Engine Preheaters —SAE J226a

SAE Recommended Practice
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THIS IS A PREPRINT AND WILL
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Purpose—Coolant heaters are used to prevent freezing damage and facilitate engine starting under low temperature conditions. This recommended practice provides a guideline for coolant heaters, including adequate clearances and service accessibility.

Scope—This recommended practice includes information and accommodation of both the electric immersion and tank or side arm type external heaters.

Electric Immersion Type Heaters

Straight Adaptor Design—This type is used for installation through covers, core hole plugs, etc. The heating element loop should be located to permit free convective circulation of the engine coolant.

See Fig. 1 and Table 1.

Pipe Thread Adaptor Design—This type is used where space within the cooling jacket allows clearance for a loop. (See Fig. 2 and Table 2.) Where the heater is screwed into a removable flange, the loop may be shaped as shown in Fig. 1.

ϕ *Tank Type Heater*—Where external or tank type heaters are required, suitable coolant connection must be provided at engine locations assuring adequate fluid circulation. Engines of less than approximately 6.5 ℓ (400 in^3) displacement require 1/4 NPT minimum size connections. For larger engines, use 3/8, 1/2, or 3/4 NPT according to increasing engine size, with 3/4 NPT being used for all engines of 13.1 ℓ (800 in^3) displacement and over.

TABLE 1—STRAIGHT ADAPTOR DESIGN

SAE Type	Rating	Volts	A		B Wire
			mm	in	
1A	500W	120	76.20	3.000	16/3
1B	500W	240	76.20	3.000	16/3
2A	1000W	120	114.30	4.500	16/3
2B	1000W	240	114.30	4.500	16/3
3A	1500W	120	152.40	6.000	16/3
3B	1500W	240	152.40	6.000	16/3
4A[a]	2000W	120[a]	190.50	7.500	16/3
4B	2000W	240	190.50	7.500	16/3

[a]Not recommended.

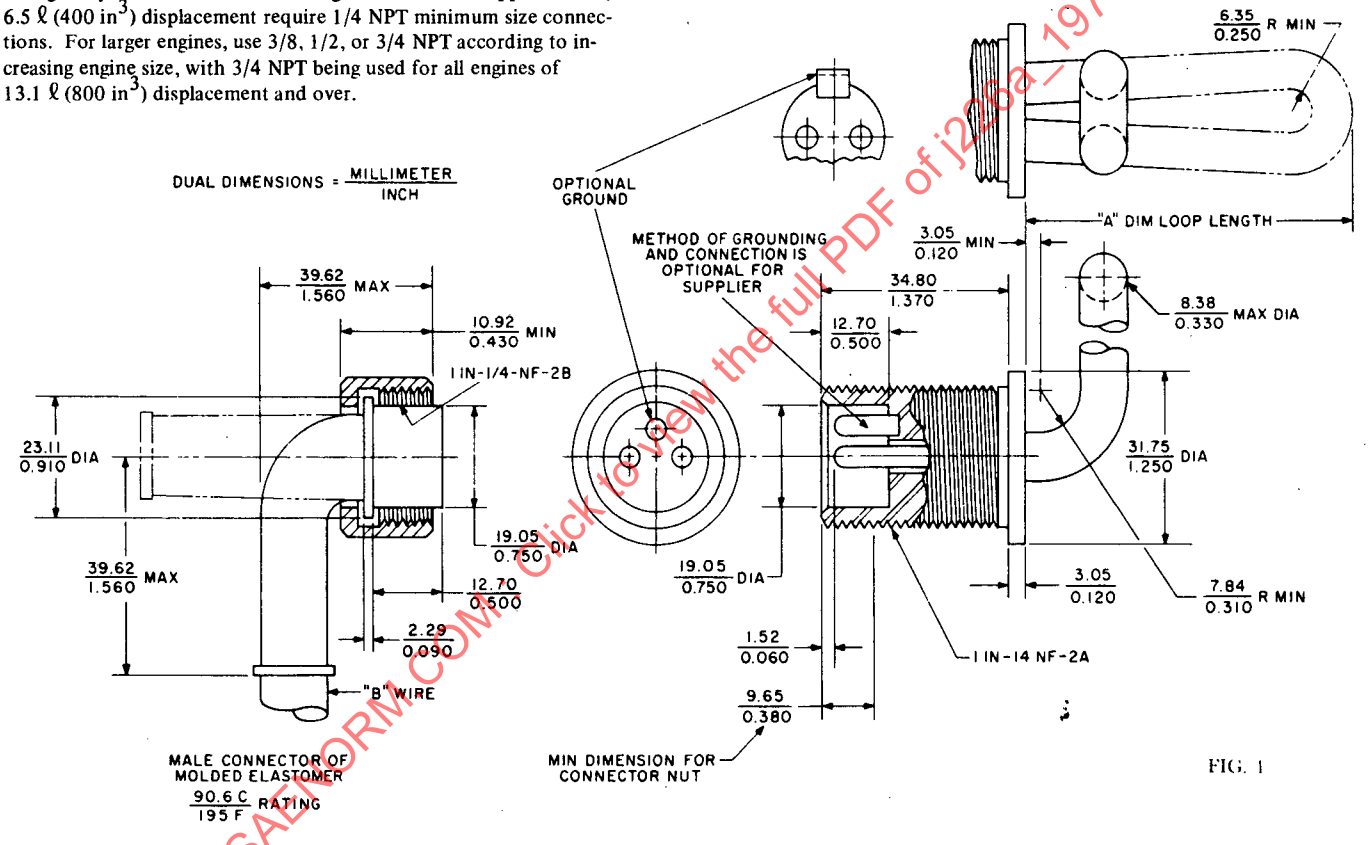

FIG. 1

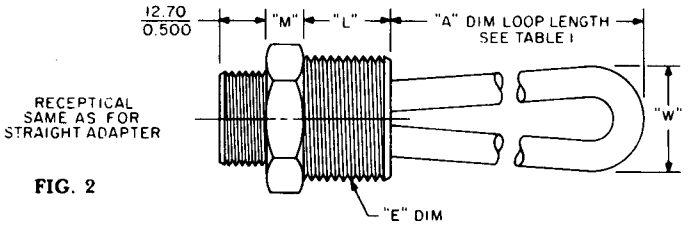

FIG. 2

TABLE 2—PIPE THREAD ADAPTOR DESIGN

E, In NPT	L		M		Max Hex Size (across flat)		W, max	
	mm	in	mm	in	mm	in	mm	in
3/4	19.05	0.750	8.89	0.350	28.45	1.120	23.11	0.910
1	23.88	0.940	8.89	0.350	34.80	1.370	28.45	1.120