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Cooperative Engineering Program

**SAE J371 JUL85**

**Drain, Fill and Level  
Plugs for Off-Road,  
Self-Propelled Work  
Machines**

SAE Recommended Practice  
Revised July 1985

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RATIONALE:

Introduction: The object is to update the recommended practice as directed under the five year review. The last review was in March, 1978.

Discussion: The technical content of this standard is unchanged from previous editions. The Introduction, Purpose and Scope were rearranged and reworded to better conform to Recommended Practice J1159 - Preparation of SAE Technical Reports.

Some metric references in the tables have been eliminated in accordance with SAE Recommended Practice J916, June, 1982 - Section 5.5.1. That eliminates metric dimensions when nominal inch sizes are referenced.

Tables and charts have been titled for clarity.

REFERENCE SECTION:

ISO 6302

SAE J48, Guidelines for Fluid Level Indicators

SAE J476, Dryseal Pipe Threads

SAE J531, Automotive Pipe, Filler, and Drain Plugs

SAE J1116, Categories of Off-Road Self-Propelled Work Machines

APPLICATION:

To standardize and, therefore, minimize the number of sizes and types of drain, fill and level plugs required. It also establishes types and sizes of pipe thread and straight thread plugs requiring commercially available hand tools for removal and installation. It is not intended to establish dimensions and materials.

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**DRAIN, FILL AND LEVEL PLUGS FOR OFF-ROAD,  
SELF-PROPELLED WORK MACHINES**

1. **INTRODUCTION:** Plugs are extensively used in off-road, self-propelled work machines as defined in SAE J1116. Loss of these plugs, stripping of the threads, or failure to tighten because of difficulty in finding the right tool can result in serious damage and/or increased down time. All the plugs listed are nominal inch sizes pending the development of metric plug standards.
2. **PURPOSE:** The purpose of this Recommended Practice is to standardize and, therefore, minimize the number of sizes and types of drain, fill, and level plugs required. It also establishes types and sizes of pipe thread and straight thread plugs requiring commercially available hand tools for removal and installation. It is not intended to establish dimensions and materials.
3. **SCOPE:** This Recommended Practice applies to off-road, self-propelled work machines as defined in SAE J1116, Categories 1, 2, 4, and 5.
4. **APPLICATION:** It is recommended that the plugs listed in Table 1, Types A, B, C, and D be used as follows:

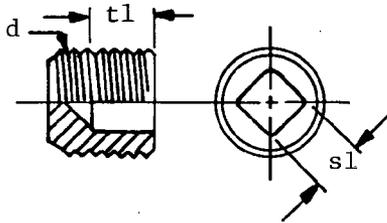
TABLE 1

APPLICATION	USE TYPE
Physical Damage Likely	A, C (C Preferred)
Clearance Problems	A, C (C Preferred)
Frequent Removal and Reassembly	D
Minimal Removal and Reassembly	B

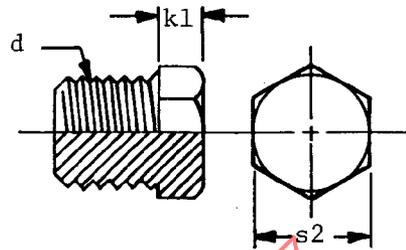
- 4.1 Below are listed the type and principal dimensions of the recommended plugs which are suggested to ease maintenance. Common tools can be used, a minimum number of tools is needed and the plugs are easily distinguished. All plugs and tools herein are nominal inch sizes.

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TYPE A  
SQUARE COUNTERSUNK HEADLESS PLUGS



TYPE B  
HEXAGON OUTSIDE HEAD PLUGS

TABLE 2

PIPE THREAD PLUGS  
DIMENSIONS MM (IN)

Type A

Type B

Taper Pipe Thread d	Socket Drive Size s1	Socket Depth t1 (min)	Wrench Size s2	Head Height k1
1/8-27 NPTF	-	-	7/16	5 (0.19)
1/4-18 NPTF	-	-	9/16	5 (0.19)
3/8-18 NPTF	-	-	11/16	6 (0.22)
1/2-14 NPTF	-	-	7/8	6 (0.22)
3/4-14 NPTF	1/2	8 (0.31)	1-1/8	8 (0.31)
1-11 1/2 NPTF	1/2	10 (0.38)	1-5/16	8 (0.31)
1-1/4-11 1/2 NPTF	3/4	12 (0.50)	1-7/8	10 (0.38)
1-1/2-11 1/2 NPTF	3/4	12 (0.50)	1-7/8	10 (0.38)
Hand Tools To Use	Socket Wrench Handles		Commercially Available Hand Tools	