SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J609

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Superseding J609a

(R) Mounting Flanges and Power Take-Off Shafts for Small Engines

1. ***Scope***—This SAE Recommended Practice was developed to provide a method of recommending the availability of various dimensional output shaft and crankcase flange combinations.

1.1 **Purpose**—The purpose of this document is to provide a recommended practice for mounting flanges and power take-off shafts used in small engine powered applications. Small engines addressed herewith are the reciprocating piston type of 14.9 kW (20 hp) or less, of both 4-cycle and 2-cycle designs.

2. ***References***—There are no referenced publications specified herein.

3. ***Mounting Flanges for Horizontal Crankshaft Engines***

3.1 Illustrations of mounting flanges for horizontal crankshaft engines are shown in Figure 1. Three flange types A,B, and C are described and their corresponding specific use with take-off shaft extensions can be identified in Figure 2.

3.2 Recommended dimensional tolerances for concentricity, squareness of crankcase pilot flanges for pump and generator crankshaft mountings are specified in Figure 1.

4. ***Power Take-Off Shaft Extensions for Horizontal Crankshaft Engines***

4.1 Crankshaft design examples for keyway, pump, and generator shafts are illustrated in Figure 2. Illustration describes mounting dimensions tolerances of power take-off shaft extensions for horizontal engines. Tables 1a and 1b provide additional descriptive dimensions for shaft extensions 1, 2, 3, 4, 4a, 4b, 6, 6a, 6b, and 8.

4.2 Recommended concentricity and squareness dimensional tolerances of threaded crankshaft to their corresponding face measurement are provided in Figure 2.

5. ***Shafts and Flanges for Vertical Crankshaft Engines***

5.1 Three recommended flanges D, E, and F; suitable for vertical crankshaft engines power take-off extensions are shown in Figure 3.

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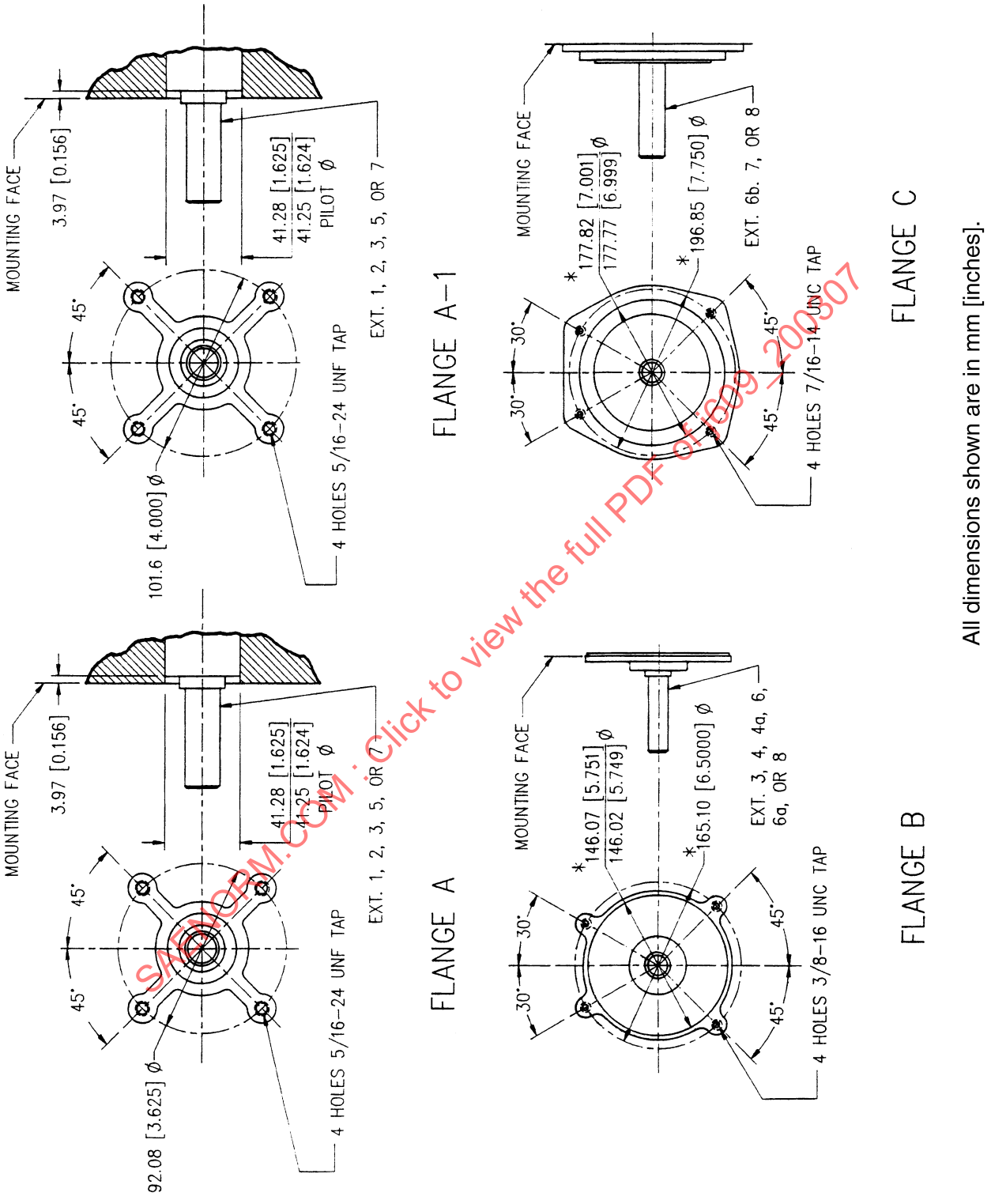

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FIGURE 1—MOUNTING FLANGE FOR HORIZONTAL CRANKSHAFT ENGINES

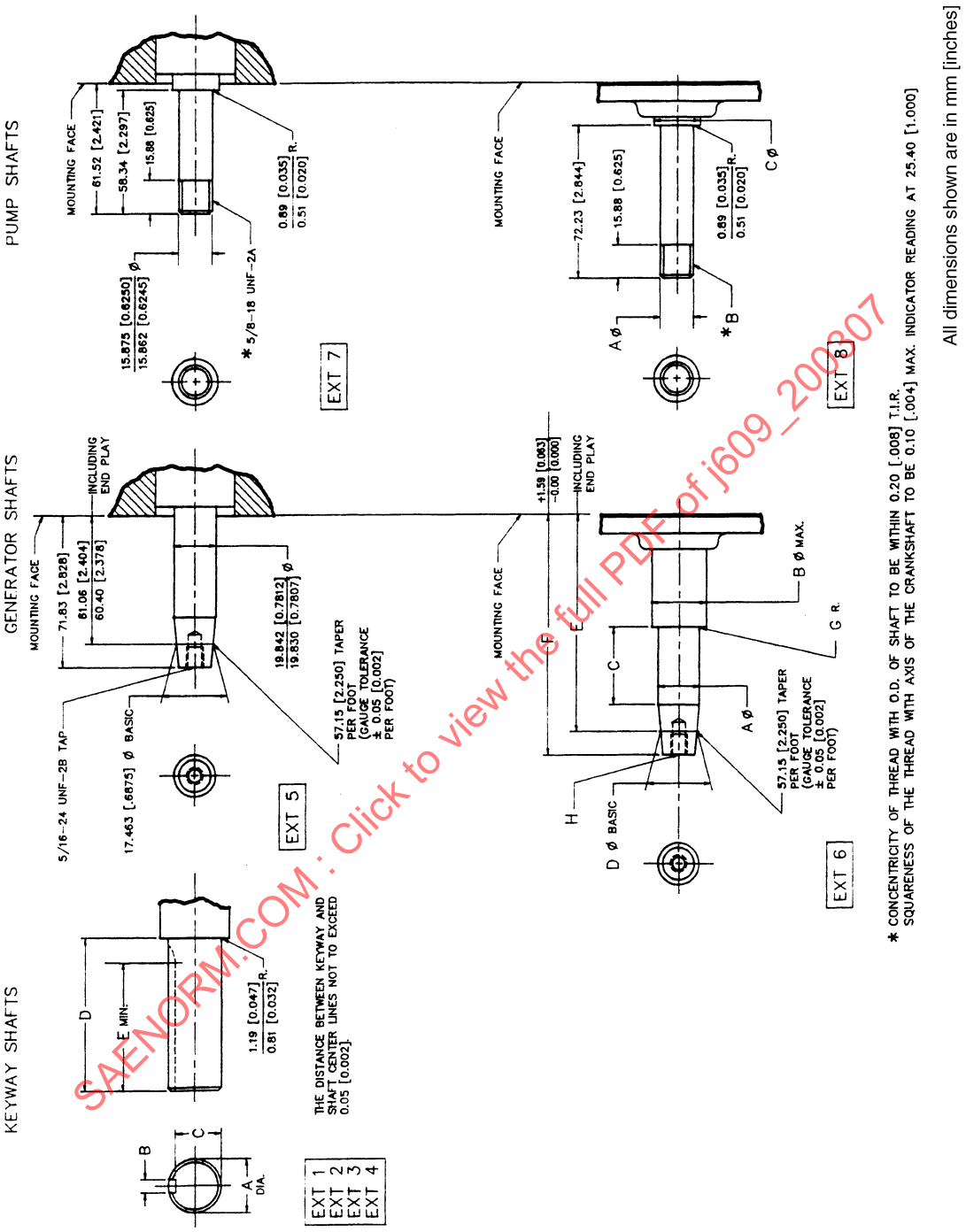

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FIGURE 2—POWER TAKE-OFF SHAFT EXTENSIONS FOR HORIZONTAL CRANKSHAFT ENGINES

TABLE 1A—POWER TAKE-OFF SHAFT EXTENSIONS FOR HORIZONTAL CRANKSHAFT ENGINES
Dimensions — mm (inches)

Extension	A	B	C	D	E	F	G	H
1	12.70 (0.500)	3.20 (0.1255)	10.89 (0.429)	42.86 (1.687)	33.33 (1.312)			
	12.67 (0.499)	3.14 (0.1240)	10.79 (0.425)					
2	15.87 (0.625)	4.77 (0.188)	13.08 (0.515)	58.34 (2.296)	47.62 (1.875)			
	15.84 (0.624)	4.72 (0.186)	12.95 (0.510)					
3	19.05 (0.750)	4.77 (0.188)	16.35 (0.644)	58.34 (2.296)	47.62 (1.875)			
	19.02 (0.749)	4.72 (0.186)	16.23 (0.639)					
4	25.40 (1.000)	6.36 (0.2505)	21.81 (0.859)	72.23 (2.843)	60.32 (2.375)			
	25.37 (0.999)	6.31 (0.2485)	21.69 (0.854)					
4a	28.57 (1.125)	6.36 (0.2505)	25.04 (0.986)	93.64 (3.687)	76.20 (3.000)			
	28.54 (1.124)	6.31 (0.2485)	24.91 (0.981)					
4b	36.49 (1.437)	9.52 (0.375)	31.87 (1.255)	107.95 (4.250)	88.90 (3.500)			
	36.47 (1.436)	9.47 (0.373)	30.98 (1.220)					
6	22.16 (0.872)	31.75 (1.250)	46.03 (1.812)	19.05 (0.075)	97.63 (3.844)	109.53 (4.312)	0.88 (0.035)	5/16-24
	22.12 (0.871)				96.82 (3.812)		0.50 (0.020)	5/16-24
6a	25.40 (1.000)		26.41 (1.040)	20.63 (0.8125)	85.14 (3.352)	110.33 (4.340)		5/16-24
	25.34 (0.998)				83.69 (3.295)			5/16-24
6b	36.51 (1.437)	39.49 (1.565)	26.98 (1.062)	31.75 (1.250)	76.58 (3.015)	84.13 (3.312)	3.30 (0.130)	3/8-16
	36.74 (1.436)	39.47 (1.564)			76.20 (3.000)		3.04 (0.120)	3/8-16

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TABLE 1B—POWER TAKE-OFF SHAFT EXTENSIONS FOR HORIZONTAL CRANKSHAFT ENGINES

Extension	A	B (Threads)
8	25.40 (1.000)	1-14 UNS-2
	25.37 (0.999)	1-14 UNS-2