

How to Use This Manual

This manual provides detailed instructions on installation and maintenance of shrink discs on Falk parallel shaft Type ARJ - Sizes 405-555, Types DHJ & DVJ - Sizes M1130-M1210, Type VPJ - Sizes M107-M227 and right angle shaft Types ABRJ & ABRCJ - Sizes 405-555, Types DBT & DXJ - Sizes M1130-M1210 and Type VRJ - Sizes M107-M227.

CAREFULLY FOLLOW THE INSTRUCTIONS IN THIS MANUAL FOR OPTIMUM PERFORMANCE AND TROUBLE FREE SERVICE OF YOUR FALK GEAR DRIVE.

Installation Instructions

New shrink discs are supplied ready for installation. Prior to tightening the locking screws, remove the spacers (used to protect the inner ring during shipment) from between the outer collars. Figure 1 shows a cutaway drawing of a typical shrink disc.

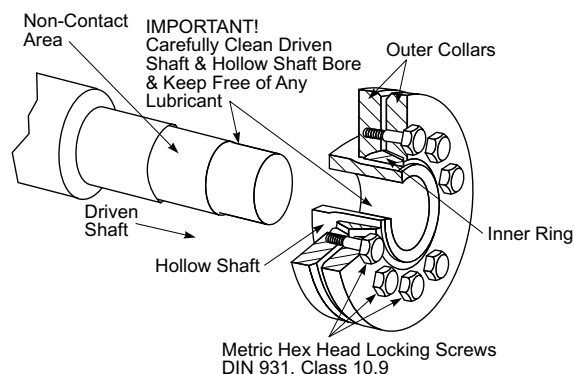


FIGURE 1 - TYPICAL SHRINK DISC

IMPORTANT: Never tighten the shrink disc locking screws unless the driven shaft is inserted into the gear drive hollow shaft with full engagement under the shrink disc. Without the driven shaft in place, plastic deformation of the hollow shaft and shrink disc inner ring can occur. Install using the following procedure:

1. Clean hollow shaft OD and shrink disc inner ring bore. Lightly lubricate hollow shaft OD with light mineral oil. Slide shrink disc onto shaft to its proper position (Figure 2, Page 2). Be certain that inner edge of shrink disc inner ring is not hung up on a shaft radius. Hand tighten three or four locking screws equally spaced around flange while maintaining outer collars parallel. Hand tighten remaining fasteners.
2. Carefully clean hollow shaft bore under shrink disc and driven shaft OD of all lubricants with solvent before assembly of gear drive to driven shaft (Figure 1). Any traces of lubricant left on the driven shaft or hollow shaft bore under the shrink disc will significantly reduce the torque transmission capacity of the shrink disc.
3. Suspend and slide the gear drive into its proper position on the driven shaft (Figure 3, Page 2). Install keeper plate assembly (when used) and tighten fasteners to the torque specified in Table 3 (Inch) or Table 4 (Metric).

4. With shrink disc in its proper position on the gear drive hollow shaft, use a torque wrench and tighten all locking screws ¼ turn at a time, progressing around the flange in either direction until the specified torque is achieved on all locking screws. Maximum outer collar gap variation is listed in Table 1. Locking screw tightening torques are listed in Table 2.

Removal

Remove the drive from the shaft using the following procedure:

1. Loosen locking screws ½ turn at a time progressing around the flange in either direction until the shrink disc is loose on the hollow shaft. Do not completely remove the locking screws.
On vertical drives, support driven shaft before loosening the shrink disc fasteners and removing keeper plate/driven shaft fastener. The keeper plate has a tapped hole for a larger fastener to assist in shaft removal if needed.
2. Suspend gear drive assembly. Disconnect tie rod or drive mounting and slide gear drive off of driven shaft. Clean hollow shaft OD outside of shrink disc and slide shrink disc off of hollow shaft.

Reinstallation

In clean operating conditions, shrink discs can be reused without cleaning and relubricating the inner ring, outer ring tapers and locking screws.

Shrink discs that require cleaning should be thoroughly cleaned. The tapers of the inner ring, tapers of the outer collars and the locking screw threads and head washer faces should be lubricated with molybdenum disulfide grease before reinstallation.

Damaged O-rings should be replaced.

Table 1 — Permissible Outer Collar Gap Variation

SHRINK DISC SIZE	Maximum Collar Gap Variation	
	Inch	mm
24-100	.015	.38
100-260	.032	.81
280-500	.062	1.57

Table 2 — Shrink Disc Locking Screw Tightening Torques, -0%+5%

Screw Size	M5	M6	M8	M10	M12	M16	M20	M24	M27
Head Size (mm)	8	10	13	17	19	24	30	36	41
Torque									
Lb-Ft	3.6	8.7	22	44	74	185	360	620	920
Nm	5	12	30	59	100	250	490	840	1250

Table 3 — ARJ & ABRJ – Keeper Plate Fastener Tightening Torque- Inch

Fastener Location	Keeper Plate/Hollow Shaft			Keeper Plate/Driven Shaft		
	.375	.500	.625	1.25	1.50	2.00 Q
Fastener Size (UNC) Grade 5 Min						
Torque (lb-ft)	28	69	137	1050	1840	5850

* ASTM A354 Gr. BC.

Table 4 — VPJ, VRJ, DHJ, DBJ DVJ & DXJ – Keeper Plate Fastener Tightening Torque - Metric

Fastener Location	Keeper Plate/Hollow Shaft						Keeper Plate/Driven Shaft				
	M6 x 1.00	M8 x 1.25	M10 x 1.50	M12 x 1.75	M16 x 2.00	M20 x 2.50	M24 x 3.00	M30 x 3.50	M36 x 4.00	M48 x 5.00	
Fastener Size (Class 8.8 Min)											
Fastener Torque											
Lb-ft	8	18	36	62	158	305	530	1060	1860	4550	
Nm	10	24	50	84	214	415	705	1440	2520	6150	

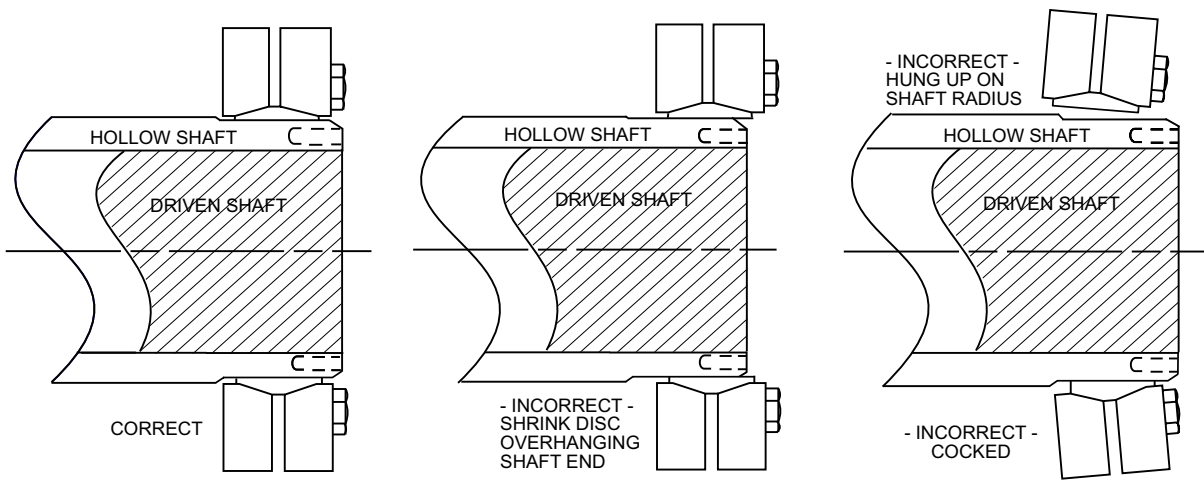


FIGURE 2 - SHRINK DISC LOCATION

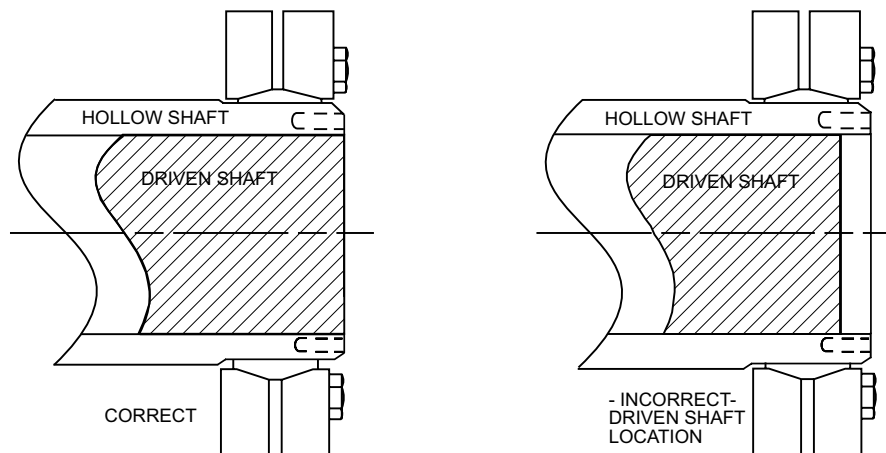
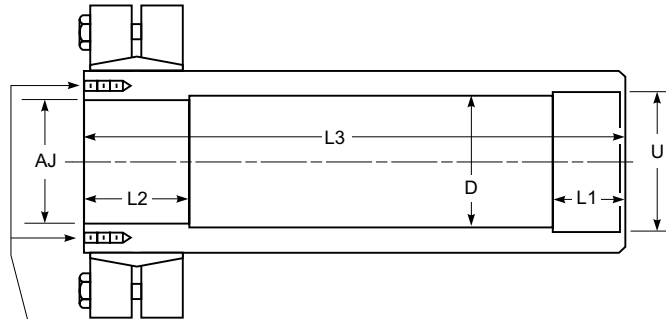


FIGURE 3 - DRIVEN SHAFT LOCATION

Type ARJ & ABRJ

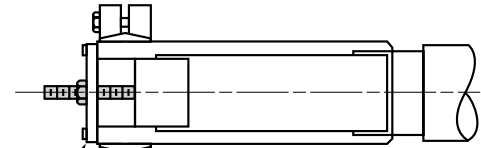
Hollow Low Speed Shaft — Shrink Disc Mounted

The drive package includes the keeper plate and keeper plate retention hardware



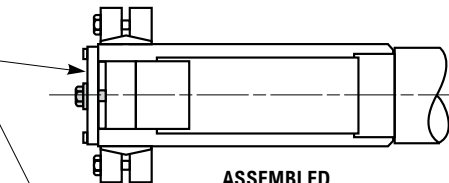
Z - QUANTITY
 ZA - DIA. UNC TAPPED HOLES IN HOLLOW SHAFT
 ZB - DEEP
 Y - DIA. BOLT CIRCLE - EQUALLY SPACED HOLES FOR KEEPER PLATE RETENTION

Installation and removal can be assisted through the use of additional hardware items shown shaded (customer-supplied)

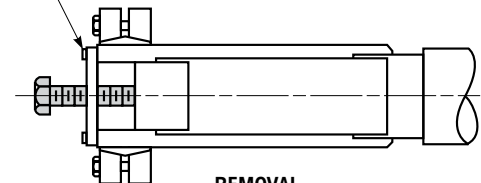


INSTALLATION

A threaded rod is inserted through the keeper plate center hole and into the tapped hole in the end of the driven shaft. The threaded rod, with nut as shown, are used to aid assembly.



ASSEMBLED



REMOVAL

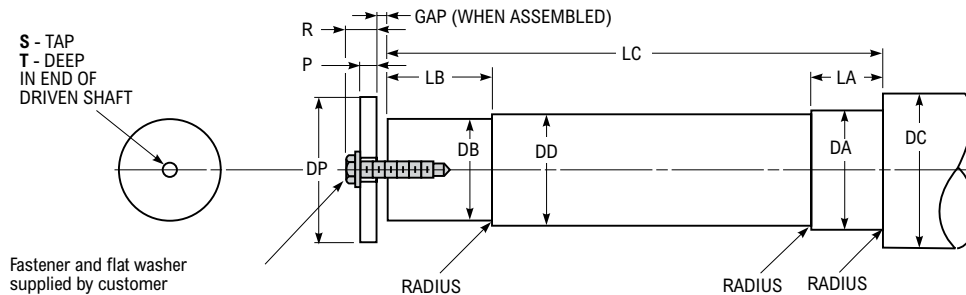
A fastener (larger dia than the

Hollow Low Speed Shaft Dimensions — Inches

DRIVE SIZE ★	AJ † +0.016 -0.000	D	L1	L2	L3	U +0.02 -0.00	Z	ZA	ZB	Y
405	5.2505	5.400	2.50	3.50	24.70	5.500	8	.375-16	.75	6.00
425	6.0005	6.100	3.50	5.00	29.10	6.250	8	.375-16	.75	6.75
445	6.5005	6.600	3.50	6.00	31.80	6.750	6	.500-13	1.00	7.50
465	7.2505	7.400	3.50	6.50	34.10	7.500	6	.500-13	1.00	8.25
485	8.5005	8.625	5.00	8.00	37.30	8.750	6	.500-13	1.00	9.75
505	9.7505	9.880	4.00	8.20	43.37	10.000	6	.625-11	1.25	11.25
535	10.5005	10.600	4.00	9.37	43.24	10.750	8	.625-11	1.25	12.00
555	11.4005	11.450	4.50	9.40	50.27	11.750	12	.625-11	1.25	12.90

★ Dimensions are for reference only and are subject to change without notice unless certified.

† AJ tolerance for Size 485 is +.0020, -.0000.



Fastener and flat washer supplied by customer

Driven Shaft Recommended Dimensions — Inches

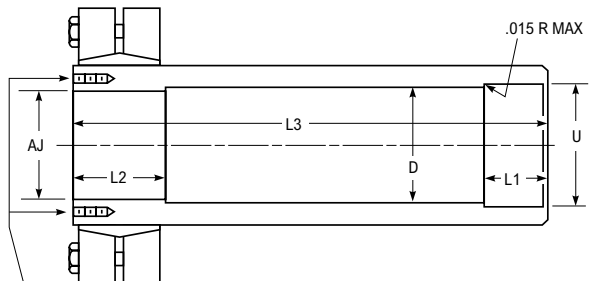
DRIVE SIZE ★	DA +0.000 -0.015	DB +0.00 -0.01	DC Min	DD +0.01 -0.010	Radius Max	LA	LB	LC	DP	P	R	S	T	Fastener Length	Tapped Hole in Center of Keeper Plate	Gap
405	5.500	5.250	6.00	5.312	.125	2.38	3.75	24.58	6.88	.75	1.76	1.250-7	2.50	2.50	1.750-5	0.12
425	6.250	6.000	6.75	6.062	.125	3.38	5.25	28.98	7.62	.75	1.76	1.250-7	2.50	2.50	1.750-5	0.12
445	6.750	6.500	7.25	6.531	.125	3.38	6.25	31.68	8.62	1.00	2.18	1.500-6	3.00	3.00	2.000-4.5	0.12
465	7.500	7.250	8.25	7.312	.125	3.38	6.75	33.98	9.38	1.00	2.18	1.500-6	3.00	3.00	2.000-4.5	0.12
485	8.750	8.500	9.50	8.562	.125	4.88	8.25	37.18	10.88	1.00	2.18	1.500-6	3.00	3.00	2.000-4.5	0.12
505	10.000	9.750	10.75	9.800	.125	3.88	8.40	43.20	12.75	1.25	2.42	1.500-6	3.00	3.25	2.000-4.5	0.17
535	10.750	10.500	11.50	10.520	.125	3.88	9.60	43.00	13.50	1.25	2.75	2.000-4.5	4.00	4.00	2.500-4	0.24
555	11.750	11.400	12.50	11.370	.125	4.38	9.60	50.00	14.30	1.50	3.00	2.000-4.5	4.00	4.00	2.500-4	0.27

★ Dimensions are for reference only and are subject to change without notice unless certified.

Type DHJ, DBJ, DVJ & DXJ

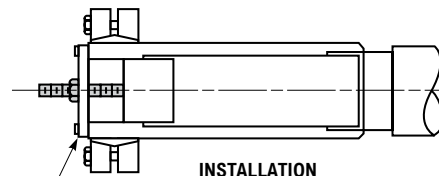
Hollow Low Speed Shaft - Shrink Disc Mounted/Dimensions — Inches

The drive package includes the keeper plate and keeper plate retention hardware



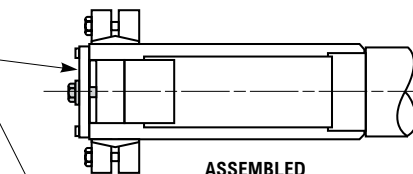
- Z - QUANTITY
- ZA - DIA. TAPPED HOLES IN HOLLOW SHAFT
- ZB - DEEP
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Installation and removal can be assisted through the use of additional hardware items shown shaded (customer-supplied)

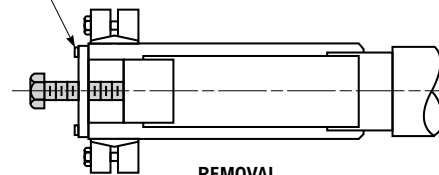


INSTALLATION

A threaded rod is inserted through the keeper plate center hole and into the tapped hole in the end of the driven shaft. The threaded rod, with nut as shown, are used to aid assembly.



ASSEMBLED



REMOVAL

A fastener (larger dia than the

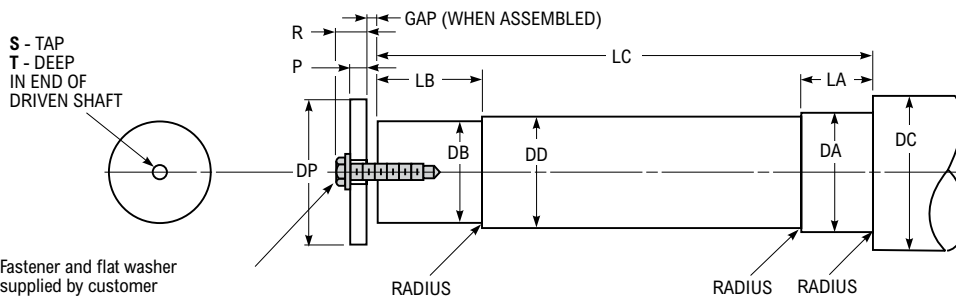
Hollow Low Speed Shaft Dimensions — Inches

DRIVE SIZE ★	AJ †	D	L1	L2	L3	U ‡	Z	ZA	ZB	Y
M1130	3.3465	3.465	2.362	2.362	15.512	3.543	8	M6 x 1-6H	0.472	3.780
M1140	3.9370	4.055	2.559	2.559	17.677	4.134	8	M6 x 1-6H	0.472	4.331
M1150	4.3307	4.449	2.756	2.756	19.191	4.528	8	M8 x 1.25-6H	0.630	4.803
M1160	5.1181	5.236	3.543	3.543	20.628	5.315	8	M10 x 1.50-6H	0.787	5.787
M1170	5.5118	5.630	3.543	3.543	21.181	5.709	8	M10 x 1.50-6H	0.787	6.181
M1180	6.4961	6.614	4.331	4.331	24.724	6.693	6	M12 x 1.75-6H	1.102	7.520
M1190	7.0866	7.205	4.724	4.724	26.694	7.283	6	M12 x 1.75-6H	1.102	8.268
M1200	7.8740	8.071	5.118	5.709	29.921	8.268	6	M12 x 1.75-6H	0.945	9.055
M1210	7.8740	8.071	5.008	5.709	29.921	8.268	6	M12 x 1.75-6H	0.945	9.055

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† J7 tolerance.

‡ H7 tolerance.



Driven Shaft Recommended Dimensions — Inches

DRIVE SIZE ★	DA †	DB ‡	DC Min	DD •	Radius Max	LA	LB	LC	DP	P	R	S	T	Fastener Length	Tapped Hole in Center of Keeper Plate	Gap
M1130	3.5433	3.3465	4.134	3.465	0.118	2.126	2.598	15.354	4.33	0.591	1.22	M20 x 2.5-6H	1.654	2.36	M24 x 3-6H	0.157
M1140	4.1339	3.9370	4.724	4.055	0.118	2.323	2.795	17.520	4.84	0.591	1.34	M24 x 3-6H	1.969	2.76	M30 x 3.5-6H	0.157
M1150	4.5276	4.3307	5.118	4.449	0.118	2.520	2.992	19.016	5.47	0.787	1.54	M24 x 3-6H	1.969	2.95	M30 x 3.5-6H	0.157
M1160	5.3150	5.1181	5.906	5.236	0.118	3.307	3.780	20.472	6.46	0.787	1.54	M24 x 3-6H	1.969	2.95	M36 x 4-6H	0.157
M1170	5.7087	5.5118	6.299	5.630	0.118	3.307	3.780	21.024	6.85	0.787	1.69	M30 x 3.5-6H	2.362	3.15	M42 x 4.5-6H	0.157
M1180	6.6929	6.4961	7.283	6.614	0.118	4.094	4.567	24.567	8.62	0.787	1.89	M36 x 4-6H	2.913	3.54	M48 x 5-6H	0.157
M1190	7.2835	7.0866	7.874	7.205	0.118	4.488	4.961	26.535	9.25	0.748	1.85	M36 x 4-6H	2.913	3.54	M48 x 5-6H	0.157
M1200	8.2677	7.8740	9.055	8.071	0.118	4.882	5.472	29.764	10.16	0.984	2.09	M36 x 4-6H	2.913	3.94	M48 x 5-6H	0.157
M1210	8.2677	7.8740	9.055	8.071	0.118	4.882	5.472	29.764	10.16	0.984	2.09	M36 x 4-6H	2.913	3.94	M48 x 5-6H	0.157

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† h6 tolerance.

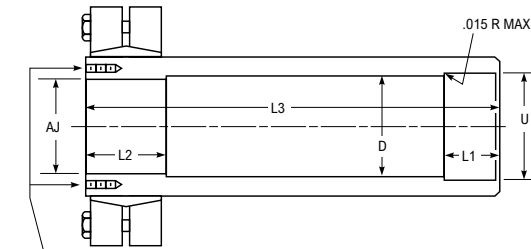
‡ g6 tolerance.

• c11 tolerance.

Type VPJ & VRJ Sizes 107-187

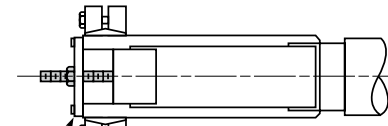
Hollow Low-Speed Shaft — Shrink Disc Mounted/Dimensions — Inches

The drive package includes the keeper plate and keeper plate retention hardware

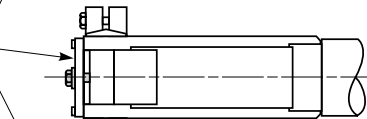


Z - QUANTITY
 ZA - DIA. TAPPED HOLES IN HOLLOW SHAFT
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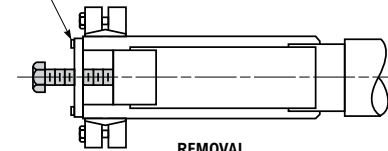
Installation and removal can be assisted through the use of additional hardware items shown shaded (customer-supplied)



INSTALLATION
 A threaded rod is inserted through the keeper plate center hole and into the tapped hole in the end of the driven shaft. The threaded rod, with nut as shown, are used to aid assembly.



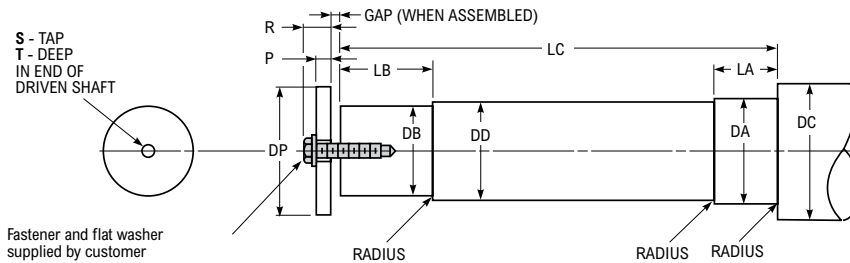
ASSEMBLED



REMOVAL
 A fastener (larger dia than the threaded rod) is threaded into the tapped center hole of the keeper plate and is used to separate the driven shaft from the hollow low-speed shaft of the gear drive.

Hollow Low-Speed Shaft Dimensions — Inches

DRIVE SIZE	AJ	D	L1	L2	L3	U	Z	ZA	ZB	Y
107	3.3465 J7	3.465	2.36	2.36	15.67	3.5433 H7	8	M6 x 1.00	0.47	3.780
117	4.1339 J7	4.252	2.95	2.36	18.19	4.3307 H7	8	M8 x 1.25	0.63	4.803
127	4.9213 J7	5.039	2.76	2.76	19.53	5.1181 H7	8	M8 x 1.25	0.63	5.512
133, 137	5.3150 J7	5.433	3.54	3.54	20.63	5.5118 H7	8	M8 x 1.25	0.63	5.827
143, 145, 147	5.9055 J7	6.024	3.74	3.74	22.17	6.1031 H7	8	M8 x 1.25	0.63	6.575
153, 155, 157	6.4961 J7	6.614	4.33	4.13	24.96	6.6937 H7	6	M12 x 1.75	1.10	7.520
163, 165, 167	7.0866 J7	7.205	4.72	4.13	27.01	7.2835 H7	6	M12 x 1.75	1.10	8.268
173, 175, 177	7.8740 J7	8.071	5.12	4.72	29.92	8.2677 H7	6	M12 x 1.75	0.945	9.055
187	8.0709 J7	8.189	5.12	4.72	29.92	8.2677 H7	6	M12 x 1.75	0.945	9.055



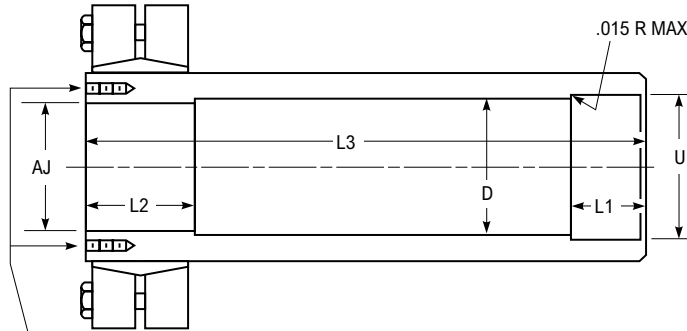
Driven Shaft Recommended Dimensions — Inches

DRIVE SIZE	DA	DB	DC Min	DD	Radius Max	LA	LB	LC	DP	P	R	S	T	Fastener Length	Tapped Hole in Center of Keeper Plate	Gap
107	3.5433 h6	3.3465 g6	4.13	3.4646 c11	0.118	2.13	2.598	15.512	4.33	0.59	1.22	M20 x 2.5	1.57	2.17	M24 x 3.0	0.16
117	4.3307 h6	4.1339 g6	4.92	4.2520 c11	0.118	2.72	2.598	18.031	5.47	0.63	1.38	M24 x 3.0	1.89	2.56	M30 x 3.5	0.16
127	5.1181 h6	4.9213 g6	5.71	5.0394 c11	0.118	2.520	2.992	19.370	6.06	0.75	1.54	M24 x 3.0	1.89	2.76	M30 x 3.5	0.16
133, 137	5.5118 h6	5.3150 g6	6.10	5.4331 c11	0.118	3.307	3.780	20.472	6.46	0.75	1.54	M24 x 3.0	1.89	2.76	M36 x 4.0	0.16
143, 145, 147	6.1024 h6	5.9055 g6	6.69	6.0236 c11	0.118	3.504	3.976	22.008	6.85	0.75	1.69	M30 x 3.5	2.36	3.15	M42 x 4.5	0.16
153, 155, 157	6.6929 h6	6.4950 g6	7.28	6.6142 c11	0.118	4.094	4.370	24.803	8.62	0.75	1.89	M36 x 4.0	2.91	3.54	M48 x 5.0	0.16
163, 165, 167	7.2835 h6	7.0866 g6	7.87	7.2047 c11	0.118	4.488	4.370	26.850	9.25	0.75	1.85	M36 x 4.0	2.913	3.54	M48 x 5.0	0.16
173, 175, 177	8.2677 h6	7.8740 g6	9.06	8.0709 c11	0.118	4.882	4.961	29.764	10.16	1.00	2.09	M36 x 4.0	2.913	3.94	M48 x 5.0	0.16
187	8.2677 h6	8.0709 g6	9.06	8.1890 c11	0.118	4.882	4.961	29.764	10.16	1.00	2.09	M36 x 4.0	2.913	3.94	M48 x 5.0	0.16

Type VPJ & VRJ Sizes 203-227

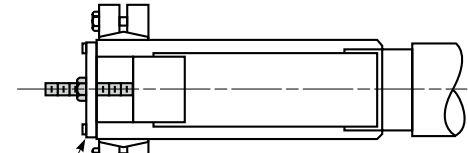
Hollow Low-Speed Shaft — Shrink Disc Mounted/Dimensions — Inches

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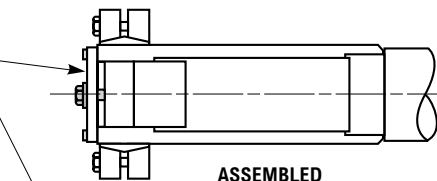


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- ZA - DIA. TAPPED HOLES IN HOLLOW SHAFT
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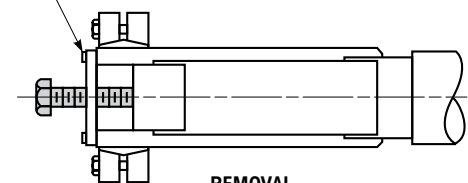
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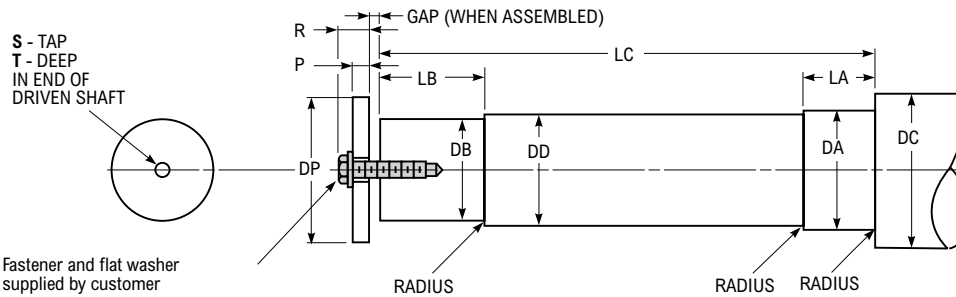
ASSEMBLED



REMOVAL
A fastener (larger dia than the threaded rod) is threaded into the tapped center hole of the keeper plate and is used to separate the driven shaft from the hollow low-speed shaft of the gear drive.

Hollow Low-Speed Shaft Dimensions — Inches

DRIVE SIZE	AJ	D	L1	L2	L3	U	Z	ZA	ZB	Y
203 207	10.2362J7	10.433	7.874	7.480	42.520	10.6299H7	10	M12 x 1.75-6H	0.95	11.417
223 225 227	12.2047J7	12.402	8.071	8.071	47.441	12.5984H7	10	M16 x 2.0-6H	1.26	13.583



Driven Shaft Recommended Dimensions — Inches

DRIVE SIZE	DA	DB	DC Min	DD	Radius Max	LA	LB	LC	DP	P	R	S	T	Fastener Length	Tapped Hole in Center of Keeper Plate	Gap
203 207	10.6299 h6	10.2362 g6	11.614	10.4331 c11	0.157	7.638	7.559	42.362	12.52	1.260	2.76	M48 x 5-6H	3.780	4.72	M64 x 6-6H	0.157
223 225 227	12.5984 h6	12.2047 g6	13.583	12.4016 c11	0.157	7.835	8.150	47.283	14.88	1.260	2.76	M48 x 5-6H	3.780	4.72	M64 x 6-6H	0.157