

## 2.2 Drive Systems

### 2.2.1 Rotary Drive Unit

The rotary drive unit is coupled to the steering mechanism by a chain drive. Most steering gear manufacturers supply special autopilot drive attachments, and many include this facility as standard.

Having selected the position for attachment of the autopilot drive chain it is necessary to determine the chain reduction ratio. Count the number of turns of the steering gears' shaft (this is the driven sprocket) when the rudder is driven from hardover to hardover. Use Fig. 14 to determine the sprocket sizes required.

These reduction ratios will provide good steering performance for most vessels with approximately 10 second and 14 second Hardover-Hardover times for the Type 1 and Type 2 drive units respectively. If the vessel is thought to have unusual steering characteristics, Nautech's Product Support Department or one of our authorised representatives should be contacted for advice.

Standard 3/8" or 1/2" pitch chain is recommended for the chain drive and the drive sprocket ideally should not have less than 15 teeth. Bore and keyway dimensions for the drive unit sprocket are detailed in Fig. 15. It is essential that these bore and keyway dimensions are strictly adhered to. All sprockets must be keyed and grub screwed to their shaft and finally secured with 'Loctite'.

Fig. 14

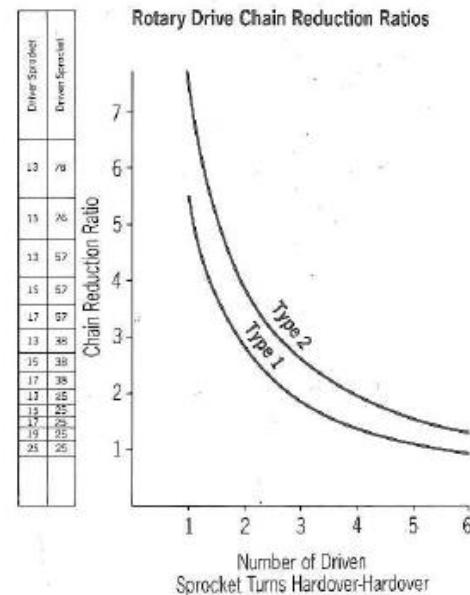
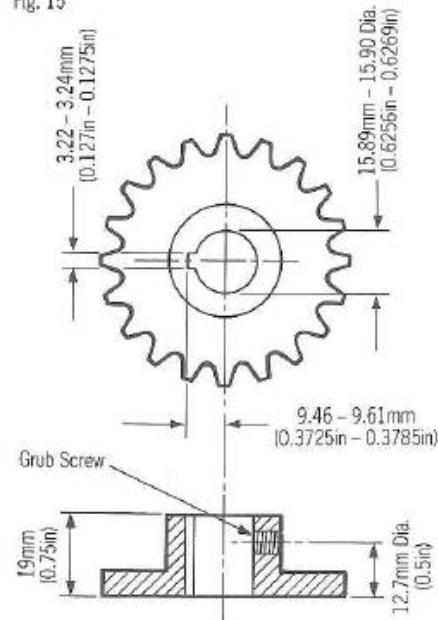


Fig. 15



The drive unit is mounted by bolting to a substantial frame member (Fig. 16). The mounting foot is secured to the drive unit by four equally spaced caphead screws and may be

rotated through 90 deg. to provide a more convenient mounting position if required (Fig. 17). In some cases, it may be necessary to fabricate a special frame to mount the drive unit. It should be noted that chain tension can exceed 230Kgs (500lbs) and thus an extremely rigid mounting structure is vital to maintain good chain alignment. Installation failures can occur in this area and it is desirable to 'over engineer' the drive unit mounting. All fastenings should be secured by lock washers.

Provision must also be made for chain adjustment which is most easily achieved by removable shims placed under the mounting foot or by elongated clearance holes in the mounting frame as illustrated in Figs. 16 and 17.

Fig. 16

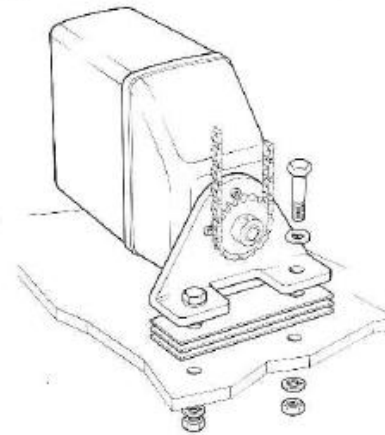


Fig. 17

