

120 INCH TELESCOPE FALK COUPLING MAINTENANCE



Steelflex® Couplings • Installation and Maintenance

Type T10 • Sizes 1020 - 1140 & 20 - 140 (Page 1 of 6)

How To Use This Manual

This manual provides detailed instructions on maintenance, lubrication, installation, and parts identification. Use the table of contents below to locate required information.

Table of Contents

Introduction	Page 1
Lube Fittings	Page 1
Limited End Float	Page 1
Lubrication	Pages 1-2
Installation & Alignment Instructions	Pages 2-4
Annual Maintenance, Relube & Disassembly	Page 4
Installation & Alignment Data	Page 5
Parts Identification & Parts Interchangeability	Page 6

CAREFULLY FOLLOW THE INSTRUCTIONS IN THIS MANUAL FOR OPTIMUM PERFORMANCE AND TROUBLE FREE SERVICE.

INTRODUCTION

This manual applies to Sizes 1020T thru 1140T and 20T thru 140T10 Falk Steelflex Tapered Grid Couplings. Unless otherwise stated, information for Sizes 1020T thru 1140T applies to Sizes 20T thru 140T respectively, e.g. 1020T = 20T, 1100T = 100T, etc. These couplings are designed to operate in either the horizontal or vertical position without modification. Beginning in 1994, these couplings are being supplied with one set of inch series fasteners and one set of metric fasteners. Use either set of fasteners, depending on your preference. Refer to Page 6 for part interchangeability.

The performance and life of the couplings depend largely upon how you install and service them. Carefully follow the instructions in this manual for optimum performance and trouble free service.

CAUTION: Consult applicable local and national safety codes for proper guarding of rotating members. Observe all safety rules when installing or servicing couplings.

WARNING: Lockout starting switch of prime mover and remove all external loads from drive before installing or servicing couplings.

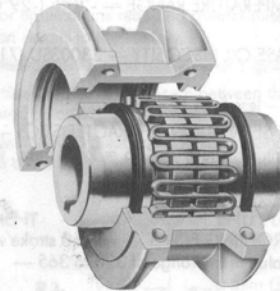
LUBE FITTINGS

Cover halves have 1/8 NPT lube holes. Use a standard grease gun and lube fitting as instructed on Page 4.

LIMITED END FLOAT

When electric motors, generators, engines, compressors and other machines are fitted with sleeve or straight roller bearings, limited axial end float kits are recommended for protecting the bearings. Falk Steelflex couplings are easily modified to limit end float; refer to Manual 428-820 for instructions.

TYPE T10 STEELFLEX COUPLING



LUBRICATION

Adequate lubrication is essential for satisfactory operation. Page 2 provides a list of typical lubricants and specifications for general purpose and long term greases. Because of its superior lubricating characteristics and low centrifuge properties, Falk Long Term Grease (LTG) is highly recommended. Sizes 1020T to 1090T10 are furnished with a pre-measured amount of grease for each coupling. The grease can be ordered for larger size couplings.

The use of general purpose grease requires re-lubrication of the coupling at least annually.

Long Term Grease (LTG)

The high centrifugal forces encountered in couplings separate the base oil and thickener of general purpose greases. Heavy thickener, which has no lubrication qualities, accumulates in the grid-groove area of Steelflex couplings resulting in premature hub or grid failure unless periodic lubrication cycles are maintained.

Falk Long Term Grease (LTG) was developed specifically for couplings. It resists separation of the oil and thickener and is an extreme pressure grease.

Steelflex couplings initially lubricated with LTG will not require re-lubrication until the connected equipment is stopped for servicing. If a coupling leaks grease, is exposed to extreme temperatures, excessive moisture, or experiences frequent reversals, more frequent lubrication may be required.

Although LTG grease is compatible with most other coupling greases, the mixing of greases may dilute the benefits of LTG.

USDA Approval

LTG has the United States Department of Agriculture Food Safety & Inspection Service approval for applications where there is no possibility of contact with edible products. (H-2 ratings).

CAUTION: Do not use LTG in bearings.

The Falk Corp., subsidiary of Sundstrand Corp.
P.O. Box 492, Milwaukee, WI 53201 USA
Telephone: 414-937-4284, Fax: 414-937-4359

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Installation and Maintenance • Steelflex Couplings

(Page 2 of 6) Type T10 • Sizes 1020 – 1140 & 20 – 140



Specifications — Falk LTG

The values shown are typical and slight variations are permissible.
AMBIENT TEMPERATURE RANGE — -20°F (-29°C) to 250°F (121°C).

MINIMUM BASE OIL VISCOSITY — 3300SSU (715cST) @ 100°F (38°C)

THICKENER — less than 12% by weight.

CENTRIFUGE SEPARATION CHARACTERISTICS — ASTM #D4425 (Centrifuge Test) — K36 = 2/24 max., very high resistance to centrifuging.

NLGI GRADE (ASTM D-217) — $\frac{1}{2}$

MINIMUM DROPPING POINT — with 60 stroke worked penetration value in the range of 320 to 365 — 350°F (177°C) min.

MINIMUM TIMKEN O.K. LOAD — 40 lbs.

ADDITIVES — Rust and oxidation inhibitors that do not corrode steel or swell or deteriorate synthetic seals.

Packaging

14 OZ. CARTRIDGES — For use in standard grease guns. Sufficient quantity to initially lubricate sizes thru 1090T.

35 LB. PAIL — Ideal for larger size couplings or many smaller sizes.

120 LB. KEG & 400 LB. DRUM — For plants with central storage areas. A pump with a pressurized follower plate is required for dispensing grease.

CASE LOTS OF 24-14 OZ. CARTRIDGES — also available.

General Purpose Grease

Annual Lubrication — The following specifications and lubricants for general purpose grease apply to Falk Steelflex couplings that are lubricated annually and operate within ambient temperatures of 0°F to 150°F (-18°C to 66°C). For temperatures beyond this range (see Table 1), consult the Factory.

If a coupling leaks grease, is exposed to extreme temperatures, excessive moisture or experiences frequent reversals, more frequent lubrication may be required.

Specifications — General Purpose Coupling Lubricants

The values shown are typical and slight variations are permissible.

DROPPING POINT — 300°F (149°C) or higher.

CONSISTENCY — NLGI No. 2 with 60 stroke worked penetration value in the range of 250 to 300.

SEPARATION AND RESISTANCE — Low oil separation rate and high resistance to separation from centrifuging.

LIQUID CONSTITUENT — Possess good lubricating properties ... equivalent to a high quality, well refined petroleum oil.

INACTIVE — Must not corrode steel or cause swelling or deterioration of synthetic seals.

CLEAN — Free from foreign inclusions.

General Purpose Greases Meeting Falk Specifications

Lubricants listed below are typical products only and should not be construed as exclusive recommendations.

TABLE 1 — General Purpose Greases

Ambient Temperature Range	0°F to 150°F (-18°C to +66°C)	-30°F to 100°F ¹ (-34°C to +38°C)
NLGI Grade	#2	#2
Manufacturer	Lubricant ²	Lubricant ²
Amoco Oil Co.	Amolith Grease #2	Amolith Grease #2
Atlantic Richfield Co.	Litholene HEP 2	Litholene HEP 2
Chevron U.S.A. Inc.	Chevron Dura-Lith EP-2	Chevron Dura-Lith EP 2
Cities Service Co.	Citigo HEP-2	Citigo HEP 2
Conoco Inc.	EP Conolith #2	EP Conolith #2
Exxon Company, USA	Ronex MP	Ronex MP
Gulf Oil Corp.	Gulfcrown Grease #2	Gulfcrown Grease #2
E. F. Houghton & Co.	Cosmolube #2	Cosmolube #1
Imperial Oil Ltd.	Esso MP Grease H	Lotemp EP
Kendall Refining Co.	Kenlube L-421 Grease	Kenlube L-427 Grease
Keystone Div. (Pennwalt)	#81 Light	#84 Light
Mobil Oil Corp.	Mobilux EP 111	Mobilux #1
Phillips Petroleum Co.	IB & RB Grease	Philube IB & RB Grease
Shell Oil Co.	Alvania Grease #2	Alvania Grease #2
Standard Oil Co. (OH)	Factran #2	Factran #2
Sun Oil Company	Prestige 42	Prestige 42
Texaco Lubricants	Starplex HD2	Multifak EP2
Texaco Canada Inc.	Marfak HD 2	Marfak AP
Union Oil Co. (CA)	Union Unoba #2	Union Unoba #2
Valvoline Oil Co.	Val-Lith EP #2	Val-Lith EP #2

¹ For northern climate applications. For continuous operation at constant ambient temperatures less than 0°F (-18°C) — for example, refrigeration systems; consult The Falk Corporation.

² Lubricants listed may not be suitable for use in the food processing industry; check with lube manufacturer for approved lubricants.

INSTALLATION OF TYPE T10 STEELFLEX TAPERED GRID COUPLINGS

Installation

Only standard mechanics tools, wrenches, a straight edge and feeler gauges are required to install Falk Steelflex couplings. Coupling Sizes 1020T thru 1090T are generally furnished for CLEARANCE FIT with setscrew over the keyway. Sizes 1100T and larger are furnished for an INTERFERENCE FIT without a setscrew.

CLEARANCE FIT HUBS — Clean all parts using a non-flammable solvent. Check hubs, shafts and keyways for burrs. Do not heat clearance fit hubs. Install keys, mount hubs with flange face flush with shaft ends or as otherwise specified and tighten setscrews.

INTERFERENCE FIT HUBS — Furnished without setscrews. Heat hubs to a maximum of 275°F (135°C) using an oven, torch, induction heater or an oil bath.

When an oxy-acetylene or blow torch is used, use an excess acetylene mixture. Mark hubs near the center of their length in several places on hub body with a temperature sensitive crayon, 275°F (135°C) melt temperature. Direct flame towards hub bore using constant motion to avoid overheating an area.

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The Falk Corp., subsidiary of Sundstrand Corp.
 P.O. Box 492, Milwaukee, WI 53201 USA
 Telephone: 414-937-4284, Fax: 414-937-4359

120 INCH TELESCOPE FALK COUPLING MAINTENANCE



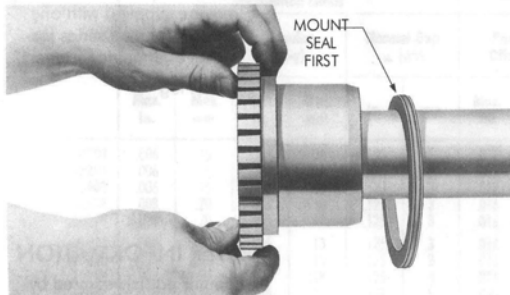
WARNING: If an oil bath is used, the oil must have a flash point of 350°F (177°C) or higher. Do not rest hubs on the bottom of the container. Do not use an open flame in a combustible atmosphere or near combustible materials.

Heat hubs as instructed above. Mount hubs as quickly as possible with hub flange face flush with shaft end. Allow hubs to cool before proceeding. Insert setscrews (if required) and tighten.

Maximize Performance And Life

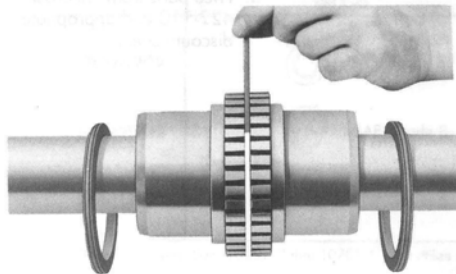
The performance and life of couplings depend largely upon how you install and maintain them. Before installing couplings, make certain that foundations of equipment to be connected meet manufacturers' requirements. Check for soft foot. The use of stainless steel shims is recommended. Measuring misalignment and positioning equipment within alignment tolerances is simplified with an alignment computer. These calculations can also be done graphically or mathematically. Alignment is shown using spacer bar and straight edge. This practice has proven to be adequate for many industrial applications. However, for superior final alignment, the use of dial indicators (see Manual 458-834 for instructions), lasers, alignment computers or graphical analysis is recommended.

1 — Mount Seals And Hubs



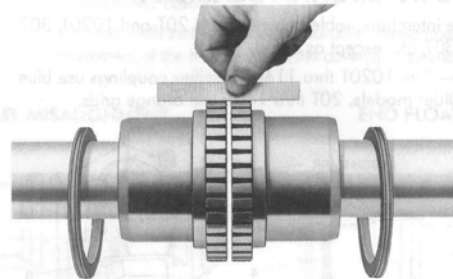
Lock out starting switch of prime mover. Clean all metal parts using a non-flammable solvent. Lightly coat seals with grease and place on shafts BEFORE mounting hubs. Heat interference fit hubs as previously instructed. Seal keyways to prevent leakage. Mount hubs on their respective shafts so the hub face is flush with the end of its shaft unless otherwise indicated. Tighten setscrews when furnished.

2 — Gap and Angular Alignment



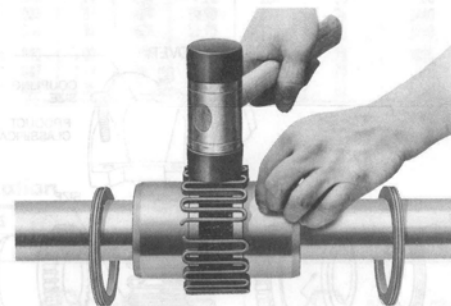
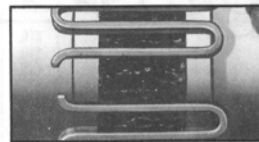
Use a spacer bar equal in thickness to the gap specified in Table 2, Page 5. Insert bar as shown below left, to same depth at 90° intervals and measure clearance between bar and hub face with feelers. The difference in minimum and maximum measurements must not exceed the ANGULAR installation limits specified in Table 2.

3 — Offset Alignment



Align so that a straight edge rests squarely (or within the limits specified in Table 2) on both hubs as shown above and also at 90° intervals. Check with feelers. The clearance must not exceed the PARALLEL OFFSET installation limits specified in Table 2. Tighten all foundation bolts and repeat Steps 2 and 3. Realign coupling if necessary.

4 — Insert Grid



Pack gap and grooves with specified lubricant before inserting grid. When grids are furnished in two or more segments, install them so that all cut ends extend in the same direction (as detailed in the exploded view picture above); this will assure correct grid contact with non-rotating pin in cover halves. Spread the grid slightly to pass over the coupling teeth and seat with a soft mallet.

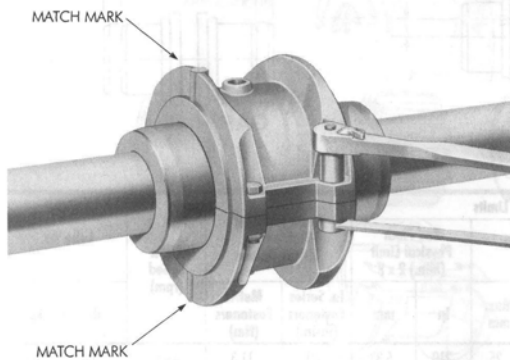
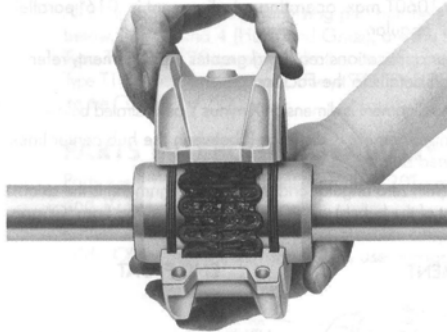
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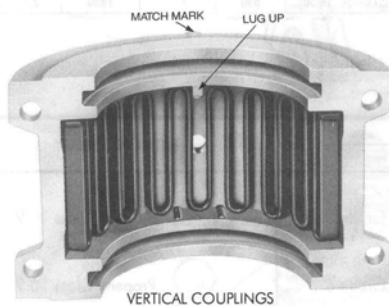
(Page 4 of 6) Type T10 • Sizes 1020 – 1140 & 20 – 140



5 — Pack With Grease And Assemble Covers



Pack the spaces between and around the grid with as much lubricant as possible and wipe off excess flush with top of grid. Position seals on hubs to line up with grooves in cover. Position gaskets on flange of lower cover half and assemble covers so that the match marks are on the same side (see above). If shafts are not level (horizontal) or coupling is to be used vertically, assemble cover halves with the lug and match mark



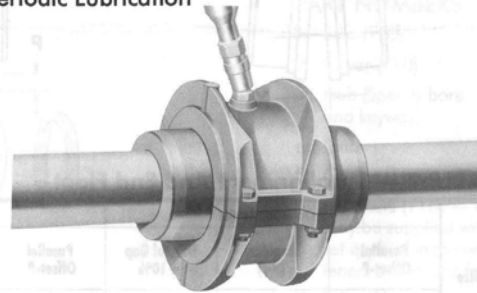
UP or on the high side. Push gaskets in until they stop against the seals and secure cover halves with fasteners, tighten to torque specified in Table 2. Make sure gaskets stay in position during tightening of fasteners. **CAUTION:** Make certain lube plugs are installed before operating.

ANNUAL MAINTENANCE

For extreme or unusual operating conditions, check coupling more frequently.

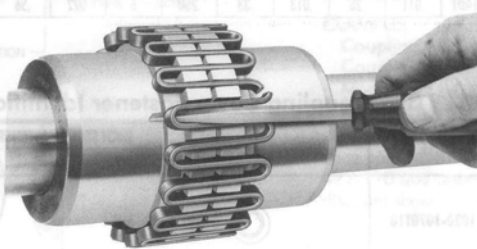
1. Check alignment per steps on Page 3. If the maximum operating misalignment limits are exceeded, realign the coupling to the recommended installation limits. See Table 2 for installation and operating alignment limits.
2. Check tightening torques of all fasteners.
3. Inspect seal ring and gasket to determine if replacement is required. If leaking grease, replace.
4. When connected equipment is serviced, disassemble the coupling and inspect for wear. Replace worn parts. Clean grease from coupling and repack with new grease. Install coupling using new gasket as instructed in this manual.

Periodic Lubrication



The required frequency of lubrication is directly related to the type of lubricant chosen, and the operating conditions. Steelflex couplings lubricated with common industrial lubricants, such as those shown in Table 1, should be relubed annually. The use of Falk Long Term Grease (LTG) will allow relube intervals to be extended to beyond five years. When relubing, remove both lube plugs and insert lube fitting. Fill with recommended lubricant until an excess appears at the opposite hole. **CAUTION:** Make certain all plugs have been inserted after lubricating.

Coupling Disassembly And Grid Removal



Whenever it is necessary to disconnect the coupling, remove the cover halves and grid. A round rod or screwdriver that will conveniently fit into the open loop ends of the grid is required. Begin at the open end of the grid section and insert the rod or screwdriver into the loop ends. Use the teeth adjacent to each loop as a fulcrum and pry the grid out radially in even, gradual stages, proceeding alternately from side to side.

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Steelflex Couplings • Installation and Maintenance

Type T10 • Sizes 1020 – 1140 & 20 – 140 (Page 5 of 6)

TYPE T COUPLING INSTALLATION & ALIGNMENT DATA

Maximum life and minimum maintenance for the coupling and connected machinery will result if couplings are accurately aligned. Coupling life expectancy between initial alignment and maximum operating limits is a function of load, speed and lubrication. Maximum operating values listed in Table 2 are based on cataloged allowable rpm.

Values listed are based upon the use of the gaps listed, standard coupling components, standard assemblies and cataloged allowable speeds.

Values may be combined for an installation or operating condition.

Example: 1060T max. operating misalignment is .016" parallel plus .018" angular.

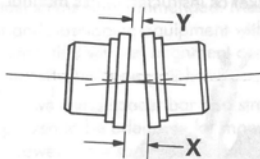
NOTE: For applications requiring greater misalignment, refer application details to the Factory.

Angular misalignment is dimension X minus Y as illustrated below.

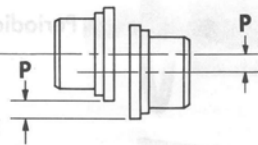
Parallel misalignment is distance P between the hub center lines as illustrated below.

End float (with zero angular and parallel misalignment) is the axial movement of the hubs(s) within the cover(s) measured from "O" gap.

ANGULAR MISALIGNMENT



PARALLEL MISALIGNMENT



END FLOAT

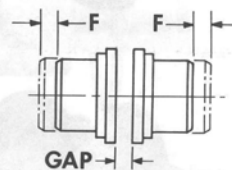


TABLE 2 — Misalignment And End Float

Size	Installation Limits						Operating Limits						Cover Fastener Tightening Torque Values		Allow Speed (rpm)	Lube Wt.	
	Parallel Offset-P		Angular (x-y)		Normal Gap ± 10%		Parallel Offset-P		Angular (x-y)		End Float Physical Limit (Min.) 2 x F		In. Series Fasteners (lb-in.)	Metric Fasteners (Nm)		lb	kg
	Max. In.	Max. mm	Max. In.	Max. mm	In.	mm	Max. In.	Max. mm	Max. In.	Max. mm	In.	mm					
1020T	.006	.15	.003	.08	.125	3	.012	.30	.010	.25	.210	5.33	100	11.3	4500	.06	.03
1030T	.006	.15	.003	.08	.125	3	.012	.30	.012	.30	.198	5.03	100	11.3	4500	.09	.04
1040T	.006	.15	.003	.08	.125	3	.012	.30	.013	.33	.211	5.36	100	11.3	4500	.12	.05
1050T	.008	.20	.004	.10	.125	3	.016	.41	.016	.41	.212	5.38	200	23.6	4500	.15	.07
1060T	.008	.20	.005	.13	.125	3	.016	.41	.018	.46	.258	6.55	200	23.6	4350	.19	.09
1070T	.008	.20	.005	.13	.125	3	.016	.41	.020	.51	.259	6.58	200	23.6	4125	.25	.11
1080T	.008	.20	.006	.15	.125	3	.016	.41	.024	.61	.288	7.32	200	23.6	3600	.38	.17
1090T	.008	.20	.007	.18	.125	3	.016	.41	.028	.71	.286	7.26	200	23.6	3600	.56	.25
1100T	.010	.25	.008	.20	.188	5	.020	.51	.033	.84	.429	10.90	312	35	2440	.94	.43
1110T	.010	.25	.009	.23	.188	5	.020	.51	.036	.91	.429	10.90	312	35	2250	1.1	.51
1120T	.011	.28	.010	.25	.250	6	.022	.56	.040	1.02	.556	14.12	650	73	2025	1.6	.74
1130T	.011	.28	.012	.30	.250	6	.022	.56	.047	1.19	.551	14.00	650	73	1800	2.0	.91
1140T	.011	.28	.013	.33	.250	6	.022	.56	.053	1.35	.571	14.50	650	73	1650	2.5	1.14

TABLE 3 — Coupling Cover Fastener Identification

SIZE	INCH SERIES FASTENERS		METRIC FASTENERS
	Old Style	New Style	
1020-1070T10	SAE Grade 8 ¹	SAE Grade 8	Property Class 10.9
1080-1090T10	SAE Grade 8	SAE Grade 8	Property Class 10.9
1100-1140T10	SAE Grade 5	SAE Grade 5	Property Class 8.8

¹ Older style covers, Sizes 1020T10 thru 1070T10 must utilize socket head cap screws and locknuts held by the cover.

120 INCH TELESCOPE FALK COUPLING MAINTENANCE

Installation and Maintenance • Steelflex Couplings

(Page 6 of 6) Type T10 • Sizes 1020 – 1140 & 20 – 140



PARTS IDENTIFICATION

All coupling parts have identifying part numbers as shown below. Parts 3 and 4 (Hubs and Grids), are the same for both Type T10 and T20 couplings. All other coupling parts are unique to Type T10. When ordering parts, always SPECIFY SIZE and TYPE shown on the COVER.

PARTS INTERCHANGEABILITY

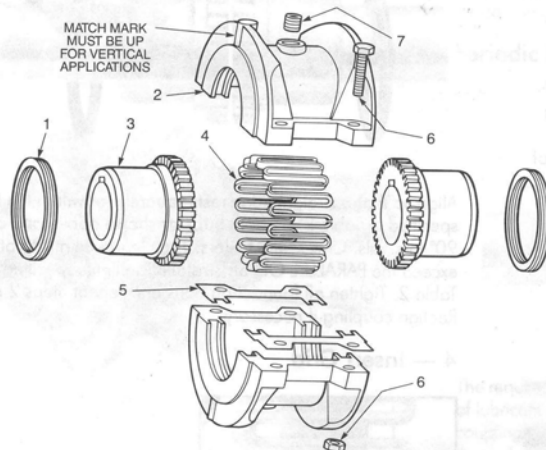
Parts are interchangeable between Sizes 20T and 1020T, 30T and 1030T, etc. except as noted.

GRIDS — Size 1020T thru 1140T Steelflex couplings use blue grids. Older models, 20T thru 140T, use orange grids.

CAUTION: Blue grids may be used in all applications, but DO NOT substitute orange grids for blue.

COVERS — CAUTION: DO NOT mix cover halves of different designs. Sizes 1020T thru 1070T10 covers have been manufactured in several different two-rib designs and 80T thru 140T covers have been manufactured with two and three ribs.

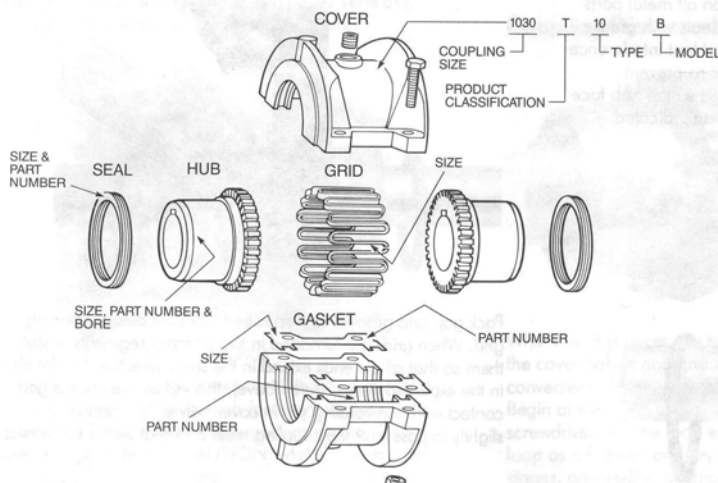
HARDWARE — Older style covers, Sizes 2020T10 thru 1070T10, utilized socket head cap screws with captured locknuts. The new style covers use hex head cap screws (either inch or metric) and unrestrained locknuts. Specify either inch series SOCKET head or inch or metric series HEX head cap screws when ordering replacement parts.



PART NUMBERS

1. Seal (T10)
2. Cover (T10)
3. Hub (Specify bore and keyway)
4. Grid
5. Gasket (T10)
6. Fasteners (T10) — Coupling may be supplied with one set each of inch series fasteners and metric fasteners.
7. Lube Plug

PART NUMBER LOCATION



ORDER INFORMATION

1. Identify part(s) required by name above.
2. Furnish the following information.

EXAMPLE:

Coupling Size: 1030
Coupling Type: T10
Model: B
Bore: 1.375
Keyway: .375 x .187

3. Price parts from Price List 422-110 and appropriate discount sheet.

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