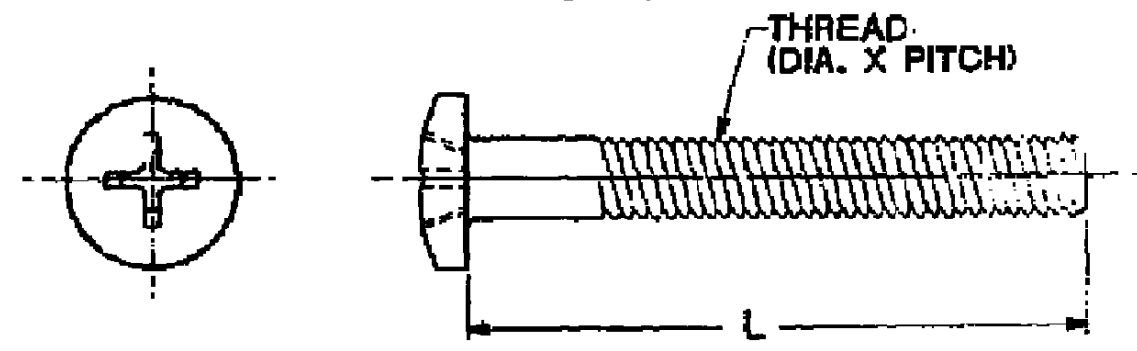


ENGINEERING STANDARD - SCREW, PAN HEAD, PHILLIPS DRIVE
CLASS 4.8 PLATED

- 1.0 PURPOSE: To document the specifications for METRIC, plated, Class 4.8, phillips pan head screws for use in Tennant Company products.
- 2.0 SCOPE: To describe the dimensions, materials, and vendor qualification requirements by Tennant Company for steel pan head phillips drive screws.
- 3.0 PART NUMBER, SIZE, AND LENGTHS: The following part numbers must conform to these specifications:

TABLE 1



Length (L)		M3x0.5	M4x0.7	M5x0.8	M6x1.0	M8x1.25	M10x1.50
<u>mm</u>	<u>Inch</u>	<u>Thread</u>	<u>Thread</u>	<u>Thread</u>	<u>Thread</u>	<u>Thread</u>	<u>THREAD</u>
6	.25	06919	06925	06931	---	---	---
10	.38	06920	06926	06932	---	---	---
12	.50	09146	---	---	---	---	---
16	.62	06921	06927	06933	09145	---	---
20	.75	06922	06928	06934	09164	09737	---
25	1.00	06923	06929	06935	382726	09196	10674
30	1.19	06924	06930	06936	---	09297	---
35	1.38	---	---	06937	33944	---	---
40	1.56	---	---	06938	09258	---	---
45	1.75	---	17223	06939	30231	---	---
50	2.00	---	---	06940	---	---	---
60	2.36		377165				
70	2.76		377166				

4.0 APPLICABLE DOCUMENTS:

International Organization for Standardization (ISO)
7045 Phillips Cross Recessed Pan Head Machine Screws

West German National Standards (DIN)
7985A Cross Recessed Pan Head Machine Screws

5.0 DEFINITIONS: The following definitions apply to the terms used in this standard.

- 5.1 **Recessed Head:** A recessed head is a head having a specially formed indentation or recess centered in its top surface.
- 5.2 **Pan Head:** On recessed pan heads, the top surface is semi-elliptical, rounding into a cylindrical side surface.
- 5.3 **Head Height:** The overall distance measured parallel to the fastener axis from the extreme top to the bearing surface.
- 5.4 **Recess Diameter:** The diameter measured in a plane perpendicular to the axis of the fastener over the intersection of the outermost extremities of the recess with the head surface.
- 5.5 **Recess Depth:** The distance measured parallel to the fastener axis from the intersection of the head surface with the maximum diameter of the recess to the bottom of the recess.
- 5.6 **Recess Width:** The distance measured in a plane perpendicular to the axis of the fastener across the intersection of the sides of the recess with the head surface.

6.0 GENERAL SPECIFICATIONS: Screws referencing this standard must conform to the following unless otherwise specified.

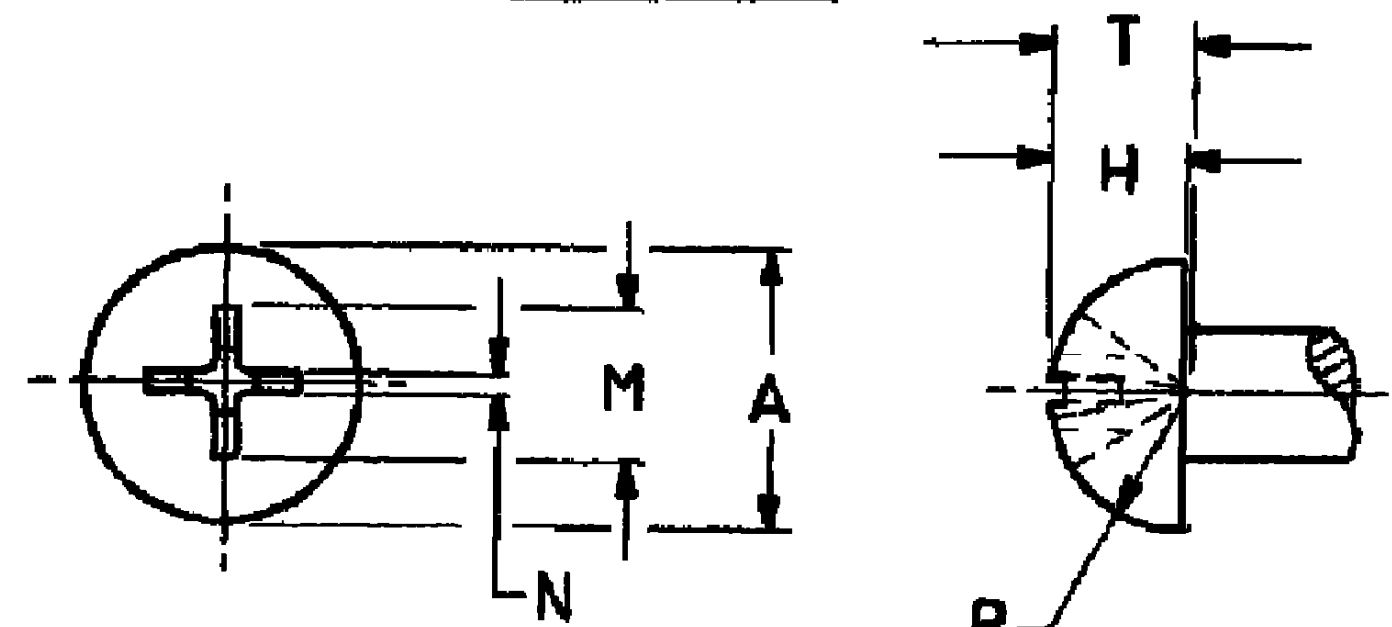
- 6.1 Material, Chemical, and Mechanical Requirements: Screws shall be made from low or medium carbon steel conforming to class 4.8, and the chemical composition of the screw material shall conform to the chemical composition specified in Table 2.

TABLE 2

<u>Element</u>	<u>Chemical Composition as Percentage by Weight</u>
Carbon, min	—
Carbon, max	0.55
Phosphorus, max	0.05
Sulphur, max	0.06

6.2 Dimensional Characteristics: Dimensions of screws referencing this standard must conform to the following:

TABLE 3
HEAD DIMENSIONS



Nominal Screw	A Dia or Thread Pitch	H Head Height	R Head Radius	R Recess Diameter		T Recess Depth		W Recess Width	
	Max	Max	Ref	Max	Min	Max	Min	Min	Driver Size
M3x0.5	6.0	2.52	5.0	3.06	2.73	1.96	1.56	0.74	1
M4x0.7	8.0	3.25	6.5	4.57	4.24	2.70	2.20	0.93	2
M5x0.8	10.0	3.95	8.0	5.07	4.74	3.20	2.70	1.00	2
M6x1.0	12.0	4.75	10.0	7.09	6.76	4.06	3.56	1.14	3
M8x1.25	16.0	6.15	13.0	9.18	8.85	5.18	4.58	1.69	4
M10x1.50	20.0	7.60	16.0	10.35	10.02	6.39	5.79	1.84	4

NOTE: All dimensions are given in millimeters.

6.3 Threads: Screw threads as received must conform to grade 6G for plain screws and grade 6H after plating.

6.4 Thread Length: These screws are fully threaded.

6.5 Length Tolerances: Length tolerances for screws must conform to the following:

TABLE 4

<u>Screw Length</u>	<u>Tolerance</u>
6	± 0.29
10, 12, 16	± 0.35
20, 25	± 0.42
30, 35, 40, 45	± 0.50
50	± 0.60
60, 70	+/- 0.60

8 6.6 Surface Finish: Pan Head Screws referencing this standard will be zinc plated to T.C.O. standard 377810

7.0 LOT ACCEPTANCE: Screws selected for test specimens shall be the same size, threads, class, and finish and shall be inspected for plating, dimensions, and threads.

8.0 PACKAGING: Screws shall be packaged in containers not exceeding 50 pounds in weight.

MATERIAL		TREATMENTS/ FINISHES		SEE ABOVE				LEVEL ID # 577 DATE	
SEE ABOVE				SEE ABOVE					
SCALE	DO NOT SCALE PRINT	TOLERANCES BELOW APPLY UNLESS OTHERWISE SPECIFIED		GENERAL NOTES		PROPRIETARY INFORMATION			
NONE		INCH TOLERANCE	METRIC TOLERANCE	DIMENSIONS WITHOUT BRACKETS ARE INCH DIMENSIONS WITH BRACKETS ARE METRIC. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE AFTER TREATMENTS AND FINISHES. IMPLIED ARE BASIC (EXACT) WITH TOLERANCES DEFINED BY TWO PARALLEL LINES AT 90 DEGREE DIMENSION LINE.		THE INFORMATION IN THIS DOCUMENT IS THE PROPERTY OF TENNANT COMPANY. IT IS SUBJECT TO RETURN UPON DEMAND AND MAY NOT BE REPRODUCED OR DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF TENNANT COMPANY.			
BY / DATE		LINEAR ±	LINEAR ±						
DWN	DG 03-15-87	SLOT WIDTH AND HOLE DIA. ±0.010 INCH / ± 0.25 MM							
MDR	P1M 8-25-99	ANGULAR ± (INCLUDES INCH AND METRIC)							
CKD	RSK 8-25-99	MACH. SURFACES ±0.25 RMS (MACH. SURFACES ±3.2 RMS)							
APPR	PK 8-25-99	PART NAME		DRAWING, TABLTD, SCREW, PAN		DWG D SIZE PART NO 25568			