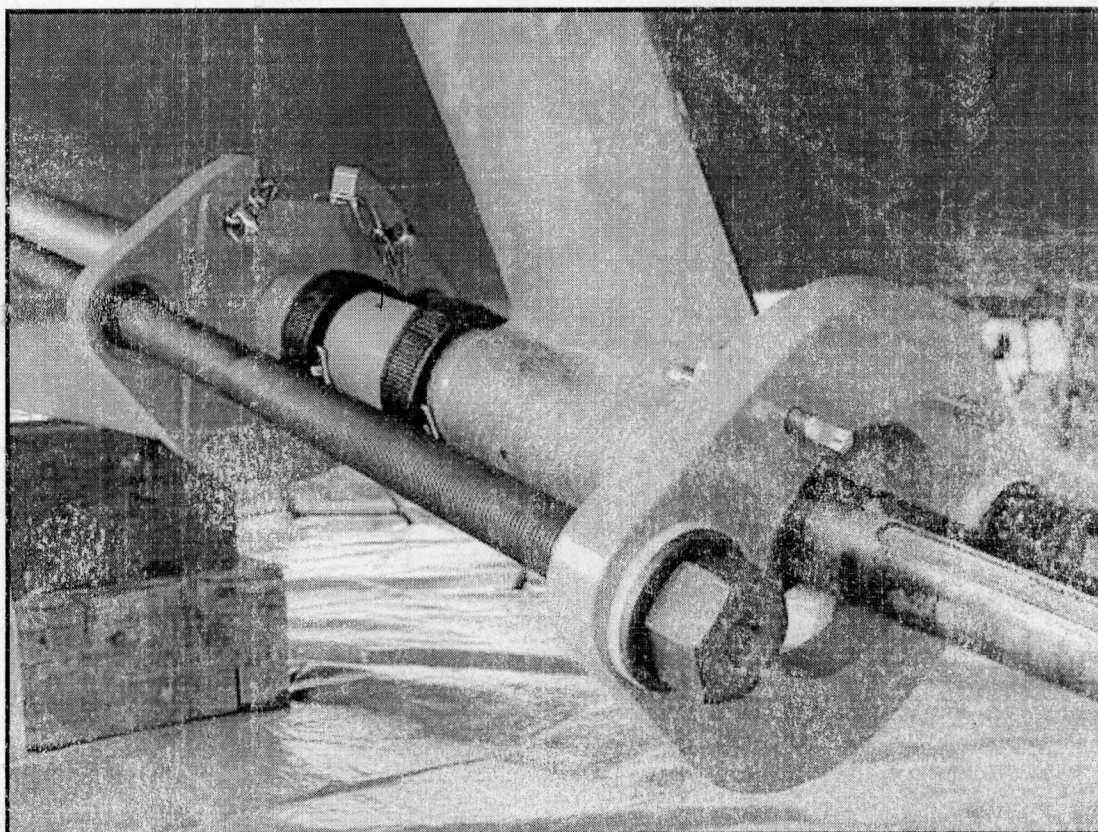




Cutless® Bearing Replacement Tools

Owner's Manual



This Product Is Produced Exclusively By

Global 
Marine Industries, Inc.

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Telephone 425-397-6601

Patent # 6,539,601

Thank you for choosing **Strut Pro®** cutless bearing replacement tools. We take great pride in producing a quality product. Review drawings and photos to familiarize yourself with the parts. Read this manual carefully before proceeding.

WARNING

Strut Pro® is a safe and convenient tool when used properly. As with any tool it is important to have a thorough knowledge of its proper use. To reduce the risk of serious injury, read the following safety instructions.

Review all drawings before using your **Strut Pro®** tool. Actual product may differ from photos due to ongoing design improvements. Note: Steel and poly washers shown in photos have been replaced using a machined tapered bearing design seat at the threaded rod to aft yoke connection.

Before You Begin

Lubricate all parts before using to insure smooth operation and prevent thread galling. Keep all parts clean and free of sand, dirt and other debris.

Although Global Marine Industries, Inc. (GMI) makes every attempt to manufacture its products with the finest materials and use the highest standards of manufacturing, occasionally a defective part is not found during the inspection process. Also, from time to time, a part necessary for operation is not shipped with the product. Even with the highest inspection and quality controls in place these things will happen occasionally. Please do not return the product. Contact us should this problem occur.

IMPORTANT SHIMMING INFORMATION: This tool is designed to replace the most popular size strut bearings. Should you encounter a size that does not match properly to a collet, including metric, you can adjust the outside dimension. Shim the collet that most closely matches but does not exceed the outer diameter of the cutless bearing. Use a thin, non-abrasive material between the propeller shaft and collet to properly space the collet to match the outer shell of the cutless bearing. **Do not exceed the bearing outer diameter.**

To assist you in proper shimming we have included .030 shim material made from UHMW (Ultra High Molecular Weight) plastic. This is a highly abrasion resistant material with a pressure sensitive backing. If needed, cut the shim material to the appropriate length and affix to the inside of the collet as needed to achieve the proper measurement.

Parts List

See exploded drawing below to view parts description.

Note: Items marked (*) are not shown on drawing.

- (1) Forward Yoke
- (1) Aft Yoke
- (10) Horseshoes Included With Complete Kit, (2) Included With Individual Tool
- (2) Sets Horseshoe Retainers *
- (8) Sets Collets (Stackable) Included With Complete Kit, (2) Included With Individual Tool
- (2) Collet Straps *
- (2) 7/8" B7 Grade Threaded Rods *
- (2) Special Machined Collared Nuts *
- (2) Lengths .030" Pressure Sensitive UHMW Wear Strip Shim Material*

Horseshoe and Collet Legend

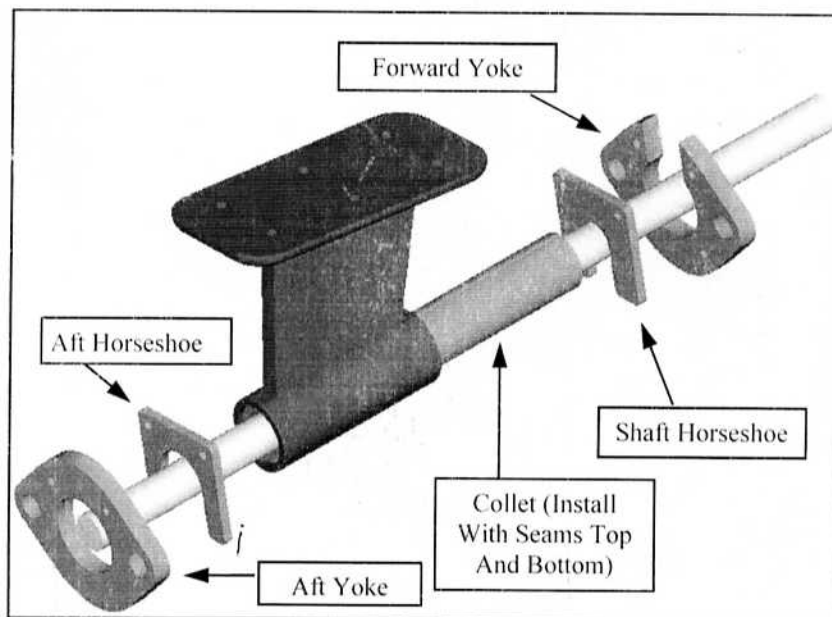
Each shaft horseshoe and collet is stamped with a part code. Each dimension shown is Outside Diameter (O.D.). This information will assist in matching which horseshoe and collet is closest to the actual shaft and bearing (O.D.). Collets are formed to be slightly undersize to prevent the collet from being jammed inside the strut. It is important to always use the collet that is smaller than the O.D. of the bearing to be removed. Read the information about shimming to precisely match or contact us if you have any particular questions.

Horseshoe Code

.75 =	3/4"	D =	2"
1 =	1"	E =	2 3/8"
A =	1 1/4"	F =	2 5/8"
B =	1 1/2"	G =	2 3/4"
C =	1 3/4"	H =	3"

Collet Code

A =	1 1/4"	E =	2 3/8"
B =	1 1/2"	F =	2 5/8"
C =	1 3/4"	G =	2 3/4"
D =	2"	H =	3"





Set-Up Instructions

Remove the propeller. Closely inspect the strut for any set screws used for retaining the cutless bearing. Sometimes the set screws have been painted over with antifouling paint so it is recommended to scrape the port and stbd. sides of the strut to make sure any set screws have been removed before proceeding.

Measure the outside diameter (O.D.) of the cutless bearing and the diameter of the propeller shaft.

Select the proper collet to fit between the propeller shaft and strut, not exceeding the outside diameter of the cutless bearing. Collets are designed to be stacked if necessary to fit a wider range of cutless bearing sizes. **READ SHIMMING INFORMATION** on page (2) if shimming is needed to match the existing bearing.

Position the collets onto the propeller shaft forward of the strut. Collets are stamped with a letter that corresponds to the outside diameter (see chart). Secure the collets using the velcro straps provided (see photo). Position the straps approx. 1" from each end of the collet and pull snug. Rotate the collets so the seams are on top and bottom to maximize the surface area of the collet to the horseshoe. Slide the collet back to the strut to make contact with the cutless bearing. Closely inspect to make sure the collet matches the outer bronze area of the bearing but does not exceed the outside diameter of the bearing. There are eight sets of formed collets that can be stacked to match various bearing sizes. If you are unable to make the required fit with by stacking the collets, use additional shims as required. Do not begin pressing the bearing until you are sure the collets are positioned to catch only the outer bearing shell with no contact being made to the strut housing.

Lay the forward and aft yokes on a clean surface. Insert the threaded rods through the yokes starting with the aft yoke first and then through the forward yoke (the white poly washers and steel washers shown on the front photo have been discontinued and are not necessary). Screw on the machined nuts starting with the machined end and secure within the locking tabs welded to the forward yoke.

Install the aft horseshoe on the aft yoke using the cotter pins provided. The aft horseshoe is to be secured to the forward side of the aft yoke, between the aft yoke and the strut. Slide the aft yoke over the propeller shaft to the strut. You can now lift the forward end of the tool assembly into place.

Swing the forward yoke up and between the propeller shaft, ahead of the previously installed collets. Install the forward horseshoe that matches the propeller shaft diameter. Secure the forward horseshoe using the cotter pins provided.

The following chart showing the standard domestic bearing sizes is for your reference.

Standard Cutless® Bearing Chart

CODE	SHAFT / ID	OD	LENGTH
Johnson Durmax® Code	A	B	C
ABLE	3/4	1 1/4	3
ACID	7/8	1 1/4	3 1/2
APEX	7/8	1 3/8	3 1/2
ATOM	7/8	1 1/2	3 1/2
BACK	1	1 1/4	4
BADE	1	1 1/4	6
BAIT	1	1 3/8	4
BALE	1	1 1/2	4
BAND	1	1 5/8	4
BASE	1	2	4
BEAM	1 1/8	1 1/2	4 1/2
BELT	1 1/8	1 5/8	4 1/2
BEND	1 1/8	1 3/4	4 1/2
BILL	1 1/8	2	4 1/2
BIND	1 1/4	1 1/2	5
BIRD	1 1/4	1 3/4	5
BITE	1 1/4	2	5
BLOW	1 1/4	2 1/8	5
BOAT	1 3/8	1 7/8	5 1/2
BOLD	1 3/8	2	5 1/2
BOND	1 3/8	2 1/8	5 1/2
BOOT	1 3/8	2 3/8	5 1/2
BOSS	1 1/2	2	6
BRAD	1 1/2	2 3/8	6
BREW	1 5/8	2 1/8	6 1/2
BRIM	1 5/8	2 5/8	6 1/2
BROW	1 3/4	2 3/8	7
BUCK	1 3/4	2 5/8	7
BULB	1 7/8	2 5/8	7 1/2
BULL	1 7/8	2 15/16	7 1/2
CALL	2	2 5/8	8
CAMP	2	2 3/4	8
CALM	2	3	8



Bearing Removal

Once the tool assembly is installed you are about to remove the cutless bearing. It is now very important to apply equal pressure to both threaded rods. Begin by turning the welded nuts clockwise. This will compress the puller assembly.

Once the slack has been taken you will need to make final adjustments and inspections. With the puller snug adjust the aft yoke and horseshoe assembly to allow the bearing to clear as it is pressed out of the strut housing. To adjust, gently tap the aft yoke as needed. **This is very important.** There must be ample clearance for the cutless bearing to slide out. Watch carefully. If the puller assembly gets tight without the bearing moving stop and examine the cause. (Also re-examine to make certain that there are no set screws holding the cutless bearing into the strut).

Be sure the collet seams are on top and bottom, the forward horseshoe is in direct contact with the collets and inspect to insure the collets are properly aligned with the cutless bearing.

Proceed with caution. Turn each nut no more than five cranks, then the other. Watch closely to insure alignment remains consistent between the forward and aft yokes. As you continue turning the nuts the tool will move the collet through the strut and remove the cutless bearing. **Note:** The machined nuts and forward yoke have been made to provide relief in the event the yokes become uneven. Keep both yokes as square as possible to prevent excessive side pressure against the threaded rod to prevent thread galling.

Once the bearing is free it can easily be slid back and over the propeller shaft. Loosen the threaded rods and remove the collets which are now partially inside the strut. This might require tapping the collets to free them from the strut. Holes are provided in the collets for this purpose.

Installing A New Bearing

Switch horseshoes. To install the new cutless attach the shaft diameter horseshoe (which was previously used on the forward yoke) to the aft yoke. This is necessary so the horseshoe makes maximum contact with the new cutless bearing being installed. Next attach the next larger sized horseshoe to the forward yoke. For struts with a steep rake angle it may be necessary to rotate the forward horseshoe 180 degrees before attaching to the forward yoke (the forward yoke has four holes for this purpose). This will provide the needed clearance so the forward horseshoe does not contact the vertical rib of the strut. Slide the new cutless bearing over the shaft and gently start it inside the strut. In most cases the new bearing can be easily pressed part way into the strut by hand. Begin compressing the threaded rods until the new bearing is in place.

Warranty

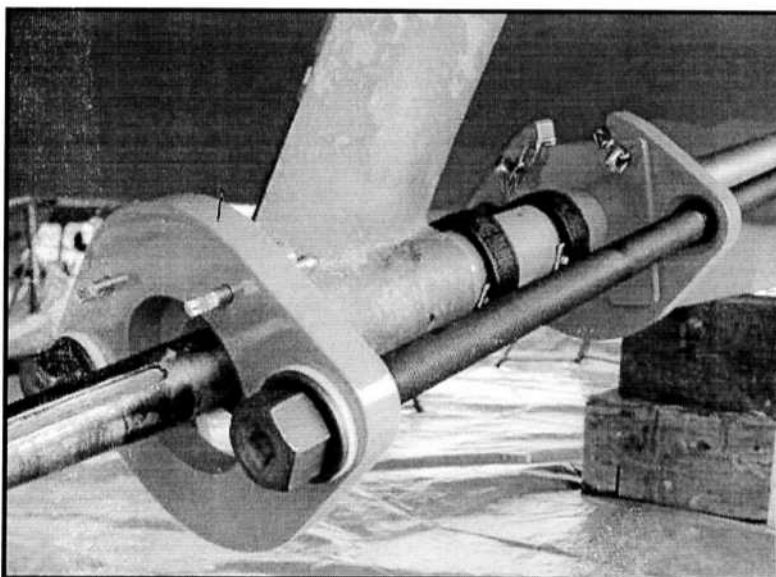
All components are warranted against breakage, under normal use, for 12 months from date of purchase. Should breakage occur, call us for a return goods authorization number. Parts must be returned freight pre-paid. After inspection by us, any defective parts will be repaired or replaced at no cost. Determination of repair or replacement is at the sole discretion of Global Marine Industries, Inc.



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Made In USA

Revision: May 2004



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