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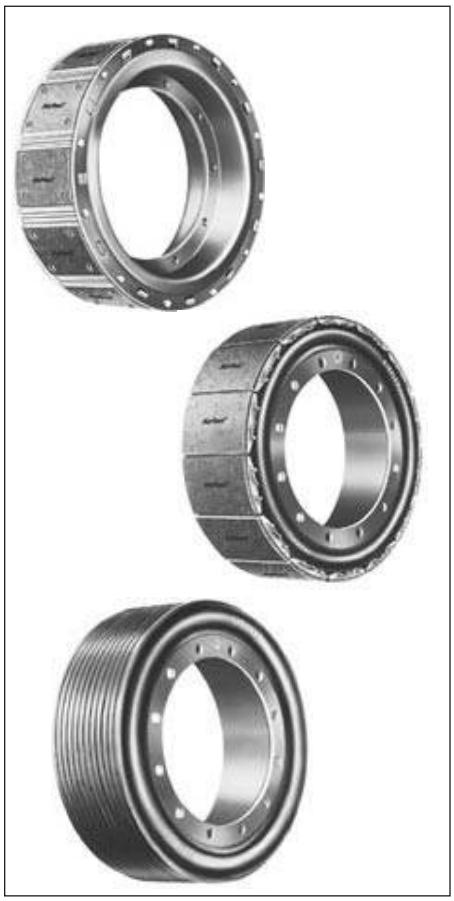
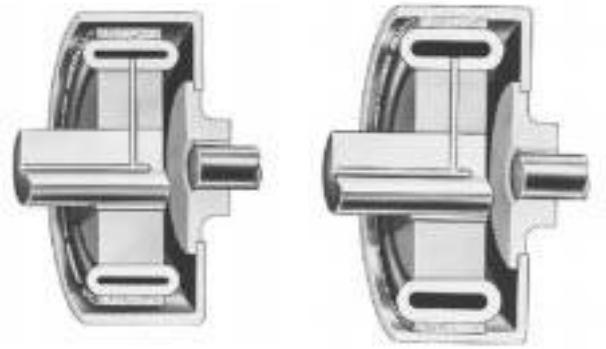


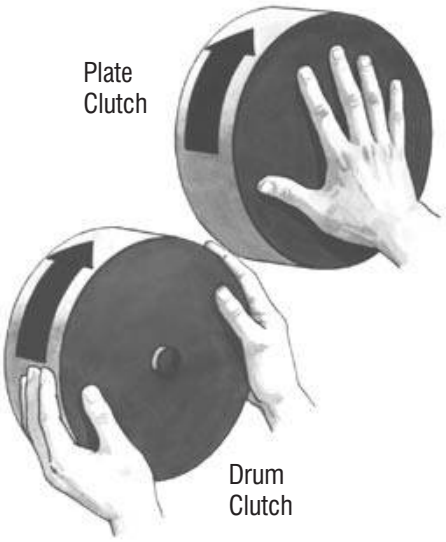
Expanding Type Clutches and Brakes C

How They Work

E, EB, ER and VE elements utilize a rugged tire-like neoprene and cord tube that expands radially outward when pressurized. The expanding tube forces a friction surface against an inner cylindrical drum surface. The rate at which the tube is pressurized determines the rate at which element torque increases. Final tube pressure determines the element torque capacity.

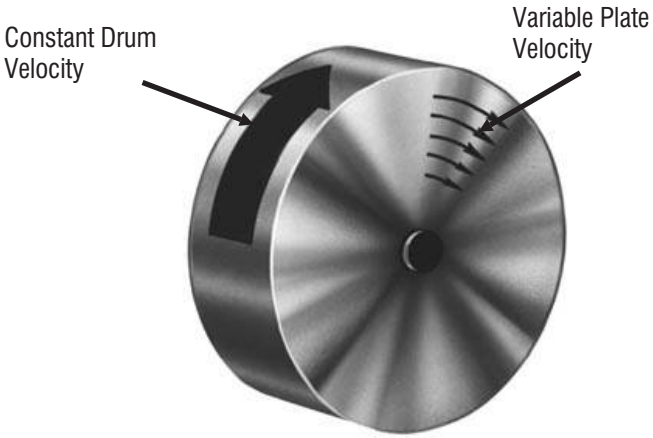


Design Features



- **Force applied at maximum radius from axis**

Airflex expanding elements concentrate the frictional force on the inside drum diameter thereby achieving maximum torque. The torque lever arm is the drum radius, not a reduced radius as occurs in plate clutches. Not only is the force generated at the optimum radius, it is also applied uniformly around the drum circumference.

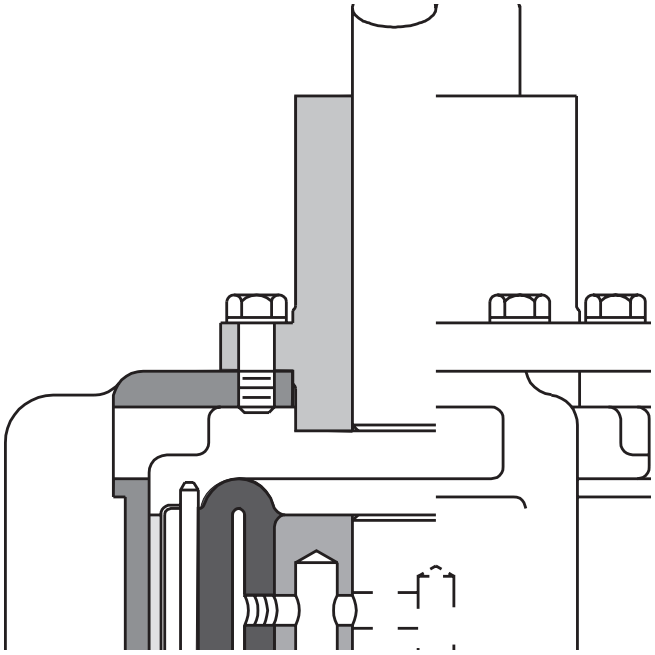


- **Uniform contact velocity**

Friction shoe contact occurs across the cylindrical surface of the drum where the contact velocity is constant unlike plate types where the contact velocity varies across the friction plate face.

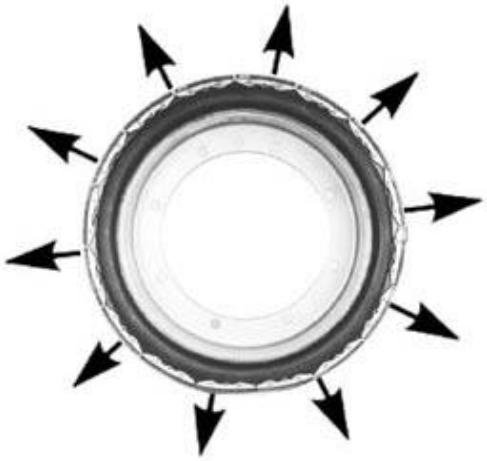
- **Heat Dissipation**

Heat, generated at the inner drum surface, is quickly conducted to the drum's exposed outer surface area where it is dissipated by radiation and convection. This feature is ideal for slip clutch and tension brake applications where heat must be dissipated continuously.



- **Operates in any plane**

Drum design permits operation in any plane. A plate type unit operates best in a vertical plane.



- **Self-adjustment**

As friction surfaces wear, the tube expands further and compensates for the wear. Normal wear will not reduce torque capacity.

- **No lubrication**

There are no close fitting sliding components which require lubrication.

E Element

VE Element

Type E and VE elements combine rugged design and rigid construction features which make them ideal for moderate to heavy duty clutch and brake service. They are suited for medium speed cyclic applications which are subject to large thermal loads. When used with an air agitating ventilated drum they provide excellent slip clutch and tension brake service.

A neoprene rubber and cord tube is contained by two side housings. Friction shoes are held in position on the tube periphery by leaf springs which pass through the shoe back plates and side housings. The springs counteract centrifugal force acting on the shoes and insure shoe disengagement. Torque is transmitted by torque bars which are held in position by the side housings. Pressurizing the tube forces the friction shoes to engage an inside drum diameter.

The expanding design allows the element to behave as a centrifugal clutch. The element's operating speed determines the spring force required to retract the shoes upon tube exhaust. When a large spring force is required, side housings with reinforced spring slots are furnished.

The VE element differs from the E element in that the VE side housings and friction shoe backing plates have open construction and ventilating features which permits a greater flow of cooling air and greater heat dissipation.

Element torque is dependent upon the applied pressure, release spring force and speed. Catalog ratings are given at 75 psi (5,2 bar) and zero rpm. Maximum recommended pressure is 125 psi (8,6 bar). Adjustment for operating pressure, spring force and speed is explained under Selection Procedure.

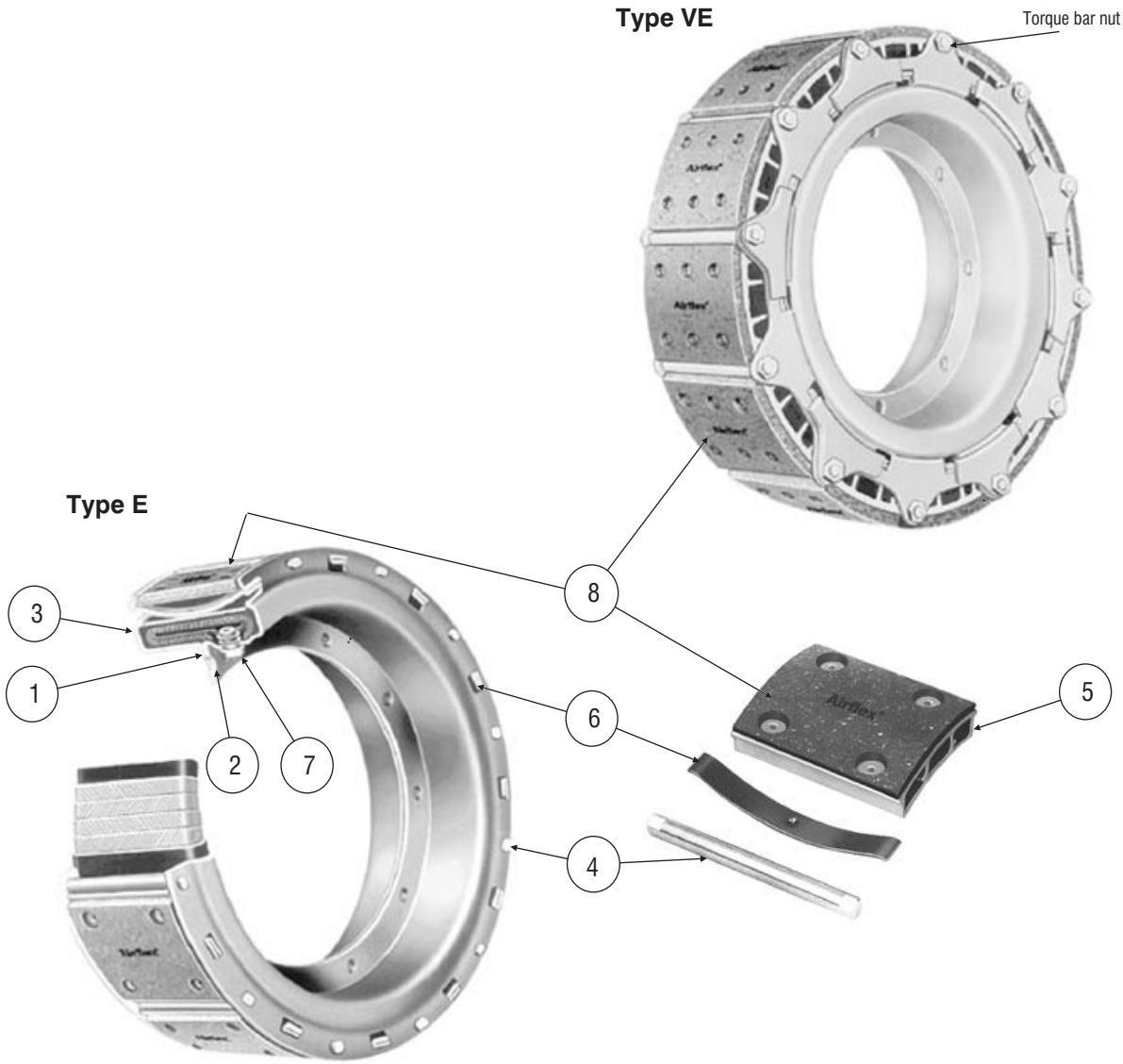
E elements are available in 10 sizes; VE elements in 3 sizes. They are identified by the inside drum diameter in inches to which they expand and the width in inches of their friction lining. For instance, size 16E475 is designed to expand to a 16 inch diameter drum and has a friction lining width of 4.75 inches. The smallest E element will expand to a 12 inch (305 mm) diameter drum and the largest to a 40 inch (1016 mm) diameter drum.

Two elements can be bolted to an adapter ring to form a dual element having twice the torque capacity of a single element.

E elements are available with split side housings. They are used in applications having limited axial access for element maintenance. Butt end actuating tubes are also available for replacement purposes.

Where used:

- Construction Equipment
- Marine Winches
- Metalworking Machinery
- Slip Clutches
- Tension Brakes



Size	Torque Rating	
	English	SI
	lb•in @ 75 psi	N•m @ 5,2 bar
12E475	11300	1280
14E475	16000	1810
16E475	21500	2430
19E475	31500	3560
21.5E475	40500	4580
24E475	52000	5880
27E475	67000	7570
30E600	106000	12000
34E600	137000	15500
40E700	225000	25400
19VE475	25500	2880
24VE475	45200	5110
27VE475	58500	6610

Item	Component Description
1	Housing half
2	Housing half with valve hole
3	Tube
4	Torque bar (nuts required for VE)
5	Friction shoe assembly
6	Release spring
7	Tube nut
8	Friction block & rivet kit
4,5,6	Torque bars, friction shoes & release springs kit

English		lb·in @ 75 psi	rpm	psi/rpm²	lb·ft²	lb	in²	in	in	in³	in
12E475	142314	11300	1800	1.0 E-06	5	25	151	0.18	0.06	50	12.09
14E475	142213	16000	1500	1.2 E-06	8	32	139	0.37	0.18	55	14.09
16E475	142214	21500	1300	1.3 E-06	14	42	167	0.37	0.18	70	16.09
19E475	142215	31500	1100	2.1 E-06	26	53	202	0.37	0.18	85	19.13
21.5E475	142395	40500	975	2.4 E-06	39	60	236	0.37	0.18	100	21.63
24E475	142216	52000	875	2.2 E-06	56	67	257	0.37	0.18	110	24.13
27E475	142334	67000	775	2.4 E-06	79	75	289	0.37	0.18	125	27.18
30E600	142336	106000	700	4.1 E-06	160	125	434	0.37	0.18	175	30.18
34E600	142335	137000	620	4.3 E-06	261	156	496	0.37	0.18	310	34.18
40E700	142452	225000	525	9.1 E-06	520	174	864	1.25	1.06	315	40.18

Size	❶ Part Number	M_t ❷❻ Torque Rating	❼ Maximum Speed	C_3 Centrifugal Gain Constant	Wk^2 J	Weight Mass	Friction Area	Lining Thickness New	Lining Thickness Worn	Air ❺ Tube Cavity	Maximum Drum Diameter
12E475	142314	1280	1800	0,1 E-06	0,21	11	974	5	2	0,82	307
14E475	142213	1810	1500	0,1 E-06	0,34	14	897	9	5	0,90	358
16E475	142214	2430	1300	0,1 E-06	0,59	19	1077	9	5	1,15	409
19E475	142215	3560	1100	0,1 E-06	1,09	24	1303	9	5	1,39	486
21.5E475	142395	4580	975	0,2 E-06	1,64	27	1522	9	5	1,64	549
24E475	142216	5880	875	0,2 E-06	2,35	30	1658	9	5	1,80	613
27E475	142334	7570	775	0,2 E-06	3,32	34	1864	9	5	2,05	690
30E600	142336	12000	700	0,3 E-06	6,72	57	2799	9	5	2,87	767
34E600	142335	15500	620	0,3 E-06	10,96	71	3199	9	5	5,08	868
40E700	142452	25400	525	0,6 E-06	21,84	79	5573	32	27	5,17	1021
SI		**N·m @ 5,2 bar**	**rpm**	**bar/rpm²**	**kg·m²**	**kg**	**cm²**	**mm**	**mm**	**dm³**	**mm**

Notes:

❶ Refers to basic part number only. When ordering, the release spring force and type of friction linings must be specified.

❷ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

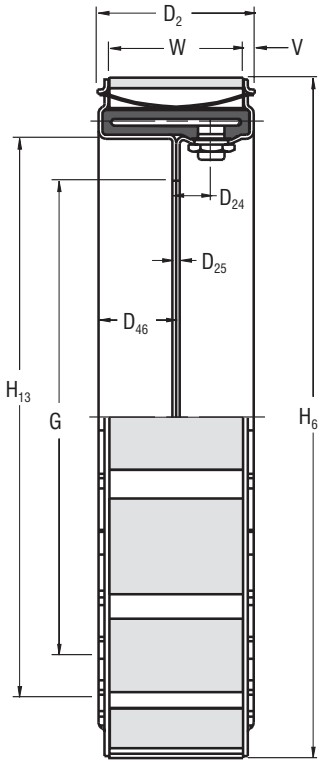
❸ Tolerances for sizes:
12 thru 27
+0.010/-0.000 in (+0,25/-0,00 mm)
30 thru 40
+0.005/-0.000 in (+0,13/-0,00 mm)

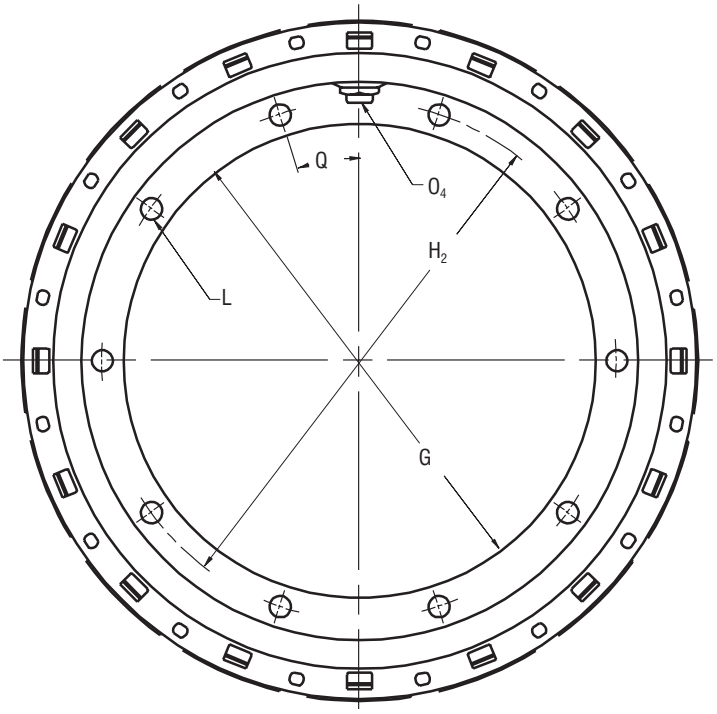
❹ American National Pipe Thread

❺ Drum contact with worn shoes.

❻ Figures shown are with teflon or graphite slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

❼ Refer to page C-42 for maximum idle RPM.





English		lb·in @ 75 psi	Dimensions in inches														
12E475	142314	11300	5.50	1.25	0.27	2.75	6.000	7.000	11.91	8.04	10	0.38	1/4-18	18.00	0.38	8	4.75
14E475	142213	16000	5.50	1.25	0.27	2.75	7.625	8.750	13.91	9.73	12	0.38	1/4-18	15.00	0.38	10	4.75
16E475	142214	21500	5.50	1.25	0.27	2.75	9.625	10.750	15.91	11.73	8	0.50	3/8-18	22.50	0.38	12	4.75
19E475	142215	31500	5.50	1.25	0.27	2.75	12.125	13.750	18.91	14.73	10	0.50	3/8-18	18.00	0.38	12	4.75
21.5E475	142395	40500	5.50	1.25	0.27	2.75	14.250	15.750	21.41	17.23	8	0.75	3/8-18	22.50	0.38	14	4.75
24E475	142216	52000	5.50	1.25	0.27	2.75	16.750	18.250	23.91	19.73	10	0.75	3/8-18	18.00	0.38	16	4.75
27E475	142334	67000	5.50	1.25	0.27	2.75	19.750	21.250	26.91	22.73	12	0.75	3/8-18	15.00	0.38	18	4.75
30E600	142336	106000	7.00	1.63	0.31	3.50	21.000	23.000	29.91	24.94	14	0.75	1/2-14	12.86	0.50	14	6.00
34E600	142335	137000	7.00	1.63	0.31	3.50	25.000	27.000	33.91	28.94	16	0.75	1/2-14	11.25	0.50	16	6.00
40E700	142452	225000	8.13	1.75	0.31	4.06	30.000	32.000	39.91	34.63	18	0.75	1/2-14	10.00	0.56	18	7.00

Size	❶ Part Number	M_t ❷❻ Torque Rating	D_2	D_{24}	D_{25}	D_{46}	❸ G	H_2	H_6	H_{13}	L No.	L Dia.	❹ O_4	Q (Deg.)	V	W No.	W Width
											No.	Dia.				No.	Width
12E475	142314	1280	140	32	7	70	152,4	177,8	303	204	10	10	1/4-18	18,00	10	8	121
14E475	142213	1810	140	32	7	70	193,7	222,3	353	247	12	10	1/4-18	15,00	10	10	121
16E475	142214	2430	140	32	7	70	244,5	273,1	404	298	8	13	3/8-18	22,50	10	12	121
19E475	142215	3560	140	32	7	70	308,0	349,3	480	374	10	13	3/8-18	18,00	10	12	121
21.5E475	142395	4580	140	32	7	70	362,0	400,1	544	438	8	19	3/8-18	22,50	10	14	121
24E475	142216	5880	140	32	7	70	425,5	463,6	607	501	10	19	3/8-18	18,00	10	16	121
27E475	142334	7570	140	32	7	70	501,7	539,8	684	577	12	19	3/8-18	15,00	10	18	121
30E600	142336	12000	178	41	8	89	533,4	584,2	760	633	14	19	1/2-14	12,86	13	14	152
34E600	142335	15500	178	41	8	89	635,0	685,8	861	735	16	19	1/2-14	11,25	13	16	152
40E700	142452	25400	206	44	8	103	762,0	812,8	1014	879	18	19	1/2-14	10,00	14	18	178
SI		N·m @ 5,2 bar	Dimensions in millimeters														

English	lb·in @ 75 psi	rpm	psi/rpm²	lb·ft²	lb	in²	in	in	in³	in
12E475	22600	1800	1.0 E-06	12	88	302	0.18	0.06	100	12.09
14E475	32000	1500	1.2 E-06	20	128	278	0.37	0.18	110	14.09
16E475	43000	1300	1.3 E-06	38	156	334	0.37	0.18	140	16.09
19E475	63000	1100	2.1 E-06	79	212	404	0.37	0.18	170	19.13
21.5E475	81000	975	2.4 E-06	118	236	472	0.37	0.18	200	21.63
24E475	104000	875	2.2 E-06	202	321	514	0.37	0.18	220	24.13
27E475	134000	775	2.4 E-06	302	384	578	0.37	0.18	250	27.18
30E600	212000	700	4.1 E-06	567	603	868	0.37	0.12	350	30.18
34E600	274000	620	4.3 E-06	964	765	992	0.37	0.12	620	34.18
Size	**M_r ❶ ❻ Torque Rating**	**❽ Maximum Speed**	**C_s Centrifugal Gain Constant**	**Wk^2 ❹ J**	**Weight ❹ Mass**	**Friction Area**	**New / Worn Lining Thickness**		**❺ Air Tube Cavity**	**Maximum Drum Diameter**
							New	**Worn**		
12E475	2550	1800	0,1 E-06	0,50	40	1948	5	2	1,64	307
14E475	3620	1500	0,1 E-06	0,84	58	1793	9	5	1,80	358
16E475	4860	1300	0,1 E-06	1,60	71	2154	9	5	2,30	409
19E475	7120	1100	0,1 E-06	3,32	96	2606	9	5	2,79	486
21.5E475	9150	975	0,2 E-06	4,96	107	3044	9	5	3,28	549
24E475	11800	875	0,2 E-06	8,48	145	3315	9	5	3,61	613
27E475	15100	775	0,2 E-06	12,68	174	3728	9	5	4,10	690
30E600	24000	700	0,3 E-06	23,81	273	5599	9	3	5,74	767
34E600	31000	620	0,3 E-06	40,49	347	6398	9	3	10,2	868
SI	**N·m @ 5,2 bar**	**rpm**	**bar/rpm²**	**kg·m²**	**kg**	**cm²**	**mm**	**mm**	**dm³**	**mm**

Notes:

❶ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

❷ Tolerance +0.005/-0.000 (+0,13/-0,00 mm)

❸ Refer to Form E613. Integral adapter hub used which is bored and keyed for direct shaft mounting.

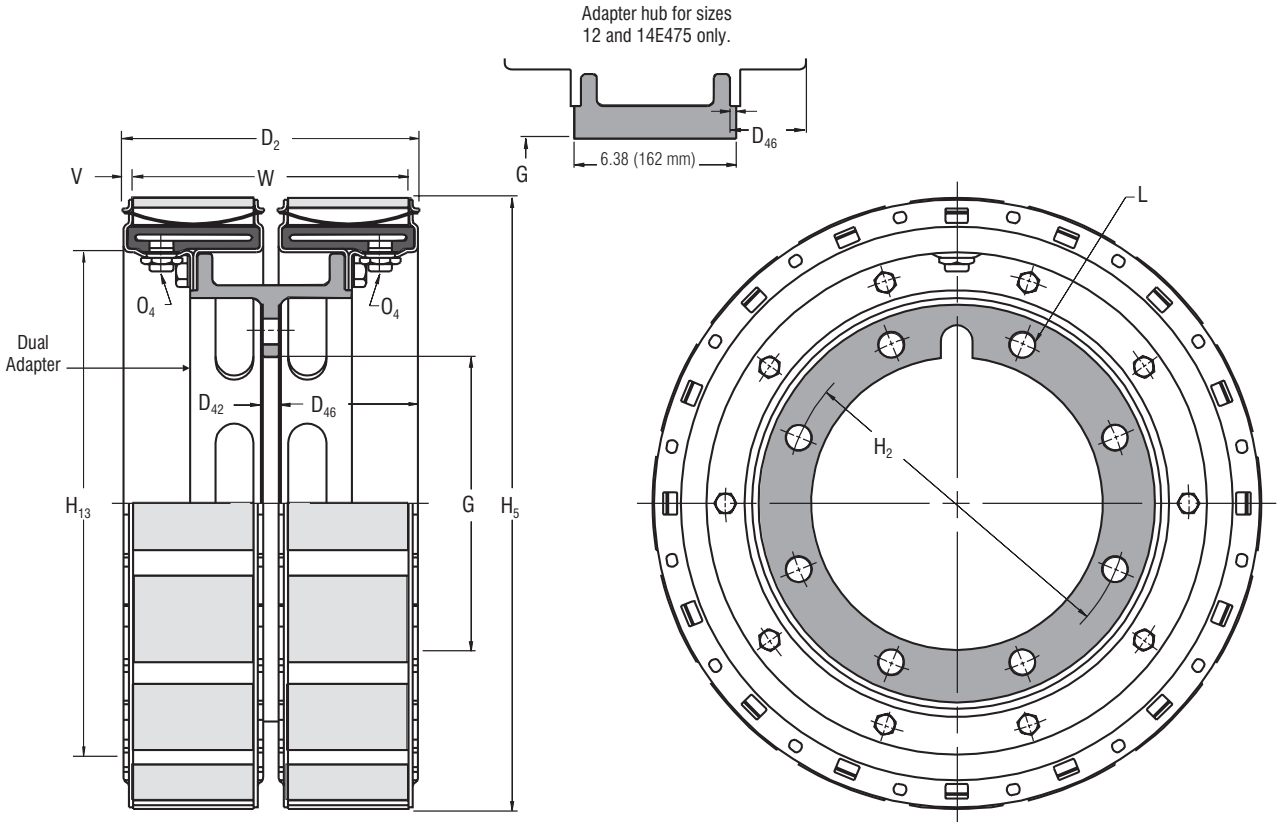
❹ Includes two elements and dual adapter.

❺ Drum contact with worn shoes.

❻ Figures shown are with teflon or graphite slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

❼ American National Pipe Thread Size 40 has four inlet valves

❽ Refer to page C-42 for maximum idle RPM.

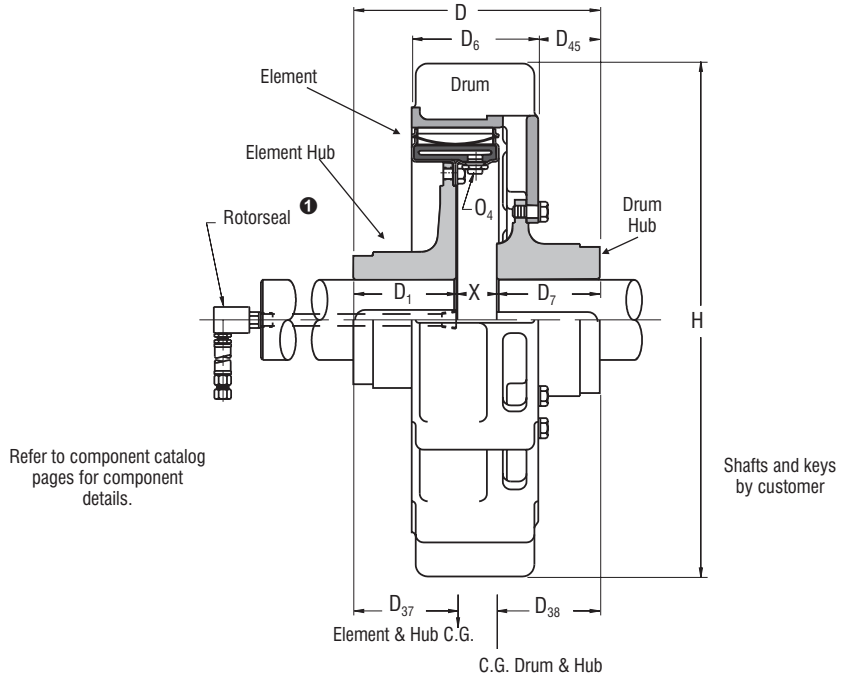


English	lb·in @ 75 psi	Dimensions in inches											
12E475	22600	11.75	N/A	N/A	❸	❸	11.91	8.40	N/A	N/A	1/4-18	0.38	16	11.00
14E475	32000	11.75	N/A	N/A	❸	❸	13.91	9.73	N/A	N/A	1/4-18	0.38	20	11.00
16E475	43000	11.63	0.50	5.56	5.500	6.750	15.91	11.73	8	0.78	3/8-18	0.38	24	10.88
19E475	63000	11.63	0.50	5.56	8.000	9.500	18.91	14.73	10	0.78	3/8-18	0.38	24	10.88
21.5E475	81000	11.63	0.63	5.50	9.625	11.000	21.41	17.23	6	0.78	3/8-18	0.38	28	10.88
24E475	104000	11.63	0.63	5.50	11.500	13.500	23.91	19.73	8	1.03	3/8-18	0.38	32	10.88
27E475	134000	11.63	0.63	5.50	14.625	16.000	26.91	22.73	8	0.78	3/8-18	0.38	36	10.88
30E600	212000	14.81	0.75	7.03	15.000	17.000	29.91	24.94	12	1.03	1/2-14	0.50	28	13.81
34E600	274000	14.81	0.75	7.03	19.000	21.000	33.91	28.94	12	1.03	1/2-14	0.50	32	13.81

Size	M, Torque Rating ❶❻	D_2	D_{42}	D_{46}	G ❷	H_2	H_6	H_{13}	L No.	L Dia.	O_4 ❹	V	W No.	W Width
									No.	Dia.			No.	Width
12E475	2550	298	N/A	N/A	❸	❸	303	213	N/A	N/A	1/4-18	10	16	279
14E475	3620	298	N/A	N/A	❸	❸	353	247	N/A	N/A	1/4-18	10	20	279
16E475	4860	295	13	141	139,7	171,5	404	298	8	20	3/8-18	10	24	276
19E475	7120	295	13	141	203,2	241,3	480	374	10	20	3/8-18	10	24	276
21.5E475	9150	295	16	140	244,5	279,4	544	438	6	20	3/8-18	10	28	276
24E475	11800	295	16	140	292,1	342,9	607	501	8	26	3/8-18	10	32	276
27E475	15100	295	16	140	371,5	406,4	684	577	8	20	3/8-18	10	36	276
30E600	24000	376	19	179	381,0	431,8	760	633	12	26	1/2-14	13	28	351
34E600	31000	376	19	179	482,6	533,4	861	735	12	26	1/2-14	13	32	351

SI	N·m @ 5,2 bar	Dimensions in millimeters

Form E 604 Coupling Arrangement – Dimensional Data Sizes 12 to 40



English	lb·in @ 75 psi		lb	Dimensions in inches													
12E475	11300	B3	150	1.50	2.50	1.50	2.75	10.25	3.75	8.00	3.75	3.20	4.12	1.25	18.00	1/4-18	2.75
14E475	16000	B3	183	1.50	3.00	1.50	3.00	10.75	3.75	8.00	4.25	3.21	4.30	1.75	20.00	1/4-18	2.75
16E475	21500	B3	237	1.75	3.50	1.75	3.25	12.00	4.25	8.00	5.00	3.72	4.70	3.50	22.00	3/8-18	2.75
19E475	31500	B3	327	2.25	4.50	2.25	4.75	14.44	5.75	8.00	6.00	4.60	5.10	3.50	25.00	3/8-18	2.68
21.5E475	40500	B3	383	2.25	4.50	2.75	4.75	14.44	5.75	8.00	6.00	4.75	5.20	3.50	29.50	3/8-18	2.68
24E475	52000	B3	514	3.00	6.50	2.75	5.25	18.06	6.50	8.00	9.00	5.19	5.33	6.37	32.00	3/8-18	2.68
27E475	67000	B3	580	2.75	5.25	2.75	5.50	16.56	6.50	8.00	7.50	5.30	6.21	4.87	35.00	3/8-18	2.56
30E600	106000	C2	740	2.75	5.50	2.75	5.50	17.31	6.50	9.75	7.50	5.60	6.04	4.62	38.00	1/2-14	3.31
34E600	137000	C2	947	3.00	6.00	3.00	6.00	20.31	8.00	9.75	9.00	6.90	7.07	6.12	42.00	1/2-14	3.31
40E700	225000	C2	1592	3.75	7.00	3.75	7.00	22.75	9.00	10.75	10.00	8.13	7.50	7.12	48.00	1/2-14	3.75

Size	M, ❷❺ Torque Rating	Rotor-seal ❶ Size	Weight ❸ Mass	Min.	Max.	Min.	Max.	D	D_1	D_6	D_7	D_{37}	D_{38}	D_{45}	H	❹ O_4	X
				Drum Hub Bore		Element Hub Bore											
				Min.	Max.	Min.	Max.										
12E475	1280	B3	68	38	64	38	70	260	95	203	95	81	105	32	457	1/4-18	70
14E475	1810	B3	83	38	76	38	76	273	95	203	108	82	109	44	508	1/4-18	70
16E475	2430	B3	107	44	89	44	83	305	108	203	127	94	119	89	559	3/8-18	70
19E475	3560	B3	148	57	114	57	121	367	146	203	152	117	130	89	635	3/8-18	68
21.5E475	4580	B3	173	57	114	70	121	367	146	203	152	121	132	89	749	3/8-18	68
24E475	5880	B3	233	76	165	70	133	459	165	203	229	132	135	162	813	3/8-18	68
27E475	7570	B3	263	70	133	70	140	421	165	203	191	135	158	124	889	3/8-18	65
30E600	12000	C2	335	70	140	70	140	440	165	248	191	142	153	117	965	1/2-14	84
34E600	15500	C2	429	76	152	76	152	516	203	248	229	175	180	155	1067	1/2-14	84
40E700	25400	C2	721	95	178	95	178	578	229	273	254	207	191	181	1219	1/2-14	95
SI	N·m @ 5,2 bar		kg	Dimensions in millimeters													

Notes:

❶ Refer to Rotorseal Section for mounting and dimension information.

❷ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

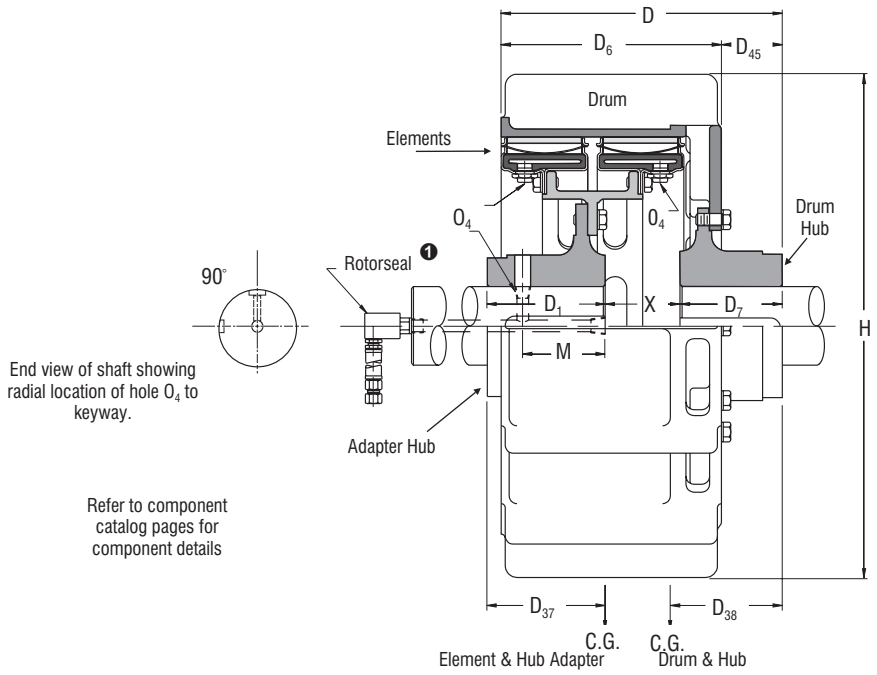
❸ Total weight or mass with minimum hub bores. Rotorseal and hose not included.

❹ American National Pipe Thread

❺ Figures shown are with teflon or graphite slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

Form E 605

Coupling Arrangement – Dimensional Data
Sizes Dual 12 to Dual 34



English	lb·in @ 75 psi		lb	Dimensions in inches														
12E475	22600	B3	253	1.50	2.50	2.50	3.75	15.25	6.38	14.00	3.75	3.20	6.31	1.25	18.00	❺	1/4-18	2.50
14E475	32000	B3	349	1.50	3.00	2.50	3.75	15.75	6.38	14.00	4.25	3.20	6.43	1.75	20.00	❺	1/4-18	2.50
16E475	43000	B3	457	1.75	3.50	1.50	3.00	16.50	4.25	14.00	5.00	3.88	7.25	2.50	22.00	5.25	3/8-18	4.88
19E475	63000	C2	599	2.25	4.50	2.25	4.50	17.50	6.00	14.00	6.00	5.22	7.69	3.50	25.00	5.25	3/8-18	4.81
21.5E475	81000	C2	670	2.25	4.50	2.25	4.50	17.50	6.00	14.00	6.00	5.40	7.50	3.50	29.50	5.25	3/8-18	4.88
24E475	104000	C2	883	3.00	6.50	2.75	5.50	20.38	7.50	14.00	9.00	6.29	7.15	4.00	32.00	6.38	3/8-18	4.88
27E475	134000	C2	1010	2.75	5.25	2.75	4.75	18.88	6.75	14.00	7.50	6.14	8.62	4.88	35.00	5.25	3/8-18	4.75
30E600	212000	C2	1496	2.75	5.50	2.75	5.50	22.38	7.50	17.75	7.50	6.83	9.13	4.63	38.00	6.44	1/2-14	6.72
34E600	274000	3/4 RH	1747	3.00	6.00	2.75	5.50	23.88	7.50	17.75	9.00	7.01	10.88	6.13	42.00	6.44	1/2-14	6.72
Size	❷❻ Mr Torque Rating	❶ Rotor-seal Size	Weight □ Mass	Drum Hub Bore Min.	Drum Hub Bore Max.	Adapter Hub Bore Min.	Adapter Hub Bore Max.	D	D_1	D_6	D_7	D_{37}	D_{38}	D_{45}	H	M	❹ O_4	X
12E475	2550	B3	115	38	64	64	95	387	162	356	95	81	160	32	457	❺	1/4-18	64
14E475	3620	B3	158	38	76	64	95	400	162	356	108	81	163	44	508	❺	1/4-18	64
16E475	4860	B3	207	44	89	38	76	419	108	356	127	99	184	64	559	133	3/8-18	124
19E475	7120	C2	271	57	114	57	114	445	152	356	152	133	195	89	635	133	3/8-18	122
21.5E475	9150	C2	304	57	114	57	114	445	152	356	152	137	191	89	749	133	3/8-18	124
24E475	11800	C2	400	76	165	70	140	518	191	356	229	160	182	102	813	162	3/8-18	124
27E475	15100	C2	458	70	133	70	121	480	171	356	191	156	219	124	889	133	3/8-18	121
30E600	24000	C2	678	70	140	70	140	568	191	451	191	173	232	118	965	164	1/2-14	171
34E600	31000	3/4 RH	791	76	152	70	140	607	191	451	229	178	276	156	1067	164	1/2-14	171
SI	N·m 5,2 bar		kg	Dimensions in inches														

Notes:

❶ Refer to Rotorseal Section for mounting and dimension information.

❷ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

❸ Total weight or mass with minimum hub bores. Rotorseal and hose not included.

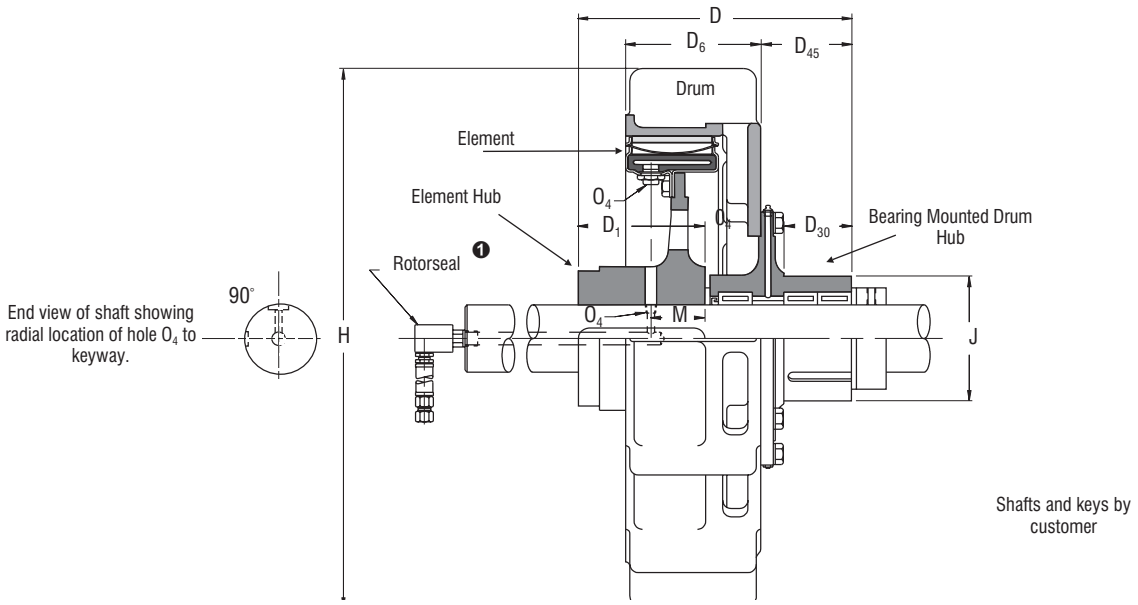
❹ American National Pipe Thread

❺ Locate radial shaft hole just beyond element hub.

❻ Figures shown are with teflon or graphite slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

Form E 606

Bearing Mounted Arrangement – Dimensional Data
Sizes 12 to 40



English	lb·in @ 75 psi	lb	Dimensions in inches											
	11300	165	B3	1.50	2.19	10.81	4.75	8.00	1.25	2.63	18.00	3.875	❹	1/4-18
14E475	16000	210	B3	1.50	3.00	11.31	4.75	8.00	1.75	3.13	20.00	5.875	❹	1/4-18
16E475	21500	275	B3	1.75	3.50	12.44	5.25	8.00	2.50	3.88	22.00	5.875	3.16	3/8-18
19E475	31500	390	B3	2.25	4.50	14.94	6.75	8.00	3.50	4.88	25.00	6.875	3.25	3/8-18
21.5E475	40500	450	B3	2.25	4.50	14.94	6.75	8.00	3.50	4.88	29.50	6.875	3.19	3/8-18
24E475	52000	650	B3	3.00	5.00	16.19	7.50	8.00	4.00	5.38	32.00	7.375	3.31	3/8-18
27E475	67000	700	B3	2.75	5.25	17.19	7.50	8.00	4.88	6.38	35.00	8.375	3.31	3/8-18
30E600	106000	900	C2	2.75	5.50	18.19	7.50	9.75	4.88	6.38	38.00	8.875	3.75	1/2-14
34E600	137000	1160	C2	3.00	6.00	21.19	9.00	9.75	6.38	7.88	42.00	9.375	3.75	1/2-14
40E700	225000	1920	C2	5.00	7.00	23.63	10.00	10.75	7.38	8.88	48.00	10.875	3.88	1/2-14

Size	M, Torque Rating ❷❻	Weight ❸ Mass	Rotor-seal Size ❶	Bore Range Min.	Bore Range Max.	D	D_1	D_6	D_{30}	D_{45}	H	J_{MAX}	M	❺ O_4
12E475	1280	75	B3	38	56	275	121	203	32	67	457	98,4	❹	1/4-18
14E475	1810	95	B3	38	76	287	121	203	44	80	508	149,2	❹	1/4-18
16E475	2430	125	B3	44	89	316	133	203	64	99	559	149,2	80	3/8-18
19E475	3560	177	B3	57	114	379	171	203	89	124	635	174,6	83	3/8-18
21.5E475	4580	204	B3	57	114	379	171	203	89	124	749	174,6	81	3/8-18
24E475	5880	294	B3	76	127	411	191	203	102	137	813	187,3	84	3/8-18
27E475	7570	317	B3	70	133	437	191	203	124	162	889	212,7	84	3/8-18
30E600	12000	408	C2	70	140	462	191	248	124	162	965	225,4	95	1/2-14
34E600	15500	525	C2	76	152	538	229	248	162	200	1067	238,1	95	1/2-14
40E700	25400	870	C2	127	178	600	254	273	187	226	1219	276,2	99	1/2-14

SI	N·m @ 5,2 bar	kg	Dimensions in millimeters

Notes:

❶ Refer to Rotorseal Section for mounting and dimension information.

❷ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

❸ Total weight or mass with minimum hub bores. Rotorseal and hose not included.

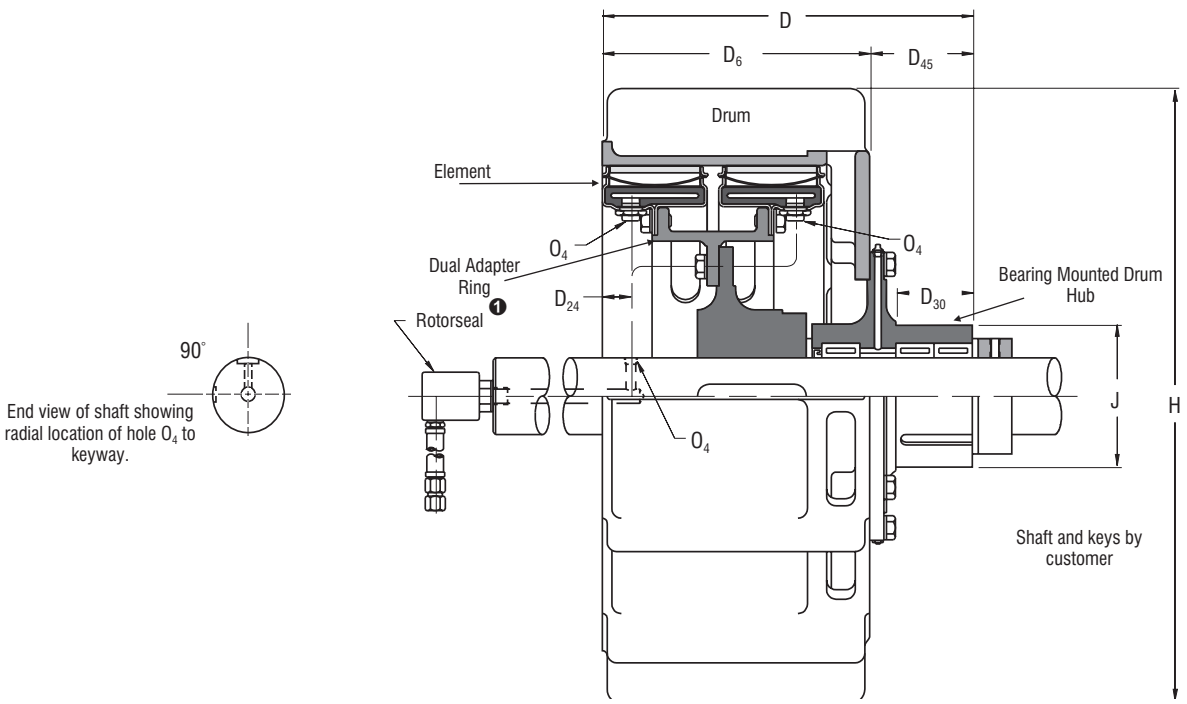
❹ Locate radial shaft hole just beyond element hub.

❺ American National Pipe Thread

❻ Figures shown are with slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

Form E 607

Bearing Mounted Arrangement – Dimensional Data
Sizes Dual 12 to Dual 34



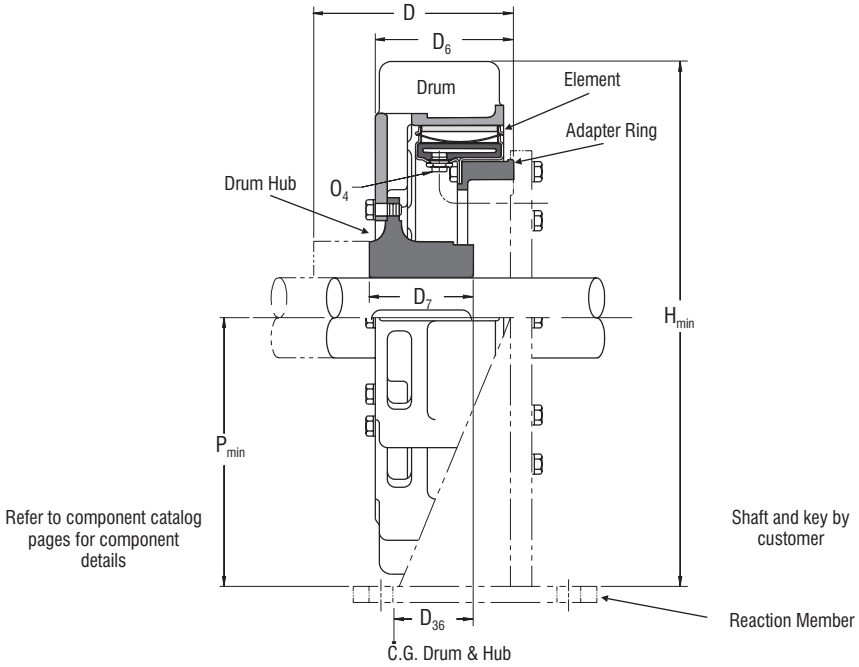
English	lb·in @ 75 psi	lb		Dimensions in inches									
12E475	22600	270	B3	1.50	2.19	16.63	14.00	1.47	1.25	2.63	18.00	3.875	1/4-18
14E475	32000	450	B3	1.50	3.38	17.13	14.00	1.47	1.75	3.13	20.00	5.875	1/4-18
16E475	43000	560	B3	1.75	3.50	17.88	14.00	1.47	2.50	3.88	22.00	5.875	3/8-18
19E475	63000	690	C2	2.25	4.75	18.88	14.00	1.50	3.50	4.88	25.00	6.875	3/8-18
21.5E475	81000	840	C2	2.75	4.75	18.88	14.00	1.50	3.50	4.88	29.50	6.875	3/8-18
24E475	104000	1080	C2	2.75	5.00	19.38	14.00	1.50	4.00	5.38	32.00	7.375	3/8-18
27E475	134000	1130	C2	2.75	6.00	20.38	14.00	1.50	4.88	6.38	35.00	8.375	3/8-18
30E475	212000	1660	C2	2.75	7.00	24.13	17.75	1.88	4.88	6.38	38.00	8.875	1/2-14
34E475	274000	1960	3/4 RH	3.00	7.00	25.63	17.75	1.88	6.38	7.88	42.00	9.375	1/2-14

Size	M, Torque Rating 2 5	Weight / Mass 3	Rotor-seal Size 1	Bore Range Min.	Bore Range Max.	D	D_6	D_{24}	D_{30}	D_{45}	H	J_{MAX}	O_4 4
12E475	2550	122	B3	38	56	422	356	37	32	67	457	98,4	1/4-18
14E475	3620	204	B3	38	86	435	356	37	44	80	508	149,2	1/4-18
16E475	4860	254	B3	44	89	454	356	37	64	99	559	149,2	3/8-18
19E475	7120	313	C2	57	121	480	356	38	89	124	635	174,6	3/8-18
21.5E475	9150	381	C2	70	121	480	356	38	89	124	749	174,6	3/8-18
24E475	11800	489	C2	70	127	492	356	38	102	137	813	187,3	3/8-18
27E475	15100	512	C2	70	152	518	356	38	124	162	889	212,7	3/8-18
30E475	24000	752	C2	70	178	613	451	48	124	162	965	225,4	1/2-14
34E475	31000	888	3/4 RH	76	178	651	451	48	162	200	1067	238,1	1/2-14

SI	N·m @ 5,2 bar	kg		Dimensions in millimeters									

Notes:

1. Refer to Rotorseal Section for mounting and dimension information.
2. Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.
3. Total weight or mass with minimum hub bores. Rotorseal and hose not included.
4. American National Pipe Thread
5. Figures shown are with slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.



English	lb·in @ 75 psi	lb	Dimensions in inches								
12E475	11300	151	1.50	2.50	9.81	8.56	3.75	3.79	18.50	1/4-18	9.50
14E475	16000	186	1.50	3.00	10.31	8.56	4.25	3.86	20.50	1/4-18	10.50
16E475	21500	238	1.75	3.50	11.06	8.56	5.00	3.92	22.50	3/8-18	11.50
19E475	31500	306	2.25	4.50	12.00	8.50	6.00	3.59	25.50	3/8-18	13.00
21.5E475	40500	379	2.25	4.50	12.06	8.56	6.00	3.47	30.25	3/8-18	15.50
24E475	52000	494	3.00	6.50	15.75	8.63	9.00	3.42	32.75	3/8-18	16.75
27E475	67000	573	2.75	5.25	13.50	8.63	7.50	3.39	35.75	3/8-18	18.25
30E600	106000	794	2.75	5.50	15.03	10.41	7.50	3.81	38.75	1/2-14	19.75
34E600	137000	1010	3.00	6.00	16.53	10.41	9.00	3.83	42.75	1/2-14	21.75
40E700	225000	1660	3.75	7.00	18.53	11.41	10.00	3.98	48.75	1/2-14	24.75
Size	**❶❺ M, Torque Rating**	**Weight ❷ / Mass**	**Bore Range Min.**	**Bore Range Max.**	**❸ D**	**D_6**	**D_7**	**D_{38}**	**H**	**❹ O_4**	**P**
12E475	1280	68	38	64	249	217	95	96	470	1/4-18	241
14E475	1810	84	38	76	262	217	108	98	521	1/4-18	267
16E475	2430	108	44	89	281	217	127	100	572	3/8-18	292
19E475	3560	139	57	114	305	216	152	91	648	3/8-18	330
21.5E475	4580	172	57	114	306	217	152	88	768	3/8-18	394
24E475	5880	224	76	165	400	219	229	87	832	3/8-18	425
27E475	7570	260	70	133	343	219	191	86	908	3/8-18	464
30E600	12000	360	70	140	382	264	191	97	984	1/2-14	502
34E600	15500	458	76	152	420	264	229	97	1086	1/2-14	552
40E700	25400	752	95	178	471	290	254	101	1238	1/2-14	629
SI	**N·m @ 5,2 bar**	**kg**	**Dimensions in millimeters**								

Notes:

❶ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

❷ Total weight or mass with minimum hub bores.

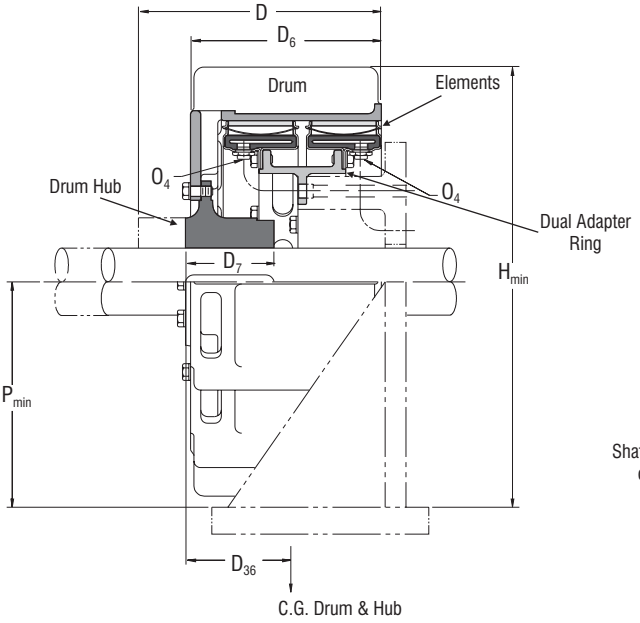
❸ Maximum length with drum hub reverse mounted.

❹ American National Pipe Thread

❺ Figures shown are with slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

Form E 609

Air-Cooled Arrangement – Dimensional Data
Sizes Dual 12 to Dual 34



Refer to component catalog pages for component details

Shaft and key by customer

English	lb·in @75 psi	lb	Dimensions in inches								
12E475	22600	253	1.50	2.50	15.25	14.00	3.75	3.52	18.50	1/4-18	9.50
14E475	32000	349	1.50	3.00	15.75	14.00	4.25	3.81	20.50	1/4-18	10.50
16E475	43000	429	1.75	3.50	16.50	14.00	5.00	4.35	22.50	3/8-18	11.50
19E475	63000	551	2.25	4.50	17.50	14.00	6.00	5.00	25.50	3/8-18	13.00
21.5E475	81000	608	2.25	4.50	17.50	14.00	6.00	5.02	30.25	3/8-18	15.50
24E475	104000	767	3.00	6.50	20.38	14.00	9.00	5.12	32.75	3/8-18	16.75
27E475	134000	934	2.75	5.25	18.88	14.00	7.50	6.01	35.75	3/8-18	18.25
30E600	212000	1363	2.75	5.50	22.38	17.75	7.50	6.35	38.75	1/2-14	19.75
34E600	274000	1622	3.00	6.00	23.88	17.75	9.00	7.17	42.75	1/2-14	21.75
40E700	450000	2788	3.75	7.00	27.13	20.00	10.00	7.71	48.75	1/2-14	24.75
Size	Mr ❶❺ Torque Rating	Weight ❷ / Mass	Bore Range Min.	Bore Range Max.	❸ D	D_6	D_7	D_{38}	H	❹ O_4	P
12E475	2550	115	38	64	387	356	95	89	470	1/4-18	241
14E475	3620	158	38	76	400	356	108	97	521	1/4-18	267
16E475	4860	194	44	89	419	356	127	110	572	3/8-18	292
19E475	7120	250	57	114	445	356	152	127	648	3/8-18	330
21.5E475	9150	275	57	114	445	356	152	128	768	3/8-18	394
24E475	11800	347	76	165	518	356	229	130	832	3/8-18	425
27E475	15100	423	70	133	479	356	191	153	908	3/8-18	464
30E600	24000	617	70	140	568	451	191	161	984	1/2-14	502
34E600	31000	735	76	152	606	451	229	182	1086	1/2-14	552
40E700	50900	1263	95	178	689	508	254	196	1238	1/2-14	629
SI	N·m @ 5,2 bar	kg	Dimensions in millimeters								

Notes:

❶ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

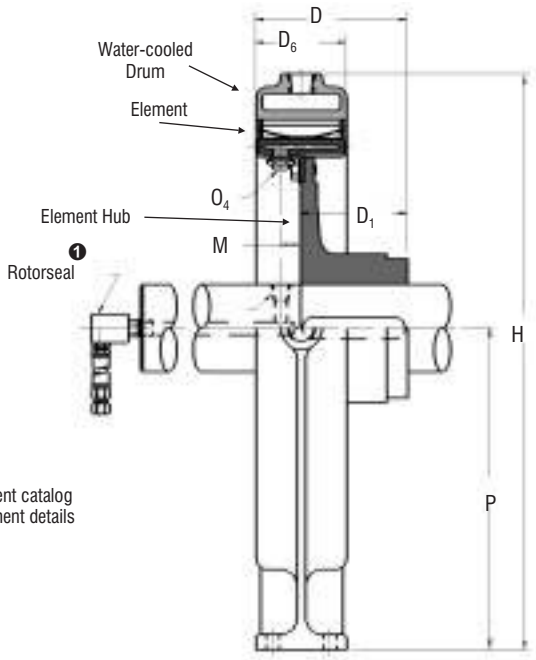
❷ Total weight or mass with minimum hub bores.

❸ Maximum length with drum hub reverse mounted.

❹ American National Pipe Thread

❺ Figures shown are with slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

Form E 610 Water cooled Arrangement – Dimensional Data – Sizes 12 to 34



Refer to component catalog pages for component details

Shaft and key by customer

English	lb·in @ 75 psi		lb	Dimensions in inches								
12E475	11300	B3	149	1.50	2.75	6.47	3.75	5.50	21.13	1.22	1/4-18	12.50
14E475	16000	B3	165	1.50	3.00	6.47	3.75	5.50	23.13	1.22	1/4-18	13.50
16E475	21500	B3	234	1.75	3.25	6.97	4.25	5.50	28.00	1.22	3/8-18	16.00
19E475	31500	B3	280	2.25	4.75	8.94	5.75	5.50	28.13	1.19	3/8-18	16.00
21.5E475	40500	B3	324	2.75	4.75	8.44	5.75	5.50	30.63	1.19	3/8-18	17.25
24E475	52000	B3	391	2.75	5.25	9.19	6.50	5.50	33.13	1.19	3/8-18	18.50
27E475	67000	B3	443	2.75	5.50	9.19	6.50	5.50	36.13	1.19	3/8-18	20.00
30E600	106000	C2	552	2.75	5.50	9.94	6.50	7.00	39.13	1.56	1/2-14	21.50
34E600	137000	C2	655	3.00	6.00	11.44	8.00	7.00	43.13	1.56	1/2-14	23.50
Size	**❷❺ M_r Torque Rating**	**❶ Rotoseal Size**	**Weight ❸ Mass**	**Bore Range Min.**	**Bore Range Max.**	**D**	**D_1**	**D_6**	**H**	**M**	**❹ O_4**	**P**
12E475	1280	B3	67	38	70	164	95	140	537	31	1/4-18	318
14E475	1810	B3	75	38	76	164	95	140	587	31	1/4-18	343
16E475	2430	B3	106	44	83	177	108	140	711	31	3/8-18	406
19E475	3560	B3	127	57	121	227	146	140	714	30	3/8-18	406
21.5E475	4580	B3	147	70	121	214	146	140	778	30	3/8-18	438
24E475	5880	B3	177	70	133	233	165	140	841	30	3/8-18	470
27E475	7570	B3	201	70	140	233	165	140	918	30	3/8-18	508
30E600	12000	C2	250	70	140	252	165	178	994	40	1/2-14	546
34E600	15500	C2	297	76	152	291	203	178	1095	40	1/2-14	597
SI	**N·m @ 5,2 bar**		**kg**	**Dimensions in millimeters**								

Notes:

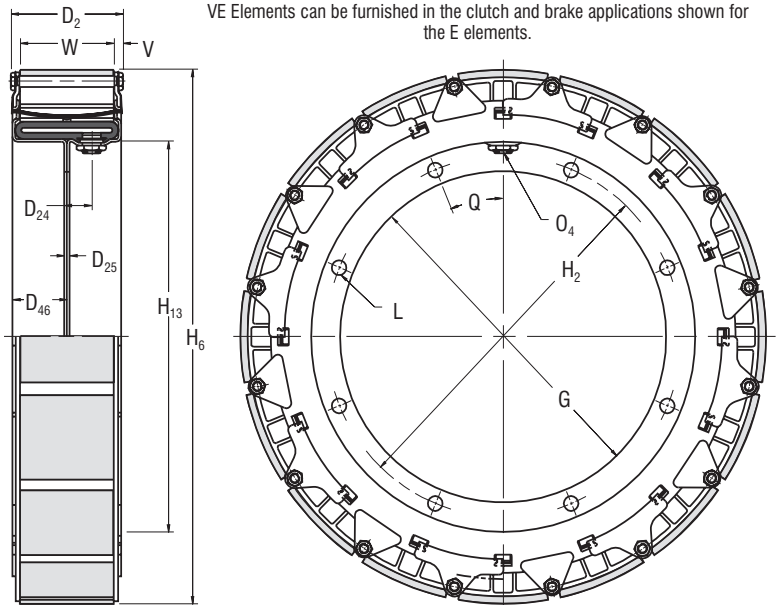
❶ Refer to Rotorseal Section for mounting and dimension information.

❷ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

❸ Total weight or mass with minimum hub bores. Rotorseal and hose not included.

❹ American National Pipe Thread

❺ Figures shown are with teflon or graphite slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.



VE Elements can be furnished in the clutch and brake applications shown for the E elements.

English		lb·in @ 75 psi	Dimensions in inches														
19VE475	143215	25500	5.69	1.25	0.19	2.72	9.625	10.750	18.91	11.81	8	0.50	3/8-18	22.50	0.44	12	4.69
24VE475	143216	45200	5.69	1.25	0.25	2.75	14.250	15.750	23.91	17.25	8	0.75	3/8-18	22.50	0.44	14	4.69
27VE475	143334	58500	5.69	1.25	0.27	2.75	16.750	18.250	26.91	19.73	10	0.75	3/8-18	18.00	0.44	16	4.75

Size	❶ Part Number	M_r ❷❻ Torque Rating	D_2	D_{24}	D_{25}	D_{46}	❸ G	H_2	H_6	H_{13}	L No.	L Dia.	❹ Q_4	Q	V	L No.	L Width
19VE475	143215	2880	145	32	5	69	244,5	273,1	480	300	8	13	3/8-18	22,50	11	12	119
24VE475	143216	5110	145	32	6	70	362,0	400,1	607	438	8	19	3/8-18	22,50	11	14	119
27VE475	143334	6610	145	32	7	70	425,5	463,6	684	501	10	19	3/8-18	18,00	11	16	121

SI		N·m @ 5,2 bar	Dimensions in millimeters

English		lb·in @ 75 psi	rpm	psi/rpm²	lb·ft²	lb	in²	inches		in³	in
19VE475	143215	25500	1100	3.3 E-06	20	58	230	0.43	0.25	70	19.13
24VE475	143216	45200	875	5.6 E-06	61	77	295	0.37	0.18	100	24.19
27VE475	143334	58500	775	5.9 E-06	75	90	333	0.37	0.25	110	27.25

Size	❶ Part Number	M_r ❷❻ Torque Rating	Maximum Speed	C_s Centrifugal Gain	Wk^2 J	Weight Mass	Friction Area	Lining Thickness New	Lining Thickness Worn	❺ Air Tube Cavity	Maximum Drum Diameter
19VE475	143215	2880	1100	0,2 E-06	0,84	26	1484	11	6	1,1	486
24VE475	143216	5110	875	0,4 E-06	2,56	35	1903	9	5	1,6	614
27VE475	143334	6610	775	0,4 E-06	3,15	41	2148	9	6	1,8	692

SI		N·m @ 5,2 bar	rpm	bar/rpm²	kg·m²	kg	cm²	millimeters		dm³	mm

Notes:

❶ Refers to basic part number only. When ordering, the release spring force and type of friction linings must be specified.

❷ Dynamic torque shown, static torque approximately 25% greater. Torque in each application is dependent upon release spring force, air pressure and speed.

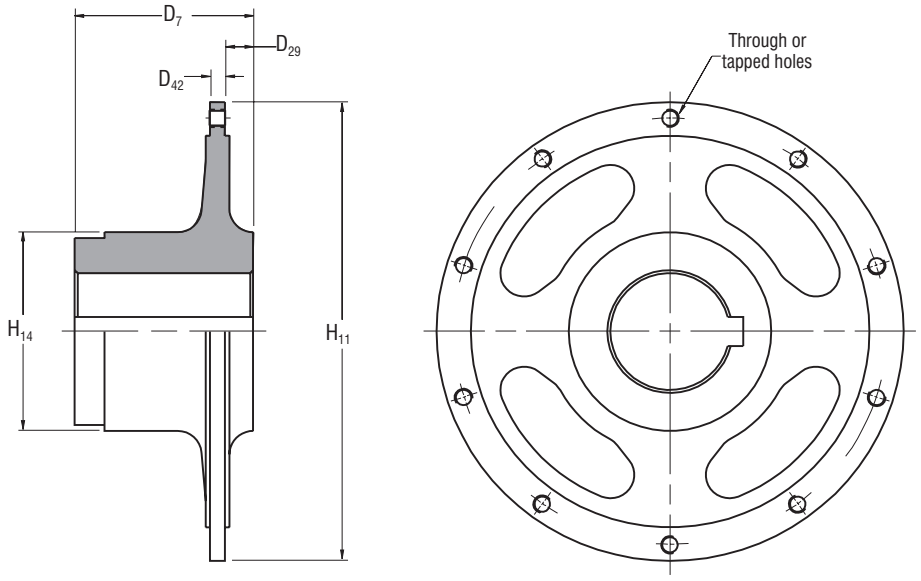
❸ Tolerances for sizes:
12 thru 27
+0.010/-0.000 in (+0,25/-0,00 mm)
30 thru 40
+0.005/-0.000 in (+0,13/-0,00 mm)

❹ American National Pipe Thread

❺ Drum contact with worn shoes.

❻ Figures shown are with teflon or graphite slip linings. Multiply values by 1.5 for standard linings, and contact factory for possible need of reinforced housings.

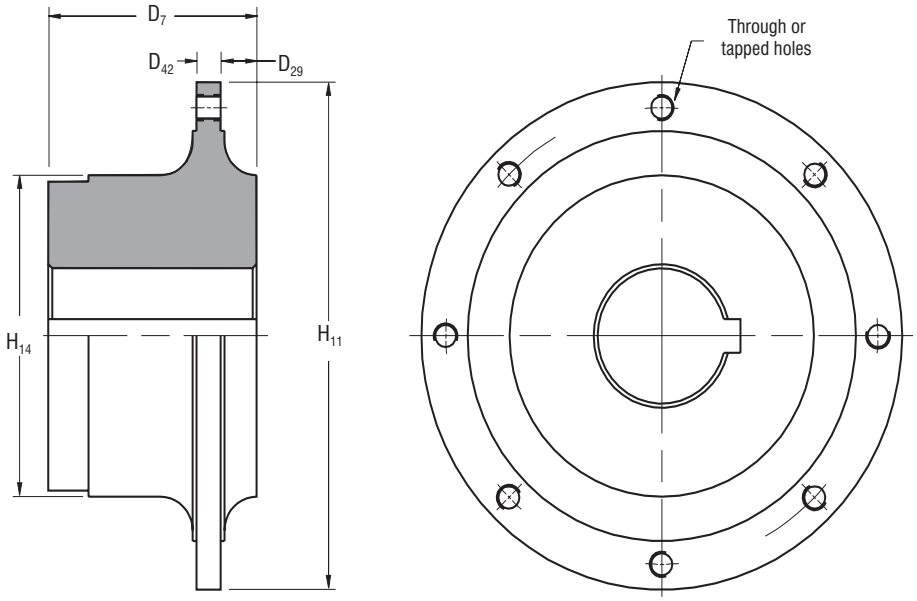
❼ Refer to page C-42 for maximum idle RPM.



English	Thru Holes	Tapped Holes	lb	lb·ft²	Dimensions in inches				
12E475	402241	402242	20	0.8	4.75	1.13	0.63	7.75	4.38
14E475	402244	402245	22	1	4.75	1.13	0.63	9.50	5.00
16E475	402247	402248	36	3	5.25	1.13	0.75	11.63	5.50
19E475	401476	401477	74	6	6.75	1.19	0.63	14.56	7.50
21.5E475	401478	401479	86	12	6.75	1.19	0.63	17.00	7.50
24E475	401480	401481	122	19	7.50	1.19	0.63	19.63	8.50
27E475	401482	401483	145	34	7.50	1.19	0.63	22.63	9.00
30E600	401484	401485	138	38	7.50	1.22	0.56	24.50	9.00
34E600	401486	401487	183	58	9.00	1.22	0.56	28.50	9.50
40E700	402250	402251	263	98	10.00	1.22	0.56	33.50	11.00
19VE475	402247	402248	36	3	5.25	1.13	0.75	11.63	5.50
24VE475	401478	401479	86	12	6.75	1.19	0.63	17.00	7.50
27VE475	401480	401481	122	19	7.50	1.19	0.63	19.63	8.50
Size	**Part Number**		**Weight / Mass** ❶	**Wk² / J**	**D_7**	**D_{29}**	**D_{42}**	**H_{11}**	**H_{14}**
12E475	402241	402242	9,1	0,03	121	29	16	197	111
14E475	402244	402245	10	0,04	121	29	16	241	127
16E475	402247	402248	16	0,12	133	29	19	295	140
19E475	401476	401477	34	0,24	171	30	16	370	191
21.5E475	401478	401479	39	0,48	171	30	16	432	191
24E475	401480	401481	55	0,81	191	30	16	498	216
27E475	401482	401483	66	1,42	191	30	16	575	229
30E600	401484	401485	63	1,60	191	31	14	622	229
34E600	401486	401487	83	2,45	229	31	14	724	241
40E700	402250	402251	119	4,12	254	31	14	851	279
19VE475	402247	402248	16	0,12	133	29	19	295	140
24VE475	401478	401479	39	0,48	171	30	16	432	191
27VE475	401480	401481	55	0,81	191	30	16	498	216
SI	Thru Holes	Tapped Holes	kg	kg·m²	Dimensions in millimeters				

Notes:

❶ Based upon minimum bores.



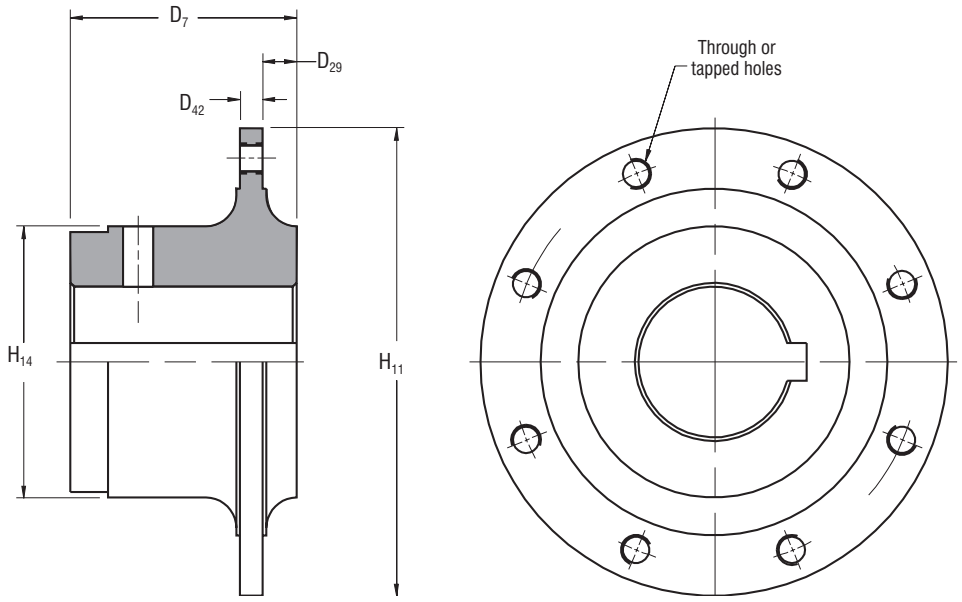
English	Thru Holes	Tapped Holes	lb	lb·ft²	Dimensions in inches				
12E475	404351	402262	13	0.3	3.75	1.125	0.63	6.25	4.00
14E475	404352	402264	25	1.0	4.25	1.125	0.63	8.25	5.00
16E475	404353	402266	38	1.5	5.00	1.125	0.63	9.25	6.00
19E475	404354	402268	64	5	6.00	1.125	0.63	11.50	7.00
21.5E475	404355	402270	71	6	6.00	1.125	0.63	13.50	7.00
24E475		404638	133	18	9.00	1.125	0.63	15.00	9.50
27E475	403194	402274	121	15	7.50	1.125	0.75	15.00	8.50
30E600	404357	402276	162	35	7.50	1.125	0.75	20.00	9.00
34E600	404358	402278	214	59	9.00	1.125	0.75	23.00	9.50
40E700	404359	402280	330	139	10.00	1.125	0.75	28.50	11.00
19VE475	404353	402266	38	1.5	5.00	1.125	0.63	9.25	6.00
24VE475	404355	402270	71	6	6.00	1.125	0.63	13.50	7.00
27VE475	404356	402272	72	9	6.50	1.125	0.63	15.00	7.50
Size	**Part Number**		**Weight Mass** ❶	**Wk² J**	**D_7**	**D_{29}**	**D_{42}**	**H_{11}**	**H_{14}**
12E475	404351	402262	5,9	0,01	95	28,6	15,9	159	102
14E475	404352	402264	11	0,04	108	28,6	15,9	210	127
16E475	404353	402266	17	0,06	127	28,6	15,9	235	152
19E475	404354	402268	29	0,19	152	28,6	15,9	292	178
21.5E475	404355	402270	32	0,26	152	28,6	15,9	343	178
24E475		404638	60	0,74	229	28,6	15,9	381	241
27E475	403194	402274	55	0,62	191	28,6	19,1	381	216
30E600	404357	402276	73	1,47	191	28,6	19,1	508	229
34E600	404358	402278	97	2,48	229	28,6	19,1	584	241
40E700	404359	402280	149	5,84	254	28,6	19,1	724	279
19VE475	404353	402266	17	0,06	127	28,6	15,9	235	152
24VE475	404355	402270	32	0,25	152	28,6	15,9	343	178
27VE475	404356	402272	33	0,38	165	28,6	15,9	381	191
SI	**Thru Holes**	**Tapped Holes**	**kg**	**kg·m²**	**Dimensions in millimeters**				

Notes:

❶ Based upon minimum bores.

Form E 618

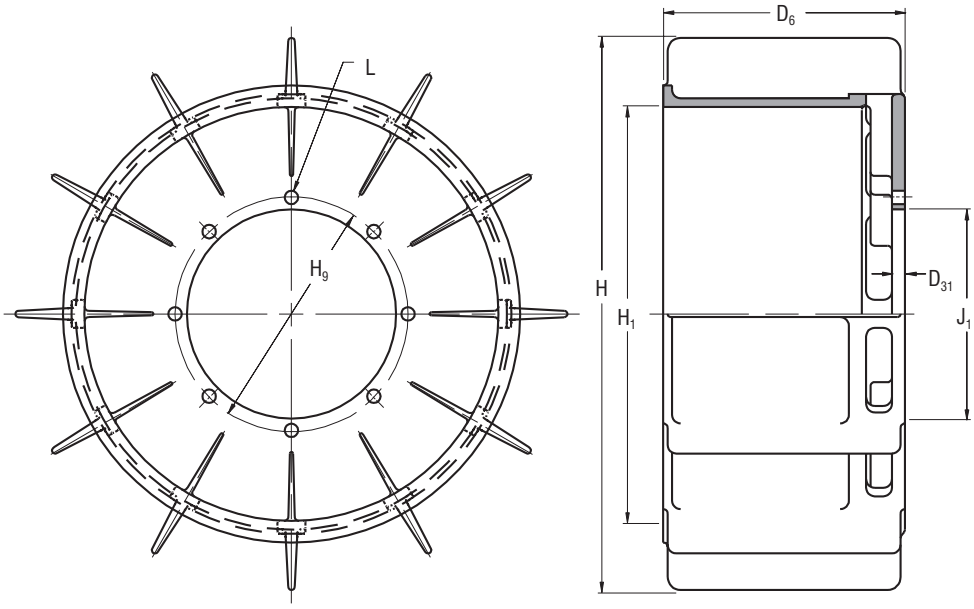
Dual Adapter Ring Hubs – Dimensional and Technical Data
Sizes 16 to 34



English	Thru Holes	Tapped Holes	lb	lb·ft²	Dimensions in inches				
16E475	402290	402291	28	1	4.25	1.13	0.63	8.25	5.00
19E475	402292	402293	48	3	6.00	1.13	0.63	11.00	7.00
21.5E475	402294	402295	62	5	6.00	1.13	0.63	12.50	7.00
24E475	402296	402297	116	10	7.50	1.13	0.75	15.50	9.00
27E475	401447	401448	72	16	6.75	1.13	0.75	17.50	7.50
30E600	402298	402299	133	26	7.50	1.13	0.75	19.00	9.00
34E600	402300	402301	125	51	7.50	1.13	0.75	22.88	9.00
19VE475	402290	402291	28	1	4.25	1.13	0.63	8.25	5.00
24VE475	402294	402297	62	5	6.00	1.13	0.63	12.50	7.00
27VE475	402296	402297	116	10	7.50	1.13	0.75	17.50	7.50
Size	**Part Number**		**Weight Mass** ❶	**Wk² J**	**D_7**	**D_{29}**	**D_{42}**	**H_{11}**	**H_{14}**
16E475	402290	402291	13	0,04	108	28,6	15,9	210	127
19E475	402292	402293	22	0,11	152	28,6	15,9	279	178
21.5E475	402294	402295	28	0,21	152	28,6	15,9	318	178
24E475	402296	402297	53	0,41	191	28,6	19,1	394	229
27E475	401447	401448	32	0,67	171	28,6	19,1	445	191
30E600	402298	402299	60	1,09	191	28,6	19,1	483	229
34E600	402300	402301	56	2,14	191	28,6	19,1	581	229
19VE475	402290	402291	13	0,04	108	28,6	16,0	209,6	127,0
24VE475	402294	402295	28	0,21	152	28,6	16,0	317,5	177,8
27VE475	402296	402297	53	0,42	191	28,6	19,1	444,5	190,5
SI	**Thru Holes**	**Tapped Holes**	**kg**	**kg·m²**	**Dimensions in millimeters**				

Notes:

❶ Based upon minimum bores.



English	Dimensions in inches								Thru Holes	Tapped Holes	lb	lb·ft²	in	Thru Holes	Tapped Holes	lb	lb·ft²	in
12E475	0.75	18.00	12.00	5.063	4.187	6	0.53	1/2-13	510363	510536	95	30	8.00	401313	N/A	155	45	14.00
14E475	0.75	20.00	14.00	7.250	6.250	6	0.53	1/2-13	510079	510417	105	45	8.00	401315	402033	200	70	14.00
16E475	0.75	22.00	16.00	7.750	6.250	6	0.78	3/4-10	510364	510453	120	60	8.00	401317	402034	235	155	14.00
19E475	0.75	25.00	19.00	10.000	8.250	8	0.78	3/4-10	412715	413328	140	85	8.00	401319	402035	275	190	14.00
21.5E475	0.75	29.50	21.50	12.000	10.750	6	0.78	3/4-10	510365	510537	170	140	8.00	401321	402036	300	285	14.00
24E475	0.75	32.00	24.00	13.500	12.125	8	0.78	3/4-10	401303	401534	195	220	8.00	401323	402037	315	330	14.00
27E475	0.75	35.00	27.00	13.500	12.125	8	0.78	3/4-10	510077	510418	240	275	8.00	401325	402038	430	570	14.00
30E600	1.00	38.00	30.00	18.500	16.750	10	0.78	3/4-10	401307	401536	315	615	9.75	401327	402039	600	960	17.75
34E600	1.00	42.00	34.00	21.500	19.500	14	0.78	3/4-10	401309	401537	395	730	9.75	401329	402040	645	1300	17.75
40E700	1.00	48.00	40.00	27.000	25.000	18	0.78	3/4-10	401712	401538	480	1210	10.75	401331	402041	775	2170	20.00
19VE475	0.75	25.00	19.00	10.000	8.250	8	0.78	3/4-10	412715	413328	140	85	8.00	401319	402035	275	190	14.00
24VE475	0.75	32.00	24.00	13.500	12.125	8	0.78	3/4-10	401303	401534	195	220	8.00	401323	402037	315	330	14.00
27VE475	0.75	35.00	27.00	13.500	12.125	8	0.78	3/4-10	510077	510418	240	275	8.00	401325	402038	430	570	14.00

Size	D_{31}	H	H_1	H_9	❶ J_9	No.	Thru	Tapped	Part Number		Weight	Wk^2	D_6	Part Number		Weight	Wk^2	D_6
						L ❷			Single Element Drum					Dual Element Drum				
						No.	Thru	Tapped	Part Number		Mass	J	D_6	Part Number		Mass	J	D_6
12E475	19	457	305	128,6	106,3	6	13	1/2-13	510363	510536	43	1,26	203	401313	N/A	70	1,89	356
14E475	19	508	356	184,2	158,8	6	13	1/2-13	510079	510417	48	1,89	203	401315	402033	91	2,94	356
16E475	19	559	406	196,9	158,8	6	20	3/4-10	510364	510453	54	2,52	203	401317	402034	106	6,51	356
19E475	19	635	483	254,0	209,6	8	20	3/4-10	412715	413328	63	3,57	203	401319	402035	125	7,98	356
21.5E475	19	749	546	304,8	273,1	6	20	3/4-10	510365	510537	77	5,88	203	401321	402036	136	11,97	356
24E475	19	813	610	342,9	308,0	8	20	3/4-10	401303	401534	88	9,24	203	401323	402037	143	13,86	356
27E475	19	889	686	342,9	308,0	8	20	3/4-10	510077	510418	109	11,55	203	401325	402038	195	23,94	356
30E600	25	965	762	469,9	425,5	10	20	3/4-10	401307	401536	143	25,83	248	401327	402039	272	40,32	451
34E600	25	1067	864	546,1	495,3	14	20	3/4-10	401309	401537	179	30,66	248	401329	402040	292	54,60	451
40E700	25	1219	1016	685,8	635,0	18	20	3/4-10	401712	401538	217	50,82	273	401331	402041	351	91,14	508
19VE475	19	635	483	254,0	209,6	8	20	3/4-10	412715	413328	63	3,57	203	401319	402035	125	7,98	356
24VE475	19	813	610	342,9	308,0	8	20	3/4-10	401303	401534	88	9,24	203	401323	402037	143	13,86	356
27VE475	19	889	686	342,9	308,0	8	20	3/4-10	510077	510418	109	11,55	203	401325	402038	195	23,94	356

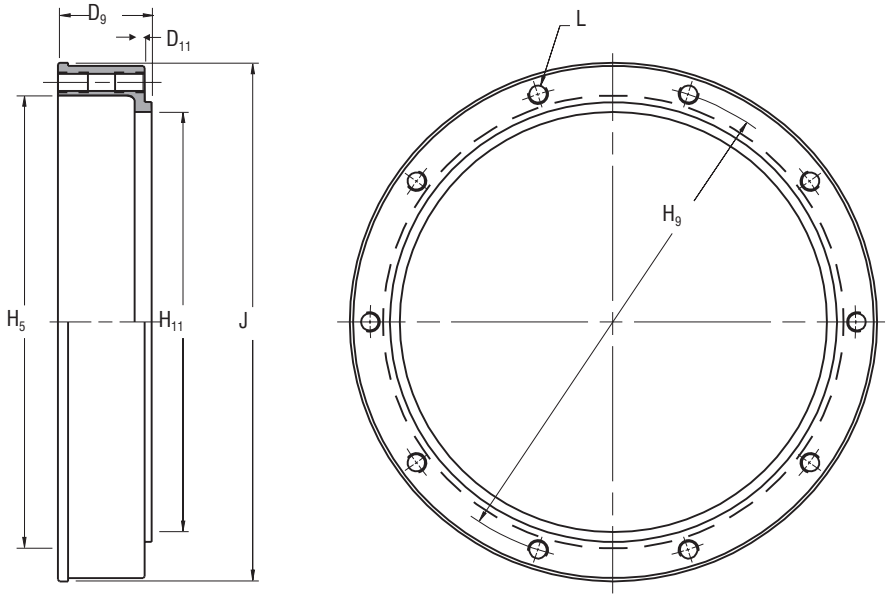
SI	Dimensions in millimeters								Thru Holes	Tapped Holes	kg	kg·m²	mm	Thru Holes	Tapped Holes	kg	kg·m²	mm

Notes:

❶ Tolerance +0.005/-0.000 in (0,13/-0,00 mm)

❷ American National Standard for Unified Screw Threads.

Form E 612 Adapter Rings – Dimensional and Technical Data – Sizes 12 to 40



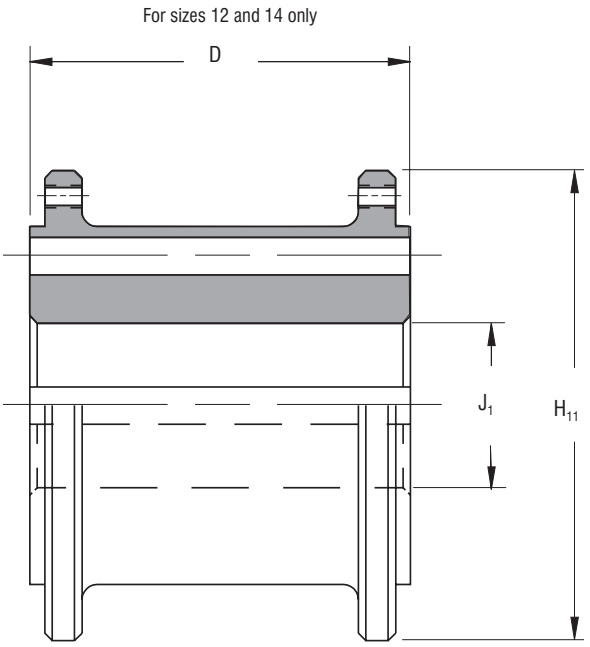
English		lb	lb·ft²	Dimensions in inches								
12E475	12117	21	2	3.38	.19	6.25	7.00	5.50	8.120	10	3/8-16	0.75
14E475	12118	25	3	3.38	.19	8.00	8.75	7.13	9.745	12	3/8-16	0.63
16E475	12119	37	6	3.38	.19	9.75	10.75	9.13	11.745	8	1/2-13	0.88
19E475	12120	53	14	3.38	.25	12.75	13.75	11.63	14.745	10	1/2-13	1.00
21.5E475	12121	82	28	3.44	.25	14.25	15.75	13.75	17.120	8	3/4-10	1.12
24E475	12122	102	50	3.50	.25	16.75	18.25	16.00	19.745	10	3/4-10	1.12
27E475	12123	138	80	3.50	.25	19.75	21.25	18.00	22.620	12	3/4-10	1.12
30E600	12124	192	145	4.31	.31	21.50	23.00	20.00	24.870	14	3/4-10	1.12
34E600	12125	246	240	4.31	.31	25.50	27.00	24.00	28.870	16	3/4-10	1.25
40E700	12126	331	445	4.88	.31	30.50	32.00	29.00	33.745	18	3/4-10	1.50
19VE475	12120	37	6	3.38	.25	9.75	10.75	9.13	11.745	8	1/2-13	0.88
24VE475	12121	82	28	3.44	.25	14.25	15.75	13.75	17.120	8	3/4-10	1.12
27VE475	12122	102	50	3.50	.25	16.75	18.25	16.00	19.475	10	3/4-10	1.12

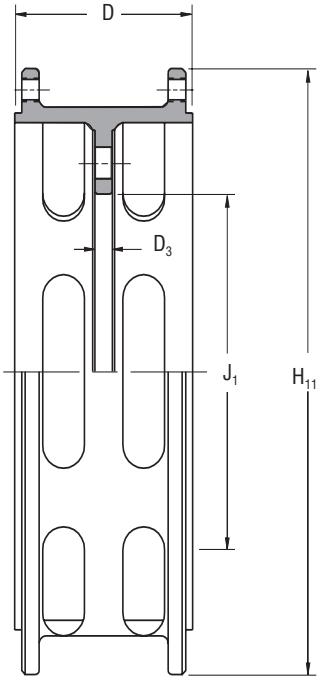
Size	Part Number	Weight	Wk²	D_9	D_{11}	H_5	H_9	H_{11}	J ❶	No.	Size	Depth
		Mass	J							L ❷		
										No.	Size	Depth
12E475	12117	9,5	0,07	86	4,83	159	178	140	206,2	10	3/8-16	19
14E475	12118	11	0,11	86	4,83	203	222	181	247,5	12	3/8-16	16
16E475	12119	17	0,26	86	4,83	248	273	232	298,3	8	1/2-13	22
19E475	12120	24	0,57	86	6,35	324	349	295	374,5	10	1/2-13	25
21.5E475	12121	37	1,19	87	6,35	362	400	349	434,8	8	3/4-10	28
24E475	12122	46	2,10	89	6,35	425	464	406	501,5	10	3/4-10	28
27E475	12123	63	3,37	89	6,35	502	540	457	574,5	12	3/4-10	28
30E600	12124	87	6,09	109	7,87	546	584	508	631,7	14	3/4-10	28
34E600	12125	111	10,08	109	7,87	648	686	610	733,3	16	3/4-10	32
40E700	12126	150	18,69	124	7,87	775	813	737	857,1	18	3/4-10	38
19VE475	12120	17	0,26	86	6,35	248	273	232	298,3	8	1/2-13	22
24VE475	12121	37	1,19	87	6,35	362	400	349	434,8	8	3/4-10	28
27VE475	12122	46	2,10	89	6,35	425	464	406	494,7	10	3/4-10	28
SI		kg	kg·m²	Dimensions in millimeters								

Notes:

❶ Tolerance +0.000/-0.005 in (+0,00/-0,13 mm)

❷ American National Standard for Unified Screw Threads.





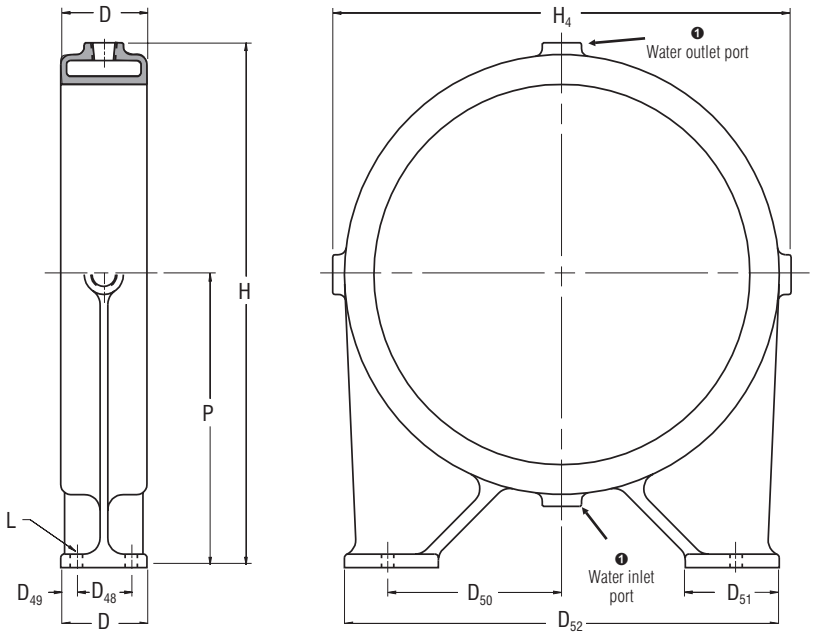
English		lb	lb·ft²	Dimensions in inches						
12E475	400234	38 ❶	2 ❶	6.38	N/A	N/A	7.88	❸	N/A	N/A
14E475	400476	64 ❶	5 ❶	6.38	N/A	N/A	9.50	❸	N/A	N/A
16E475	012135	72	10	6.25	0.50	6.75	11.63	5.500	8	0.78
19E475	012208	106	30	6.38	0.50	9.50	14.63	8.000	10	0.78
21.5E475	012098	116	40	6.38	0.63	11.00	17.13	9.625	6	0.78
24E475	012209	187	90	6.38	0.63	13.50	19.62	11.500	8	1.03
27E475	012210	234	145	6.38	0.63	16.00	22.63	14.625	8	0.78
30E600	012211	353	250	8.13	0.75	17.00	24.50	15.000	12	1.03
34E600	012212	453	445	8.13	0.75	21.00	28.50	19.000	12	1.03
Size	**Part Number**	**Weight Mass**	**Wk² J**	**D**	**D_{31}**	**H_9**	**H_{11}**	**❷ J_1**	**No L No**	**Dia. Dia.**
12E475	400234	17 ❶	0,91 ❶	162	N/A	N/A	200	❸	N/A	N/A
14E475	400476	29 ❶	2,27 ❶	162	N/A	N/A	241	❸	N/A	N/A
16E475	012135	33	4,53	159	13	171	295	140	8	20
19E475	012208	48	13,59	162	13	241	372	203	10	20
21.5E475	012098	53	18,12	162	16	279	435	244	6	20
24E475	012209	85	40,77	162	16	343	498	292	8	26
27E475	012210	106	65,69	162	16	406	575	371	8	20
30E600	012211	160	113,3	207	19	432	622	381	12	26
34E600	012212	205	201,6	206	19	533	724	483	12	26
SI		kg	kg·m²	Dimensions in millimeters						

Notes:

❶ Based upon minimum bores.

❷ Tolerance +0.005/-0.000 in (+0,13/-0,00 mm)

❸ Adapter ring bored and keyseated for shaft mounting. Bore 2.75 in (70 mm) minimum, 3.75 in (95 mm) maximum.



English		lb	in³	Dimensions in inches										
12E475	403111	104	210	5.50	1.00	3.50	6.125	4.00	15.75	21.13	17.25	4	0.66	12.50
14E475	403113	111	240	5.50	1.00	3.50	7.125	4.00	17.75	23.13	19.25	4	0.66	13.50
16E475	402456	156	650	5.50	1.00	3.50	9.500	4.00	22.50	28.00	24.00	4	0.66	16.00
19E475	402593	153	320	5.50	1.00	3.50	9.125	5.00	22.75	28.13	24.25	4	0.78	16.00
21.5E475	403115	178	350	5.50	1.00	3.50	9.875	6.00	25.25	30.63	26.75	4	0.78	17.25
24E475	403117	202	390	5.50	1.00	3.50	11.125	6.00	27.75	33.13	29.25	4	0.78	18.50
27E475	403119	223	430	5.50	1.00	3.50	12.625	6.00	30.75	36.13	32.25	4	0.78	20.00
30E600	402876	289	730	7.00	1.25	4.50	13.625	7.00	33.75	39.13	35.25	4	1.06	21.50
34E600	403121	316	820	7.00	1.25	4.50	15.625	7.00	37.75	43.13	39.25	4	1.06	23.50

Size	Part Number	Weight / Mass	Water Cavity Volume	D	D_{48}	D_{49}	D_{50}	D_{51}	D_{52}	H	H_4	L No..	L Dia	P
12E475	403111	47	3,44	140	25	89	155,6	102	400	537	438	4	17	318
14E475	403113	50	3,94	140	25	89	181,0	102	451	587	489	4	17	343
16E475	402456	71	10,7	140	25	89	241,3	102	572	711	610	4	17	406
19E475	402593	69	5,2	140	25	89	231,8	127	578	714	616	4	20	406
21.5E475	403115	81	5,7	140	25	89	250,8	152	641	778	679	4	20	438
24E475	403117	92	6,4	140	25	89	282,6	152	705	841	743	4	20	470
27E475	403119	101	7,1	140	25	89	320,7	152	781	918	819	4	20	508
30E600	402876	131	12,0	178	32	114	346,1	178	857	994	895	4	27	546
34E600	403121	143	13,4	178	32	114	396,9	178	959	1095	997	4	27	597
SI		kg	dm³	Dimensions in millimeters										

Notes:

1. 1 1/4 - 11 1/2 American National Pipe Thread. To insure a water-filled cavity, it is important that the water inlet be located at 6 o'clock and the outlet at 12 o'clock.