

TECHNICAL MANUAL



TORQ-SET® Drive Systems

Includes comprehensive engineering Head Standards, Driver Bit Standards, Gaging Standards and Punch Standards.



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TORQ-SET®

Drive System Technical Manual



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Issue: 10/11

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TORQ-SET® ENGINEERING MANUAL

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November 27, 1963

Retyped: 5-21-64

Reissued 4-20-90

TORQ-SET[®] ENGINEERING

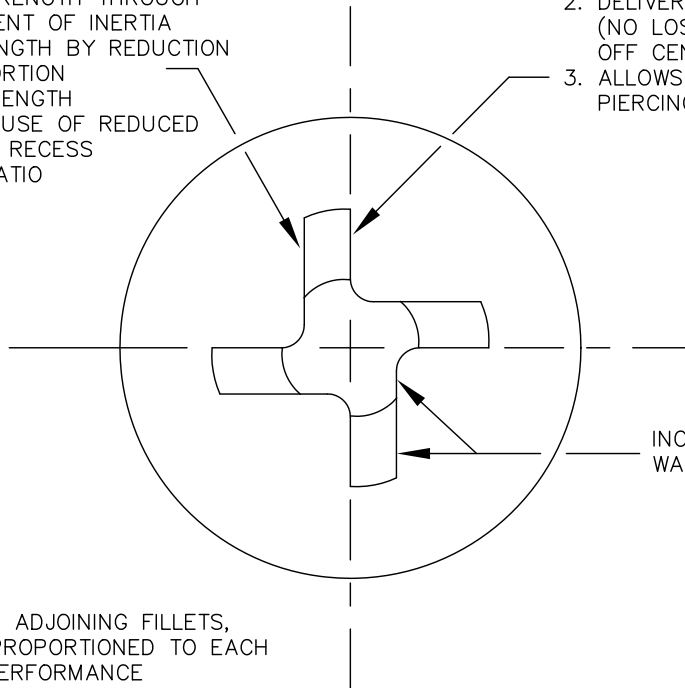
1. TORQ-SET[®] recessed head fasteners can be produced in all sizes and are currently used from #0 (.060) diameter through 5/8 (.625") diameter in various lengths and head styles. Sizes through 1-1/2 (1.500") diameter can be made as required.
2. No restriction on materials exists with the use of TORQ-SET[®] screws. Typical materials currently being produced, in addition to conventional high heat treat alloy steels, are:

A-286	302	Inconel X
17-4MO	321	Crucible "Hi-Tuf"
17-4PH	347	Greek Ascoloy
17-7PH	422	K Monel
C130AM	431	Rene' 41 & others
Titanium	H11	

3. Although the majority of Aircraft structural grade TORQ-SET[®] bolts are called out in configurations intended for basic shear load applications, the design characteristics of the recess (i.e. minimum penetration, minimal radial transition from shank to head, etc.) have proven to have excellent fatigue strength characteristics. Even in flush head configurations it has been possible (through cold working procedures) to produce TORQ-SET[®] bolts that will meet the fatigue requirements of tension type fasteners as called out in MIL-B-7838A.
4. The impact strength of any fastener, of course, varies with its mass. Another important requisite for high tensile impact strength is the uniformity of cross-sectional stress area. The displacement of material by the TORQ-SET[®] recess reduces the abrupt change in cross-sectional area at the head juncture as would be experienced in a countersunk head of more or less solid design. The improvement in tensile resilience is shown by comparing the lower (TORQ-SET[®]) curve with the upper curve for the solid head on PSC-176.
5. The above mentioned design features afford the ultimate in tensile strength, torsional load carrying ability, and impact resistance.

OFFSET WINGS FOR

1. GREATER DRIVER STABILITY
2. INCREASED DRIVER STRENGTH THROUGH GREATER POLAR MOMENT OF INERTIA
3. IMPROVED HEAD STRENGTH BY REDUCTION OF CUPPING OR DISTORTION
4. GREATER FATIGUE STRENGTH
5. EASIER HEADING BECAUSE OF REDUCED RADIAL FLOW, BETTER RECESS DIAMETER TO ROOT RATIO



NOTE:

RECESS WING THICKNESS, ADJOINING FILLETS, AND PENETRATION ARE PROPORTIONED TO EACH SCREW SIZE FOR BEST PERFORMANCE

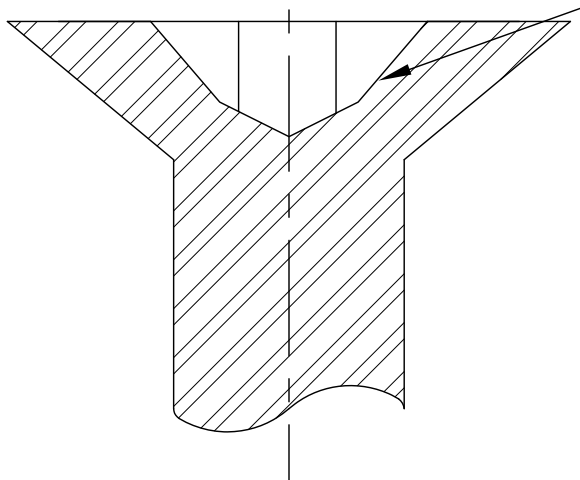
RADIAL DRIVING WALLS

1. GIVE SURFACE CONTACT WITH BIT
2. DELIVER FULL APPLIED TORQUE (NO LOST COMPONENT DUE TO OFF CENTER TIGHTENING)
3. ALLOWS BETTER MATERIAL FLOW FOR PIERCING STRAIGHT WALLED RECESS

INCREASED AREA OF REMOVAL WALL FACILITATES LOOSENING

WIDE OUTER WINGS

1. LOCATE CENTER OF PRESSURE FURTHER FROM CENTER LINE WITH REDUCED UNIT STRESS
2. PROVIDE FOR STRONGER BIT
3. BETTER GRAIN FLOW



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TORQ-SET® RECESS

DRAWN
V.W. MOTTOLA

DATE
10/30/63

DRAWING NUMBER

PSC-165A

CONFIRMED:
L. DOUGAN

DATE
11/04/11

SHEET 1 OF 1

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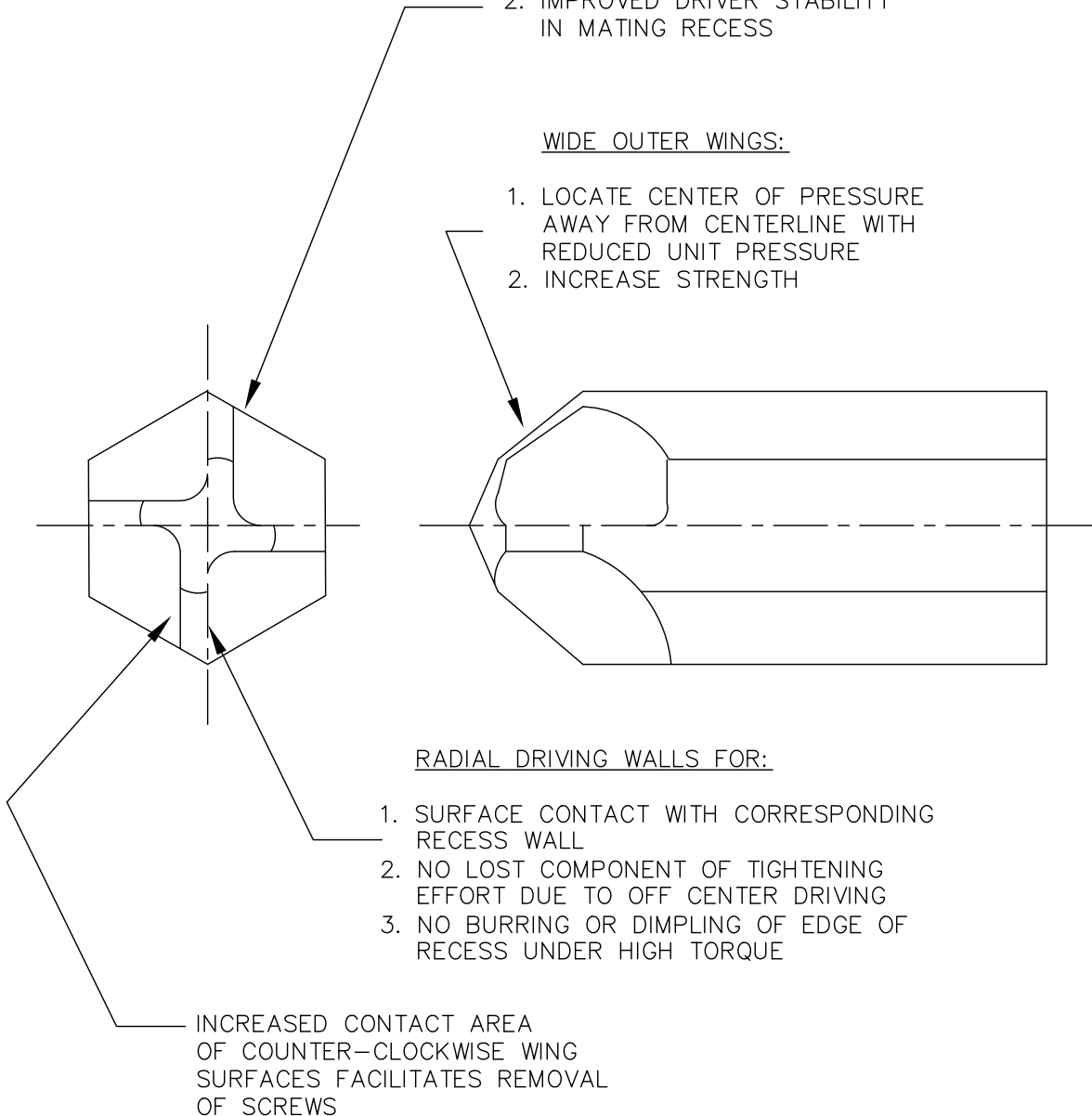
A Reissued
4-20-90

OFFSET WINGS FOR:

1. INCREASED DRIVER STRENGTH THROUGH GREATER POLAR MOMENT OF INERTIA.
2. IMPROVED DRIVER STABILITY IN MATING RECESS

WIDE OUTER WINGS:

1. LOCATE CENTER OF PRESSURE AWAY FROM CENTERLINE WITH REDUCED UNIT PRESSURE
2. INCREASE STRENGTH



RADIAL DRIVING WALLS FOR:

1. SURFACE CONTACT WITH CORRESPONDING RECESS WALL
2. NO LOST COMPONENT OF TIGHTENING EFFORT DUE TO OFF CENTER DRIVING
3. NO BURRING OR DIMPLING OF EDGE OF RECESS UNDER HIGH TORQUE

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CONFIGURATION OF TORQ-SET® DRIVER

DRAWN V.W. MOTTOLA	DATE 12/6/62	DRAWING NUMBER PSC-174
CONFIRMED: L. DOUGAN	DATE 11/04/11	SHEET 1 OF 1

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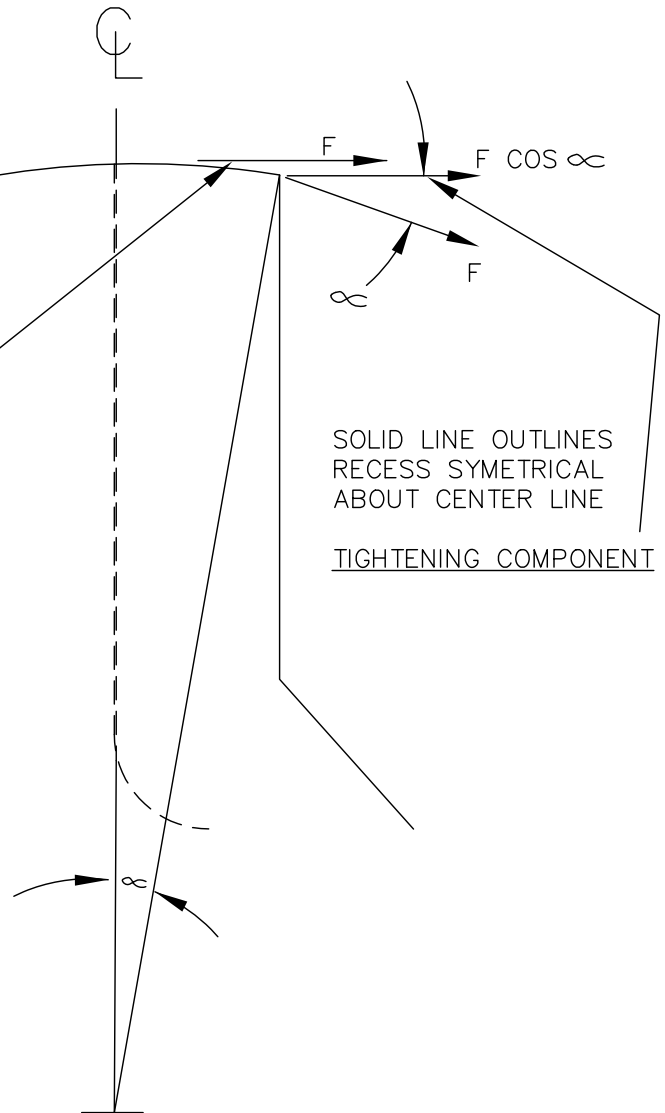
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DOTTED LINE OUTLINES
RECESS WITH DRIVING WALLS
ON CENTER LINE

TIGHTENING COMPONENT

SOLID LINE OUTLINES
RECESS SYMMETRICAL
ABOUT CENTER LINE

TIGHTENING COMPONENT



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ILLUSTRATION SHOWING NO LOST COMPONENT OF FORCE IN TORQ-SET[®] DESIGN

DRAWN V.W. MOTTOLA	DATE 10/30/63	DRAWING NUMBER PSC-174A SHEET 1 OF 1
CONFIRMED: L. DOUGAN	DATE 11/04/11	

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PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
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RESILIENCE

SOLID HEAD	9.88 IN-LBS
TORQ-SET® RECESSED HEAD	8.77 "
TORQ-SET® RECESSED HEAD EXCLUDING VOLUME BETWEEN RECESS WINGS	7.72 "
ONE DIA. (.375) FULL BODY SHANK	9.89 "
ONE DIA. (.375) THREAD	7.90 "

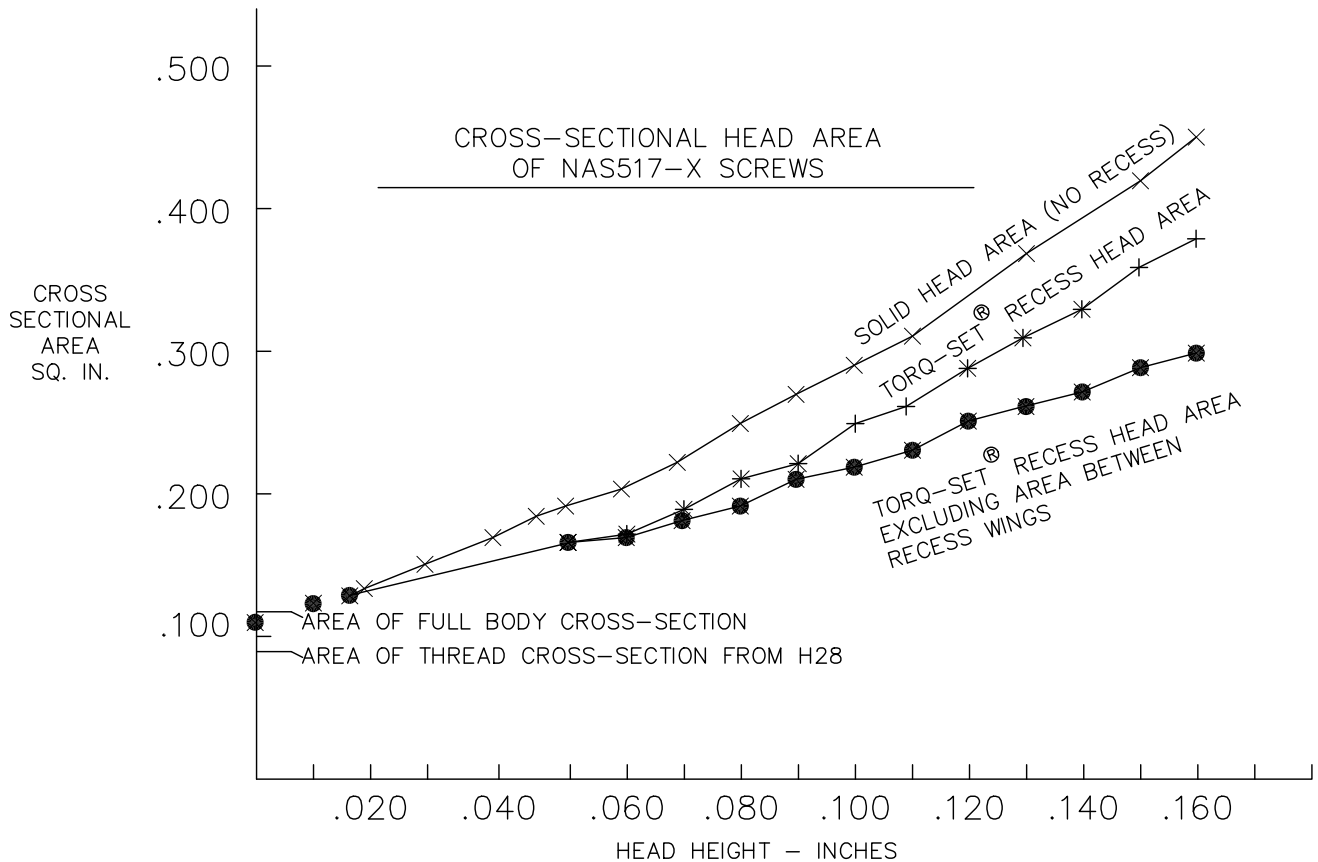
NOTE THAT RESILIENCE OF THE TORQ-SET® RECESSED HEAD FALLS MIDWAY BETWEEN A ONE-DIAMETER FULL BODY SECTION AND A ONE-DIAMETER THREADED SECTION

$$\text{RESILIENCE } U = \frac{S^2 V}{2E} \text{ INCH POUNDS}$$

S = STRESS LEVEL (75% OF 160000)

V = VOLUME

E = MODULUS OF ELASTICITY (30,000,000)



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TITLE: **TABULATION OF RESILIENCE AND CURVES OF
CROSS-SECTIONAL HEAD AREA OF NAS517-6-X SCREWS**

DRAWN:

V. W. MOTTOLA

DATE:

5-20-55

DRAWING NUMBER

PSC-176

CONFIRMED:

L. DOUGAN

DATE:

11-04-11

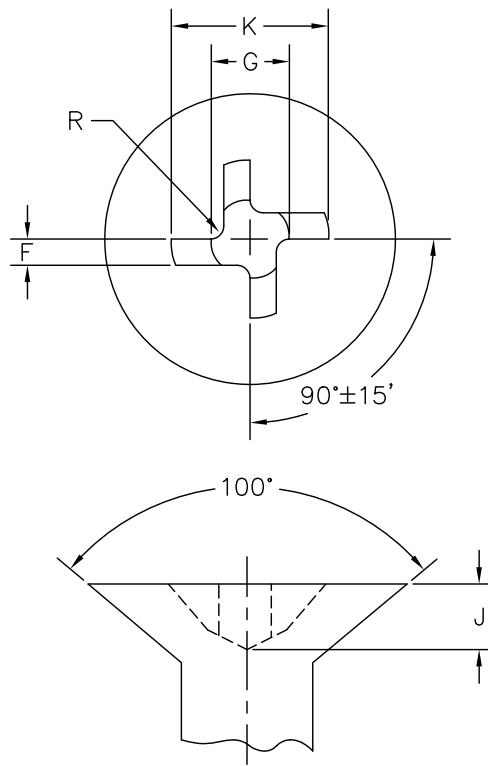
SHEET 1 OF 1

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A RERAWN 5-1-56
B REVISED TITLE 2-26-64
C Reissued 4-20-90



100° COUNTERSUNK HEAD

FOR SCREW SIZES 0-1-2

K =	1.280	(BASIC MAJOR THREAD DIAMETER)
J =	.46	(BASIC MAJOR THREAD DIAMETER)
G =	.58	(BASIC MAJOR THREAD DIAMETER)
F =	.20	(.086)
R =		SEE TABULATION SHEET 3

TOLERANCE

+.005"	-.005"
+.003"	-.007"
+.002"	-.002"
+.001"	-.001"

FOR SCREW SIZES 3 THROUGH 1/4

K =	1.280	(BASIC MAJOR THREAD DIAMETER)
J =	.46	(BASIC MAJOR THREAD DIAMETER)
G =	.58	(BASIC MAJOR THREAD DIAMETER)
F =	.20	(BASIC MAJOR THREAD DIAMETER)
R =		SEE TABULATION SHEET 3

+.005"	-.005"
+.003"	-.007"
+.002"	-.002"
+.001"	-.002"

FOR SCREW SIZES 5/16 THROUGH 7/16

K =	1.125	(BASIC MAJOR THREAD DIAMETER)
J =	.38	(BASIC MAJOR THREAD DIAMETER)
G =	.58	(BASIC MAJOR THREAD DIAMETER)
F =	.20	(BASIC MAJOR THREAD DIAMETER)
R =		SEE TABULATION SHEET 3

+.005"	-.005"
+.003"	-.007"
+.002"	-.002"
+.001"	-.002"

FOR SCREW SIZES 1/2 THROUGH 5/8

K =	1.125	(BASIC MAJOR THREAD DIAMETER)
J =	.38	(BASIC MAJOR THREAD DIAMETER)
G =	.58	(BASIC MAJOR THREAD DIAMETER)
F =	.20	(BASIC MAJOR THREAD DIAMETER)
R =		SEE TABULATION SHEET 3

+.005"	-.005"
+.003"	-.007"
+.002"	-.002"
+.002"	-.002"

A Reissued
4-20-90

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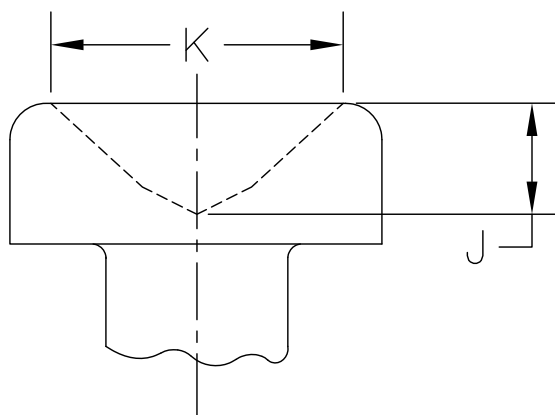
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RECESS DIMENSION FORMULAS FOR STANDARD TORQ-SET® HEAD STYLES

DRAWN V.W. MOTTOLA	DATE 11/1/63	DRAWING NUMBER PSC-264
CONFIRMED: L. DOUGAN	DATE 11/04/11	SHEET 1 OF 3

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FLAT FILLISTER AND FLAT PAN HEADS

	FOR SCREW SIZES 0-1-2	TOLERANCE
K =	1.360 (BASIC MAJOR THREAD DIAMETER)	+.005" - .005"
J =	.50 (BASIC MAJOR THREAD DIAMETER)	+.003" - .007"
G =	.58 (BASIC MAJOR THREAD DIAMETER)	+.002" - .002"
F =	.20 (.086)	+.001" - .001"
R =	SEE TABULATION SHEET 3	

	FOR SCREW SIZES 3 THROUGH 1/4	TOLERANCE
K =	1.360 (BASIC MAJOR THREAD DIAMETER)	+.005" - .005"
J =	.50 (BASIC MAJOR THREAD DIAMETER)	+.003" - .007"
G =	.58 (BASIC MAJOR THREAD DIAMETER)	+.002" - .002"
F =	.20 (BASIC MAJOR THREAD DIAMETER)	+.001" - .002"
R =	SEE TABULATION SHEET 3	

	FOR SCREW SIZES 5/16 THROUGH 3/8	TOLERANCE
K =	1.205 (BASIC MAJOR THREAD DIAMETER)	+.005" - .005"
J =	.42 (BASIC MAJOR THREAD DIAMETER)	+.003" - .007"
G =	.58 (BASIC MAJOR THREAD DIAMETER)	+.002" - .002"
F =	.20 (BASIC MAJOR THREAD DIAMETER)	+.001" - .002"
R =	SEE TABULATION SHEET 3	

	FOR SCREW SIZES 7/16	TOLERANCE
K =	1.125 (BASIC MAJOR THREAD DIAMETER)	+.005" - .005"
J =	.38 (BASIC MAJOR THREAD DIAMETER)	+.003" - .007"
G =	.58 (BASIC MAJOR THREAD DIAMETER)	+.002" - .002"
F =	.20 (BASIC MAJOR THREAD DIAMETER)	+.001" - .002"
R =	SEE TABULATION SHEET 3	

	FOR SCREW SIZES 1/2 THROUGH 5/8	TOLERANCE
K =	1.125 (BASIC MAJOR THREAD DIAMETER)	+.005" - .005"
J =	.38 (BASIC MAJOR THREAD DIAMETER)	+.003" - .007"
G =	.58 (BASIC MAJOR THREAD DIAMETER)	+.002" - .002"
F =	.20 (BASIC MAJOR THREAD DIAMETER)	+.002" - .002"
R =	SEE TABULATION SHEET 3	

B Revised
11-14-07

A Reissued
4-20-90

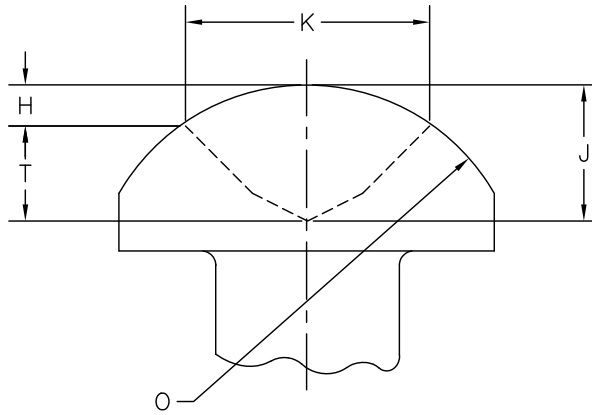
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RECESS DIMENSION FORMULAS FOR STANDARD TORQ-SET® HEAD STYLES

DRAWN V.W. MOTTOLA	DATE 11/1/63	DRAWING NUMBER PSC-264
CONFIRMED: L. DOUGAN	DATE 11/04/11	SHEET 2 OF 3
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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PAN, BRAZIER & BUTTON HEADS

FOR SCREW SIZES 0 THROUGH 5/8

TOLERANCE

K =	1.125	(BASIC MAJOR THREAD DIAMETER)	+ .005" - .005"
J =		T + H	
T =	.38	(BASIC MAJOR THREAD DIAMETER)	+ .003" - .007"
H =	$0 - \sqrt{0^2 - \frac{K^2}{4}}$		
R =	SEE TABULATION BELOW		

FOR SCREW SIZES 0-1-2

F =	.20	(.086)	+ .001" - .001"
G =	.58	(BASIC MAJOR THREAD DIAMETER)	+ .002" - .002"

FOR SCREW SIZES 3 THROUGH 7/16

F =	.20	(BASIC MAJOR THREAD DIAMETER)	+ .001" - .002"
G =	.58	(BASIC MAJOR THREAD DIAMETER)	+ .002" - .002"

FOR SCREW SIZES 1/2 THROUGH 5/8

F =	.20	(BASIC MAJOR THREAD DIAMETER)	+ .002" - .002"
G =	.58	(BASIC MAJOR THREAD DIAMETER)	+ .002" - .002"

TABULATION FOR "R" DIMENSION

SCREW SIZE	0	1	2	3	4	5	6	8	10	12	1/4	5/16
	.000	.000	.000	.000	.008	.008	.016	.016	.023	.023	.023	.031
	.010	.010	.010	.010	.018	.018	.030	.030	.040	.040	.040	.052
SCREW SIZE	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/8	1-1/4	1-3/8	1-1/2
	.031	.048	.062	.078	.078	.078	.078	.109	.109	.125	.125	.156
	.052	.072	.089	.108	.108	.108	.108	.149	.149	.175	.175	.211

A Reissued
4-20-90

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RECESS DIMENSION FORMULAS FOR STANDARD TORQ-SET® HEAD STYLES

DRAWN V.W. MOTTOLA	DATE 11/1/63	DRAWING NUMBER PSC-264 SHEET 3 OF 3
CONFIRMED: L. DOUGAN	DATE 11/04/11	

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The following minimum torque values are established for the inspection of the Torq-Set[®] recessed head screws of all head styles, in typical materials of 160KSI strength level and higher, with normal coatings and finishes.

The test procedure shall be in accordance with PSC-395A.

(1) the end load in paragraph 3a is 15.0 pounds, and (2) the bit wing thicknesses "F" are in accordance with PSC-170. Bits used for testing shall meet the appropriate requirements and shall not show evidence of distortion or deformation.

RECESS SIZE	CLOCKWISE TORQUE (DRIVING DIRECTION)	COUNTER-CLOCKWISE-TORQUE (REMOVAL DIRECTION)
0	not established at this time	
2	4 1/2 IN-LBS	2 1/2 IN-LBS
4	14	10
6	30	26
8	50	40
10	70	50
1/4	180	145
5/16	270	230
3/8	600	430
7/16	925	725
1/2	1250	1050
9/16	1750	1400
5/8	not established at this time	

ACCEPTANCE CRITERIA

- No burrs or raises of metal are permitted on the driving edges of the recess allowing the application of the clockwise torque values listed. Minor surface scraping or "bruising" is permitted.
- Burrs or raises of metal up to .003 are permitted on the removal wings of the recess following the application of the counterclockwise torque values listed.

LIMITATION

- Screws with drilled heads are not subject to recess torque tests.

A TSCN9 10-30-63
B Reissued 4-20-90
C Completely Revised 12-3-91
1/ ECO 100 08/11/92

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TITLE:

MINIMUM TORQUE VALUES FOR TORQ-SET[®] SCREWS, 160,000 PSI MINIMUM

DRAWN:

R.E.C.

DATE:

10-30-63

DRAWING NUMBER

PSC-395

CONFIRMED:

L. DOUGAN

DATE:

11-04-11

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TORQUE TESTING PROCEDURE FOR TORQ-SET® SCREW PRODUCTS

SCOPE:

This specification covers torque testing procedures for TORQ-SET® screws, and should serve as a guide for all Quality Control Inspection personnel responsible for the acceptance and performance of TORQ-SET® products.

A. APPLICABLE SPECIFICATIONS AND PUBLICATIONS:

The following specifications and publications shall form a part of this specification.

1. TORQ-SET® Engineering Manual – P.S.C.:

- a. SG-112 – TORQ-SET® Recess Gage (Go and NoGo).
- b. SG-112A – TORQ-SET® Penetration Values.
- c. SG-147 – TORQ-SET® Curved Top Head Dial Indicator Fallaway Gage.
- d. SG-137 – TORQ-SET® Penetration Gage.

2. Test Equipment:

- a. Sturtevant Torque Tester, Model #TTF-1/4, #TTF-1/2, or equivalent with special adaptor.
- b. Sturtevant or equivalent calibrated torque wrenches, with range from:

0-50	in-lbs	F-50-1
0-100	"	F-100-1
0-600	"	S-600-1
0-1200	"	S-1200-1

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TITLE: **TORQUE TESTING PROCEDURE FOR
TORQ-SET® SCREW PRODUCTS**

DRAWN:
S. GREGORY

DATE:
08/11/92

DRAWING NUMBER

PSC-395A

CONFIRMED:
L. DOUGAN

DATE:
4/23/12

SHEET 1 OF 4

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PHONE: 774-396-6190 FAX: 508-966-2326

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

3. Bits:

- a. All TORQ-SET® driver bits used for torque testing shall meet the dimensional requirements of PSC-170 and the physical requirements of QC-37C except that impact testing per paragraph 3 is not a mandatory requirement.
- b. Bits are to be discarded when signs of wear or when rounded edges appear on the driving or removal walls.

B. PROCEDURES:

1. Test Specimens:

TORQ-SET® screws shall meet the dimensional and physical requirements of Section A1 of this specification prior to torque testing. Test specimens shall be selected at random from production lots in a manner that will eliminate the possibility of stratification.

2. Specimen Mounting:

Specimen being tested is to be affixed to the test fixture in a vertical manner that will assure alignment with the mating driver bit, and held rigidly enough to prevent rotation when subjected to torque loading beyond the physical strength of the test specimen. It also should be held as close as possible to the head shank junction, thus minimizing the chance of misalignment.

3. Weights and Adaptors:

- a. The specimen mating driver bit, torque delivery shaft, adaptors, torque wrench and additional affixed weights shall be 15.00 pounds.
- b. Engage the mating driver bit with the specimen recess. Care should be taken to ensure axial alignment of the driver with the test specimen. Care should also be taken to assure that the specimen has been subjected to full weight allowables as outlined in Paragraph 3a above.
- c. Torque loads shall be delivered both clockwise and counter-clockwise, beginning with the counter-clockwise direction. It is recommended that the specimen being tested only be subjected to the minimum torque requirements, as set forth herein.

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TITLE:

TORQUE TESTING PROCEDURE FOR TORQ-SET® SCREW PRODUCTS

DRAWN:
S. GREGORY

DATE:
08/11/92

DRAWING NUMBER

PSC-395A

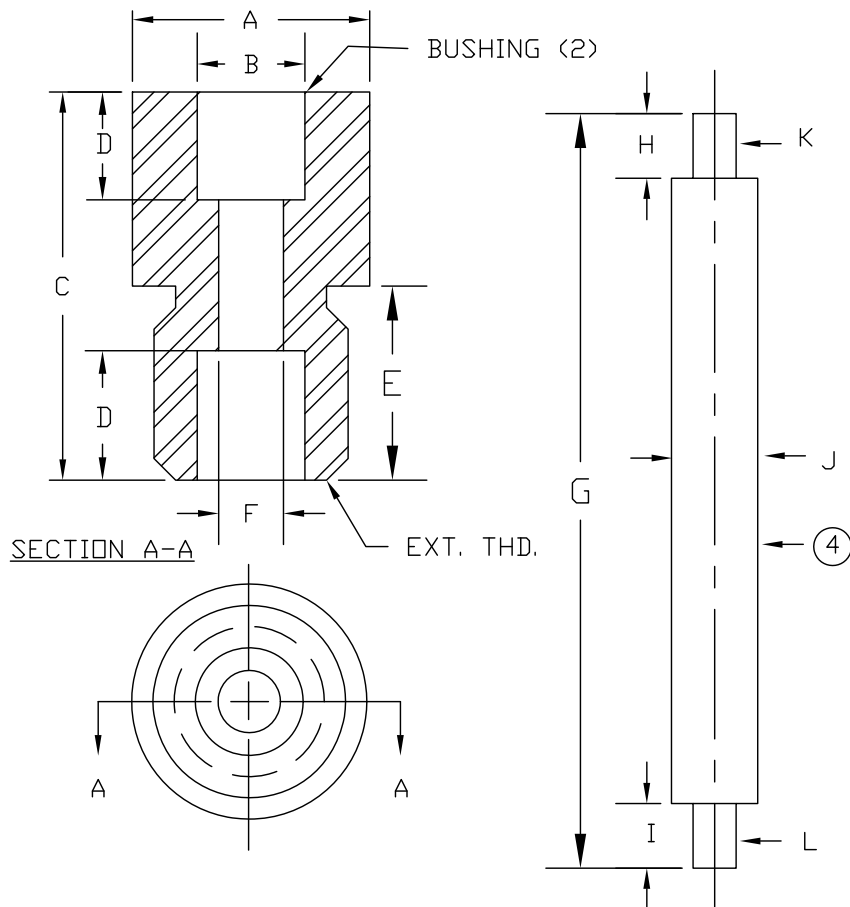
CONFIRMED:
L. DOUGAN

DATE:
4/23/12

SHEET 2 OF 4

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PHONE: 774-396-6190 FAX: 508-966-2326

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NOTES:

- 1 - NO.1 ADAPTOR FOR MODEL TTF-1/4 TORQUE TESTER
- 2 - NO.2 ADAPTOR FOR MODEL TTF-1/2 TORQUE TESTER
- 3 - USE THOMPSON BALL BUSHINGS OR EQUIVALENT
- 4 - HEAT TREAT TO ROCKWELL C56-60.

NO.	EXT. THD	BUSHING NO. (NOTE 3)	A	B +.0005 -.0000	C	D	E	F	G	H	I	J	K HEX.	L SQUARE
1	1 1/4-7 UNC 2A	A61014	2	.6250	2 1/2	7/8	1 1/8	.386	6	1/2	7/16	.370	1/4	1/4
2	2 1/4 - 4 1/2 UNC 2A	A122026	3	1.249	4 1/8	1 5/8	1 7/8	.760	9	7/8	7/8	.745	7/16	1/2

**ADAPTOR FOR STURTEVANT TORQUE
TESTERS TTF 1/4 AND TTF 1/2**

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TITLE:

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TORQ-SET® SCREW PRODUCTS**

DRAWN:
S. GREGORY

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L. DOUGAN

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SHEET 3 OF 4

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

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TORQUE VALUES FOR NON-DESTRUCTIVE ACCEPTANCE

TESTING FOR TORQ-SET®

RECESSED HEAD PRODUCTS

In order that once-tested TORQ-SET® fasteners may be used in applications, without being overstressed during inspection, the following torque values will apply for TORQ-SET® standard products of all head styles in the 140,000 and 160,000 PSI ranges.

SCREW SIZE

TORQUE

(Using Axial Load of 15 pounds)
140,000 and 160,000 PSI ranges.

2	4 inch pounds
4	8 "
6	16 "
8	31 "
10	50 "
1/4	125 "
5/16	180 "
3/8	350 "
7/16	600 "
1/2	850 "
9/16	1100 "
5/8	NOT ESTABLISHED

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TITLE: **TORQUE TESTING PROCEDURE FOR
TORQ-SET® SCREW PRODUCTS**

DRAWN: S. GREGORY	DATE: 08/11/92	DRAWING NUMBER PSC-395A SHEET 4 OF 4
CONFIRMED: L. DOUGAN	DATE: 4/23-12	

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COMPOSITE TABULATION OF WING THICKNESS OF TORQ-SET® PUNCH, RECESS AND DRIVER

Screw Size	Punch "F"	Recess "F" PSC-264,PSC-430 AND SG-112	Bit "F" PSC-170	Bit Tol.	MINIMUM Clearance "F" Min. Recess "F" Max. Bit	MAXIMUM Clearance Max. Recess "F" Min. Bit "F"
0	.018 .017	.018 .016	.0155 .0140	.0015	.0005	.0040
1	.018 .017	.018 .016	.0155 .0140	.0015	.0005	.0040
2	.018 .017	.018 .016	.0155 .0140	.0015	.0005	.0040
3	.021 .020	.021 .018	.0175 .0160	.0015	.0005	.0050
4	.023 .021	.023 .020	.0185 .0170	.0015	.0015	.0060
5	.026 .024	.026 .023	.0215 .0205	.0015	.0015	.0055
6	.029 .027	.029 .026	.0245 .0230	.0015	.0015	.0060
8	.034 .032	.034 .031	.0295 .0280	.0015	.0015	.0060
10	.039 .037	.039 .036	.0345 .0330	.0015	.0015	.0060
1/4	.051 .049	.051 .048	.0465 .0435	.0030	.0015	.0075
5/16	.064 .062	.064 .061	.0595 .0565	.0030	.0015	.0075
3/8	.076 .074	.076 .073	.0705 .0675	.0030	.0025	.0085
7/16	.089 .087	.089 .086	.0835 .0805	.0030	.0025	.0085
1/2	.102 .099	.102 .098	.0945 .0915	.0030	.0035	.0105
9/16	.115 .112	.115 .111	.1055 .1020	.0035	.0045	.0110
5/8	.127 .124	.127 .123	.1175 .1140	.0035	.0055	.0130

A Reissued
4-20-90

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TITLE:

COMPOSITE TABULATION OF WING THICKNESS OF TORQ-SET® PUNCH, RECESS AND DRIVER

DRAWN:

DATE:

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
4/23/12

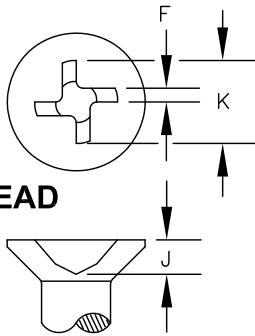
PSC-428

SHEET 1 OF 1

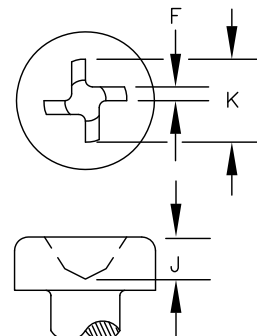
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100° FLUSH HEAD



FLAT FILLISTER HEAD AND FLAT PAN HEAD



Screw Size	Recess & Driver Size	Wing Diam. K	Wing Thick. F	Recess Depth J	Recess Pen.
0	0	.082 .072	.018 .016	.031 .021	.0225 .0145
1	1	.098 .088	.018 .016	.037 .027	.0270 .0185
2	2	.115 .105	.018 .016	.043 .033	.0315 .0225
3	3	.132 .122	.021 .018	.049 .039	.0365 .0270
4	4	.148 .138	.023 .020	.055 .045	.0405 .0305
5	5	.165 .155	.026 .023	.061 .051	.0450 .0350
6	6	.182 .172	.029 .026	.066 .056	.0500 .0395
8	8	.215 .205	.034 .031	.078 .068	.0595 .0480
10	10	.248 .238	.039 .036	.090 .080	.0685 .0560
1/4	1/4	.325 .315	.051 .048	.118 .108	.0890 .0750
5/16	5/16	.357 .347	.064 .061	.122 .112	.0860 .0700
3/8	3/8	.427 .417	.076 .073	.145 .135	.1030 .0850
7/16	7/16	.498 .488	.089 .086	.169 .159	.1205 .1005
1/2	1/2	.568 .558	.102 .098	.193 .183	.1375 .1155
9/16	9/16	.638 .628	.115 .111	.217 .207	.1545 .1305
5/8	5/8	.708 .698	.127 .123	.241 .231	.1710 .1450
3/4	3/4	.849 .839	.152 .148	.288 .278	.2060 .1760
7/8	7/8	.989 .979	.177 .173	.336 .326	.2395 .2055
1"	1"	1.130 1.120	.202 .198	.383 .373	.2740 .2360

Screw Size	Recess & Driver Size	Wing Diam. K	Wing Thick. F	Recess Depth J	Recess Pen.
0	0	.087 .077	.018 .016	.033 .023	.0250 .0170
1	1	.104 .094	.018 .016	.039 .029	.0300 .0215
2	2	.122 .112	.018 .016	.046 .036	.0350 .0260
3	3	.140 .130	.021 .018	.053 .043	.0405 .0310
4	4	.157 .147	.023 .020	.059 .049	.0450 .0350
5	5	.175 .165	.026 .023	.066 .056	.0500 .0400
6	6	.193 .183	.029 .026	.072 .062	.0555 .0450
8	8	.228 .218	.034 .031	.085 .075	.0660 .0545
10	10	.263 .253	.039 .036	.098 .088	.0760 .0635
1/4	1/4	.345 .335	.051 .048	.128 .118	.0990 .0850
5/16	5/16	.382 .372	.064 .061	.134 .124	.0985 .0825
3/8	3/8	.457 .447	.076 .073	.161 .151	.1180 .1000
7/16	7/16	All sizes from 7/16" to 1" Same as 100° Flush Head			
1/2	1/2				
9/16	9/16				
5/8	5/8				

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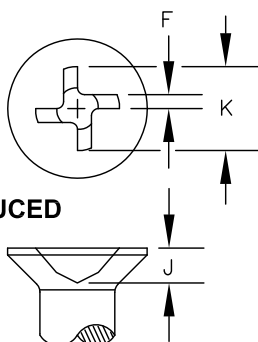
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TORQ-SET® RECESS DIMENSIONS

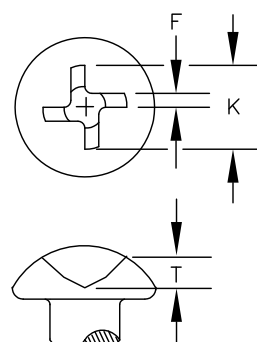
DRAWN R.C. & L.P.	DATE 3/18/64	DRAWING NUMBER PSC-430
CONFIRMED: L. DOUGAN	DATE 11/04/11	SHEET 1 OF 4
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

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100° FLUSH REDUCED HEAD



BRAZIER, PAN & BUTTON HEADS.



Screw Size	Recess & Driver Size	Wing Diam. K	Wing Thick. F	Recess Depth J	Recess Pen.
0	These sizes are not available				
1					
2					
3					
4					
5					
6					
8	6	.182 .172	.029 .026	.066 .056	.0500 .0395
10	8	.215 .205	.034 .031	.078 .068	.0595 .0480
1/4	10	.248 .238	.039 .036	.090 .080	.0685 .0560
5/16	1/4	.325 .315	.051 .048	.118 .108	.0890 .0750
3/8	5/16	.357 .347	.064 .061	.122 .112	.0860 .0700
7/16	3/8	.427 .417	.076 .073	.145 .135	.1030 .0850
1/2	7/16	.498 .488	.089 .086	.169 .159	.1205 .1005
9/16	1/2	.568 .558	.102 .098	.193 .183	.1375 .1155
5/8	9/16	.638 .628	.115 .111	.217 .207	.1545 .1305

Screw Size	Recess & Driver Size	Wing Diam. K	Wing Thick. F	Recess Depth T	Recess Pen.
0	0	.073 .063	.018 .016	.026 .016	.0180 .0100
1	1	.087 .077	.018 .016	.031 .021	.0215 .0130
2	2	.102 .092	.018 .016	.036 .026	.0250 .0160
3	3	.116 .106	.021 .018	.041 .031	.0285 .0190
4	4	.131 .121	.023 .020	.046 .036	.0320 .0220
5	5	.146 .136	.026 .023	.051 .041	.0355 .0255
6	6	.160 .150	.029 .026	.055 .045	.0390 .0285
8	8	.190 .180	.034 .031	.065 .055	.0470 .0355
10	10	.219 .209	.039 .036	.075 .065	.0540 .0415
1/4	1/4	.286 .276	.051 .048	.098 .088	.0695 .0555
5/16	5/16	All sizes from 5/16" to 1" Same as 100° Flat Head			
3/8	3/8				
7/16	7/16				
1/2	1/2				
9/16	9/16				
5/8	5/8				

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TORQ-SET® RECESS DIMENSIONS

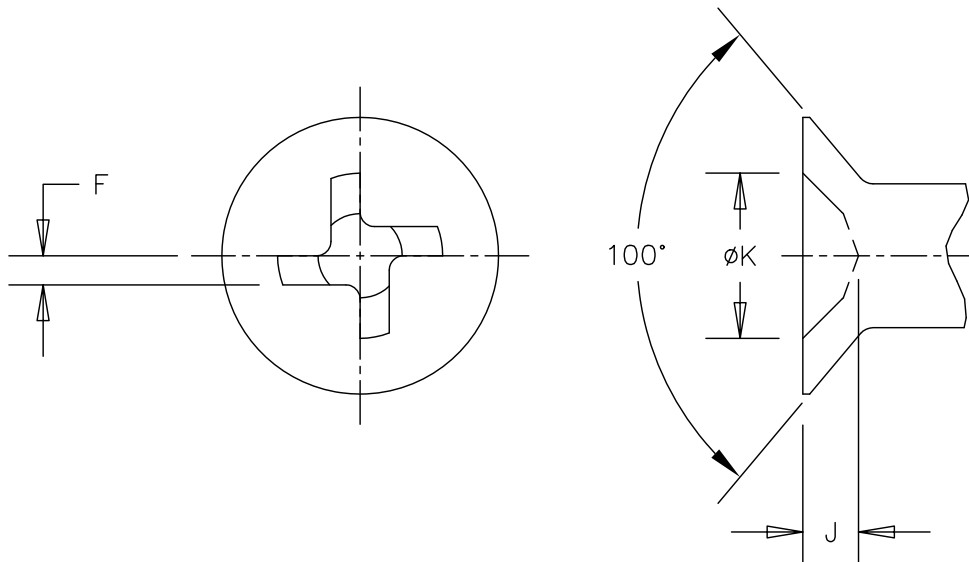
DRAWN R.C. & L.P.	DATE 3/18/64	DRAWING NUMBER PSC-430
CONFIRMED: L. DOUGAN	DATE 11/04/11	

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ECO # 149
4-23-12
A Reissued
4-20-90



METRIC

SCREW SIZE	RECESS AND DRIVER SIZE	DIMENSIONS			
		ØK	F	J	RECESS PEN.
M1.6	0	2.08 1.83	0.46 0.41	0.79 0.53	0.572 0.368
M2	1	2.49 2.24	0.46 0.41	0.94 0.69	0.688 0.470
M2.5	3	3.35 3.10	0.53 0.46	1.24 0.99	0.927 0.686
M3	4	3.76 3.51	0.58 0.51	1.40 1.14	1.029 0.775
M3.5	6	4.62 4.37	0.74 0.66	1.68 1.42	1.270 1.003
M4	8	5.46 5.21	0.86 0.79	1.98 1.73	1.511 1.219
M5	10	6.30 6.05	0.99 0.91	2.29 2.03	1.740 1.422
M6	1/4	8.26 8.00	1.30 1.22	3.00 2.74	2.261 1.905
M7	1/4	8.26 8.00	1.30 1.22	3.00 2.74	2.261 1.905
M8	5/16	9.07 8.81	1.63 1.55	3.10 2.84	2.184 1.778
M10	3/8	10.85 10.59	1.93 1.85	3.68 3.43	2.616 2.159
M12	1/2	14.43 14.17	2.59 2.49	4.90 4.65	3.493 2.934

REVISION

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TITLE:

TORQ-SET®
METRIC 100° FLUSH HEAD

DRAWN

G.DILLING

DATE

4/23/12

DRAWING
NUMBER

PSC-430

SHEET 3 OF 4

CHECKED:

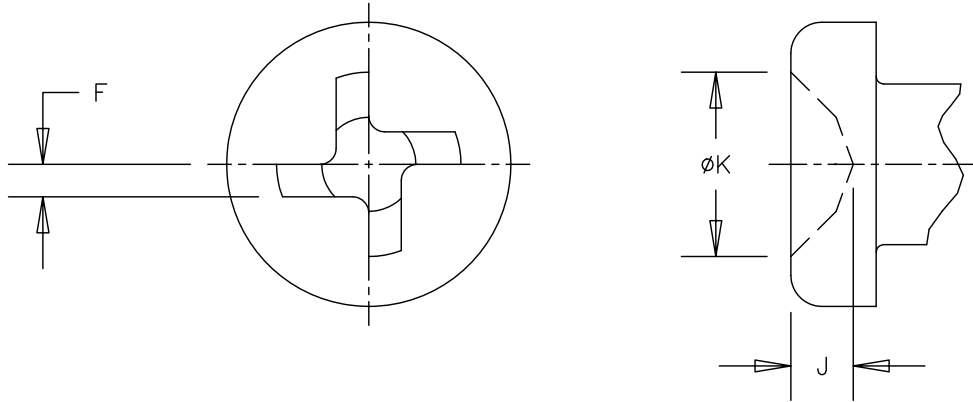
G.DILLING

DATE

4/23/12

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX®
AND POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



METRIC

SCREW SIZE	RECESS AND DRIVER SIZE	DIMENSIONS			
		ØK	F	J	RECESS PEN.
M1.6	0	2.21 1.96	0.46 0.41	0.84 0.58	0.635 0.432
M2	1	2.64 2.39	0.46 0.41	0.99 0.74	0.762 0.546
M2.5	3	3.56 3.30	0.53 0.46	1.35 1.09	1.029 0.787
M3	4	3.99 3.73	0.58 0.51	1.50 1.24	1.143 0.889
M3.5	6	4.90 4.65	0.74 0.66	1.83 1.57	1.410 1.143
M4	8	5.79 5.54	0.86 0.79	2.16 1.91	1.676 1.384
M5	10	6.68 6.43	0.99 0.91	2.49 2.24	1.930 1.613
M6	1/4	8.76 8.51	1.30 1.22	3.25 3.00	2.515 2.159
M7	1/4	8.76 8.51	1.30 1.22	3.25 3.00	2.515 2.159
M8	5/16	9.70 9.45	1.63 1.55	3.40 3.15	2.502 2.096
M10	3/8	11.61 11.35	1.93 1.85	4.09 3.84	2.997 2.540
M12	1/2	14.43 14.17	2.59 2.49	4.90 4.65	3.493 2.934

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TITLE:

TORQ-SET®
METRIC FLAT PAN HEAD

DRAWN

G.DILLING

DATE

4/23/12

DRAWING
NUMBER

PSC-430

SHEET 4 OF 4

CHECKED:

G.DILLING

DATE

4/23/12

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TORQ-SET® ENGINEERING MANUAL

I N D E X

DRIVERS & BITS

9/13/73
4/20/90
8/24/93
7/13/99
2/25/05
5/15/13
11-30-16

<u>DOCUMENT NUMBER</u>	<u>DESCRIPTION</u>	<u>SHEET</u>	<u>DATE</u>
QC-37C	QUALITY CONTROL SPECIFICATION #37C	1 of 5 2 of 5 3 of 5 4 of 5 5 of 5	11-30-16 11-30-16 11-30-16 11-30-16 11-30-16
PSC-170	TORQ-SET® INSERT BITS FOR POWER DRIVERS & HAND SCREWDRIVERS	1 of 2 2 of 2	11-02-93 11-02-93
PSC-170A	SQUARE DRIVE ADAPTER FOR HEX BITS		04-20-90
PSC-212	TORQ-SET® INSERT BITS FOR HAND SCREWDRIVERS		12-07-94
PSC-212AA	HAND DRIVERS FOR TORQ-SET® BITS		04-20-90
PSC-212A&B	HAND DRIVERS FOR TORQ-SET® BITS		05-15-13
PSC-212C&D	HAND DRIVERS (STUBBY) FOR TORQ-SET® BITS		05-15-13
PSC-216	MAGNETIC ADAPTER FOR TORQ-SET® BITS		05-15-13
PSC-265	TORQ-SET® POWER DRIVER BIT		11-02-93
PSC-268	TORQ-SET® HAND SCREWDRIVER WOOD & SUPERLOID HANDLE		04-20-90
PSC-273	TORQ-SET® POWER DRIVER BIT		04-20-90
PSC-310	OFFSET BIT HOLDERS FOR PSC-212 BITS		04-20-90
PSC-310A	OFFSET BIT HOLDERS FOR PSC-170 BITS		04-20-90
PSC-405	SPECIAL TORQ-SET® BIT WITH SPRING BALL LOCK		04-20-90
PSC-425	TORQ-SET® BITS FOR MINIMUM CLEARANCE APPLICATIONS		04-20-90
PSC-433	3/4 SIZE TORQ-SET® POWER DRIVER INSERT BIT		04-20-90

November 27, 1963

August 11, 1992

May 15, 2013

TORQ-SET[®] DRIVER BITS AND ADAPTERS

The TORQ-SET[®] bits being the counterpart of the recess, offer one of the best possible designs for the delivery of torque. The offset wing yields over twenty percent increase in the section modulus of the bit, which is reflected in a corresponding increase in the torque strength of the bit, compared to a symmetrical design, without increasing the wing thickness or other dimensions.

Because of its simple shank construction, TORQ-SET[®] bits are adaptable to all power and hand driving tools. TORQ-SET[®] bits are produced with 1/4, 5/16, 7/16, 5/8 hexagon shanks adaptable directly to all common power screw-drivers.

Hand tightening may be employed by the direct use of open end or box wrenches. For more precise torque control, standard torque wrenches may be used with the adaptors on PSC-170A or with 12 point sockets.

QUALITY CONTROL SPECIFICATION #37C

Procedure for inspection and impact testing of TORQ-SET® bits.

I. PURPOSE

This specification outlines the procedures, sampling plans, and minimum requirements for the inspection of TORQ-SET® bits. It is intended for the use of the Inspection Department in checking finished lots of bits before they are accepted into stock.

II. MATERIAL COVERED BY THIS SPECIFICATION

This applies to all lots of TORQ-SET® power driver bits and hand driver insert bits. Any specially modified bit configuration other than those covered by the following Phillips Screw Company documents must be reviewed by the Phillips Screw Company.

TORQ-SET® hand drivers (PSC-268) are also to be inspected to the requirements of this specification, except that they will not be impact tested. Torque testing will be performed on the hand driver blade only. Handle to be tested to ANSI B107.4 or Federal Spec. GGG-S-121.

III. SAMPLING, TEST PROCEDURES AND SPECIFICATION REQUIREMENTS

The following inspections will be performed on each lot of finished bits submitted for test. A lot is defined as a group of bits of the same size and type received at the same time. Grouping of lots (different sizes or types, or same size and type but different receipt dates) is not permitted.

A. Dimensional Characteristics and General Appearance

- Count bits – up to 200 pcs. hand count.
Over 200 pcs. – scale count using small bench scale.
- Inspect for burrs, proper part number, size, manufacturer's name, symbol, or code, and general appearance.
Up to 200 pcs. – 100% check.
Over 200 pcs. – Use sampling plan .25% AQL.
- Gage using sampling plan .25% AQL and gage per PSC-776.
- Check wing thickness (F dimension) of each wing using sampling plan 1.0% AQL inspection level L8.

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TITLE:

TORQ-SET® DRIVER & BITS QUALITY CONTROL SPECIFICATION

DRAWN:
J. GRADY

DATE:
11-08-61

DRAWING NUMBER

QC-37C

CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 5

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

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REVISION
ECO 54
01/30/86
Reissued
04/20/90

MIL-STD-105A .25% AQL
INSPECTION LEVEL II

Lot Size	Sample Size	Acct. No.	Rej. No.
0-800	75	0	1
801-3200	150	1	2
3201-8000	225	2	3

MIL-STD-105B 1.0% AQL
INSPECTION LEVEL L8

Lot Size	Sample Size	Acct. No.	Rej. No.
0-800	25	0	1
801-3200	50	1	2
3201-8000	75	2	3

5. Check other dimensions including point angle, hex size, and overall length per proper prints and check effectiveness of retaining grooves.
Up to 200 pcs. - check 10 pcs.
Over 200 pcs. - check 15 pcs.

Effectiveness of retaining groove can be checked by inserting bits in a driver socket and verifying that they enter the socket reasonably well, are retained securely, and will disengage easily. A detailed dimensional check of the retaining grooves is not required.

B. Physical Test Requirements

1. Rockwell Hardness
Up to 200 pcs. - check 12 pcs.
Over 200 pcs. - check 15 pcs.

Specification Requirements

Bit Size Hardness
Up to 1/4 size Rc 57-62
5/16 and larger Rc 56-60

2. Torsional Strength
Up to 200 pcs. - check 12 pcs.
Over 200 pcs. - check 15 pcs.

1/ECD 109
06/24/93
Revised
4-20-90
REVISION

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TITLE: **TORQ-SET® DRIVER & BITS**
QUALITY CONTROL SPECIFICATION

DRAWN: J. GRADY	DATE: 11-08-61	DRAWING NUMBER QC-37C SHEET 2 OF 5
CHECKED: G. LaMONICA	DATE: 02-25-05	

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TORSIONAL STRENGTH REQUIREMENTS FOR TORQ-SET® BITS

The following represents minimum torque strength values to be expected from TORQ-SET® bits and hand driver blades when tested in hardened (Rc 61-63) test blocks having recess dimensions per flat fillister head tabulations on PSC-430 and sheet 5. The torque test fixture used shall be capable of preventing any axial movement of the bit while testing. The bit shall be firmly engaged into the full depth of the test recess with end pressure not to exceed 20.5 pounds. Further, the bit shall be tested in the tightening direction only (clockwise) and should not exceed the specified value by more than 10% to prevent undue test block wear.

<u>SIZE</u>	<u>PSC-170 POWER BITS</u>	<u>HAND DRIVER BLADES AND PSC-212 INSERT BITS</u>
02	10 in./lbs.	10 in./lbs.
03	12 "	12 "
04	18 "	18 "
05	32 "	32 "
06	45 "	45 "
08	65 "	65 "
10	100 "	100 "
1/4	250 "	150 "
5/16	500 "	250 "
3/8	900 "	550 "
7/16	1300 "	
1/2	2200 "	
9/16	2400 "	
5/8	3000 "	

3. Impact Strength (Not an inspection requirement. Furnished for information only.)

- a. Take sample quantity per following table for each lot of bits to be tested.

<u>Lot Size</u>	<u>Sample Size</u>
0-50 pcs.	1
51-200	2
201-500	3
501-1000	4
1001-3000	5
3001-10000	6

REVISION
 1/ECO 100 08-11-92
 2/ECO 109 06/24/93
 3/ECO 110 09/24/93
 4/ECO 166 11/30/16

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TITLE:

TORQ-SET® DRIVER & BITS QUALITY CONTROL SPECIFICATION

DRAWN:
J. GRADY

DATE:
11-08-61

DRAWING NUMBER

QC-37C

CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 3 OF 5

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- b. Test each bit in sample per following procedure using hardened (Rc 61–63) test fixtures with recesses per flat fillister heads on PSC–430 and sheet 5.

<u>BIT SIZE</u>	<u>DRIVER</u>	<u>DRIVER SETTING</u>	<u>DRIVER AIRLINE OPERATING SETTING PRESSURE OR TORQUE SETTING</u>	<u>TEST METHOD</u>	<u>MINIMUM TEST TIME</u>
2	ARO Model 106	#1	40 PSI Running	Drill	25 seconds
3	"	#1	52 " "	Press Fixture	30 "
4	"	#2	60 " "	"	30 "
5	"	#1	70 " "	"	30 "
6	"	#1	84 " "	"	25 "
8	"	#3	84 " "	"	20 "
10	"	#3	84 " "	"	30 "
1/4	Black & Decker Size 12 Type A.	Clutch Set 1/2 turn Off Max.	220 in./lbs.	"	40 "
5/16	Ingersoll–Rand Size 5040–T		300 in./lbs.	"	30 "
3/8	Ingersoll–Rand Size 5040–T		450 in./lbs.	"	40 "

- c. Test must be continued for three minutes or failure, whichever occurs first. Tested bits which did not fail after three minutes must not be put back in the lot.

IV. ACCEPTANCE AND REJECTION

Accept lot if all bits inspected and tested meet the dimensional and physical test requirements of paragraph III. Reject the lot if the sample does not meet the requirements of paragraph III.

REVISED
04/20/90
REVISION

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TITLE:

TORQ-SET® DRIVER & BITS QUALITY CONTROL SPECIFICATION

DRAWN:
J. GRADY

DATE:
11–08–61

DRAWING NUMBER

QC-37C

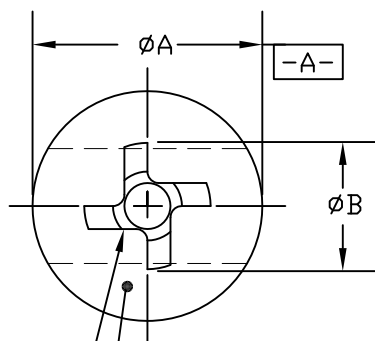
CHECKED:
G. LaMONICA

DATE:
02–25–05

SHEET 4 OF 5

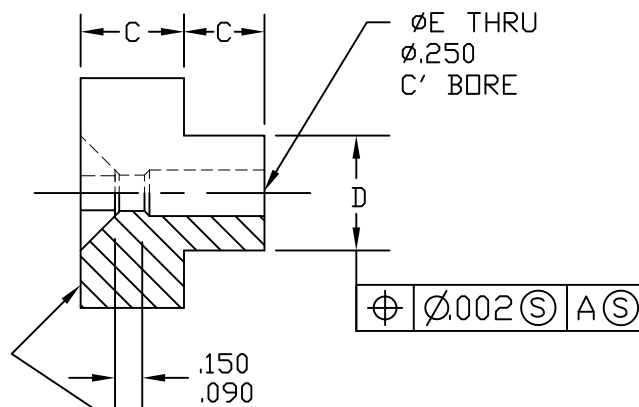
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RECESS PER PSC-430
FLAT FILLISTER HEAD

⊕ .005 (S) A (S)



MATERIAL-A2, HEAT TREAT TO Rc 61-63
UNLESS OTHERWISE SPECIFIED.

BIT AND HAND DRIVER TEST BLOCKS

DASH NO.	RECESS SIZE	ØA MIN	ØB +.005 -.000	C MIN	D +.002 -.003	ØE ±.002
00	0	.688	.082	.375	.500	.031
01	1		.099			.037
02	2		.117			.043
03	3		.135			.052
04	4		.152			.055
05	5		.170			.067
06	6		.188			.073
08	8		.223			.089
10	10		.258			.104
25	1/4	1.125	.340	.750	.750	.140
31	5/16		.377			.177
37	3/8		.452			.213
43	7/16		.493			.250
50	1/2		.563			.281
56	9/16		.633			.316
62	5/8		.703			.358
75	3/4	2.000	.844			.422
87	7/8		.984			.500
100	1.00		1.125			.562

REVISION	1st Issue	1/ECD 96	2/ECD 100	3/ECD 109
	4-20-90	05/27/92	08-11-92	06/24/93

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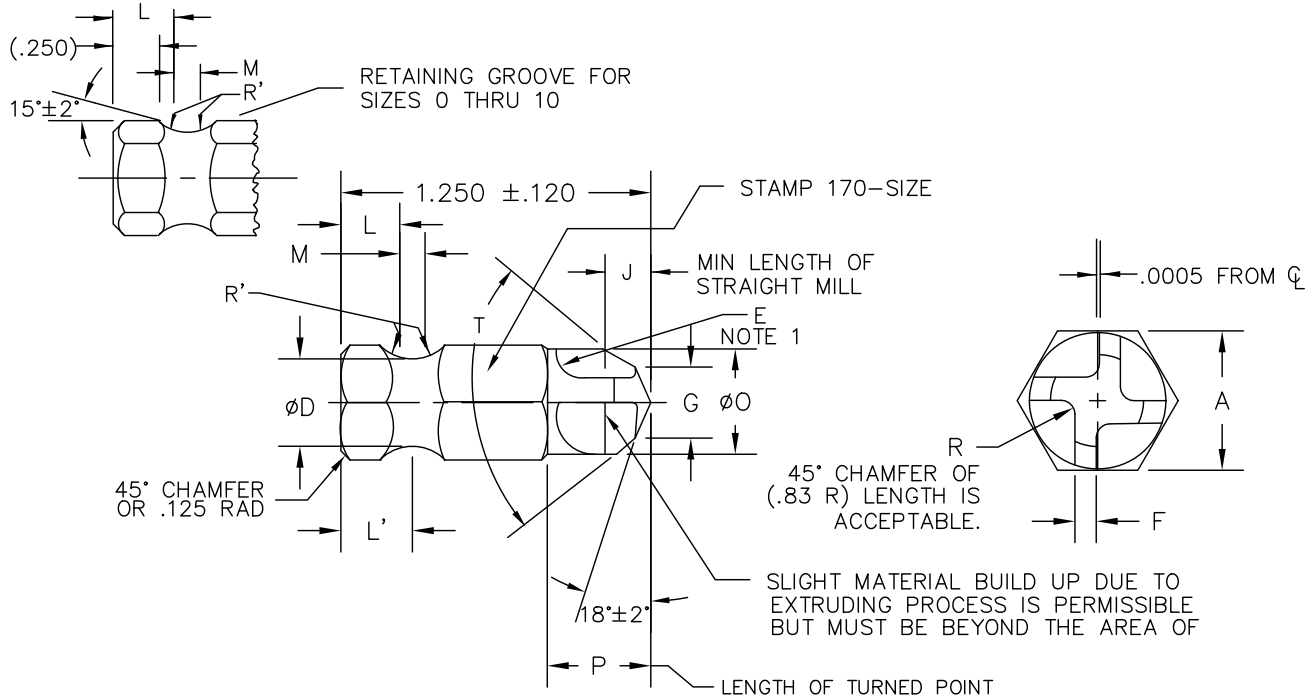
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TITLE: TORQ-SET® DRIVER & BITS QUALITY CONTROL SPECIFICATION

DRAWN: J. GRADY	DATE: 11-08-61	DRAWING NUMBER QC-37C SHEET 5 OF 5
CHECKED: G. LaMONICA	DATE: 02-25-05	

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POINT CONFIGURATION PER U.S. PAT. RE 24,888

FEDERAL STK NUMBERS	SIZE	A +.000 -.004	ϕD $\pm .010$	E REF	F	G	J MIN	L $\pm .020$	L' $\pm .020$	M $\pm .020$	ϕO	P MIN	R	R' $\pm .005$	T	45° CHAMFER
*	0					.039 .037	.047					.188				
*	1				.0155 .0140	.046 .044							.005 .000			
*	5130-00-798-0825					.054 .052	.063					.203				
*	5130-00-798-0826				.0175 .0160	.061 .059		.375			.185 .180				92°30' 93°30'	
*	5130-00-798-0828				.0185 .0170	.069 .067				.063						
*	5130-00-798-0829	.250	.188	.125	.0215 .0200	.077 .075	.078					.219	.010 .007	.094		TO .203 DIA
*	6				.0245 .0230	.084 .082	.094						.016 .013		92°30' 94°30'	
*	8				.0295 .0280	.098 .096					.247 .242	.250				
*	10				.0345 .0330	.113 .111	.109						.023 .020			
	5130-00-672-8671	1/4			.0465 .0435	.149 .147	.125					.313				TO .391 DIA
	5130-00-672-8679	5/16	.438	.344	.0595 .0565	.187 .185	.141	.250		.047	.434 .429	.375	.028 .023	.109		
	5130-00-511-0210	3/8			.0705 .0675	.223 .221	.172					.438	.040 .035		90°30' 91°30'	
	5130-00-063-2738	7/16			.0835 .0805	.259 .257	.172						.055 .050			TO .609 DIA
	5130-00-511-0208	1/2		.250	.0945 .0915	.295 .293	.203									
	5130-00-511-0207	9/16	.625	.531	.1055 .1020	.331 .329	.219	.344			.622 .617	.500		.172		
	5130-00-624-7973	5/8			.1175 .1140	.368 .366	.250						.068 .063			

NOTE 1. RUNOUT AT MANUFACTURER'S OPTION.

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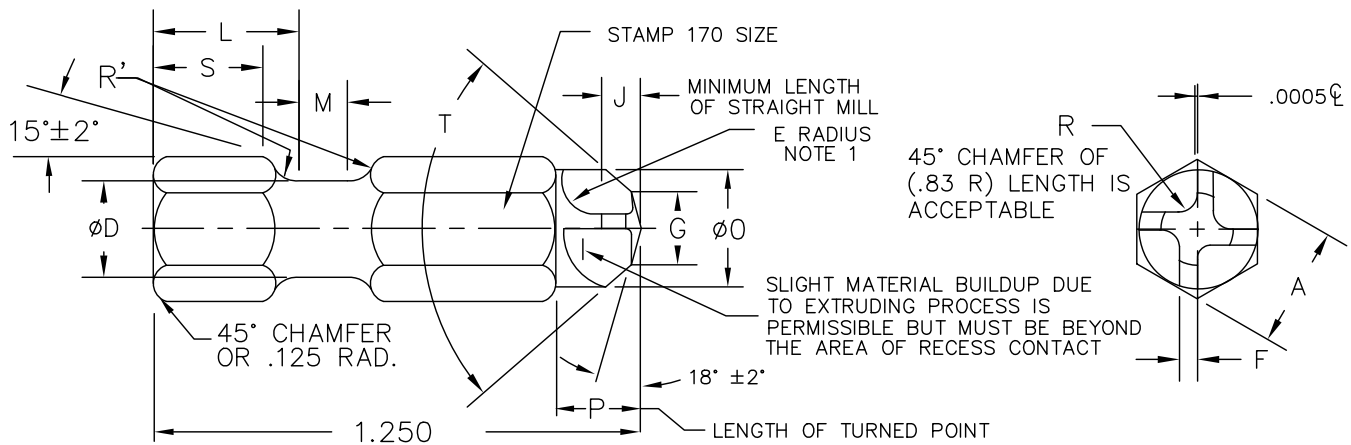
TITLE: TORQ-SET® INSERT BITS FOR POWER & HAND SCREWDRIVERS

DRAWN: V. W. MOTTOLA	DATE: 08-09-62	DRAWING NUMBER PSC-170
CHECKED: G. LaMONICA	DATE: 02-05-05	SHEET 1 OF 2

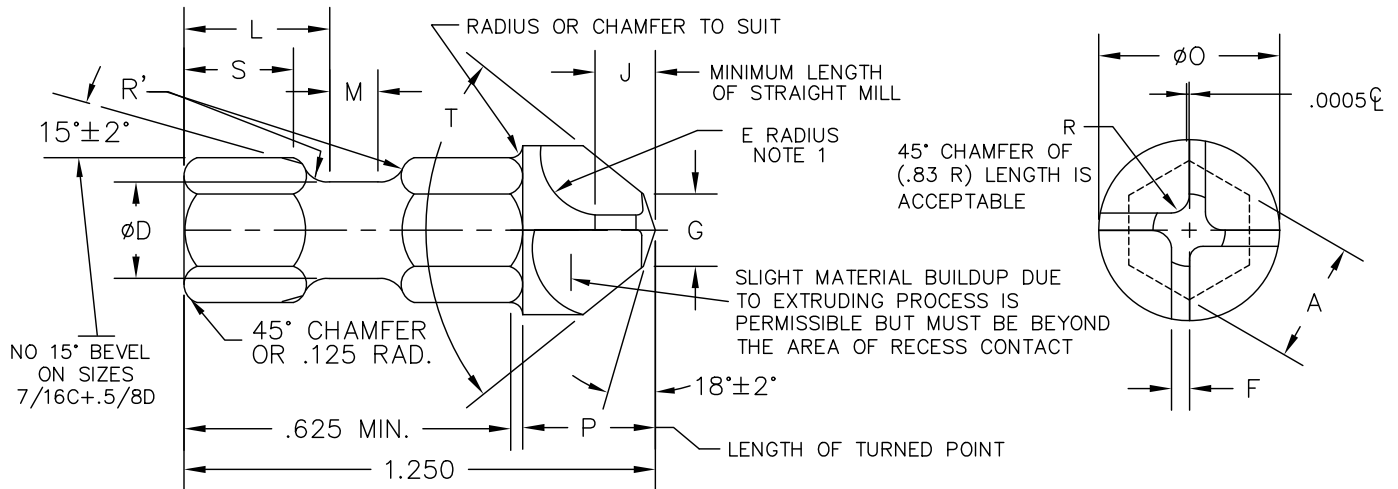
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PHONE: 774-396-6190 FAX: 508-966-2326

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
6/87
1/ECO 105/2/ECO 109/3/ECO 112
2-11-93 6-24-93 11-2-93



FEDERAL STOCK NO.	SIZE	A +.000 -.004	ØD ±.010	R' ±.005	S REF	E REF	F	G	L ±.020	J MIN	M ±.020	ØO	P MIN	R	T	45° CHAMFER
5130-00-226-5604	8A	.312	.250	.094	.281	.125	.0295 .0280	.098 .096	.406	3/32	.063	.309 .304	.250	.016 .013	94°30' 92°30'	TO Ø .266
5130-00-226-5605	10A						.0345 .0330	.113 .111		7/64						



FEDERAL STOCK NO.	SIZE	A +.000 -.004	ØD ±.010	R' ±.005	S REF	E REF	F	G	L ±.020	J MIN	M ±.020	ØO	P MIN	R	T	45° CHAMFER
* 5130-00-226-5607	1/4A	.312	.250	.281	.188	.188	.0465 .0435	.149 .147	1.094	.125	.063	.437 .429	.312	.023 .020	91°30' 90°30'	TO Ø .266
* 5130-00-133-3453	5/16A						.0595 .0565	.187 .185		.141		.437 .429	.375	.028 .023		
* 5130-00-226-5611	3/8A						.0705 .0675	.223 .221		.172		.504 .496	.375	.028 .023		
* 5130-00-226-5606	1/4B	.250	.188	.250	.250	.250	.0465 .0435	.149 .147	.375	.125	.063	.437 .429	.312	.023 .020	91°30' 90°30'	TO Ø .203
* 5130-00-226-5608	5/16B						.0595 .0565	.187 .185		.141		.437 .429	.375	.028 .023		
* 5130-00-226-5610	3/8B						.0705 .0675	.223 .221		.172		.504 .496	.375	.028 .023		
	7/16C	.438	.344	.109	—	.250	.0835 .0805	.259 .257	.250	.172	.047	.504 .496	.438	.040 .035	TO Ø .391	TO Ø .609
	5/8D	.625	.531	.172	—	.250	.1175 .1140	.368 .366	.344	.250	—	.754 .746	.531	.068 .063		

POINT CONFIGURATION PER U.S. PAT. RE 24,888

ITEMS MARKED WITH *, IN ADDITION TO BEING USED AS POWER BITS MAY ALSO BE USED AS HAND DRIVER INSERT BITS WITH .250 OR .312 HEX HAND DRIVER ADAPTORS AS APPLICABLE.
EXCEPT FOR OVERALL LENGTH AND DETAILS OF RETAINING GROOVE, THEY ARE DIMENSIONALLY IDENTICAL AND FUNCTIONALLY INTERCHANGABLE WITH PSC-212 SERIES BITS.

NOTE 1. RUNOUT AT MANUFACTURER'S OPTION.

PHILLIPS SCREW CO., 155 FARM ST, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PSC-170

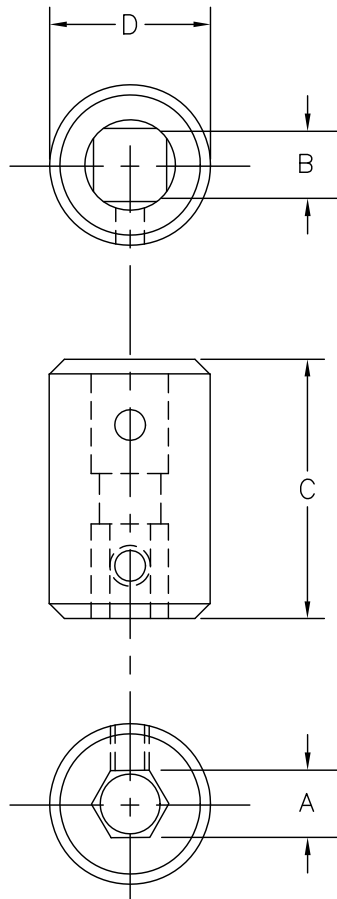
SHEET 2 OF 2

1/ECO 109 12

6-24-93 11-2-93

REDRAWN 6/87

REVISION



SQUARE DRIVE

HEX

APEX PART NO.	A HEX SIZE	B SQUARE DRIVE	C	D DIAM.
SC-308	.253 .252	3/8	1-1/2	3/4
SC-514	.442 .441	1/2	1-5/16	15/16
HE 3320	.630 .629	1/2	1-1/2	1-1/8
SC-114	.442 .441	1/4	1	3/4
SC-314	.442 .441	3/8	1-1/4	3/4
SC-108	.253 .252	1/4	1-1/2	3/4

MANUFACTURED BY AND AVAILABLE FROM
APEX DIV. COOPER IND. DAYTON, OHIO

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TITLE:

**SQUARE DRIVE ADAPTER
FOR HEX BITS**

DRAWN:
V. W. MOTTOLA

DATE:
10/31/62

DRAWING NUMBER

PSC-170-A

CHECKED:

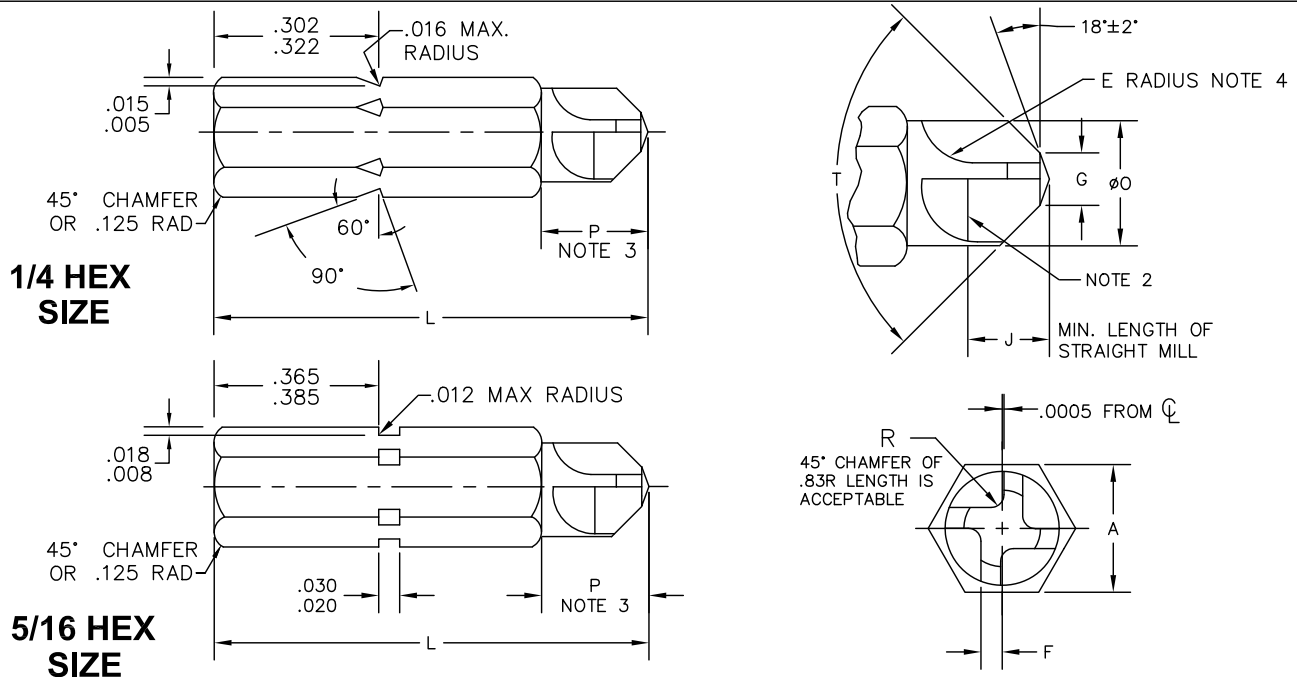
DATE:

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISED TITLE
BLOCK 2/17/64
B Reissued
4-20-90



FED STOCK NO.	SIZE	A +.000 -.004	E REF.	F	G	J MIN.	L ±.12	øO	P MIN.	R	T	45° CHAMFER		
5120-00-226-5559	0	.250	.125	.0155 .0140	.039 .037	.047	1.00	.185 .180	.188	.005 .000	92°30' 93°30'	TO .203 DIA		
5120-00-226-5560	1				.046 .044									
5120-00-082-8529	2				.054 .052									
5120-00-226-5562	3			.0175 .0160	.061 .059	.063								
5120-00-888-5829	4								.0185 .0170	.069 .067			.078	
5120-00-756-2209	5													.0215 .0200
5120-00-888-5827	6			.0245 .0230	.084 .082	.109								
5120-00-888-5826	8							.0295 .0280	.098 .096	.125				
5120-00-888-5831	10			.0345 .0330	.113 .111	.125								
THIS STYLE NOT PREFERRED 5120-00-226-5606	1/4							.188	.0465 .0435	.149 .147	.437 .429		.023 .020	90°30' 91°30'
PREFERRED STYLE 5120-01-406-6910	1/4B	.312	.125	.0295 .0280	.098 .096	.094	.309 .304					.312		
_____	8A							.0345 .0330	.113 .111	.109				
_____	10A										.0465 .0435		.149 .147	.125
_____	1/4A		.188	.0595 .0565	.187 .185	.141	.375	.028 .023	90°30' 91°30'					
5120-00-888-5828	5/16A													

- NOTES: 1. RETAINING GROOVE TO CORRESPOND WITH APEX 440 SERIES INSERT BITS FOR 1/4 INCH HEX SIZE, AND APEX 480 SERIES FOR 5/16 INCH HEX SIZE.
2. SLIGHT MATERIAL BUILD-UP DUE TO EXTRUDING PROCESS IS PERMISSIBLE BUT MUST BE BEYOND THE AREA OF RECESS CONTACT.
3. LENGTH OF TURNED POINT.
4. RUNOUT AT MANUFACTURER'S OPTION.

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TITLE:

TORQ-SET® INSERT BITS FOR HAND SCREWDRIVERS

DRAWN:

S. GREGORY

DATE:

12-07-94

DRAWING NUMBER

PSC-212

CHECKED:

G. LaMONICA

DATE:

02-25-05

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.

PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
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4/ ECO 116
12-7-94

10/ ECO 111
10-12-93

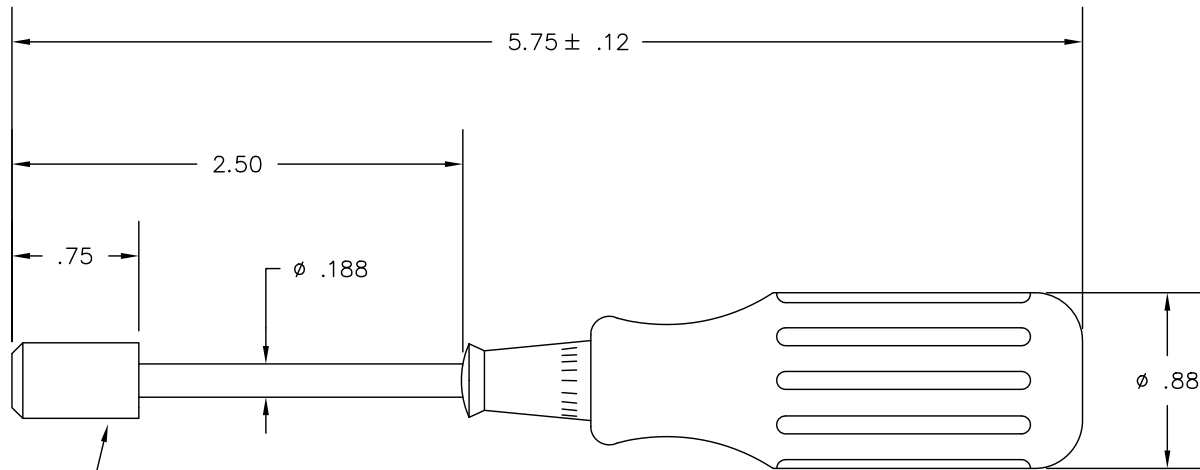
2/ ECO 109
6-24-93

1/ ECO 105
2-11-93

ECO 97
6-30-92

REDRAWN
5/87

REVISION



SOCKET SIMILAR TO PSC 212A
1/4 HEX OPENING TO ACCEPT
PSC212 BIT SIZES 0 THRU 10 OR
PSC170 BIT SIZES 0 THRU 10

NOTE: PSC 212AA IS EQUIVALENT TO
APEX PART NO. 1500 P.

A Reissued
4-20-90

REVISION

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TITLE:

HAND DRIVERS FOR TORQ-SET® BITS

DRAWN:
R. H. SOMERS

DATE:
08-19-64

DRAWING NUMBER

PSC-212AA

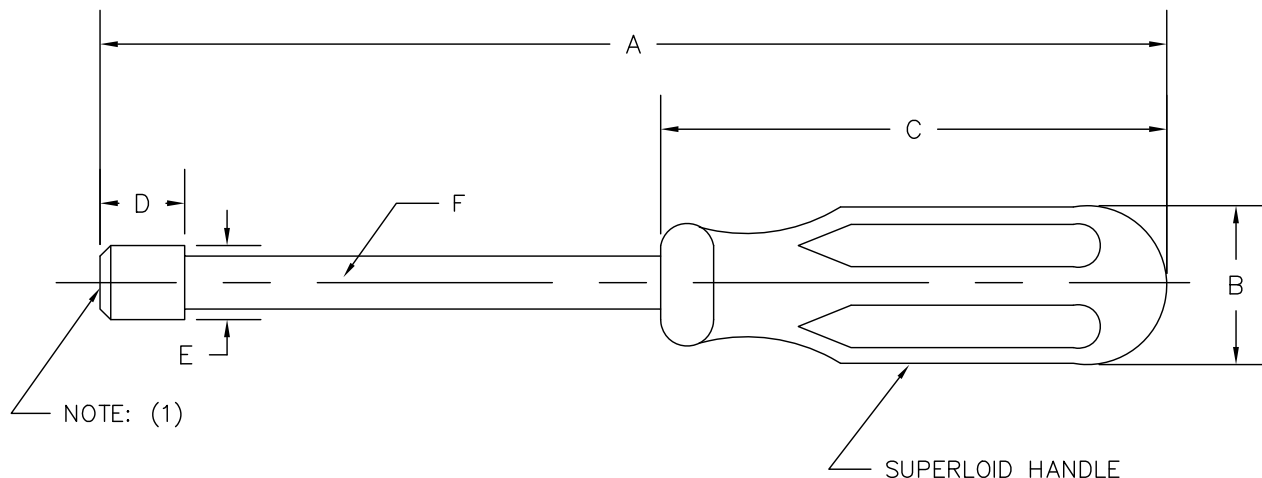
CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

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PART NO.	FEDERAL STOCK NO.	A ± .12	B	C	D	E	F HEX SIZE
PSC212A	5120-888-5833	8.12	1.00	3.75	.75	.44	1/4
PSC212B	5120-888-5832	10.12	1.25	4.50	1.00	.56	5/16

NOTE: (1)
PSC212A: 1/4 HEX OPENING TO ACCEPT TORQ-SET® BITS
PER PSC212 SIZES 0 THRU 10 OR PSC170
SIZES 0 THRU 10, 1/4B, 5/16B, & 3/8B

PSC212B: 5/16 OPENING TO ACCEPT TORQ-SET® BITS
PER PSC212 SIZES 8A & 10A OR PSC170 SIZES 8A THROUGH 3/8A

NOTE:
PSC212A IS EQUIVALENT TO APEX 1500P
PSC212B IS EQUIVALENT TO APEX 1550P

REVISION
A TSCN33 9/27/65
B Reissued 4-20-90
C REVISED 5-15-13

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TITLE:

HAND DRIVERS FOR TORQ-SET® BITS

DRAWN:
V. W. MOTTOLA

DATE:
02-13-64

DRAWING NUMBER

PSC-212A&B

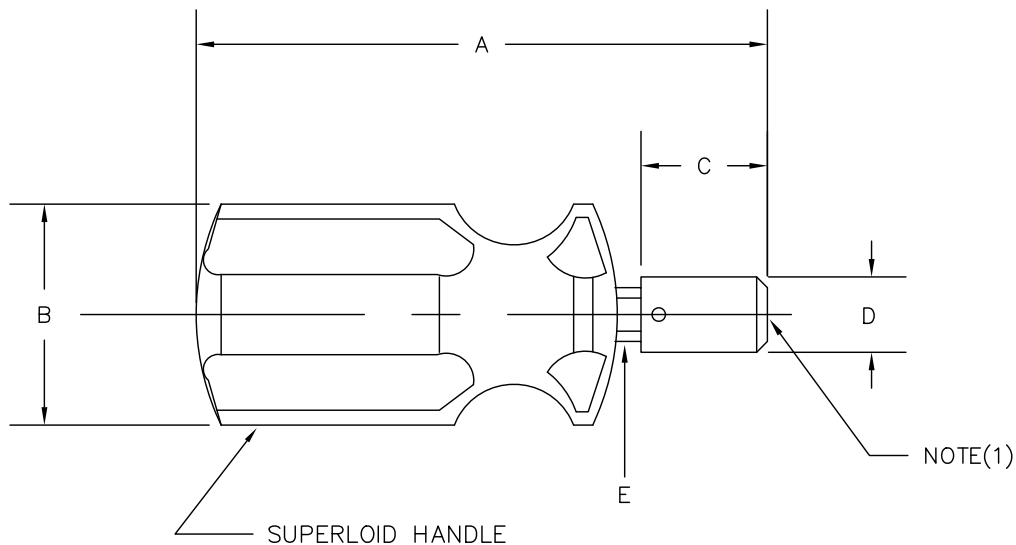
CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



PART NO.	FEDERAL STOCK NO.	A ± .12	B	C	D	E HEX SIZE
PSC-212C		2.75	1.25	.75	.44	1/4
PSC-212D		3.00	1.25	1.00	.56	5/16

NOTE: (1)

PSC212C: STANDARD 1500 ADAPTOR WITH
1/4 HEX OPENING TO ACCEPT TORQ-SET® BITS
PER PSC212 SIZES 0 THRU 10 OR
PSC170 SIZES 0 THRU 10, 1/4B, 5/16B, & 3/8B

PSC212D: STANDARD 1500 ADAPTOR WITH
5/16 OPENING TO ACCEPT TORQ-SET® BITS
PER PSC212 SIZES 8A & 10A OR PSC170 SIZES 8A THROUGH 3/8A

NOTE:

PSC212C IS EQUIVALENT TO APEX 1510P
PSC212D IS EQUIVALENT TO APEX 1555P

B REVISED
5-15-13

A Reissued
4-20-90

REVISION

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TITLE:

HAND DRIVERS (STUBBY) FOR TORQ-SET® BITS

DRAWN:
V. W. MOTTOLA

DATE:
02-13-64

DRAWING NUMBER

PSC-212C&D

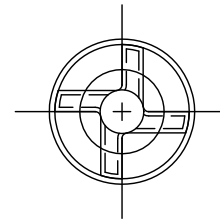
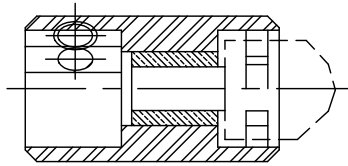
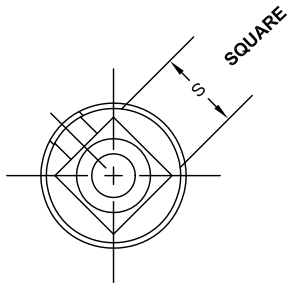
CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 1

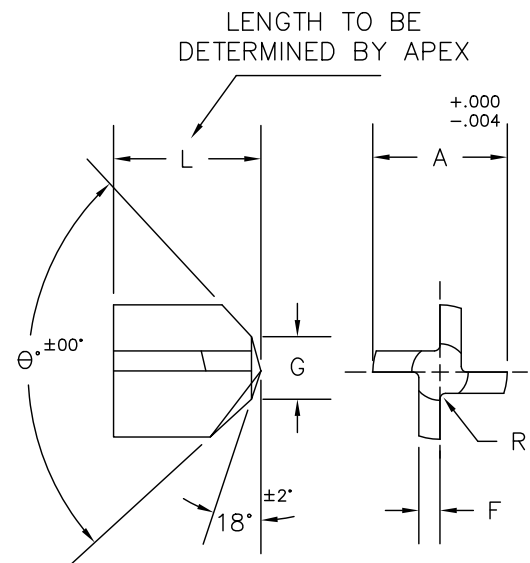
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PHONE: 774-396-6190 FAX: 508-966-2326

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MAGNETIC ADAPTER
TO APEX DESIGN

SIZE	A	F	R	G	S
#10	.250	.0345 .0330	.023 .020	.113 .111	1/4
1/4	.438	.0465 .0435	.023 .020	.149 .147	3/8
5/16	.438	.0595 .0565	.028 .023	.187 .185	3/8 or 7/16
3/8	.438	.0705 .0675	.028 .023	.223 .221	7/16 or 1/2
7/16	.438	.0835 .0805	.040 .035	.259 .257	1/2
1/2	.625	.0945 .0915	.055 .050	.295 .293	1/2
9/16	.625	.1055 .1020	.068 .063	.331 .329	1/2
5/8	.625	.1175 .1140	.068 .063	.368 .366	1/2



TORQ-SET® BIT

θ	SIZE
92°30' 94°30'	#10
90°30' 91°30'	1/4 & UP

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TITLE:

MAGNETIC ADAPTER FOR TORQ-SET® BITS

DRAWN:
N.K.D.

DATE:
05/26/61

DRAWING NUMBER

PSC-216

CONFIRMED:
L. DOUGAN

DATE:
05/15/13

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

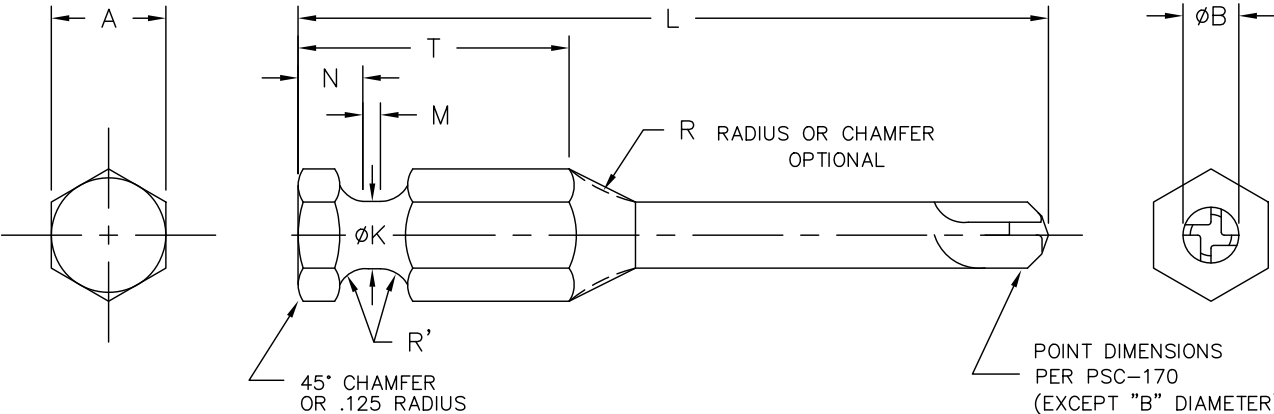
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C REVISED
5-15-13

B Reissued
4-20-90

A 2/7/64

NOTE: "B" DIAMETER REDUCED WITHIN HEAD DIAMETER OF TS-705
POINT CONFIGURATION PER US PAT. RE. 24,888.



FEDERAL STOCK NO.	PART NUMBER	A +.000 -.004	ØB +.000 -.063	ØK ±.010	M ±.020	N ±.020	R' ±.005 RADIUS	R MIN	T	L ±.12
	PSC-265-0	.250 HEX	.125	.188	.062	.344	.094	.031	1.375 .625	3.50
	PSC-265-1									
	PSC-265-2									
5130-00-816-1314	PSC-265-3		.156							
5130-00-724-3703	PSC-265-4									
	PSC-265-5									
	PSC-265-6									
	PSC-265-8		.250							
	PSC-265-10									
5130-00-765-3677	PSC-265-1/4	.438 HEX	.344	.344	.047	.250	.109	1.375 1		
5130-00-854-2624	PSC-265-5/16		.375							
5130-00-853-5556	PSC-265-3/8		.438							
5130-00-853-5557	PSC-265-7/16									
	PSC-265A-0	.250 HEX	.125	.188	.062	.344	.094	.031	1.375 .625	6.00
	PSC-265A-1									
	PSC-265A-2									
	PSC-265A-3		.156							
	PSC-265A-4									
	PSC-265A-5									
	PSC-265A-6									
	PSC-265A-8		.250							
5130-00-080-2430	PSC-265A-10									
5130-00-501-2806	PSC-265A-1/4	.438 HEX	.344	.344	.047	.250	.109	1.375 1		
	PSC-265A-5/16		.375							
	PSC-265A-3/8		.438							
	PSC-265A-7/16									

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TITLE:

TORQ-SET[®]
POWER DRIVER BIT

DRAWN:
V. W. MOTTOLA

DATE:
07-29-63

DRAWING NUMBER

PSC-265

CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
Redrawn for Clarity
06/27/85
B Reissued
4-20-90
C ECO 104
1-26-93
1/ ECO 105
02/11/93
2/ ECO 112
11/02/93

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TITLE:

TORQ-SET® SCREWDRIVER WOOD & SUPERLOID HANDLE

DRAWN:
V. W. MOTTOLA

DATE:
02-17-64

DRAWING NUMBER

CHECKED:
G. LaMONICA

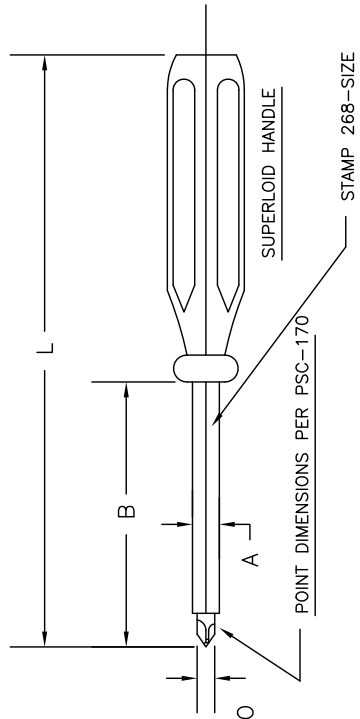
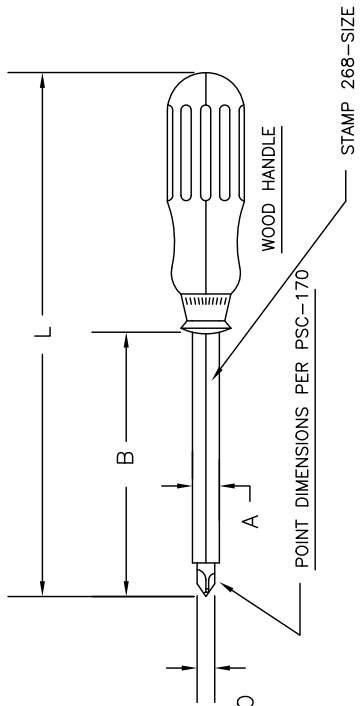
DATE:
02-25-05

PSC-268

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



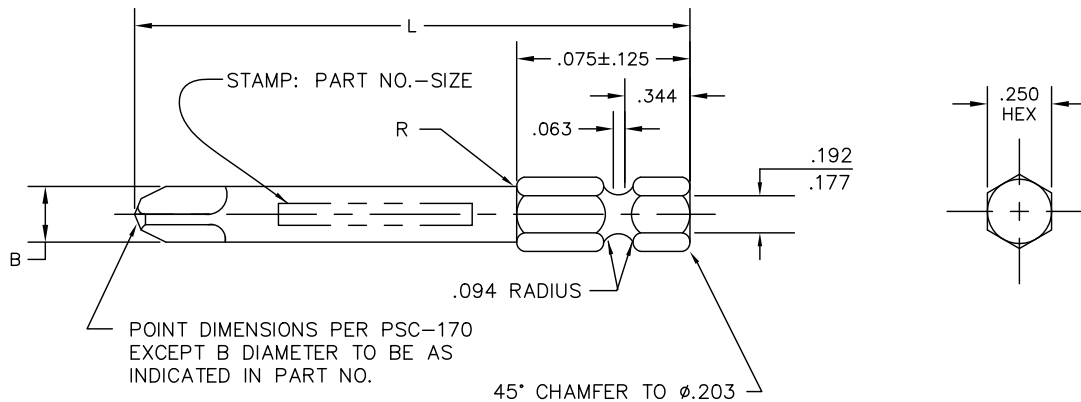
POINT CONFIGURATION PER U.S. PAT. RE 24,888

FEDERAL STOCK NO.	PART NUMBER	SCREW NUMBER	A HEX SIZE	B ± .25	L ± .38	O
	PSC268W-0	0	* 1/8	1.25	3.00	
	PSC268W-1	1	* 1/8	1.25	3.00	
	PSC268W-2	2	1/4	3.12		
	PSC268W-3	3	1/4	3.12	8.25	.185
	PSC268W-4	4	1/4	3.12		.180
	PSC268W-5	5	1/4	3.12		
	PSC268W-6	6	1/4	4.00	9.12	
	PSC268W-8	8	1/4	4.00	9.12	.247
5120-00-829-6742	PSC268W-10	10	1/4	4.00	9.12	.242
ORDNANCE P/N 9172322 **	PSC268W-10-ORD	10	5/16	6.00	11.88	.309
5120-00-066-4257	PSC268W-1/4	1/4	5/16	6.00	11.88	.304
5120-00-829-6723	PSC268W-5/16	5/16	3/8	8.00	14.62	.372
	PSC268W-3/8	3/8	3/8	8.00	14.62	.367

FEDERAL STOCK NO.	PART NUMBER	SCREW NUMBER	A HEX SIZE	B ± .25	L ± .38	O
	PSC268-0	0	* 1/8	1.25	3.00	
	PSC268-1	1	* 1/8	1.25	3.00	
5120-00-033-9035	PSC268P-2	2	1/4	3.12	6.25	
5120-00-034-3067	PSC268P-3	3	1/4	3.12	6.25	.185
5120-00-714-7400	PSC268P-4	4	1/4	3.12	6.25	.180
5120-00-034-3066	PSC268P-5	5	1/4	3.12	6.25	
5120-00-675-0867	PSC268P-6	6	1/4	4.00	7.50	
5120-00-674-9216	PSC268P-8	8	1/4	4.00	7.50	.247
5120-00-674-9215	PSC268P-10	10	1/4	4.00	7.50	.242
5120-00-712-0400	PSC268P-1/4	1/4	5/16	6.00	10.12	.309
5120-00-033-9053	PSC268P-5/16	5/16	3/8	8.00	12.62	.372
	PSC268P-3/8	3/8	3/8	8.00	12.62	.367

* ROUND STOCK
** ALTERNATE STYLE FOR ORDNANCE USE
PSCSAMPLE OF PART NO. CALLOUT:
PSC268W-6 = (NO. 6 HAND SCREWDRIVER WOODEN HANDLE)
PSC268P-6 = (NO. 6 HAND SCREWDRIVER PLASTIC HANDLE)

REVISION	(A)	TSCN-31	(B)	TSCN-36	(C)	TSCN-37	(D)	TSDN-42	(E)	Reissued
		4/30/65		11/21/66		12/1/67		12/29/70		4/20/90



				PART NUMBER		
SIZE	CODE NO.	B	R MIN.	PSC-273 L	PSC-273A L	PSC-273B L
0	-0	.125 .109	.031	1.94±.12	1.81±.12	2.75±.12
1	-1					
2	-2					
3	-3	.172 .141				
4	-4					
6	-6	.203 .172				
8	-8	.266 .234				
10	-10					

EXAMPLE OF PART NO. CALLOUT:

PSC-273-2 NO. 2 SCREWDRIVER 1.938 LONG
PSC-273A-2 NO. 2 SCREWDRIVER 1.813 LONG

NOTE: POINT CONFIGURATION PER U.S. PAT. RE 24,888

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TITLE:

TORQ-SET®
POWER DRIVER BIT

DRAWN:
V. W. MOTTOLA

DATE:
07-29-63

DRAWING NUMBER

PSC-273

CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 1

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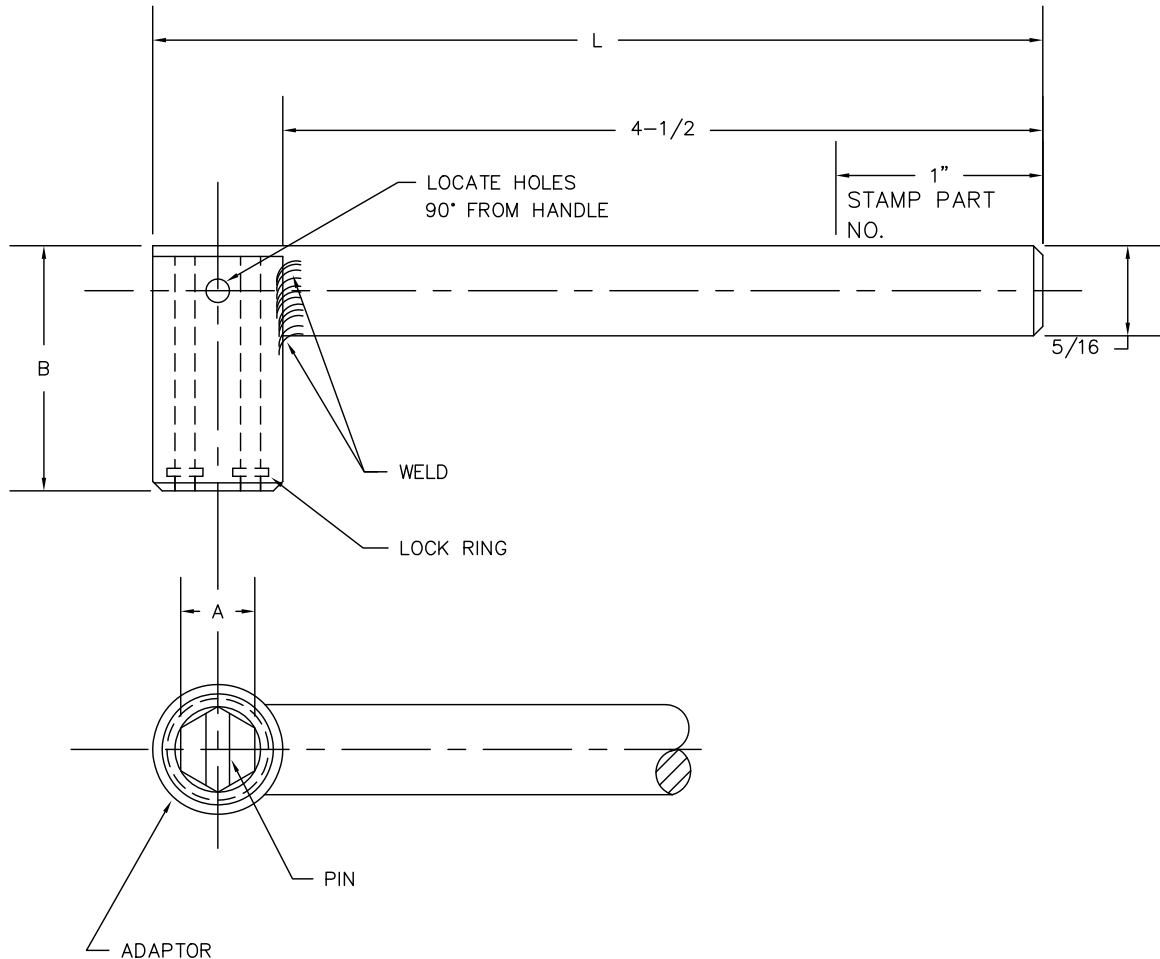
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B Reissued
4-20-90

④ TSCN-19
6/15/64

REVISION

DASH NO.	APEX ADAPTOR	HEX A	B	L
-4	#1500	1/4	7/8	4-15/16
-5	#1550	5/16	1"	5-1/16



REF: APEX MACHINE & TOOL CO.
PART NO. SD-664

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TITLE:

OFFSET BIT HOLDERS FOR TORQ-SET® PSC-212 BITS

DRAWN:
L. P.

DATE:
02/18/60

DRAWING NUMBER

PSC-310

CONFIRMED:
L. DOUGAN

DATE:
05/15/13

SHEET 1 OF 1

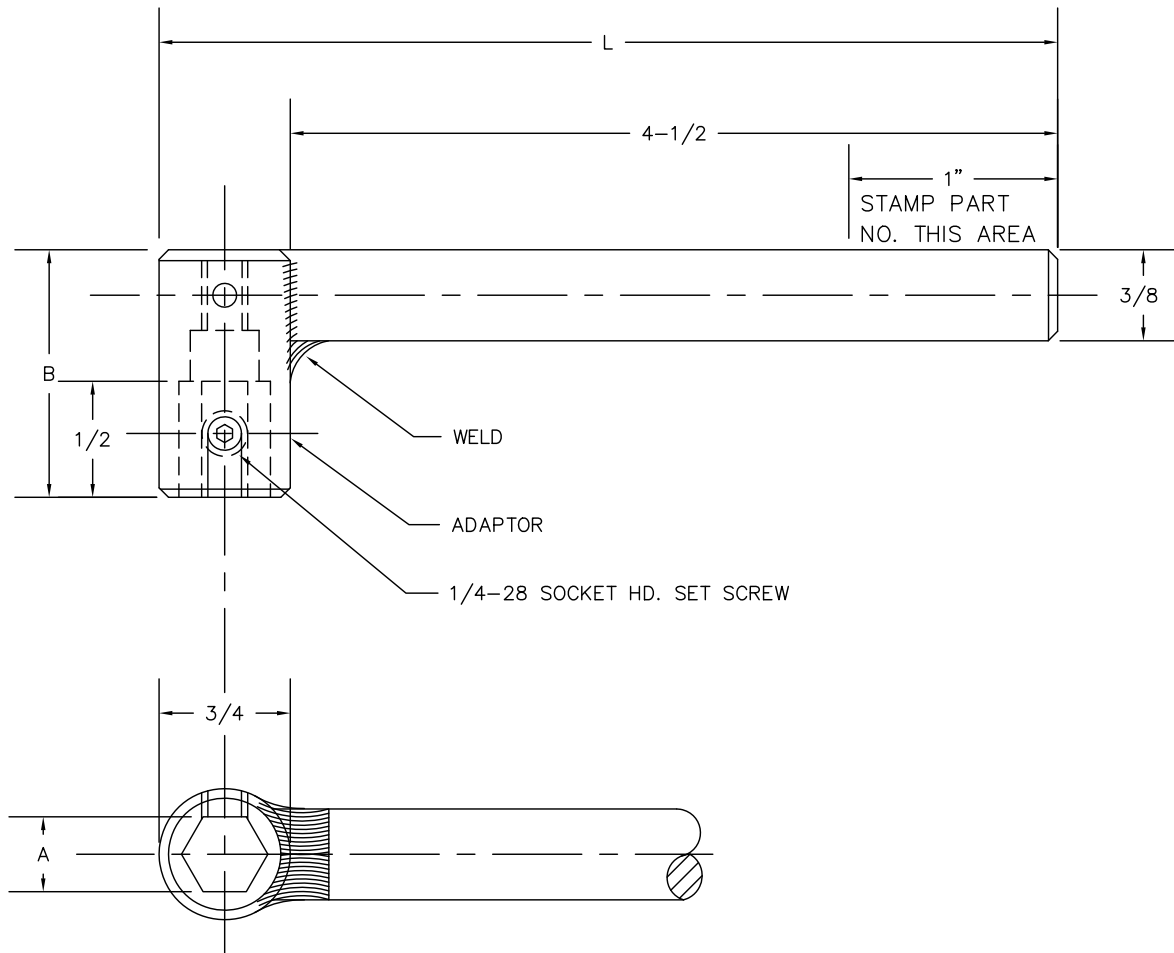
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PHONE: 774-396-6190 FAX: 508-966-2326

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B Reissued
4-20-90

2/7/64

DASH NO.	APEX ADAPTOR	HEX A	B	L
-7	SC114	7/16	1"	5-1/4



REF: APEX
PART NO. SD-664C

B Reissued
4-20-90

2/7/64

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TITLE:

OFFSET BIT HOLDER FOR TORQ-SET® PSC-170 BITS

DRAWN:

L. P.

DATE:

03/17/60

DRAWING NUMBER

PSC-310A

CONFIRMED:

L. DOUGAN

DATE:

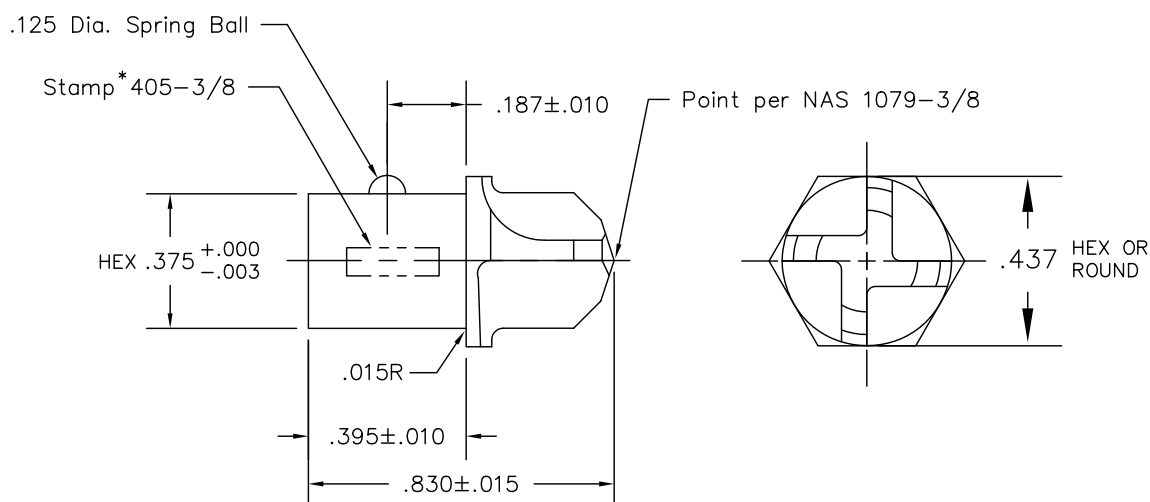
05/15/13

SHEET 1 OF 1

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Point Configuration Per U.S. Pat. RE: 24,888



APPROVED CALLOUT	VENDOR P/N (REF)	FEDERAL STOCK NO.
PS-1-4811-1	PSC405	6A5120-802-2995

Design Considerations:

1. Drive bit for 3/8 Dia. TORQ-SET[®] Screw

Material: Tool Steel (Venango Special)
Heat Treat Rc 58-60

Finish: Black Oxide per MIL-C-13924

Sample Callout: PS-1-4811-1, bit

Procurement Information:

- * Part Identification: Vendor Standard
Pkg. Identification: LMSC Part No. PS-1-4811 and applicable
dash number shall appear externally on each package.

Packaging: Per OS 8244

B Reissued
4-20-90

① TSCN-7
2/5/64

REVISION

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TITLE:

**SPECIAL TORQ-SET[®] BIT
WITH SPRING BALL LOCK**

DRAWN:
L. P.

DATE:
01-14-64

DRAWING NUMBER

PSC-405

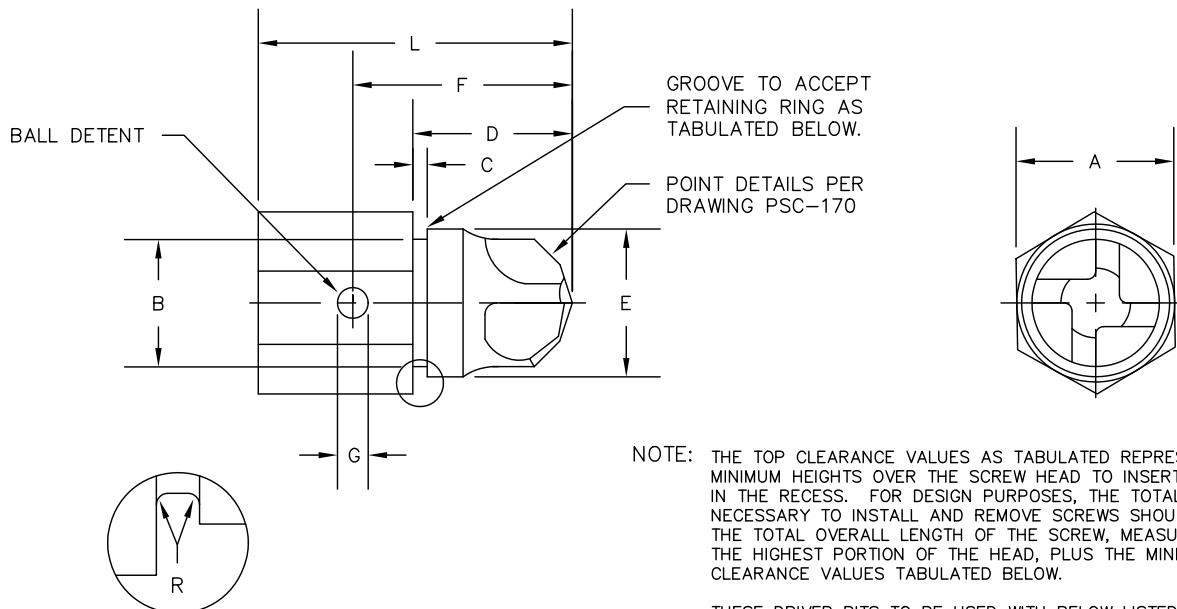
CHECKED:
G. LaMONICA

DATE:
02-25-05

SHEET 1 OF 1

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HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



NOTE: THE TOP CLEARANCE VALUES AS TABULATED REPRESENT THE MINIMUM HEIGHTS OVER THE SCREW HEAD TO INSERT THE BIT IN THE RECESS. FOR DESIGN PURPOSES, THE TOTAL CLEARANCE NECESSARY TO INSTALL AND REMOVE SCREWS SHOULD INCLUDE THE TOTAL OVERALL LENGTH OF THE SCREW, MEASURED FROM THE HIGHEST PORTION OF THE HEAD, PLUS THE MINIMUM CLEARANCE VALUES TABULATED BELOW.

THESE DRIVER BITS TO BE USED WITH BELOW LISTED THROUGH SOCKET, SINGLE OR DOUBLE HEXAGON RATCHET WRENCHES OR EQUIVALENT PRODUCTS.

SIZE	+.000 -.004 A	GROOVE DIMENSIONS				RETAINING RING	E	±.031 F	BALL DIA. G	±.031 L	CLEARANCE		WRENCH NO.
		B	+.003 -.000 C	±.031 D	MAX. R						MIN. TOP	MIN. SIDE	
0	.250	.2315 .2285	.028	.344	.003	WALDES #5125 OR EQUAL	.247 .242	.500	.125	1.063	.719	.313	"SNAP-ON" R-810 OR EQUAL
1													
2													
3													
4													
5													
6													
8													
10				.375				.531					
1/4	.438	.4140 .4100		.563	.005	WALDES #5143 OR EQUAL	.434 .429	.719	.188	.875	.906	.469	"SNAP-ON" R-1214 OR EQUAL
5/16													
3/8													
7/16													
1/2	.625	.5990 .5930	.039	.656		WALDES #5162 OR EQUAL	.622 .617	.844		1.032	1.063	.656	"SNAP-ON" R-2022 OR EQUAL
9/16													
5/8													

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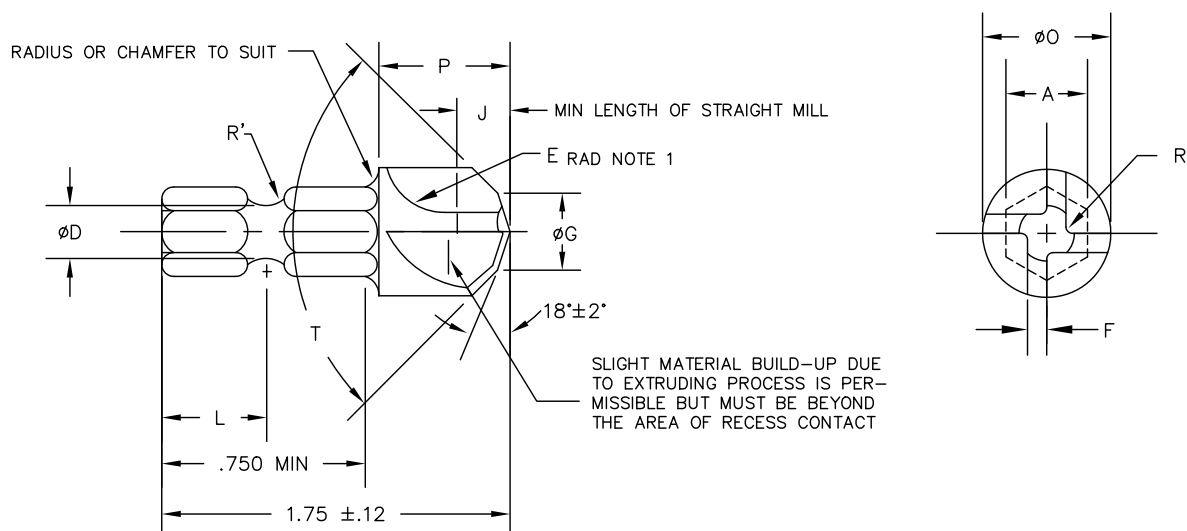
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TITLE: TORQ-SET® BITS FOR MINIMUM CLEARANCE APPLICATIONS

DRAWN: L. A. PROULX	DATE: 12-06-63	DRAWING NUMBER PSC-425
CHECKED: G. LaMONICA	DATE: 02-25-05	
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		SHEET 1 OF 1

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REVISION
A Reissued
4-20-90



FEDERAL STOCK NO.	SIZE	A +.000 -.004	ØD	R' ±.005	E REF	F	ØG	L ±.020	J MIN	ØO ±.010	P MIN	R	T
	3/4	.750	.656	.172	.313	.1410 .1375	.440 .438	.344	.313	.875	.813	.068 .063	91°±30'

NOTE:

1. RUNOUT AT MANUFACTURER'S OPTION.

POINT CONFIGURATION PER U.S. PAT. RE: 24,888

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TITLE:

3/4 SIZE TORQ-SET[®] POWER DRIVER INSERT BIT

DRAWN:
L. A. PROULX

DATE:
05-15-64

DRAWING NUMBER

CHECKED:
G. LaMONICA

DATE:
02-25-05

PSC-433

SHEET 1 OF 1

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A Reissued
4-20-90

REVISION

10/17/74
02/24/88
04/20/90

TORQ-SET® ENGINEERING MANUAL

I N D E X

GAGES

<u>SHEET NUMBER</u>	<u>DESCRIPTION</u>	<u>DATE</u>
	TORQ-SET® GAGES INTRODUCTION	04-20-90
SG-112	TORQ-SET® RECESS GAGE SG-112	01-02-92
SG-112A (Sheet 1)	METHOD OF COMPUTING TORQ-SET® PENETRATION VALUES FOR ALL HEAD STYLES	04-20-90
SG-112A (Sheet 2)	TORQ-SET® RECESS PENETRATION VALUES	04-20-90
SG-113	CONCENTRICITY GAGES FOR TORQ-SET® RECESSES	04-20-90
SG-119	TORQ-SET® PUNCH GO GAGE	04-20-90
EX-198	ASSEMBLY & DETAILS FOR TORQ-SET® SCREW DRIVER GAGE (OBSOLETE 3/87 - SEE PSC-766 OR PSC-776)	04-20-90
SG-137	TORQ-SET® PENETRATION GAGE (SUPERSEDES SG137A & B)	08-11-92
SG-147	TORQ-SET® CURVED TOP HEAD DIAL INDICATOR FALLAWAY GAGE	04-20-90
SG-150 (Sheet 1)	TORQ-SET® CURVED TOP HEAD HAND TYPE FALLAWAY GAGE	04-20-90
SG-150 (Sheet 2)	TORQ-SET® CURVED TOP HEAD HAND TYPE FALLAWAY GAGE	04-20-90
PSC-776	POINT GAGE - TORQ-SET® DRIVER	02-24-89

TORQ-SET® GAGES

Two-wing recess plug gages illustrated on print SG-112 are used to control recess dimensions of the finished product. The wing thickness of the "Go" plug is .001 less than the minimum wing thickness ("F" dimension) of the punch to allow for wear. This two-wing design aids in locating misfit conditions in the recess and is a simple and economical gage to produce. It is also used to check the fit in impressions of the punches in the course of incoming inspection.

A further refinement of the plug gage (SG-112) is the dial indicator penetration gage as shown on SG137. The penetration gage measures the actual depth of engagement of the SG-112 GO plug gage and is an excellent gage for the control of TORQ-SET® recess dimensions.

In addition to the functional check with the plug gage, the wings of the punch are checked independently with a micrometer and any wide discrepancies may be an indication of excessive radial misalignment of the wings.

INSTRUCTIONS FOR USE OF TORQ-SET® FALLAWAY GAGES

BACKGROUND:

Fallaway is a condition whereby the material of the screw head does not completely conform to the shape of the header punch that produced it. This is most apparent in the backoff wing walls of the TORQ-SET® recess, and in the extreme condition, results in poor recess torque delivery in the counter-clockwise direction.

Since it has been found impractical to measure this condition directly on the backoff wing walls, these gages were designed to measure the degree of fallaway of a related portion of the recess by measuring the size of the central opening at the head surface of curved top heads.

Two gage designs are provided using the same basic principle. One is a hand type gage utilizing a "flush pin" method of gaging. The other type is provided with a dial indicator for more accurate determination of fallaway.

LIMITATION:

The gage shall not be used for flat top heads (i.e 100° flat, flat pan, flat fillister) since the phenomenon of fallaway does not require control for these head styles.

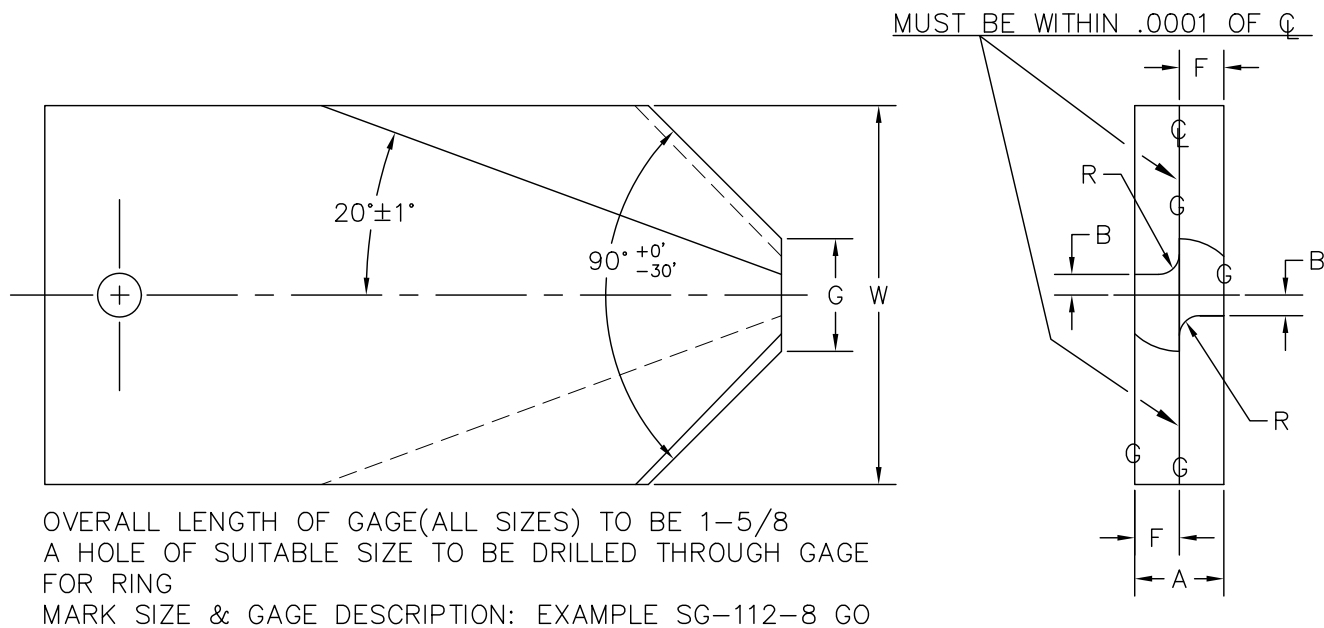
DESCRIPTION:

Basically, each of these gages consist of an accurately prepared circular pin, mounted in a barrel assembly, which has been counterbored on the gaging face to the diameter of the TORQ-SET® recess for curved top heads. Since the recess size is different for each fastener size, a separate gage is provided for measuring fallaway for each screw size. However, since all curved top heads of the same screw size have the same recess diameter, one gage can be used to measure fallaway of any curved top head of the same shank size.

INSTRUCTIONS FOR USE OF TORQ-SET[®] FALLAWAY GAGES (cont'd)

PROCEDURE:

1. Select proper gage depending on recess size in fastener to be checked.
2. Zero gage on flat surface so tip of gage pin is flush with front face of the gage barrel.
 - a. For hand type gages, back end of gage pin should be flush with back end of barrel.
 - b. For dial indicator gages, adjust needle to 0 when zeroed as above.
3. Engage gage pin in center (core) opening of recess in head of fastener.
4. Maintaining axis of gage in alignment with axis of fastener, press gage body toward head of fastener, tending to retract gage pin against compression spring, until counterbore of gage body firmly contacts head surface of fastener.
5.
 - a. For hand type gages — If back end of gage pin is flush with or projects beyond back surface of barrel, fallaway is acceptable. If back end of gage pin is below flush with back surface of barrel, fallaway is excessive.
 - b. For dial indicator type gages, any reading above zero on dial (+) indicates acceptable fallaway. A reading below zero (–) indicates excessive fallaway.



SIZE	A ±.0001	B MAX. 1/	F +.0001 −.0000	G ±.001	R MAX.	W ±.010 1/	
0 GO	.0319	.004	.0159	.038	.005	.250	
0 NOGO	.0361		.0180				
1 GO	.0319		.0159	.045			
1 NOGO	.0361		.0180				
2 GO	.0319		.0159	.053			
2 NOGO	.0361		.0180				
3 GO	.0359	.0179	.060				
3 NOGO	.0421	.0210					
4 GO	.0399	.006	.0199	.068	.007		
4 NOGO	.0461		.0230				
5 GO	.0459		.0229	.076			
5 NOGO	.0521		.0260				
6 GO	.0519		.0259	.083			
6 NOGO	.0581		.0290				
8 GO	.0619	.009	.0309	.097	.015		
8 NOGO	.0681		.0340				
10 GO	.0719		.0359	.112			
10 NOGO	.0781		.0390				
12 GO	.0819		.0409				.128
12 NOGO	.0881		.0440				
1/4 GO	.0959	.014	.0479	.148	.022		
1/4 NOGO	.1021		.0510				
5/16 GO	.1219		.0609	.186			
5/16 NOGO	.1281		.0640			.030	

SIZE	A ±.0001	B MAX. 1/	F +.0001 −.0000	G ±.001	R MAX.	W ±.010 1/		
3/8 GO	.1459	.014	.0729	.222	.030	.438		
3/8 NOGO	.1521		.0760					
7/16 GO	.1719	.020	.0859	.258	.750			
7/16 NOGO	.1781		.0890					
1/2 GO	.1959		.0979	.294				
1/2 NOGO	.2041		.1020					
9/16 GO	.2219		.1109	.330				
9/16 NOGO	.2301		.1150					
5/8 GO	.2459		.1229	.367				
5/8 NOGO	.2541		.1270					
3/4 GO	.2959		.1479	.438	1.000			
3/4 NOGO	.3041		.1520					
7/8 GO	.3459		.1729	.511				
7/8 NOGO	.3541		.1770					
1" GO	.3959		.1979	.583			1.500	
1" NOGO	.4041		.2020					
1-1/8 GO	.4459		.2229	.656				
1-1/8 NOGO	.4561		.2280					
1-1/4 GO	.4959		.2479	.728	1.750			
1-1/4 NOGO	.5061		.2530					
1-3/8 GO	.5459	.2729	.801					
1-3/8 NOGO	.5561	.2780						
1-1/2 GO	.5959	.2979	.873					
1-1/2 NOGO	.6061	.3030						

1/ ECO 89	01/02/92
D Reissued	4-20-90
C TSCN 41	3-24-70
B TSCN 18	5-26-64
A TSCN 15	4-21-64

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TITLE: **TORQ-SET®**
RECESS GAUGE POINT

DRAWN: V. W. MOTTOLA	DATE: 11-14-63	DRAWING NUMBER SG-112
CHECKED: G. LaMONICA	DATE: 2-18-05	

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
 PHONE: 774-396-6190 FAX: 508-966-2326

METHOD OF COMPUTING TORQ-SET® PENETRATION VALUES FOR ALL HEAD STYLES

MAXIMUM PENETRATION = MAX. RECESS DIA. OF SCREW – MIN. POINT DIA. ON PLUG
PER SG112

2

MINIMUM PENETRATION = MIN. RECESS DIA. OF SCREW – MAX. POINT DIA. ON PLUG
PER SG112

2

– W

W = WEAR ALLOWANCE TO BE APPLIED TO MINIMUM PENETRATION AND IS .002
PER 1/16 OF NOMINAL SHANK DIAMETER.

Minimum penetration values shall be rounded off downward to the nearest one-half thousandth; for example, .0483 would be rounded off to .0480; .0419 would be rounded off to .0415.

These penetration values apply only to standard recesses in nominal size fasteners. Where smaller or larger recesses are substituted, the wear allowance shall be based on the nominal size for which the recess was originally designed.

EXAMPLE #1

#8 100° FLAT HEAD

.215 = MAX. RECESS DIA.
–.096 = MIN. PT. DIA. ON PLUG
2/.119
.0595 = MAX. PENETRATION

.205 = MIN. RECESS DIA.
–.098 = MAX. PT. DIA. ON PLUG
2/.107
.0535
–.0052 = WEAR ALLOWANCE .002 X .164
.0483 BEFORE ROUNDING
.0480 = MIN. PENETRATION AFTER ROUNDING

EXAMPLE #2

#10 PAN HEAD

.219 = MAX. RECESS DIA.
–.111 = MIN. PT. DIA. ON PLUG
2/.108
.054 = MAX. PENETRATION

.209 = MIN. RECESS DIA.
–.113 = MAX. PT. DIA. ON PLUG
2/.096
.048
–.0061 = WEAR ALLOWANCE .002 X .1900
.0419 BEFORE ROUNDING
.0415 = MIN. PENETRATION AFTER ROUNDING

June 21, 1963

Recess Dia. was .203 – .193
Sample calculation changed.

TSCN-10
APR. 20, 1990

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TITLE:

TORQ-SET®

RECESS PENETRATION VALUES

DRAWN:
V. W. MOTTOLA

DATE:
02/13/64

DRAWING NUMBER

SG-112A

CONFIRMED:
L. DOUGAN

DATE:
11/04/11

SHEET 1 OF 2

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

TORQ-SET[®] RECESS PENETRATION VALUES

<u>SCREW SIZE</u>	<u>100° FLAT HEAD</u>	<u>FLAT FILL HEAD FLAT PAN HEAD</u>	<u>PAN, BRAZIER, BUTTON HEAD</u>
0	.0225-.0145	.0250-.0170	.0180-.0100
1	.0270-.0185	.0300-.0215	.0215-.0130
2	.0315-.0225	.0350-.0260	.0250-.0160
3	.0365-.0270	.0405-.0310	.0285-.0190
4	.0405-.0305	.0450-.0350	.0320-.0220
5	.0450-.0350	.0500-.0400	.0355-.0255
6	.0500-.0395	.0555-.0450	.0390-.0285
8	.0595-.0480	.0660-.0545	.0470-.0355
10	.0685-.0560	.0760-.0635	.0540-.0415
1/4	.0890-.0750	.0990-.0850	.0695-.0555
5/16	.0860-.0700	.0985-.0825	.0860-.0700
3/8	.1030-.0850	.1180-.1000	.1030-.0850
7/16	.1205-.1005	.1205-.1005	.1205-.1005
1/2	.1375-.1155	.1375-.1155	.1375-.1155
9/16	.1545-.1305	.1545-.1305	.1545-.1305
5/8	.1710-.1450	.1710-.1450	.1710-.1450

Redrawn 6-19-63
Change 6-21-63
(100° Flat Head
.0535 changed to .0595).

TSCN-10
APR. 20,1990

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TITLE:

TORQ-SET[®] **RECESS PENETRATION VALUES**

DRAWN:
V. W. MOTTOLA

DATE:
02/13/64

DRAWING NUMBER

SG-112A

CONFIRMED:
L. DOUGAN

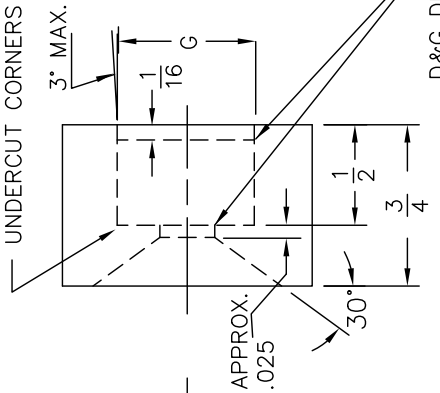
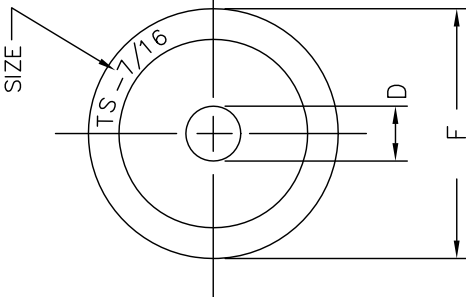
DATE:
11/04/11

SHEET 2 OF 2

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

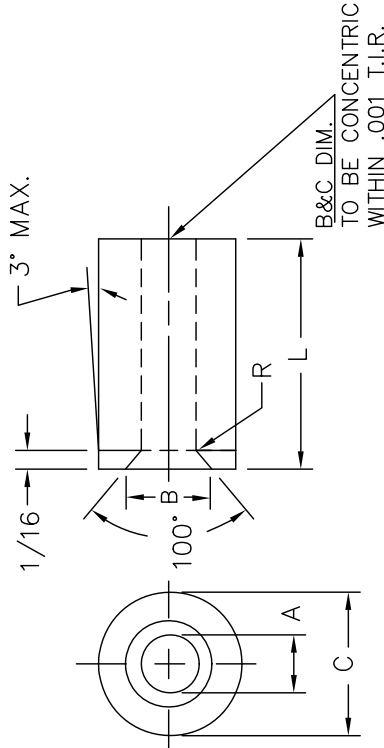
PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORG[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

STAMP-TS-AND APPROPRIATE
SIZE



D&G DIM.
TO BE CONCENTRIC
WITHIN .001 T.I.R.

OUTER BODY



BLANK RETAINER

SIZE	D +.002 -.000	F APPROX.	G
10	.234	1-1/4	.7415 .742
1/4	.307	1-1/4	.867 .868
5/16	.357	1-3/4	1.242 1.243
3/8	.427	1-3/4	1.242 1.243
7/16	.498	2-1/8	1.742 1.743
1/2	.568	2-1/8	1.742 1.743
9/16	.638	2-1/8	1.742 1.743
5/8	.708	2-1/8	1.742 1.743

SIZE	A	B ±.003	C	L APPROX.	R
10	.239 .237	.357	.740 .7405	1-1/32	.060 .065
1/4	.299 .297	.477	.8650 .8655	1-1/32	.060 .065
5/16	.361 .359	.592	1.240 1.241	1-1/32	.060 .065
3/8	.426 .424	.713	1.240 1.241	1-1/32	.060 .065
7/16	.485 .483	.837	1.740 1.741	1	.060 .065
1/2	.548 .546	.950	1.740 1.741	1	.060 .065
9/16	.610 .608	1.070	1.740 1.741	1	.060 .065
5/8	.674 .672	1.185	1.740 1.741	1	.060 .065

A Reissued
4-20-90

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TITLE:

CONCENTRICITY GAGES FOR TORQ-SET® RECESSES

DRAWN:
V.W. MOTTOLA

DATE:
12/04/62

DRAWING NUMBER

SG-113

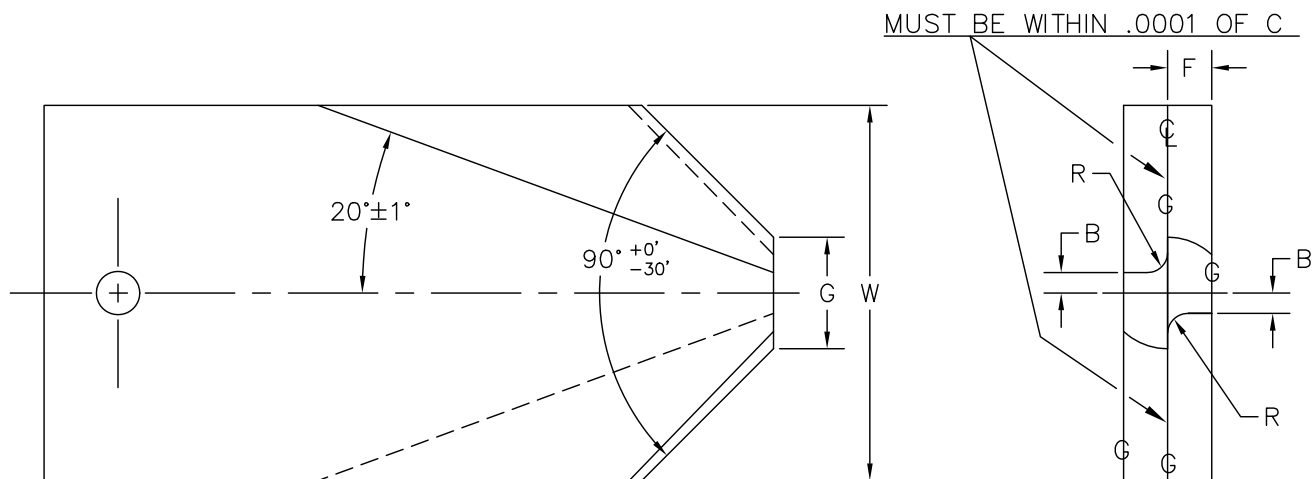
CONFIRMED:
L. DOUGAN

DATE:
11/04/11

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



OVERALL LENGTH OF GAGE(ALL SIZES) TO BE 1"
 A HOLE OF SUITABLE SIZE TO BE DRILLED THROUGH GAGE
 FOR RING
 MARK SIZE & GAGE DESCRIPTION: EXAMPLE SG-119-8 GO

SIZE	A ±.0001	B MAX.	F +.0001 -.0000	G ±.001	R MAX.	W ±.010
0 GO	.0339	.004	.0169	.038	.005	1/4
1 GO	.0339		.0169	.045		1/4
2 GO	.0339		.0169	.053		1/4
3 GO	.0379		.0189	.060		1/4
4 GO	.0419	.006	.0209	.068	.007	1/4
5 GO	.0479		.0239	.076		1/4
6 GO	.0539		.0269	.083		1/4
8 GO	.0639		.0319	.097		1/4
10 GO	.0739	.014	.0369	.112	.022	1/4
12 GO	.0839		.0419	.128		1/4
1/4 GO	.0979		.0489	.148		7/16
5/16 GO	.1239		.0619	.186	.030	7/16
3/8 GO	.1479	.020	.0739	.222		7/16
7/16 GO	.1739		.0869	.258	.040	3/4
1/2 GO	.1979		.0989	.294		3/4
9/16 GO	.2239		.1119	.330		3/4
5/8 GO	.2479		.1239	.367		3/4
3/4 GO	.2979		.1489	.438		1"
7/8 GO	.3479		.1739	.511		1"
1" GO	.3979		.1989	.583		1-1/2
1-1/8 GO	.4479		.2239	.656		1-1/2
1-1/4 GO	.4979		.2489	.728		1-1/2
1-3/8 GO	.5479		.2739	.801		1-3/4
1-1/2 GO	.5979		.2989	.873		1-3/4

NOTE: NO GO SAME AS SG 112

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TITLE:

TORQ-SET® PUNCH GO GAGE

DRAWN:
V.W. MOTTOLA

DATE:
11/15/63

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
11/04/11

SG-119

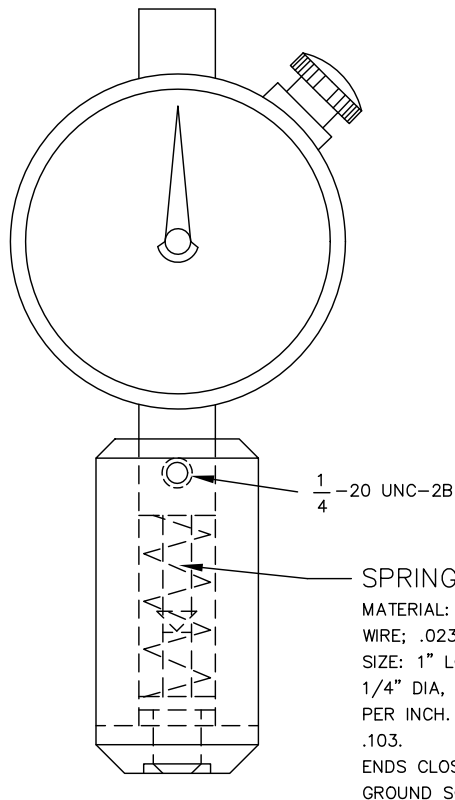
SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
 PHONE: 774-396-6190 FAX: 508-966-2326

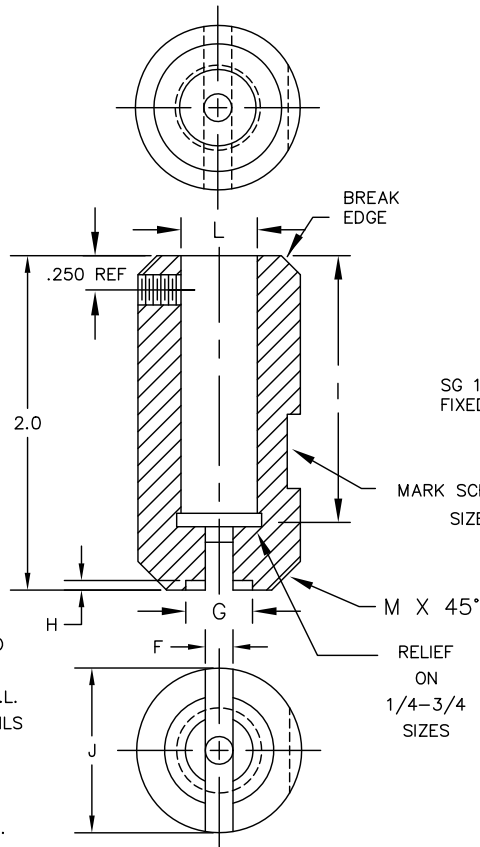
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 HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A TSCN 24 B Reissued
 7-22-64 4-20-90

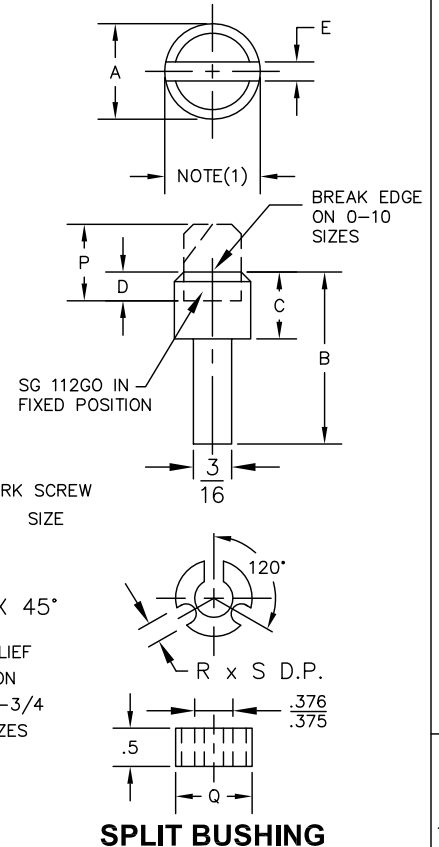
GAGE ASSEMBLY



GAGE BODY



GAGE PIN



SPLIT BUSHING

SCREW SIZE	A	B	C	D	±.001 E	+.002 -.000 F	+.002 -.000 G	+1/64 - 0 H	I	J	L	M	±.005 P	Q	R	S
0					.034	.033	.073									
1					.034	.033	.087									
2					.034	.033	.102									
3	.3745	27/32	1/2	3/16	.038	.037	.116	1/32	1.880	7/8	.376	1/8	.510			
4	.3740	27/32	1/2	3/16	.042	.041	.131	1/32	1.875	7/8	.375	1/8	.510			
5					.048	.047	.146									
6					.054	.053	.160									
8					.064	.063	.190									
10					.074	.073	.219									
1/4					.098	.097	.286									
5/16					.124	.123	.357					1/4				
3/8	.7495	23/32	3/8	5/16	.148	.147	.427	1/16	1.755	1 1/4	.751	1/4	.800	.7495	1/16	.125
7/16	.7490	23/32	3/8	5/16	.174	.173	.498	1/16	1.750	1 1/4	.750	1/4	.800	.7490	1/16	.125
1/2					.198	.197	.568					1/8				
9/16					.224	.223	.638					1/8				
5/8					.248	.247	.708					1/8				
3/4	1.1245	5/8			.298	.297	.849	7/64		2	1.126	1/16	.850	1.1245	1/8	.250
7/8	1.1240	5/8			.348	.347	.989	7/64		2	1.125	1/16	.850	1.1240	1/8	.250
1					.398	.397	1.130									

NOTE(1): SG112 GAGE EDGE TO BE GROUND FLAT AFTER ASSEMBLY TO PERMIT ENTRY INTO GAGE BODY "L" BORED HOLE

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TITLE:

TORQ-SET®
PENETRATION GAUGE

DRAWN:
L. A. PROULX

DATE:
11-2-65

DRAWING NUMBER

CHECKED:
G. LaMONICA

DATE:
2-17-05

SG-137

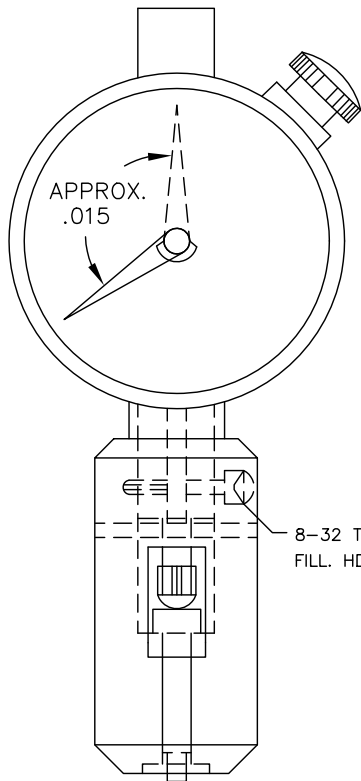
SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

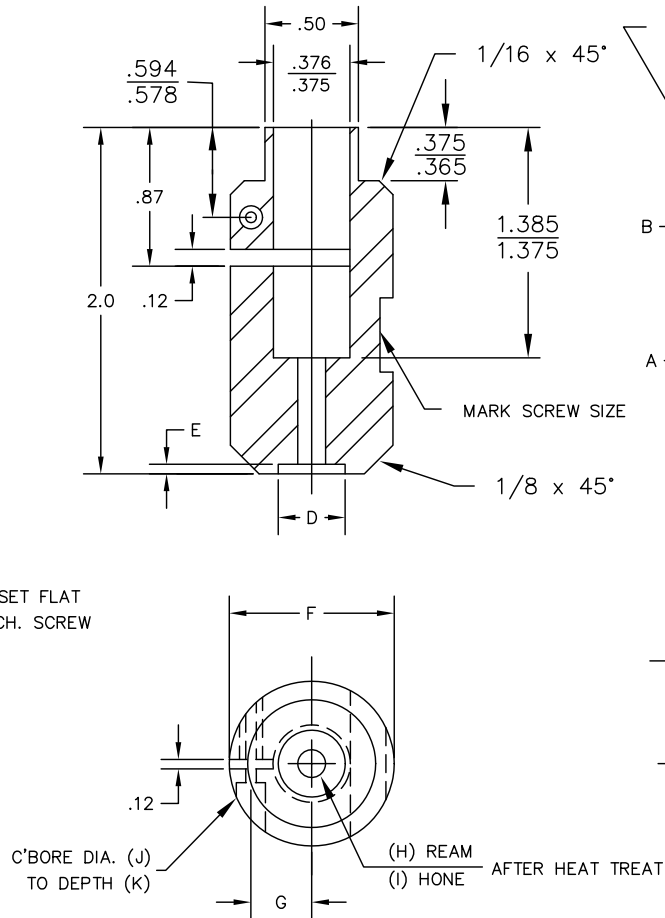
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HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
A TSCN 35 11-4-65
B TSCN 41 3-24-70
C TSCN 47 10-17-74
D TSCN 61 4-18-79
E Reissued 4-20-90
1/ ECO 100 08/11/92

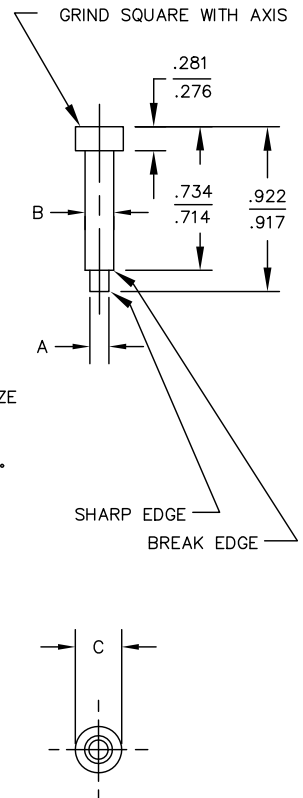
GAGE ASSEMBLY



GAGE BODY



GAGE PIN



MATERIAL AND HEAT TREAT

GAGE BODY

AIR-HARDENING TOOL STEEL,
R/c 60-62

GAGE PIN

DRILL ROD OR EQUIVALENT,
R/c 62-64

BODY SIZE	SCREW SIZE	+0.005 -0.000 A	B	C	+0.002 -0.000 D	+1/32 -0 E	F	G	H	I	J	+1/64 -0 K
2	2	.0440	.1015		.102				.100	.1025		
3	3	.0510	.1005		.116					.1020		
4	4	.0600			.131							
5	5	.0650	.1305	.250	.146	1/16	7/8	.291	.129	.1315	.250	5/32
6	6	.0750	.1295	.240	.160			.281		.1310		
8	8	.0890	.1895		.190				.188	.1905		
10	10	.1000	.1885		.219					.1900		
1 1/4	1 1/4	.1250	.2500	.312	.286					.2510		5/16
5/16	5/16	.1600	.2490	.307	.357	1/8	1 1/4	.406	.248	.2505	.285	
3/8	3/8	.1870			.427			.390				
7/16	7/16	.2250	.3125	.375	.498				.311	.3135		
1/2	1/2	.2600	.3115	.370	.568					.3130		

A TSCN-13
3-3-64
B Reissued
4-20-90

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TITLE:

TORQ-SET® CURVE TOP HEAD DIAL INDICATOR FALLWAY GAGE

DRAWN:
L.A. PROULX

DATE:
05/21/64

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
11/04/11

SG-147

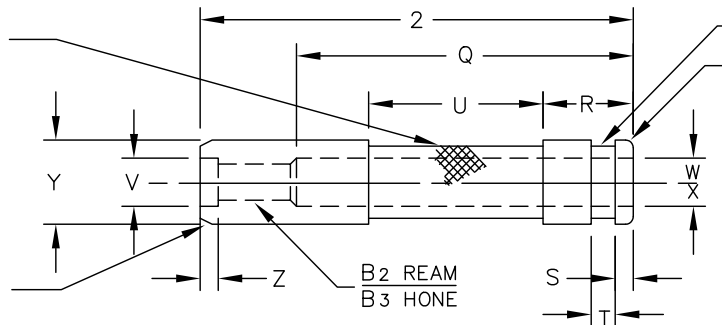
SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

.015 UNDERCUT FOR
FINE DIAMOND KNURL

(b) RAD. OR CHFR.

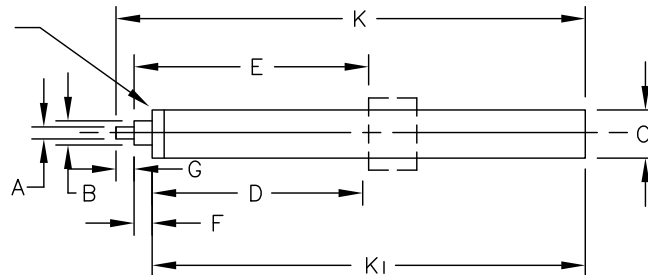


.015 UNDERCUT
(a) RAD.

GAGE BODY

OIL-HARDENING TOOL STEEL
R/c 62-64

1/16 x (J) LEAD

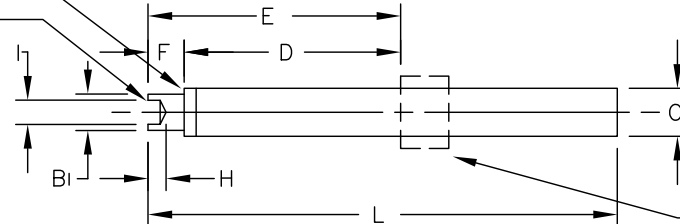


GAGE PIN

OIL-HARDENING DRILL ROD
R/c 62-64

1/16 x (J) LEAD

HOLE FOR CARBIDE TIP



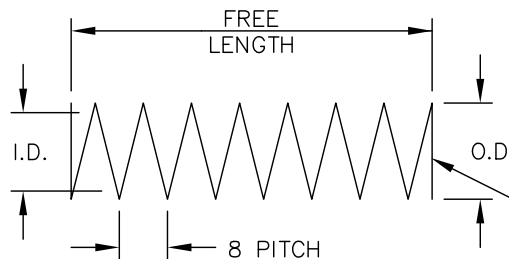
GAGE PIN

ALTERNATE DESIGN

GAGE PIN COLLAR
PRESS FIT POSITION

SPRING FOR 1/4 DIA. PIN

WIRE DIA. = .022
I.D. = .265
F.L. = 1-1/2



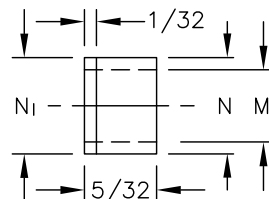
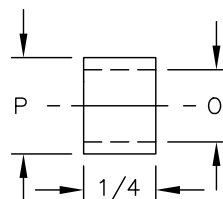
SPRING FOR 5/16 DIA. PIN

WIRE DIA. = .029
I.D. = .328
F.L. = 2

ENDS GROUND
AND SQUARED

GAGE PIN COLLAR

OIL-HARDENING DRILL ROD
R/c 62-64



TOP BUSHING

OIL-HARDENING DRILL ROD
R/c 62-64

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TITLE:

TORQ-SET® CURVED TOP HEAD HAND TYPE FALLAWAY GAGE

DRAWN:

L.A. PROULX

DATE:

05/26/64

DRAWING NUMBER

SG-150

CONFIRMED:

L. DOUGAN

DATE:

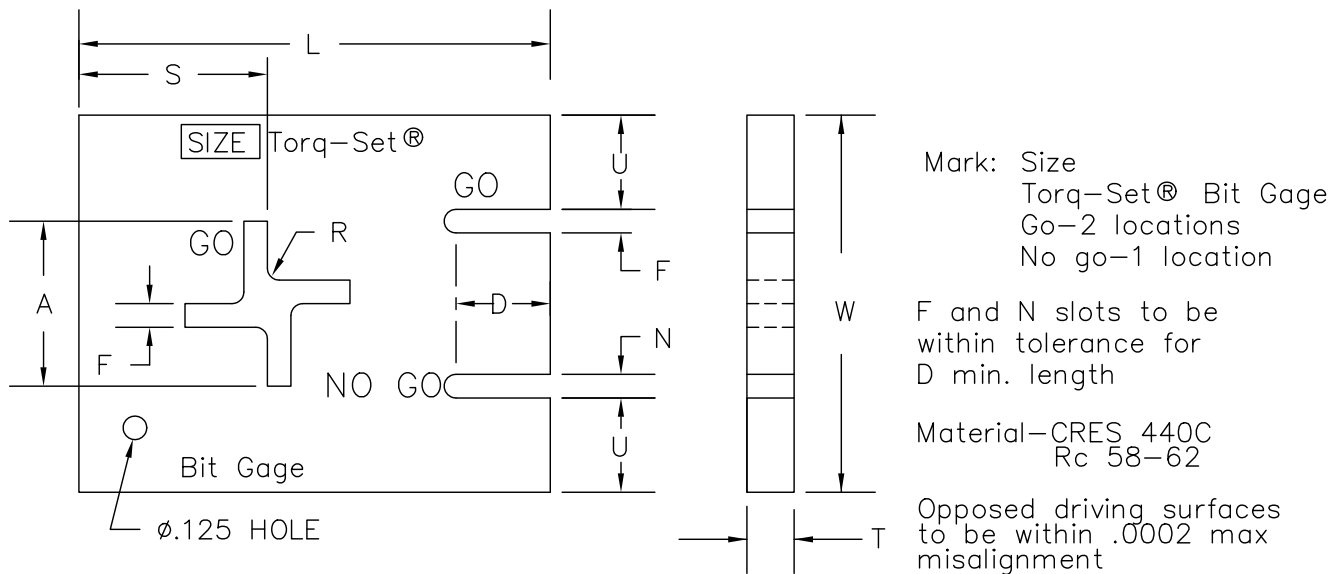
11/04/11

SHEET 1 OF 2

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A Reissued
4-20-90



Size	L Ref	W Ref	T ±.010	D Min	A ±.005	F +.0002 -.0000	N +.0000 -.0002	R ±.001	S Ref	U Ref
0	1.25	1.00	.125	.078	.082	.0155	.0140	.007	.50	.25
1					.099	.0155	.0140	.007		
2					.117	.0155	.0140	.007		
3					.135	.0175	.0160	.007		
4				.094	.152	.0185	.0170	.012		
5					.170	.0215	.0200	.012		
6					.188	.0245	.0230	.018		
8					.223	.0295	.0280	.018		
10				.125	.258	.0345	.0330	.025		
1/4					.340	.0465	.0435	.025		
5/16					.377	.0595	.0565	.030		
3/8					.452	.0705	.0675	.030		
7/16	1.75	1.25	.250	.219	.493	.0835	.0805	.042	.75	.31
1/2					.563	.0945	.0915	.057		
9/16					.633	.1055	.1020	.070		
5/8					.703	.1175	.1140	.070		
3/4	2.50	2.00	.375	.375	.844	.1410	.1375	.070	1.00	.50
7/8					.984	.1660	.1625	.070		
1					1.125	.1910	.1875	.101		

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TITLE:

POINT GAGE FOR TORQ-SET® & ACR® RIBBED TORQ-SET® DRIVER

DRAWN:

J. GRADY

DATE:

03-02-87

DRAWING NUMBER

PSC-776

CHECKED:

G. LaMONICA

DATE:

02-26-05

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
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FEB. 24, 1989

REVISION

TORQ-SET® ENGINEERING MANUAL

INDEX

PUNCHES

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TORQ-SET[®] PUNCH INSPECTION

Header punches for TORQ-SET[®] fasteners are made to exacting standards from high quality punch steel and are heat treated for best consistency and performance in production. The following inspection procedure is recommended for receiving inspection by authorized TORQ-SET[®] producers.

Check one punch per lot or at least one per twenty-five punches of the same code or lot for the following attributes:

1. Punch diameter, length, retaining pin groove, hardness, etc. and other requirements to be inspected to the blueprint in accordance with standard procedures, except as noted below.
2. Recess fit, i.e. wing thickness (F), and alignment, to be checked using SG119 GO and SG112 NOGO Plug Gages. "NOGO" may enter up to one-half the depth of impression. A secondary functional check with a bit may also be employed.
3. Nib length ("J" dimension on flat head punches) to be checked with a micrometer. Extreme point or tip of punch may be rounded or flattened to the extent of .015 and in such cases "J" dimensions measuring .003 under minimum specifications will be acceptable.
4. Minimum flat on punch face to be checked with micrometers or calipers.
5. Spot check wing thickness with micrometers wherever possible.
6. Check point diameter "G" dimension with micrometer.
7. All punches to be scanned visually with 10X glass to check for obvious visual defects as cracks, chips, tears, folds, objectional flow lines, poor workmanship, etc.
8. All punches to be checked visually for proper code identification, product part number, grip marking, etc. where specified.

TORQ-SET® PUNCH CODE

<u>3</u>	<u>K</u>	<u>10</u>	<u>1</u>	<u>3M</u>	<u>XXX</u>
1-MASTER PUNCH 2-TYPE 3-HEADER PUNCH	TORQ-SET®	HEAD STYLE			MARKINGS AND VENDORS IDENTIFICATION AS REQUIRED
	SCREW SIZE			BASIC PUNCH NUMBER	
	1 - 1	100° FLAT -1		100° FLAT, 0-1/4	3M
	2 - 2	FLAT FILLISTER -1		100° FLAT, 5/16 to 1-1/2	3
	3 - 3	FLAT PAN -1		FLAT PAN, FLAT FILL, 0-3/8	82
	4 - 4	OVAL -2		FLAT PAN, FLAT FILL.,	
	5 - 5	ROUND -3		7/16 TO 1 1/2	3
	6 - 6	PAN -4		PAN	4
	8 - 8	BRAZIER -5		PAN (MODIFIED)	4M
	10 - 10	BUTTON -6		BRAZIER	3
	1/4 - 25	SPECIAL CURVED TOP HEADS		BUTTON	1
	5/16 - 31	SINGLE RAD. -7		ROUND	1
	3/8 - 37	SPECIAL CURVED TOP HEADS		TRUSS	1
	7/16 - 43	DOUBLE RAD. -8		TRIMMED HEX	1
	1/2 - 50	TRUSS -9		100° REDUCED CROWN	1
	9/16 - 56	TRIMMED HEX -10			
	5/8 - 62	SPECIAL INDENTED FLAT FILLISTER -11			
		100° REDUCED CROWN -12			

FLAT HEAD PUNCHES METRIC SIZES

SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D		±.001 G	REF J		+.005 -.000 R	+.000 -.004 S	MIN. FACE DIA. Y	±.002 B			PUNCH PEN
M1.6	3K 0-1-3M	.077	.4375	F .018 .017	.035	.028	P	---	1.0000	.125	.003	K .126 .125	L .062 .061	.0225 .0185
M2	3K 1-1-3M	.093			.042	.034		---		.156				.0270 .0230
M2.5	3K 3-1-3M	.127			.057	.046		---		.219				.0365 .0325
M3	3K 4-1-3M	.143			.065	.052		.008		.234	.0405 .0365			
M3.5	3K 6-1-3M	.177			.080	.063		.016		.312	.0500 .0450			
M4	3K 8-1-3M	.210	.5625	.034 .032	.094	.075	.375			.0595 .0545				
M5	3K 10-1-3M	.243		.039 .037	.109	.087	.008 .005	.023		.438	.0685 .0635			
M6	3K 25-1-3M	.320	.8750	.051 .049	.145	.115				.594	.0890 .0840			
M7	3K 25-1-3M	.320	1.0000	.051 .049	.145	.115				.594	.0890 .0840			
M8	3K 31-1-3	.352		.064 .062	.182	.119	.010 .005	.031		.688	.0860 .0810			
M10	3K 37-1-3	.422		.076 .074	.218	.142			.844	.1030 .0980				
M12	3K 50-1-3	.563	1.2500	.102 .099	.290	.190	.012 .005	.062		1.062	.014			.1375 .1325

REVISION

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TITLE:

TORQ-SET®
METRIC 100° FLAT HEAD PUNCH

DRAWN

G.DILLING

DATE

6/8/12

DRAWING
NUMBER

CHECKED:

G.DILLING

DATE

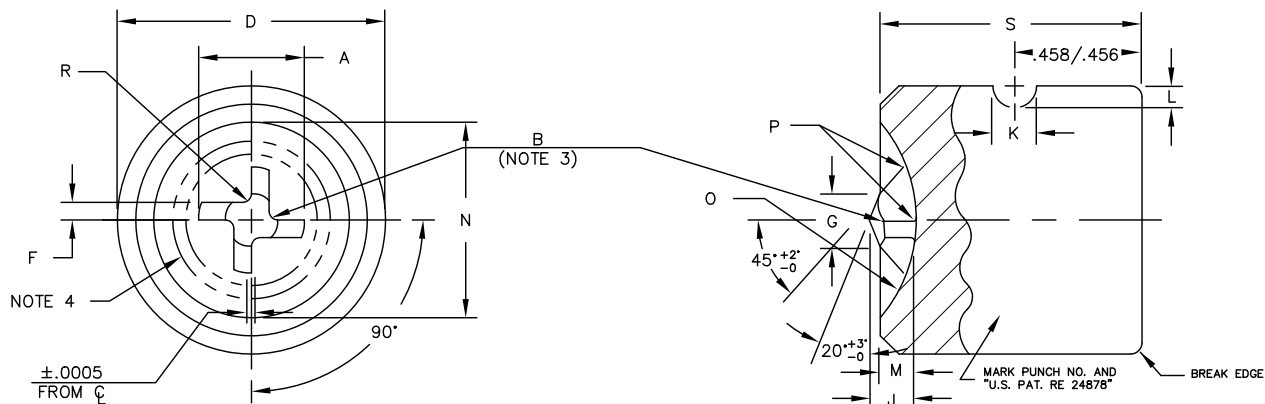
6/8/12

TSP-IM

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX®
AND POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



1/

SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D	±.001 F	±.001 G	REF J	+ .002 - .000 M	+ .005 - .000 N	+ .005 - .000 O	P	+ .005 - .000 R	+ .000 - .004 S	±.002 B	K	L	PUNCH PEN
4																
5																
6	3K6-5-3	.155	.4375	.028	.080	.069	.057	.271	.190	.005 .003	.016	1.000	.005	.126 .125	.062 .061	.0390 .0340
8	3K8-5-3	.185	.5625	.033	.094	.082	.067	.326	.230	.008 .005				.023	.007	.213 .212
10	3K10-5-3	.214		.038	.109	.095	.079	.375	.264		.010 .005		.0540 .0490			
1/4	3K25-5-3	.281	.8750	.050	.145	.128	.110	.483	.320	.012 .005	.048 .062		.012	.0695 .0645		
5/16	3K31-5-3	.352	1.0000	.063	.182	.161	.136	.591	.390					.0860 .0810		
3/8	3K37-5-3	.422	1.5000	.075	.218	.194	.162	.699	.460	.012 .005	.048 .062		.012	.1030 .0980		
7/16	3K43-5-3	.493		.088	.254	.227	.187	.807	.530					.1205 .1155		
1/2	3K50-5-3	.563		.102 .099	.290	.261	.211	.914	.600					.1375 .1325		
9/16																
5/8																

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

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TITLE:

TORQ-SET®
BRAZIER HEAD PUNCH

DRAWN:
R.H. SOMERS

DATE:
07/11/63

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
06/12/12

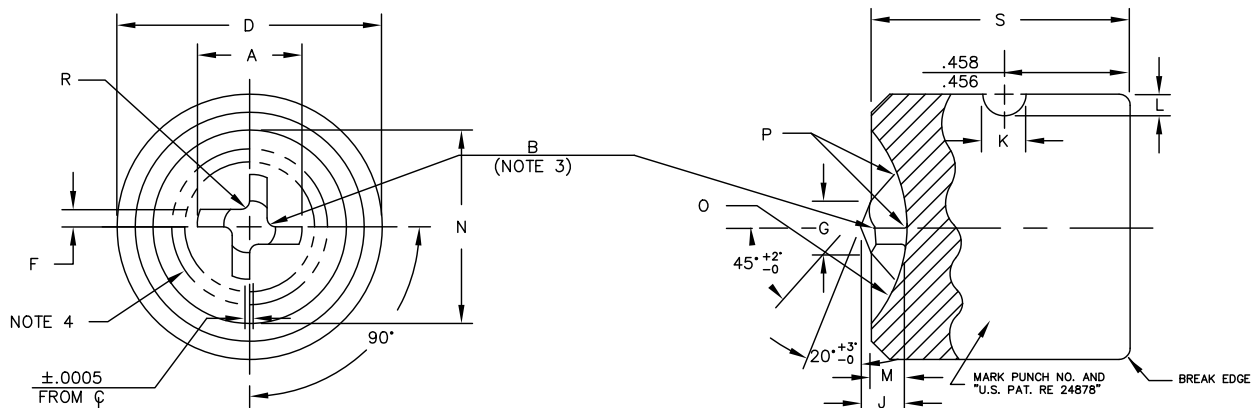
TSP-67

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A 10-22-63
B 73CN-15
C TSCN 18
D Reissued
1/ ECO 100
4-21-64
6-10-64
4-20-90
09/16/92



1/

SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D	±.001 F	±.001 G	REF J	+0.002 -.000 M	+0.005 -.000 N	+0.005 -.000 O	P	+0.005 -.000 R	+0.000 -.004 S	±.002 B	K	L	PUNCH PEN
0																
1																
2	3K2-6-1	.097	.4375	.018 .017	.050	.045	.038	.159	.101	.005 .003	—	1.000	.003			.0250 .0210
3																
4	3K4-6-1	.126	.4375	.022	.065	.060	.051	.208	.131	.005 .003	.008	1.000	.004	.126 .125	.062 .061	.0320 .0280
5																
6	3K6-6-1	.155	.4375	.028	.080	.073	.066	.257	.158	.005 .003	.016		.005			.0390 .0340
8	3K8-6-1	.185		.033	.094	.087	.082	.307	.185							.0470 .0420
10	3K10-6-1	.214	.5625	.038	.109	.101	.092	.351	.213	.008 .005	.023					.0540 .0490
1/4	3K25-6-1	.281	.8750	.050	.145	.138	.124	.427	.249				.007			.0695 .0645
5/16	3K31-6-1	.352	1.0000	.063	.182	.174	.156	.537	.309	.010 .005	.031	1.000	.010	.213 .212	.106 .105	.0860 .0810
3/8	3K37-6-1	.422	1.2500	.075	.218	.209	.192	.646	.368							.1030 .0980
7/16																
1/2	3K50-6-1	.563	1.5000	.102 .099	.290	.275	.222	.875	.542	.012 .005	.062	1.000	.014			.1375 .1325
9/16																
5/8	3K62-6-1	.703	1.5000	.127 .124	.363	.360	.231	1.000	.570	.014 .005	.078	1.000	.018			.1710 .1660

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

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TITLE:

TORQ-SET[®] BUTTON HEAD PUNCH

DRAWN:
R.H. SOMERS

DATE:
07/22/63

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
6/12/12

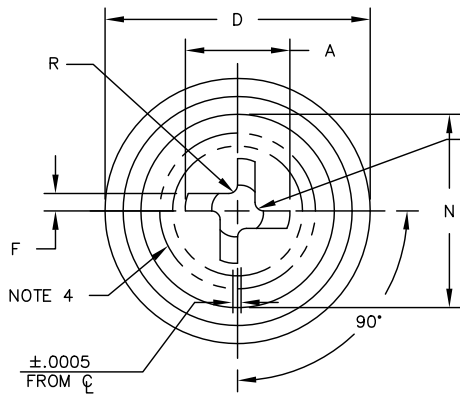
TSP-71

SHEET 1 OF 1

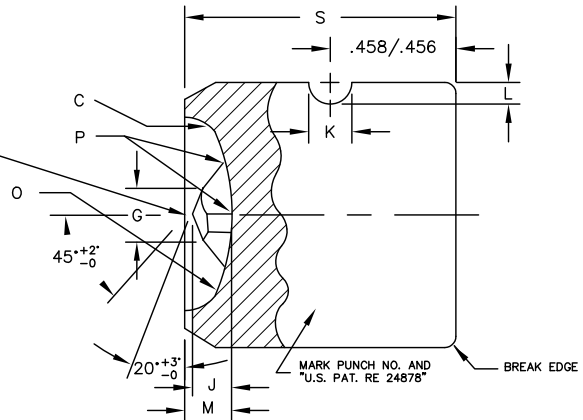
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II[®] PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A 10-22-63
B TSCN 18 5-27-64
C Reissued 4-20-90
1/ ECO 100 09/16/92



B
(NOTE 3)



1/

SCREW SIZE	PUNCH NUMBER	±.002 A	±.005 C	±.0005 D	±.001 F	±.001 G	REF J	+ .002 - .000 M	+ .005 - .000 N	+ .005 - .000 O	P	+ .005 - .000 R	+ .000 - .004 S	±.002 B	K	L	PUNCH PEN
0	3K0-4-4	.068	.015	.4375	.018 .017	.035	.030	.030	.106	.091	.005 .003		1.000	.003	.126 .125	.062 .061	.0180 .0140
1	3K1-4-4	.082				.042	.036	.036	.132	.111		.0215 .0175					
2	3K2-4-4	.097	.050									.042					.040
3	3K3-4-4	.111			.021 .020	.057	.049	.047	.183	.150				.0285 .0245			
4	3K4-4-4	.126	.022								.065	.055		.053			.209
5	3K5-4-4	.141			.025	.073	.061	.059	.235	.191					.0355 .0305		
6	3K6-4-4	.155	.041								.028	.080		.067	.065	.260	.207
8	3K8-4-4	.185	.043	.5625	.033	.094	.080	.077	.312	.244							
10	3K10-4-4	.214	.047								.038	.109		.093	.089	.358	.284
1/4	3K25-4-4	.281	.062	.8750	.050	.145	.123	.118	.477	.373							
5/16	3K31-4-4	.352	.095	1.0000	.063	.182	.150	.147	.600	.527	.012 .005	.048	.0860 .0810				
3/8	3K37-4-4	.422	.118	1.2500	.075	.218	.178	.177	.725	.652				.012 .005	.048	.1030 .0980	
7/16	3K43-4-4	.493	.160	1.5000	.088	.254	.206	.207	.848	.782	.012 .005	.048	.1205 .1155				
1/2	3K50-4-4	.563	.190		.102 .099	.290	.233	.235	.972	.917				.062	.062	.1375 .1325	
9/16																	
5/8																	
3/4																	

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

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TITLE:

TORQ-SET®

PAN HEAD PUNCH (DOUBLE RADIUS)

DRAWN:
R.H. SOMERS

DATE:
07/15/63

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
6/12/12

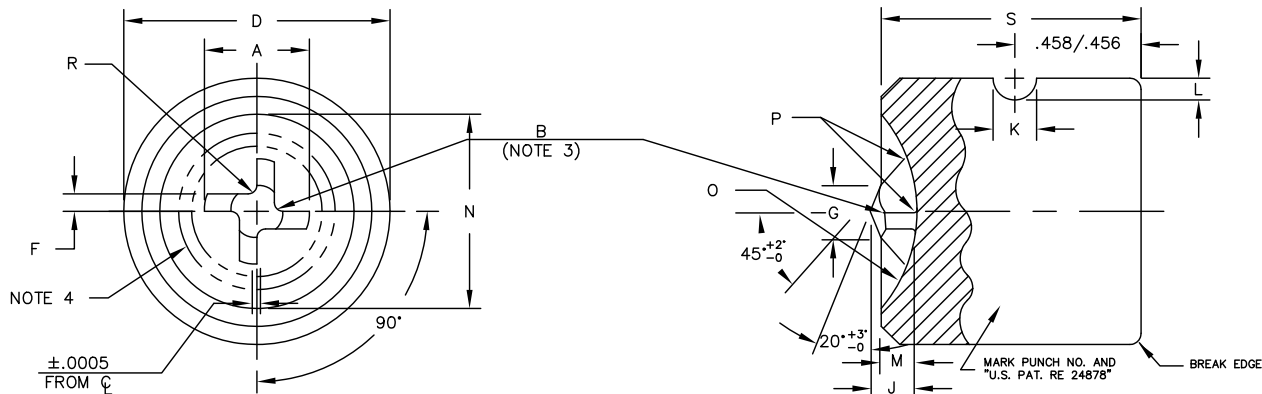
TSP-75

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A 10-22-63
B TSCN 15 4-21-64
C TSCN 18 6-10-64
D TSCN 40 8-21-69
E Reissued 4-20-90
1/ ECO 100 09/16/92



1/

SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D	±.001 F	±.001 G	REF J	+0.002 -0.000 M	+0.005 -0.000 N	+0.005 -0.000 O	P	+0.005 -0.000 R	+0.000 -0.004 S	±.002 B	K	L	PUNCH PEN
0	3K0-4-4M	.068	.4375	.018 .017	.035	.030	.019	.111	.091	.005 .003	.008	1.000	.003	.126 .125	.062 .061	.0180 .0140
1	3K1-4-4M	.082			.042	.036	.024	.137	.111							.0215 .0175
2	3K2-4-4M	.097			.050	.042	.028	.162	.132							.0250 .0210
3	3K3-4-4M	.111			.021 .020	.057	.049	.033	.188							.0285 .0245
4	3K4-4-4M	.126			.022	.065	.055	.037	.214							.0320 .0280
5	3K5-4-4M	.141			.025	.073	.061	.042	.240							.0355 .0305
6	3K6-4-4M	.155	.5625	.028	.080	.067	.048	.265	.207	.008 .005	.016	.023	.004	.126 .125	.062 .061	.0390 .0340
8	3K8-4-4M	.185			.033	.094	.080	.059	.317							.0470 .0420
10	3K10-4-4M	.214			.038	.109	.093	.066	.363							.0540 .0490
1/4	3K25-4-4M	.281			.050	.145	.123	.089	.482							.0695 .0645
5/16	3K31-4-4M	.352			.063	.182	.150	.095	.605							.0860 .0810
3/8	3K37-4-4M	.422			.075	.218	.178	.112	.730							.1030 .0980
7/16	3K43-4-4M	.493	1.5000	.088	.254	.206	.126	.853	.782	.012 .005	.048	.062	.010	.213 .212	.106 .105	.1205 .1155
1/2	3K50-4-4M	.563			.102 .099	.290	.233	.141	.977							.1375 .1325
9/16	3K56-4-4M	.633	2.000	.115 .112	.326	.267	.150	.960	.960	.014 .005	.078	1.500	.016			.1545 .1495
5/8	3K62-4-4M	.703	2.500	.127 .124	.363	.300	.187	.995	.995	.014 .005	.078	1.500	.018			.1710 .1660
3/4																

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

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TITLE:

**TORQ-SET®
MODIFIED PAN HEAD PUNCH
(SIDE HEIGHT IN DIE)**

DRAWN:
L.A. PROULX

DATE:
04/01/64

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
6/12/12

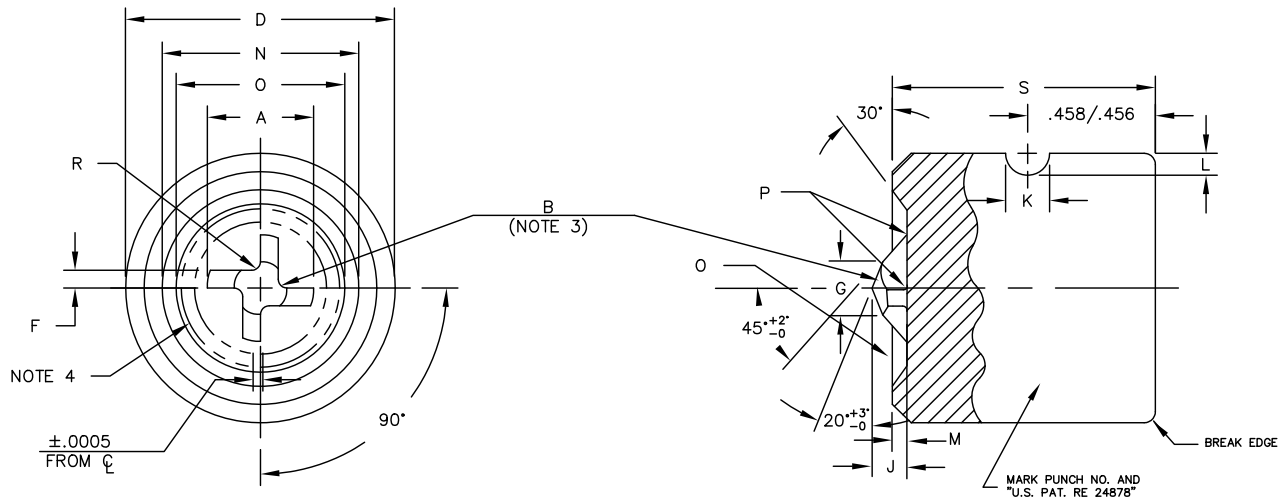
TSP-75M

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II PHILLIPS POZIDRIV ACR POZISQUARE PHILLIPS SQUARE-DRIV TORQ-SET TRI-WING MORTORQ
HEXSTIX POZILOCK ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A TSCN 15 B TSCN 18 C TSCN 28 D TSCN 28
4-21-64 6-10-64 1-8-65 4-20-90 09/16/92



SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D	F	±.001 G	±.003 J	+ .002 - .000 M	+ .005 - .000 N	+ .005 - .000 O	P	+ .005 - .000 R	+ .000 - .004 S	±.002 B	K	L	PUNCH PEN
4	3K4-10-1	.152	.4375	.023 .021	.065	.056	.014	.236	.188	.005 .003	.008	1.000	.004	.126 .125	.062 .061	.0450 .0410
5																
6	3K6-10-1	.188		.029 .027	.080	.069	.023	.310	.230		.008 .005		.016	.005	.0555 .0505	
8	3K8-10-1	.223	.5625	.034 .032	.094	.082	.023	.310	.230	.023				.0660 .0610		
10	3K10-10-1	.258		.039 .037	.109	.095	.026	.380	.290				.0760 .0710			
1/4	3K25-10-1	.340	.8750	.051 .049	.145	.125	.027	.455	.360				.007	.213 .212	.106 .105	.0990 .0940
5/16																
3/8																
7/16																
1/2																

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

10-22-63
B TSCN 18
C TSCN 28
D Reissued
1/ ECO 100
5-27-64
4-20-90
8-7-73
09/16/92

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TITLE:

TORQ-SET®
TRIMMED HEXAGON HEAD PUNCH

DRAWN:
R.H. SOMERS

DATE:
07/31/63

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

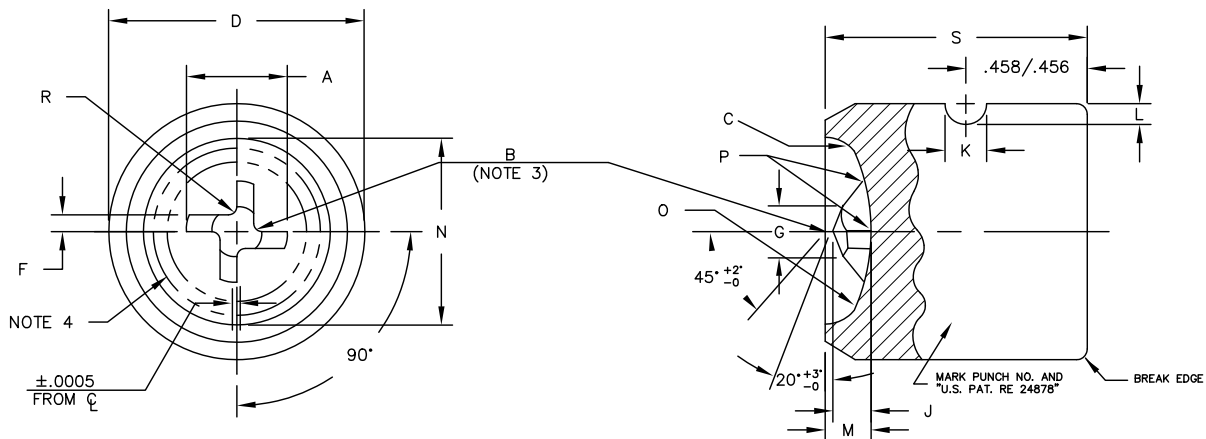
DATE:
6/12/12

TSP-76

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



1/

SCREW SIZE	PUNCH NUMBER	±.002 A	±.002 B	±.0005 D	±.001 F	±.001 G	REF J	K	L	+0.002 -0.000 M	+0.005 -0.000 N	+0.005 -0.000 O	±.005 C	P	+0.005 -0.000 R	+0.000 -0.004 S	PUNCH PEN
0																	
1																	
2	3K2-3-1	.097	.003	.4375	.018 .017	.050	.047	.126 .125	.062 .061	.051	.156	.091	.055	.005 .003	.008	1.000	.0250 .0210
3																	
4	3K4-3-1	.126	.004		.022	.065	.061			.065	.205	.121	.073				.0320 .0280
5																	
6	3K6-3-1	.155	.005	.5625	.028	.080	.074	.213 .212	.106 .105	.078	.254	.154	.093	.008 .005	.016	.023	.0390 .0340
8	3K8-3-1	.185			.033	.094	.087			.091	.301	.187	.112				.0470 .0420
10	3K10-3-1	.214			.038	.109	.100			.104	.349	.219	.131				.0540 .0490
1/4	3K25-3-1	.281	.010	.8750	.050	.145	.132	.213 .212	.106 .105	.135	.460	.286	.172	.010 .005	.031		.0695 .0645
5/16	3K31-3-1	.352			.063	.182	.166			.166	.577	.357	.214				.0860 .0810
3/8	3K37-3-1	.422			.075	.218	.198			.202	.693	.430	.258				.1030 .0980

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

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TITLE:

TORQ-SET[®]
ROUND HEAD PUNCH

DRAWN:
L.A. PROULX

DATE:
10/04/63

DRAWING NUMBER

TSP-77

CONFIRMED:
L. DOUGAN

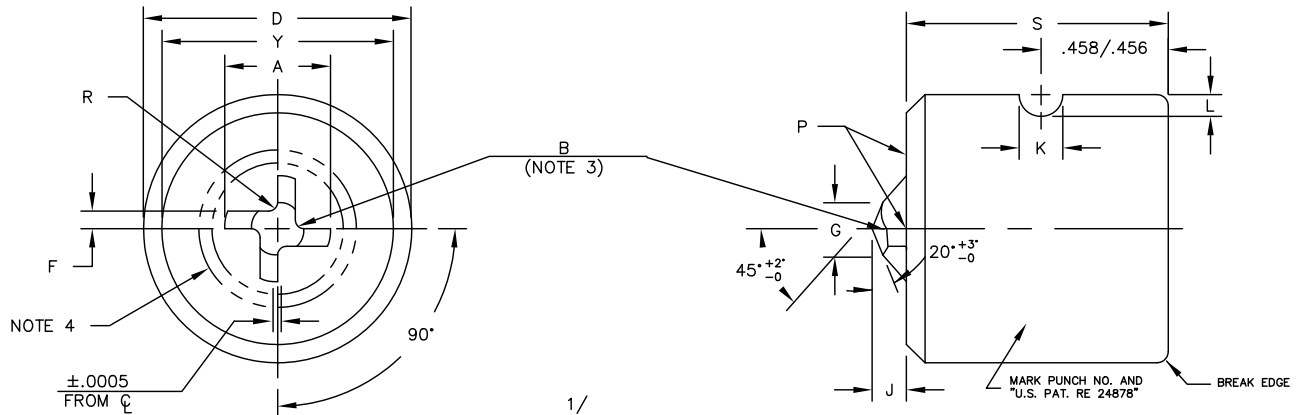
DATE:
6/12/12

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS[®] II PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®]
HEXSTIX[®] POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

A 10-22-63 5-27-64 B TSCN 18 C Reissued 1/ ECO 100 09/16/92



SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D	F	±.001 G	REF J	P	+ .005 - .000 R	+ .000 - .004 S	MIN. FACE DIA. Y	±.002 B	K	L	PUNCH PEN							
0	3K0-1-82	.082	.4375	.018 .017	.035	.030	.005 .003	—	1.000	.125	.003	.126 .125	.062 .061	.0250 .0210 .0300 .0260							
1	3K1-1-82	.099			.021 .020 .023 .021	.057		.050		—				.156	.0350 .0310						
2	3K2-1-82	.117								—				.188	.0405 .0365						
3	3K3-1-82	.135		.026 .024 .029 .027	.073	.063		—		.219	.004			.0450 .0410							
4	3K4-1-82	.152		.5625		.034 .032 .039 .037		.082		.008 .005	.008		.234	.213 .212	.106 .105	.0500 .0450 .0555 .0505					
5	3K5-1-82	.170			.029 .027	.080							.250			.005			.0660 .0610 .0760 .0710		
6	3K6-1-82	.188			.051 .049	.109					.016		.312						.0990 .0940		
8	3K8-1-82	.223	.064 .062 .076 .074		.131		.023				.375	.007				.0985 .0935					
10	3K10-1-82	.258	1.0000	.089 .087 .102 .099							.182					.438	.010 .012 .014 .016 .018	.020	.1180 .1130		
1/4	3K25-1-82	.340		.115 .112 .127 .124	.254	.166	.010 .005	.031		.594	.010			.1205 .1155							
5/16	3K31-1-82	.377		.152 .149		.285				.688				.1375 .1325							
3/8	3K37-1-82	.452		.177 .174	.326	.214		.062		.844	.012			.1545 .1495							
7/16	3K43-1-82	.493	1.2500	.202 .199	.363	.238	.012 .005	.048		.938	.014			.1710 .1660							
1/2	3K50-1-82	.563		.228 .224		.285				1.062	.016			.2060 .2010							
9/16	3K56-1-82	.633		1.5000	.253 .249	.435		.333		.078		1.219	.018			.2395 .2345					
5/8	3K62-1-82	.703			.278 .274			.380				.109				1.344			.2740 .2690		
3/4	3K75-1-82	.844	2.0000		.303 .299	.580	.428	.018 .008	.125	1.500	1.531	.020			.3080 .3030						
7/8	3K87-1-82	.984			.253 .249		.475				1.812				.3420 .3370						
1"	3K100-1-82	1.125		.278 .274	.725	.523					2.062				.3760 .3710						
1-1/8	3K112-1-82	1.266		.303 .299		.570					2.375				.4105 .4055						
1-1/4	3K125-1-82	1.406	3.0000	.253 .249	.798		.030 .015	.156	2.000	2.625											
1-3/8	3K137-1-82	1.547		.278 .274						2.875											
1-1/2	3K150-1-82	1.688		.303 .299						3.125											

- NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.
(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS AND PRODUCE A FLAT SURFACE ON PRODUCT.
(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.
(4) HEAD MARKING IN THIS AREA IF APPLICABLE.
(5) PERMISSIBLE TO USE PIN SLOT.
(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.
(7) SIZES 7/16 TO 1 1/2 SAME AS TSP-1, 100° FLAT HEAD.

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TITLE: **TORQ-SET® FLAT FILLISTER AND
FLAT PAN HEAD PUNCH**

DRAWN: R.H. SOMERS DATE: 07/18/63 DRAWING NUMBER
TSP-82
CONFIRMED: L. DOUGAN DATE: 6/12/12 SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ®
HEXSTIX® POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

10-22-62 1/ ECO 100
B TSCN 18 C Reissued 09/16/92
A 5-28-64 4-20-90

FLAT PAN HEAD PUNCHES METRIC SIZES

SCREW SIZE	PUNCH NUMBER	±.002 A	±.0005 D	F	±.001 G	REF J	P	+.005 -.000 R	+.000 -.004 S	MIN. FACE DIA. Y	±.002 B	K	L	PUNCH PEN		
M1.6	3K0-1-82	.082	.4375	.018 .017	.035	.030	.005 .003	---	1.0000	.125	.003	.126 .125	.062 .061	.0250 .0210		
M2	3K1-1-82	.099			.042	.036		---		.156				.0300 .0260		
M2.5	3K3-1-82	.135		.021 .020	.057	.050		---		.219				.0405 .0365		
M3	3K4-1-82	.152		.023 .021	.065	.056		.008		.234	.004			.0450 .0410		
M3.5	3K6-1-82	.188		.029 .027	.080	.069		.016		.312	.005			.0555 .0505		
M4	3K8-1-82	.223	.5625	.034 .032	.094	.082	.008 .005			.375				.213 .212	.106 .105	.0660 .0610
M5	3K10-1-82	.258		.039 .037	.109	.095				.023		.438	.007			.0760 .0710
M6	3K25-1-82	.340	.8750	.051 .049	.145	.125						.594				.0990 .0940
M7	3K25-1-82	.340	1.0000	.051 .049	.145	.125	.010 .005	.031		.594	.010					.0990 .0940
M8	3K31-1-82	.377		.064 .062	.182	.131				.688						.0985 .0935
M10	3K37-1-82	.452		.076 .074	.218	.158				.844						
M12	3K50-1-82	.563	1.2500	.102 .099	.290	.190	.012 .005	.062			1.062	.014				

REVISION

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TITLE:

TORQ-SET®
METRIC FLAT PAN HEAD PUNCH

DRAWN
G.DILLING

DATE
6/12/12

DRAWING
NUMBER

CHECKED:
G.DILLING

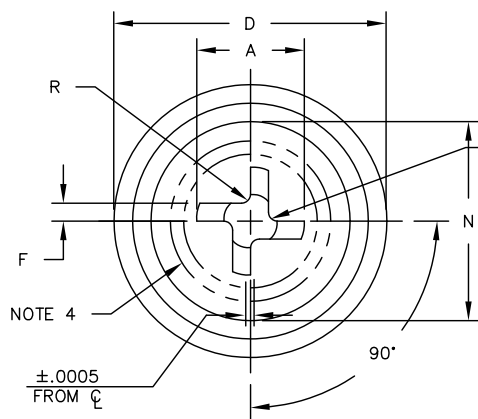
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6/12/12

TSP-82M

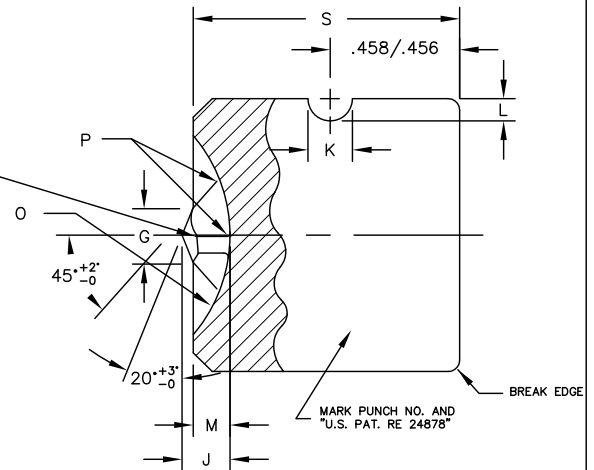
SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX®
AND POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY



B
(NOTE 3)



2/

1/

SCREW SIZE	RECESS SIZE	PUNCH NUMBER	±.002 A	±.0005 D	F	±.001 G	REF J	+.002 −.000 M	+.005 −.000 N	+.005 −.000 O	P	+.005 −.000 R	+.000 −.004 S	±.002 B	K	L	PUNCH PEN	
8	6	3K6−12−1	.185	.4375	.029 .027	.080	.071	.008	.256	1.028	.005 .003	.016	1.000	.005	.213 .212	.106 .105	.0555 .0505	
10	8	3K8−12−1	.218	.5625	.034 .032	.094	.084	.009	.300	1.254	.008 .005						.023	.0650 .0600
1/4	10	3K10−12−1	.257		.039 .037	.109	.099	.012	.393	1.615		.010 .005		.031				.0770 .0720
5/16	1/4	3K25−12−1	.337	.8750	.051 .049	.145	.130	.015	.474	1.880	.012 .005						.048	.1000 .0950
3/8	5/16	3K31−12−1	.374		.064 .062	.182	.137	.018	.560	2.187		.014 .005		.078				.0980 .0930
7/16	3/8	3K37−12−1	.446	1.0000	.076 .074	.218	.163	.021	.669	2.675	.016						.023	.1160 .1110
1/2	7/16	3K43−12−1	.520	1.2500	.089 .087	.254	.191	.025	.756	2.870		.008 .005		.016				.1350 .1300
9/16	1/2	3K50−12−1	.593	1.5000	.102 .099	.290	.218	.028	.840	3.164	.009 .005						.023	.1540 .1490
5/8	9/16	3K56−12−1	.666		.115 .112	.326	.245	.031	.928	3.488		.010 .005		.031				.1725 .1675
.190	8MAR	3K8−12−3	.217	.5625	.034 .032	.094	.085	.012	.300	.944	.008 .005						.016	.005
.190	8NAR	3K8−12−2	.224		.034 .032	.094	.090	.014	.299	.800		.010 .005		.031				
.250	10NAR	3K10−12−2	.264		.039 .037	.109	.104	.014	.392	1.400							.011 .005	
.312	1/4NAR	3K25−12−2	.344		.8750	.051 .049	.145	.135	.018	.471		1.560	.012 .005	.048	.1040 .0990			

NOTES: (1) NIB TO BE CONCENTRIC WITH AXIS WITHIN .005 T.I.R.

(4) HEAD MARKING IN THIS AREA IF APPLICABLE.

(2) PUNCH FACE TO BE SMOOTH, SQUARE WITH AXIS.

(5) PERMISSIBLE TO USE PIN SLOT.

(3) THE SHARP EDGE DEFINED BY "G" AND "R" AT THE NIB WILL BE ROUNDED BY A RADIUS "B" PER TABULATION.

(6) IMPRESSION OF NIB MUST BE GAGED BY SG119 GO AND SG112 NOGO TO VERIFY SIZE. NO INDIVIDUAL WING OF IMPRESSION SHALL ACCEPT NOGO GAGE.

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TITLE:

TORQ-SET®

100° CROWN REDUCED HEAD PUNCH

DRAWN:
J. GRADY

DATE:
06/28/89

DRAWING NUMBER

CONFIRMED:
L. DOUGAN

DATE:
6/12/12

TSP-90

SHEET 1 OF 1

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

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2/ ECO 100 09/16/92