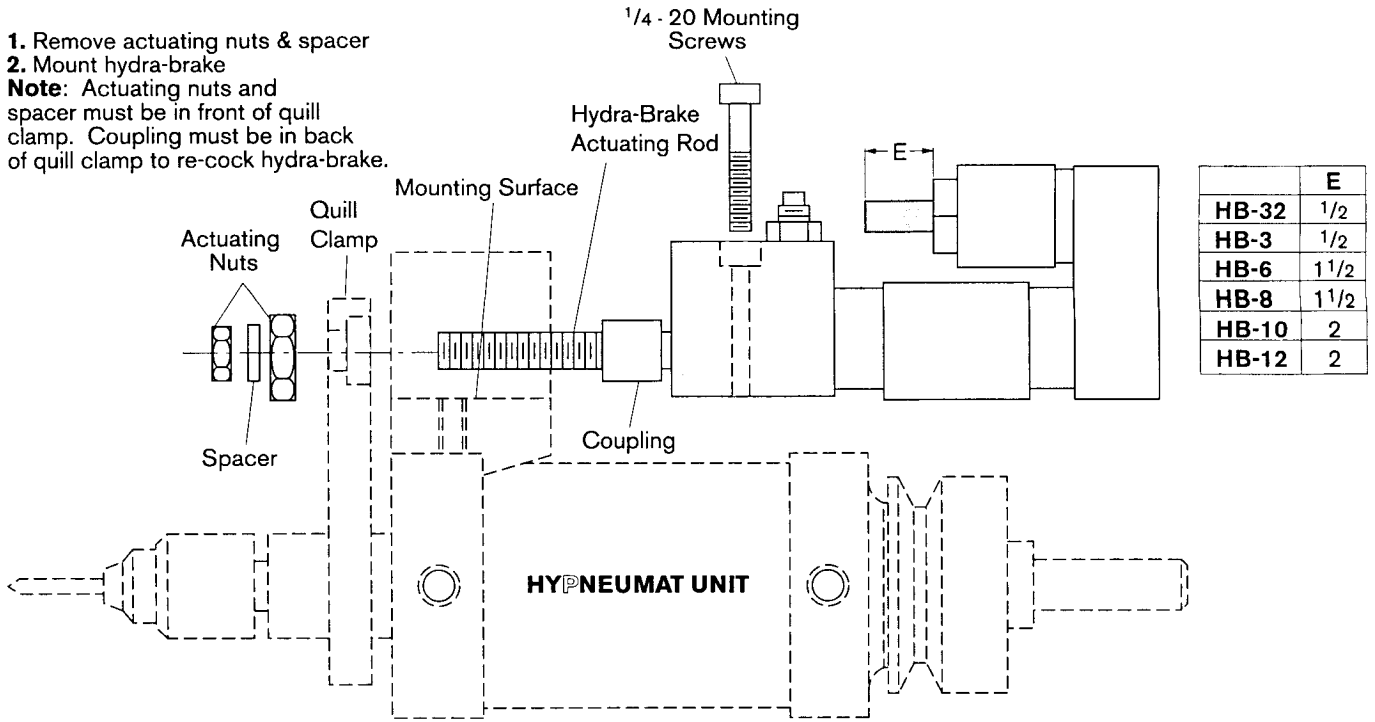


REVISIONS	HYPNEUMAT INC. 5900 WEST FRANKLIN DR. FRANKLIN, WI 53132-9178	DWG. NO. 6999-BCL
IJ REDRAWN 3-30-87 R.B.	AIR STROKE CONTROL FOR 200 SERIES (CLIPPARD)	SCALE NONE
	DRAWN BY: C.R.F.	DATE: 11-1-76

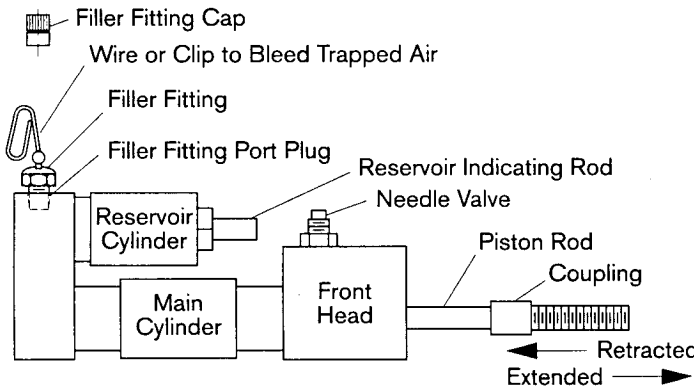


MOUNTING INSTRUCTIONS OF HYDRA-BRAKES

1. Remove actuating nuts & spacer
 2. Mount hydra-brake
- Note:** Actuating nuts and spacer must be in front of quill clamp. Coupling must be in back of quill clamp to re-cock hydra-brake.



FILLING INSTRUCTIONS



NOTE: During the Hydra-Brake operation, the reservoir indicating rod will move in and out. If at any time the end of the indicating rod comes within 1/8" of the reservoir end cap, the Hydra-Brake needs refilling.

Oil Filling Instructions: (Step #1)

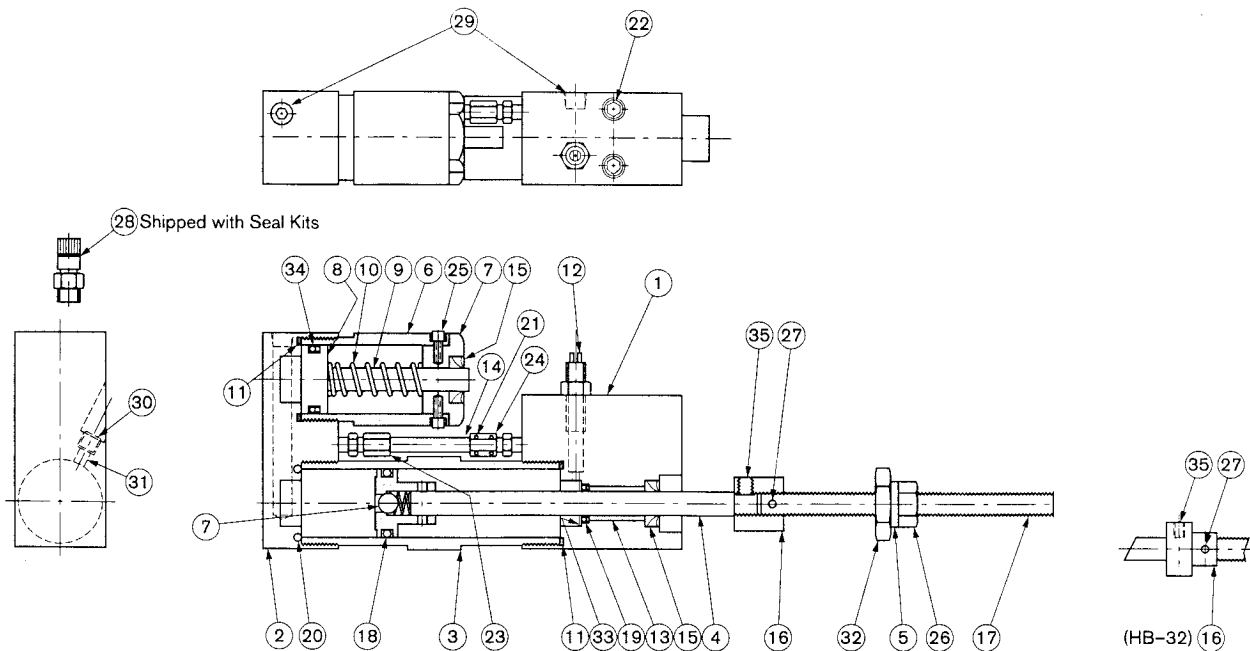
1. Clamp Indicator Rod to prevent releasing oil out of Filler Fitting Port due to spring pressure.
2. Remove Filler Fitting Pipe Plug from Filler Fitting Port.
3. Install Filler Fitting.
4. Follow oil filling instructions (Step #2)

Oil Filling Instructions (Step #2):

1. Clamp Front Head in a vise so that the hydra-brake is tilted downward and the Filler Fitting on the Rear Head is the highest point on the Hydra-Brake. This is so the air will be forced up to the Filler Fitting and can be bled from the system.
2. The Needle Valve should be opened sufficiently (approx. 4 full turns) to allow a free flow of oil in the system. Pull the Piston Shaft out until it is fully extended.
3. Using a low pressure oil filler gun, pump oil (recommended Mobil DTE26) into the Filler Fitting until the Reservoir Indicating Rod begins to extend.
4. Push piston rod in until Coupling seats against Front Head.
5. Insert a small wire (a paper clip will do) into the Filler Fitting hole. Press on the wire sufficiently while applying slight thumb pressure to end of Indicator Rod to remove all the air and until only oil flows from the Filler Fitting hole.
6. Repeat steps 2, 3 and 4 until only oil can be bled from the Filler Fitting hole.
7. Bleed Filler Fitting until Reservoir Indicator Rod is at "E" position (shown above).
8. To check to see that all air is removed from the Hydra-Brake press in on the Reservoir Indicating Rod with your thumb. If there is any movement or spongy action of the Indicating Rod, air is present and must be removed as stated above.
9. When Hydra-Brake is filled and air is removed, clamp Indicator Rod to prevent any movement and replace Filler Fitting with Pipe Plug. It is important that all air be removed from the Hydra-Brake to insure proper operation and to maintain a feed rate.

IMPORTANT INFORMATION
Retain For Future Reference
MODEL No. HB-32
STROKE LENGTH 3 1/4"
SERIAL No. H-153786-1 THEU-3

REPAIR INSTRUCTIONS OF HYDRA-BRAKES



DISASSEMBLY:

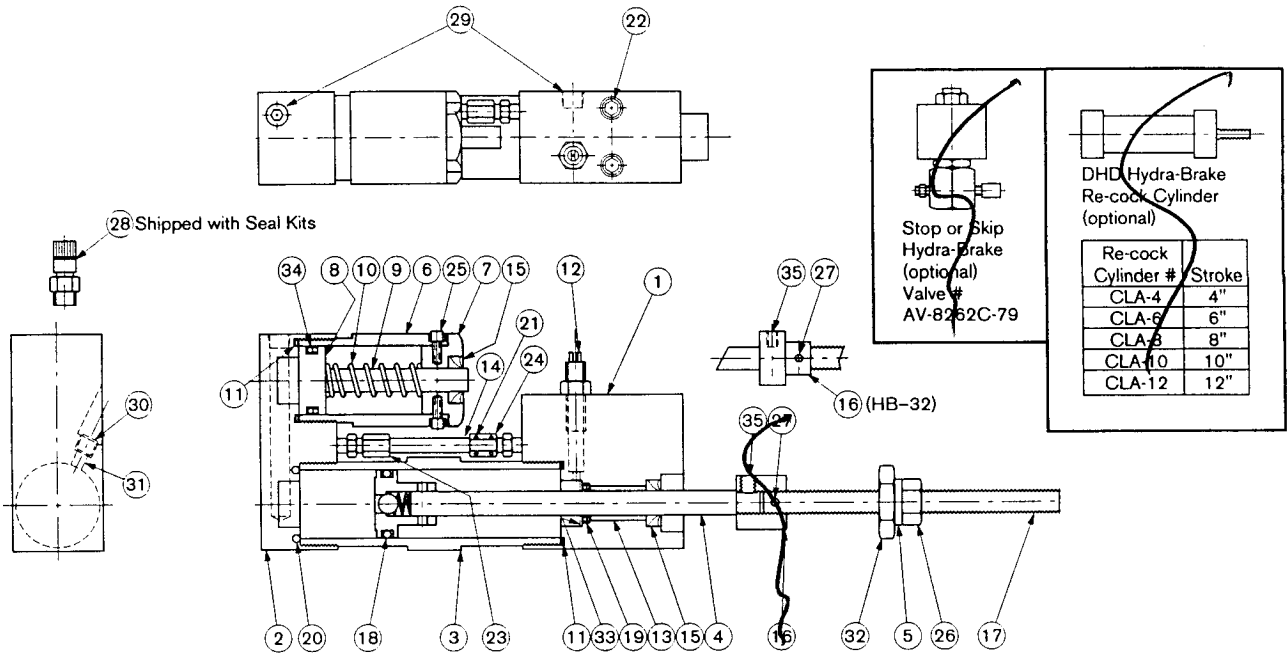
1. Remove Hydraulic Oil: Hold Hydra-Brake over a container and remove needle valve carefully to allow oil under pressure to shoot out. Slowly actuate the piston forward and backward to remove the remaining oil.
2. Loosen Set Screw (#35) on coupling and unscrew Actuating Rod Assembly (#17) from Piston Rod (#4).
3. Clamp Rear Head (#2) into vise carefully to avoid damage to the cylinder. Remove Reservoir Cylinder (#6) by turning the Reservoir End Cap (#7) with wrench. Remove Reservoir Piston Assembly (#8).
4. Loosen the two Compression Nuts (#23 & #24) and slide Copper Tube (#14) into Front Head.
5. Loosen Set Screw (#30).
6. Remove Rear Head (#2) by clamping the Front Head (#1) in a vise and unscrewing the Rear Head. (Do Not Lose Nylon Slug, (#31)).
7. Remove Copper Tubing (#14).
8. Pull out Piston Assembly (#4). Do Not Disassemble.
9. If necessary to remove main cylinder (#3), unscrew Cylinder by using a pipe wrench on heavy part of tube.
10. Remove Wiper (#15) from front of head. Press out Bronze Bushing (#13), Poly-Pak #1250 x 0375 (#19) and Star Washer (#33) from front of head.

ASSEMBLY:

1. Replace Bronze Bushing (#13) - Bushing must be replaced from the front of the Front Head. Press in flush with shoulders.
2. It is necessary to line ream the bushing after pressing into Front Head (.376 - .377 dia.).
3. Wiper (#15) is pressed into place. (After reaming).

4. Replace Poly-Pak #1250 x 0375 (#19) and Star Washer (#33).
5. Replace Gasket (#11) in Front Head.
6. Screw Main Cylinder (#3) into Front Head and tighten with pipe wrench.
7. Replace O-Ring (#18) 6227-17 (2-212) on Piston.
8. Slide Piston Rod Assembly (#4) into Front Head.
9. Replace (2) O-Rings (#21) 6227-5 (2-010) on Copper Tube. (Replace tube if necessary). Slide into Front Head.
10. Replace (#20) O-Ring in Rear Head 6227-20 (2-215).
11. Screw Rear Head (#2) onto Main Cylinder. Turn until tension against O-Ring is felt. Then continue to turn until the sides of the Rear Head are parallel to the sides of the Front Head.
12. Replace Nylon Slug (#31) and Set Screw (#30). IMPORTANT - only tighten sufficiently to prevent Rear Head from turning.
13. Slide Copper Tube (#14) into Rear Compression Fitting (#23). Tighten Rear Nut (#23). Tighten Front Nut (#24) to provide compression to two O-Ring Seals (#21).
14. Replace Reservoir Piston Assembly (#8), Poly-Pak #1250 x 0875 (#34) and Spring (#10) in Reservoir Cylinder (#6).
15. Replace (#11) Gasket in Rear Head.
16. Clamp Rear Head (#2) in vise and screw in Reservoir Cylinder and tighten.
17. Replace O-Ring 6227-1 (2-006) on Needle Valve (#12) insert in Front Head.
18. Replace Actuating Rod (#17) and Coupling (#16).
19. Fill Hydra-Brake as specified in Filling Instructions (Bulletin #HBN2-00).

HYDRA-BRAKE UNITS - PARTS LIST



HYDRA-BRAKE

Item No.	No. Req.	Common Parts	Description	HB-32 HBS-32 3 1/4 Stroke	HB-8 HBS-3 3 1/4 Stroke	HB-6 HBS-6 5 7/8 Stroke	HB-8 HBS-8 7 7/8 Stroke	HB-10 HBS-10 9 7/8 Stroke	HB-12 HBS-12 11 7/8 Stroke
1	1		Front Head Assembly (Standard)	1047	1029	1029	1029	1029	1029
1	1		Front Head Assembly (Side Mt.) (Assembly Incl. Items 13 & 24)	S1047	S1029	S1029	S1029	S1029	S1029
2	1	1018	Rear Head (Includes Item 23)						
3	1		Cylinder	1003-3	1003-3	1003-6	1003-8	1003-10	1003-12
4	1		Piston Rod Assembly	21998-3	21998-3	21998-6	21998-8	21998-10	21998-12
5	1	1040	Spacer						
6	1	1004	Reservoir Cylinder	1024-3	1024-3	1024-6	1024-8	1024-10	1024-12
7	1	1004	Reservoir End Cap						
8	1		Reservoir Piston Assembly	1005-3	1005-3	1005-6	1005-8	1005-10	1005-12
9	1		Reservoir Indicator Rod		Included with reservoir piston assembly.				
10	1		Reservoir Spring	1016-3	1016-3	1016-6	1016-8	1016-10	1016-12
11*	2	1025	Cylinder Gasket						
12	1	1013	Needle Valve Assembly						
13	1	14220	Front Head Bushing						
14*	1		Copper Oil By-Pass Tube	1027-3	1027-3	1027-6	1027-8	1027-10	1027-12
15*	2	HI-L7	Wiper (Seal) J-M HI L7						
16	1		Coupling	22000	21999	21999	21999	21999	21999
17	1		Actuating Rod	22023-3	22023-3	22023-6	22023-8	22023-10	22023-12
18*	1	6227-17	O-Ring (2-212)						
19*	1	1250x0375	Poly-Pak						
20*	1	6227-20	O-Ring (2-215)						
21*	2	6227-5	O-Ring (2-010)						
22	2		1/4-20 x 2 3/4 Lg. SHCS						
23*	1	68x4	Compression Male Connector 68 x 4						
24	1	1026	Compression Connector						
25	2		8 - 32 x 3/8 SHCS						
26	1		3/8 - 16 Hex Jam Nut						
27*	1		1/8 - 7/8 Rollpin						
28*	1	1977	Filler Fitting (Not in Assembly)						
29	2		Pipe Plug 1/8 Pt. Soc. Head						
30	1		5/16 - 18 x 3/8 SHSS						
31*	1	1030	Nylon Slug 3/16 Dia. x 1/4 Lg.						
32	1	14080-A	Locknut						
33	1		Star Washer (7/16 Ext. Tooth lockwasher)						
34	1		Poly-Pak 1250 x 0875						
35	1		1/4-28 x 1/4 Lg. SHSS						

* Note! Designates seal kit items

