

# Shaft Repair Kit







## ■ Shaft Repair Kit

### ■ General Description

The shaft repair kit serves as a running surface for rotary shaft lip seals. It consists of a thin-walled cylindrical tube with a mounting flange (see Figure 69). The flange has a design breaking point and can – if it is an obstacle – be removed.

The shaft repair kit has a wall thickness of approximately 0.254 mm and a spiral free ground surface. It is ideally suited as a counter face for rotary shaft lip seals.

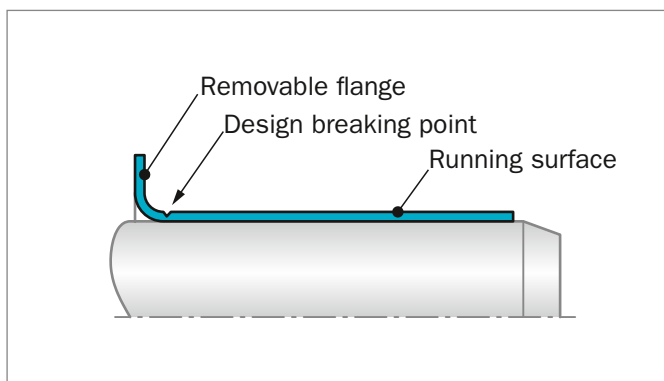


Figure 69: Design of the shaft repair kit

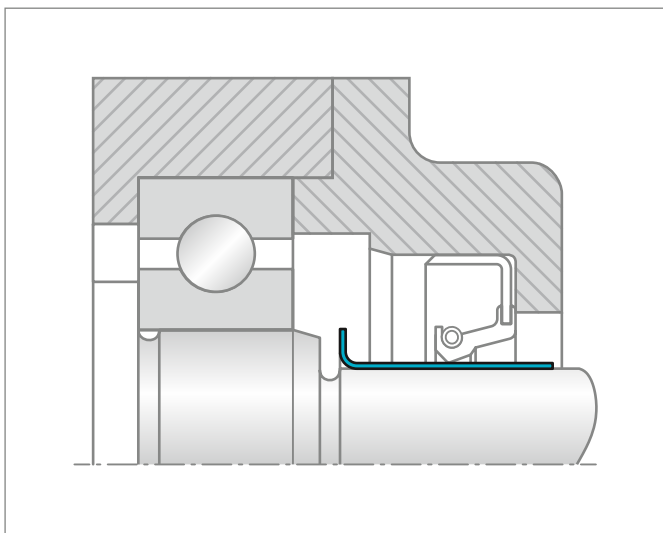


Figure 70: Running surface with shaft repair kit

### ADVANTAGES

- Inexpensive replacement of worn shaft surfaces
- Simple and quick installation with supplied assembly tool
- No alterations to the seal dimensions
- Wear-resistant surface for long service life
- Secure seating due to a force fit

### APPLICATION EXAMPLES

- Repair of worn shaft surfaces
- Used in new designs to save costs for surface treatment

### OPERATING CONDITIONS

<b>Material:</b>	Stainless steel, AISI 304 (1.4301)
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<b>Material Code:</b>	900 V
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<b>Wall thickness:</b>	0.254 mm
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<b>Surface:</b>	Ground spiral-free (Ra = 0.25 ... 0.5 μm)
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<b>Hardness:</b>	95 HRB
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## INSTALLATION INSTRUCTIONS

The shaft repair kit is fitted using the installation tool supplied. The raised mounting flange and the tool supplied ensure an exact fit.

Together they prevent tilting during installation and thus damage to the sealing surface.

Observe the following points before installation:

- Remove dust, dirt, rust, etc. from the damaged running surface
- Repair deep running scores with filling compound, e.g. metal-filled synthetic resin
- Check that the shaft has a lead-in chamfer

## INSTALLATION SEQUENCE

- Check the nominal diameter of the shaft. The oversize to the nominal dimension of the shaft must be taken into consideration
- Place the shaft repair kit with the mounting flange facing forward onto the shaft
- Push on the installation tool
- Push on the shaft repair kit by striking the installation tool with a hammer or use a press
- If necessary, cut the mounting flange using side cutters up to the design breaking point and break off the flange at the line
- Grease the shaft repair kit before fitting the seal

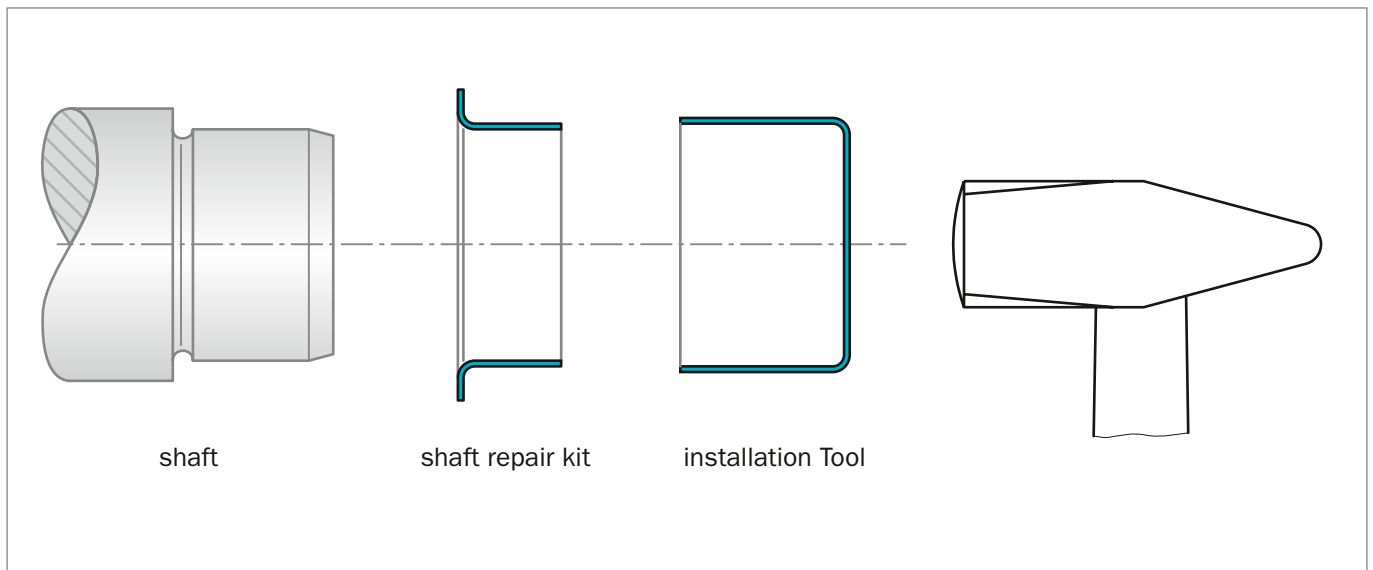


Figure 71: Installation sequence



## ■ Installation Recommendation – Metric Sizes

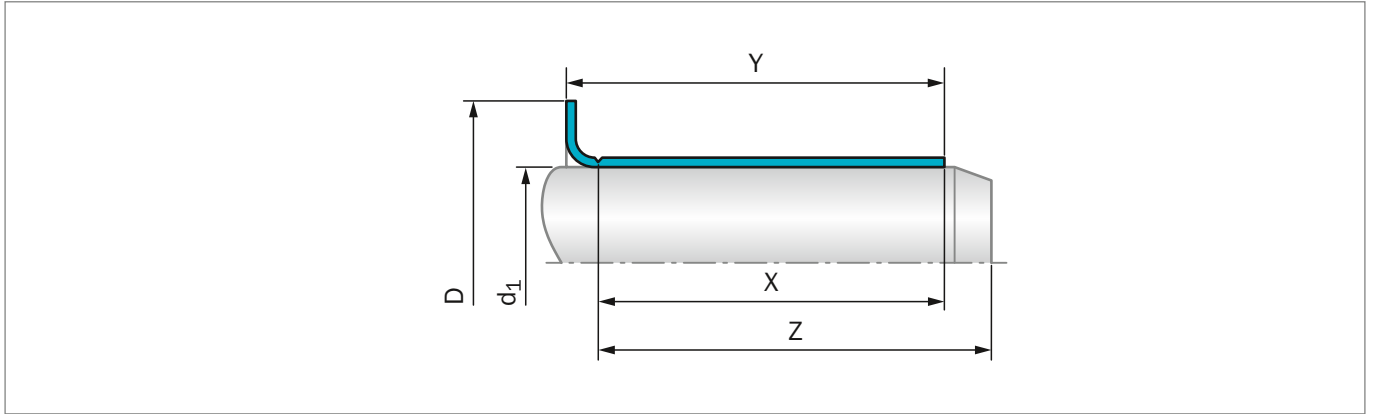


Figure 72: Installation Drawing

**Table 47: Installation Dimensions – Metric**

Shaft Diameter Metric Sizes			Length without Flange	Overall Length	Flange Diameter	Max. Installation Depth	TSS Article No.
Nominal Dia.	Range						
$d_1$	min.	max.	$X \pm 0.8$	$Y \pm 0.8$	$D \pm 1.6$	$Z$	
12.0	11.93	12.07	6.0	8.4	20.0	12.0	TS0099049-900V
15.0	14.96	15.06	5.0	9.0	19.1	11.0	TS0099059-900V
17.0	16.94	17.04	8.0	11.0	22.2	51.0	TS0099068-900V
18.0	17.89	18.00	8.0	11.0	27.0	46.0	TS0099082-900V
20.0	19.94	20.04	8.0	11.0	23.6	51.0	TS0099078-900V
22.0	21.87	22.00	8.0	12.0	30.2	46.0	TS0099085-900V
25.0	24.94	25.04	8.0	11.0	33.0	51.0	TS0099098-900V
26.0	25.87	26.00	8.0	12.0	33.3	46.0	TS0099103-900V
28.0	27.94	28.04	9.5	12.7	34.9	71.0	TS0099111-900V
30.0	29.95	30.07	8.0	11.0	35.6	17.0	TS0099114-900V
32.0	31.93	32.08	8.0	11.1	38.0	18.0	TS0099128-900V
35.0	34.93	35.08	13.0	16.0	41.6	20.0	TS0099139-900V
36.0	35.84	36.00	13.0	17.0	42.9	25.0	TS0099146-900V
38.0	37.84	38.00	13.0	17.0	45.2	25.0	TS0099147-900V
40.0	39.93	40.08	13.0	16.0	47.0	26.0	TS0099157-900V
42.0	41.86	42.00	14.3	17.5	53.0	21.0	TS0099169-900V
45.0	44.93	45.09	14.0	17.0	53.0	21.0	TS0099177-900V
48.0	47.92	48.08	14.0	17.0	56.0	25.0	TS0099189-900V
50.0	49.91	50.06	14.0	17.0	57.0	25.0	TS0099196-900V
55.0	54.91	55.07	20.0	23.0	62.0	32.0	TS0099215-900V
60.0	59.92	60.07	20.0	23.0	70.7	35.0	TS0099235-900V
62.0	61.85	62.00	12.7	15.9	71.8	36.0	TS0099242-900V
65.0	64.92	65.07	20.0	23.0	72.4	35.0	TS0099254-900V
70.0	69.85	70.00	10.3	14.3	79.4	31.0	TS0099272-900V



Shaft Diameter Metric Sizes			Length without Flange	Overall Length	Flange Diameter	Max. Installation Depth	TSS Article No.
Nominal Dia.	Range						
d <sub>1</sub>	min.	max.	X ± 0.8	Y ± 0.8	D ± 1.6	Z	
70.0	69.93	70.08	20.0	24.0	79.4	32.0	<a href="#">TS0099276-900V</a>
75.0	74.93	75.08	22.0	26.0	84.0	33.0	<a href="#">TS0099294-900V</a>
80.0	79.81	80.01	19.1	22.5	89.9	35.0	<a href="#">TS0099313-900V</a>
80.0	79.91	80.09	21.0	24.0	90.0	35.0	<a href="#">TS0099315-900V</a>
85.0	84.78	85.00	21.0	25.0	94.0	35.0	<a href="#">TS0099333-900V</a>
90.0	89.92	90.07	23.0	28.0	101.6	44.0	<a href="#">TS0099354-900V</a>
95.0	94.92	95.07	21.0	24.0	102.2	44.0	<a href="#">TS0099369-900V</a>
100.0	99.85	100.10	20.6	25.4	110.0	52.0	<a href="#">TS0099393-900V</a>
105.0	104.90	105.11	20.0	23.0	113.5	35.0	<a href="#">TS0099413-900V</a>
110.0	109.90	110.10	12.9	16.5	125.0	31.0	<a href="#">TS0099435-900V</a>
115.0	114.88	115.09	20.6	23.8	127.0	32.0	<a href="#">TS0099452-900V</a>
120.0	119.89	120.09	20.0	25.0	129.8	32.0	<a href="#">TS0099473-900V</a>
125.0	124.89	125.10	26.0	32.0	137.2	37.0	<a href="#">TS0099492-900V</a>
130.0	129.98	130.18	22.0	25.3	139.5	33.0	<a href="#">TS0099491-900V</a>
135.0	134.79	135.00	20.5	25.4	149.2	32.0	<a href="#">TS0099533-900V</a>
140.0	139.90	140.11	20.5	25.5	151.0	32.0	<a href="#">TS0099552-900V</a>
150.0	149.75	150.00	26.0	30.0	159.0	34.0	<a href="#">TS0099595-900V</a>
155.0	154.75	155.00	26.0	30.0	167.0	33.0	<a href="#">TS0099606-900V</a>
160.0	159.97	160.23	25.4	31.8	177.8	46.0	<a href="#">TS0099630-900V</a>
165.0	164.97	165.23	25.4	31.8	177.8	44.0	<a href="#">TS0099650-900V</a>
170.0	169.75	170.00	31.8	38.0	182.6	55.0	<a href="#">TS0099640-900V</a>
175.0	174.75	175.00	28.0	32.0	187.0	35.0	<a href="#">TS0099687-900V</a>
180.0	179.76	180.00	33.0	38.0	190.5	45.0	<a href="#">TS0099721-900V</a>
185.0	184.73	185.00	32.0	38.0	199.0	55.0	<a href="#">TS0099726-900V</a>
200.0	199.87	200.13	34.5	38.1	212.7	44.0	<a href="#">TS0099787-900V</a>



## ■ Installation Recommendation – Inch Sizes

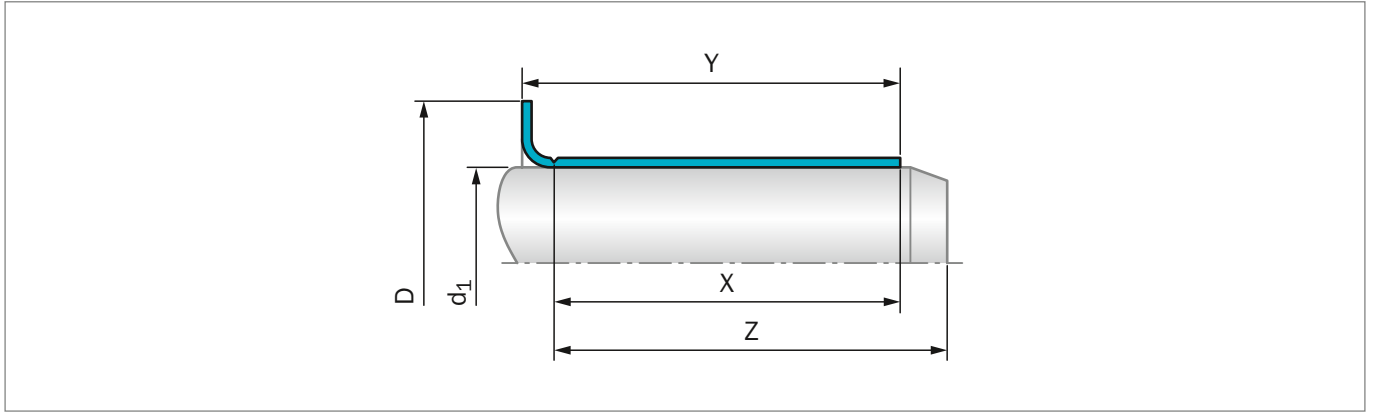


Figure 73: Installation Drawing

**Table 48: Installation Dimensions – Inch**

Shaft Diameter inch Sizes			Length without Flange	Overall Length	Flange Diameter	Max. Installation Depth	TSS Article No.
Nominal Dia.	Range						
$d_1$	min.	max.	$X \pm 0.031$	$Y \pm 0.031$	$D \pm 0.063$	Z	
0.500	0.498	0.502	0.250	0.344	0.610	2.000	<a href="#">TS0099050-900V</a>
0.563	0.560	0.566	0.250	0.391	0.750	1.831	<a href="#">TS0099056-900V</a>
0.625	0.623	0.627	0.313	0.406	0.750	2.000	<a href="#">TS0099062-900V</a>
0.750	0.748	0.752	0.313	0.438	0.945	2.000	<a href="#">TS0099076-900V</a>
0.781	0.780	0.784	0.313	0.438	0.935	2.000	<a href="#">TS0099080-900V</a>
0.859	0.857	0.861	0.250	0.373	1.155	2.000	<a href="#">TS0099086-900V</a>
0.875	0.873	0.877	0.313	0.438	1.094	2.000	<a href="#">TS0099087-900V</a>
0.969	0.966	0.970	0.313	0.438	1.130	2.000	<a href="#">TS0099094-900V</a>
0.969	0.966	0.970	0.625	0.719	1.130	2.000	<a href="#">TS0099096-900V</a>
1.000	0.998	1.002	0.313	0.438	1.219	2.000	<a href="#">TS0099100-900V</a>
1.063	1.060	1.064	0.313	0.438	1.320	2.813	<a href="#">TS0099106-900V</a>
1.125	1.123	1.127	0.313	0.438	1.500	0.688	<a href="#">TS0099112-900V</a>
1.156	1.154	1.158	0.375	0.500	1.350	0.688	<a href="#">TS0099120-900V</a>
1.188	1.185	1.190	0.313	0.438	1.400	0.688	<a href="#">TS0099118-900V</a>
1.240	1.237	1.243	0.315	0.438	1.540	0.688	<a href="#">TS0099141-900V</a>
1.250	1.247	1.253	0.313	0.438	1.500	0.688	<a href="#">TS0099125-900V</a>
1.313	1.308	1.314	0.250	0.375	1.600	0.813	<a href="#">TS0099129-900V</a>
1.313	1.310	1.316	0.500	0.625	1.594	1.813	<a href="#">TS0099131-900V</a>
1.375	1.371	1.377	0.313	0.438	1.638	0.813	<a href="#">TS0099133-900V</a>
1.375	1.371	1.377	0.500	0.625	1.638	0.813	<a href="#">TS0099138-900V</a>
1.438	1.432	1.438	0.563	0.688	1.690	1.016	<a href="#">TS0099143-900V</a>
1.438	1.435	1.441	0.375	0.500	1.781	1.016	<a href="#">TS0099144-900V</a>
1.500	1.497	1.503	0.563	0.688	1.781	1.016	<a href="#">TS0099149-900V</a>
1.500	1.497	1.503	0.375	0.500	1.781	1.016	<a href="#">TS0099150-900V</a>



Shaft Diameter inch Sizes			Length without Flange	Overall Length	Flange Diameter	Max. Installation Depth	TSS Article No.
Nominal Dia.	Range						
d <sub>1</sub>	min.	max.	X ± 0.031	Y ± 0.031	D ± 0.063	Z	
1.563	1.559	1.565	0.563	0.688	1.859	1.016	TS0099156-900V
1.625	1.622	1.628	0.313	0.438	1.875	1.016	TS0099161-900V
1.625	1.623	1.628	0.563	0.688	1.875	0.813	TS0099162-900V
1.688	1.685	1.691	0.313	0.438	1.906	0.875	TS0099167-900V
1.688	1.684	1.690	0.563	0.688	1.906	0.875	TS0099168-900V
1.719	1.715	1.721	0.563	0.688	2.031	0.813	TS0099171-900V
1.750	1.747	1.753	0.375	0.500	2.055	0.813	TS0099172-900V
1.750	1.747	1.753	0.563	0.688	2.063	0.813	TS0099174-900V
1.750	1.747	1.753	0.750	0.875	2.063	0.813	TS0099175-900V
1.750	1.747	1.753	0.531	0.625	2.063	0.812	TS0099180-900V
1.781	1.778	1.784	0.664	0.800	2.125	1.125	TS0099179-900V
1.875	1.872	1.878	0.375	0.516	2.203	1.050	TS0099184-900V
1.875	1.872	1.878	0.563	0.688	2.203	1.000	TS0099187-900V
1.875	1.872	1.878	0.295	0.415	2.203	0.744	TS0099188-900V
1.875	1.872	1.878	0.175	0.295	2.203	0.744	TS0099190-900V
1.938	1.934	1.940	0.563	0.688	2.219	1.000	TS0099193-900V
1.969	1.965	1.971	0.551	0.688	2.244	0.984	TS0099196-900V
2.000	1.997	2.003	0.563	0.688	2.406	1.050	TS0099199-900V
2.000	1.997	2.003	0.875	1.000	2.406	1.000	TS0099200-900V
2.063	2.057	2.063	0.781	0.938	2.469	1.375	TS0099205-900V
2.125	2.123	2.128	0.500	0.750	2.422	1.281	TS0099210-900V
2.125	2.124	2.130	0.781	0.938	2.422	1.375	TS0099212-900V
2.188	2.186	2.192	0.781	0.938	2.500	1.313	TS0099218-900V
2.250	2.249	2.255	0.781	0.938	2.531	1.313	TS0099225-900V
2.250	2.249	2.255	0.313	0.438	2.531	1.313	TS0099227-900V
2.313	2.309	3.315	0.781	0.938	2.688	1.375	TS0099231-900V
2.375	2.369	2.375	0.781	0.938	2.750	1.375	TS0099236-900V
2.375	2.374	2.380	0.781	0.938	2.750	1.375	TS0099237-900V
2.375	2.372	2.378	0.594	0.750	2.750	1.375	TS0099238-900V
2.375	2.374	2.380	0.526	0.683	2.750	1.375	TS0099240-900V
2.438	2.435	2.441	0.500	0.625	2.828	1.425	TS0099242-900V
2.438	2.434	2.440	0.781	0.938	2.828	1.375	TS0099243-900V
2.500	2.500	2.506	0.500	0.656	2.828	1.393	TS0099248-900V
2.500	2.500	2.506	0.781	0.938	2.820	1.375	TS0099250-900V
2.563	2.560	2.566	0.781	0.938	2.850	1.375	TS0099256-900V
2.625	2.622	2.628	0.500	0.625	3.047	1.375	TS0099260-900V
2.625	2.621	2.627	0.781	0.938	3.047	1.375	TS0099262-900V
2.625	2.621	2.627	0.781	0.906	3.047	1.562	TS0099264-900V
2.750	2.747	2.753	1.438	1.625	3.075	1.625	TS0099267-900V
2.750	2.750	2.756	1.125	1.250	3.125	1.313	TS0099269-900V
2.750	2.747	2.753	0.781	0.906	3.125	1.250	TS0099270-900V
2.750	2.750	2.756	0.406	0.563	3.125	1.250	TS0099272-900V





Shaft Diameter inch Sizes			Length without Flange	Overall Length	Flange Diameter	Max. Installation Depth	TSS Article No.
Nominal Dia.	Range						
d <sub>1</sub>	min.	max.	X ± 0.031	Y ± 0.031	D ± 0.063	Z	
2.750	2.745	2.751	0.781	0.938	3.125	1.250	TS0099274-900V
2.750	2.750	2.756	0.781	0.938	3.125	1.250	TS0099275-900V
2.813	2.809	2.815	0.594	0.688	3.188	1.250	TS0099281-900V
2.875	2.873	2.879	0.781	0.938	3.219	1.250	TS0099287-900V
2.938	2.937	2.943	0.781	0.938	3.344	1.250	TS0099293-900V
3.000	2.997	3.003	0.813	0.938	3.240	1.375	TS0099296-900V
3.000	3.000	3.006	0.813	1.000	3.235	1.281	TS0099300-900V
3.000	3.000	3.006	0.625	0.813	3.345	1.063	TS0099303-900V
3.125	3.124	3.132	0.551	0.709	3.525	2.031	TS0099307-900V
3.125	3.120	3.126	0.688	0.813	3.531	2.000	TS0099311-900V
3.125	3.120	3.126	0.813	1.000	3.531	2.000	TS0099312-900V
3.250	3.247	3.253	0.813	1.000	3.594	1.375	TS0099322-900V
3.250	3.250	3.256	0.595	0.719	3.575	1.375	TS0099324-900V
3.250	3.250	3.256	0.813	1.000	3.585	1.375	TS0099325-900V
3.375	3.373	3.379	0.813	1.000	3.695	1.375	TS0099337-900V
3.375	3.373	3.379	0.375	0.500	3.688	1.410	TS0099338-900V
3.438	3.435	3.441	0.781	0.906	3.844	1.406	TS0099339-900V
3.500	3.500	3.506	0.313	0.500	3.825	1.347	TS0099347-900V
3.500	3.500	3.506	0.813	1.000	3.844	1.347	TS0099350-900V
3.563	3.560	3.566	0.813	1.000	3.900	1.750	TS0099356-900V
3.625	3.623	3.629	0.813	1.000	4.031	1.750	TS0099362-900V
3.625	3.623	3.629	0.500	0.625	4.025	1.750	TS0099363-900V
3.688	3.685	3.691	0.813	0.938	4.025	1.750	TS0099365-900V
3.688	3.684	3.690	0.313	0.438	3.830	0.875	TS0099368-900V
3.750	3.750	3.756	0.344	0.500	4.025	1.750	TS0099367-900V
3.750	3.750	3.756	0.688	0.875	4.020	1.875	TS0099372-900V
3.750	3.746	3.752	0.563	0.688	4.025	1.750	TS0099376-900V
3.875	3.873	3.879	0.813	1.000	4.219	1.875	TS0099387-900V
4.000	3.398	4.006	0.600	0.725	4.375	2.050	TS0099395-900V
4.000	3.398	4.006	0.813	1.000	4.375	2.050	TS0099399-900V
4.000	3.398	4.006	0.650	0.775	4.375	1.375	TS0099400-900V
4.000	3.398	4.006	0.500	0.625	4.375	1.375	TS0099401-900V
4.125	4.122	4.130	0.813	1.000	4.420	1.375	TS0099412-900V
4.188	4.183	4.191	0.813	1.000	4.500	1.375	TS0099418-900V
4.234	4.226	4.234	0.781	0.906	4.610	1.438	TS0099423-900V
4.250	4.248	4.256	0.813	1.000	4.610	1.438	TS0099424-900V
4.328	4.327	4.335	0.509	0.650	4.921	1.250	TS0099435-900V
4.375	4.370	4.378	0.813	1.000	4.750	1.650	TS0099437-900V
4.406	4.401	4.409	0.748	0.886	4.750	1.063	TS0099438-900V
4.438	4.434	4.442	1.000	1.142	4.813	1.313	TS0099439-900V
4.500	4.496	4.504	0.813	1.000	4.900	1.250	TS0099450-900V
4.625	4.621	4.629	1.000	1.250	5.063	1.375	TS0099463-900V



Shaft Diameter inch Sizes			Length without Flange	Overall Length	Flange Diameter	Max. Installation Depth	TSS Article No.
Nominal Dia.	Range						
d <sub>1</sub>	min.	max.	X ± 0.031	Y ± 0.031	D ± 0.063	Z	
4.625	4.621	4.628	0.438	0.625	4.875	1.375	TS0099465-900V
4.688	4.685	4.693	0.813	1.000	5.063	1.375	TS0099468-900V
4.750	4.746	4.754	0.500	0.750	5.000	1.500	TS0099475-900V
4.875	4.871	4.879	0.625	0.750	5.250	1.438	TS0099487-900V
5.125	5.117	5.125	0.866	0.996	5.493	1.280	TS0099491-900V
5.125	5.120	5.128	0.813	1.000	5.500	1.250	TS0099513-900V
5.250	5.246	5.254	0.813	1.000	5.560	1.250	TS0099525-900V
5.313	5.307	5.315	0.807	1.000	5.875	1.250	TS0099533-900V
5.375	5.371	5.379	0.813	1.000	5.875	1.250	TS0099537-900V
5.438	5.434	5.442	1.500	1.688	5.750	1.875	TS0099548-900V
5.500	5.498	5.506	0.813	1.000	5.938	1.250	TS0099549-900V
5.750	5.746	5.754	0.813	1.000	6.180	1.750	TS0099575-900V
6.000	5.995	6.003	1.000	1.250	6.375	1.750	TS0099599-900V
6.000	5.995	6.003	0.500	0.750	6.360	1.750	TS0099601-900V
6.063	6.058	6.068	1.024	1.181	6.375	1.299	TS0099605-900V
6.203	6.198	6.208	0.813	1.063	6.625	1.750	TS0099620-900V
6.250	6.245	6.255	1.031	1.250	6.625	1.750	TS0099625-900V
6.500	6.495	6.505	1.000	1.250	7.000	1.750	TS0099650-900V
6.688	6.683	6.693	1.250	1.496	7.188	2.175	TS0099640-900V
6.750	6.745	6.755	0.813	1.063	7.175	1.750	TS0099675-900V
6.688	6.683	6.693	1.250	1.496	7.188	2.175	TS0099640-900V
6.750	6.745	6.755	0.813	1.063	7.175	1.750	TS0099675-900V
7.000	6.995	7.005	1.000	1.250	7.475	1.688	TS0099700-900V
7.250	7.244	7.254	1.250	1.500	7.760	2.175	TS0099725-900V
7.500	7.495	7.505	0.813	1.000	7.875	1.250	TS0099750-900V
7.750	7.745	7.755	1.000	1.313	8.270	1.875	TS0099775-900V
7.875	7.869	7.879	1.359	1.500	8.375	1.750	TS0099787-900V
8.000	7.795	8.005	1.000	1.250	8.375	1.750	TS0099800-900V