

FED. SUPPLY CLASS

NAS890

STANDARD SHANK CONFIGURATIONS FOR CUTTING TOOLS

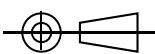
SPECIFICATION



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ISSUE DATE: MAY 31, 2018

THIRD ANGLE PROJECTION 	CUSTODIAN ENGINEERING MANAGEMENT COMMITTEE	REVISION NEW
PROCUREMENT SPECIFICATION NONE	TITLE STANDARD SHANK CONFIGURATIONS FOR CUTTING TOOLS	CLASSIFICATION SPECIFICATION NAS890 SHEET 1 OF 25



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1. INTRODUCTION

1.1 PURPOSE

This document provides the aerospace industry with a uniform standard for the shank configuration of drills, reamers and end mills. Utilization of the specified shank configurations is in accordance with recommended applications that will ensure the performance of a wide variety of cutting tasks with optimum quality, reliability, and economy.

1.2 SCOPE

This standard defines various modification options for the shank and is to be used in conjunction with NAS cutting tool standards. Included in the standard are specification requirements, shank design parameters, pertinent nomenclature and a Glossary of Terms defining relevant terminology.

1.3 REFERENCES

ASME B46.1-2009, SURFACE TEXTURE (SURFACE ROUGHNESS, WAVINESS, AND LAY)

ASME B94.11M-1993, TWIST DRILLS

NAS897, REAMERS, CHUCKING, RIGHT HAND CUT, 0.0938 THROUGH 1.5000 INCH

NAS898, REAMERS, SOLID CARBIDE, RIGHT HAND CUT, .1250 THROUGH .7500 INCH

NAS907, DRILLS, HIGH SPEED STEEL AND COBALT, 1/16 INCH THRU 1/2 INCH

NAS937, DRILLS, DOUBLE MARGIN STEPPED, HIGH SPEED STEEL AND COBALT, 1/8 INCH THRU 1/2 INCH

NAS965, DRILLS, HIGH SPEED STEEL AND COBALT, THREADED SHANK, 1/16 INCH THRU F

NAS986, END MILLS, FINISHING, HIGH SPEED STEEL, .125 INCH THROUGH 3.000 INCH DIAMETER

NAS987, TOOL HOLDER, NOSE CONFIGURATION - MACHINE TOOLS

NAS988, DRILLS, CARBIDE, DOUBLE MARGIN, 1/8 INCH THRU 1 INCH

2. TOOL FUNCTION

To provide various cutting tool shank end options for use in different chuck types.

3. PACKAGING INSTRUCTIONS

Packaging instructions shall be per the NAS cutting tool standards referenced above.

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4. SHANK CONFIGURATIONS – DRILLS AND REAMERS

4.1 TOOL NUMBERING SYSTEM

Drill & Reamer Shank Types:

- 1 = Straight Shank
- 2 = Straight Shank With Tri-Flats
- 3A = Quick Change Adapter, Long (LQC)
- 3B = Quick Change Adapter, Short (SQC)
- 4 = Reduced Straight Shank
- 5 = Reduced Straight Shank With Tri-Flats
- 6 = Tang Shank
- 6A = Short Tang for Collet
- 6B = Standard Tang (per ASME B94.11)
- 7 = Threaded Shank Adapter
- 7A1 = 1/4-28 Thread - Hex Flats
- 7A2 = 1/4-28 Thread - Round With Flats
- 7A4 = 1/4-28 Thread - Thin Hex
- 7B1 = 5/16-24 Thread - Hex Flats
- 7B2 = 5/16-24 Thread - Round With Flats
- 7B4 = 5/16-24 Thread - Thin Hex
- 7C1 = 3/8-24 Thread - Hex Flats
- 7C2 = 3/8-24 Thread - Round With Flats
- 7D1 = 7/16-20 Thread - Hex Flats
- 7D2 = 7/16-20 Thread - Round With Flats
- 7E1 = 9/16-18 Thread - Hex Flats
- 7E2 = 9/16-18 Thread - Round With Flats
- 7F1 = 5/8-18 Thread - Hex Flats
- 7F2 = 5/8-18 Thread - Round With Flats
- 7G1 = 3/4-16 Thread - Hex Flats
- 7G2 = 3/4-16 Thread - Round With Flats
- 8 = Reduced Straight Shank With Tang

4.2 OPTION 1: STRAIGHT SHANK

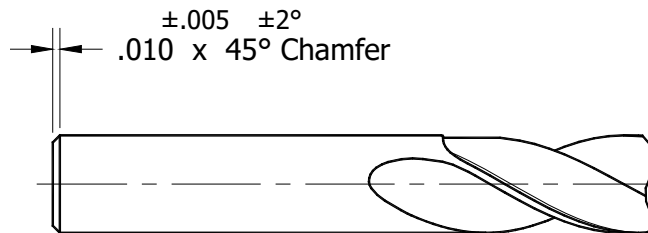


FIGURE 1A – CORNER BREAK

Cobalt tools shall be identified by an identifying ring at the end of the shank.

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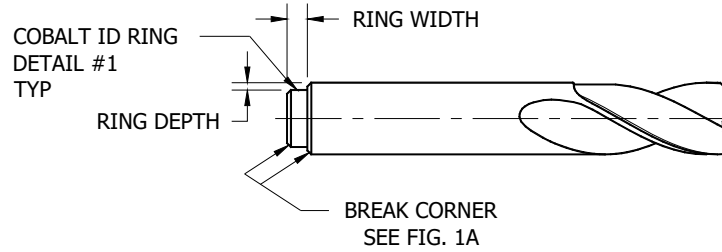


FIGURE 1B – COBALT ID RING

TABLE I – COBALT RING DIMENSIONS

SHANK DIA.	RING DEPTH	RING WIDTH
.126 -- .1875	.005 -- .010	.040 -- .125
.1876 -- .2500	.005 -- .015	.040 -- .125
.2501 -- .5000	.005 -- .020	.040 -- .125
.5001 -- 1.000	.010 -- .040	.040 -- .125

4.3 OPTION 2: TRI-FLAT

Cobalt tools shall be identified by an identifying ring at the end of the shank. See Option 1 for dimensions.

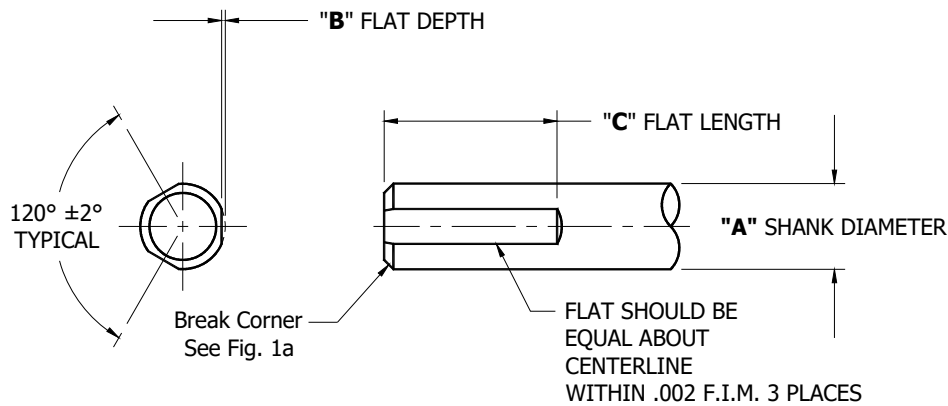


FIGURE 2 – TRI-FLAT SHANK

TABLE II – TRI-FLAT DIMENSIONS

"A" Shank Diameter	"B" Flat Depth ±.005	"C" Flat Length +.12 / -.00
.2450 - .3750	.017	.75
.3751 - .4250	.025	1.00
.4251 - .5000	.030	1.25
.5001 - .7500	.040	1.25

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4.4 OPTION 3: QUICK-CHANGE

4.4.1 3A – LONG QUICK CHANGE ADAPTER (LQC)

Cobalt tools shall be identified by an identifying ring near the end of the long quick change adapter.

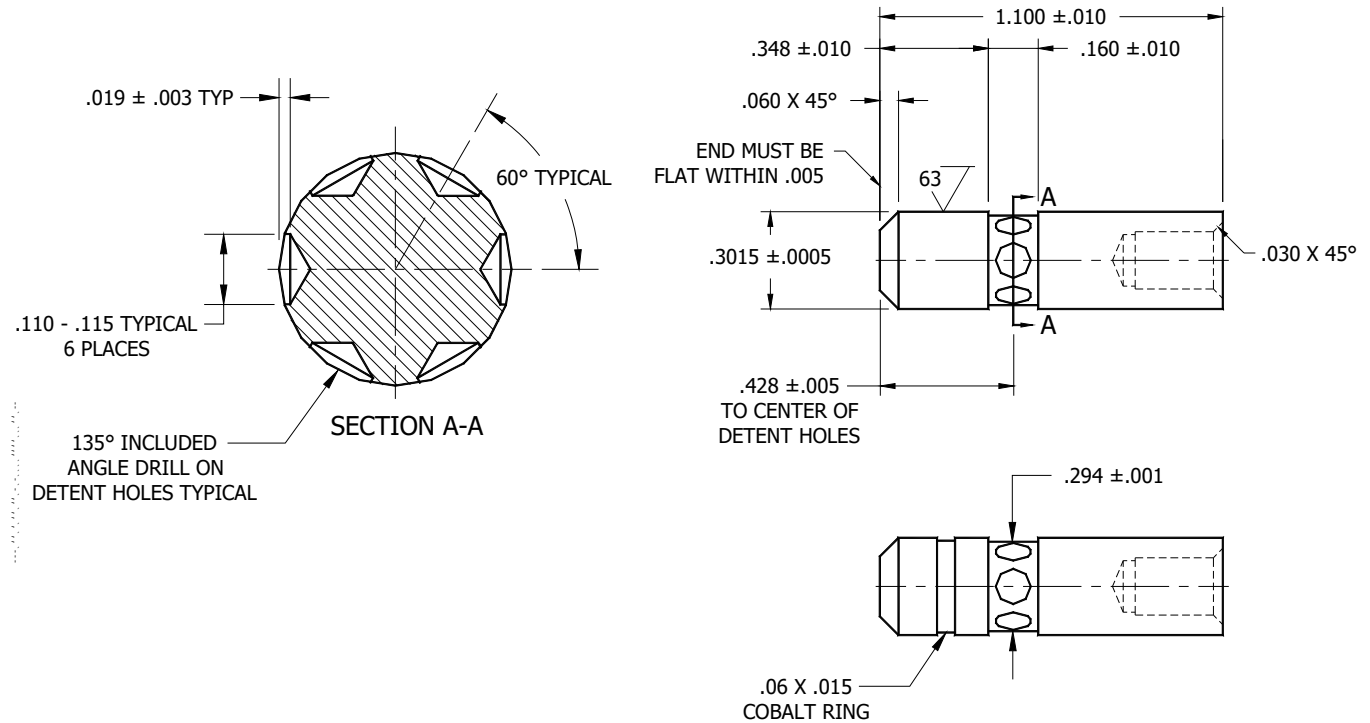


FIGURE 3 – LONG QUICK CHANGE ADAPTER

4.4.2 3B – SHORT QUICK CHANGE ADAPTER (SQC)

No cobalt identifier is required for short quick change adapter.

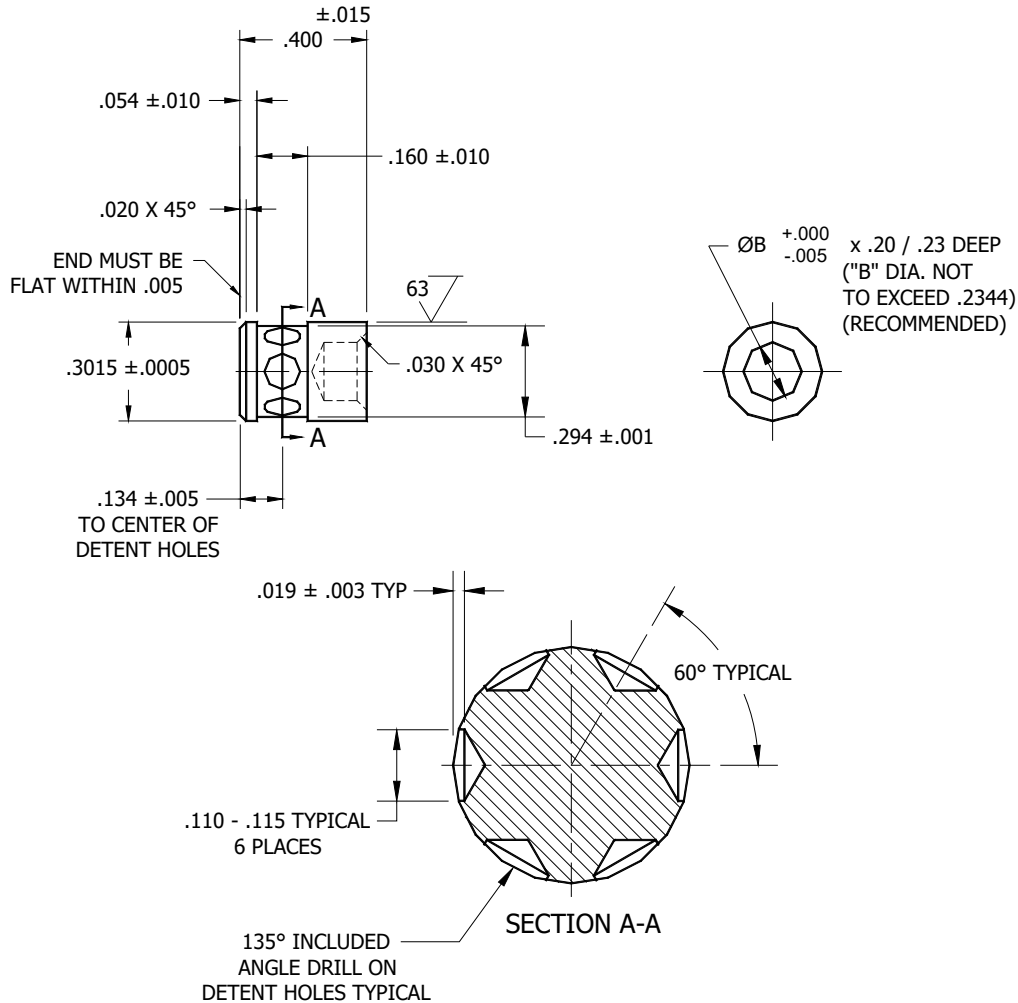


FIGURE 4 – SHORT QUICK CHANGE ADAPTER

Construction and Assembly Information

1. Material: 4140, M2, M7 steel or equivalent. Harden 36-50 HRC.
2. Specification decimal tolerances: $.XX \pm .015"$, $.XXX = \pm .005"$ unless otherwise specified.
3. Location of detent holes not to vary more than $.004$ inch, one to another.
4. Construction may be one-piece or two-piece. Two-piece construction must meet assembly torque requirements. See TABLE III, QUICK CHANGE ADAPTER TORQUE REQUIREMENTS.
5. Maximum drill diameter $.312$ inch with two-piece assembly.
6. Drill flutes must not enter adapter and flute length is to be per NAS907 or end at a maximum of $.312"$ from adapter face when NAS flute length would intersect the adapter.
7. Drill assembly hole not to exceed $.235$ inches in diameter.

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