BOMBARDIER

Toronto Site

PROPRIETARY INFORMATION

PPS 2.17

PRODUCTION PROCESS STANDARD

Installation of Anchor Nuts

Issue 26
- This standard supersedes PPS 2.17, Issue 25.
- Vertical lines in the left hand margin indicate technical changes over the previous issue.
- Direct PPS related questions to christie.chung@aero.bombardier.com or (416) 375-7641.
- This PPS is effective as of the distribution date.

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	Quality	

Signed original on file. Validation of paper prints is the responsibility of the user.

Issue 26 - Summary of Changes (over the previous issue)

The following summaries are not detailed and are intended only to assist in alerting PPS users to changes which may affect them; refer to the applicable sections of this PPS for detailed procedure and requirements.

- Revised Figure 3 (Breakdown of MS Anchor Nut Part Numbers) to place part numbers in proper numerical order.
- Replaced Alodine 1200S with Bonderite M-CR 1201 Aero as an acceptable manual chemical conversion coating example.
- For standard hole installations using “T” handle drill jigs, allowed use of #30 screw hole positioner dowels.
- Revised standard to replace reference to MF6000-10 in Table IV (Installation Dimensions for Right Angle Anchor Nuts) with reference to MF6000-3.

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Flow Charts

1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the installation of anchor nuts in aircraft structures.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS must be followed to ensure compliance with all applicable specifications. In general, if this PPS conflicts with the engineering drawing, follow the engineering drawing. The requirements specified in this PPS are necessary to fulfil the engineering design and reliability objectives.

1.1.2 Refer to PPS 13.26 for the subcontractor provisions applicable to this PPS.

1.1.3 Procedure or requirements specified in a Bombardier BAPS, MPS, LES or P. Spec. do not supersede the procedure or requirements specified in this PPS.

2 HAZARDOUS MATERIALS

2.1 Before receipt at Bombardier Toronto, all materials must be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto Environment, Health and Safety Department. Refer to the manufacturer's MSDS for specific safety data on any of the materials specified in this PPS. If the MSDS is not available, contact the Bombardier Toronto Environment, Health and Safety Department.

3 REFERENCES

3.1 PPS 1.09 - Drilling and Reaming.

3.2 PPS 1.12 - Use of Rivet Squeezers (Portable and Stationary).

3.3 PPS 1.14 - Use of Pneumatic Rivet Guns.

3.4 PPS 1.40 - Set-Up and Operation of Nut Plate Drillmotor.

3.5 PPS 2.01 - Installation of Solid Rivets.

3.6 PPS 2.20 - Installation of Bolts and Screws.

3.7 PPS 2.63 - Installation of Nut Plate Rivets.

3.8 PPS 13.26 - General Subcontractor Provisions.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Anchor nuts, gang channels, bolts and rivets as specified on the engineering drawing. Refer to Figure 1, Figure 2 and Figure 3 for a breakdown of anchor nut part numbers. Refer to Figure 4 and Figure 5 for a breakdown of B0204043 and B0204044 gang channel part numbers, respectively. Refer to Figure 6 for a general description of various anchor nut types (i.e., one lug, two lugs, corner and one lug with side by side rivets).

4.1.1.1 MS anchor nuts supersede many of the NAS anchor nuts specified herein. Refer to Table I for a cross reference between superseded NAS anchor nuts and replacement MS anchor nuts. Although they may be used interchangeably, MS anchor nuts superseding NAS anchor nuts with the same dash number may not be identical and may require different installation parameters.

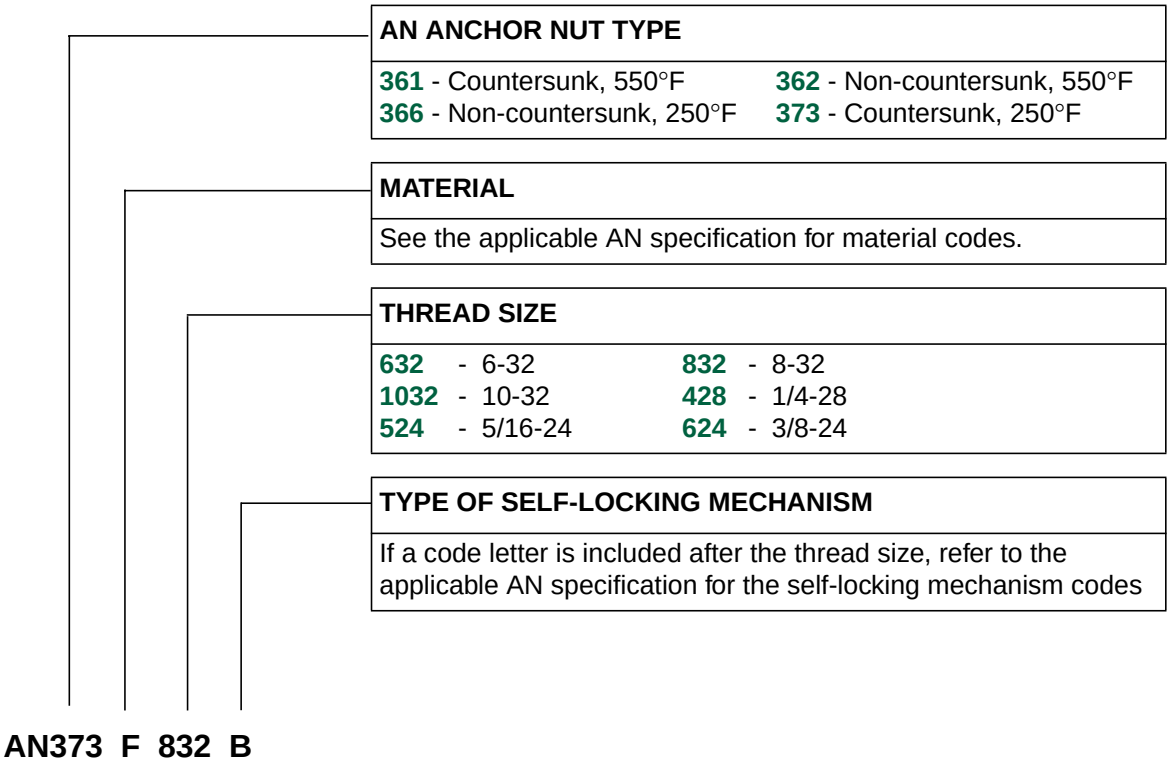


FIGURE 1 - BREAKDOWN OF AN ANCHOR NUT PART NUMBERS

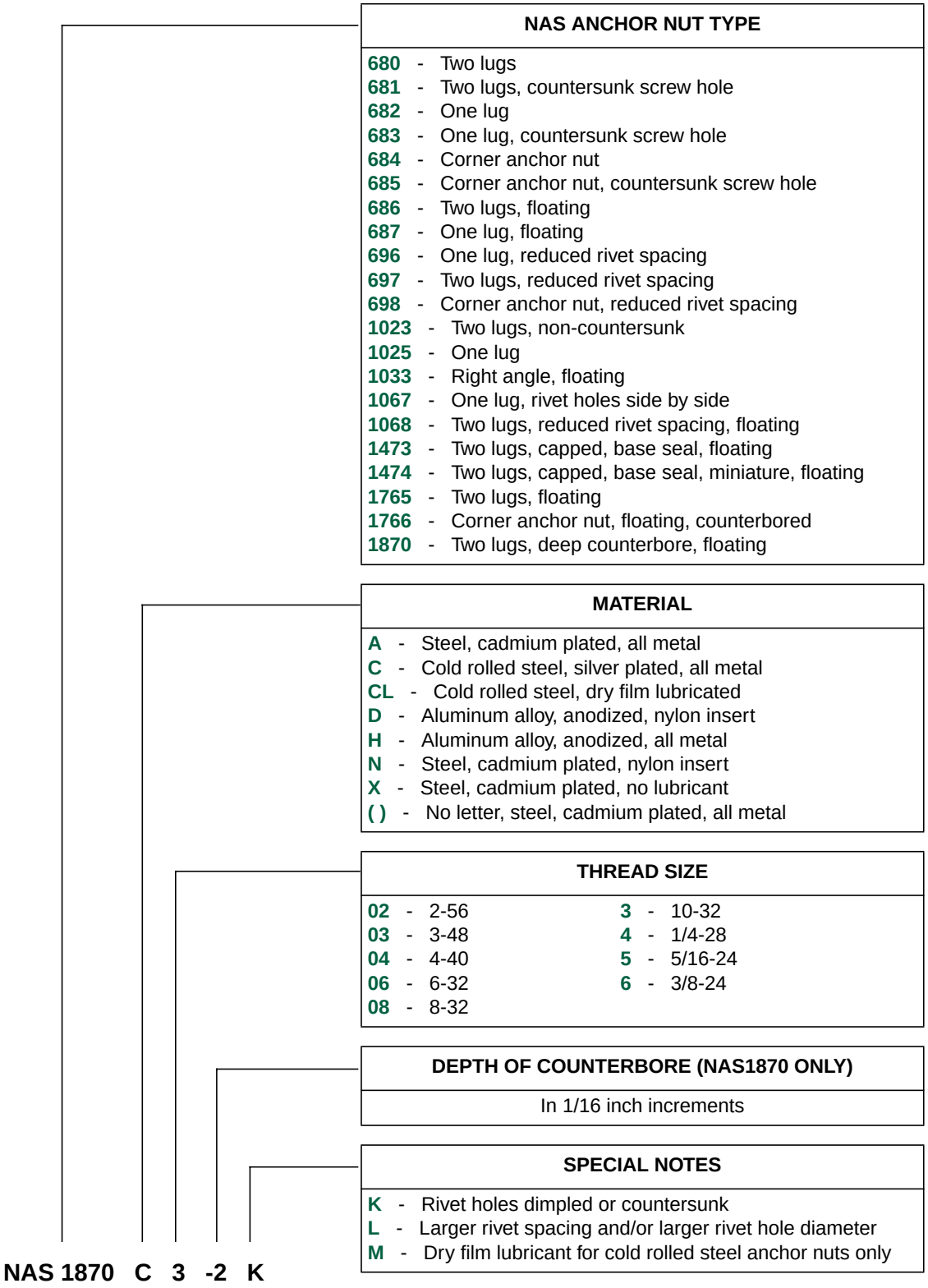


FIGURE 2 - BREAKDOWN OF NAS ANCHOR NUT PART NUMBERS

MS ANCHOR NUT TYPE AND FINISH

- **21047** - Two lugs, cadmium plated steel
- **21048** - Two lugs, silver plated CRES
- **21049** - Two lugs, cadmium plated steel, countersunk screw hole
- **21050** - Two lugs, silver plated CRES, countersunk screw hole
- **21051** - One lug, cadmium plated steel
- **21052** - One lug, silver plated CRES
- **21053** - One lug, cadmium plated steel, countersunk screw hole
- **21054** - One lug, silver plated CRES, countersunk screw hole
- **21055** - Corner anchor nut, cadmium plated steel
- **21056** - Corner anchor nut, silver plated CRES
- **21057** - Corner anchor nut, cadmium plated steel, countersunk screw hole
- **21058** - Corner anchor nut, silver plated CRES, countersunk screw hole
- **21059** - Two lugs, cadmium plated steel, floating
- **21060** - Two lugs, silver plated CRES, floating
- **21061** - One lug, cadmium plated steel, floating
- **21062** - One lug, silver plated CRES, floating
- **21069** - Two lugs, cadmium plated steel, reduced rivet spacing
- **21070** - Two lugs, silver plated CRES, reduced rivet spacing
- **21071** - One lug, cadmium plated steel, reduced rivet spacing
- **21072** - One lug, silver plated CRES, reduced rivet spacing
- **21073** - Corner anchor nut, cadmium plated steel, reduced rivet spacing
- **21074** - Corner anchor nut, silver plated CRES, reduced rivet spacing
- **21075** - Two lugs, cadmium plated steel, reduced rivet spacing, floating
- **21076** - Two lugs, silver plated CRES, reduced rivet spacing, floating
- **21078** - Two lugs, cadmium plated steel, non-metallic insert, non-countersunk
- **21080** - One lug, cadmium plated steel, non-metallic insert
- **21086** - One lug, cadmium plated steel, rivet holes side by side
- **21087** - One lug, silver plated CRES, rivet holes side by side

LUBRICANT

- **L** - Dry film lubricant over cadmium plating or instead of silver plating
- **( )** - No dash letter - as plated

THREAD SIZE

- **02** - 2-56
- **03** - 3-48
- **04** - 4-40
- **06** - 6-32
- **08** - 8-32
- **3** - 10-32
- **4** - 1/4-28
- **5** - 5/16-24
- **6** - 3/8-24

SPECIAL NOTES

- **K** - Rivet holes dimpled or countersunk
- **( )** - No dash number - plain rivet holes

MS 21072 L 4 K

FIGURE 3 - BREAKDOWN OF MS ANCHOR NUT PART NUMBERS

TABLE I - MS REPLACEMENTS FOR SUPERSEDED NAS ANCHOR NUTS

MATERIAL	SUPERSEDED NAS ANCHOR NUT	REPLACEMENT MS ANCHOR NUT	MATERIAL	SUPERSEDED NAS ANCHOR NUT	REPLACEMENT MS ANCHOR NUT
Alloy Steel (Note 1)	680A	21047	Corrosion Resistant Steel	680C	21048
	681A	21049		681C	21050
	682A	21051		682C	21052
	683A	21053		683C	21054
	684A	21055		684C	21056
	685A	21057		685C	21058
	686A	21059		686C	21060
	687A	21061		687C	21062
	696A	21071		696C	21072
	697A	21069		697C	21070
	698A	21073		698C	21074
	1023A	21047		1023C	21048
	1023N	21078		1025C	21052
	1025A	21051		1067C	21087
	1025N	21080			
	1067	21086		1068C	21076
	1068	21075			

Note 1. NAS1023N and NAS1025N anchor nuts are alloy steel with a nylon insert.

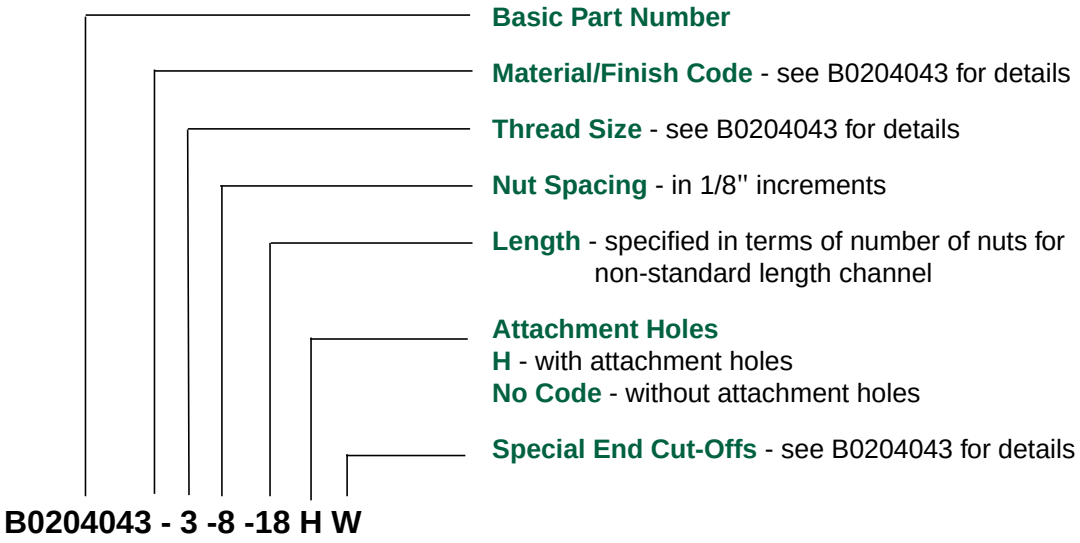


FIGURE 4 - B0204043 GANG CHANNEL PART NUMBER BREAKDOWN

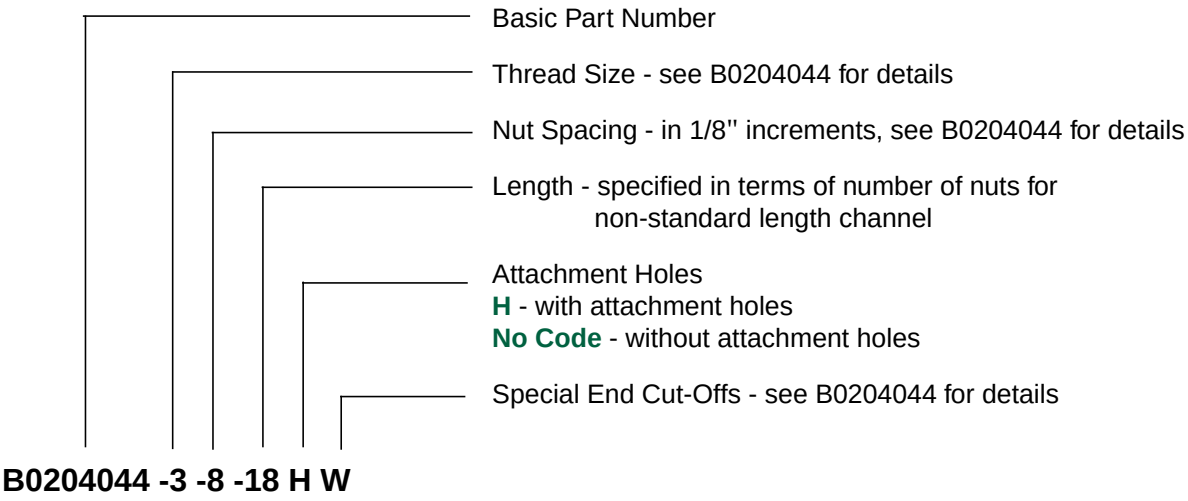


FIGURE 5 - B0204044 GANG CHANNEL PART NUMBER BREAKDOWN

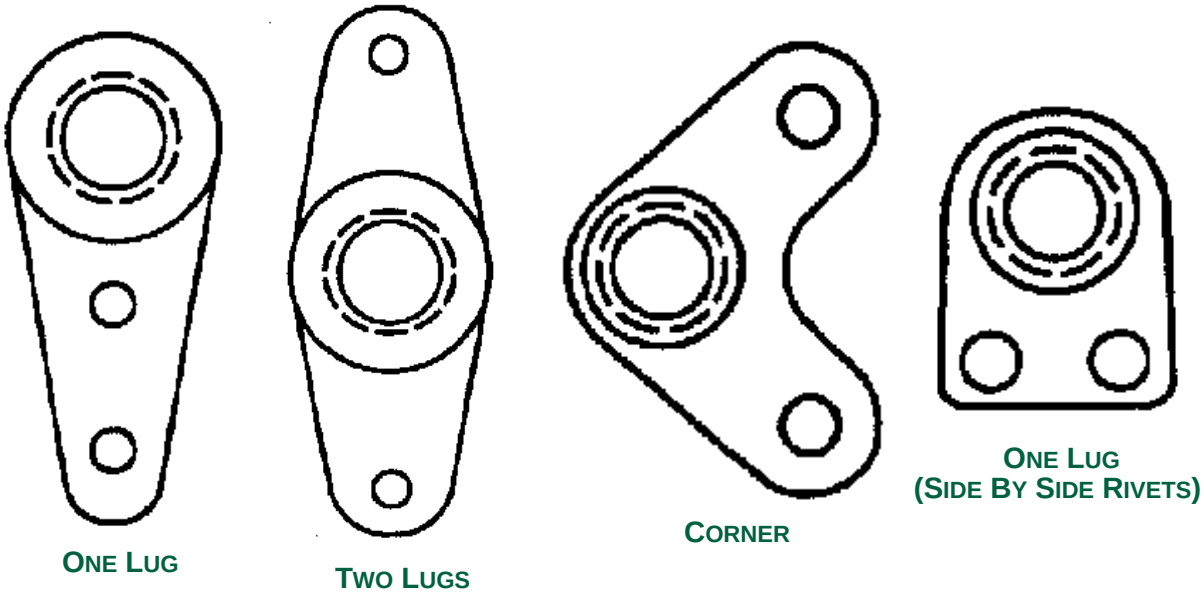


FIGURE 6 - GENERAL DESCRIPTION OF ANCHOR NUT TYPES (TYP.)

4.2 Equipment

4.2.1 Anchor nut “T” handle drill jigs (e.g., TS.519.11.10, TS.519.11.20, TS.519.11.30 & TS.519.11.40, as listed in Table III).

4.2.2 Nut plate drillmotors and accessories (e.g., see drillmotor assemblies listed in Table VI).

4.2.3 CNC drill/rout machine.

4.2.4 Shop aid, as shown in Figure 8.

4.2.5 Rivet dolly (e.g., TS.463.10.160).

5 PROCEDURE

5.1 General

5.1.1 Installation of anchor nuts consists of correctly locating the screw hole in the part as specified by the engineering drawing and then locating the rivet holes to ensure alignment of the anchor nut with the screw hole.

5.1.2 The 2 distinct anchor nut installation types, as defined below, depend on the design application and final screw hole size required:

- Typically a **standard** size screw hole is specified by the engineering drawing if the anchor nut attaches or secures parts in non-structural applications (e.g., electrical box covers). A typical drawing call-out for this installation is "**INSTALL ANCHOR NUT - PPS 2.17"**. Refer to Flow Chart 1 for the manufacturing sequence for installation of anchor nuts in **standard** size screw hole applications.
- A **Class 1** or **dimensioned** hole is typically specified if the anchor nut assembles parts in structural applications designed to carry shear loads (e.g., wing access panels). In these applications, install the anchor nut using screw holes that are smaller than standard size. A typical drawing call-out for this installation type is: "**INSTALL ANCHOR NUT - PPS 2.17 CLASS I FIT"** or, with a **dimensioned** tolerance on the screw hole: **"INSTALL ANCHOR NUT - PPS 2.17 EXCEPT FOR HOLE SIZE 0.250 - 0.254"**. Refer to Flow Chart 2 for the manufacturing sequence for installation of anchor nuts and anchor nut gang channels in **Class I** or **dimensioned** hole applications.

5.2 Preparation of Parts

5.2.1 General Hole Preparation

5.2.1.1 If using a nut plate drillmotor, pre-drill the screw hole to the size specified in Table VI.

5.2.1.2 Pre-drill all screw holes in gang channel installations to the **Class I** hole size specified in Table V.

5.2.1.3 Prepare rivet holes for right angle anchor nuts according to section 5.2.6.

5.2.1.4 Prepare rivet holes and screw holes for anchor nuts according to section 5.2.7.

5.2.1.5 If required, dimple or countersink rivet holes according to PPS 2.01 or PPS 2.63.

5.2.1.6 If required, pre-drill the screw hole for dimpling as specified in Table V and dimple according to PPS 2.20.

5.2.1.7 If specified on the engineering drawing, countersink screw holes according to PPS 2.20.

5.2.1.8 For **dimensioned** hole installations, the final size of the screw hole must meet the hole tolerance specified by the engineering drawing. Refer to Table V for the final hole sizes for screw holes for **standard** and **Class 1** installations.

5.2.1.9 In many design applications, floating anchor nuts are used with **Class I** holes, when the float of the anchor nut is used to facilitate alignment of the nut element with the screw hole.

5.2.1.10 Unless otherwise specified on the engineering drawing or Engineering Order, anchor nut screw holes do not require touch-up with chemical conversion coating (e.g., Bonderite M-CR 1201 Aero) or primer.

5.2.2 Hole Preparation Using CNC Drill/Rout Machine

5.2.2.1 For the following anchor nuts, pilot holes for the screw hole and rivet holes may be produced in detail parts using a CNC drill/rout machine (see Equipment section, paragraph 4.2.3):

- NAS680, MS21047 & MS21048
- NAS682, MS21051 & MS21052
- NAS684, MS21055 & MS21056
- NAS686, MS21059 & MS21060
- NAS687, MS21061 & MS21062

5.2.2.2 Drill rivet holes to final size using the drill specified in Table III.

5.2.2.3 Unless otherwise specified, drill screw pilot holes using a #30 drill.

5.2.3 Hole Preparation Using "T" Handle Drill Jigs

5.2.3.1 "T" handle drill jigs are hand held drill templates used to locate and drill rivet holes for anchor nuts. "T" handle drill jigs are available in 4 basic series (see Table II) for specific anchor nut configurations.

5.2.3.2 For **standard** and **dimensioned** hole installations, "T" handle drill jigs are available for the anchor nut types and sizes specified in Table III. For **standard** hole installations, use "T" handle drill jigs having #30 or #40 screw hole positioner dowels. For **dimensioned** hole installations, use "T" handle drill jigs having full size screw positioner dowels. Unless otherwise specified, for **Class I** hole installations locate rivet holes using master tooled drill templates incorporating final size drill bushings.

5.2.3.2.1 For **standard** hole installations, pre-drill the screw hole pilot using a #30 or #40 drill; open the screw hole pilot to final size after locating rivet holes using the "T" handle drill jig.

5.2.3.2.2 For **dimensioned** hole installations, if there is an applicable "T" handle drill jig specified in Table III pre-drill the screw hole to the final size specified by the engineering drawing before using the "T" handle to locate the rivet holes. The "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit) to properly locate the rivet holes.

TABLE II - "T" HANDLE DRILL JIG SERIES

DRILL JIG SERIES	ANCHOR NUT CONFIGURATION
TS.519.11.10	One lug
TS.519.11.20	Two lugs
TS.519.11.30	Corner lugs
TS.519.11.40	One lug (side by side rivets)

5.2.3.3 Locate rivet holes using “T” handle drill jigs as follows:

Step 1. Insert the screw pilot of the “T” handle drill jig into the screw pilot hole (**standard** installation) or full size screw hole (**dimensioned** hole installation) as shown in Figure 7.

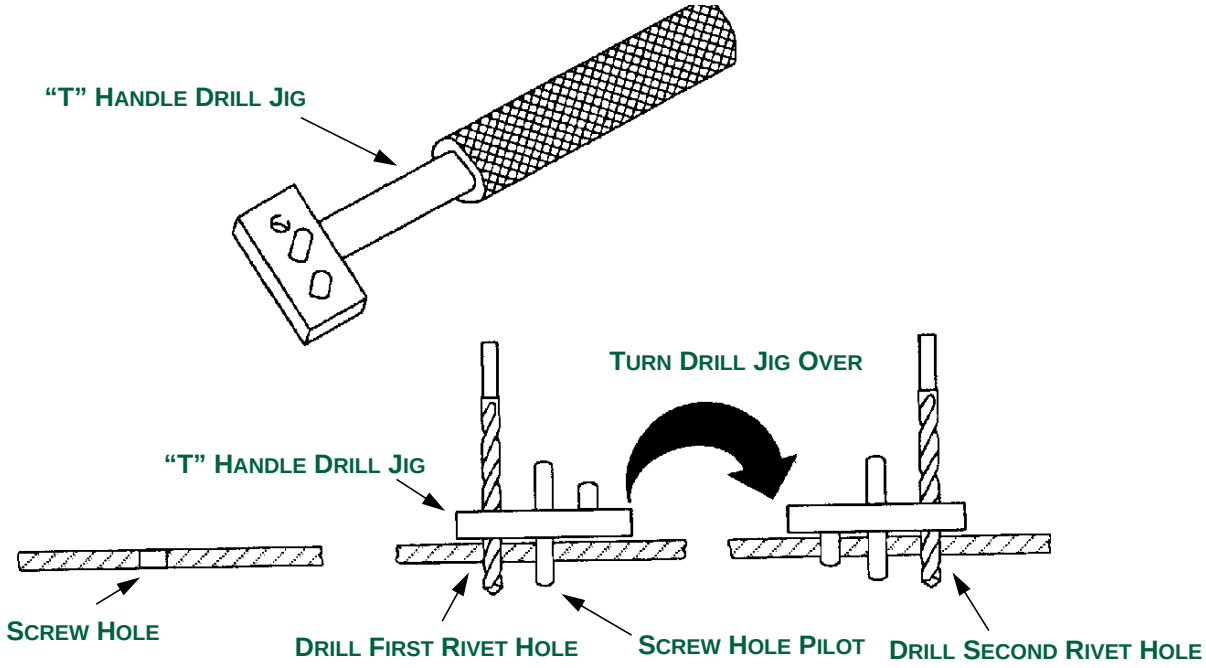


FIGURE 7 - TYPICAL USE OF “T” HANDLE DRILL JIG

Step 2. Position the drill jig to drill the rivet holes so that the anchor nut lugs will be located in the correct alignment as shown on the engineering drawing.

Step 3. Drill the first rivet hole according to PPS 1.09.

Step 4. Turn the “T” handle drill jig over and position the screw hole and rivet hole pilots in the appropriate holes.

Step 5. Drill the second rivet hole according to PPS 1.09.

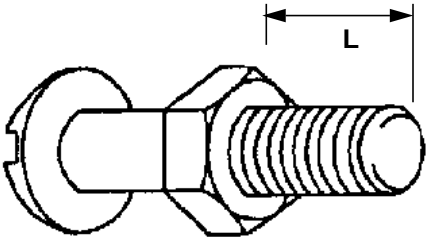
5.2.4 Hole Preparation Using a Shop Aid

5.2.4.1 For anchor nuts, if a “T” handle drill jig is not available, use the anchor nut to locate and drill rivet holes as follows:

Step 1. Drill the screw hole using the drill size specified for **Class I** holes in Table V.

Step 2. Attach the anchor nut to the structure using an appropriately sized screw. Use a nut on the screw as a depth stop (see Figure 8) to ensure the screw threads only engage the anchor nut to hold it firmly in place but do not enter the locking device.

Step 3. Drill rivet holes according to PPS 1.09. For floating anchor nuts, locate the nut element approximately in the centre of its float travel before drilling the rivet holes.



L = LENGTH SUFFICIENT TO ENGAGE THREADS WITHOUT ENTERING LOCKING DEVICE.

FIGURE 8 - GENERAL DESCRIPTION OF A SHOP AID

5.2.4.2 For gang channels, locate and drill holes as follows (see Figure 9):

Step 1. Attach the gang channel to the part using 2 or more shop aids.

Step 2. Locate the nut element in the approximate centre of its float travel at each shop aid.

Step 3. Starting at one end of the gang channel, locate and drill one rivet hole through the part and gang channel according to the engineering drawing.

Step 4. Using a rivet or cleco, pin the gang channel to the part through the first rivet hole and drill another rivet hole at the opposite end of the channel.

Step 5. Using another rivet or cleco, pin the gang channel to the part through the second rivet hole and drill the remainder of the rivet holes in the gang channel according to the engineering drawing.

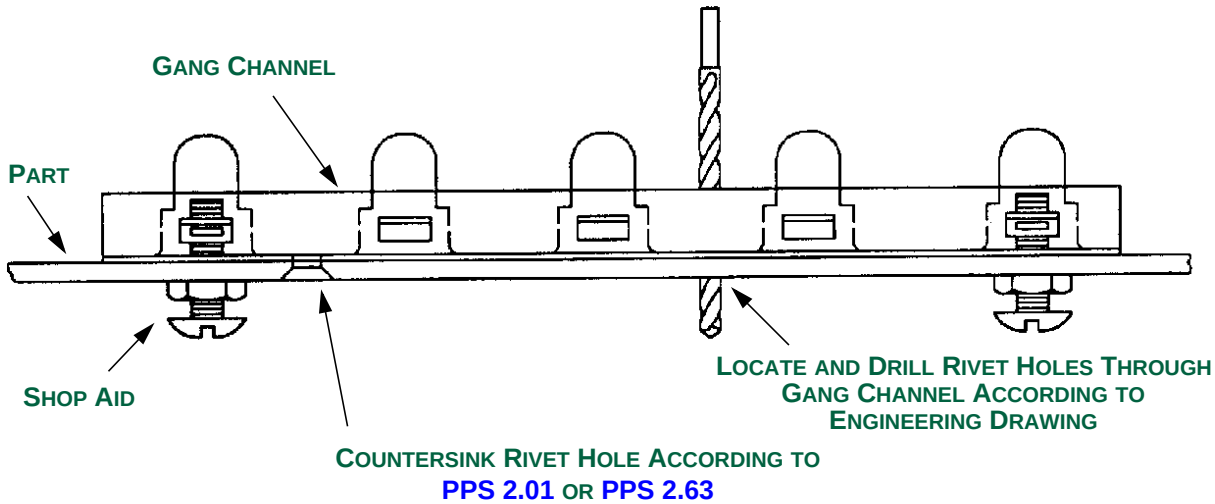


FIGURE 9 - INSTALLATION OF GANG CHANNELS

5.2.5 Hole Preparation Using Nut Plate Drillmotor

5.2.5.1 Enlarge the screw pilot hole using the drill size specified in Table VI for the applicable anchor nut.

5.2.5.2 Select the appropriate drillmotor assembly from Table VI and drill/countersink the rivet holes according to PPS 1.40.

5.2.6 Right Angle Anchor Nuts

5.2.6.1 Lay out the locations of rivet holes for right angle anchor nuts on the part using the dimensions shown on the engineering drawing and Table IV.

5.2.6.2 Drill the rivet holes using the appropriate size drill shown in Table IV for the particular anchor nut.

5.2.6.3 Dimple or countersink rivet holes, as specified on the engineering drawing, according to PPS 2.01 or PPS 2.63.

5.2.7 DSC 243 Anchor Nuts

5.2.7.1 Drill screw holes for DSC 243 spring loaded anchor nuts full size to the dimensions shown on the engineering drawing.

5.2.7.2 The relevant engineering drawings and Figure 10 show locations of rivet holes for DSC 243 anchor nuts.

5.2.7.3 Drill the rivet holes using a #40 drill.

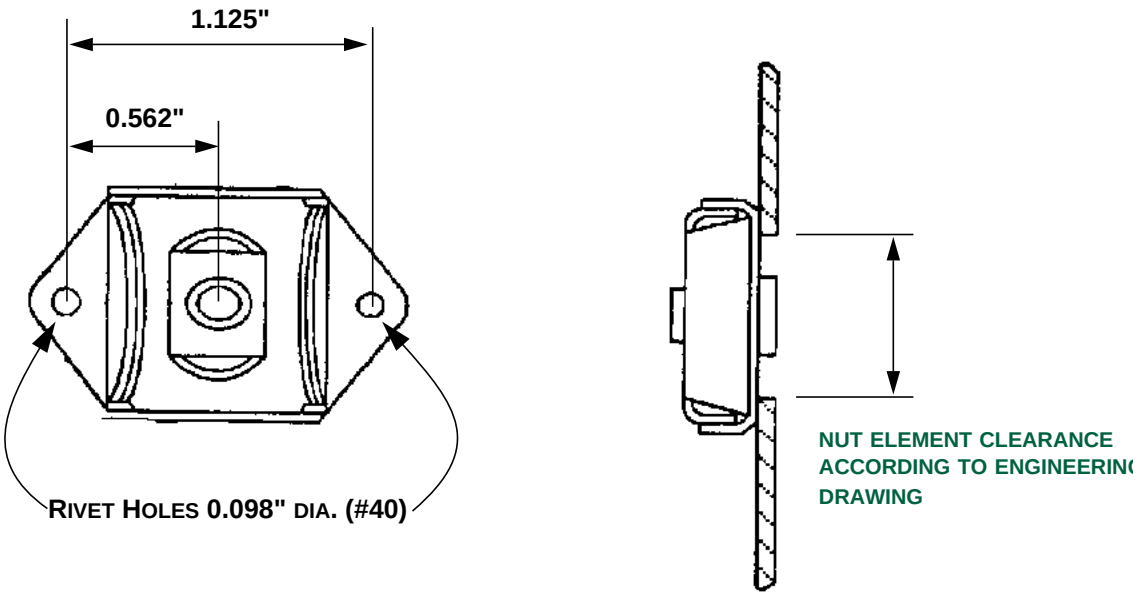


FIGURE 10 - INSTALLATION DIMENSIONS FOR B0204043 ANCHOR NUTS

5.3 Installation

5.3.1 If using solid rivets, rivet anchor nuts to supporting members according to PPS 2.01 and, if using nut plate rivets, install rivets according to PPS 2.63.

5.3.2 If installing self-sealing capped anchor nuts, draw the anchor nut down to the sheet to compress the rubber “O” ring and create a proper seal. Compress the anchor nut “O” ring using toggle action or “C” clamps when the anchor nut installation is near the edge of the part or by using a shop aid when a toggle or “C” clamp cannot be used.

5.3.3 Except for NAS1097, BACR15CE or B0205018 rivets, shave flush head solid rivets flush with the surrounding area if necessary to obtain proper contact of mating parts. It is **not** acceptable to shave the heads of NAS1097, BACR15CE or B0205018 rivets.

5.3.4 If the engineering drawing specifies installation of floating anchor nuts, non-floating anchor nuts or gang channels with MS20426AD or B0205017AD solid rivets in limited access areas and there is a danger of damage being caused by bucking bars, refer to Bombardier Toronto Material Review Board (MRB) or Bombardier Toronto delegated MRB for authorization to use MS20605S nut plate rivets.

5.3.5 When installing NAS686 and NAS687 floating type anchor nuts, it is acceptable to use a TS.463.10.160 rivet dolly.

5.3.6 MRB authorization is **not** required to make the following substitutions:

- In thin gauge aluminum structure (i.e., 0.040'' and thinner), it is acceptable to use 3/32'' B0205018AD rivets in place of 3/32'' nut plate rivets (i.e., CCR264SS, BACR15DR or MS20605S). Install B0205018AD rivets according to PPS 2.01.
- In thicker gauge aluminum structure (i.e., over 0.040''), it is acceptable to use 3/32'' B0205017AD rivets in place of 3/32'' nut plate rivets (i.e., CCR264SS, BACR15DR or MS20605S). Install B0205017AD rivets according to PPS 2.01.

6 REQUIREMENTS

6.1 Locations of anchor and gang channel nuts, the types and sizes of anchor nuts, gang channels and rivets must be as specified on the engineering drawings.

6.2 Drilled holes, dimples and countersinks must meet the requirements of PPS 2.01, PPS 2.20 or PPS 2.63, as applicable.

7 SAFETY PRECAUTIONS

7.1 The safety precautions specified herein are specific to Bombardier Toronto to meet Canadian Federal and Provincial government environmental, health and safety regulations. It is strongly recommended that other facilities consider these safety precautions; however, suppliers, subcontractors and partners are responsible for ensuring that their own environmental, health and safety precautions satisfy the appropriate local government regulations.

7.2 Observe standard plant safety precautions when performing the procedure specified herein.

7.3 Disconnect the air line from the drillmotor or riveter while installing or changing drill bits or rivet snaps.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for installation of anchor nuts must have a good working knowledge of the procedure and requirements as specified herein and must have exhibited their competency to their supervisor.

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
			DIMENSIONED HOLE (Note 3)		
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
22NA17A	82	---	519.11.**10** MK 1	0.164"	#40
A2507	02	519.11.**40** MK 6	---	---	#30
	048	519.11.**40** MK 7	---	---	#30
A6293-X	02	---	519.11.**20** MK 46	0.191"	#40
AN361	832	519.11.**20** MK 25	---	---	#40
	1032	519.11.**20** MK 25	---	---	#40
	428	519.11.**20** MK 30	---	---	#40
	524	519.11.**20** MK 31	---	---	#30
AN362	632	519.11.**20** MK 25	---	---	#40
	832	519.11.**20** MK 25	---	---	#40
	1032	519.11.**20** MK 25	---	---	#40
	428	519.11.**20** MK 30	---	---	#40
	524	519.11.**20** MK 31	---	---	#30
AN366	632	519.11.**20** MK 25	519.11.**20** MK 1	0.139"	#40
	832	519.11.**20** MK 25	519.11.**20** MK 2	0.164"	#40
	1032	519.11.**20** MK 25	519.11.**20** MK 3	0.191"	#40
	428	519.11.**20** MK 30	---	---	#40
	524	519.11.**20** MK 31	---	---	#30
AN373	832	519.11.**20** MK 25	---	---	#40
	1032	519.11.**20** MK 25	---	---	#40
	428	519.11.**20** MK 30	---	---	#40
	524	519.11.**20** MK 31	---	---	#30
B0204006	3	519.11.**20** MK 22	519.11.**20** MK 7	0.191"	#40
	4	519.11.**20** MK 23	519.11.**20** MK 8	0.248"	#40

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	DIMENSIONED HOLE (Note 3)		
			TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
BACN10KH	3	519.11.**40** MK 2	---	---	#40
F1972	4	---	519.11.**10** MK 23	0.247"	#40
M13640	82	---	519.11.**40** MK 10	0.170"	#40
M13740	02	---	519.11.**40** MK 11	0.191"	#40
MS21047 & MS21048	04	519.11.**20** MK 25	---	---	#40
	06	519.11.**20** MK 25	---	---	#40
	08	519.11.**20** MK 25	---	---	#40
	3	519.11.**20** MK 25	519.11.**20** MK 39	0.156"	#40
			519.11.**20** MK 15	0.1935"	#40
			519.11.**20** MK 55	0.199"	#40
	4	519.11.**20** MK 30	---	---	#40
	5	519.11.**20** MK 31	519.11.**20** MK 14	0.320"	#30
	6	519.11.**20** MK 31	---	---	#30
MS21049 & MS21050	08	519.11.**20** MK 25	---	---	#40
	3	519.11.**20** MK 25	---	---	#40
	4	519.11.**20** MK 30	---	---	#40
	5	519.11.**20** MK 31	---	---	#30
MS21051 & MS21052	06	519.11.**10** MK 14	---	---	#40
	08	519.11.**10** MK 14	---	---	#40
	3	519.11.**10** MK 14	519.11.**10** MK 7	0.1935"	#40
	4	519.11.**10** MK 14	---	---	#40
	5	519.11.**10** MK 18	---	---	#30
	6	519.11.**10** MK 18	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
			DIMENSIONED HOLE (Note 3)		
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
MS21053 & MS21054	08	519.11.**10** MK 14	---	---	#40
	3	519.11.**10** MK 14	---	---	#40
	4	519.11.**10** MK 17	---	---	#40
	5	519.11.**10** MK 18	---	---	#30
MS21055 & MS21056	06	519.11.**30** MK 11	---	---	#40
	08	519.11.**30** MK 11	---	---	#40
	3	519.11.**30** MK 11	---	---	#40
	4	519.11.**30** MK 14	---	---	#40
	5	519.11.**30** MK 15	---	---	#30
	6	519.11.**30** MK 15	---	---	#30
MS21057 & MS21058	08	519.11.**30** MK 11	---	---	#40
	3	519.11.**30** MK 11	---	---	#40
	4	519.11.**30** MK 14	---	---	#40
	5	519.11.**30** MK 15	---	---	#30
MS21059 & MS21060	04	519.11.**20** MK 25	---	---	#40
	06	519.11.**20** MK 25	519.11.**20** MK 37	0.157"	#40
	08	519.11.**20** MK 25	519.11.**20** MK 53	0.170"	#40
	3	519.11.**20** MK 25	519.11.**20** MK 38	0.213"	#40
			519.11.**20** MK 49	0.221"	#40
	4	519.11.**20** MK 30	519.11.**20** MK 11	0.250"	#40
	5	519.11.**20** MK 31	519.11.**20** MK 12	0.125"	#30
	6	519.11.**20** MK 31	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	DIMENSIONED HOLE (Note 3)		
			TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
MS21061 & MS21062	06	519.11.**10** MK 14	---	---	#40
	08	519.11.**10** MK 14	519.11.**10** MK 21	0.170"	#40
	3	519.11.**10** MK 14	519.11.**10** MK 22	0.191"	#40
	4	519.11.**10** MK 17	---	---	#40
	5	519.11.**10** MK 18	---	---	#30
MS21069 & MS21070	03	519.11.**20** MK 16	---	---	#51
	04	519.11.**20** MK 19	519.11.**20** MK 4	0.112"	#40
	06	519.11.**20** MK 20	519.11.**20** MK 5	0.139"	#40
	08	519.11.**20** MK 21	519.11.**20** MK 6	0.164"	#40
	3	519.11.**20** MK 22	519.11.**20** MK 7	0.191"	#40
			519.11.**20** MK 13	0.249"	#40
	4	519.11.20 MK 23	519.11.**20** MK 8	0.248"	#40
	5	519.11.**20** MK 26	---	---	#30
	6	519.11.**20** MK 29	---	---	#30
MS21086 & MS21087	08	519.11.**40** MK 1	---	---	#40
	3	519.11.**40** MK 2	---	---	#40
	4	519.11.**40** MK 3	---	---	#40
	5	519.11.**40** MK 4	---	---	#30
	6	519.11.**40** MK 5	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	DIMENSIONED HOLE (Note 3)		
			TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
NAS680	04	519.11.**20** MK 25	---	---	#40
	06	519.11.**20** MK 25	---	---	#40
	08	519.11.**20** MK 25	---	---	#40
	3	519.11.**20** MK 25	519.11.**20** MK 15	0.1935"	#40
			519.11.**20** MK 39	0.156"	#40
			519.11.**20** MK 55	0.199"	#40
	4	519.11.**20** MK 30	---	---	#40
	5	519.11.**20** MK 31	519.11.**20** MK 14	0.320"	#30
	6	519.11.**20** MK 31	---	---	#30
NAS681	08	519.11.**20** MK 25	---	---	#40
	3	519.11.**20** MK 25	---	---	#40
	4	519.11.**20** MK 30	---	---	#40
	5	519.11.**20** MK 31	---	---	#30
NAS682	06	519.11.**10** MK 14	---	---	#40
	08	519.11.**10** MK 14	---	---	#40
	3	519.11.**10** MK 14	519.11.**10** MK 7	0.1935"	#40
	4	519.11.**10** MK 14	---	---	#40
	5	519.11.**10** MK 18	---	---	#30
	6	519.11.**10** MK 18	---	---	#30
NAS683	08	519.11.**10** MK 14	---	---	#40
	3	519.11.**10** MK 14	---	---	#40
	4	519.11.**10** MK 17	---	---	#40
	5	519.11.**10** MK 18	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	DIMENSIONED HOLE (Note 3)		
			TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
NAS684	06	519.11.**30** MK 11	---	---	#40
	08	519.11.**30** MK 11	---	---	#40
	3	519.11.**30** MK 11	---	---	#40
	4	519.11.**30** MK 14	---	---	#40
	5	519.11.**30** MK 15	---	---	#30
	6	519.11.**30** MK 15	---	---	#30
NAS685	08	519.11.**30** MK 11	---	---	#40
	3	519.11.**30** MK 11	---	---	#40
	4	519.11.**30** MK 14	---	---	#40
	5	519.11.**30** MK 15	---	---	#30
NAS686	04	519.11.**20** MK 25	---	---	#40
	06	519.11.**20** MK 25	519.11.**20** MK 37	0.157"	#40
	08	519.11.**20** MK 25	---	---	#40
	3	519.11.**20** MK 25	519.11.**20** MK 38	0.213"	#40
	4	519.11.**20** MK 30	519.11.**20** MK 11	0.250"	#40
	5	519.11.**20** MK 31	519.11.**20** MK 12	0.125"	#30
	6	519.11.**20** MK 31	---	---	#30
NAS687	06	519.11.**10** MK 14	---	---	#40
	08	519.11.**10** MK 14	---	---	#40
	3	519.11.**10** MK 14	---	---	#40
	4	519.11.**10** MK 17	---	---	#40
	5	519.11.**10** MK 18	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	DIMENSIONED HOLE (Note 3)		
			TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
NAS696	04	519.11.**10** MK 8	519.11.**10** MK 20	0.120"	#51
	06	519.11.**10** MK 9	519.11.**10** MK 5	0.139"	#51
	06L	519.11.**10** MK 10	519.11.**10** MK 2	0.139"	#40
	08	519.11.**10** MK 11	519.11.**10** MK 6	0.164"	#40
	3	519.11.**10** MK 12	519.11.**10** MK 4	0.191"	#40
	4	519.11.**10** MK 13	519.11.**10** MK 3	0.248"	#40
	5	519.11.**10** MK 15	---	---	#30
	6	519.11.**10** MK 16	---	---	#30
NAS697	03	519.11.**20** MK 16	---	---	#51
	04	519.11.**20** MK 17	---	---	#51
	04L	519.11.**20** MK 19	519.11.**20** MK 4	0.112"	#40
	06	519.11.**20** MK 18	519.11.**20** MK 9	0.139"	#51
	06L	519.11.**20** MK 20	519.11.**20** MK 5	0.139"	#40
	08	519.11.**20** MK 21	519.11.**20** MK 6	0.164"	#40
	3	519.11.**20** MK 22	519.11.**20** MK 7	0.191"	#40
			519.11.**20** MK 13	0.249"	#40
	4	519.11.**20** MK 23	519.11.**20** MK 8	0.248"	#40
	5	519.11.**20** MK 26	---	---	#30
	6	519.11.**20** MK 29	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
			DIMENSIONED HOLE (Note 3)		
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
NAS698	04	519.11.**30** MK 5	---	---	#51
	06	519.11.**30** MK 6	519.11.**30** MK 2	0.139"	#51
	06L	519.11.**30** MK 7	---	---	#40
	08	519.11.**30** MK 8	519.11.**30** MK 3	0.284"	#40
	3	519.11.**30** MK 9	519.11.**30** MK 4	0.191"	#40
	4	519.11.**30** MK 10	519.11.**30** MK 1	0.164"	#40
	5	519.11.**30** MK 12	---	---	#30
	6	519.11.**30** MK 13	---	---	#30
NAS1067	3	519.11.**40** MK 2	---	---	#40
	4	519.11.**40** MK 3	---	---	#40
	5	519.11.**40** MK 4	---	---	#30
	6	519.11.**40** MK 5	---	---	#30
NAS1068	04	519.11.**20** MK 17	---	---	#51
	04L	519.11.**20** MK 19	---	---	#40
	06	519.11.**20** MK 18	---	---	#51
	06L	519.11.**20** MK 20	---	---	#40
	08	519.11.**20** MK 21	519.11.**20** MK 51	0.170"	#40
			519.11.**20** MK 59	0.191"	#40
			519.11.**20** MK 60	0.194"	#40
	3	519.11.**20** MK 22	519.11.**20** MK 52	0.191"	#40
			519.11.**20** MK 56	0.218"	#40
			519.11.**20** MK 13	0.249"	#40
	5	519.11.**20** MK 26	---	---	#30

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE III - "T" HANDLE DRILL JIG AND DRILL SELECTION

ANCHOR NUT		"T" HANDLE ANCHOR NUT DRILL JIGS (Note 1)			DRILL FOR RIVET HOLES
PART NUMBER	DASH NO.	STANDARD HOLE TOOL STANDARD (Note 2)	DIMENSIONED HOLE (Note 3)		
			TOOL STANDARD	"T" HANDLE POSITIONER DOWEL (+0.001/-0.000)	
NAS1473	3	---	519.11.**20** MK 47	0.250"	#40
	4	---	519.11.**20** MK 42	0.250"	#40
			519.11.**20** MK 43	0.252"	#40
			519.11.**20** MK 45	0.257"	#40
			519.11.**20** MK 40	0.281"	#40
			519.11.**20** MK 54	0.281"	#40
NAS1474	04	519.11.**20** MK 24	---	---	#40
	06	519.11.**20** MK 24	---	---	#40
	08	519.11.**20** MK 24	519.11.**20** MK 58	0.172"	#40
	3	519.11.**20** MK 24	519.11.**20** MK 41	0.191"	#40
			519.11.**20** MK 57	0.215"	#40
	4	---	519.11.**20** MK 44	0.252"	#40
NAS1766	08	---	519.11.**30** MK 18	0.168"	#40
	4	---	519.11.**30** MK 19	0.247"	#40
NAS1789	4	---	519.11.**40** MK 8	0.250"	#40
NAS1793	3	---	519.11.**40** MK 9	0.242"	#40
NAS1803	3	---	519.11.**20** MK 46	0.191"	#40
NAS1870	3	519.11.**20** MK 15	519.11.**20** MK 55	0.199"	#40

Notes
1. In place of the Tool Standard (TS) anchor nut drill jigs specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met. If a suitable "T" handle is not available, use one of the other techniques specified in this PPS to locate the rivet holes.
2. Pre-drill the screw hole using a #40 drill for standard hole "T" handle drill jigs.
3. For certain **dimensioned** holes, TS "T" handle drill jigs may be available, as specified herein. Drill the screw hole to final size (as specified by the engineering drawing) according to PPS 1.09. To use a "t" handle drill jig to locate the rivet holes, the "T" handle positioner dowel must fit properly in the screw hole (i.e., a close fit).

TABLE IV - INSTALLATION DIMENSIONS FOR RIGHT ANGLE ANCHOR NUTS

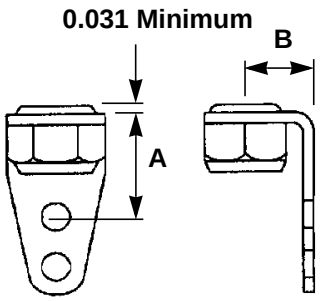
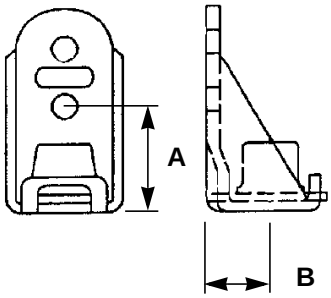
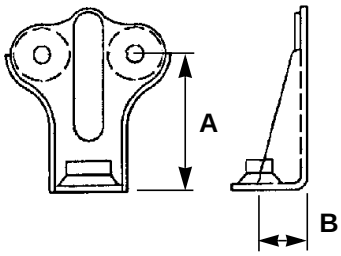
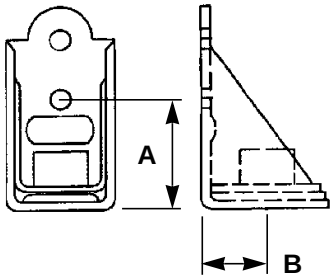
CONFIGURATION	PART NUMBER	THREAD SIZE	DIMENSIONS			
			RIVET HOLES		NUT ELEMENT	
			PITCH	DIA.	"A"	"B"
	AN256-()-6	6-32	0.250"	0.098" (#40)	0.469"	0.281"
	AN256-()-8	8-32				
	AN256-()-10	10-32				
	MF6000-04	4-40	0.219"	0.098" (#40)	0.325"	0.170"
	MF6000-06	6-32				
	MF6000-08	8-32			0.375"	0.210"
	MF6000-3	10-32				
	B0204033-3-4	10-32	0.562"	0.128" (#30)	0.450"	0.281"
	B0204033-3-6				0.650"	
	B0204033-3-8				0.850"	
	1033-()-06	6-32	0.250"	0.098" (#40)	0.484"	0.281"
	1033-()-08	8-32				
	1033-()-3	10-32				
	1033-()-4	1/4-28				0.313"
	1033-()-5	5/16-24		0.128" (#30)	0.578"	0.344"

TABLE V - ANCHOR NUT SCREW HOLE DATA

ANCHOR NUT				PRE-DRILL FOR RAM COIN DIMPLING	FINAL HOLE SIZE FOR SCREW HOLE (Notes 1 & 2)	
DASH NUMBER (Note 3)			THREAD SIZE			
NAS, MS, B0, BAC or KAYLOCK	AN	SPS			STANDARD HOLE FINAL SIZE (Note 4)	CLASS I HOLE FINAL SIZE (Note 5)
NON-FLOATING ANCHOR NUTS						
02	256		2-56 or 0.0860-56	---	0.102" - 0.106"	0.088" - 0.093"
03	348		3-48 or 0.0990-48	---	0.113" - 0.117"	0.103" - 0.108"
04	440		4-40 or 0.1120-40	---	0.129" - 0.134"	0.115" - 0.120"
06	632	62	6-32 or 0.1380-32	---	0.154" - 0.159"	0.143" - 0.149"
08	832	82	8-32 or 0.1640-32	#29	0.180" - 0.185"	0.169" - 0.174"
3	1032	02	10-32 or 0.1900-32	#24	0.206" - 0.211"	0.195" - 0.201"
4	428	048	1/4-28 or 0.2500-32	#6	0.266" - 0.272"	0.256" - 0.263"
5	524	054	5/16-24 or 0.3125-24	1/4"	0.328" - 0.334"	0.322" - 0.329"
6	624		3/8-24 or 0.3750-24	---	0.391" - 0.397"	0.385" - 0.392"
FLOATING ANCHOR NUTS						
02	256		2-56 or 0.0860-56	---	0.147" - 0.152"	0.088" - 0.093"
03	348		3-48 or 0.0990-48	---	0.159" - 0.164"	0.103" - 0.108"
04	440		4-40 or 0.1120-40	---	0.172" - 0.177"	0.115" - 0.120"
06	632	62	6-32 or 0.1380-32	---	0.199" - 0.204"	0.143" - 0.149"
08	832	82	8-32 or 0.1640-32	#29	0.221" - 0.226"	0.169" - 0.174"
3	1032	02	10-32 or 0.1900-32	#24	0.250" - 0.255"	0.195" - 0.201"
4	428	048	1/4-28 or 0.2500-32	#6	0.313" - 0.319"	0.256" - 0.263"
5	524	054	5/16-24 or 0.3125-24	1/4"	0.375" - 0.381"	0.322" - 0.329"
6	624		3/8-24 or 0.3750-24	---	0.438" - 0.444"	0.385" - 0.392"

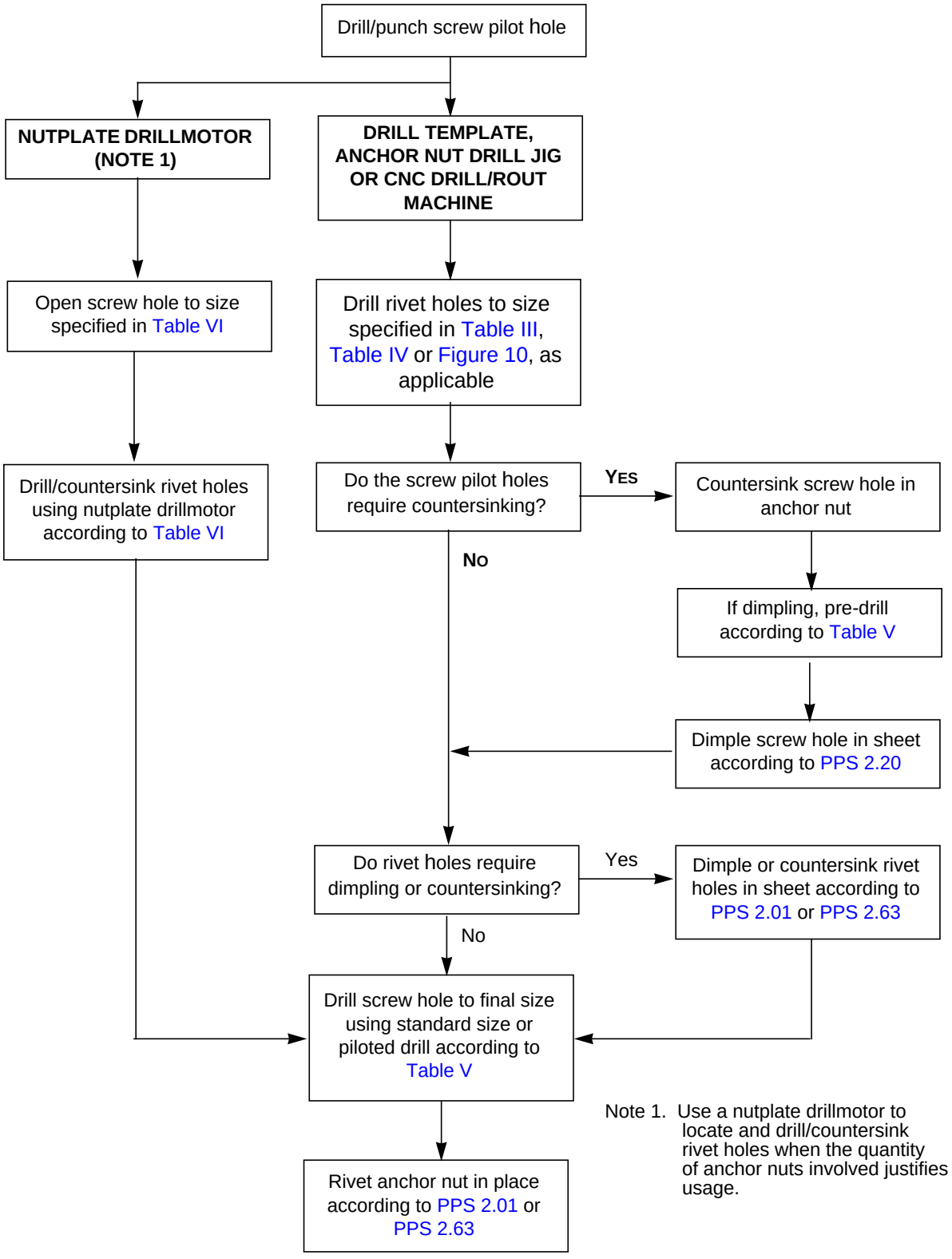
Notes
1. Drill holes to the size specified herein according to PPS 1.09.
2. If the engineering drawing specifies a **dimensioned** tolerance hole (e.g., “INSTALL ANCHOR NUT TO PPS 2.17 EXCEPT FOR HOLE SIZE 0.250 - 0.254”), prepare the screw hole to the size specified by the engineering drawing.
3. F1972 is a Kaylock part number; 22NA17A, A2507, A6293-X, M13640 and M13740 are SPS part numbers
4. **Standard** Hole Typical drawing callout: “INSTALL ANCHOR NUT TO PPS 2.17”.
5. **Class I** Hole Typical drawing callout: “INSTALL ANCHOR NUT TO PPS 2.17, CLASS I FIT”.

TABLE VI - NUT PLATE DRILL MOTOR

ANCHOR NUT	THREAD SIZE	DRILLMOTOR ASSEMBLY (Note 1)			PRE-DRILL FOR SCREW HOLE
		DRILLMOTOR	COLLET ASSEMBLY	DRILL/ COUNTERSINK	
22NA1K 22NA1K3 F1967 MS21047 MS21048 MS21049 MS21050 MS21059 MS21060 MS21078 NAS680 NAS681 NAS686 NAS1023 NAS1473 NAS1765 NAS1870	8-32	11655-0688 or DW 688 0.688" spindle spacing	Collet 1050540 Mandrel 1053243 Bushing 1055422	TS.516.23.11 MK 1, 3, 4, 5, 6, 7 or 8 (Note 2)	0.1562" (5/32")
	10-32	11655-0688 or DW 688 0.688" spindle spacing	Collet 1050990 Mandrel 1053462 Bushing 1055470	TS.516.23.11 MK 1, 3, 4, 5, 6, 7 or 8 (Note 2)	0.1910" (#11)
	1/4-28	DW 1000 1.00" spindle spacing	Collet 1051890 Mandrel 1053929 Bushing 1055640	TS.516.23.11 MK 1, 3, 4, 5, 6, 7 or 8 (Note 2)	0.250" (1/4")
	5/16-24	DW 1000 1.00" spindle spacing	Collet 1051890 Mandrel 1053929 Bushing 1055640	TS.516.23.11 MK 2 (Note 3)	0.250" (1/4")
	3/8-24	DW 1000 1.00" spindle spacing	Collet 1051890 Mandrel 1053929 Bushing 1055640	TS.516.23.11 MK 2 (Note 3)	0.250" (1/4")

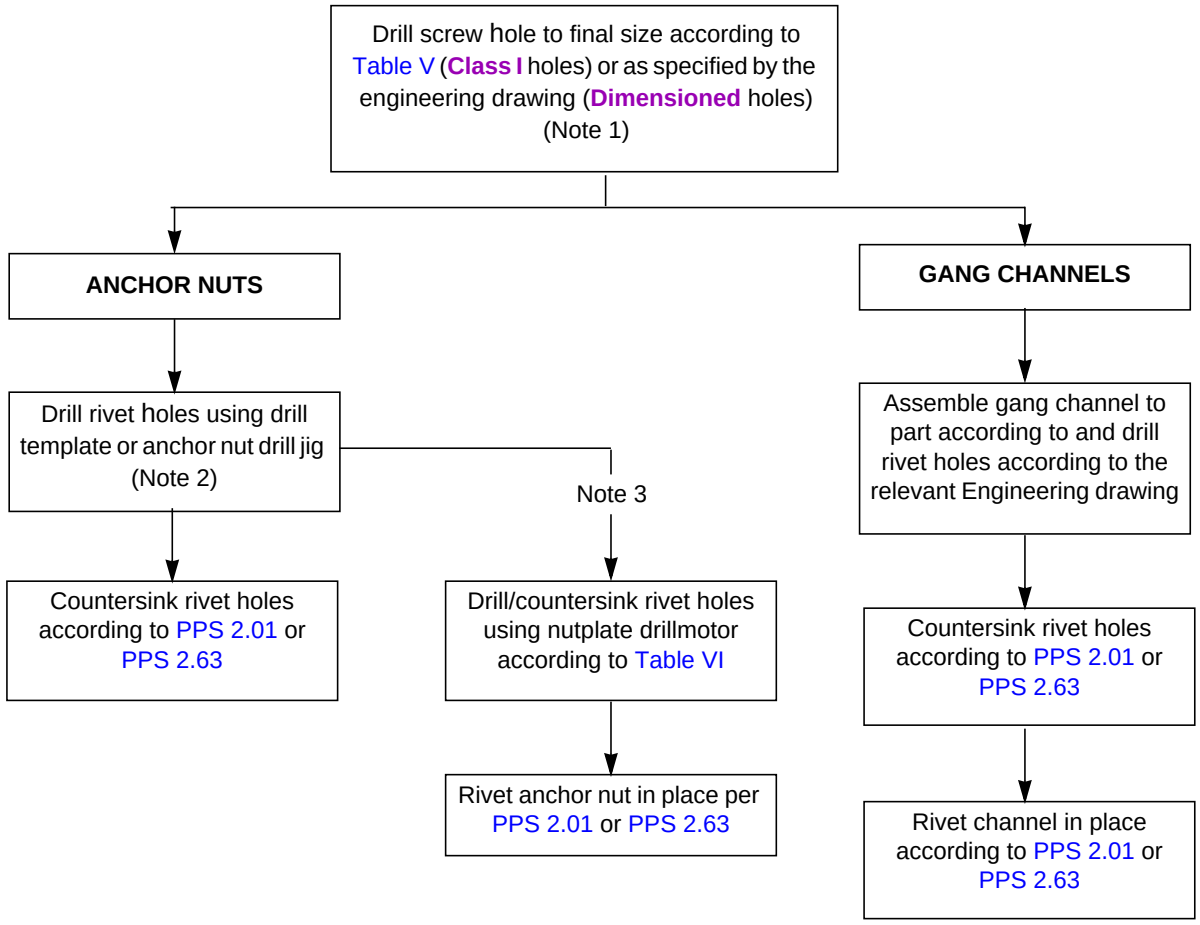
Notes
1. .In place of the nutplate drillmotor assemblies and TS.516.23.11 drill/countersinks specified herein, it is acceptable to use alternative tooling provided that all the requirements of this specification are met.
2. The Mk 1, 3, 4, 5, 6, 7 and 8 drill countersinks all have the same drill diameter (i.e., 0.098") but have different countersink diameter, drill length or hardness. Choose the most appropriate.
3. Use foot plate assembly #1049914 (International Fasteners) when using the TS.516.23.11 Mk 2 drill/countersink

FLOW CHART 1 - INSTALLATION OF ANCHOR NUTS IN STANDARD HOLES



Note 1. Use a nutplate drillmotor to locate and drill/countersink rivet holes when the quantity of anchor nuts involved justifies usage.

FLOW CHART 2 - INSTALLATION OF ANCHOR NUTS IN CLASS I OR DIMENSIONED HOLES



Note 1. Locate and drill **Class I** screw holes for anchor nuts and gang channels using master tooled drill templates incorporating final size drill bushings.

Note 2. Use of bushed drill templates is the preferred method of locating rivet holes. If necessary, use special "T" handle drill jigs specified in Table III.

Note 3. If the drill template does not include the rivet holes, use a nutplate drillmotor to locate and drill/countersink the rivet holes when the quantity of anchor nuts involved justifies usage.