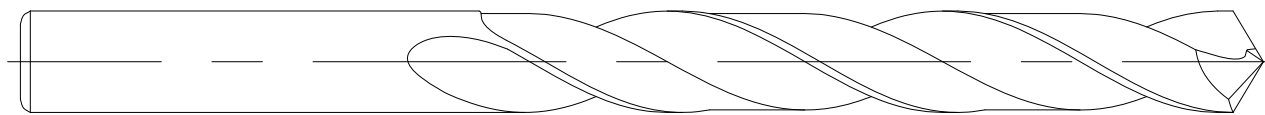


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DRILLS, HIGH SPEED STEEL, COBALT, AND CARBIDE 1/16 INCH THRU 1/2 INCH



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PROCUREMENT SPECIFICATION NONE	TITLE DRILLS, HIGH SPEED STEEL, COBALT, AND CARBIDE 1/16 INCH THRU 1/2 INCH	CLASSIFICATION SPECIFICATION NAS907 SHEET 1 OF 34



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1. INTRODUCTION

1.1 PURPOSE

This document provides the aerospace industry with the uniform standard for the procurement of high-speed steel, cobalt, and carbide twist drills. Utilization of the specified drills in accordance with recommended applications will ensure the performance of drilling tasks with optimum quality, reliability, and economy.

1.2 SCOPE

Included in the standard are drill design parameters, pertinent nomenclature and point geometries, suggested areas of application, acceptable drill materials and hardness requirements, and a Glossary of Terms defining relative terminology. See individual drawings for specific areas of application.

2. TOOL FUNCTION

To produce a drilled hole.

3. PACKAGING INSTRUCTIONS

Each package will contain the following information:

- a) Manufacturer's name or symbol
- b) Manufacturing lot number
- c) Tool diameter
- d) Tool identification number

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4. TOOL NUMBERING SYSTEM

Standard: NAS907 - B - .2500

Standard with Options: NAS907 - B - .2500 - 06 - 3 - P3D - OF

Specification: _____

Drill Type: _____

Diameter: _____

Drill Length: _____

06 - six inch
12 - twelve inch
JL - jobber length

Optional Shank: _____

1 - standard straight
2 - straight with tri-flat
3 - quick change
4 - reduced shank
5 - reduced shank with tri-flat
6 - tang shank

Point Options: _____

P3 - P3 without dub
P3D - P3 with dub
P5 - P5 without dub
P5D - P5 with dub
P9 - P9 without dub
P9D - P9 with dub

Optional Surface Treatment: _____

BF - bright finish standard HSS
OF - steam oxide finish
OFB - steam oxide finish with bright point
BOF - bronze oxide finish
N - None (Type S only)
XX - other

Note: To obtain General Drill Industry Standards refer to ASME B94.11M – most current revision.

TABLE I – NAS907 DRILL TYPES

Standard Drill Types and Points	Options			
	Length	Shank	Point	Surface Treatment
Type A , Straight Shank, HSS, Bright Finish, Jobber Length, P-5 Point (118°)	06, 12	2, 3, 4, 5, 6	P5D	OF OFB XX
Type B , Straight Shank, HSS, Bright Finish, Jobber Length, P-3 Point (135°)	06, 12	2, 3, 4, 5, 6	P3D P9 P-9D	OF OFB XX
Type C , Straight Shank, HSS, Bright Finish, Screw Machine Length P-3 Point (135°)		2, 3, 4, 5, 6	P3D P9 P9D	OF OFB XX
Type D , Straight Shank, Cobalt, Oxide Surface Treatment, Jobber Length, Standard P-9 Point (135°)	06, 12	2, 3, 4, 5, 6	P3 P3D P9D	BF OFB XX
Type J Straight Shank, Cobalt, Oxide Surface Treatment, Jobber Length, Standard P-3 Point (135°)	06, 12	2, 3, 4, 5, 6	P3D P9 P9D	BF OFB XX
Type K Straight Shank, Cobalt, Bright Finish, Screw Machine Length, P3 Point (135°)		2,3, 4,5,6	P3D P9 P9D	OF OFB XXX
Type S Straight Shank, Carbide, Jobber Length, Standard P-3 Point (135°)	06, 12	2, 3, 4, 5, 6	P3D P5D	N

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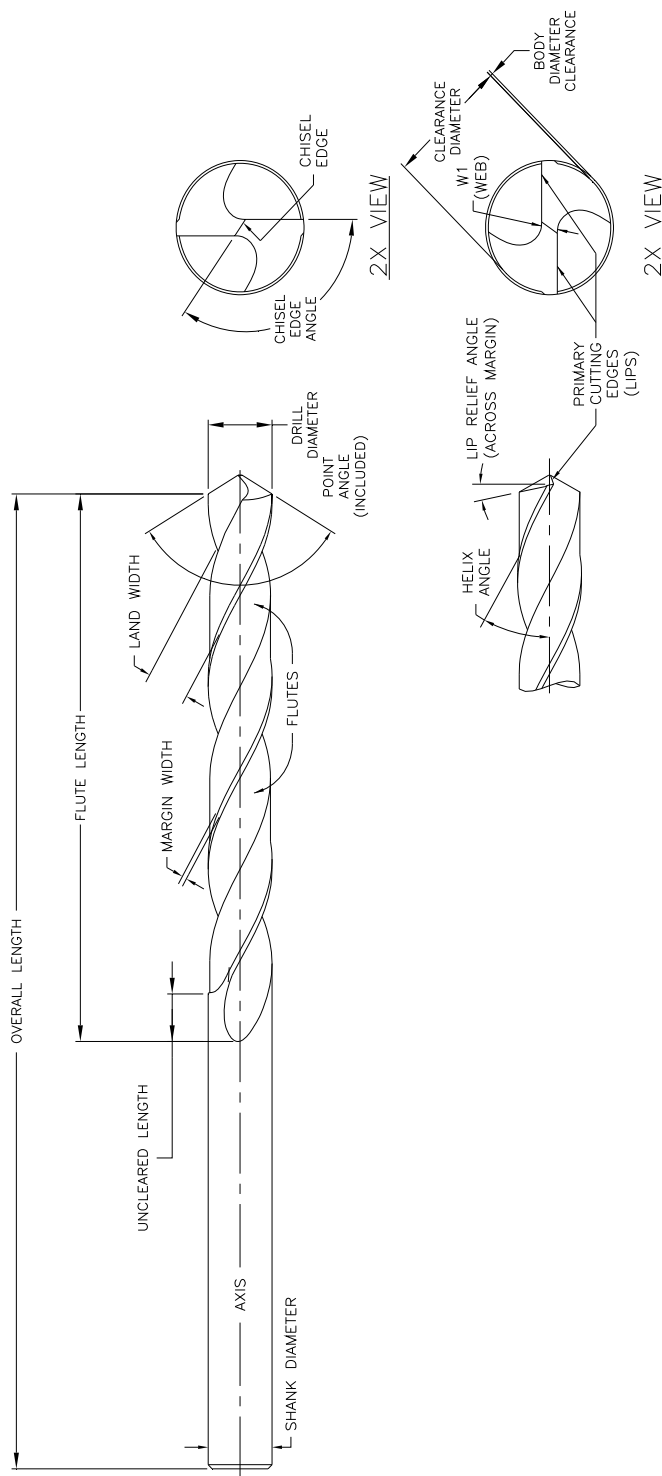
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5. TWIST DRILL NOMENCLATURE (CONVENTIONAL POINT)

TWIST DRILL NOMENCLATURE (CONVENTIONAL POINT)



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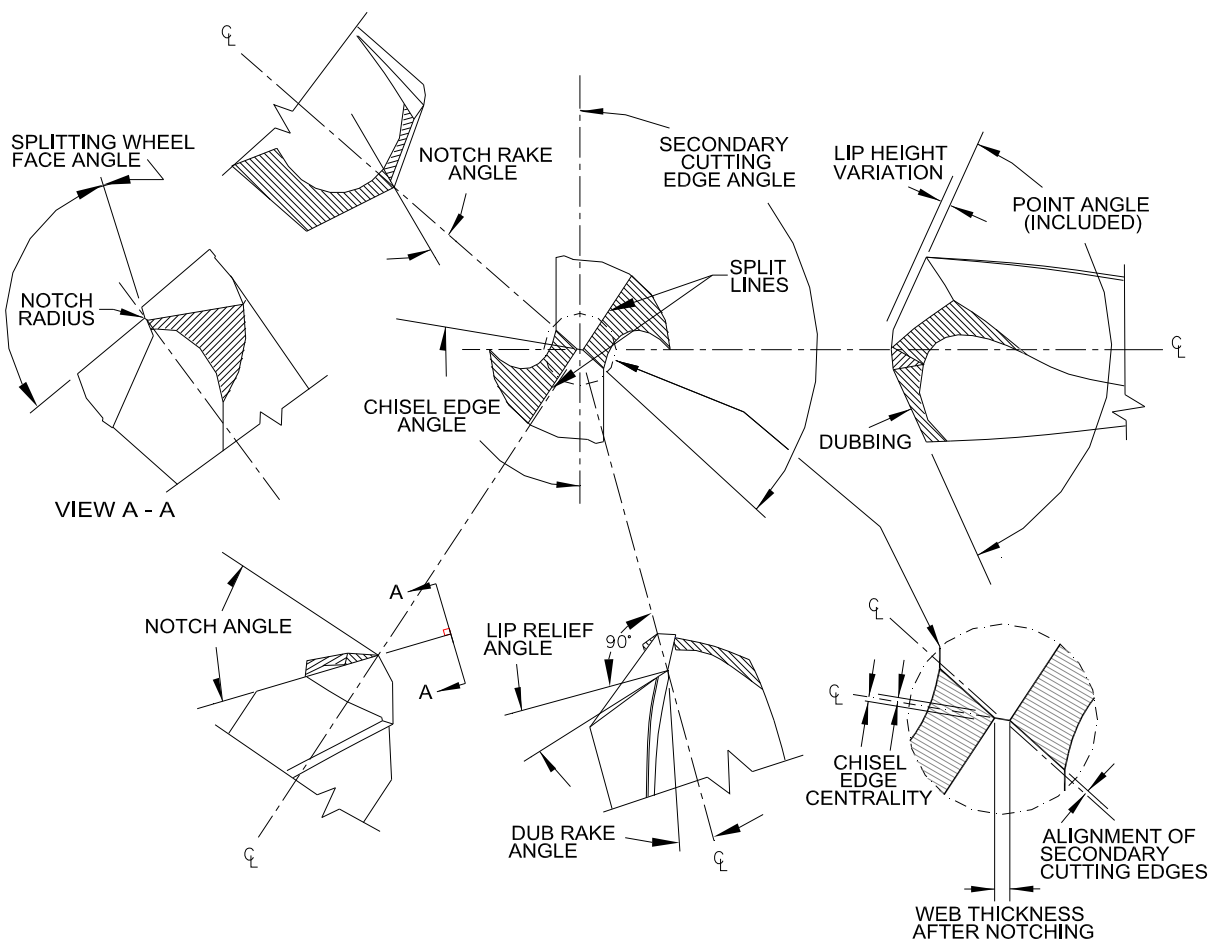


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6. DRILL POINT NOMENCLATURE (SPLIT POINT)



SHADING REPRESENTS AREAS GROUND DURING NOTCHING AND DUBBING OPERATIONS.
SEE GLOSSARY OF TERMS FOR DEFINITIONS.

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7. TYPE "A" STRAIGHT SHANK – JOBBER & AIRCRAFT EXTENSION LENGTHS SIZE 1/16 INCH THRU 1/2 INCH

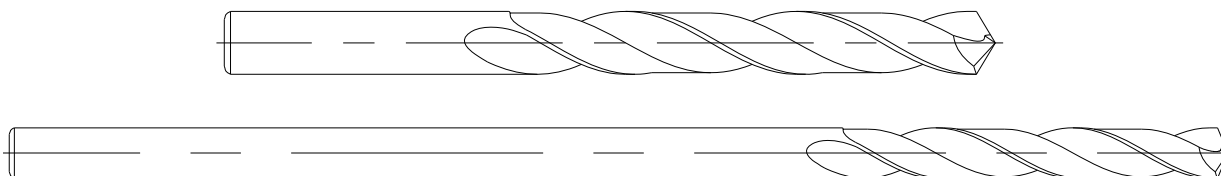


TABLE II – TYPE "A" DRILL

APPLICATION	SEE TABLE XVIII FOR APPLICATION SUMMARY FOR ALL DRILL TYPES.
DRILL MATERIAL	M-2 OR M-7 H.S.S.
HARDNESS	HRC 63.0 TO HRC 66.0 FOR 75% OF FLUTE LENGTH FROM POINT END. SHANK HARDNESS ON AIRCRAFT EXTENSION DRILLS TO BE HRC 45 TO HRC 66 TO WITHIN 1-1/2 INCH OF END. SHANK HARDNESS SHALL BE A MINIMUM OF HRC 18 ONE INCH FROM THE DRILL SHANK END.
SURFACE TREATMENT	BRIGHT FINISH STANDARD, OXIDE OR OTHER CUSTOMER SPECIFIED FINISH OPTIONAL. TOOLS TO HAVE ADEQUATE PROTECTION FROM CORROSION.
WEB CONSTRUCTION	WEB THICKNESS SHALL INCREASE IN A UNIFORM TAPER OF 0.017 ± 0.003 INCH PER INCH FROM "W1" AT POINT TO END OF FULL DEPTH OF FLUTES.
TYPE POINT	P-5 (118°) STANDARD.
IDENTIFICATION	MANUFACTURER'S SYMBOL, TOOL TYPE, MANUFACTURING LOT NUMBER AND SIZE TO BE MARKED WITH LASER MARKING. IDENTIFICATION SHALL BE PERMANENT AND LEGIBLE (WITHOUT MAGNIFICATION) ON THE TOOL SHANK FOR SIZES 1/8 INCH AND LARGER. SIZES LESS THAN 1/8 INCH MAY BE IDENTIFIED ON PACKAGING.
OVERALL LENGTH	JOBBER LENGTH STANDARD, OPTIONAL 6 INCH AND 12 INCH AIRCRAFT EXTENSION LENGTHS.

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8. TYPE "B" STRAIGHT SHANK - JOBBER & AIRCRAFT EXTENSION LENGTHS SIZE 1/16 INCH THRU 1/2 INCH

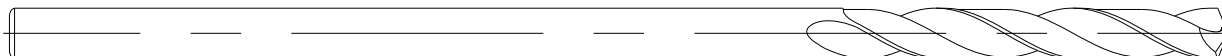


TABLE III – TYPE "B" DRILL

APPLICATION	SEE TABLE XVIII FOR APPLICATION SUMMARY FOR ALL DRILL TYPES.
DRILL MATERIAL	M-2 OR M-7 H.S.S.
HARDNESS	HRC 63.0 TO HRC 66.0 FOR 75% OF FLUTE LENGTH FROM POINT END. SHANK HARDNESS ON AIRCRAFT EXTENSION DRILLS TO BE HRC 45 TO HRC 66 TO WITHIN 1-1/2 INCH OF END. SHANK HARDNESS SHALL BE A MINIMUM OF HRC 18 ONE INCH FROM THE DRILL SHANK END.
SURFACE TREATMENT	BRIGHT FINISH STANDARD, OXIDE OR OTHER CUSTOMER SPECIFIED FINISH OPTIONAL. TOOLS TO HAVE ADEQUATE PROTECTION FROM CORROSION.
WEB CONSTRUCTION	WEB THICKNESS SHALL INCREASE IN A UNIFORM TAPER OF 0.024 ± 0.003 INCH PER INCH FROM "W1" AT POINT TO END OF FULL DEPTH OF FLUTES.
TYPE POINT	P-3 (135°) STANDARD.
IDENTIFICATION	MANUFACTURER'S SYMBOL, TOOL TYPE, MANUFACTURING LOT NUMBER, AND SIZE TO BE MARKED WITH LASER MARKING. IDENTIFICATION SHALL BE PERMANENT AND LEGIBLE (WITHOUT MAGNIFICATION) ON THE TOOL SHANK FOR SIZES 1/8 INCH AND LARGER. SIZES LESS THAN 1/8 INCH MAY BE IDENTIFIED ON PACKAGING.
OVERALL LENGTH	JOBBER LENGTH STANDARD, OPTIONAL 6 INCH AND 12 INCH AIRCRAFT EXTENSION LENGTHS.

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9. TYPE "C" STRAIGHT SHANK - SCREW MACHINE LENGTH SIZE 1/16 INCH THRU 1/2 INCH



TABLE IV – TYPE "C" DRILL

APPLICATION	SEE TABLE XVIII FOR APPLICATION SUMMARY FOR ALL DRILL TYPES.
DRILL MATERIAL	M-2 OR M-7 H.S.S.
HARDNESS	HRC 63.0 TO HRC 66.0 FOR 75% OF FLUTE LENGTH FROM POINT END. SHANK HARDNESS SHALL BE A MINIMUM OF HRC 18 ONE INCH FROM THE DRILL SHANK END.
SURFACE TREATMENT	BRIGHT FINISH STANDARD, OXIDE OR OTHER CUSTOMER SPECIFIED FINISH OPTIONAL. TOOLS TO HAVE ADEQUATE PROTECTION FROM CORROSION.
WEB CONSTRUCTION	WEB THICKNESS SHALL INCREASE IN A UNIFORM TAPER OF 0.024 ± 0.003 INCH PER INCH FROM "W1" AT POINT TO END OF FULL DEPTH OF FLUTES.
TYPE POINT	P-3 (135°) STANDARD.
IDENTIFICATION	MANUFACTURER'S SYMBOL, TOOL TYPE, MANUFACTURING LOT NUMBER AND SIZE TO BE MARKED WITH LASER MARKING. IDENTIFICATION SHALL BE PERMANENT AND LEGIBLE (WITHOUT MAGNIFICATION) ON THE TOOL SHANK FOR SIZES 1/8 INCH AND LARGER. SIZES LESS THAN 1/8 INCH MAY BE IDENTIFIED ON PACKAGING.
OVERALL LENGTH	SCREW MACHINE LENGTH STANDARD.

**10. TYPE "D" STRAIGHT SHANK – SHORT FLUTE, JOBBER & AIRCRAFT EXTENSION LENGTHS
SIZE 1/16 INCH THRU 1/2 INCH**

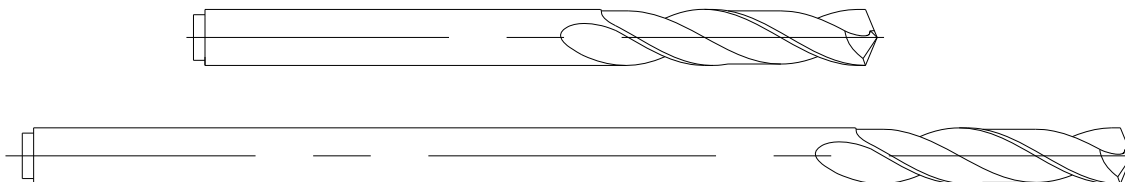


TABLE V – TYPE "D" DRILL

APPLICATION	SEE TABLE XVIII FOR APPLICATION SUMMARY FOR ALL DRILL TYPES.
DRILL MATERIAL	M-33 OR M-42 COBALT HIGH SPEED STEEL.
HARDNESS	HRC 65.0 TO HRC 68.0 FOR 75% OF FLUTE LENGTH FROM POINT END. SHANK HARDNESS ON AIRCRAFT EXTENSION DRILLS TO BE HRC 45 TO HRC 66 TO WITHIN 1-1/2 INCH OF END. SHANK HARDNESS SHALL BE A MINIMUM OF HRC 18 ONE INCH FROM THE DRILL SHANK END.
SURFACE TREATMENT	BRONZE OXIDE FINISH IS STANDARD, OPTIONAL FINISHES MAY BE SPECIFIED BY THE CUSTOMER. TOOLS ARE TO HAVE ADEQUATE PROTECTION FROM CORROSION.
WEB CONSTRUCTION	WEB THICKNESS SHALL INCREASE IN A UNIFORM TAPER OF 0.027 ± 0.003 INCH PER INCH FROM "W1" AT POINT TO END OF FULL DEPTH OF FLUTES.
TYPE POINT	P-9 (135°) STANDARD.
IDENTIFICATION	MANUFACTURER'S SYMBOL, TOOL TYPE, MANUFACTURING LOT NUMBER AND SIZE TO BE MARKED WITH LASER MARKING. IDENTIFICATION SHALL BE PERMANENT AND LEGIBLE (WITHOUT MAGNIFICATION) ON THE TOOL SHANK FOR SIZES 1/8 INCH AND LARGER. SIZES LESS THAN 1/8 INCH MAY BE IDENTIFIED ON PACKAGING. IDENTIFYING RING OR STEP ON END OF SHANK TO DENOTE COBALT HIGH SPEED STEEL.
OVERALL LENGTH	JOBBER LENGTH STANDARD, OPTIONAL 6 INCH AND 12 INCH AIRCRAFT EXTENSION LENGTHS.

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