

OPERATING INSTRUCTIONS

for **SUNNEN TN-111**

QUICK CHECK ROD ALIGNER



CARE OF ALIGNER

Keep surface plate oiled when not in use.

Hang up V-Block and Bend and Twist Indicator when not in use.

Use bolt hole in rear of clamping fork to bolt the aligner to work bench.



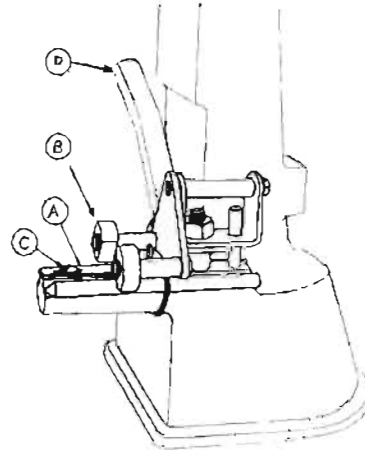
Sunnen Products Co., 7910 Manchester Ave., St. Louis 17, Mo.

Canadian Factory: CHATHAM, ONTARIO

SUNNEN QUICK CHECK ROD ALIGNER

SETTING THE STOP

- A.** Position adjustable stop A (see drawing at right) so that clamp collars B will grip rod in center; then tighten screw C. Rotate clamp collars if necessary for best gripping action. Press down lever D to raise clamp collars so rod can be positioned against stop A.



MANDREL HAS HARDENED AND GROUND CONTACTS

- B.** See that the contact bars are seating in mandrel by shifting them slightly endwise. The "v" grooves that hold these bars should be kept clean. (See Fig. 1)

- C.** Place rod on mandrel so that thrust side of piston is to the operator.

The thrust side of any piston is the right-hand side in running position. It is the plain side of any split skirt piston. Rock rod slightly to seat.



Fig. 1

CHECKING FOR BEND

- D.** Apply the V-block to piston and grasp both with right hand as shown on the front page. Hold the piston vertically on rod and slide the V-block around to contact surface plate. This contact line will indicate whether the rod is straight or bent.

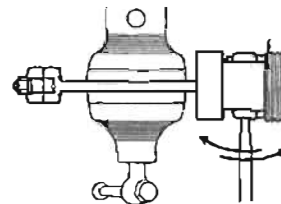


Fig. 2
Straightening a Bent Rod

STRAIGHTENING A BENT ROD

- E.** Straightening is done by clamping rod in a vise and bending with bending bar which is furnished with the Quick-Check Rod Aligner. See Fig. 2.

Place the rod in the vise with the thrust side of piston up. Always keep this side up in order to keep from getting mixed up on which direction to bend the rod.

CHECKING FOR TWIST AND CORRECTING IT

- F.** Rocking the top of the piston away from you as shown in Fig. 3 will indicate whether or not the rod is twisted. Notice that V-block is away from surface plate at the top. To correct twist shown in Fig. 3 it is necessary to turn piston to left with bending bar as shown in Fig. 5. To correct opposite twist shown in Fig. 4 turn piston to right with bending bar as shown in Fig. 6.

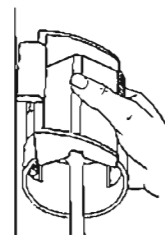


Fig. 3

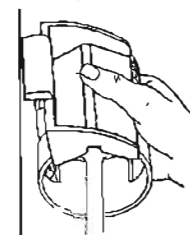


Fig. 4

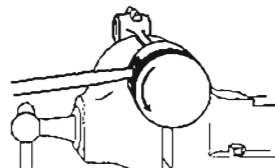


Fig. 5

Correcting a twist in rod turning piston to left

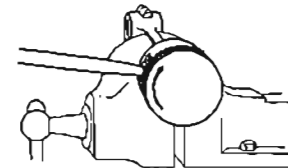


Fig. 6

Correcting a twisted rod—turning piston to right

In correcting a twisted rod it is only necessary to remember whether you are going to turn the piston to the left or the right when looking at the top of the piston.

SUNNEN QUICK CHECK ROD ALIGNER

IMPORTANT

To avoid wear on contact edge of V-block, *never slide contact edge against face* of aligner. Always rock V-block lightly against face when checking for bend or twist, being sure that V-block contact edge is away from face while piston is being moved from one position to another. If this is done your Rod Aligner will always remain accurate.

CHECKING OFFSET IN A ROD

- G. Be sure lower end of rod is against the stop. Slide piston to the left until right hand piston boss is against the upper end of rod; then bring scale down and take reading from top left edge of piston as shown in Fig. 7. Take rod off and check from other side in the same way. Half the difference of your two readings will be the amount of offset in the rod. To correct offset see paragraph "CORRECTING OFFSET".

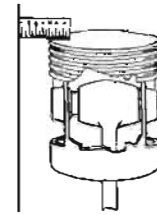


Fig. 7

CORRECTING OFFSET

- H. The shank of a rod should be a straight line to prevent flexing under load and impact of operation; therefore, corrections should be made near rod ends and not in the shank proper.

Correcting for offset should be done at L, Fig. 8 with a monkey wrench and vise and followed by bend and twist corrections at M, Fig. 9, with the bending bar.

Each time you make an offset correction, test again for bend and twist.

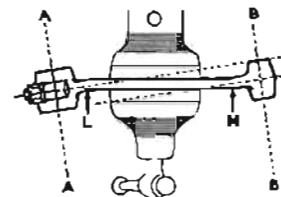


Fig. 8

Lines A-A and B-B are parallel

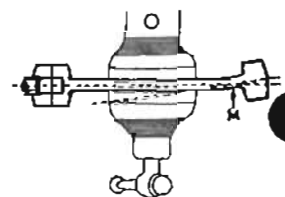


Fig. 9

BENDING FROM THE PIN

- I. Bending from the pin eliminates that trouble often encountered when using the usual method of correction -- bending the lower section of the rod -- which often results in throwing the upper end of rod too close to one piston boss, resulting in that mean knock known as boss slap.

Bending from the pin is not new as it has been used for years by many of the larger engine rebuilders as well as the large factory operated service stations of one of our high priced car manufacturers.

A little experience will prove conclusively that bending from the pin is the most accurate, as well as the fastest method.

The pictures at the right (Fig. 10) show the Bending Bar inserted in a very small pin and in a large one.



LARGE PIN



SMALL PIN

Fig. 10

SUNNEN QUICK CHECK ROD ALIGNER

Accessories for SUNNEN Quick Check Rod Aligner

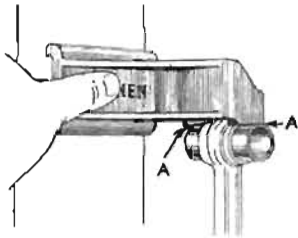


Fig. 11

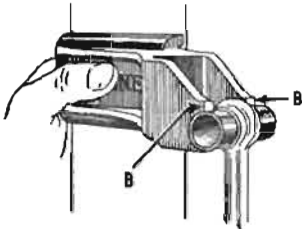


Fig. 12

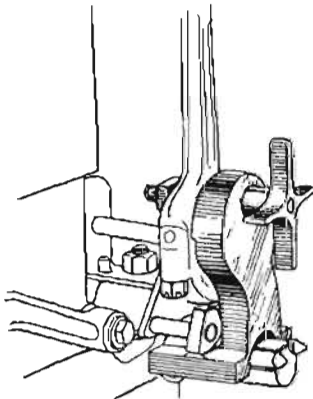


Fig. 13

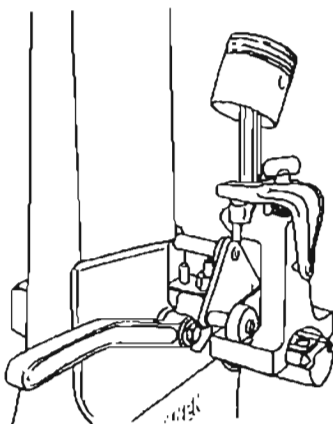


Fig. 14

BEND AND TWIST INDICATOR

- J. To check a rod from the pin when the piston is not assembled a Bend and Twist Indicator must be used.

CHECKING FOR BEND. Hold Bend and Twist Indicator against surface plate of aligner as shown in Fig. 11. Allow the two small, horizontal, parallel, ground surfaces A-A to rest on top of the pin. If both surfaces fully contact the pin the rod is straight. If light shows under either surface the rod is bent down in a direction away from the planed surface that showed light.

CHECKING FOR TWIST. Hold Bend and Twist Indicator against surface plate of aligner and allow the two small, vertical, ground surfaces B-B to rest against the side of the pin as shown in Fig. 12. If these two surfaces B-B fully contact the pin the rod is not twisted. If light shows between the pin and one ground surface the rod is twisted away from the side that passes light.

SIDE CLAMPING FIXTURE FOR WORN V-8 RODS

- K. V-8 Fords have full floating rod bearings and, after long use, the steel rod becomes worn inside to such an extent that it is impossible to get a true test from the inside of the rod. The large ends of these rods have the sides ground parallel with the bore, therefore these are the proper points from which to check these rods. To insert a worn V-8 rod in the Side Clamping Fixture -- hold the rod in a vertical position and slip its large end over the spring clamping device so that the side of the rod is against the side wall of the fixture, then tighten the clamp. Place fixture with the rod in it on universal mandrel as shown in Fig. 13. Fixture is useful for any make of rod that is narrow and that has no bearing metal flange.

MIDGET ALIGNING SET

- L. Midget Aligning Set is to be used with rods having bearings less than 1-3/4 inches in diameter. If cap is on rod, slip the rod under clamp A on the special mandrel for the Midget Aligning Set (See Fig. 14), and clamp with thumb screw B. Then place the whole assembly on the universal rod aligner TN-111, just as a rod would be clamped. If cap is not on rod, the rod can be placed on Midget Aligning Set after the set is mounted on the TN-111 aligner. Checking for bend, twist and offset is handled in exactly same manner as large rods. A special bending clamp is furnished with the Midget Aligning Set. Bending is done in vise in same manner as large rods.