MULTIPLE APPLICATIONS

PART NUMBERS **VB-FIX, VB-06**

Valve Body Reaming Fixture & Oversized Pump Base Plate

VB-FIX

1 Base Plate
1 Clamp Mounting Plate
1 Clamp Plate
2 Outer Races
1 Inner Race
3 Studs
3 Washers
3 Wing Nuts
4 Socket Cap Screws

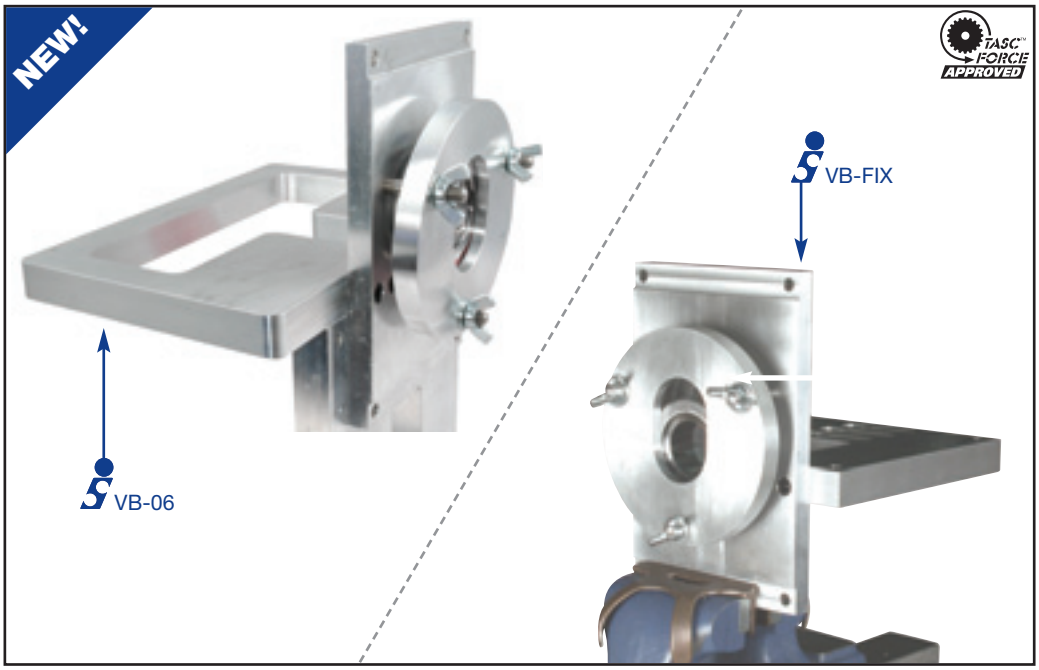
NEW PRODUCT!

VB-06

1 Oversized Pump Base Plate

Special tool kits have been designed to service a specific bore and were created to be used in conjunction with the Valve Body Reaming Fixture. Part numbers for these specially designed kits begin with an F-, to distinguish them from traditional Sonnax special tools that can be used as stand-alone tools.

VALVE BODY FIXTURE REQUIRED



ASSEMBLY INSTRUCTION

1. Remove all parts from shipping container.
2. Install 3 threaded studs into the front plate as shown in Figure 1.

NOTE: Shorter thread must be threaded into the front plate. The shorter thread is an interference fit so it will thread in harder than a normal bolt.

Using a double hex nut on the long threaded portion of the stud helps to thread the stud into the plate. Studs can be locked in place by using Loctite™ 609.

3. Using the 4 socket cap screws, attach the standard base plate or the optional oversized **VB-06** base plate as shown in Figure 2. Align the front plate square to the base plate.
4. Coat the 2 outer races as well as the inner race with lightweight grease.

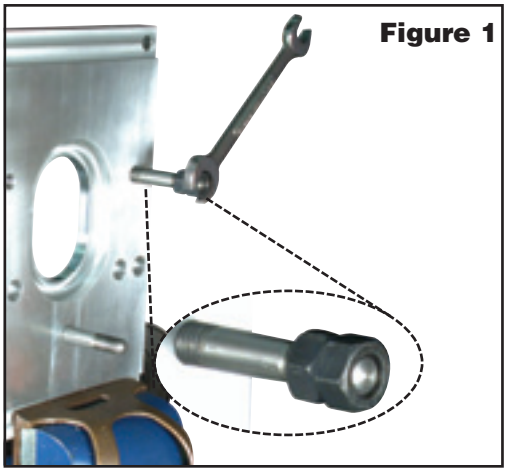


Figure 1

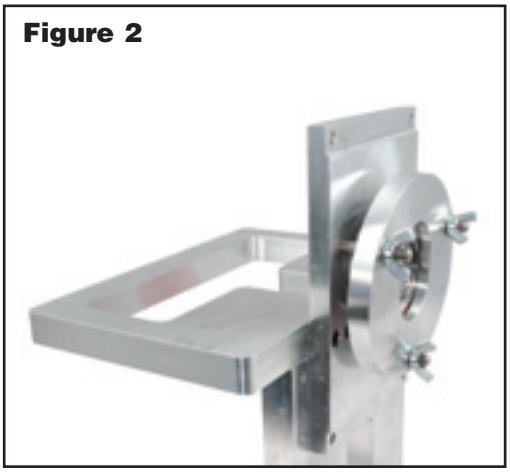


Figure 2

MULTIPLE APPLICATIONS

PART NUMBERS VB-FIX, VB-06

5. Install the 2 outer races and the inner race into the pocket in the clamp plate forming a ball & socket as shown in Figure 3.
6. Install the round clamp plate over the 3 threaded studs as shown in Figure 4.

   NOTE: Orientation of the pocket must face the pocket in the front plate.
7. Install the 3 flat washers over the threaded studs.
8. Install the 3 wing nuts finger tight.

BASIC VB-FIX PROCEDURES

1. Mount the fixture in a vise (see Figure 4). Test fit the guide pin in the bore. Make sure pin slides in and out freely. If pin does not slide smoothly, clean guide pin and valve/pump body bore, lubricate pin with cutting fluid and recheck fit.
2. Put valve/pump body on base of reaming fixture, open circuits facing up whenever possible (see Figures 5 and 6). Due to valve/pump body variations, it may be necessary to clamp with the circuits down. In this case, position the bore to be reamed over the cutout in the plate in order to provide a source of lubrication and removal of chips. Once the valve/pump body has been secured following steps 1-6, the complete fixture can then be removed from the vise and rotated 180º for better access to the circuits through the cutout in the plate.
3. Install reamer guide into inner race of reaming fixture (see Figure 7).
4. Install guide pin through the reamer guide (see Figure 8).

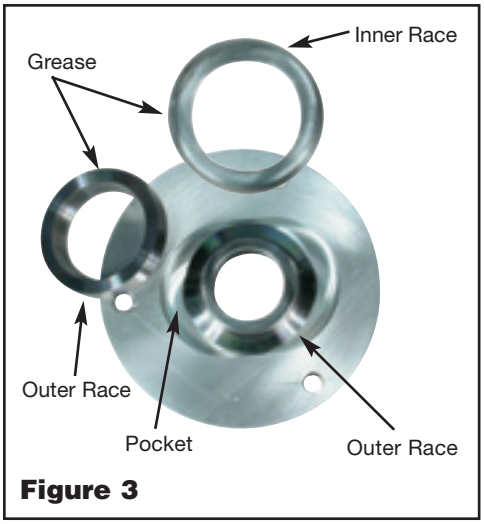


Figure 3

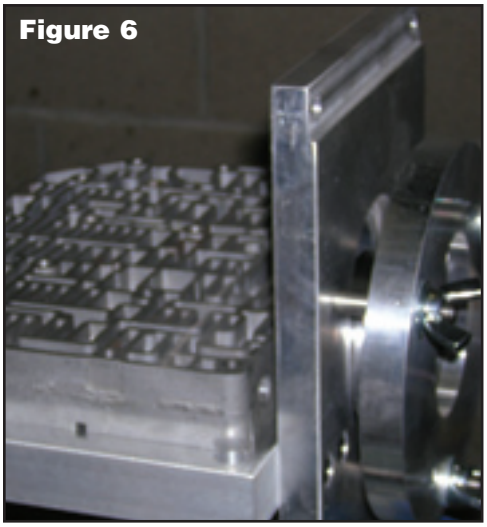


Figure 6

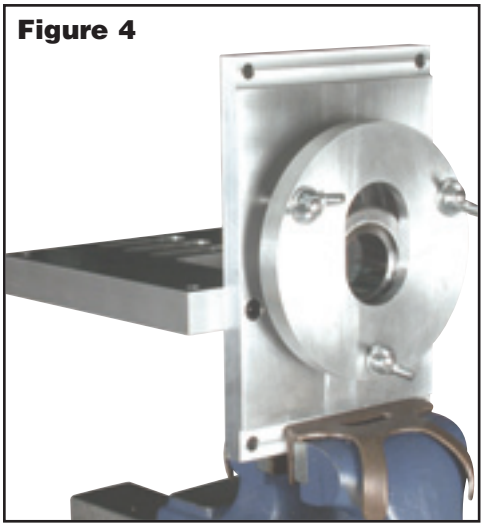


Figure 4

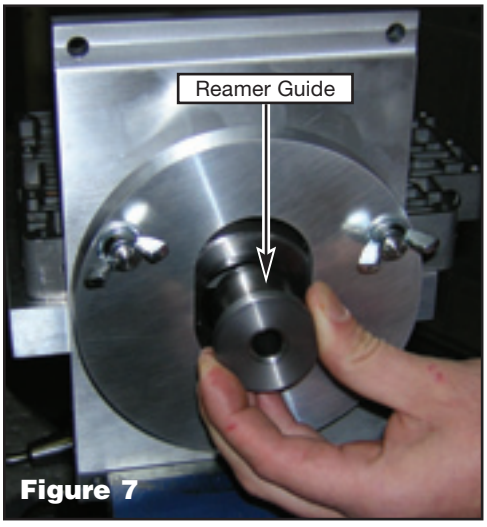
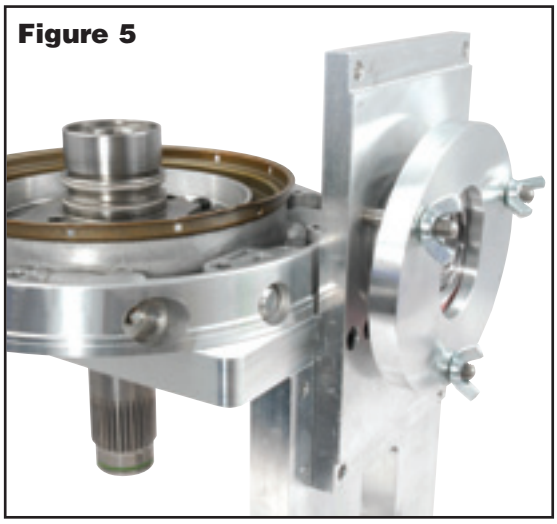


Figure 7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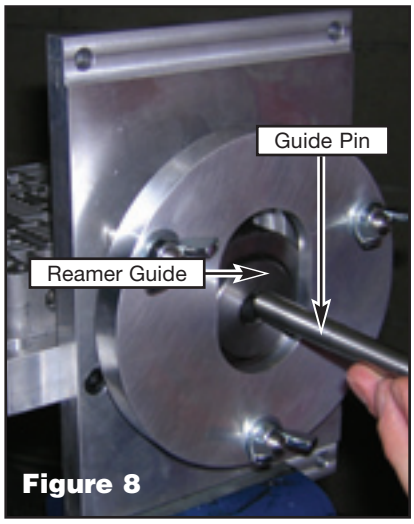


Figure 8

5. Align valve/pump body so guide pin fits fully into the valve bore; leave wing nuts on fixture loose (see Figure 9).
6. Using a "C" clamp, clamp valve/pump body securely to fixture base (see Figure 10). It is recommended to use only one clamp, as two clamps may distort valve/pump body. Position valve/pump body close to reamer guide. Do not clamp over the bore being repaired.
7. Check fit of alignment pin. The pin should slide smoothly with no binding.
8. Lightly tighten all three wing nuts continuously, then recheck pin fit while sequentially snugging down the wing nuts by hand. Wiggling the pilot may also be necessary during this process to keep the guide pin moving freely. Do not use pliers or tools to tighten wings nuts. Do not overtighten one wing nut as this will pull the fixture out of alignment.
9. Recheck to see if alignment pin slide smoothly in bore. If pin does not slide freely, loosen wing nuts and readjust.
10. Remove alignment pin and install the reamer (see Figure 11).

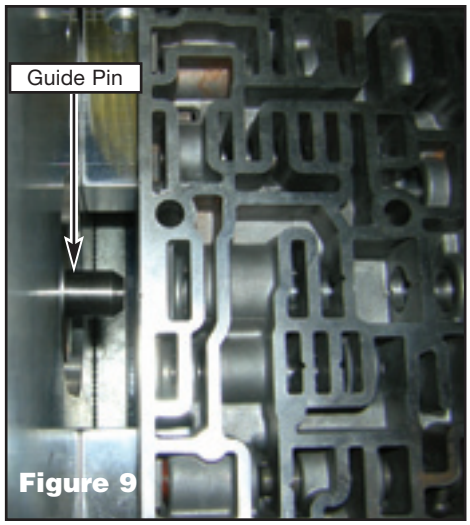


Figure 9

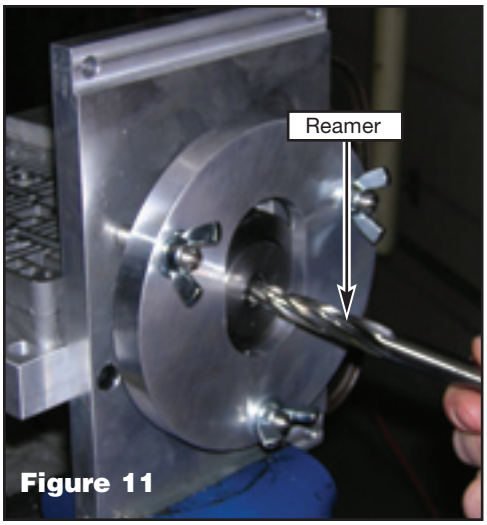


Figure 11

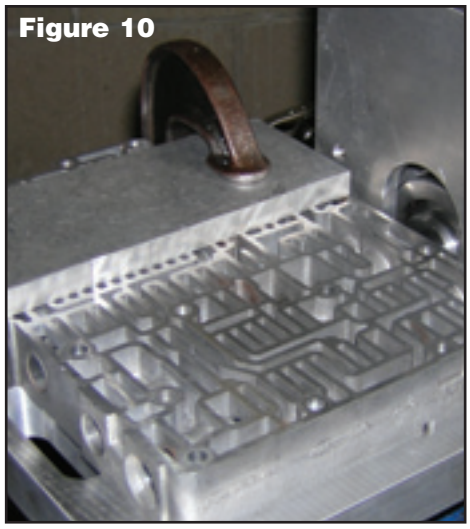


Figure 10

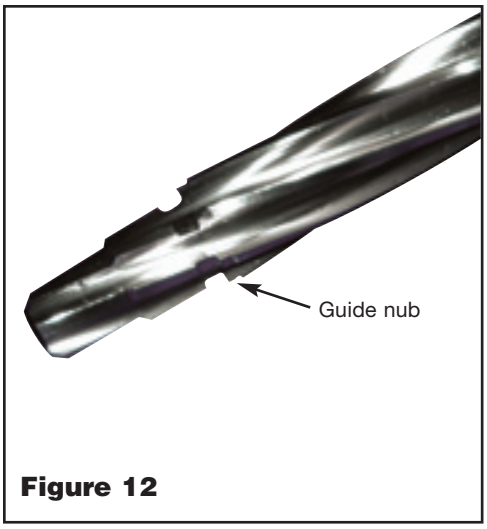


Figure 12

11. The guide nub on the large reamer cutting diameter should fit into the first valve/pump body land to be cut (see Figures 12 and 13).
12. Ream valve/pump body using standard procedure.

Note: These are general guidelines for using the **VB-FIX**. Check for specific instructions packaged with each F-Series tool kit.

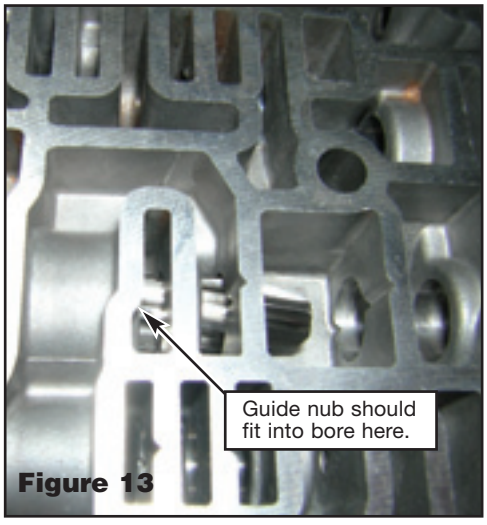


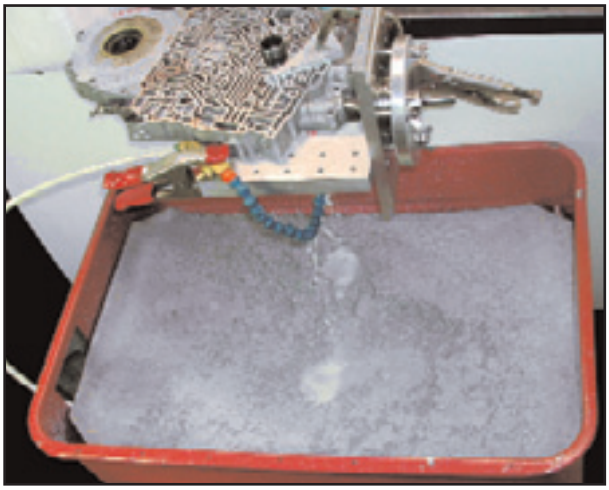
Figure 13

Recommendations for Building An Inexpensive Reaming Station

Reaming Tank:

20-gallon parts washer tank kit, to include the following:

- Pump, submersible
- Legs
- Flexible nozzle
- Removable cover (to reduce evaporation)
- Shelf
- Filter element



Northern Hydraulics P/N 15986-1505 includes the items listed. Kit does not include a shelf filter, casters or hose extension. The 20-gallon washer kit is approximately $85 plus freight.

Legs and casters allow tank to be positioned under your bench. Height should be as close to the bench as practical to reduce reaming fluid splash. Legs should be shorter on the pump end of the tank. This will reduce the amount of fluid required and pump cavitation.

Some of these kits have sump filters. It is suggested you lay a filter element over the shelf. A fiberglass furnace filter will work or if you can source Dacron® transmission material, it works well due to the density. The filter catches the chips, which can be dumped as the filter dries between use. The shelf filter also reduces the interval needed to clean the tank and reduces fluid splash.

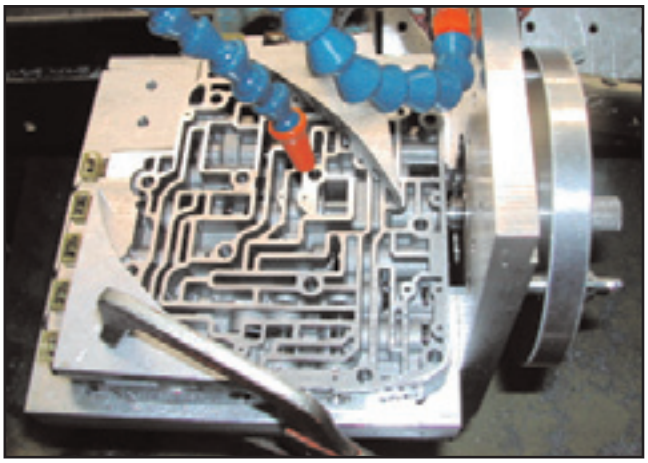
Reaming Fluids:

Mobilmet P/N S-122, available from MSC in P/N 60002466, is about $20 per gallon. Mobil suggests mixture at 5% Mobilmet to water. We suggest going to about 20% (one part Mobilmet to 4 parts water). If the solution is too slimy or does not clean up easily, reduce the Mobilmet. The mixture amount required will depend on tank size and how tall your filter shelf is. Use enough to prevent starving the pump but not so much that it sloshes over the sides. One gallon should allow you to service a 20-gallon tank about 3 to 4 times. With average usage, the reaming solution should last more than one year. This is also available in 5-gallon buckets.

Reaming Fixture and Tools:

- Sonnax Valve Body Reaming Fixture **VB-FIX**

  Note: This fixture is designed for piloted reamer bore repairs such as the 01M, 47RE and 4T40-E.
- The fixture mounting plates can also be used as a stand for use with previous reaming tools and jigs. By drilling a pattern of holes into both plates, the fixture can be set up to quickly bolt or pin frequently reamed valve bodies into a horizontal or vertical position.
- With the constant lube flow, you can use a wobble adapter and a 1/2" low speed air drill, regulated down to operate at 200 rpm max.



Suggestions for Optional Equipment:

- Jointed plastic coolant nozzle (P/N 48484679) from MSC, around $11
- 4' braided extension hose (P/N 09410606) from MSC, around $23
- Odor control- emulsion stabilizer for reaming fluid, (P/N 01790575) from MSC, around $28 for 15 tablets.
- Bench-mounted 360-degree swivel head (such as ATEC TransTool P/N T-0156-A) price around $125. This can be mounted to the Sonnax fixture.

Sources:

Northern Hydraulics
Phone: 800-533-5545 or Web: www.NorthernTool.com

MSC
Phone: 800-645-7270 or Web: www.mscdirect.com

Goodson Tools for engine rebuilders
Phone: 800-533-8010 or Web: www.goodson.com

ATEC TransTool
Phone: 210-225-6745 or Web: www-atec-trans-tool.com

Catching Fluidpower/Parker
Phone: 800-826-4185 or Web: www.catching.com