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## CLUTCH ALIGNMENT SPECIFICATIONS

When installing a clutch, attention should be paid to all parallel and perpendicular alignment. The life of a clutch can be significantly lengthened if care is taken in its installation.

Just as tires out of alignment work against each other trying to go their own way, a clutch cam and its housing will work against each other if their surfaces are not parallel to each other. Inconsistent pressures exerted against clutch members can cause this misalignment. This forces either a roller to incorrectly engage or disengage at an angle, or for less than four rollers to do the work of all four rollers. Therefore, we would have the torque driving circumference working at three quarter or less efficiency. Results would include nonconcentric overloading and radial elongation causing unchecked strain of all inline transmission systems.

Furthermore, when mounting a complete clutch, (including any customer mounted supplemental members) care should be taken that the end of the clutch and its supplemental member are square or perpendicular to the centerline of the shaft. Without properly squaring these assemblies these assemblies, a compounding run-out effect would result, further causing excessive clutch wear.

Warning signs of misalignment include excessive vibration and/or heat buildup on and around the clutch assemblies, excessive lubricant breakdown, indexing variations and part fracturing (caused by rapid metal expansion and contraction). Part binding is also a telltale sign of misalignment.

Our goal is to provide the most efficient and effective clutch available. But without proper installation, no device can perform to its designed capacity. Careful attention paid to the parallel and perpendicular alignment when installing the clutch will deliver maximum performance.

For further information, please feel free to call.

NOTE: It is recommended on the ratchet arm ends to allow at least 1/16" free play either way on the axial plane. This allows for the cam and the shaft to find their true parallelism with the ratchet housing. Tightening down and restricting the ratchet housing will cause misalignment, run-out and all or some of the problems formerly listed.

## APPLICATION DATA

When supplied by a customer, the outer race will require a hardened and ground service of 16MU and an R/C 60 hardness, .060 deep minimum for optimum performance.

When assemblies with ring are used, a .001 to .002 interference fit is required in the customer's outer member.

### OVER-RUNNING SPEED

Permissible speeds given assume that the outer race over-runs and that good lubrication exists.

## INSTALLATION OF ONE WAY CLUTCHES

### CLUTCH DRIVE CONFIGURATION

Clutches are normally assembled as illustrated so that the housing will drive the cam and thus the shaft in a clockwise direction. They can be easily assembled to drive counter-clockwise per customer specifications.

### GENERAL

When possible, the unit should not be taken apart for assembly onto the shaft. Access to the setscrew in the cam member is provided via the oil hole screw. The setscrew binds the key and the cam to the shaft and positions the clutch axially on the shaft, see Figures 1 & 2.

### LUBRICATION

Two methods of lubrication are used. Grease is generally used in an unsealed unit like the standard one-way sprockets and ratchet arms, see Figure 1, and mineral oil in the sealed types like the over-running clutch of Figure 2. Of course special conditions might change this, since re-lubrication with grease requires removal of one of the covers and sometimes complete teardown and cleaning, while re-lubrication with mineral oil through the oil hole screw is the easiest. So, in some cases, re-lubrication of an unsealed unit with mineral oil would be practical.

### ASSEMBLY WITH GREASE

During initial assembly with grease the rollers and rings are given a light coating prior to introduction of the rollers into the space between the cam and ring. Care must be taken at this point to avoid overstressing the springs. Springs enter easily, if after all springs are inserted halfway, they are worked in gradually while members are manually over-run. Before unit is closed, a volume of grease approximately equal in size to a sphere of the same diameter as the roller is placed on each of the "ramps" adjacent to the rollers as shown in Figure 3.

### ASSEMBLY WITH OIL

Coat all parts with a lube oil such as Standard Oil of Ohio's Factovis 52 prior to assembly and proceed as above. Lubricant is added after closing in compliance with the Lubrication Table.

## STANDARD KEYWAYS

| BORE  | KEYWAY | BORE  | KEYWAY |
|-------|--------|-------|--------|
| 1/4   | 1/16   | 1-3/8 | 5/16   |
| 5/16  | 1/16   | 1-1/2 | 3/8    |
| 3/8   | 3/32   | 1-5/8 | 3/8    |
| 1/2   | 1/8    | 1-3/4 | 3/8    |
| 5/8   | 3/16   | 2     | 1/2    |
| 3/4   | 3/16   | 2-1/4 | 5/8    |
| 7/8   | 3/16   | 2-1/2 | 5/8    |
| 1     | 1/4    | 2-3/4 | 5/8    |
| 1-1/8 | 1/4    | 3     | 3/4    |
| 1-1/4 | 1/4    |       |        |

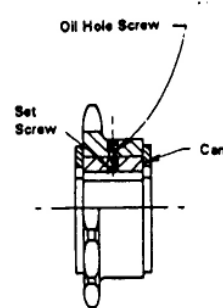


FIGURE 1  
UNSEALED

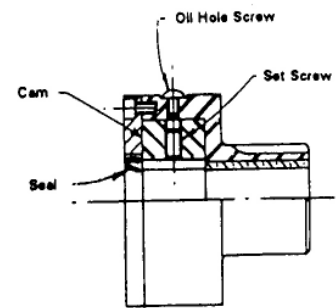


FIGURE 2  
SEALED TYPE

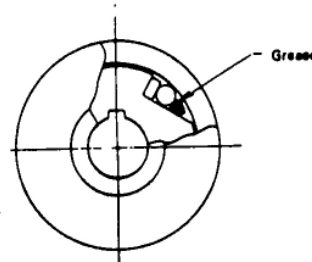


FIGURE 3

### LUBE. TABLE

| SIZE CLUTCH | VOL. OF OIL C.C. |
|-------------|------------------|
| 5           | .05              |
| 14          | 1.5              |
| 28          | 3                |
| 100         | 10               |
| 300         | 30               |