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Flywheel Dimensions for Truck and Bus Applications

1. **Scope**—Although not limited to, these flywheels are normally used on trucks considered as Medium-Duty (Class 6 and 7), as well as Heavy-Duty (Class 8) trucks.
- 1.1 **Purpose**—This SAE Recommended Practice defines flywheel configurations to promote standardization of clutch installation and mounting dimensions for flywheels used with pull type single- and twin-plate truck clutches.
2. **References**
 - 2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.
 - 2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAEJ1033—Procedure for Measuring Bore and Face Runout of Flywheels, Flywheel Housings, and Flywheel Housings Adapters
SAE J1731—Pilot Bearings for Truck and Bus Applications
SAE J1806—Clutch Dimensions for Truck and Bus Applications
3. **Flywheel Specifications**—This section covers recommended flywheel dimensional specifications for several different clutch and flywheel combinations. Unless otherwise specified, dimensions listed are nominal. This document applies to new flywheels and does not attempt to provide service machining limits for remachined flywheels.
- 3.1 **Flat Type Flywheels for Use with 14-in Single- and Twin-Plate Clutches (Typically Medium-Duty Applications)**—See Table 1 and Figure 1.

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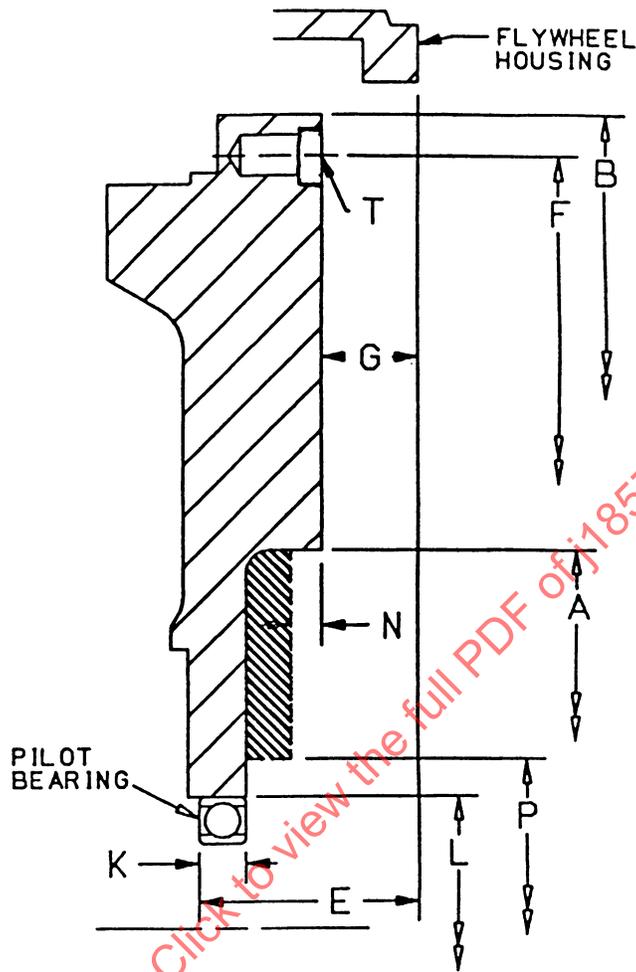
**TABLE 1—FLAT TYPE FLYWHEELS FOR USE WITH 14-in SINGLE-
AND TWIN-PLATE CLUTCHES—FLYWHEEL DIMENSIONS
(REFERENCE FIGURE 1)**

	mm	in	Reference Note
A	180 - 184.25	7.09 - 7.25	
B	420.0 Min	16.54 Min	(1)(2)
E	100.1	3.94	(3)
F	393.7	15.50	
G	66.5	2.62	
K	16.0	0.63	(4)(5)
L	62.0	2.44	(4)(5)
N	6.6 Min	0.260 Min	(6)
P	62.0 Min	2.44 Min	(7)
T	3/8-16 NC-2B √20 Min 12 Holes Equally Spaced Counterbore y 9.54 to 9.60	3/8-16 NC-2B √0.79 Min 12 Holes Equally spaced Counterbore y 0.376 to 0.378	(8)

\oplus \varnothing 0.25 M

\oplus \varnothing 0.0098 or 0.010 M

1. Clutch is located with mounting screws and no pilot lip is required. B gives outer diameter of flat face required to seat the clutch against the flywheel.
2. Face runout is 0.013 mm (0.0005 in) TIR per inch of diameter and applies between diameter A and B. Reference SAE J1033.
3. Preferred dimensions. Optional design: 105.0 mm (4.13 in).
4. Pilot bearing dimensions. Reference SAE J1731 for flywheel pilot bearing bore tolerances.
5. Preferred bearing. Optional Bearing: K = 15.0 mm (0.59 in) and L = 52.0 mm (2.05 in).
6. N is the clearance required for clutch dampers, including the maximum clutch face wear. Refer to SAE J1806 for specific details of the clutch envelopes.
7. P is the clearance required for the clutch and transmission shaft.
8. Clutch to be piloted by using shoulder cap screws. Contact clutch manufacturers for the clutch mounting bolt dimensions and tolerances.



NOTE—The shaded area denotes space available for flywheel mounting cap screw heads and for flywheel material. The clutch envelope should not encroach on this area.

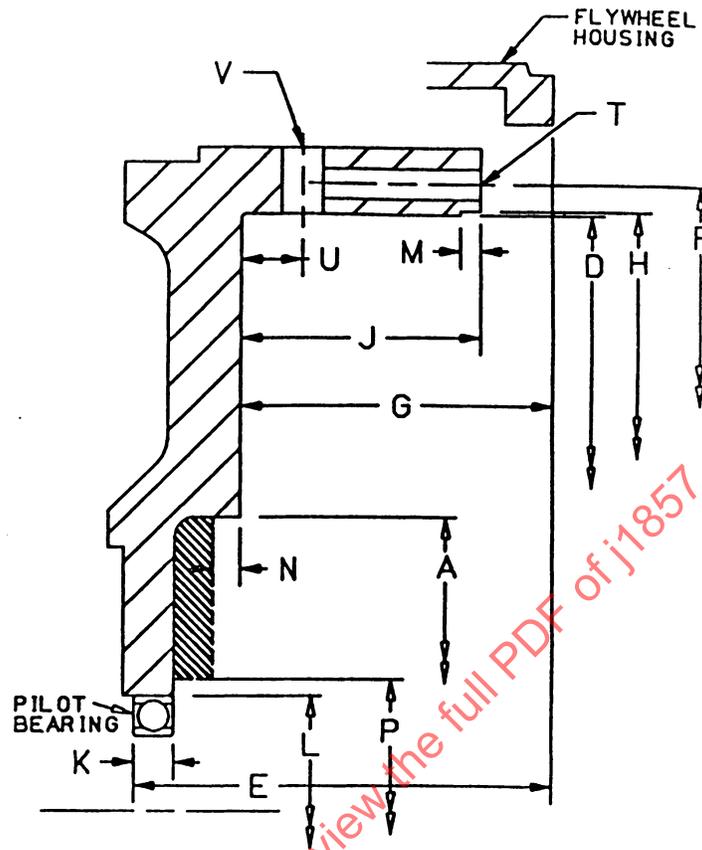
FIGURE 1—FLAT FLYWHEEL FOR 14-in SINGLE- AND TWIN-PLATE CLUTCHES

3.2 Pot Type Flywheels for Use with 14-in Twin-Plate Clutches (Typically Heavy-Duty Applications)—See Table 2 and Figure 2.

TABLE 2—POT TYPE FLYWHEELS FOR USE WITH 14-in TWIN-PLATE CLUTCHES—FLYWHEEL DIMENSIONS (REFERENCE FIGURE 2)

	mm	in	Reference Notes
A	180.0 - 184.0	7.09 - 7.24	
D	374.00 - 374.78	14.725 - 14.755	
E	100.1	3.94	
F	393.7	15.5	
G	63.5	2.50	
H	374.65 - 374.73	14.750 - 14.753	
J	74.47 - 74.73	2.932 - 2.942	
K	19.1	0.75	(1)(2)
L	72.0	2.83	(1)(2)
M	4.57 min.	0.18 min	
N	6.6 Min	0.260 Min	(3)
P	72.0 Min	2.83 Min	(4)
T	3/8-16 NC-2B ↓ 55.3 Min 12 Holes Equally Spaced	3/8-16 NC-2B ↓ 2.18 Min 12 Holes Equally Spaced	
U	19.1	0.75	
V	12.67 - 12.71 12 Holes Equally Spaced	0.4990 to 0.5005 12 Holes Equally Spaced	

1. Pilot bearing dimensions. Reference SAE J1731 for flywheel pilot bearing bore tolerances.
2. Preferred bearing. Optional Bearing: K = 16.0 mm (0.63 in) and L = 62.0 mm (2.445 in).
3. N is the clearance required for clutch dampers, including the maximum clutch face wear. Refer to SAE J1806 for specific details of the clutch envelopes.
4. P is the clearance required for the clutch and transmission shaft.



NOTE—The shaded area denotes space available for flywheel mounting cap-screw heads and for flywheel material. The clutch envelope should not encroach on this area.

FIGURE 2—POT TYPE FLYWHEEL FOR 14-in TWIN-PLATE CLUTCHES

3.3 Flat Type Flywheels for Use with 15.5-in Twin-Plate Clutches and 16-in Single-Plate Clutches (Typically Heavy-Duty Applications)—See Tables 3 and 4 and Figure 3.

TABLE 3—FLAT TYPE FLYWHEELS FOR USE WITH 15.5-in TWIN-PLATE CLUTCHES AND 16-in SINGLE-PLATE CLUTCHES—FLYWHEEL DIMENSIONS (REFERENCE FIGURE 3)

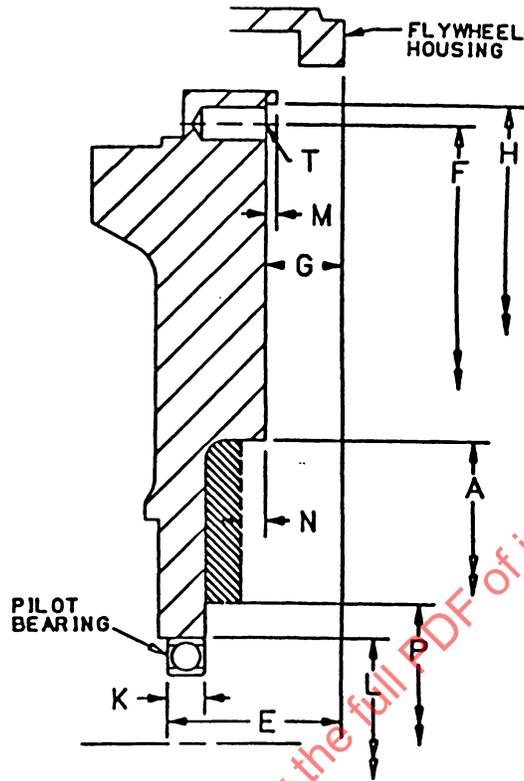
	mm	in	Reference Notes
A	See Table 4	See Table 4	
E	100.1	3.94	
F	422.28	16.625	
G	63.5	2.50	
H	435.76 - 435.84	17.156 - 17.159	
K	19.0	0.75	(1)(2)
L	72.0	2.83	(1)(2)
M	3.56 - 4.57	0.140 - 0.180	
N	See Table 4	See Table 4	(3)
P	72.0 Min	2.83 Min	(4)
T	7/16-14 NC-2B ↓ 20.0 Min. 12 Holes Equally Spaced	7/16-14 NC-2B ↓ 0.79 Min. 12 Holes Equally Spaced	

1. Pilot bearing dimensions. Reference SAE J1731 for flywheel pilot bearing bore tolerances.
2. Preferred bearing. Optional bearing: K = 16.0 mm (0.63 in) and L = 62.0 mm (2.445 in).
3. N is the clearance required for clutch dampers, including the maximum clutch face wear. Refer to SAE J1806 for specific details of the clutch envelopes.
4. P is the clearance required for the clutch and transmission shaft. Details of the clutch envelopes.

TABLE 4—FLYWHEEL DIMENSIONS (REFERENCE FIGURE 3)

Type	A mm	A in	N mm	N in
1 ⁽¹⁾	219.0 - 222.5	8.62 - 8.76	6.60 Min	0.260 Min
2 ⁽²⁾	256.5 - 257.5	10.10 - 10.14	9.40 Min	0.370 Min

1. Traditional Dimensions for Either Organic or Ceramic Faced Clutches.
2. Dimensions for Larger Damper Section Ceramic Faced Clutches.



NOTE—The shaded area denotes space available for flywheel mounting cap screw heads and for flywheel material. The clutch envelope should not encroach on this area.

FIGURE 3—FLAT FLYWHEEL FOR 15.5-in TWIN-PLATE AND 16-in SINGLE-PLATE CLUTCHES

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3.4 Flat Type Flywheels for Use with 17-in Single-Plate Clutches (Typically Heavy-Duty Applications)—See Tables 5 and 6 and Figures 4 and 5.

**TABLE 5—FLAT TYPE FLYWHEELS FOR USE WITH 17-in SINGLE-PLATE CLUTCHES—
FLYWHEEL DIMENSIONS
(REFERENCE FIGURE 4)**

	mm	in	Reference Notes
A	See Table 6	See Table 6	
E	100.1	3.94	
F	450.00	17.717	
G	59.9	2.36	
H	475.00 - 475.10	18.701 - 18.705	
K	19.0	0.75	(1)
L	72.0	2.83	(1)
M	5.5 - 8.5	0.22 - 0.33	
N	See Table 6	See Table 6	(2)
P	72.0 Min	2.83 Min	(3)
T	7/16-14 NC-2B ↓ 20.0 Min 12 Holes Unequally Spaced	7/16-14 NC-2B ↓ 0.79 Min 12 Holes Unequally Spaced	(4)(5)

1. Pilot bearing dimensions. Reference SAE J1731 for flywheel pilot bearing bore tolerances.
2. N is the clearance required for clutch dampers, including the maximum clutch face wear. Refer to SAE J1806 for specific details of the clutch envelopes.
3. P is the clearance required for the clutch and transmission shaft.
4. American standard thread size. Optional thread size is metric M10 x 1.5 - 6H.
5. See Figure 5 for bolt hole spacing.

**TABLE 6—FLYWHEEL DIMENSIONS
REFERENCE FIGURE 4**

Type	A mm	A in	N mm	N in
1(1)	235.7 - 238.3	9.28 - 9.38	7.65 Min	0.301 Min
2(2)	256.5 - 257.5	10.10 - 10.14	9.40 Min	0.370 Min

1. Traditional Dimensions for Either Organic or Ceramic Faced Clutches.
2. Dimensions for Larger Damper Section Ceramic Faced Clutches