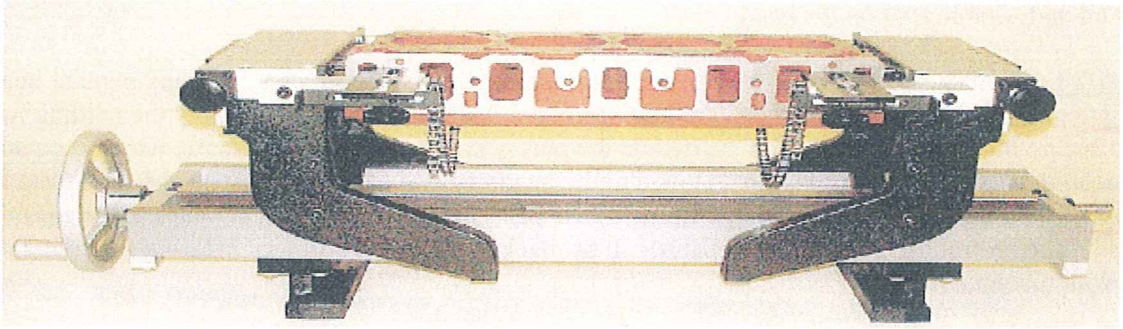
Winfield

DSF-1000

DECK RESURFACING FIXTURE



OPERATOR AND SET-UP MANUAL

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HOW THE FIXTURE WORKS

The "DSF" base unit is essentially a sophisticated vise in which cylinder heads can be located and held for the purpose of machining the head gasket surface.

The jaws of this vise ride on two precision base rails. These jaws are connected by a lead screw, which has a right and left hand thread. Turning the handwheel attached to the lead screw causes the jaws to move apart or together. Mounted on top of the jaw side frames is an aluminum body called an anchor head. These anchor heads act as the jaw pads or grippers. Each anchor head is fitted with five (5) hardened steel pins called anchor pins. These pins will come in contact with the head and hold it in place. The extent to which these pins protrude from the anchor head is controlled by hydraulic fluid, which is fed to each pin through a valve body, turning a threaded feed knob on a master cylinder. The valve body enables the operator to exclude from use any pin that will not make contact with the head or will contact an undesirable spot on the head.

PLEASE NOTE: The data sheets supplied with this unit will allow you to re-set pins for many popular heads. Once the appropriate pins have contacted the head, the lead screw handwheel is tightened to apply the holding force necessary to secure the head. The pressure exerted on the pins generates hydraulic pressure, which is equal to all pins used, thus creating balance holding pressure. Bolted to the inside face of each anchor head is a steel plate that protrudes 1/4 inch passed the top of the anchor head. These places are known as datum plates and are used to locate the cylinder head. The protruding edge of these plates will be machined by your surfacer, creating a locating plane as accurate as your machine travel.

INSTALLING THE DSF

Remove all existing fixturing. Use a flat stone or other suitable means to deburr the table surface and clean the T-slots. Raise the cutter head to max and traverse the cutter head to the extreme right. Wipe table clean of any debris.

Install three (3) T-nuts from the fixture mounting package in the front T-slot and three (3) in the rear T-slot. Using a hoist or appropriate man power place the DSF unit on the table. Open the DSF to max and center the leading edge of the cutter within the machine travel. Once in the right position use the supplied bolts and washers to secure the unit to the table.

QUALIFYING THE DATUM PLATES

Install the lifting bar (one inch tube with an I-bolt welded to it) on the center anchor pins face the I-bolt down. Squeeze the bar with 1/8-1/4 turn on the hand wheel.

Traverse the cutter head down and touch off on the datum plate. Taking cuts of .002-.003 surface the datum plates until they clean. Cut both datum plates on each pass.

Turn off the cutter head and raise it at least 3/8 inch. Open the fixture and remove the lifting bar. Your DSF fixture is ready for use.

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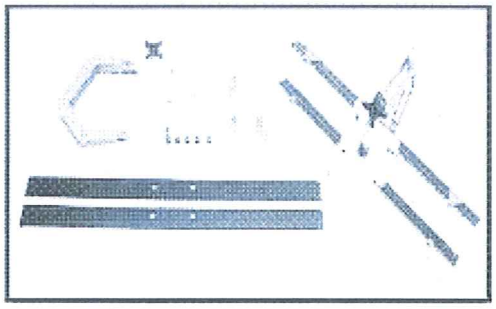
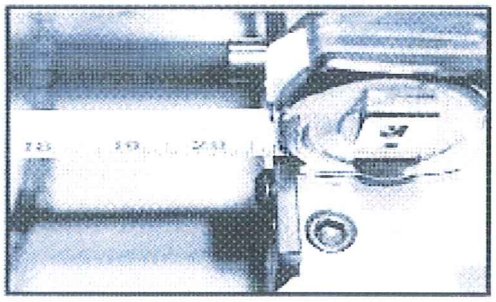
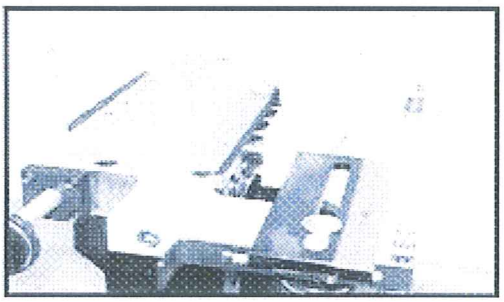


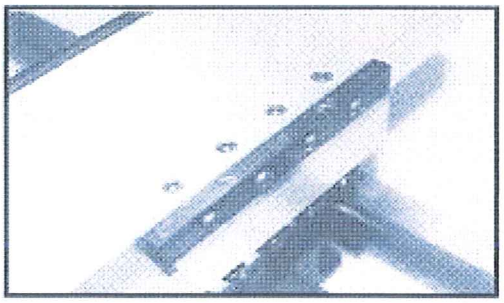
Using the supplied hardware assemble the two locating clamps. The 3/8-16 button head screws that hold the locating rails need only to be snug as to allow the two rails to shift on a twisted deck surface.



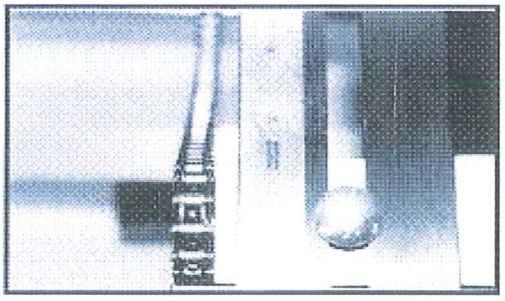
1. Hook a tape measure on the back side of the opposite datum plate and place the body behind the other. Open or close the DSF until the reading at the front edge is 20 & 3/4 inches. This is the "Span" for a small block Chevy.



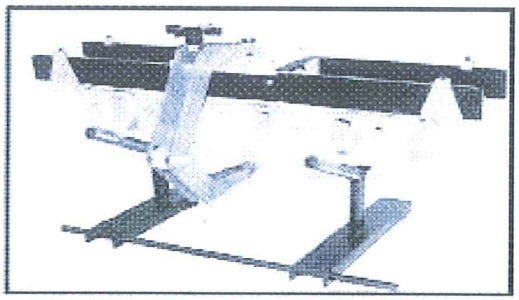
2. The feed screw in each Anchor Head should be backed out completely. Using the piece of wood supplied, push the Anchor pins in, if they are not already retracted.



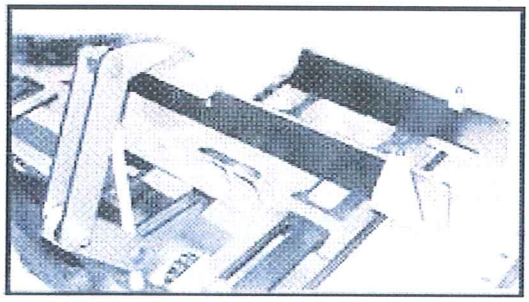
3. Push up on the valves listed in the Data Sheets, left side 3 & 4 and right side 3 & 4. **PLEASE NOTE:** The anchor pin associated with the valve being closed will move out approximately 1/16 inch, this is normal.



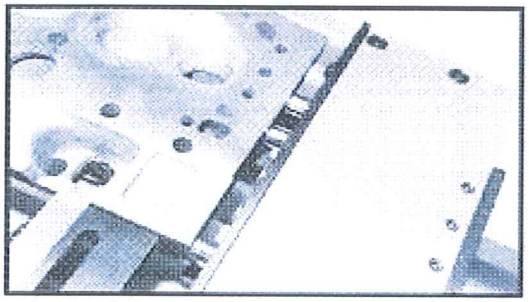
4. Loosen the hand know under the stop and set the stops to 3 & 1/2 inches using the inside edge of the stop mount as a reference. Pull back on the chain lock, reset the chains in order to allow ample room for the cylinder head.



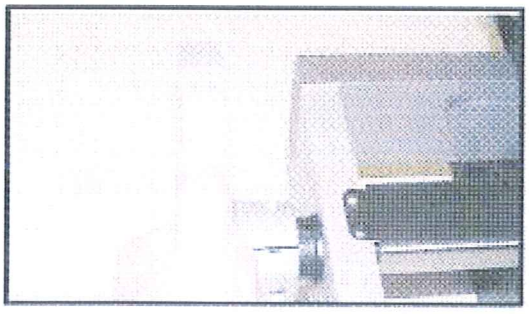
5. Place the head to be surfaced in the set-up stands, deck side up and the intake side towards you. Place the Locator clamp across the deck, center it front to back and end to end. Lift up the lower jaw of the clamp to make contact with the under side of the head. Tighten the clamp screw sufficiently to secure the Locator in place. Slide a Locator Stand Off onto the end of each Locator rail.



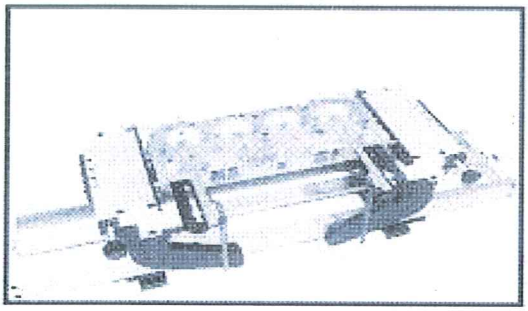
6. Lifting the head and clamp assembly by the rail support, place it in the DSF. Pull the head towards you until it makes contact with the stops. Turn both feed screws until Anchor pins contact the ends of the head. Alternating the turning of the feed screws allows you to center the head.



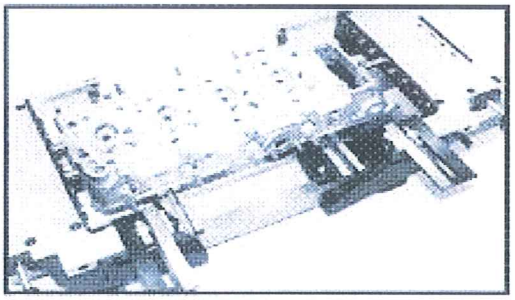
7. Snug the feed screws as if you were tightening a pickle jar. The cylinder head should be an equal distance from each datum plate. It is best to keep this gap from 3/8 to 5/8 inch.



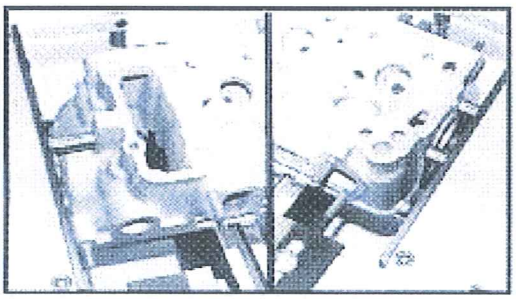
8. Tighten hand wheel until resistance is felt. Tighten approximately one half turn more, this applies 1,000 to 1,500 pounds of clamping force on the cylinder head. **PLEASE NOTE!** We have done extensive testing and have found that clamping a cast iron or full cast aluminum head in this manner will **NOT** distort the head.



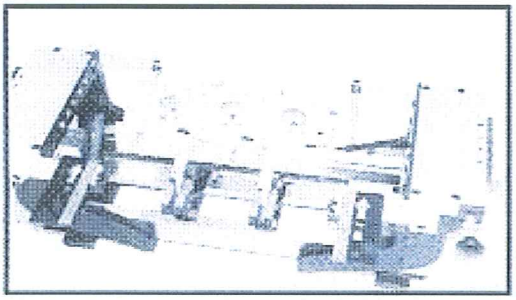
9. Loosen the screw on the locator clamp and remove the clamp assembly. Release the chain lock and set the chains close to the head but not touching. **The head is now ready to be resurfaced.**



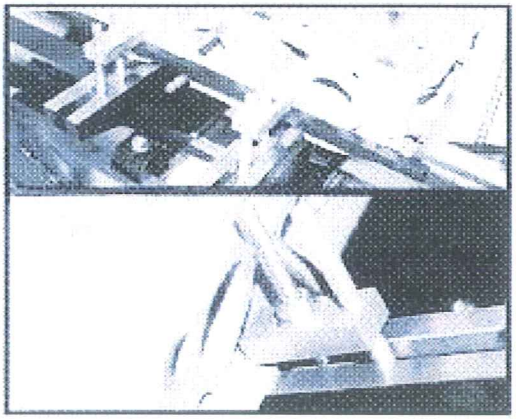
10. Cylinder heads that have irregular ends or hollow timing chain housings can be fixtured on the 5 inch tall cast iron parallels.



1. Place the head on the parallels. 2. Close the DSF allowing room to advance the Anchor pins. 3. Select pins that will contact appropriate points. 4. Advance these pins until contact is made with the head. 5. Very lightly snug the hand wheel. 6. Record the set-up data to simplify the next set-up. When cutting heads of the same casting, use the hand wheel to release the head. Place the next head on the parallels and against the stops, snug the hand wheel and you are ready to cut again.



11. The standard equipment package includes a set of 4 toe clamps which can be used to hold cylinder heads or other components to the parallels.



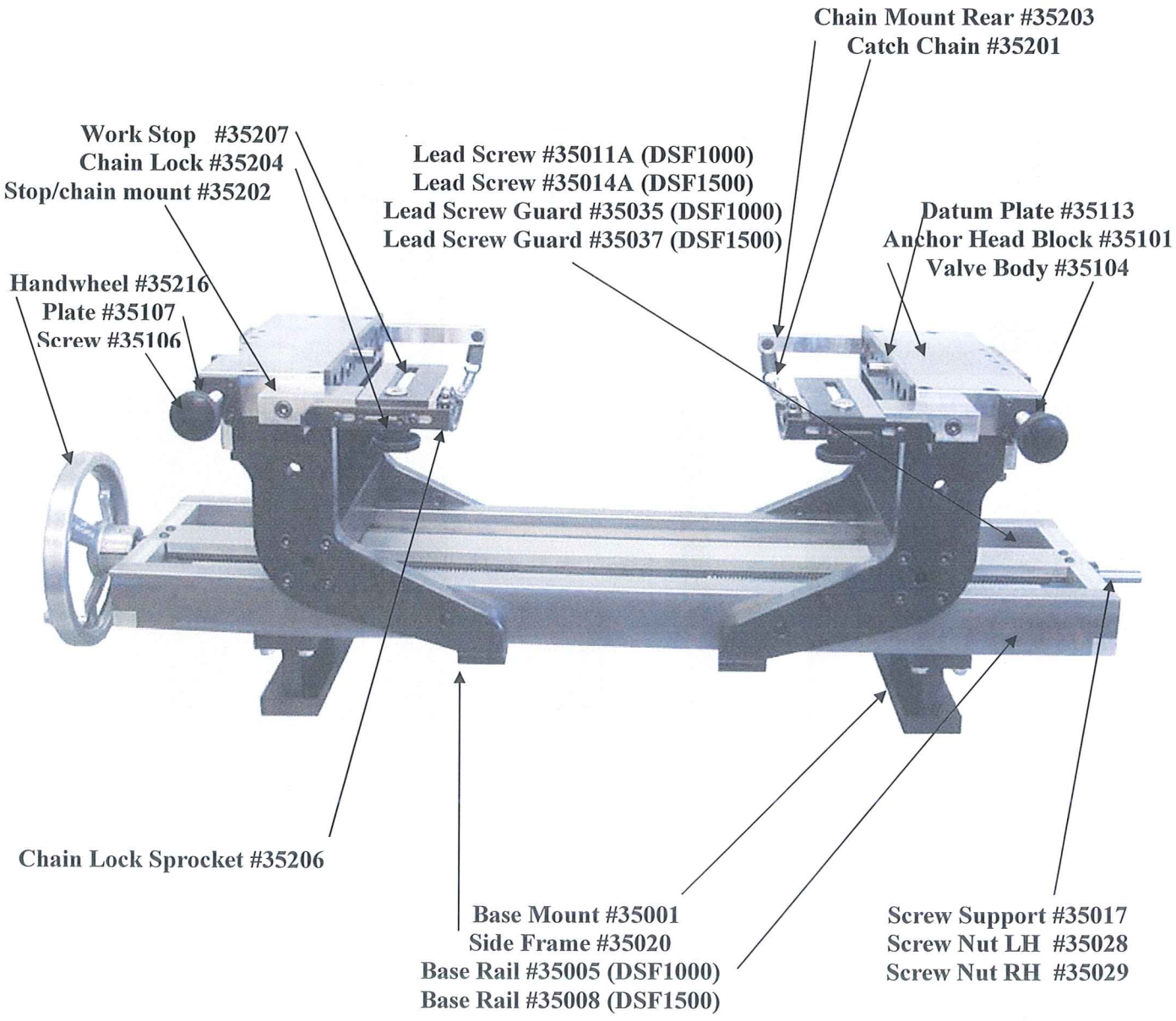
12. Also included are two 3/8 square bars used to span threaded studs or other protruding bosses. They give you greater flexibility in placement of the parallels.

Clamping the head directly from a lip, an edge or a boss is also possible.

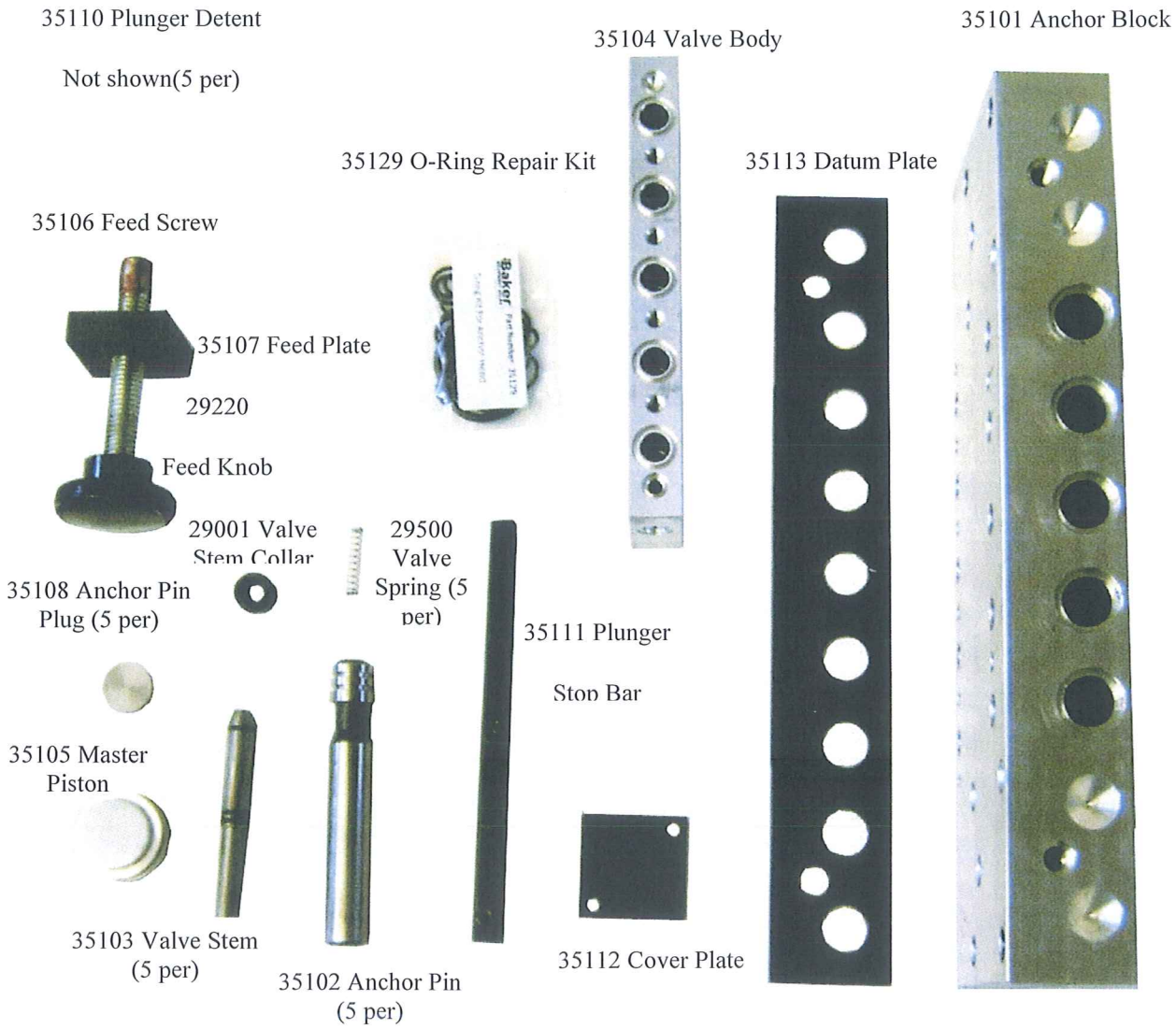
Notes on parallel heads:

Due to the fact that the decks of these heads were originally machined using the valve cover surface to locate from, they supply us with information that is hard or impossible to get from wedge shaped heads. Knowing the original thickness, you can tell if it has been cut before. Even if the original thickness is not know, measuring the four corners will tell you if it has been cut improperly. Locating the head from the valve cover surface will return the head to it's proper geometry. Returning the parallelism will also eliminate possible timing belt tracking problems. Most diesel heads share these same characteristics and can be checked and machined in much the same way.

DSF-1000/1500
Winfield Production Fixture

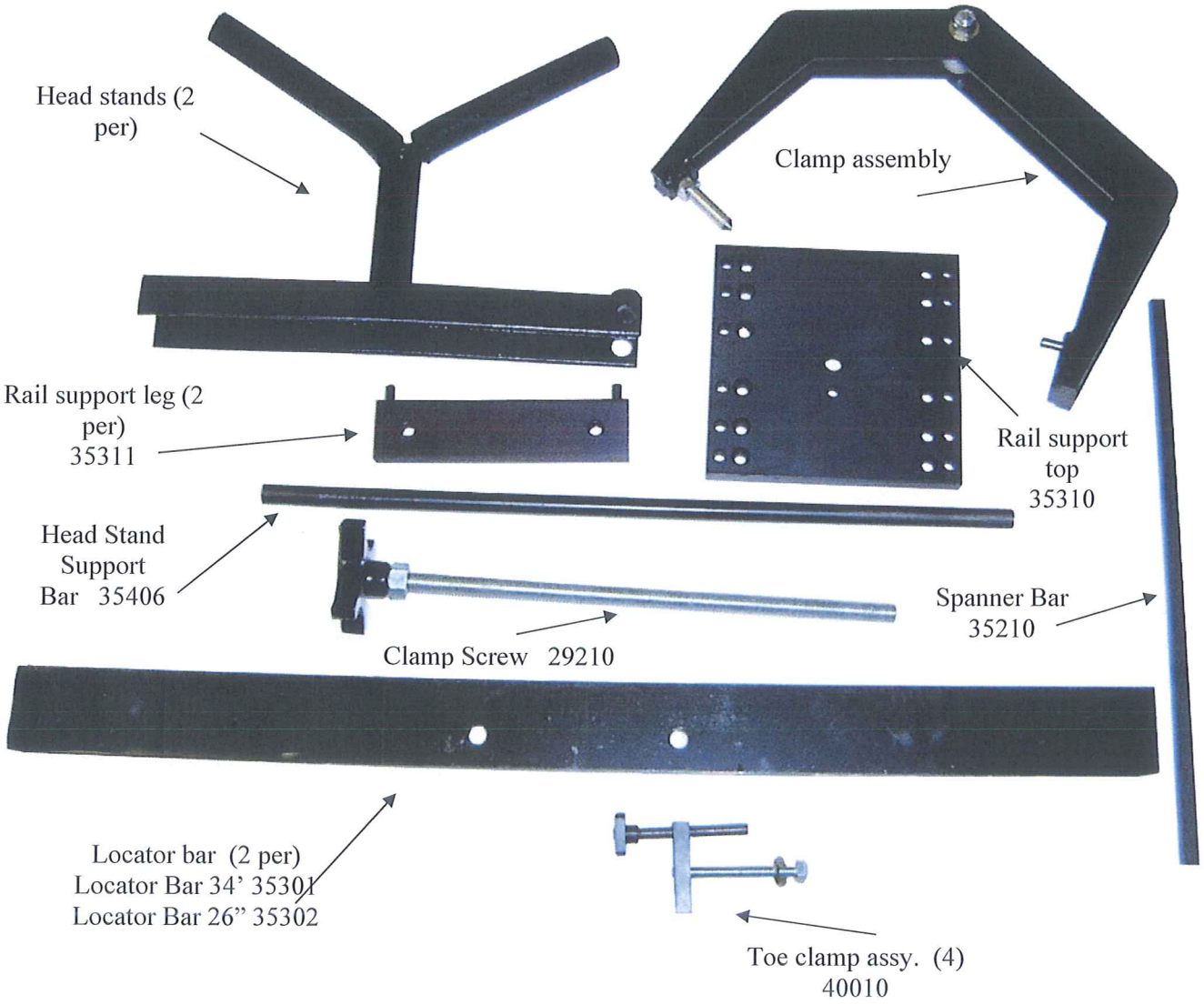


DSF Anchor Head



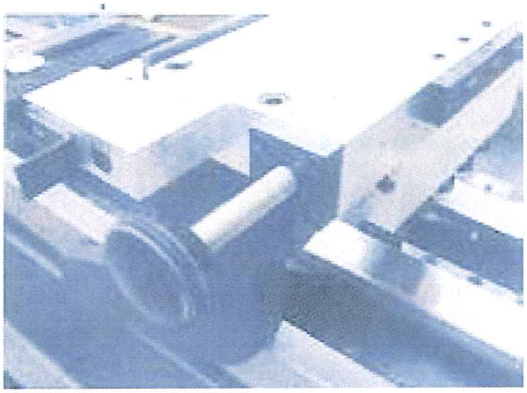
- O-ring Application
- 70001 Anchor Pin O-Ring (2 per pin)
- 70000 Valve Stem (2 per stem)
- 70002 Master Piston (2 per)
- 70003 Datum Plate/Anchor Block (5 per)
- 70004 Datum Plate/Anchor Block (5 per)

Standard Equipment
DSF1000

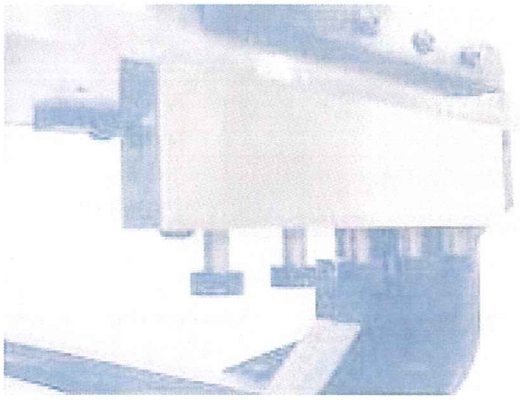


Winfield
DSF/HBS Anchor Head Refill Instructions

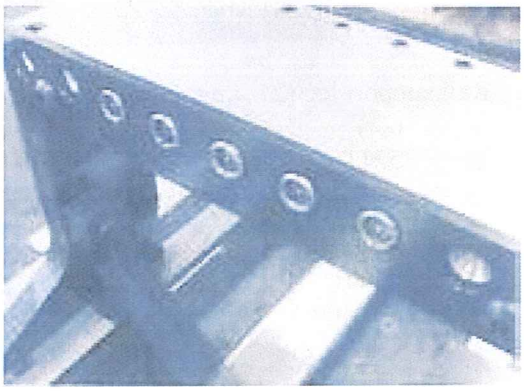
1. Wash out pump type oil can and fill it with hydraulic jack oil. Pump the can till a steady stream comes out.



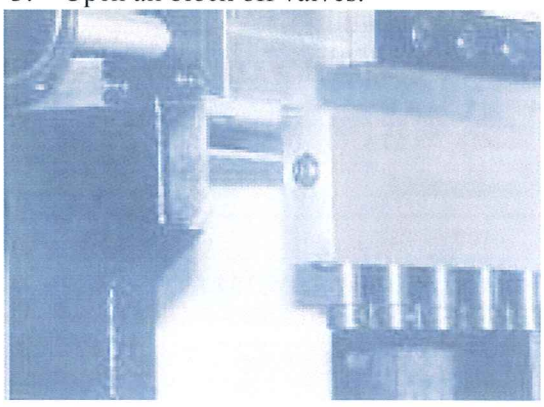
2. Back off the feed screw



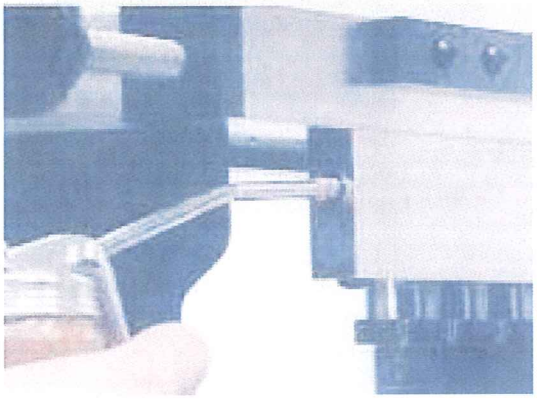
3. Open all block off valves.



4. Push in all anchor pins.



5. Remove button head screw at the end of the valve body.



6. Use the o-ring from under the screw as a seal.

INSTRUCTIONS
FOR REBUILDING "DSF" & "HBS" ANCHOR HEADS

1. Remove the chain (or cable) head catch mounts from the anchor head.
2. Remove aluminum anchor head assembly from the base unit.
3. Disassemble the head completely. To remove the 1 1/4 master piston use expanding snap ring pliers.
4. Remove all odd o-rings and wash all components in mineral spirits.
5. Inspect the pistons for raised burrs and polish if necessary using #400 grit production paper.
6. With clean hands install new o-rings in all grooves. Pre-lube the groove with "Hydraulic Jack Oil".
7. Pre-lube the valve body and piston bores.
8. Install the valves into the valve body turning them as the o-ring enters the bore.
9. Install the pistons into the anchor head from the number plate side.
10. Install a piston plug in each of the bores. Push in slowly to allow the o-ring to seat. Important!! Be sure that there is oil around the lip of the bore.
11. Bolt the number plate to the head. The #1 should be away from the operator.
12. Placing the head up-side down, install the spring plungers and retaining bar (or caps on older units).
13. While up-side down move the head to the edge of the bench so that the valve body mounting holes are accessible from the under side.
14. Place the valve body on the head insuring that the feed hole in the valve body (end hole with the small o-ring) will be matched up with the master bore closest to the operator.
15. Push all 5 valves into the head (closed) replace the 4 bolts. Make contact with all 4 bolts. Then lightly snug them
    starting with the one of the middle bolts. As you would with a cylinder head alternate bolts until all are tight.
16. Re-install the knobs on the valves and install the button head screws with the o-rings in the ends of the valve body. **Do Not Over Tighten These Screws, Over Tightening May Cause Permanent Damage.**
17. Stand the head on end with master bore facing up, fill the master bore with "Hydraulic Jack Oil".
18. Open the valve closest to the master bore, using a pair of needle nose pliers slowly pull out on that piston. The oil in the master bore will go down. Push the piston back in. The oil will rise and air will be expelled. Continue this until there is no air remaining. Close that valve.
19. Repeat this process with the other 4 valves and pistons. When all the air is out, refill the master bore to the top.
20. Place the master piston in the bore, (oil will be displaced and over flow) continue to slowly push the master piston into the bore. One or more of the 5 pistons will start to move out. Stop when the top of the piston is even with the head.

21. Install the feed knob assembly with the knob fully retracted.

22. Place the head up-side down on the work bench with the 5 pistons facing you. Put a block of wood or other suitable stop behind the head preventing it from moving back.

23. Loosen the button head screws at either end of the valve body. Using a second block of wood apply pressure to the 5 pistons. Oil will start to leak from the screws along with any leftover air. When the 5 pistons are retracted re-tighten the valve body screws.

24. Replace the datum plate o-rings and datum plate. Note!!! The o-rings used with the datum plate do not seal oil. They can be washed and re-used. **If New O-rings Are Needed Or Desired, A Kit Is Available.**

25. The anchor head is now ready to be re-installed on the base unit.

26. Trimming the datum plates after re-installation is recommended.

27. All the o-rings used are standard size Buna Rubber.

1. 3/8" o.d. x 1/4" i.d.	#010 Valve stems and button head screws.
2. 5/8" o.d. x 1/2" i.d.	#014 Anchor pins, pin plugs and valve body.
3. 1" o.d. x 1 1/4" i.d.	#214 Master Piston
4. 7/16" o.d. x 5/8" i.d.	#111 First datum plate seal in anchor head
5. 5/8" o.d. x 13/16" i.d.	#114 Second seal in datum plate.

28. Anchor heads made before 1997 had 2 o-rings on the valve stem, since 1997 there have been 3.

For Technical Assistance Call
(888)440-9429
bakerequip@fuse.net

Joe Baker EQUIPMENT SALES

SET-UP DATA SHEET
DSF WINFIELD FIXTURE

Cylinder Head Manufacturer: AMC

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
151	L4	20	3	1-5	1-5	
196-258	L6	29	3	1-5	1-5	
290-401	V8	21 3/4	2	1-3	0	

*ALL STOP SETTINGS ARE FROM THE INTAKE SIDE UNLESS NOTED DIFFERENTLY IN THE COMMENTS COLUMN

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SET-UP DATA SHEET
DSF WINFIELD FIXTURE

Cylinder Head Manufacturer: **BUICK**

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
196-252	V6	15 1/2	2 7/8	2-3-4	2-3-4	
340						
350						
430-455						

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SET-UP DATA SHEET
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CADILLAC

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
4.1-4.5	V8	19 1/2	3 1/2	1	1	
368-500	V8	23	2	5	5	

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SET-UP DATA SHEET
DSF WINFIELD FIXTURE

CHEVROLET

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
1.8-2.0	L4	18 1/2	3	3-4	0	Cast Iron 2.0
153	L4	20	2 1/4	1	1	
173	V6	15 3/4	3 3/4	5	5	
194-292	L6	29	2 1/4	1	1	
250 INT	L6	29	2 1/4	0	1	Stop from Plug Side
200-262	V6	16 1/4	3 1/2	3-4	3-4	
267-400	V8	20 3/4	3 1/2	3-4	3-4	
366-454	V8	23 1/4	2	0	0	

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DSF WINFIELD FIXTURE

CHRYSLER PRODS.

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
225	L6	29	3	1-3-5	1-2-3	
273-360	V8	21 1/4	2 1/2	5	4	
383-440						

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SET-UP DATA SHEET
DSF WINFIELD FIXTURE

FORD

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
2.3 HSC	L4	18 3/4	3 1/8	0	0	
2.3 OHC	L4	20 1/4	3 1/2	1-5	5	
2.8	V6	17 1/4	3 1/4	2-5	2-5	
200-250	L6	28	2 3/4	1-3-5	1-3-5	Stop from plug side
221-351W	V8	20 3/4	2 1/2	1-4	1-4	
351-400C	V8	20 1/2	2 1/2	2-3-5	2-3-5	
240-300	L6	30	2 3/4	0	1-4	
330-428	V8	21 1/4	3 3/4	0	0	
429-460						

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Joe Baker EQUIPMENT SALES

SET-UP DATA SHEET
DSF WINFIELD FIXTURE

INTERNATIONAL

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
345-392	V8	23 1/4	2 1/8	5	4	

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Joe Baker EQUIPMENT SALES

SET-UP DATA SHEET
DSF WINFIELD FIXTURE

OLDSMOBILE

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
260-455	V8	21 3/4	2 1/2	1-2-4	1-3-5	

*ALL STOP SETTINGS ARE FROM THE INTAKE SIDE UNLESS NOTED DIFFERENTLY IN THE COMMENTS COLUMN

Joe Baker Equipment Sales, Inc.
1000 Devils Backbone Road
Cincinnati, OH 45233
(888)440-9429.E-mail:winfieldfixtures@fuse.net
Website: www.winfieldfixtures.com

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SET-UP DATA SHEET
DSF WINFIELD FIXTURE

PONTIAC

Cylinder Head Manufacturer: _____

C.I.D/LTR.	TYPE	SPAN	STOPS*	RAMS OFF LEFT	RAMS OFF RIGHT	COMMENTS
265-455	V8	21	2	2-3-4	2-3-4	
2.5	L4	20	3	3-5	1-3	

*ALL STOP SETTINGS ARE FROM THE INTAKE SIDE UNLESS NOTED DIFFERENTLY IN THE COMMENTS COLUMN

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Cylinder Head Manufacturer: _____

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