



DART AEROSPACE LTD.
1270 Aberdeen Street
Hawkesbury, ON, K6A 1K7
CANADA

Tel: 1 613 632 5200
Fax: 1 613 632 5246

e-mail: heli@dartaero.com
<http://www.dartaero.com>

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

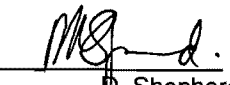
ICA-D206-667

Crosstube Installation

BELL 206A/206B/206L/206L-1/206L-3/206L-4/407 MODELS

Prepared By: 
C. Provencal
Mechanical Designer

Checked By: 
D. Shepherd, P. Eng.
DE #02

Released By: 
D. Shepherd, P. Eng.
DE #02

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Revision: 3

REVISION RECORD

Revision No.	Issue Date	Description	Date Inserted	Inserted By
0	00.12.21	New Issue		
1	02.05.16	Add D407-667-105/-205		
2	05.07.26	Add compatibility with Bell/AAI skidtubes		
3	11.05.04	Add D206-667-107/-207, Incorporate DSI 9366/9415/9439/9471/9544 /9550		

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CHAPTER 1 – INTRODUCTION (01-00-00)

1.1 SCOPE

This manual provides the requirements set forth in Appendix A of FAR Part 27 for the Instructions for Continued Airworthiness of the Dart D206-667 and D407-667 crosstubes when installed on the Bell 206A/ 206B/206L/ 206L-1/206L-3/206L-4/407 model aircraft. These Instructions for Continued Airworthiness are to be referred to for inspection and maintenance when the Dart crosstubes are installed on, removed from, or in service on the rotorcraft.

1.2 ARRANGEMENT

The manual is arranged in ATA-100 format. This manual is only applicable to Bell 206A/206B/206L/ 206L-1/206L-3/206L-4/407 model rotorcraft modified with the Dart D206-667 and D407-667 crosstubes.

There are no abbreviations, acronyms, or symbolization in this manual that are not common to the aviation industry.

Units of measurement are expressed in Imperial and Metric values and all torque values are standard values for the specified fastener combinations as defined in FAA AC 43.13, unless specifically called out otherwise.

No other Instructions for Continued Airworthiness for any product or appliance is inferred or addressed herein.

1.3 DISTRIBUTION

Any changes in the content or revision level of this document will be made available to any owner/operator who possesses this STC at www.dartaero.com.

Additionally, any changes will be sent to Transport Canada. All changes will be recorded in the Record of Revisions page at the front of this manual.

1.4 COMPATIBILITY

Compatibility of this installation with the aircraft is the **responsibility of the installer**. Ensure that this installation does not conflict with a previous modification.

1.5 SYSTEM DESCRIPTION

The Dart Crosstube Installations are replacements for the following Bell (or equivalent) crosstubes:

AIRCRAFT	CROSS TUBE	DART INSTALLATION	BHT/AAI INSTALLATION		COMPATIBLE SKIDTUBES
			Standard Gear	High Gear	
206A/206B	Forward	D206-667-101	206-050-286-101 206-050-119-001 206-050-119-005 206-050-119-103 206-320-119	206-050-288-101 206-050-107-025 206-050-107-119 206-321-019	D206-642-211/-212 D206-642-213/-214 206-050-107-105/-106 206-050-107-123/-124 206-050-297-101/-102 206-050-297-105/-106
206A/206B	Aft	D206-667-201	206-050-286-103 206-050-119-003 206-050-119-007 206-050-119-101 206-320-120	206-050-288-103 206-050-107-027 206-050-107-121 206-321-022 206-321-024	206-050-297-105/-106 206-321-211/-212 206-321-251/-252 D206-642-611/-612 D206-642-613/-614 206-050-246-101/-102 206-050-246-107/-108 206-050-298-101/-102 206-327-201/-202 206-327-251/-252
206L/206L-1/ 206L-3/ 206L-4	Forward	D206-667-103 D206-667-107	206-053-201-101 206-053-119-003 206-053-119-103 206-053-119-107 206-325-119	206-053-203-101 206-053-109-007 206-053-109-103 206-053-109-105 206-053-109-109 206-323-021	D206-642-411/-412 D206-642-511/-512* D206-642-513/-514* 206-053-158-103S/-104S 206-323-211/-212 206-053-184-113/-114*
206L/206L-1/ 206L-3/ 206L-4	Aft	D206-667-203 D206-667-207	206-053-201-103 206-053-119-001 206-053-119-101 206-053-119-105 206-325-120	206-053-203-103 206-053-109-005 206-053-109-101 206-053-109-107 206-323-022	206-053-184-117/-118* 206-324-459/-460* 206-324-457/-458* D206-642-311/-312 206-325-201/-202
407	Fwd	D407-667-105	407-050-101-101 407-722-101	407-050-201-101 407-724-101	D206-642-311/-312 D206-642-511/-512
407	Aft	D407-667-205	407-050-102-101 407-723-104	407-050-202-101 407-725-104	D206-642-513/-514 206-053-118-109/-110 407-011-201/-202 206-053-184-121/-122 407-012-203/-204

* compatible with D206-667-103/-203 only

The D206-667-101/-103/-201/-203 and D407-667-105/-205 crosstubes are direct replacements for the Bell 206/407 high-gear crosstubes listed above. For aircraft equipped with high-gear, they can be installed as a set or on an individual basis. For aircraft equipped with Bell standard-gear, the aircraft can be converted to high-gear by installing the Dart D206-667-101 and D206-667-201 crosstubes as a set on 206A/206B series aircraft, or D206-667-103 and D206-667-203 crosstubes as a set on 206L/206L-1/206L-3/206L-4 series aircraft, or D407-667-105 and D407-667-205 crosstubes as a set on 407 series aircraft.

The D206-667-107/-207 crosstubes are a set of mid-height crosstubes for Bell 206L/206L-1/206L-3/206L-4 series aircraft. The mid-height crosstubes are 5" lower than existing high-gear crosstubes. For aircraft equipped with Bell standard or high gear, the aircraft can be converted to mid-height gear by installing the Dart D206-667-107 and D206-667-207 crosstubes as a set.

The Dart crosstubes are compatible with Dart D206-642 skid tubes certified on Canadian STC SH98-4 (ref. FAA STC SA00475SE). The Dart crosstubes (D206-667-XXX and D407-667-XXX CHG 002 or later) are compatible with the Bell/AAI skid tubes listed in the above table. Early model Dart crosstubes (D206-667-101/-103/-201/-203, D407-667-105/-205 at CHG 001) can be made compatible with the Bell/AAI skid tubes listed above by performing the modification as shown in chapter 32 of this document. The Dart D206-667-101/-201 crosstubes are compatible with BHT STC SR09397RC for the internal gross weight increase from 3200 lbs to 3350 lbs as described in BHT-206-SI-129. D206-667-107/-207 crosstubes at any CHG number are compatible with Dart/Bell/AAI skid tubes.

The components in the Dart Crosstube Installations are as defined in the tables in chapter 32 of this document. The last 3 digits of the Dart Crosstube Installation Part No. designate the different Dart Installations. For convenience, only the last three digits of the Part No. are listed on the top row of each table. The quantity of each component which is included in the D206-667-101 Crosstube Installation, for example, is as defined in the column labeled -101.

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CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)

The Airworthiness Limitations section is approved by the Minister and specifies maintenance required by any applicable airworthiness or operating rule unless an alternative program has been approved by the Minister.

No airworthiness limitations associated with this type of design change.

CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00) for FAA Aircraft

The Airworthiness Limitations section is FAA approved and specifies maintenance required under Sections 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

No airworthiness limitations associated with this type of design change.

CHAPTER 5 – INSPECTION REQUIREMENTS (05-00-00)

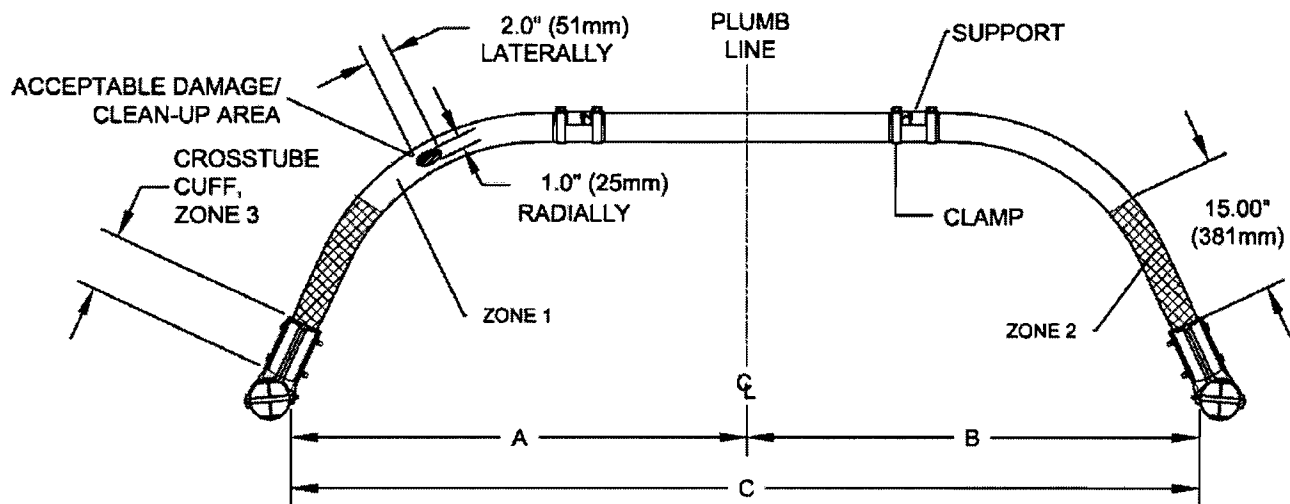
5.1 DAILY INSPECTION

5.1.1 Inspect the landing gear assembly for

- Mechanical damage (scratches, nicks) and corrosion damage on crosstube
- Elongation of any of the saddle holes
- Cracked saddles or supports
- Break in sealant around the saddles or supports
- Corrosion damage in the vicinity of the saddles or supports
- Looseness in the saddle joint
- Moving or slipping of the supports

If damage or slipping found, perform the 300 hour inspection and repair.

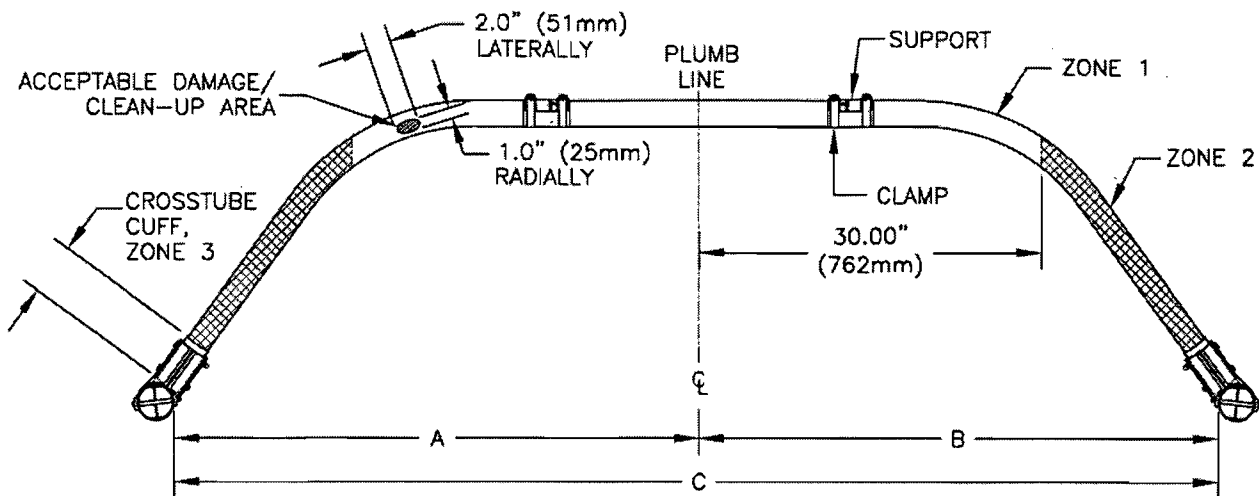
5.2 DAMAGE LIMITS



Maximum Nick, Scratch, or Corrosion Damage Depth Limit			
Damage Zone	3	2	1
D206-667-101 High Fwd Crosstube	0.030" (0.76mm)	0.008" (0.20mm)	0.015" (0.38mm)
D206-667-103 High Fwd Crosstube D206-667-107 Mid Fwd Crosstube	0.030" (0.76mm)	0.012" (0.30mm)	0.015" (0.38mm)
D206-667-201 High Aft Crosstube D206-667-203 High Aft Crosstube D206-667-207 Mid Aft Crosstube	0.030" (0.76mm)	0.015" (0.38mm)	0.015" (0.38mm)

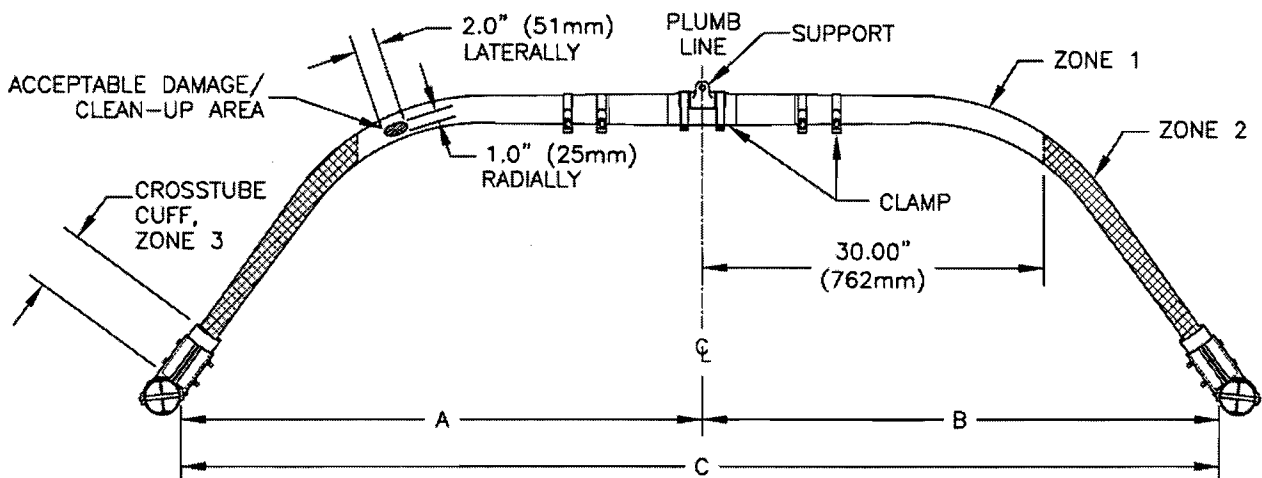
Figure 5-1: Acceptable Crosstube Damage Limits
D206-667-101/-103/-107/-201/-203/-207 Crosstubes

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Maximum Nick, Scratch, or Corrosion Damage Depth Limit			
Damage Zone	3	2	1
D407-667-105 High Fwd Crosstube	0.030" (0.76mm)	0.012" (0.30mm)	0.015" (0.38mm)

Figure 5-2: Acceptable Crosstube Damage Limits D407-667-105 Crosstube



Maximum Nick, Scratch, or Corrosion Damage Depth Limit			
Damage Zone	3	2	1
D407-667-205 High Aft Crosstube	0.030" (0.76mm)	0.015" (0.38mm)	0.015" (0.38mm)

Figure 5-3: Acceptable Crosstube Damage Limits D407-667-205 Crosstube

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5.3 300 HOUR INSPECTION

To be performed every 300 hours or if damage found on daily inspection.

Note: For the convenience of scheduling maintenance, the tolerance for scheduled inspection intervals is +/-10% (+/- 30 hours). In each case, the subsequent interval will be adjusted to re-establish the original schedule. When an inspection is done more than 10% early, subsequent inspections will be advanced as required not to exceed the maximum tolerance. Concurrence and final approval of inspection interval tolerance by the governing civil aviation authority is the responsibility of the owner/operator.

- 5.3.1 Inspect all visible areas of the crosstube for cracks. The bottom side of the crosstube should be inspected for cracks using a 10X magnifying glass with weight on the landing gear. If a pattern is observed that resembles the crack pattern shown in Figure 5-4 below, the crosstube should be removed, the primer and paint should be stripped and an LPI inspection should be performed in accordance with ASTM 1417 Level 2. Cracks in the crosstube are unacceptable anywhere. Replace per item 5.3.10. If the LPI reveals that the crosstube is not cracked, it should be re-finished per item 5.3.9 and re-installed per section 32.2.

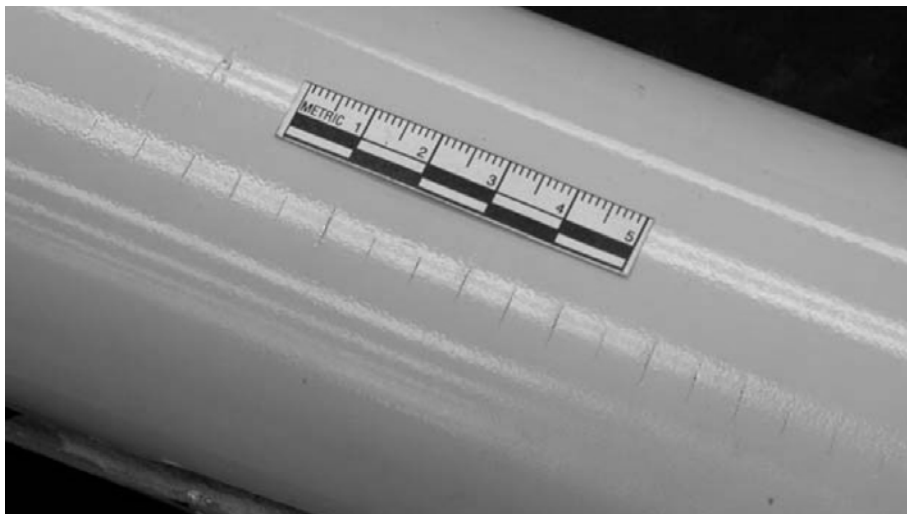


Figure 5-4: Crack pattern

- 5.3.1 All visible areas of the crosstube should be inspected for mechanical damage (nicks and scratches) and corrosion. Maximum size of acceptable nicks, scratches, or corrosion is limited to a 1.0" wide X 2.0" long (25mm wide X 51mm long) area. The maximum depth of any nicks, scratches, or corrosion is given in Figures 5-1, 5-2, and 5-3. Repairs are limited to one at any cross-section with a minimum distance of 3.0" (76mm) between any other repairs. Repair any acceptable damage per item 5.3.3. Replace crosstube per item 5.3.10 if these limits are exceeded.
- 5.3.2 For damage within the acceptable limits, blend out scratches/nicks/corrosion in the crosstube in the longitudinal direction using scotchbrite. There should be a smooth transition from the surrounding tube to the affected area. CIRCUMFERENTIAL GRIND MARKS ARE NOT ALLOWED. Clean up cannot exceed the damage limits. After clean up, touch up affected area with chemical film material (Alodine 1200 or 1201) per MIL-C-5541, one coat of MIL-P-85582 or MIL-P-23377 primer, and 2-3 coats of MIL-C-85285 polyurethane coating to match original finish. Repairs are lifetime accumulated and both the location and depth of the repair must be logged. If the accumulated repairs exceed the limits given in item 5.3.2, replace crosstube per item 5.3.10.

- 5.3.3 Inspect the supports for cracks, scratches, nicks, wear, and corrosion damage. Cracks in the supports are unacceptable. Polish out scratches, nicks, wear, and corrosion up to 0.020" (0.508mm) deep using scotchbrite to a maximum depth of 0.020" (0.508mm) after clean-up. Replace parts that have been damaged beyond the above limits per item 5.3.10. The area of the repair is limited to 1.00 in² (645mm²) and the maximum number of repairs per support is two. Touch up affected areas with two coats of MIL-P-85582 or MIL-P-23377 primer and 2-3 coats of MIL-C-85285 polyurethane coating to match original finish.
- 5.3.4 Inspect the supports for evidence of moving, slipping, or fretting. The supports should be positioned on the crosstubes as shown in Figure 32-4 through 32-9. Check that the torque on the attachment clamps is between 80-100 in-lb (9.0-11.3 Nm) per section 32.4. It is optional to re-seal the edges of the supports with Sikaflex-241/291 or MIL-S-8802 Class B2 or Proseal 890 sealant if necessary.
- 5.3.5 Inspect the MS21920 clamps / D3190-1 chafing strips for nicks, scratches, or corrosion damage. Scratches, nicks, or corrosion damage deeper than 0.005" (0.127mm) requires clamp replacement per item 5.3.10.
- 5.3.6 Check rubber bumper pad on the crosstube retention caps for looseness or deterioration. Replace as necessary per the Aircraft Maintenance Manual. Inspect any D2856-XXX abrasion strips (only installed on crosstubes with non-Magnobonded supports) underneath the supports and clamps for deterioration and suitability for continued service. Replace as necessary per item 5.3.10.
- 5.3.8 Check the crosstubes for excessive deflection as follows:
- Position the aircraft on a smooth surface.
 - Raise the aircraft, removing all weight from the landing gear.
 - Level the aircraft laterally.
 - Measure distance between crosstube support fittings and divide the distance to determine aircraft centerline, as shown in Figures 5-1, 5-2, and 5-3.
 - Drop a plumb line from the aircraft centerline to ground or floor surface. Measure dimensions A, B, and C as shown in Figures 5-1, 5-2, and 5-3 to ensure that they are within the limits of the appropriate table below (Table 5-5, 5-6, or 5-7). Measurements are taken from the innermost edge of the skidtube to either the plumb line (A and B) or to the opposite skidtube edge (C). Crosstubes that have deflected beyond limits must be replaced per item 5.3.10.

Table 5-5: D206-667-101 and D206-667-201 Crosstube Spread Limits

Dimension	Spread Limits (inches)	Spread Limits (mm)
A	35.77 to 37.27	909 to 947
B	35.77 to 37.27	909 to 947
C	71.54 to 74.54	1818 to 1894

Table 5-6: D206-667-103, D206-667-107, D206-667-203, and D206-667-207
Crosstube Spread Limits

Dimension	Spread Limits (inches)	Spread Limits (mm)
A	41.40 to 42.90	1052 to 1090
B	41.40 to 42.90	1052 to 1090
C	82.80 to 85.80	2104 to 2180

Table 5-7: D407-667-105 and D407-667-205 Crosstube Spread Limits

Dimension	Spread Limits (inches)	Spread Limits (mm)
A	45.40 to 46.90	1153 to 1191
B	45.40 to 46.90	1153 to 1191
C	90.80 to 93.80	2306 to 2382

- 5.3.9 Inspect all areas of the crosstube for suitability of the paint finish. Touch up affected areas with chemical film material (Alodine 1200 or 1201) per MIL-C-5541, one coat of MIL-P-85582 or MIL-P-23377 primer, and 2-3 coats of MIL-C-85285 polyurethane paint to match original finish.

For D407-667-205 High Aft Crosstubes that are being refinished, an inspection window should be incorporated into the underside of the crosstube to facilitate inspection as follows:

- 1) Apply chemical conversion film material (Alodine 1200 or 1201) per MIL-C-5541 and one coat of MIL-P-85582 or MIL-P-23377 primer.
- 2) Mask underside of crosstube as per hatched area shown in Figure 5-8.
- 3) Paint outside surfaces of crosstube by applying 2-3 coats of MIL-C-85285 polyurethane paint to match original finish.
- 4) Apply clear coat on inspection window (hatched area).

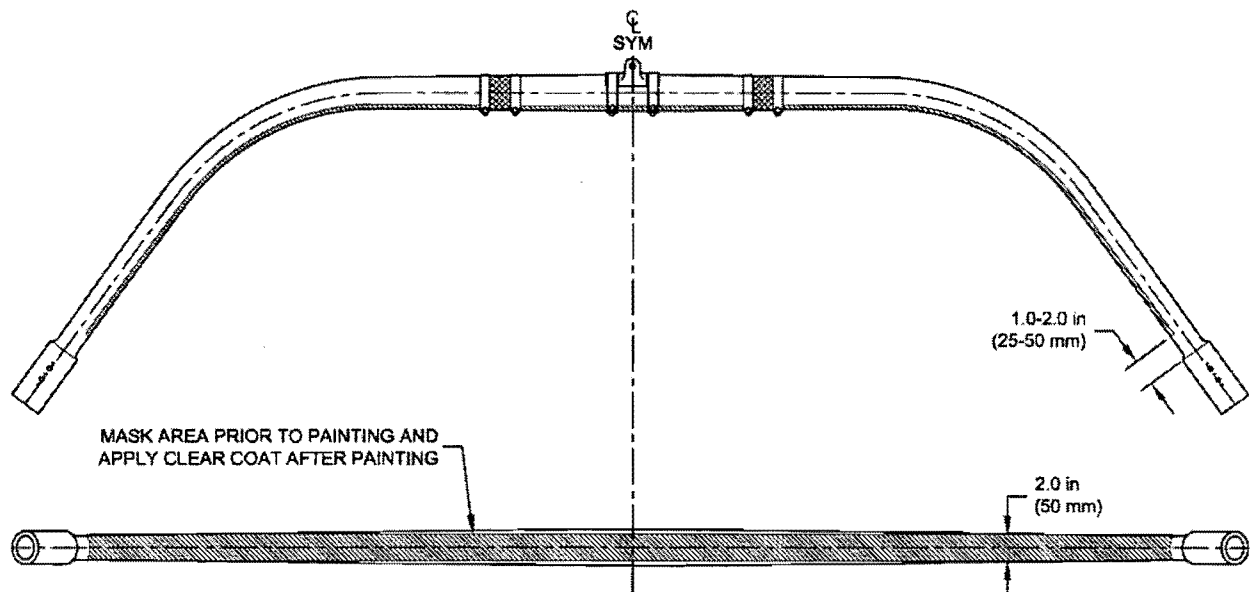


Figure 5-8: Inspection Window on D407-667-205 Crosstube

- 5.3.10 Replace all excessively damaged or unserviceable parts per chapter 32 of these Instructions.

5.4 BI-ANNUAL INSPECTION

To be performed every 2 years.

Inspect the landing gear assembly for

- h) Elongation of any of the saddle holes
- i) Cracked saddles or supports
- j) Break in sealant around the saddles or supports
- k) Corrosion damage in the vicinity of the saddles or supports
- l) Looseness in the saddle joint
- m) Slipping of the supports

If any of the above damage is observed or the aircraft has had a hard landing, perform the following inspection (in addition to the requirements of the 300 hour inspection). Note that although it is **NOT** a requirement, Dart recommends the following inspection every 2 years regardless of whether any of the above damage is observed.

- 5.4.1 Remove the landing gear from the aircraft per section 32.1.
- 5.4.2 Remove the skid tubes from the crosstubes. On Dart skid tubes, this can be done by removing (2) AN5 bolts per cuff and relaxing the torque on the 6 AN4 flange bolts per cuff.
- 5.4.3 For crosstubes equipped with Bell/AAI skid tubes, remove the skid tube from the crosstubes by removing the 5 or 7 AN5 bolts per cuff. Inspect saddle hardware for damage and replace in accordance with Aircraft Maintenance Manual.
- 5.4.4 Inspect the attachment holes in cuff of the crosstube for elongation. The maximum allowable hole elongation is 0.025" (0.634 mm) at any hole. Inspect the cuff beneath the saddle for mechanical damage and corrosion. Maximum size of acceptable nicks, scratches, or corrosion is limited to a 1.0" wide X 2.0" long (25mm wide X 51mm long) area. The maximum depth of any nicks, scratches, or corrosion is given in Figure 5-1. Repairs are limited to two at any cross-section with a minimum distance of 3.0" (76mm) between any other repairs and only one fastener hole per cuff can be affected. Repair damage within acceptable limits per item 5.3.3 of the 300 hour inspection, or replace per item 5.3.10 of the 300 hour inspection.
- 5.4.5 Remove the supports from both crosstubes per section 32.3 and remove any D2856-XXX abrasion strips (only installed on non-Magnobonded supports) per section 32.5. Check for corrosion and mechanical damage per items 5.3.1 and 5.3.2 of the 300 hour inspection. Repair damage within acceptable limits per item 5.3.3 of the 300 hour inspection, or replace per item 5.3.10 of the 300 hour inspection. It is recommended that any abrasion strips be discarded and the supports be installed with Magnobond. Reinstall the supports per section 32.4.
- 5.4.6 Reinstall landing gear on the aircraft per section 32.2.

5.5 HARD LANDING INSPECTION

- 5.5.1 Perform 300 hour inspection per section 5.3
- 5.5.2 Perform bi-annual inspection per section 5.4

5.6 OVERHAUL REQUIREMENTS

NO COMPONENT OVERHAUL REQUIRED FOR THIS DESIGN CHANGE.

CHAPTER 32 – LANDING GEAR (32-00-00)

A hoist with sufficient capacity to lift entire helicopter shall be used to raise helicopter clear of landing gear when removing or installing landing gear as an assembly.

32.1 CROSSTUBE REMOVAL

- 32.1.1 The complete landing gear may be removed as an assembly or the crosstubes (and skidtubes) may be removed separately.
- 32.1.2 With the helicopter supported but not raised on hoist, remove the two bolts and washers at each of the four caps that secure the crosstubes to the structure. Raise the helicopter off the landing gear.
- 32.1.3 If necessary, remove the beam assembly and attaching hardware from the 407 aft crosstube.

32.2 CROSSTUBE INSTALLATION

Refer to Figures 32-4, 32-5, 32-6, 32-7, 32-8, and 32-9 while installing the Dart crosstubes.

- 32.2.1 For D206-667-XXX or D407-667-XXX at any change number to be installed with Dart D206-642-XXX skidtubes, install the Dart skidtubes on the crosstubes per STC SH98-4, except replace the saddle-to-crosstube attachment bolts with AN5-32A bolts on the Dart D206-667-101, D206-667-103, D407-667-105, D206-667-107, and D206-667-201 crosstubes. Replace the saddle-to-crosstube attachment bolts with AN5-34A bolts on the Dart D206-667-203, D206-667-207, and D407-667-205 crosstube. **CAUTION:** Pay special attention to view C-C of Figure 32-5 when installing the D206-667-201 aft crosstube.
- 32.2.2 If Dart skidtubes are being replaced with Bell/AAI skidtubes for installation with D206-667-101/-103/-201/-203 or D407-667-105/-205 crosstubes at CHG 001 the fwd/aft holes will have to be drilled into the crosstube and nut plates will have to be installed prior to installing the fasteners as shown in Figure 32-1. To drill these holes, insert crosstube into both skidtube saddles. Pin the saddles to the crosstubes using 2 of the AN5 bolts provided per cuff. Transfer drill $\varnothing 0.313$ holes on the fwd and aft sides of the saddle to the crosstube. Open holes to $\varnothing 0.323 \pm \begin{smallmatrix} 0.005 \\ 0.000 \end{smallmatrix}$. Remove crosstube from saddles and deburr drilled holes.

For installation of Dart D206-667-201 aft crosstube on 206-321-251/-252 or 206-327-251/-252 or 206-050-297-101/-102/-105/-106 or 206-050-298-101/-102 thru-bolt skidtubes, nut plates are not required. Touch up holes with alodine 1200/1201 per MIL-C-5541 and one coat of MIL-P-85582 or MIL-P-23377 primer and proceed to step 32.2.3.

For installation of all other Dart D206-667-XXX/D407-667-XXX crosstubes onto Bell skidtubes and the installation of D206-667-201 aft crosstube on non-thru bolt skidtubes, the D2873-043/-045 or D2872-043/-045 nut plates will have to be installed on the crosstube cuffs as shown below. Purchase D206-667-013 to modify -101/-103/-105/-203/-205 crosstubes. Purchase D206-667-015 to modify -201 crosstubes to go with non-thru bolt skidtubes. Deburr all rivet holes and touch up all holes with primer before installing D2873-043/-045 nut plates. Proceed to step 32.2.4.

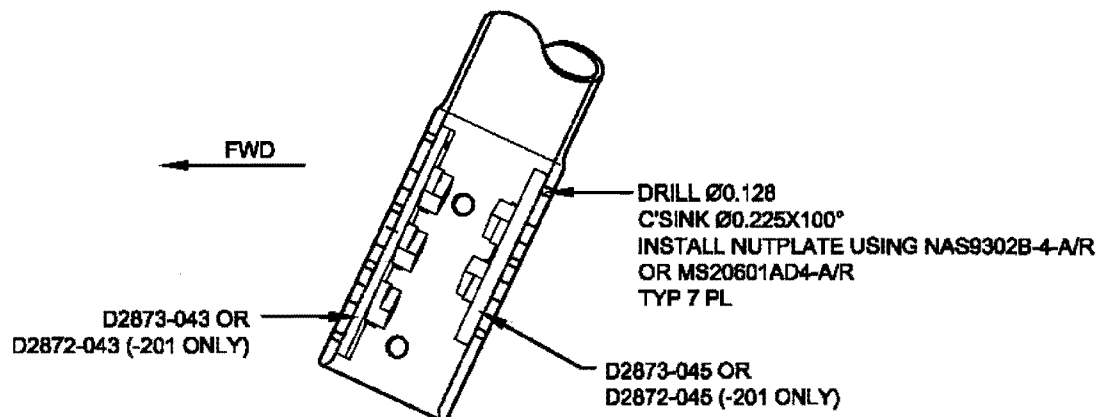


Figure 32-1 – Nut Plate Installation for D206-667-101/-103/-201/-203 or D407-667-105/-205 crosstubes at CHG 001

- 32.2.3 For installation of Dart D206-667-201 aft crosstube at CHG 002 or later onto 206-321-251/-252 or 206-327-251/-252 or 206-050-297-101/-102/-105/-106 or 206-050-298-101/-102 skid tubes, attach the crosstube to the skid tube saddle using qty (5) AN5-30A thru bolts as shown below. Torque nuts to 65-85 in-lbs. Ensure bolt threads are not bearing on saddle sheet. Apply a bead of sealant around the top of the saddle in accordance with the Aircraft Maintenance Manual.
Note: The modification shown in Figure 32-5 View C-C (Drill out lower hole) will have to be performed prior to installation.

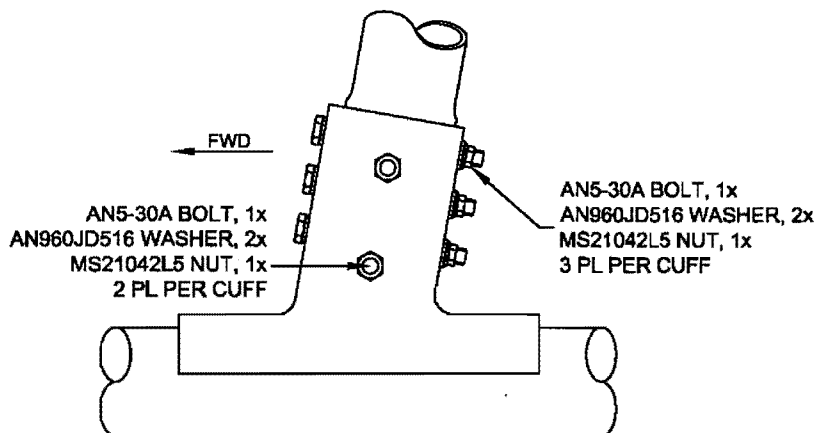


Figure 32-2 – Installation for D206-667-201 aft crosstubes on thru bolt skid tubes

- 32.2.4 For installation of all other Dart D206-667-XXX/D407-667-XXX crosstubes at CHG 002 or later onto BHT/AAI skid tubes and the installation of D206-667-201 aft crosstube at CHG 002 or later on non-thru bolt skid tubes, attach the crosstube to the skid tube using qty (2) AN5-YY thru bolts and qty (5) AN5-XX short bolts as listed in Table 32-1. Torque bolts to 65-85 in-lbs. Apply a bead of sealant around the top of the saddle in accordance with the Aircraft Maintenance Manual.

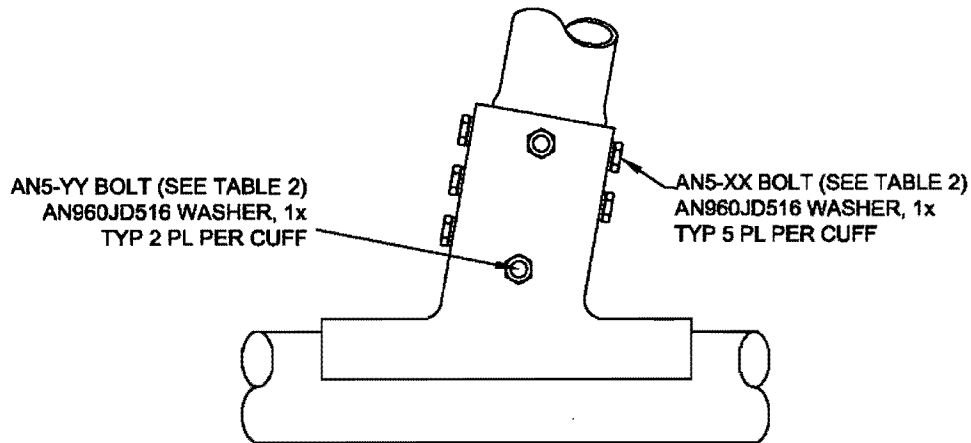


Figure 32-3 – Installation of all other Dart D206-667-XXX/D407-667-XXX crosstubes onto BHT/AAI skid tubes

Table 32-1 – Bolts used on D206-667-XXX/D407-667-XXX crosstubes onto BHT/AAI skid tubes

CROSSTUBE	THRU BOLT (AN5-YY)	SHORT BOLT (AN5-XX)
D206-667-101	AN5-30A	AN5-7A
*D206-667-201	AN5-30A	AN5-10A
D206-667-103	AN5-30A	AN5-7A
D206-667-203	AN5-32A	AN5-10A
D206-667-107	AN5-30A	AN5-7A
D206-667-207	AN5-32A	AN5-10A
D407-667-105	AN5-30A	AN5-10A
D407-667-205	AN5-32A	AN5-10A

*For installation on 206-050-107-105/-106/-123/-124 or 206-321-211/-212 or 206-050-246-101/-102/-107/-108 or 206-327-201/-202 skid tubes only.
Crosstube must be modified per Figure 32-5 View C-C (Drill out upper hole)

- 32.2.5 Reinstall the beam assembly and attaching hardware on D206-667-205 if required, as shown in Figure 32-9.
- 32.2.6 Locate landing gear under aircraft and carefully lower the aircraft to seat the four mounting points of the Bell support fittings onto the supports of crosstubes. On D407-667-205, ensure the beam assembly properly engages in the fuselage structure.
- 32.2.7 For the Dart D206-667-101 crosstube, install the Bell cap assemblies as shown in section A-A of Figure 32-4. Tighten bolts to a snug fit. If converting from low to high gear, the D206-667-011 Spacer Block Kit will have to be installed first as shown in Section A-A of Figure 32-4.

32.2.8 For the Dart D206-667-201 crosstube, install the Bell cap assemblies as shown in section B-B of Figure 32-5. Tighten bolts to a snug fit.

32.2.9 For the Dart D206-667-103/-107 crosstube, install the Bell cap assemblies as shown in section D-D of Figure 32-6. Tighten bolts to a snug fit.

When installing the support assemblies, the rubber cushioning on the Dart crosstube may cause the LC-063G-1SS spring (or equivalent, ref) to over compress. As shown in Figure 32-6, it is acceptable to install AN970-4 washers (3 max) between the 206-033-108-001 fitting (or equivalent, ref) and 206-050-223-001 spacer (or equivalent, ref).

32.2.10 For the Dart D206-667-203/-207 crosstube, install the Bell cap assemblies as shown in section E-E of Figure 32-7. Tighten bolts to a snug fit.

32.2.11 For the Dart D407-667-105 crosstube, install the Bell cap assemblies as shown in section F-F of Figure 32-8. Tighten bolts to a snug fit.

32.2.12 For the Dart D407-667-205 crosstube, install the Bell cap assemblies as shown in section G-G of Figure 32-9. Tighten bolts to a snug fit.

32.2.13 Lower the aircraft onto the ground and remove the hoisting equipment. Verify that the aircraft is set correctly onto the crosstubes. Torque bolts on cap assemblies per the Aircraft Maintenance Manual.

32.3 SUPPORT REMOVAL

32.3.1 Break the seal around the supports and undo the clamps to remove the supports. Remove excess sealant with scotchbrite.

32.3.2 For D206-667-101/-103/-201/-203 (CHG 003 or later), D407-667-105 (CHG 003 or later), and/or D407-667-205 (CHG 004 or later), the supports are installed with Magnobond 6398:

To remove the support, undo the clamps and remove adhesive between crosstube and support.

CAUTION:

Ensure crosstubes are not damaged during removal of supports.

32.3.3 Remove remaining adhesive. Saturate a clean cotton cloth with Methyl Ethyl Ketone (MEK), 4105S Wash'n'Wipe Degreaser, or equivalent and wipe the surface to clean the entire area.

32.4 SUPPORT INSTALLATION

Note: If installing supports on D206-667-101/-103/-201/-203 (CHG 002 or earlier), D407-667-105 (CHG 002 or earlier), and/or D407-667-205 (CHG 003 or earlier) crosstubes, it is recommended that the D2856-XXX Abrasion Strips at the support locations be removed in accordance with Section 32.5 and the supports be re-installed as outlined below. Otherwise, ensure that the D2856-XXX Abrasion Strips are installed per Section 32.6 and are in good condition.

32.4.1 Abrade area to which support will be applied with 400 grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash 'n Wipe Degreaser or equivalent and wipe area until there is no residue.

32.4.2 Apply a 0.03" to 0.06" thick layer of Magnobond 6398 underneath support and install support in the proper location (see Figures 32-4 to 32-9). For the D206-667-101/-103/-107/-201 and D407-667-105 crosstube, the outward face of the support tabs should be 13.08" (332mm) from

the crosstube center. For the D206-667-203/-207 crosstube, the support tabs should be 10.03" (255mm) from the crosstube center.

For the D407-667-205 crosstube, the D2894-1 Support should be centered on the crosstube and the D3190-1 Chafing Shields should be positioned as shown in Figure 32-9. Ensure the rocker beam assembly can move freely without any friction with other parts.

- 32.4.3 Install the MS21920 clamps opposite to crosstube supports as shown in the sectional diagrams of Figures 32-4, 32-5, 32-6, 32-7, 32-8, and 32-9. Install a D3595-XXX Rubber Cushion underneath each clamp. Torque the clamps to a torque of 80 to 100 in·lb (9.0 to 11.3 Nm). It is acceptable to use smaller or larger sized MS21920-XX clamps than those listed in this document; ensure that after torquing the clamps per this instruction, the nuts are in safety but not bottomed out.

- 32.4.4 Let Magnobond cure before reinstalling crosstube on the aircraft.

32.5 ABRASION STRIP REMOVAL

To remove a D2856-400-694, D2856-400-773, or D2856-600-851 Abrasion Strip:

- 32.5.1 Being careful not to mark/scratch the part on which it is installed, lift edge and carefully peel Abrasion Strip at an angle of 90 to 180 degrees. Speed and angle of removal may affect amount of residue and the amount of paint removed.
- 32.5.2 Remove adhesive with 3M 8908 Woodgrain and Stripe Remover (or equivalent). Scrape softened adhesive off the surface using plastic squeegee after the remover has sat for the required amount of time. Repeat if required.
- 32.5.3 Remove remaining adhesive by scrubbing area with a cloth and 3M 8908 Woodgrain and Stripe Remover (or equivalent). Scotchbrite may be used as required.
- 32.5.4 Saturate a clean cotton cloth with Methyl Ethyl Ketone (MEK), 4105S Wash'n'Wipe Degreaser, or equivalent and wipe the surface to clean the entire area.

32.6 ABRASION STRIP INSTALLATION

To install a D2856-400-694, D2856-400-773, or D2856-600-851 Abrasion Strip:

- 32.6.1 Ensure the surface of the crosstube is properly finished per item 5.3.9 of the 300 hour inspection.
- 32.6.2 Abrade area to which abrasion strip will be applied with 400 grit sandpaper.
- 32.6.3 Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe area until there is no residue.
- 32.6.4 Remove liner from the adhesive side of the Abrasion Strip.
- 32.6.5 Locate the Abrasion Strip on the crosstube per Figure 32-4/32-5/32-6/32-7/32-8/32-9 as applicable. The Abrasion Strip should wrap around the entire circumference of the crosstube and leave a 0.13" (3mm) gap on the bottom side of the crosstube opposite the support. Align the Abrasion Strip with the surface and press one edge to surface with finger.
- 32.6.7 Squeegee remaining portion of the Abrasion Strip onto the surface using firm overlapping strokes and a 3M PA-1 Plastic Applicator or equivalent.

32.7 CHAFING SHIELD REMOVAL (FOR D407-667-205)

- 32.7.1 If necessary, remove the Rocker Beam Assembly and attaching hardware from the 407 aft crosstube. Undo the MS21920 clamps to remove the D3190-1 Chafing Shield.

32.8 CHAFING SHIELD INSTALLATION (FOR D407-667-205)

Note: If installing chafing shield on D407-667-205 (CHG 006 or earlier) crosstube, it is recommended that the D2856-XXX Abrasion Strips at the chafing shield locations be removed in accordance with Section 32.5 and the chafing shields be re-installed as outlined below. Otherwise, ensure that the D2856-XXX Abrasion Strips are installed per Section 32.6 and are in good condition.

- 32.8.1 Apply a 0.02" to 0.04" (0.5-1.0 mm) thick layer of Proseal890 on the concave surface of D3190-1 Chafing Shields and let cure per manufacturer's instructions.
- 32.8.2 Once the Proseal on the D3190-1 Chafing Shields is cured, apply a thin layer of Proseal 890 on the crosstube to cover the area where the Chafing Shields will be installed.
- 32.8.3 Locate the D31 90-1 Chafing Shield as shown in Figure 32-9. Ensure that the overlapping edge of the chafing shield is located at approximately 60° from bottom vertical to prevent deterioration of the rubber bumpers. Be sure to eliminate any air gaps.
- 32.8.4 Position and tighten the clamps to a torque of 80-100 in-lb (9.0-11.3 N-m).
- 32.8.5 Allow the assembly to cure for 12 hours prior to reinstalling the crosstube.

32.9 D206-667-017 GROUNDING STRAP REMOVAL

- 32.9.1 Unfasten MS27039 screw, break seal around edge of clamp, and remove AN742D36 Clamp from crosstube

32.10 D206-667-017 GROUNDING STRAP INSTALLATION

Note: Grounding strap should be installed while crosstube is removed from aircraft

- 32.10.1 Locate AN742D36 Clamp as shown in Figure 32-10 and mark location of clamp on the crosstube.
- 32.10.2 Remove any crosstube finish (paint and primer) in area where AN742D36 Clamp will be installed and touch up affected area with chemical film material (Alodine 1200 or 1201) per MIL-C-5541.
- 32.10.3 Install AN742D36 Clamp complete with MS9165-05 per Section H-H of Figure 32-10.
- 32.10.4 Touch up finish of surrounding area with chemical film material (Alodine 1200 or 1201) per MIL-C-5541, one coat of MIL-P-85582 or MIL-P-23377 primer, and 2-3 coats of MIL-C-85285 polyurethane coating to match original finish.
- 32.10.5 Seal edges where AN742D36 Clamp meets with crosstube using Sikaflex-241/291 or MIL-S-8802 Class B2 or Proseal 890 sealant.
- 32.10.6 With crosstube installed on aircraft, fasten OEM grounding strap to MS9165-05 Angle Bracket on forward crosstube per Bell instructions.
- 32.2.8 Undertake a resistance check between a ground point on the skidtube and aircraft ground in accordance with Class R-II requirement per BHT-ELEC-SPM. Maximum resistance is 10 milliohms (mΩ).

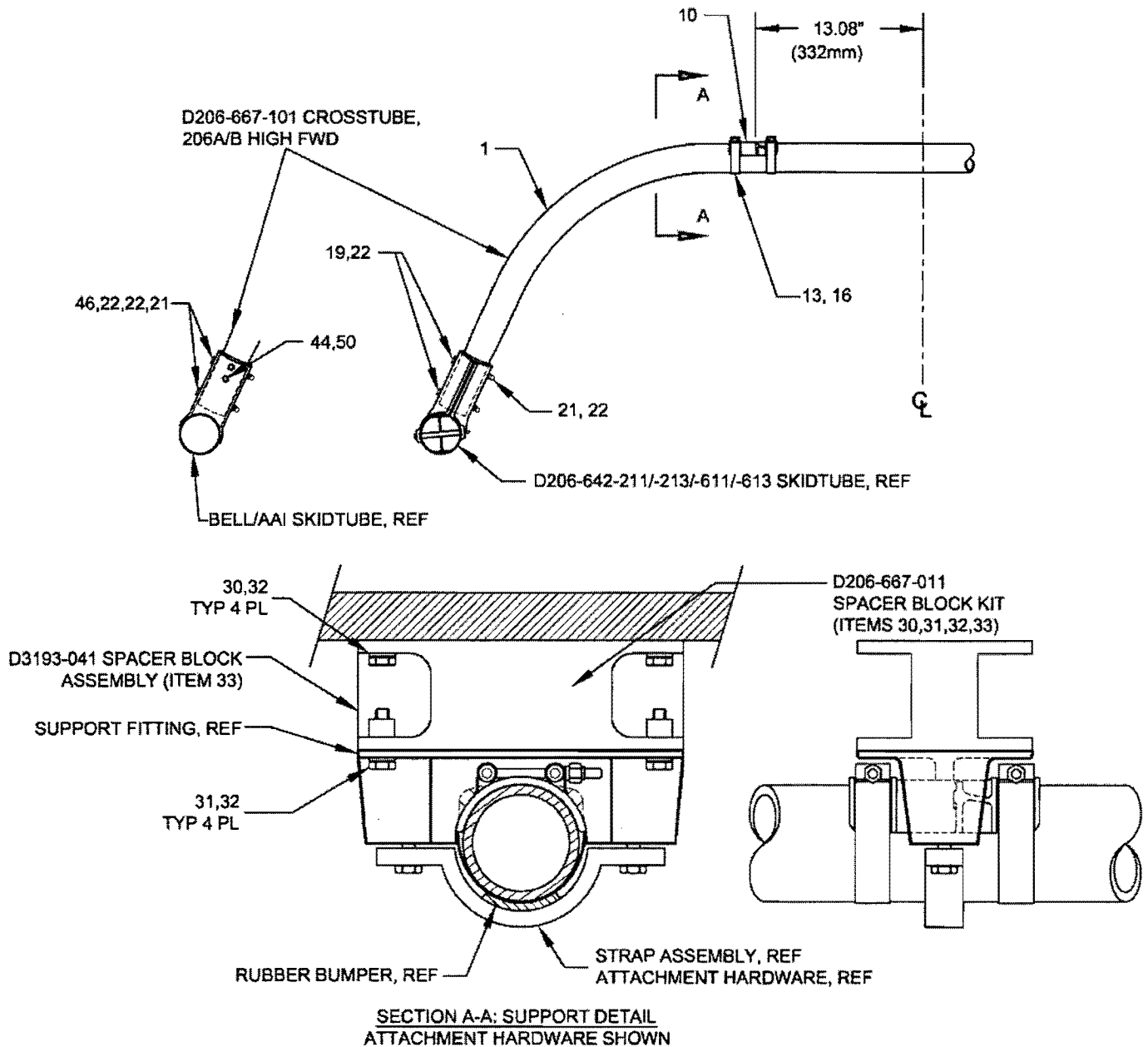
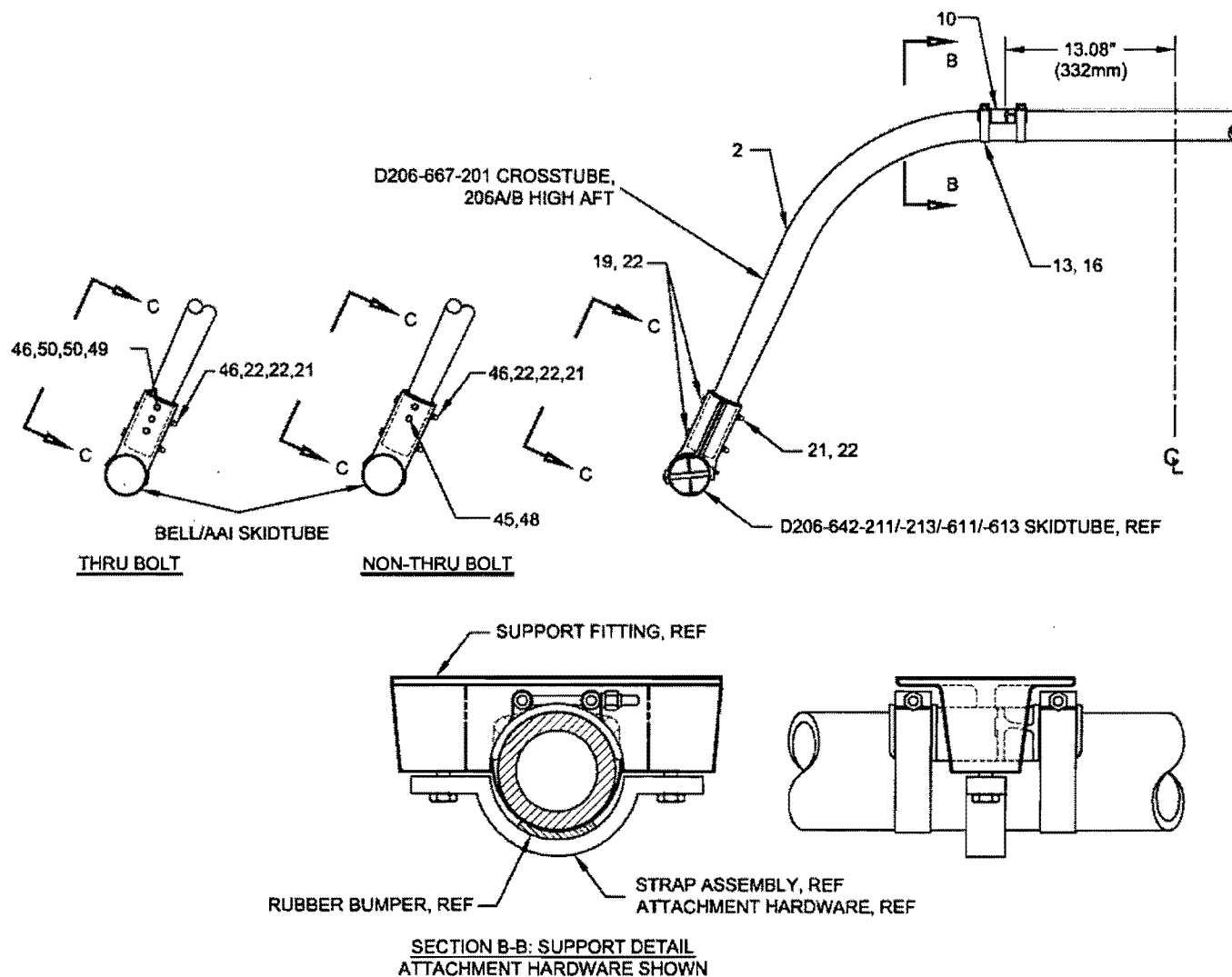
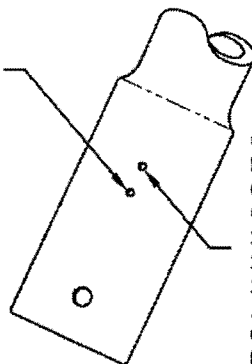


FIGURE 32-4: D206-667-101 CROSSTUBE, 206A/B HIGH FWD

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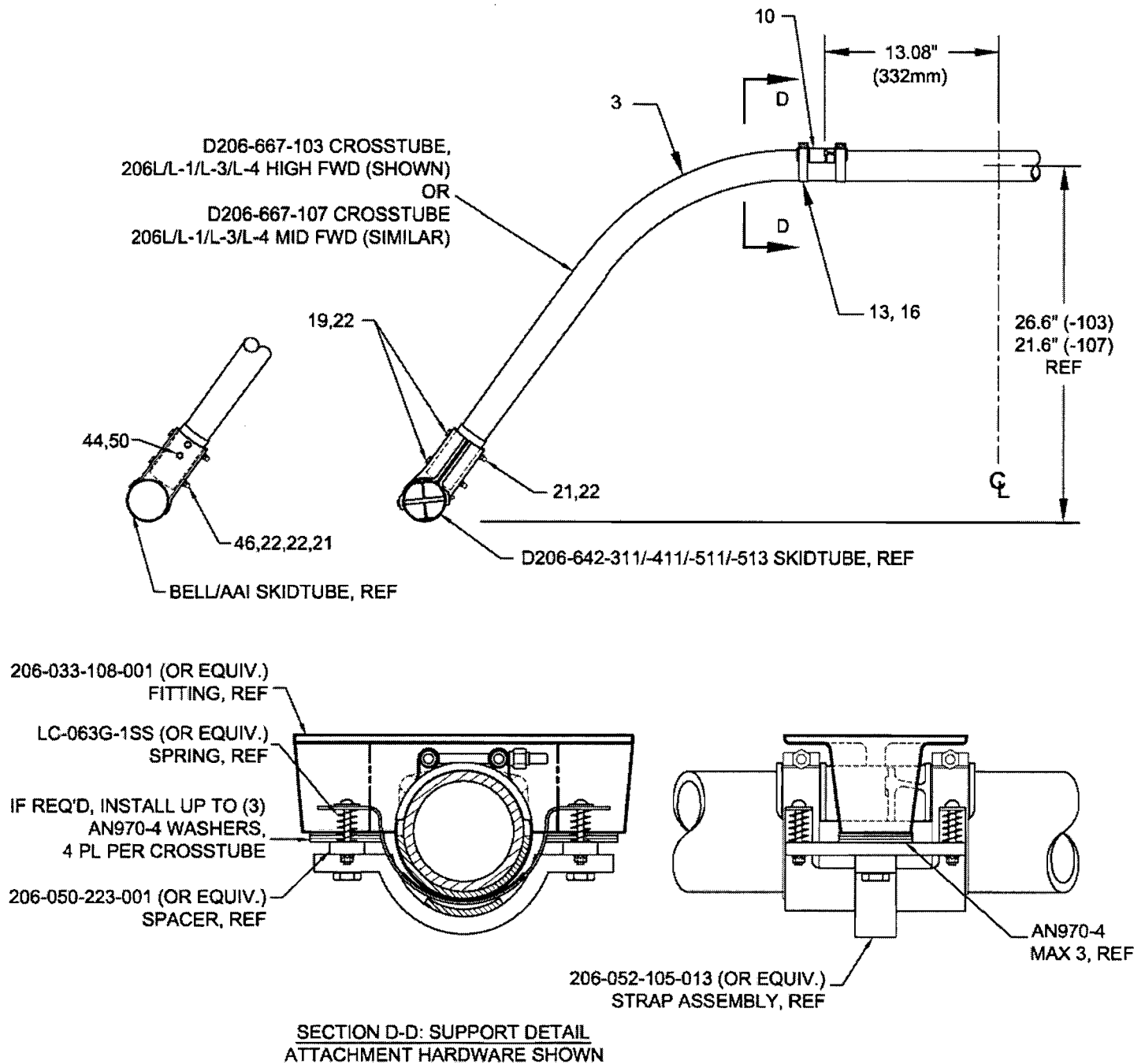
OPEN TO $\varnothing 0.323^{+0.005}_{-0.000}$ USING DRILL BIT PROVIDED BOTH SIDES ON BOTH CUFFS FOR COMPATIBILITY WITH D206-642-213/-214/-613/-614 OR BELL/AAI SKIDTUBES (P/N 206-050-297-101/-102, 206-050-297-105/-106, 206-321-251/-252, 206-050-298-101/-102, 206-327-251/-252). TOUCH UP HOLES WITH ALODINE 1200/1201 PER MIL-C-5541 AND ONE COAT OF MIL-P-85582 OR MIL-P-23377 PRIMER PRIOR TO INSTALLATION.



VIEW C-C: CUFF DETAIL
SKIDTUBE SADDLE NOT SHOWN

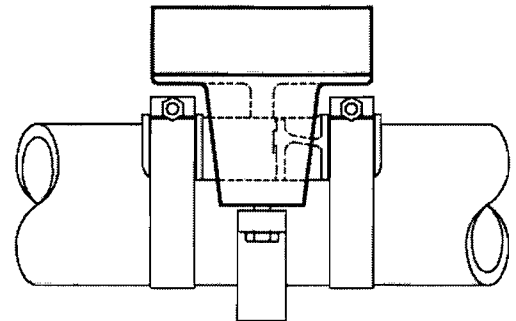
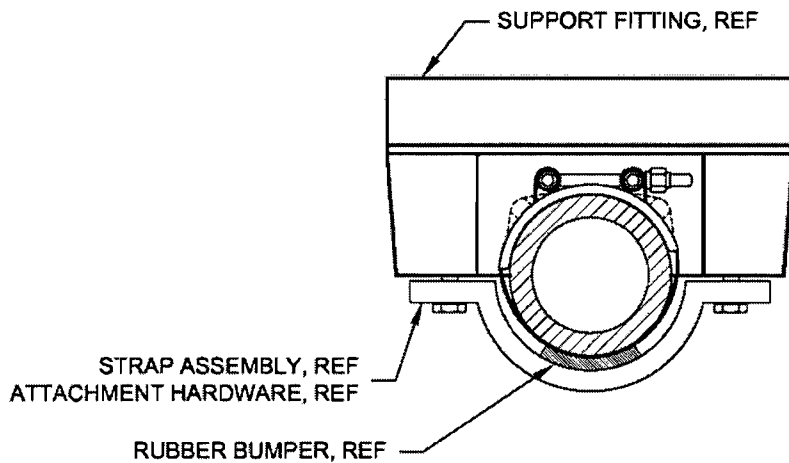
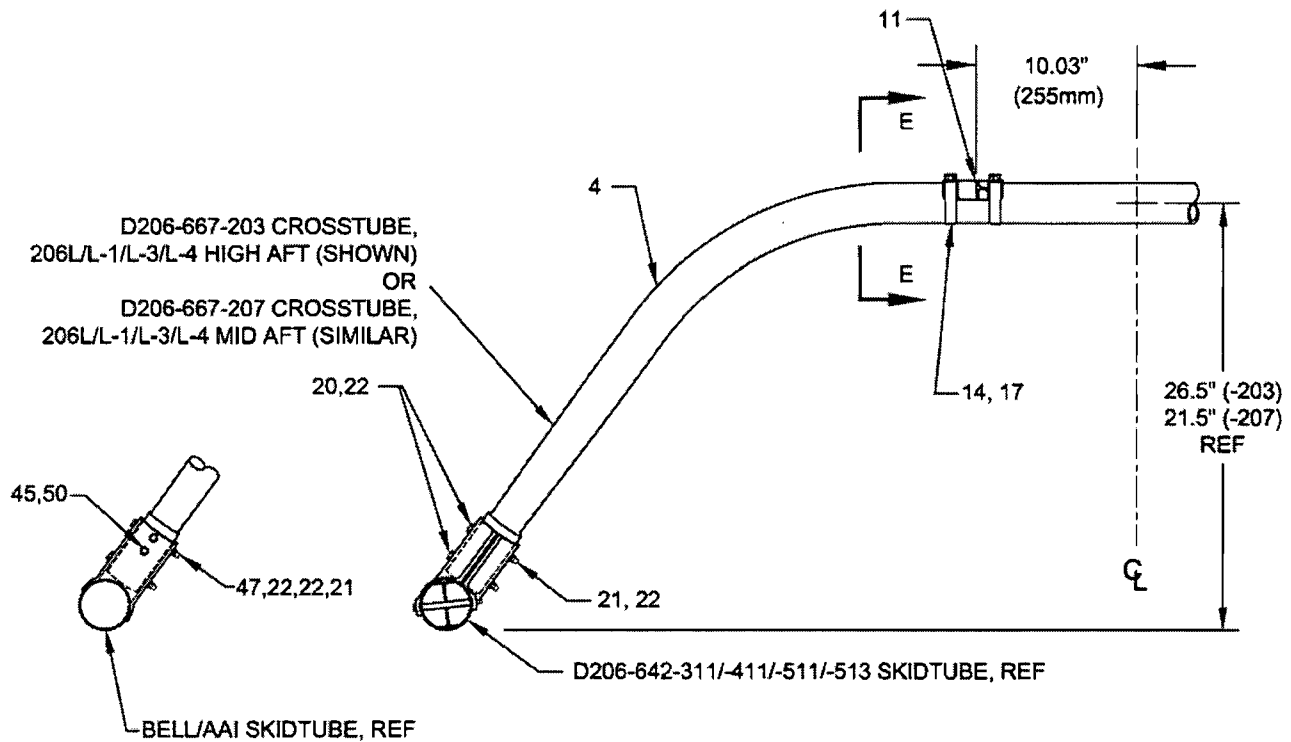
OPEN UP TO $\varnothing 0.323^{+0.005}_{-0.000}$ USING DRILL BIT PROVIDED BOTH SIDES ON BOTH CUFFS FOR COMPATIBILITY WITH D206-642-211/-212/-611/-612 OR BELL/AAI SKIDTUBES (P/N 206-050-107-105/-106, 206-050-107-123/-124, 206-321-211/-212, 206-050-246-101/-102, 206-050-246-107/-108, 206-327-201/-202). TOUCH UP HOLES WITH ALODINE 1200/1201 PER MIL-C-5541 AND ONE COAT OF MIL-P-85582 OR MIL-P-23377 PRIMER PRIOR TO INSTALLATION.

FIGURE 32-5: D206-667-201 CROSSTUBE, 206A/B HIGH AFT



**FIGURE 32-6: D206-667-103 CROSSTUBE, 206L/L-1/L-3/L-4 HIGH FWD (SHOWN)
D206-667-107 CROSSTUBE, 206L/L-1/L-3/L-4 MID FWD (SIMILAR)**

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SECTION E-E: SUPPORT DETAIL
ATTACHMENT HARDWARE SHOWN

**FIGURE 32-7: D206-667-203 CROSSTUBE, 206L/L-1/L-3/L-4 HIGH AFT (SHOWN)
D206-667-207 CROSSTUBE, 206L/L-1/L-3/L-4 MID AFT (SIMILAR)**

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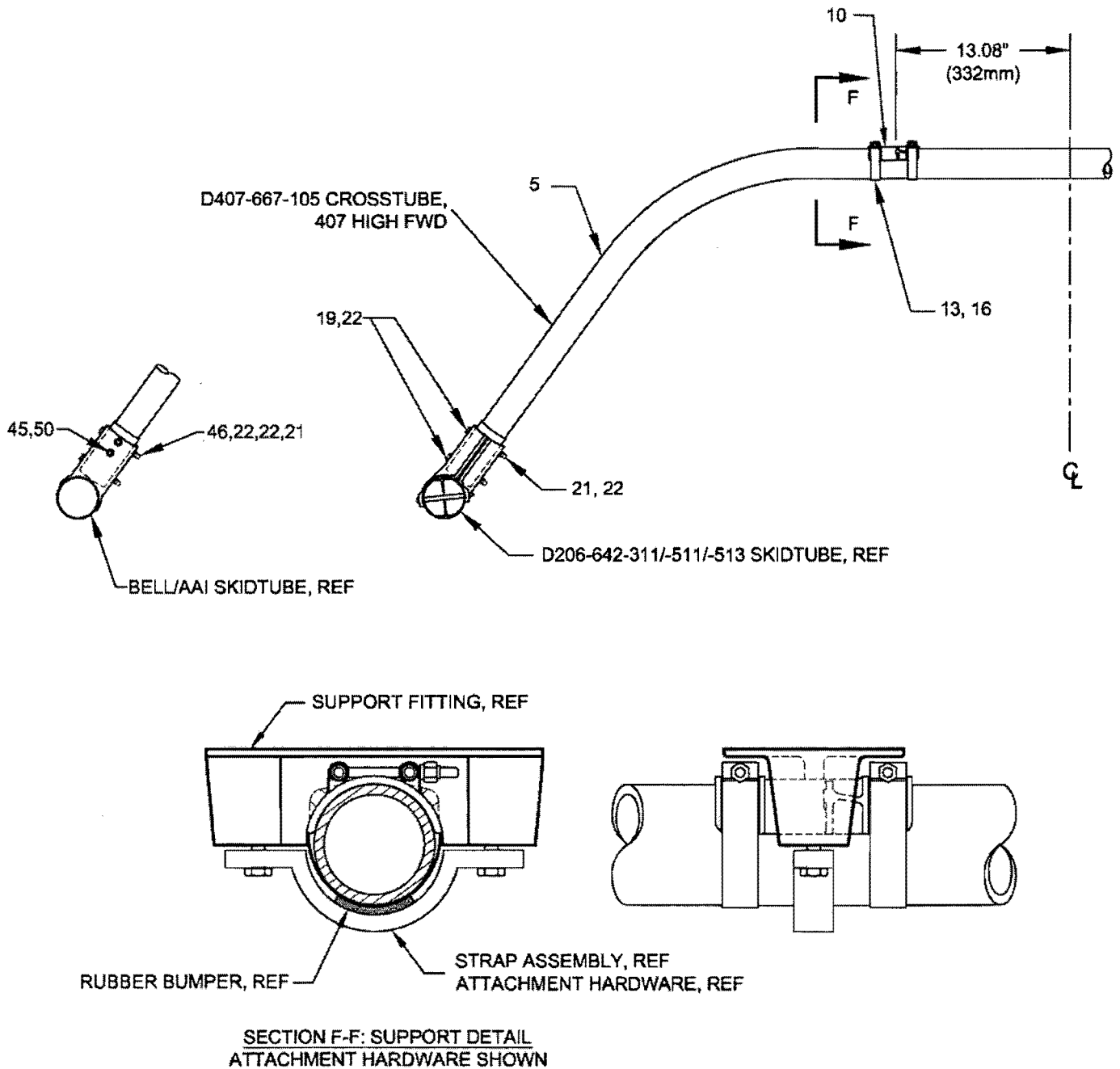
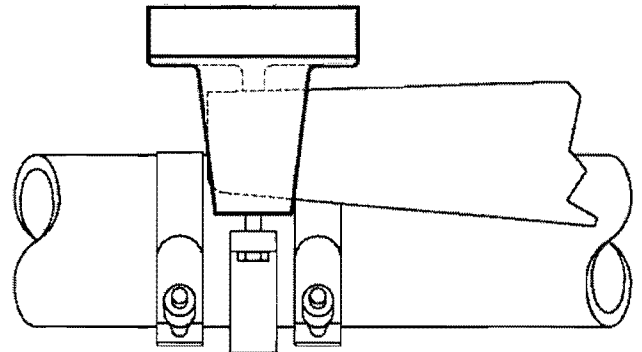
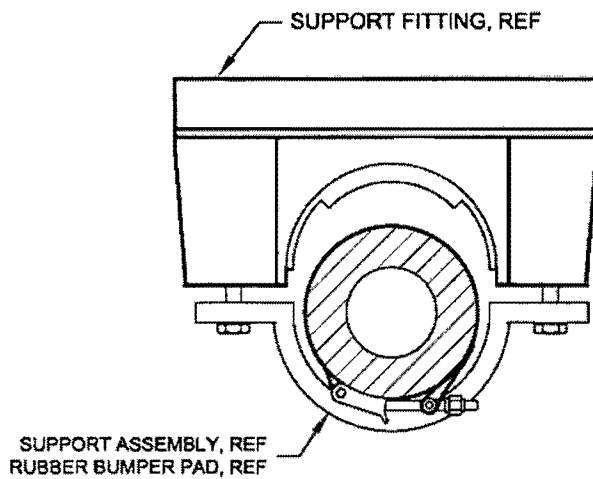
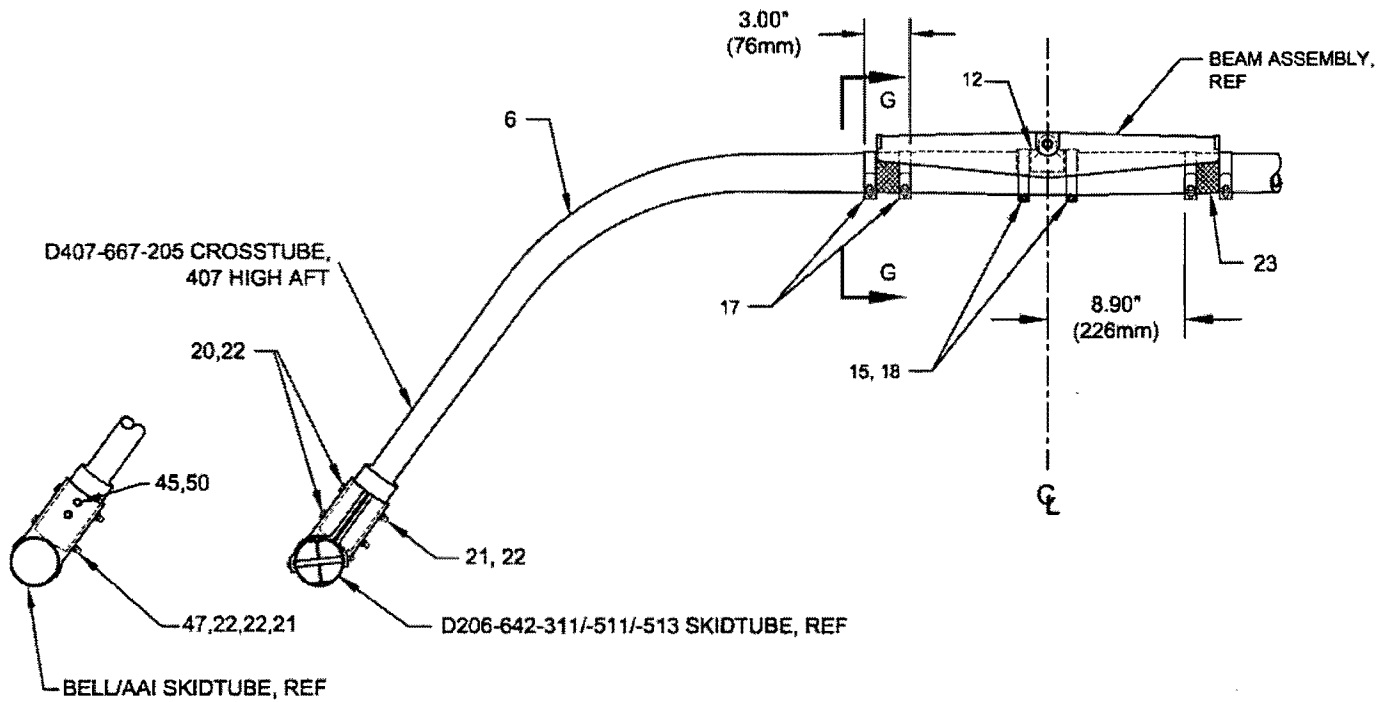


FIGURE 32-8: D407-667-105 CROSSTUBE, 407 HIGH FWD

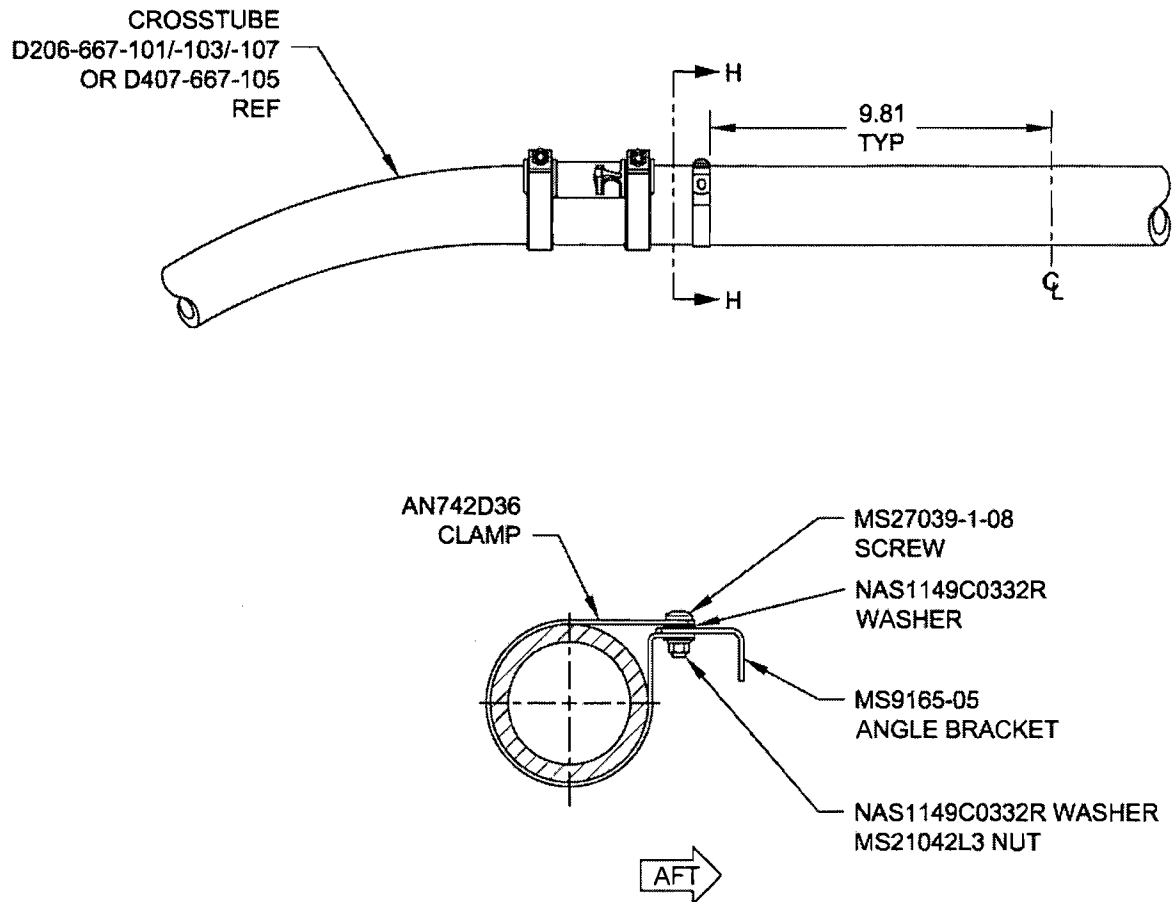
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SECTION G-G SUPPORT DETAIL
ATTACHMENT HARDWARE SHOWN

FIGURE 32-9: D407-667-205 CROSSTUBE, 407 HIGH AFT

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SECTION H-H
(SUPPORT NOT SHOWN FOR CLARITY)
SCALE 2X, TYP 2PL PER CROSSTUBE

FIGURE 32-10: D206-667-017 GROUNDING STRAP INSTALLATION

32.11 WEIGHT AND BALANCE

The following weight and balance information is for Dart crosstube installations only. This data should be similar to the existing installation. Differences from the parts removed are the responsibility of the installer.

INSTALLATION	A/C	FWD/ AFT	WEIGHT	STA	MOMENT
D206-667-011 <i>Spacer Block</i>	206A/B	n/a	2.7 lb 1.2 kg	73.0 in 1.85 m	197 in lb 2.2 m kg
D206-667-017 <i>Grounding Strap</i>	206 / 407	n/a	Negligible	n/a	Negligible
D206-667-101 <i>Crosstube</i>	206A/B	Fwd	11.3 lb 5.1 kg	73.0 in 1.85 m	825 in lb 9.4 m kg
D206-667-201 <i>Crosstube</i>	206A/B	Aft	22.5 lb 10.2 kg	127.5 in 3.24 m	2869 in lb 33.0 m kg
D206-667-103 <i>Crosstube</i>	206L/ L-1/L-3/L-4	Fwd	15.5 lb 7.0 kg	73.0 in 1.85 m	1132 in lb 13.0 m kg
D206-667-203 <i>Crosstube</i>	206L/ L-1/L-3/L-4	Aft	21.9 lb 9.9 kg	155.2 in 3.94 m	3399 in lb 39.0 m kg
D206-667-107 <i>Crosstube</i>	206L/ L-1/L-3/L-4	Fwd	15.0 lb 6.8 kg	73.0 in 1.85 m	1095 in lb 12.6 m kg
D206-667-207 <i>Crosstube</i>	206L/ L-1/L-3/L-4	Aft	21.1 lb 9.6 kg	155.2 in 3.94 m	3275 in lb 37.8 m kg
D407-667-105 <i>Crosstube</i>	407	Fwd	17.8 lb 8.1 kg	73.0 in 1.85 m	1299 in lb 15.0 m kg
D407-667-205 <i>Crosstube</i>	407	Aft	27.7 lb 12.6 kg	155.2 in 3.94 m	4299 in lb 49.6 m kg

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32.12 PARTS LIST

32.12.1 HIGH GEAR CROSSTUBES

Item	Qty -101	Qty -201	Qty -103	Qty -203	Qty -105	Qty -205	Part Number	Description
	X						D206-667-101	CROSSTUBE INSTALLATION, 206A/B HIGH FWD
		X					D206-667-201	CROSSTUBE INSTALLATION, 206A/B HIGH AFT
			X				D206-667-103	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH FWD
				X			D206-667-203	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 HIGH AFT
					X		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD
						X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT
1	1						D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD
2		1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT
3			1				D206-667-143	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH FWD
4				1			D206-667-243	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 HIGH AFT
5					1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD
6						1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT
10	*2	*2	*2		*2		D2891-1	SUPPORT
11				*2			D2892-1	SUPPORT
12						*1	D2894-1	SUPPORT
13	*4	*4	*4		*4		D3595-063-395	RUBBER CUSHION
14				*4			D3595-063-450	RUBBER CUSHION
15						*2	D3595-075-430	RUBBER CUSHION
16	*4	*4	*4		*4		MS21920-20	CLAMP
17				*4		*4	MS21920-22	CLAMP
18						*2	MS21920-25	CLAMP (OR MS21920-24)
19	4	4	4		4		AN5-32A	BOLT
20				4		4	AN5-34A	BOLT
21	4	4	4	4	4	4	MS21042L5	NUT (OR MS21042-5)
22	8	8	8	8	8	8	NAS1149C0563J	WASHER (OR AN960JD516)
23						*2	D3190-1	CHAFING SHIELD
40	*2		*2	*2	*2	*2	D2873-043	NUT PLATE
41	*2		*2	*2	*2	*2	D2873-045	NUT PLATE
42		2					D2872-043	NUT PLATE
43		2					D2872-045	NUT PLATE
44	10		10				AN5-7A	BOLT
45		10		10	10	10	AN5-10A	BOLT
46	4	10	4		4		AN5-30A	BOLT
47				4		4	AN5-32A	BOLT
48			12				AN970-4	WASHER (OPTIONAL)
49		6					MS21042L5	NUT (OR MS21042-5)
50	10	12	10	10	10	10	NAS1149C0563J	WASHER (OR AN960JD516)
60		1					D3039-3	CENTER DRILL (TOOLING, NOT INSTALLED)

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/-143/-241/-243 & D407-667-145/-245
ASSEMBLIES ABOVE.

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Revision: 3

32-00-00

32.12.2 MID-HEIGHT CROSSTUBES

Item	Qty -107	Qty -207	Part Number	Description
	X		D206-667-107	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 MID FWD
		X	D206-667-207	CROSSTUBE INSTALLATION, 206L/L-1/L-3/L-4 MID AFT
7	1		D206-667-147	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 MID FWD
8		1	D206-667-247	CROSSTUBE ASSEMBLY, 206L/L-1/L-3/L-4 MID AFT
10	*2		D2891-1	SUPPORT
11		*2	D2892-1	SUPPORT
13	*4		D3595-063-395	RUBBER CUSHION
14		*4	D3595-063-450	RUBBER CUSHION
16	*4		MS21920-20	CLAMP
17		*4	MS21920-22	CLAMP
19	4		AN5-32A	BOLT
20		4	AN5-34A	BOLT
21	4	4	MS21042L5	NUT (OR MS21042-5)
22	8	8	NAS1149C0563J	WASHER (OR AN950JD516)
40	*2	*2	D2873-043	NUT PLATE
41	*2	*2	D2873-045	NUT PLATE
44	10		AN5-7A	BOLT
45		10	AN5-10A	BOLT
46	4		AN5-30A	BOLT
47		4	AN5-32A	BOLT
48	12		AN970-4	WASHER (OPTIONAL)
50	10	10	NAS1149C0563J	WASHER (OR AN960JD516)

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-147/-247 ASSEMBLIES ABOVE

32.12.3 CROSSTUBE KITS

Item	Qty -011	Qty -013	Qty -015	Qty -017	Part Number	Description
	X				D206-667-011	SPACER BLOCK KIT (-101)
		X			D206-667-013	NUT PLATE KIT (-101/-103/-105/-107/-203/-205/-207)
			X		D206-667-015	NUT PLATE KIT (-201)
				X	D206-667-017	GROUNDING STRAP INSTALLATION (-101/-103/-105/-107)
30	8				AN4-6A	BOLT
31	8				AN4-7A	BOLT
32	16				AN960JD416	WASHER
33	2				D3193-041	SPACER BLOCK ASSEMBLY
40		2			D2873-043	NUT PLATE
41		2			D2873-045	NUT PLATE
42			2		D2872-043	NUT PLATE
43			2		D2872-045	NUT PLATE
44		10			AN5-7A	BOLT
45		10	10		AN5-10A	BOLT
46		4	4		AN5-30A	BOLT
47		4			AN5-32A	BOLT
49		4	4		MS21042L5	NUT (OR MS21042-5)
50		18	18		NAS1149C0563J	WASHER (OR AN960JD516)
70				2	AN742D36	CLAMP
71				2	MS9165-05	ANGLE BRACKET
72				2	MS21042L3	NUT (OR MS21042-3)
73				2	MS27039-1-08	SCREW
74				4	NAS1149C0332R	WASHER (OR AN960C10L)

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