



Shaft Repair Kits



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...or phone our special
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CERTIFICATE NUMBER RS00530



Barnwell Shaft Repair Kits

The quickest and most efficient way of performing permanent repairs on seal-worn shafts.

Barnwell offers an extensive range of high quality, easy to install stainless steel wear sleeves, designed to provide fast, low cost solutions.

For more information on our superb range of Sealing Kits, contact your nearest Customer Service Centre, or call our Sales Hotline on **0121 420 0770**.

The problem - rotating shaft wear

Any rotating shaft in contact with a seal is subject to wear. The rate of shaft wear is dictated by a number of factors, but is increased by excessive heat, dust, shaft speed and lack of lubrication. A groove is gradually worn into the shaft by the seal lip, resulting in leakage. The damage to the shaft is permanent; a new seal will leak again in minutes if the shaft is not resurfaced in some way first.

The Choices

Historically, the options have been limited. Replacing the shaft with a new one is both extremely costly and time consuming.

The machinery may require extensive dismantling and could be subject to a long period of downtime. The same applies to removing, remetalling, regrinding and replacing the worn shaft. Fitting a conventional wear sleeve saves time and money, but usually, the repair is only temporary and requires the use of oversize seals.

None of the above routes are ideal.

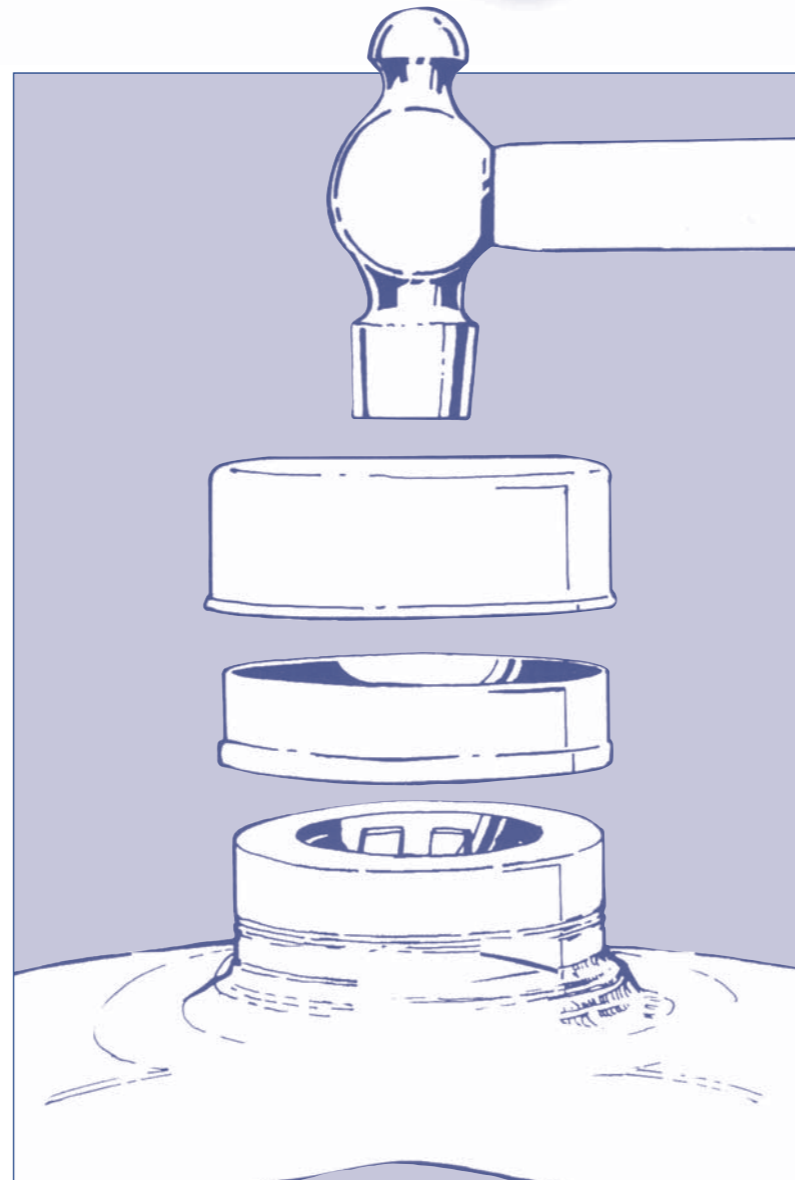
But now, from Barnwell, there's a fast, cost-effective permanent repair alternative for seal worn shafts:

Barnwell Shaft Repair Kits.

Barnwell shaft repair kits are the quickest, most effective way of performing a permanent repair on a seal-worn shaft, without having to subsequently use oversize seals. A wall of ultra thin stainless steel with no machine lead, each sleeve is engineered to form a perfect sealing surface.

An interference fit, the sleeve is pulled down the shaft to cover the seal-worn region, with the aid of a removable flange and an application tool (supplied).

In most cases, because of its design, the sleeve can be installed without removing the shaft - significantly reducing downtime. The sleeve is hardwearing and corrosion free and offers a better quality sealing surface than a new shaft would.



Fitting

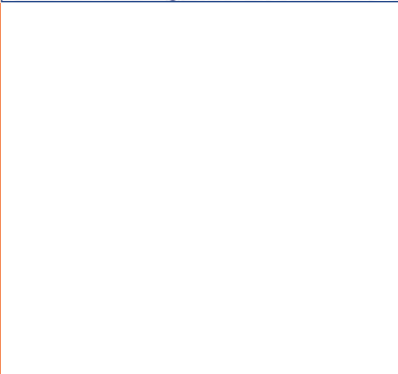
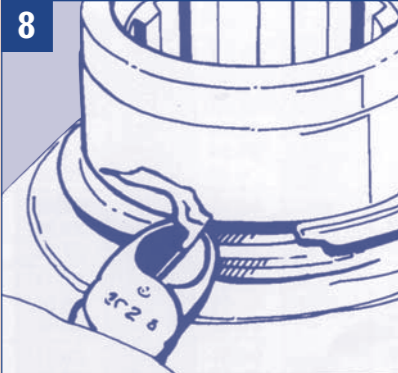
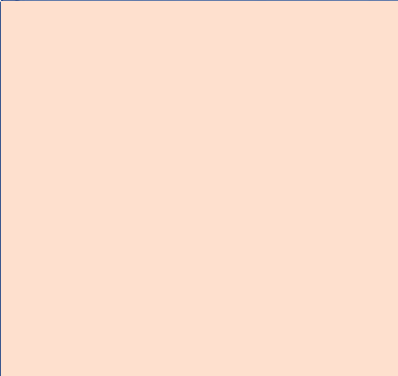
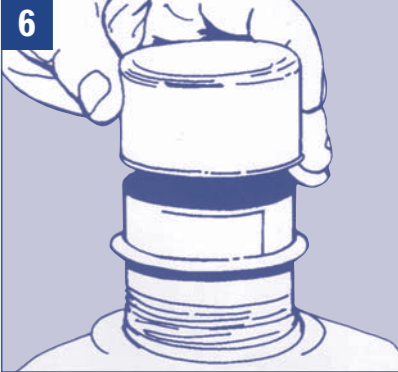
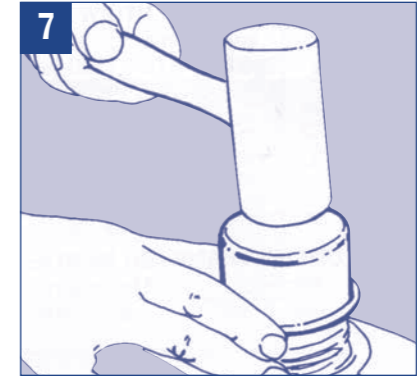
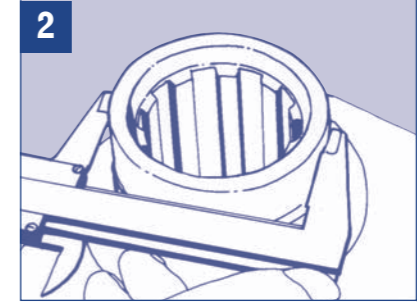
1. Clean the surface where the seal has worn the shaft. File down and polish any burrs or rough spots.
2. Measure in three positions the unworn region of the shaft and average the reading in case the shaft is out of round. Select the appropriate sleeve falling within the diameter range from the table that follows. The sleeves are an interference fit on the shaft. No cement is necessary.
3. If the shaft is deeply scored, fill the groove with epoxy type filler. Install the sleeve before the filler hardens.
4. If the groove does not require filling, apply a light layer of non-hardening sealant to the inner surface of the sleeve.
5. Mark the position the sleeve must occupy on the shaft to cover the wear tracks. The sleeve must be placed over the worn area, not just bottomed or left overhanging the end of the shaft or chamfered end.
6. Place the installation tool over the sleeve. The flange end of the sleeve goes on the shaft first.
7. Gently tap the centre of the tool with a mallet until the sleeve covers the seal worn surface. If the installation tool supplied with the sleeve is too short, a length of pipe or tubing with a squared-off, burr-free end can be substituted.
8. Leave the sleeve flange intact unless clearance is required. Use side cutters to pry the flange away from the seal surface and twist it into a coil. The flange will break loose along the pre-cut line.
9. After the sleeve is installed, check the shaft for burrs (which could damage the seal).
10. Lubricate the end of the sleeve when installing the seal.
11. Proceed with seal and bearing installation.

Removal

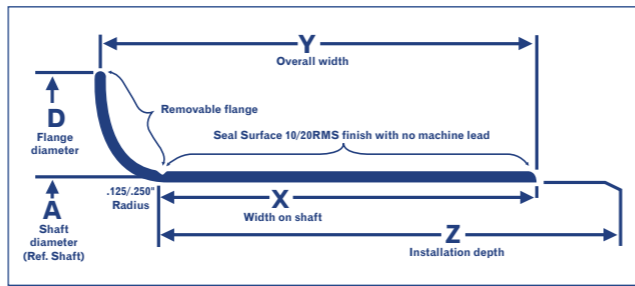
A sleeve can be removed in a number of ways, depending upon personal preference and/or shaft configuration.

Suggested methods are:-

- Heating - which will often cause the sleeve to expand sufficiently to permit removal.
- Wire cutters - which may be effective to "rip" or "tear" the sleeve from the shaft by starting at or near the flange, using a twisting motion.
- Stretching - with the flange removed, use a small ball-peen hammer to "peen" one or more lines across the full width of the sleeve.



Shaft Repair Kit Listing



Inches/Metric

REF SHAFT	REF SHAFT	SHAFT DIAMETER RANGE				STOCK NUMBER	X WIDTH ON SHAFT		Y OVERALL WIDTH		D FLANGE DIAMETER		Z INSTALLATION DEPTH	
		Minimum	Maximum	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
.472	12.00	.469	11.93	.475	12.07	99049	.236	6.0	.331	8.4	.787	20.0	.472	12
.500	12.70	.498	12.65	.502	12.75	99050	.250	6.4	.344	8.7	.610	15.5	2.000	51
.551	14.00	.547	13.89	.551	14.00	99055	.250	6.3	.391	9.9	.750	19.1	1.831	47
.563	14.30	.560	14.22	.566	14.38	99056	.250	6.4	.391	9.9	.750	19.1	1.831	47
.591	15.00	.589	14.96	.593	15.06	99059	.197	5.0	.354	9.0	.750	19.1	.425	11
.625	15.88	.623	15.82	.627	15.92	99062	.313	8.0	.406	10.3	.750	19.1	2.000	51
.630	16.00	.626	15.89	.630	16.00	99058	.313	8.0	.438	11.1	.718	18.2	2.000	51
.669	17.00	.667	16.95	.671	17.05	99068	.313	8.0	.433	11.0	.875	22.2	2.000	51
.684	17.37	.682	17.32	.686	17.42	99060	.313	8.0	.438	11.1	.900	27.0	2.000	51
.706	18.00	.704	17.89	.709	18.00	99082	.313	8.0	.438	11.0	1.063	27.0	1.811	46
.750	19.00	.748	19.00	.752	19.10	99076	.313	8.0	.438	11.1	.945	24.0	2.000	51
.760	19.30	.759	19.28	.761	19.33	99081	.313	8.0	.438	11.1	.938	23.8	2.000	51
.781	19.86	.780	19.81	.784	19.91	99080	.313	8.0	.438	11.1	.935	23.8	2.000	51
.787	20.00	.785	19.95	.789	20.05	99078	.313	8.0	.433	11.0	.930	23.6	2.000	51
.859	21.82	.857	21.77	.861	21.87	99086	.250	6.5	.373	9.5	1.155	29.3	2.000	51
.866	22.00	.861	21.87	.866	22.00	99084	.259	6.6	.359	9.1	1.188	30.2	1.856	47
.866	22.00	.861	21.87	.866	22.00	99085	.315	8.0	.472	12.0	1.188	30.2	1.813	46
.875	22.23	.873	22.17	.877	22.27	99087	.313	8.0	.438	11.1	1.094	27.8	2.000	51
.910	23.11	.908	23.06	.912	23.16	99091	.313	8.0	.438	11.1	1.218	30.9	1.847	47
.945	24.00	.940	23.87	.945	24.00	99092	.313	8.0	.438	11.1	1.130	28.7	2.000	51
.969	24.59	.966	24.54	.970	24.64	99094	.313	8.0	.438	11.1	1.130	28.7	2.000	51
.969	24.59	.966	24.54	.970	24.64	99096	.625	15.9	.719	18.3	1.130	28.7	2.000	51
.984	25.00	.982	24.95	.986	25.05	99098	.313	8.0	.433	11.0	1.300	33.0	2.000	51
1.000	25.40	.998	25.35	1.002	25.45	99100	.313	8.0	.438	11.1	1.219	31.0	2.000	51
1.024	26.00	1.019	25.87	1.024	26.00	99103	.313	8.0	.472	12.0	1.312	33.3	1.813	46
1.063	27.00	1.060	26.92	1.064	27.03	99106	.313	8.0	.438	11.0	1.320	33.5	2.813	72
1.089	27.66	1.087	27.61	1.091	27.71	99108	.313	8.0	.438	11.1	1.406	35.7	.625	16
1.102	28.00	1.100	27.94	1.104	28.04	99111	.375	9.5	.500	12.7	1.375	34.9	2.813	71
1.125	28.58	1.123	28.52	1.127	28.62	99112	.313	8.0	.438	11.1	1.500	38.1	.688	17
1.125	28.58	1.123	28.53	1.127	28.63	99116	.375	9.5	.500	12.7	1.500	38.1	.688	18
1.156	29.36	1.154	29.31	1.158	29.41	99120	.375	9.5	.500	12.7	1.350	34.3	.688	17
1.175	29.85	1.173	29.79	1.178	29.92	99122	.313	8.0	.438	11.1	1.575	40.0	.688	17
1.181	30.00	1.179	29.95	1.184	30.07	99114	.315	8.0	.433	11.0	1.400	35.6	.688	17
1.188	30.15	1.185	30.10	1.190	30.22	99118	.313	8.0	.438	11.0	1.400	35.6	.688	17
1.219	31.00	1.216	30.89	1.222	31.04	99123	.313	8.0	.433	11.0	1.563	39.7	.625	16
1.240	31.50	1.237	31.42	1.243	31.57	99141	.315	8.0	.438	11.1	1.540	39.1	.688	17
1.250	31.75	1.247	31.67	1.253	31.83	99125	.313	8.0	.438	11.1	1.500	38.1	.688	18
1.260	32.00	1.257	31.92	1.263	32.08	99128	.315	8.0	.438	11.1	1.500	38.0	.688	18
1.313	33.30	1.308	33.23	1.314	33.37	99129	.250	6.4	.375	9.5	1.600	40.6	.813	21
1.313	33.35	1.310	33.28	1.316	33.42	99131	.500	12.7	.625	15.9	1.594	40.5	1.813	21
1.375	34.90	1.371	34.82	1.377	34.98	99133	.313	8.0	.438	11.1	1.638	41.6	.813	21
1.375	34.90	1.371	34.82	1.377	34.98	99138	.500	12.7	.625	15.9	1.638	41.6	.813	21
1.375	35.00	1.375	34.92	1.381	35.08	99139	.512	13.0	.630	16.0	1.638	41.6	.813	20
1.417	36.00	1.412	35.84	1.417	36.00	99146	.512	13.0	.669	17.0	1.690	42.9	.984	25
1.438	36.45	1.432	36.37	1.438	36.52	99143	.563	14.3	.688	17.5	1.690	42.9	1.016	26
1.438	36.53	1.435	36.45	1.441	36.60	99144	.375	9.5	.500	12.7	1.781	45.2	1.016	26
1.496	38.00	1.490	37.84	1.496	38.00	99147	.512	13.0	.669	17.0	1.781	45.2	.984	25
1.500	38.10	1.497	38.02	1.503	38.18	99149	.563	14.3	.688	17.5	1.781	45.2	1.016	26
1.500	38.10	1.497	38.02	1.503	38.18	99150	.375	9.5	.500	12.7	1.781	45.2	1.016	26
1.523	38.68	1.520	38.61	1.526	38.76	99152	.438	11.1	.563	14.3	1.859	47.2	1.016	26
1.552	39.42	1.549	39.35	1.555	39.49	99155	.438	11.1	.563	14.3	1.859	47.2	1.016	26
1.563	39.67	1.559	39.60	1.565	39.74	99156	.563	14.3	.688	17.5	1.859	47.2	1.016	26
1.569	39.85	1.566	39.77	1.572	39.93	99159	.625	15.9	.750	19.1	1.859	47.2	1.016	26
1.575	40.00	1.569	39.84	1.575	40.00	99151	.827	21.0	.945	24.0	1.850	47.0	1.000	25
1.578	40.00	1.572	39.92	1.578	40.08	99157	.512	13.0	.630	16.0	1.850	47.0	1.023	26
1.605	40.77	1.602	40.69	1.608	40.84	99160	.500	12.7	.641	16.3	1.938	49.2	1.000	25
1.614	41.00	1.608	40.84	1.614	41.00	99163	.500	12.7	.625	15.9	1.938	49.2	1.016	26
1.625	41.28	1.622	41.20	1.628	41.35	99161	.313	8.0	.438	11.1	1.875	47.6	1.016	26
1.625	41.28	1.623	41.21	1.628	41.35	99162	.563	14.3	.688	17.5	1.875	47.6	.813	21
1.650	42.00	1.647	41.84	1.654	42.00	99166	.445	11.3	.571	14.5	2.087	53.0	.846	22

REF SHAFT	REF SHAFT	SHAFT DIAMETER RANGE				STOCK NUMBER	X WIDTH ON SHAFT		Y OVERALL WIDTH		D FLANGE DIAMETER		Z INSTALLATION DEPTH	
		Minimum	Maximum	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
1.650	42.00	1.647	41.84	1.653	42.00	99169	.563	14.3	.689	17.5	2.087	53.0	.827	21
1.656	42.06	1.653	41.98	1.659	42.14	99165	.550	14.0	.689	17.5	2.087	53.0	.827	21
1.688	42.85	1.684	42.77	1.690	42.93	99168	.563	14.3	.688	17.5	1.906	48.4	.875	22
1.688	42.88	1.685	42.80	1.691	42.95	99167	.313	8.0	.438	11.1	1.906	48.4	.875	22
1.693	43.00	1.687	42.84	1.693	43.00	99182	.500	12.7	.625	15.9	1.906	48.4	.844	21
1.719	43.64	1.715	43.56	1.721	43.71	99171	.563	14.3	.688	17.5	2.031	51.6	.813	21
1.739	44.17	1.736	44.09	1.742	44.25	99170	.375	9.5	.500	12.7	2.063	52.4	.813	21
1.750	44.45	1.747	44.37	1.753	44.53	99172	.375	9.5	.500	12.7	2.055	52.2	.813	21
1.750	44.45	1.747	44.37	1.753	44.53	99180	.531	13.5	.625	15.9	2.063	52.4	.812	21
1.750	44.45	1.747	44.37	1.753	44.53	99174	.563	14.3	.688	17.5	2.063	52.4	.813	21
1.750	44.45	1.747	44.37	1.753	44.53	99175	.750	19.0	.875	22.2	2.063	52.4	.813	21
1.766	44.80	1.761	44.73	1.767	44.87	99176	.563	14.3	.688	17.5	2.063	52.4	.813	21
1.772	45.00	1.769	44.92	1.775	45.08	99177	.551	14.0	.669	17.0	2.087	53.0	.813	21
1.781	45.24	1.778	45.16	1.784	45.31	99179	.664	16.9	.800	20.3	2.125	54.0	1.125	29
1.813	46.00	1.809	45.95	1.815	46.10	99181	.563	14.3	.688	17.5	2.090	53.1	1.000	26
1.859	47.24	1.857	47.17	1.863	47.32	99185	.563	14.3	.688	17.5	2.156	54.8	1.000	25
1.866	47.47	1.866	47.40	1.872	47.55	99186	.889	22.6	1.025	26.0	2.188	55.6	1.000	25
1.875	47.63	1.872	47.55	1.878	47.70	99190	.175	4.5	.295	7.5	2.203	56.0	.744	19
1.875	47.63	1.872	47.55	1.878	47.70	99188	.295	7.5	.415	10.5	2.203	56.0	.744	19
1.875	47.63	1.872	47.55	1.878	47.70	99184	.375	9.5	.516	13.1	2.203	56.0	1.050	27
1.875	47.63	1.872	47.55	1.878	47.70	99187	.563	14.3	.688	17.5	2.203	56.0	1.000	25
1.891	48.00	1.887	47.92	1.893	48.08	99								

REF SHAFT	REF SHAFT	A SHAFT DIAMETER RANGE				STOCK NUMBER	X WIDTH ON SHAFT		Y OVERALL WIDTH		D FLANGE DIAMETER		Z INSTALLATION DEPTH	
		Minimum	Maximum	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
ins	mm	ins	mm	ins	mm		ins ±0.031	mm ±0.8	ins ±0.031	mm ±0.8	ins ±0.063	mm ±1.6	ins	mm
2.756	70.00	2.753	69.92	2.759	70.08	99276	.787	20.0	.945	24.0	3.125	79.4	1.250	32
2.813	71.42	2.809	71.35	2.815	71.50	99281	.594	15.1	.688	17.5	3.188	80.9	1.250	32
2.835	72.00	2.828	71.81	2.835	72.00	99284	.750	19.1	.875	22.2	3.225	81.9	1.343	34
2.844	72.16	2.838	72.08	2.844	72.24	99282	.500	12.7	.656	16.7	3.225	81.9	1.250	32
2.869	72.87	2.866	72.80	2.872	72.94	99286	.781	19.8	.938	23.8	3.188	81.0	1.250	32
2.875	73.00	2.873	72.97	2.879	73.13	99287	.781	19.8	.938	23.8	3.219	81.8	1.250	32
2.938	74.68	2.937	74.60	2.943	74.75	99290	.500	12.7	.641	16.3	3.344	84.9	1.331	34
2.938	74.68	2.937	74.60	2.943	74.75	99293	.781	19.8	.938	23.8	3.344	84.9	1.313	33
2.953	75.00	2.950	74.93	2.956	75.09	99289	.594	15.1	.690	17.5	3.273	83.1	1.083	28
2.953	75.00	2.950	74.92	2.956	75.08	99294	.866	22.0	1.024	26.0	3.305	84.0	1.313	33
2.974	75.54	2.972	75.49	2.976	75.59	99292	.813	20.6	1.000	25.4	3.235	82.2	1.250	32
2.993	76.02	2.990	75.94	2.996	76.10	99291	.484	12.3	.625	15.9	3.359	85.3	1.331	34
2.993	76.00	2.990	75.95	2.996	76.10	99298	.563	14.3	.688	17.5	3.359	85.3	1.375	35
2.993	76.00	2.990	75.95	2.996	76.10	99299	.813	20.6	1.000	25.4	3.350	85.1	1.281	33
3.000	76.20	2.997	76.12	3.003	76.28	99296	.813	20.6	.938	23.8	3.240	82.3	1.375	35
3.000	76.28	3.000	76.20	3.006	76.35	99300	.813	20.6	1.000	25.4	3.235	82.2	1.281	33
3.000	76.28	3.000	76.20	3.006	76.40	99303	.625	15.9	.813	20.6	3.345	85.0	1.063	27
3.011	76.48	3.008	76.40	3.014	76.56	99301	.500	12.7	.625	15.8	3.355	85.2	2.000	51
3.071	78.00	3.064	77.81	3.071	78.00	99306	.750	19.1	.875	22.2	3.468	88.0	2.056	52
3.125	79.32	3.120	79.24	3.126	79.40	99311	.688	17.5	.813	20.6	3.531	89.7	2.000	51
3.125	79.32	3.120	79.25	3.126	79.40	99312	.813	20.6	1.000	25.4	3.531	89.7	2.000	51
3.125	79.44	3.124	79.35	3.131	79.53	99307	.551	14.0	.709	18.0	3.525	89.5	2.031	52
3.146	80.00	3.142	79.81	3.150	80.01	99313	.750	19.1	.886	22.5	3.540	89.9	1.375	35
3.149	80.00	3.146	79.92	3.153	80.08	99315	.827	21.0	.945	24.0	3.543	90.0	1.375	35
3.150	80.00	3.146	79.90	3.153	80.08	99317	.433	11.0	.591	15.0	3.543	90.0	1.375	35
3.250	82.63	3.250	82.55	3.256	82.70	99324	.595	15.1	.719	18.3	3.575	90.8	1.375	35
3.250	82.63	3.250	82.55	3.256	82.70	99325	.813	20.6	1.000	25.4	3.585	91.1	1.375	35
3.250	82.63	3.250	82.55	3.256	82.70	99326	.688	17.5	.875	22.2	3.585	91.1	1.250	32
3.228	82.00	3.225	81.92	3.231	82.07	99328	.612	15.5	.800	20.3	3.585	91.1	1.750	44
3.250	82.55	3.247	82.47	3.253	82.63	99322	.813	20.6	1.000	25.4	3.594	91.3	1.375	35
3.310	84.00	3.307	84.00	3.313	84.15	99331	.813	20.6	1.000	25.4	3.688	93.7	1.375	35
3.342	85.00	3.337	84.76	3.347	85.02	99332	.669	17.0	.827	21.0	3.700	94.0	1.378	35
3.342	85.00	3.337	84.78	3.346	85.00	99333	.827	21.0	.984	25.0	3.700	94.0	1.378	35
3.346	85.00	3.338	84.78	3.346	85.00	99334	.399	10.1	.499	12.7	3.580	90.9	1.431	36
3.375	85.75	3.373	85.67	3.379	85.83	99338	.375	9.5	.500	12.7	3.688	93.7	1.410	36
3.375	85.75	3.373	85.67	3.379	85.83	99337	.813	20.6	1.000	25.4	3.695	93.9	1.375	35
3.438	87.33	3.435	87.25	3.441	87.40	99339	.781	19.8	.906	23.0	3.844	97.6	1.406	36
3.480	88.39	3.477	88.31	3.483	88.47	99340	.781	19.8	.906	23.0	3.835	97.4	1.406	36
3.500	88.98	3.497	88.82	3.503	88.98	99346	.625	15.9	.813	20.6	3.844	97.6	1.347	34
3.500	89.00	3.500	88.90	3.506	89.05	99347	.313	8.0	.500	12.7	3.825	97.2	1.347	34
3.500	89.00	3.500	88.90	3.506	89.05	99350	.813	20.6	1.000	25.4	3.844	97.6	1.347	34
3.504	89.00	3.501	88.93	3.507	89.08	99349	.625	15.9	.813	20.6	3.844	97.6	1.348	34
3.543	90.00	3.540	89.92	3.546	90.08	99353	.526	13.4	.667	16.9	4.000	101.6	1.750	44
3.543	90.00	3.540	89.92	3.546	90.08	99352	.434	11.0	.538	13.7	4.000	101.6	1.813	46
3.543	90.00	3.540	89.92	3.546	90.08	99351	.710	18.0	.906	23.0	4.000	101.6	1.813	46
3.543	90.00	3.540	89.92	3.546	90.08	99354	.906	23.0	1.102	28.0	4.000	101.6	1.750	44
3.563	90.50	3.560	90.42	3.566	90.58	99356	.813	20.6	1.000	25.4	3.900	99.1	1.750	44
3.621	92.00	3.618	91.90	3.624	92.05	99360	.813	20.6	1.000	25.4	4.031	102.4	1.750	44
3.625	92.10	3.623	92.02	3.629	92.18	99363	.500	12.7	.625	15.9	4.025	102.2	1.750	45
3.625	92.10	3.623	92.02	3.629	92.18	99362	.813	20.6	1.000	25.4	4.031	102.4	1.750	44
3.688	93.65	3.684	93.57	3.690	93.73	99368	.313	8.0	.438	11.1	3.830	97.3	.875	22
3.688	93.68	3.685	93.60	3.691	93.75	99365	.813	20.6	.938	23.8	4.025	102.2	1.750	45
3.730	94.74	3.727	94.67	3.733	94.82	99359	.469	12.0	.594	15.1	4.016	102.0	1.719	44
3.730	94.74	3.727	94.66	3.733	94.82	99366	.781	19.8	.906	23.0	4.025	102.2	1.750	45
3.740	95.00	3.737	94.92	3.743	95.08	99369	.827	21.0	.945	24.0	4.025	102.2	1.750	44
3.743	95.00	3.740	95.00	3.746	95.15	99374	.344	8.7	.500	12.7	4.031	102.4	1.750	44
3.743	95.00	3.740	94.99	3.746	95.15	99364	.469	12.0	.594	15.1	4.035	102.5	1.750	45
3.750	95.22	3.746	95.14	3.752	95.30	99376	.563	14.3	.688	17.5	4.025	102.2	1.750	45
3.750	95.33	3.750	95.26	3.756	95.40	99367	.344	8.7	.500	12.7	4.025	102.2	1.750	44
3.750	95.33	3.750	95.26	3.756	95.40	99372	.688	17.5	.875	22.2	4.020	102.1	1.875	48
3.871	98.32	3.868	98.25	3.874	98.40	99386	.813	20.6	1.000	25.4	4.185	106.3	1.875	48
3.875	98.45	3.873	98.37	3.879	98.53	99387	.813	20.6	1.000	25.4	4.219	107.2	1.875	48
3.938	100.00	3.935	99.95	3.941	100.10	99393	.813	20.6	1.000	25.4	4.313	110.0	2.050	52
4.000	101.65	3.998	101.55	4.006	101.75	99395	.600	15.2	.725	18.4	4.375	111.1	2.050	52
4.000	101.65	3.998	101.55	4.006	101.75	99399	.813	20.6	1.000	25.4	4.375	111.1	2.050	52
4.000	101.65	3.998	101.55	4.006	101.75	99400	.650	16.5	.775	19.7	4.375	111.1	1.375	35
4.000	101.65	3.998	101.55	4.006	101.75	99401	.500	12.7	.625	15.9	4.375	111.1	2.066	53
4.094	104.00	4.090	103.90	4.098	104.10	99409	.787	20.0	.945	24.0	4.438	112.7	1.417	36
4.125	104.80	4.122	104.70	4.130	104.90	99412	.813	20.6	1.000	25.4	4.420	113.5	1.375	35
4.134	105.00	4.130	104.90	4.138	105.10	99413	.787	20.0	.906	23.0	4.470	113.5	1.378	35
4.188	106.35	4.183	106.25	4.191	106.45	99418	.813	20.6	1.000	25.4	4.500	114.3	1.375	35
4.234	107.44	4.226	107.34	4.234	107.54	99423	.781	19.8	.906	23.0	4.610	117.1	1.438	37

REF SHAFT	REF SHAFT	A SHAFT DIAMETER RANGE				STOCK NUMBER	X WIDTH ON SHAFT		Y OVERALL WIDTH		D FLANGE DIAMETER		Z INSTALLATION DEPTH	
		Minimum	Maximum	ins	mm		ins	mm	ins	mm	ins	mm	ins	mm
ins	mm	ins	mm	ins	mm		ins ±0.031	mm ±0.8	ins ±0.031	mm ±0.8	ins ±0.063	mm ±1.6	ins	mm
4.250	108.00	4.248	107.90	4.256	108.10	99424	.813	20.6	1.000	25.4	4.610	117.1	1.438	37
4.328	110.00	4.327	109.90	4.335	110.10	99435	.509	12.9	.650	16.5	4.921	125.0	1.250	31
4.331	110.00	4.322	109.78	4.331	110.00	99434	.448	11.4	.589	15.0	4.921	125.0	1.297	33
4.375	111.00	4.370	111.00	4.378	111.20	99437	.813	20.6	1.000	25.4	4.750	120.7	1.650	42
4.406	112.00	4.401	111.80	4.409	112.00	99438	.748	19.0	.886	22.5	4.750	120.7	1.063	27
4.438	112.72	4.434	112.62	4.442	112.83	99439	1.000	25.4	1.142	29.0	4.813	122.2	1.313	33
4.500	114.30	4.496	114.20	4.504	114.40	99450	.813	20.6	1.000	25.4	4.900	124.5	1.250	32
4.527</														