



AERONAUTICAL ACCESSORIES, INC.

P.O. BOX 3689 BRISTOL, TENNESSEE 37625-3689 USA
TELEPHONE: 423-538-5151 TOLL FREE: 800-251-7094
TELEFAX: 423-538-8469 E-MAIL: sales@aero-access.com
techsupport@aero-access.com

INSTRUCTIONS

for

CONTINUED AIRWORTHINESS

for

CARGO MIRROR KIT

407-175-001 / 407-175-003

AIR CONDITIONER SUPPORT KIT

407-175-002

STC SR01077AT

FOR

BELL HELICOPTER TEXTRON MODEL 407 HELICOPTERS

Report Number AA-00120

Revision C

January 14, 2010



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LIST OF EFFECTIVE PAGES

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1.0 INTRODUCTION

These instructions contain the information necessary to inspect and maintain the **AERONAUTICAL ACCESSORIES, INC. 407-575-001 / 407-575-003 CARGO MIRROR KIT** and **407-575-002 AIR CONDITIONER SUPPORT KIT** installed on Bell Helicopter model 407 helicopters in accordance with STC SR01077AT.

1.1 DISTRIBUTION

These instructions are provided with each Cargo Mirror Kit. Any airworthiness of flight safety revisions will be immediately made available to all affected Cargo Mirror Kit owners.

1.2 REVISION

A Log of Revision section is included in these instructions and will be utilized to document all changes. Change recommendations should be submitted to:

Aeronautical Accessories Inc.
P.O. Box 3689
Bristol, TN 37625-3689

2.0 DESCRIPTION

The Aeronautical Accessories, Inc. Cargo Mirror Kit provides an extra measure of safety during external load operations. The Cargo Mirror Kit allows the pilot to see the hook and load for accurate positioning during hook-up and release. The Cargo Mirror stows for cruise flight and is easily adjusted from inside the cockpit using a friction-lock positioning handle.

3.0 CONTROL, OPERATION INFORMATION

1. To deploy/extend mirror:
 - a. Rotate T-Handle counter-clockwise to unlock
 - b. Pull T-Handle aft to deploy/extend Mirror.
2. To retract/lock mirror:
 - a. Push T-Handle in to retract mirror
 - b. Rotate T-Handle clockwise to lock.

4.0 MAINTENANCE INSTRUCTIONS**4.1 ANNUAL INSPECTION**

The Cargo Mirror Kit shall receive an Annual Inspection consisting of the following items:

NOTE

Removal of Cargo Mirror from helicopter is not required for inspection. If any damage is noted during inspection, refer to Section 4.3 Repair or Section 5.0 Troubleshooting Information.

1. Inspect Support Assembly with Mirror for nicks, scratches, dents, corrosion, cracks or broken glass.

NOTE

The indications of corrosion are 1) corrosion deposits (a white or gray powder on aluminum or rust colored deposits on steel), 2) pits in aluminum or steel surfaces, 3) blisters, bulging or flaking of protective coatings.

2. Inspect Cable Support Bracket for nicks, scratches, dents, and corrosion.
3. Rotate Control Cable T-Handle counter-clockwise to unlock and verify proper operation and deployment/extension of the mirror.
4. Push Control Cable T-Handle in to retract mirror and rotate T-Handle clockwise to lock.
5. Inspect attachment fasteners for security.
6. Check the torque value on the Control Cable Connector Assembly Nut and adjust as required to 15 in-lb plus tare torque.
7. Utilize the Annual Inspection Record provided in Appendix A to document inspection completion.

4.2 CONDITIONAL INSPECTIONS

A conditional inspection does not occur at a specified time. It is caused by known or suspected unusual events, malfunctions, or defects. The Cargo Mirror Kit shall receive a conditional inspection in cases of known or suspected rotor strikes, hard landings, or lightning strikes.

1. Perform Annual Inspection detailed in Section 4.1.

TABLE 1. DAMAGE AND REPAIR LIMITS

Component	Maximum Allowable Damage And Repair Limits (Damage and corrosion may be repaired as noted in Section 4.3 Repair, if it does not exceed these limits.)	
	Scratches/Nicks/Dents/Fraying/Corrosion	Cracks
Mirror Support Rod	To a depth of .025"	None
Mirror Support	To a depth of .010"	None
Mirror Glass	N/A	None

4.3 REPAIR

Repair scratches, nicks, and corrosion as follows:

1. On metal components, lightly polish affected area using Scotch-Brite pad. Ensure the limits presented in Table 1 are not exceeded. Take care to remove as little of the component protective coating as possible.

NOTE

If damage to cable assembly is present, replace assembly.

2. For aluminum components, after corrosion or damage repair: Clean repaired area with isopropyl alcohol, brush Alodine bare aluminum areas per MIL-DTL-81706 or equivalent, and paint area to match existing finish.
3. For steel components, after corrosion or damage repair: Prime with a rust inhibitive primer and paint area to match existing finish.

NOTE

If mirror cracks are present, replace mirror. Crack repairs are not authorized.

4.4 CLEANING REQUIREMENTS

Any dirt, sand or debris should be cleaned from Cargo Mirror using a mild, non-abrasive soap or glass cleaner/lens cleaner for the mirror surface. Wipe surfaces dry with non-abrasive cloth or paper before cleaning agent evaporates.

4.5 ADJUSTMENTS

Adjust mirror controls as follows:

1. In cockpit, rotate T-Handle counter-clockwise to unlock and pull aft to deploy/extend mirror.
2. Rotate mirror to a neutral position in reference to the Ball Stud in mirror.
3. Push T-Handle forward and rotate clockwise to lock.

INSTRUCTIONS for CONTINUED AIRWORTHINESS CARGO MIRROR KIT

4. At chin window, loosen the Control Cable Connector Assembly nut and adjust the position of the mirror so it is positioned at least 1/8" away from the chin window per Figure 1. Remove slack from the Control Cable wire and temporarily tighten the Connector Assembly nut.
5. In cockpit, rotate T-Handle counter-clockwise to unlock and pull aft to deploy/extend Mirror. Check and, if necessary, adjust mirror on Ball Stud for desired rear/lower view.
6. Push T-Handle in to retract mirror and rotate clockwise to lock.
7. Recheck mirror to chin bubble clearance and if necessary readjust the Control Cable inner wire connection. Torque the Control Cable Connector Assembly nut to 15 in-lb plus tare torque.

CAUTION

Ensure there is no contact between the chin window and mirror.

NOTE

If slight mirror vibration occurs in flight in the stowed position, readjust the mirror away from the chin window to increase clearance.

8. When desired adjustment position is obtained, curl any excess control wire down and aft to prevent personnel injury. Leave sufficient wire length to allow future removal and readjustment.

5.0 TROUBLESHOOTING INFORMATION

TABLE 2. TROUBLESHOOTING

Problem	Probable Cause	Remedy
Mirror is loose or vibrates	Fastener loose/missing	Check fastening hardware for security
	Mirror loose on Ball Stud	Tighten screws adjacent to the Ball Stud until the desired amount of friction is achieved
	Control Cable Connector Assembly loose	Check torque value on the Control Cable Connector Assembly nut. Adjust as required (15 in-lb plus tare torque)
T-Handle will not lock	Failure of internal locking mechanism	Replace Control Cable
Mirror is difficult to deploy / extend	Support Assembly requires lubrication	Lubricate with light lubricant such as WD-40

6.0 REMOVAL AND REPLACEMENT INFORMATION

Refer to Tables 3 thru 12 and Figures 1 thru 4 for part identification.

6.1 REMOVAL – CARGO MIRROR KIT

1. Refer to Figures 1 and 2 or 3 (as applicable). Disconnect Control Cable (206-189-006) from Connector Fitting Assembly (206-170-277).
2. Remove the Support Assembly with Mirror (206-170-550 / 206-170-548) and Washers (AN970-3) from mounting locations by removing attachment screws (MS27039-1-11) and washers (NAS1149F0332P). Retain hardware for reinstallation.
3. Refer to Figure 4. Remove the Control Cable (206-189-006) from Support Assembly with Mirror mounting location.
 - a. If equipped with defrost tube, detach cable assembly from defrost tube by removing screw (MS27039-1-07), washers (NAS1149D0363J) and nut (MS21042L3) securing clamp (MS21919WDG5) and clamp (MS21919WCH6). Retain removed hardware.
 - b. If not equipped with defrost tube, remove OEM installed screw and washer. Remove clamp (MS21919WDG5) and screws (MS27039-1-07), washers (NAS1149F0332P), and clamp (MS21919WDG5) and 90° bracket (AN743-12) securing Control Cable to aircraft. Retain removed hardware.

NOTE

If Air Comm air conditioner is installed, Air Conditioner Support Kit (407-175-002) with Cable Support Bracket Assembly (206-170-282) is used in place of Cable Support Bracket Assembly (206-170-281).

4. Remove Cable Support Bracket Assembly (206-170-281 / 206-170-282) from Console by removing bracket attachment screws (MS27039-1-08) and washers (NAS1149D0332J). Retain hardware for reinstallation.
5. Removal complete.

6.2 INSTALLATION – CARGO MIRROR KIT**NOTE**

If Air Comm air conditioner is installed, Air Conditioner Support Kit (407-175-002) with Cable Support Bracket Assembly (206-170-282) is used in place of Cable Support Bracket Assembly (206-170-281).

**INSTRUCTIONS for CONTINUED AIRWORTHINESS
CARGO MIRROR KIT**

1. Refer to Figure 4. Install Cable Support Bracket Assembly (206-170-281 / 206-170-282) to Console using retained bracket attachment screws (MS27039-1-08) and washers (NAS1149D0332J).
2. Install the Control Cable (206-189-006) through chin bubble.
 - a. If equipped with defrost tube, attach cable assembly to defrost tube by using retained screw (MS27039-1-07), washers (NAS1149D0363J) and nut (MS21042L3) securing clamp (MS21919WDG5) and clamp (MS21919WCH6).
 - b. If not equipped with defrost tube, use retained OEM screw and washer, clamp (MS21919WDG5) and screws (MS27039-1-07), washers (NAS1149F0332P), clamp (MS21919WDG5) and 90° bracket (AN743-12) to secure Control Cable to aircraft.
3. Refer to Figure 1. Install Support Assembly with Mirror (206-170-550 / 206-170-548) to mounting locations using attachment screws (MS27039-1-11) and washers (NAS1149F0332P).
4. Refer to Figure 1. Install Control Cable (206-189-006) into Connector Fitting Assembly (206-170-277). Complete procedures in Section 4.5 Adjustments.
5. Installation complete.

7.0 STRUCTURAL FASTENER DATA

For hardware identification see Tables 3 thru 12 and Figures 1 thru 4.

8.0 SPECIAL TOOLS NEEDED

Torque wrench

9.0 RECOMMENDED OVERHAUL PERIODS

No component overhaul required for this type design change.

10.0 AIRWORTHINESS LIMITATIONS

No airworthiness limitations associated with this type design change.

11.0 WEIGHT AND BALANCE

Weight Change	Station	B.L.
2.0 lb (0.91 kg)	18.5 in. (470 mm)	7.5 in. (191 mm)

12.0 PARTS BREAKDOWN

Tables 3 thru 10 contain Parts Breakdown data for the Aeronautical Accessories, Inc. 407-175-001 / 407-175-003 Cargo Mirror Kit as illustrated in Figures 1 thru 3. Tables 11 and 12 contain Parts Breakdown data for the 407-175-002 Air Conditioner Support Kit.

The column Availability Code (AV Code) specifies the procurement status for each part. The codes to identify if a part is procurable, procedure details to get an assembly or local manufacture code are as follows:

AV Code	Details
0	Nonprocurable part
1	Procurable part
2	Procure as detail parts only
3	Procurable as Next Higher Assembly
4	Local manufacture. Contact AAI Product Support Engineering (PSE)
5	Part replacement requires a fixture or special equipment. Contact AAI PSE
6	Non-stock procurable part

**TABLE 3. PARTS BREAKDOWN,
407-175-001⁽¹⁾ / 407-175-003 CARGO MIRROR KIT**

Qty -001	Qty -003	Part Number	Description	AV Code
1		206-170-548	Support Assembly with Mirror	0
	1	206-170-550	Support Assembly with Mirror	1
1	1	206-170-281	Cable Support Bracket Assembly	1
1	1	206-189-006	Control Cable (Alt: 206-189-004)	1
1	1	206-170-101	Channel Assembly	1
1	1	MS21069L3	Nut Plate	1
2	2	MS27039-1-11	Screw	1
1	1	MS27039-1-08	Screw	1
1	1	NAS1149D0332J	Washer	1
4	4	AN970-3	Washer	1
6	6	NAS1149F0332P	Washer	1
2	2	MS21919WDG5	Clamp	1
3	3	CCR264SS3-2	Rivet	1
4	4	CR3242-4-3	Rivet	1
1	1	MS21919WCH6	Clamp	1
4	4	NAS1149F0463P	Washer (Alt: AN960-416)	1
2	2	NAS1149D0363J	Washer (Alt: AN960JD10)	1
3	3	MS27039-1-07	Screw	1
3	3	MS21042L3	Nut	1
2	2	MS35489-11	Grommet	1
1	1	AN743-12	90° Bracket	1
Note 1: Kit superseded				

INSTRUCTIONS for CONTINUED AIRWORTHINESS CARGO MIRROR KIT

**TABLE 4. PARTS BREAKDOWN,
206-170-548⁽¹⁾ / 206-170-550 SUPPORT ASSEMBLY WITH MIRROR**

Qty -548	Qty -550	Part Number	Description	AV Code
1	1	206-170-271	Tube	1
1	1	206-170-277	Connector Fitting Assembly	1
1	1	206-170-257	Mounting Bracket Assembly	1
1	1	206-170-267	Bracket Assembly	1
1	1	206-170-558	Rod	1
1		206-189-011	Mirror Assembly	0
	1	206-189-111	Mirror Assembly	1
2	2	MS21042L04	Nut	1
1	1	MS21042L4	Nut	1
2	2	MS35206-220	Screw	1
7.75in	7.75in	MS23053/5-308-9	White Heatshrink (Alt: RNF100.5)	1
1	1	NAS1149D0463J	Washer	1
	1	099-050-178	Adhesive, Threadlocker (Loctite 22205)	1
Note 1: Assembly superseded.				

**TABLE 5. PARTS BREAKDOWN,
206-170-277 CONNECTOR FITTING ASSEMBLY**

Qty	Part Number	Description	AV Code
1	206-170-299	Bolt (AN4-5A Modified)	1
1	206-170-279	Bushing	1
1	MS21042L4	Nut	1
1	NAS1149F0463P	Washer	1

**TABLE 6. PARTS BREAKDOWN,
206-170-257 MOUNTING BRACKET ASSEMBLY**

Qty	Part Number	Description	AV Code
1	206-170-266	Clip	1
1	206-170-265	Clip	1
1	206-170-261	Tube	1

**TABLE 7. PARTS BREAKDOWN,
206-170-267 BRACKET ASSEMBLY**

Qty	Part Number	Description	AV Code
1	206-170-269	Tube	1
1	206-170-268	Bracket	1

INSTRUCTIONS for CONTINUED AIRWORTHINESS CARGO MIRROR KIT

**TABLE 8. PARTS BREAKDOWN,
206-189-011 / 206-189-111 MIRROR ASSEMBLY**

Qty -011	Qty -111	Part Number	Description	AV Code
1	1	206-189-012	Mirror	1
1		206-189-015	Ball Stud	1
	1	206-189-017	Threaded Adapter	1

**TABLE 9. PARTS BREAKDOWN,
206-170-281 CABLE SUPPORT BRACKET ASSEMBLY**

Qty	Part Number	Description	AV Code
1	206-170-284	Bracket	1
1	206-173-030	Decal	1

**TABLE 10. PARTS BREAKDOWN,
206-170-101 CHANNEL ASSEMBLY**

Qty	Part Number	Description	AV Code
1	206-170-122	Spacer	1
1	206-173-121	Channel	1

**TABLE 11. PARTS BREAKDOWN,
407-175-002 AIR CONDITIONER SUPPORT KIT**

Qty	Part Number	Description	AV Code
1	206-170-282	Cable Support Bracket Assembly	1

**TABLE 12. PARTS BREAKDOWN,
206-170-282 CABLE SUPPORT BRACKET ASSEMBLY**

Qty	Part Number	Description	AV Code
1	206-170-285	Bracket	1
1	206-173-040	Decal	1

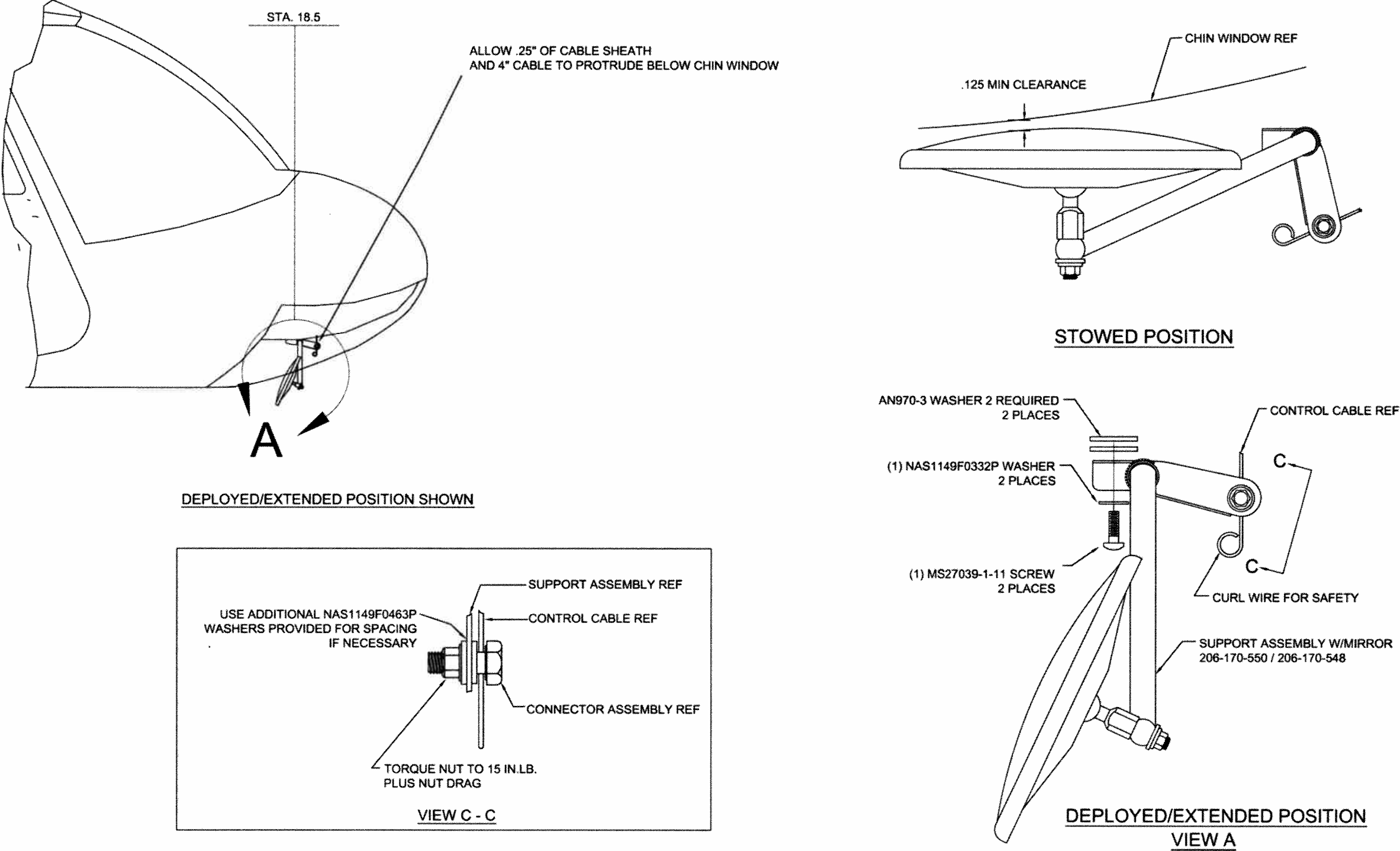


FIGURE 1. CARGO MIRROR

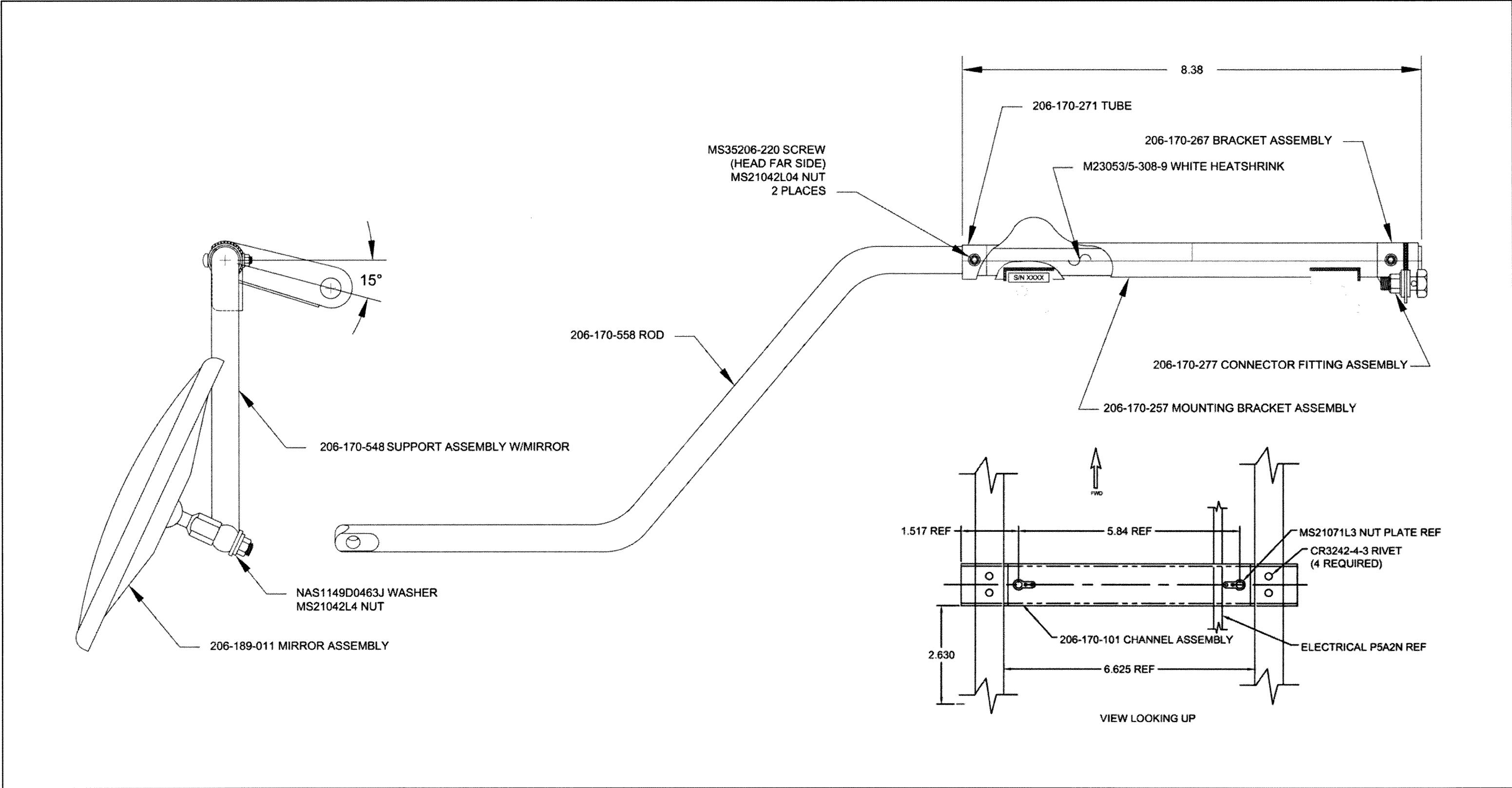


FIGURE 2. 206-170-548 SUPPORT ASSEMBLY WITH MIRROR REFERENCE INSTALLATION (MIRROR REMOVED)

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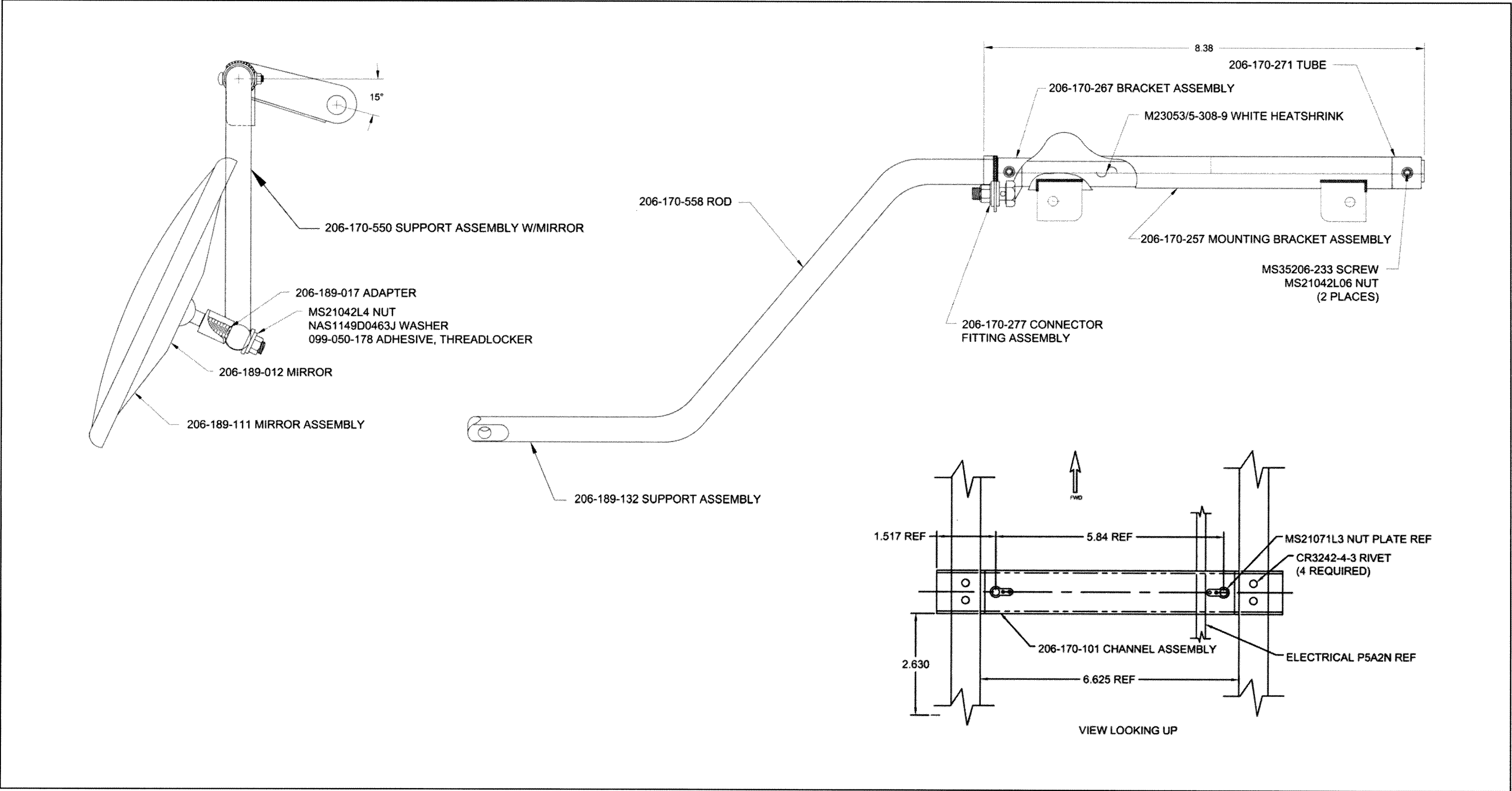


FIGURE 3. 206-170-550 SUPPORT ASSEMBLY WITH MIRROR REFERENCE INSTALLATION (MIRROR REMOVED)

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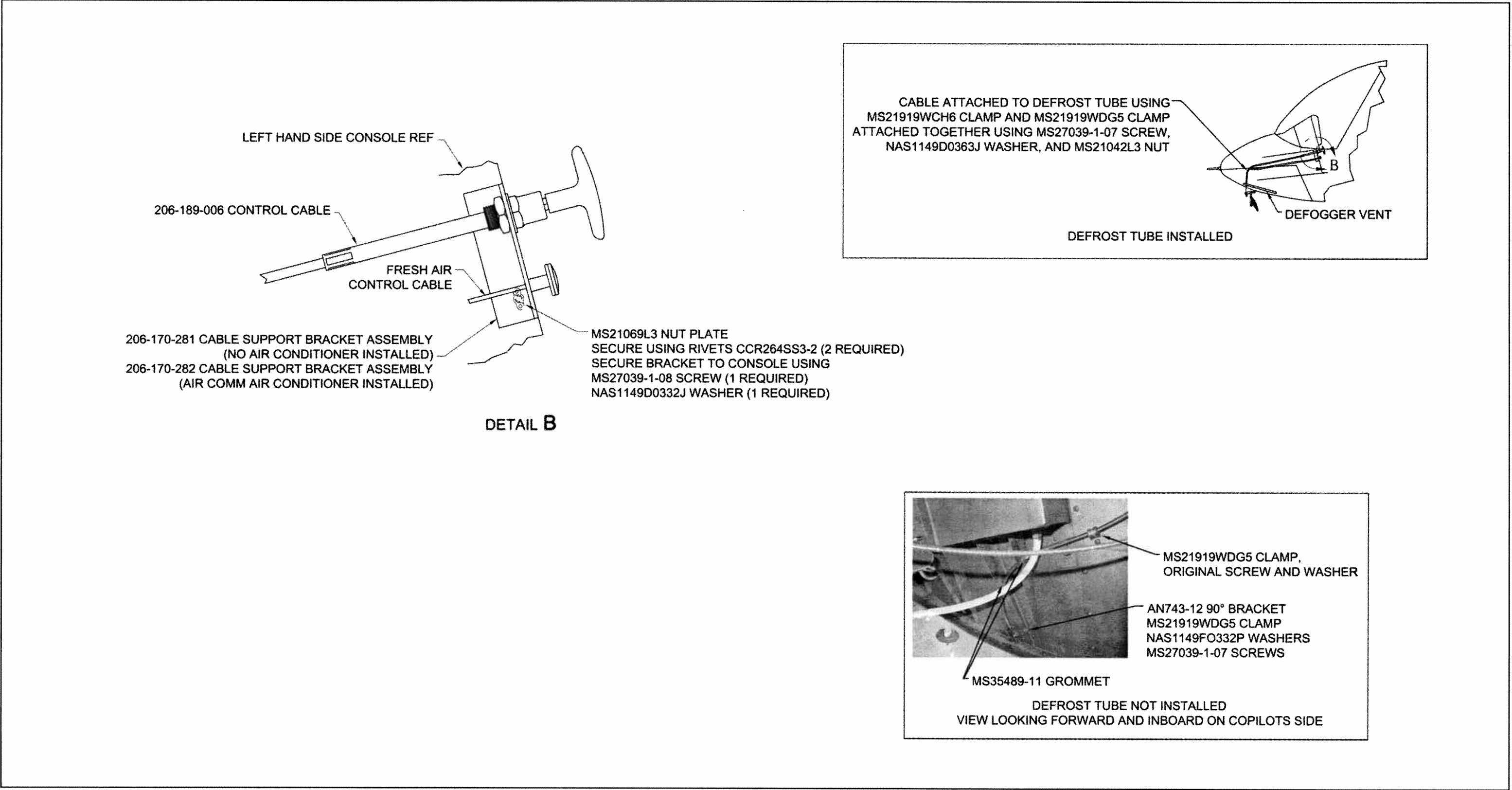


FIGURE 4. REFERENCE CONTROL CABLE INSTALLATION

APPENDIX A

Annual Inspection Record

Work Order Number: _____

Registration Number: _____

Serial Number: _____

Total Time: _____

Date: _____

Inspect the Cargo Mirror Kit in accordance with Section 4.1 Annual Inspection.

1. Inspect Support Assembly with Mirror for nicks, scratches, dents, corrosion, cracks or broken glass. _____

NOTE

The indications of corrosion are 1) corrosion deposits (a white or gray powder on aluminum or rust colored deposits on steel), 2) pits in aluminum or steel surfaces, 3) blisters, bulging or flaking of protective coatings.

2. Inspect Cable Support Bracket for nicks, scratches, dents, and corrosion. _____
3. Rotate Control Cable T-Handle counter-clockwise to unlock and verify proper operation and deployment/extension of the mirror. _____
4. Push Control Cable T-Handle in to retract mirror and rotate T-Handle clockwise to lock. _____
5. Inspect attachment fasteners for security. _____
6. Check the torque value on the Control Cable Connector Assembly Nut and adjust as required to 15 in-lb plus tare torque. _____

Signature _____ A & P No. _____

Signature _____ Inspector _____