

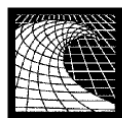
Suredrive™

Installation & Instructions

Please read before using Suredrive™

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Marine Systems Inc.

Table of Contents

Installation Procedure for Borg Warner Group	3
Securing Outer Spider Ring	3
Mounting Inner Spider Drive for Borg Warner Group (See Fig.2).....	4
Mounting Inner Spider Drive for <u>Other</u> Marine Transmissions (See Fig.2).....	4
Mounting Transmission to Engine	6
Information regarding installation for flywheel	6
Elastomers	6
MOD04V – Volvo 2001, 2002 & 2003 Series Coupled with Transmission!.....	7

Please Note: All bolts listed are Grade 8. Any bolts that need to be replaced must be Grade 8. Failure to use Grade 8 bolts will void warranty.



Installation Procedure for Borg Warner Group

For Borg Warner 71C, 72C, 73C or Series 5000 marine transmissions, you will need to complete the following steps prior to installation.

Transmission Adapter Plate Measurement *(See Fig. 1)*

- Remove transmission, transmission adapter plate and old drive plate
- Mount the transmission adapter plate to the engine bell housing and fasten with two bolts
- Measure from the flywheel face to the exterior face of the transmission adapter plate (Faces identified with arrows – see fig.1).
- If the measurement is within 63.5 - 66.7mm (2-1/2" - 2-5/8") proceed with installation of the Suredrive™. If the dimensions fall below or exceed the above numbers (2-1/2" - 2-5/8") call the manufacturer or seller for additional information.

Securing Outer Spider Ring

- **Providing the distance is correct**, fasten the outer drive ring to the flywheel and torque bolts
- Mount marine transmission adapter plate on to the transmission and tighten retaining bolts (see torque table next page)

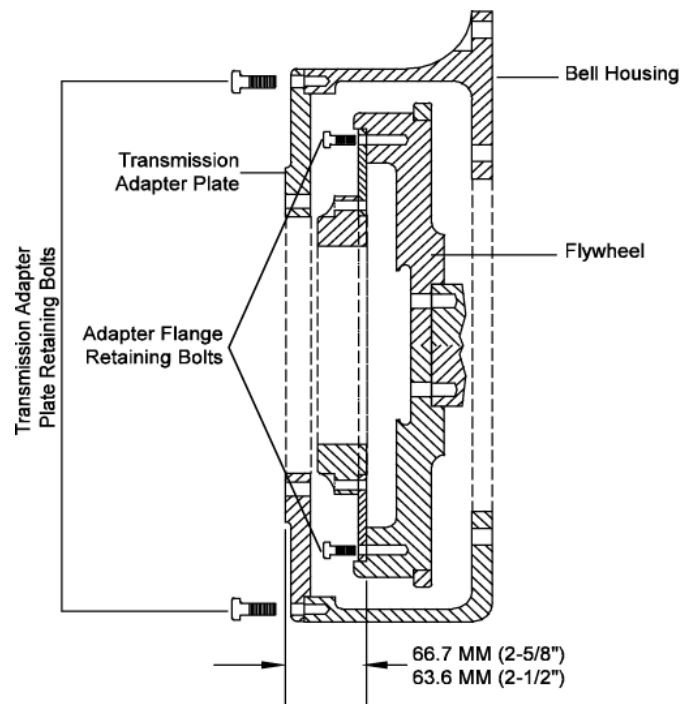


Fig. 1: Transmission Adapter Plate Measurement

Mounting Inner Spider Drive for Borg Warner Group *(See Fig.2)*

- For Borg Warner 71C, 72C, 73C or Series 5000 transmissions, tap the centre spline hub onto the transmission input shaft with the flange towards the gear
- (use a soft hammer) until the hub bottoms out on the input shaft
- Insert key; slide the inner spider drive onto the center spline hub
- Select one bolt as starting point and go around tightening each Bolt ¼-turn at a time; continue until all bolts have the same resistance.

Do not tighten fully one at a time

- It is important to follow this tightening procedure as it ensures that the center spline hub is positively locked onto the input shaft
- Use a torque wrench to tighten between 25-27N-m (18-20 ft/lb), using the same circular tightening pattern to obtain this torque value

Nominal Bolt Size	Torque (N*m)	Torque (ft*lbs)
8mm	25	18
5/16"	27	20
3/8"	48	35

Torque Specifications

Mounting Inner Spider Drive for Other Marine Transmissions

(See Fig.2)

Note: For Marine transmissions - Newage PRM, Hurth, Twin Disc, ZF etc, you will need to obtain the following measurement before you mount the inner spider drive.

- Remove old drive plate
- Measure from the flywheel contact surface to the mounting face of the transmission adapter plate (*see Fig. 2*), this measurement will be used in the preceding steps to adjust the location of the inner spider drive on the transmission input shaft. This measurement will be referred to as "X"
- Tap the center spline hub onto the transmission input shaft with the flange towards transmission; continue until the hub is flush with the end of the input shaft. Insert key, slide the inner spider drive onto the center spline hub, insert the allen-head bolts (provided) and finger tighten
- Now using the measurement "X" obtained above, adjust the location of the inner spider drive on the transmission input shaft (tap only the center spline hub during adjustment) so that when you measure from the mounting face of the transmission adapter plate to the outside of the elastomers, the distance equals "X". (*See Fig. 2*)
- Double check the inner spider drive position
- Select one bolt as a starting point and go around tightening each bolt ¼-turn at a time, continue until all bolts have the same resistance. Do not tighten fully one at a time. It is very important to follow this tightening procedure as it ensures that the center spline hub is positively locked onto the input shaft
- Torque between 25-27N-m (18-20 ft/lb), using the same circular tightening pattern

Important: As you torque the allen-head bolts, the inner spider drive will move towards the transmission, this offset is typical of this arrangement and is important in providing running clearance between the flywheel and elastomers.

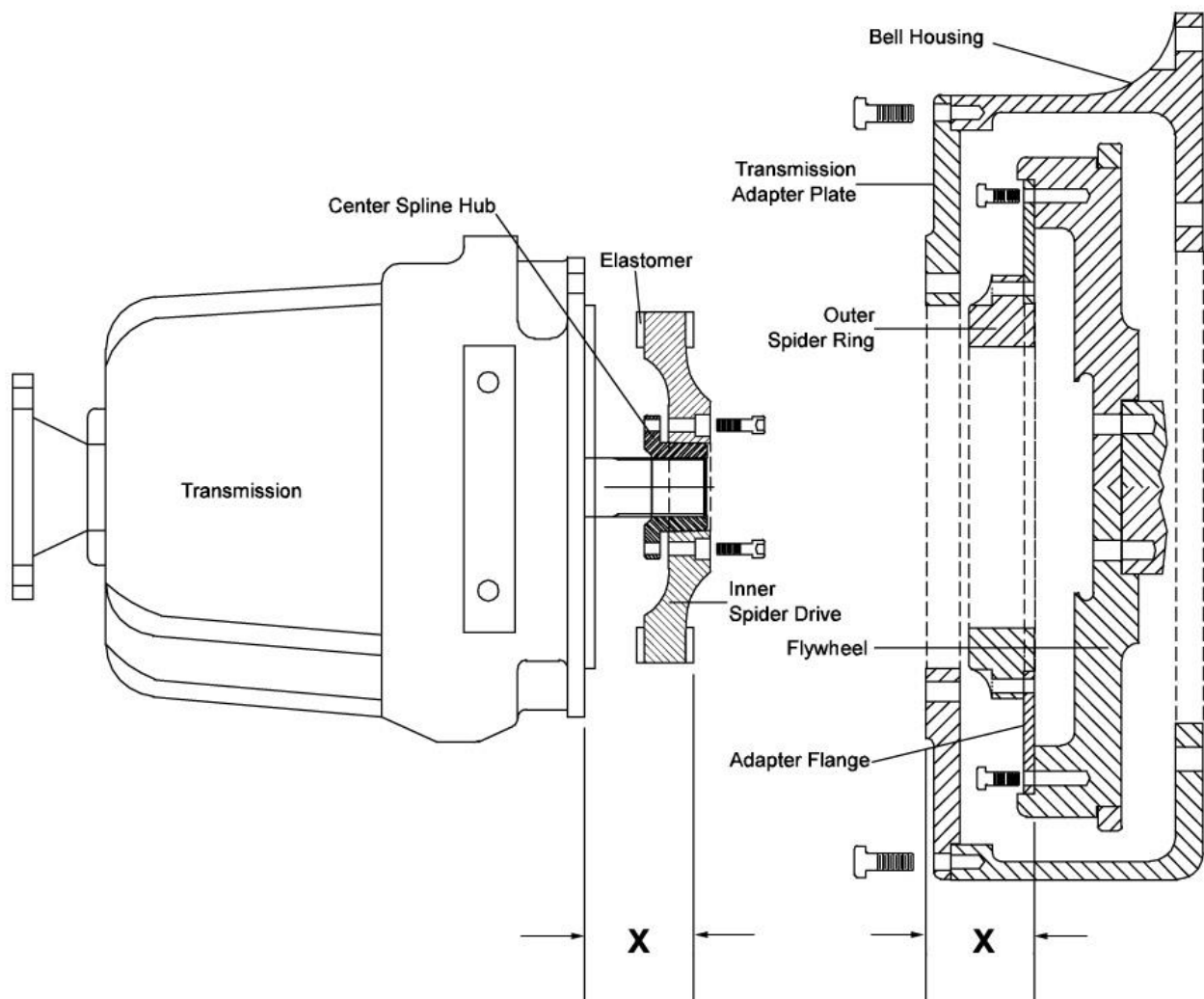


Fig. 2: Mounting Inner Spider Drive to Transmission

Mounting Transmission to Engine

- Mount the transmission complete with the inner spider and transmission adapter plate, you may have to rotate the transmission input shaft in order for the inner spider drive to index with the outer spider ring
- Once indexed the inner spider drive ***should*** engage easily into the outer spider ring

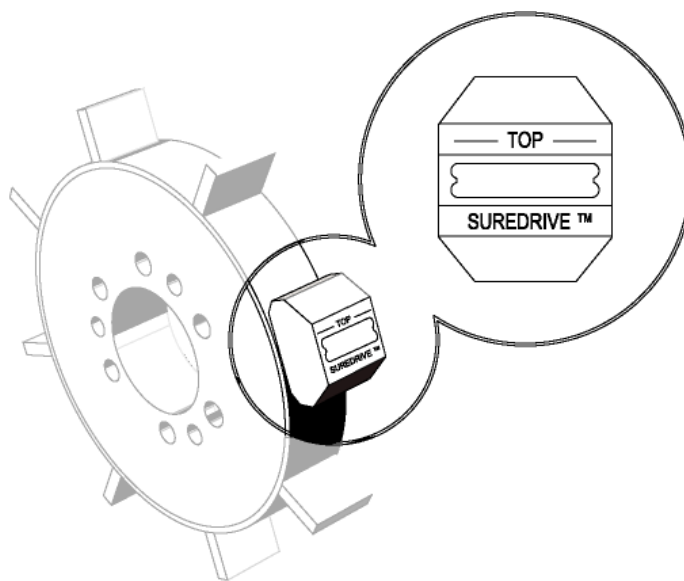
Please note: Forcing the Suredrive™ together without indexing the inner spider drive and outer spider ring could damage the elastomers

Information regarding installation for flywheel without spigot that is not a standard SAE dimension

- Most common (11 ½ or 10)
- Contact the manufacturer

Elastomers

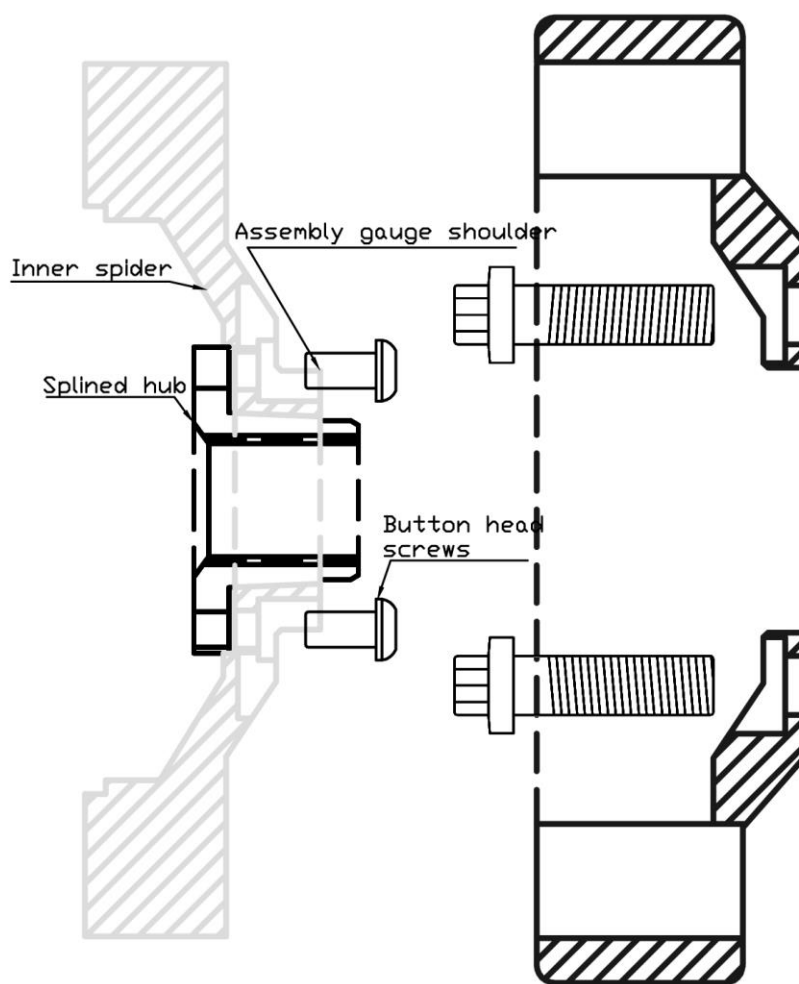
Please Note: Elastomers are marked 'Top'.



MOD04V – Addition to Suredrive Family (Volvo 2001, 2002 & 2003 Series Coupled with Transmission MS2B) – Special Instructions

Suredrive™ Outer Ring Installation

Remove the 8 flywheel retainer bolts and discard the old drive hub. Install Suredrive™ outer drive ring with 8 special bolts (torque to 45 ft-lbs). Installation of outer ring is complete.

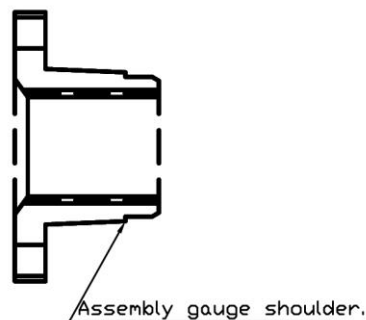


Engage splined hub with transmission input shaft spline - flange side toward transmission. Tap small end of the hub by placing a flat object on the end and tapping

with a hammer until the small end of the hub is in flush with the transmission input shaft outer end.

Please Note: It is important to have the hub correctly located. Make certain the round key is in the groove of the hub and then slide the inner spider onto the hub.

Slightly tap with the handle of the hammer to locate the spider. Then insert the 6 Allen head bolts and engage into the threaded holes in the splined hub flange. To obtain the spline locking onto the transmission worn spline, the bolts need to be tightened in a circular fashion, a quarter of a turn at a time until the outer face of the inner spline is in line with the shoulder located on the splined hub outer end. It is important to force the inner spider to the shoulder of the splined hub or slightly past (See drawing below).



This will provide the positive lockup onto the worn transmission spline. Rotate the transmission by hand to make certain that there is no interference in the assembly. The transmission is ready to be mounted onto the engine and this completes the installation.



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