A Textron Company

ALERT SERVICE BULLETIN

505-21-20
PSL#541
PSL#591
20 February 2021
Revision A, 26 February 2021
Revision B, 3 March 2021
Revision C, 11 March 2021

MODEL AFFECTED: **505**

SUBJECT: **PILOT COLLECTIVE STICK AND GRIP ASSEMBLY M207-20M478-041 / -043 / -047, TERMINATING ACTION, INTRODUCTION OF.**

HELICOPTERS AFFECTED: **65011 through 65347.**

[Serial number 65348 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

COMPLIANCE:

PART I: Insertion of Temporary Revision into Rotorcraft Flight Manual prior to next flight, or not to exceed necessary ferry flight of helicopter to nearest approved maintenance facility to comply with this Alert Service Bulletin.

Recurring 25 flight hour FPI thereafter, only for dual pilot operations.

PART II: Accomplish no later than March 15, 2022

DESCRIPTION:

Bell has received a report where a pilot collective stick assembly broke above the cabin floor at the junction with the collective jackshaft. This finding occurred during a pilot pre-flight check of flight controls for travel per BHT-505-FM Rotorcraft Flight Manual instructions.

This Alert Service Bulletin (ASB) provides instructions for a one-time inspection for cracks of the pilot collective stick and grip assembly.

Applicability of this bulletin to any spare part shall be determined prior to its installation on an affected helicopter.

Revision A to this bulletin mandates a fluorescent penetrant inspection (FPI) upon receipt of this revision removing the option for a 10x visual inspection. A recurring 25 flight hour FPI is mandated thereafter. For those having already complied with an FPI from original release, establish first 25 flight hour recurring FPI.
The warranty statement was updated with specific instructions for a replacement pilot collective stick if found cracked. Additionally, some compensation for labor hour and FPI is now provided.

Revision B of this ASB mandates the insertion of 505 Rotorcraft Flight Manual (RFM) Temporary Revision TR-6 or TR-1, as applicable. The Temporary Revision prohibits single pilot operations from the right crew seat until further notice. The Pilot in Command (PIC) shall operate from the left crew seat only. The recurring 25 flight hour FPI of the right crew seat pilot collective stick assembly only applies when dual pilot operations are conducted.

If the right crew seat pilot collective stick assembly was confirmed serviceable, following an FPI in accordance with Revision A of this ASB, then the 25 flight hour recurring FPI of the right crew seat pilot collective stick assembly is no longer required provided the helicopter is only operated single PIC from the left crew seat.

If conducting dual pilot operations, a 25 flight hour recurring FPI of the right crew seat pilot collective stick assembly will be required.

Revision C of this ASB introduces a **PART II.** The incorporation of M207-20M301-043 pilot collective stick tube upgrading M207-20M478-043/-047 pilot collective stick and grip assembly to a M207-20M478-051FM or M207-20M478-053FM assembly respectively are considered as a terminating action to **PART I** of this ASB. Installation of a pilot collective stick and grip assembly M207-20M478-053 as spares replacement meets the intent of this ASB as a terminating action.

Pilot collective stick tube M207-20M301-043 will have an initial retirement life published in 505 Maintenance Planning Information Chapter 4 and is anticipated to increase once fatigue testing is completed.

Those owners/operators having already complied with revision B of this ASB are compliant with the intent of **PART I**.

APPROVAL:

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
Tel: 1-450-437-2862 / 1-800-363-8023 / productsupport@bellflight.com

MANPOWER:

Approximately 5 man-hours for **PART II** is required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

Owners / Operators of Bell Helicopters who comply with the instructions in this bulletin will be eligible to receive non prorated replacement part as applicable, listed in the MATERIAL section bulletin. Bell has recently introduced enhancements to the "My Bell Portal" which allocates specific warranty entitlement for an aircraft by serial number. The Product Service Letter (PSL) number which will be listed below the bulletin number on the introduction page. This is going to be a required field when submitting a claim on the Bulletins Tab for replacement parts, labor, and/or freight. If you receive an ASB or TB that does not have a PSL number, then there is no warranty entitlement for that bulletin.

Warranty considerations for a replacement pilot collective stick and grip assembly will be managed on a case by case basis following completion of PART I step 5.a. in the accomplishment instructions of this ASB.

PART I For reoccurring 25 flight hour FPI inspections, and labor warranty coverage per ASB 505-21-20 Rev A PSL 541, please send an e-mail to warranty@bellflight.com with supporting technical log book entries including dates and hours with ship serial number and your original claim number for review. All approved credits will be issued on the original claim numbers. Labor $273.00 FPI $150.00.

PART II File a PSL 591 claim against ASB 505-21-20 Rev C for parts and labor for upgrading to a M207-20M478-051FM or M207-20M478-053FM pilot collective stick and grip assembly. This includes 3 hours to remove and install the pilot collective stick and grip assembly and 2 hours to accomplish a pilot collective stick tube upgrade. Refer to material section, claim Qty 1 M207-20**K**478-041 pilot collective stick + grip supply kit. Labor $455.00 will be covered.

- Comply with the instructions contained in this Bulletin no later than the applicable date in the "compliance section".
- If there is a PSL number identified in the bulletin you will be required to enter this PSL number which will validate warranty entitlement for the selected aircraft. Please ensure that you use the Bulletin tab when you file your claim.

MATERIAL:

Required Material:
The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

Refer to page 12 of 21 for complete materials listing for accomplishment of supplier instructions.

Part Number	Nomenclature	Qty (Note)
M207-20**K**478-041	Pilot Collective Stick + Grip Supply Kit	1 (1)
BHT-505-FM-1 (TR-6)	505 Rotorcraft Flight Manual Temporary Revision	1 (2)
BHT-505-FM-2 (TR-1)	505 Rotorcraft Flight Manual Temporary Revision	1 (3)

NOTES:
1. Pilot collective stick kit includes, Qty 1 M207-20M301-043 Collective Stick Tube Assembly, Qty 1 MS3367-1-9 Tiedown strap, Qty 1 MS35489-144 Grommet, Qty 2 MS21083N08 Nut.
2. BHT-505-FM-1 (TR-6) applicable 65011 through 65169, 65171 through 65300
3. BHT-505-FM-2 (TR-1) applicable 65170, 65301 and subsequent.

Consumable Material:
The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

Refer to page 13 of 21 for complete consumables listing for accomplishment of supplier instructions.

Part Number	Nomenclature	Qty (Note)	Reference *
2110-07015-00	Dry-cleaning Solvent	1 GAL (1)	C-304
Commercial	Cleaning Cloth, Low-Lint	A/R	C-516

* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

NOTE 1: Quantity indicated is the format that the product is delivered in. Actual quantity required to accomplish the instructions in this bulletin may be less than what has been delivered.

SPECIAL TOOLS:

Refer to page 13 of 21 for complete tools listing for accomplishment of supplier instructions.

WEIGHT AND BALANCE:

Negligible.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

Supplier Pilot Stick Tube Replacement Procedure
BHT-505-MM, Maintenance Manual, Chapter 67
BHT-ALL-SPM, Standard Practice Manual, Chapter 6
BHT-505-FM-1 (TR-6), 505 Rotorcraft Flight Manual Temporary Revision
BHT-505-FM-2 (TR-1), 505 Rotorcraft Flight Manual Temporary Revision

PUBLICATIONS AFFECTED:

BHT-505-MPI Maintenance Planning Information, Chapter 4
BHT-505-FM-1 (TR-6), 505 Rotorcraft Flight Manual, Section 1
BHT-505-FM-2 (TR-1), 505 Rotorcraft Flight Manual, Section 1

ACCOMPLISHMENT INSTRUCTIONS:

PART I: Fluorescent Penetrant Inspection (FPI) and Rotorcraft Flight Manual Temporary Revision

1. If required, it is acceptable to perform a necessary ferry flight(s) to return the helicopter to the nearest approved maintenance facility where the suspect part shall be inspected. The following limitations are applicable for the duration of the ferry flight(s).

    a. Minimum crew on board for the ferry flight(s).

    b. Any approvals that may need to be obtained from local aviation authorities are the responsibility of the owner/operator.

2. Prepare the helicopter for maintenance.

-NOTE-

If helicopter is to be parked, as applicable, comply with storage requirements (BHT-ALL-SPM, Chapter 10).

a. If the mandatory FPI requirement from Revision A, 26 February 2021, has not been accomplished, go to step 3.

b. If the mandatory FPI requirement from Revision A, 26 February 2021, has been accomplished, go to step 7.

3. Remove pilot collective stick and grip assembly (1, Figure 1) (DMC-505-A-67-11-01-00A-520A-A) from jackshaft assembly (2).

4. Clean pilot collective stick and grip assembly at areas identified (Figure 2) with a clean cloth (C-516) moistened with dry-cleaning solvent (C-304) or equivalent.

5. Perform a fluorescent penetrant inspection (BHT-ALL-SPM, Chapter 6) in the area of complete circumference of the pilot collective stick and grip assembly at the areas identified (Figure 2). Level I Special trained individual is qualified to perform task and acceptance.

   a. If a crack is confirmed following the fluorescent penetrant inspection, the pilot collective stick and grip assembly is considered unserviceable as is. Report findings with pictures to Product Support Engineering at productsupport@bellflight.com before proceeding. Make sure that the following is in the subject line of the e-mail:

      1. Service directive number: 505-21-20 Revision B
      2. Helicopter serial number
      3. Operator name
      4. Total time in service

   b. If there is no crack identified following the fluorescent penetrant inspection, go to step 6.

6. Install serviceable pilot collective stick and grip assembly (DMC-505-A-67-11-01-00A-720A-A) that meets the intent of this Alert Service Bulletin.

7. Schedule a recurring 25 flight hour fluorescent penetrant inspection of the right crew seat pilot collective stick assembly if conducting dual pilot operations.

-NOTE-

Communicate to the Model 505 pilots and maintenance personnel the contents of the newly inserted Temporary Revision

8. Insert applicable Temporary Revision (TR-6) or (TR-1) in Section 1 of the Rotorcraft Flight Manual.

9. Make an entry in the helicopter logbook and historical service records indicating compliance with **PART I** of this Alert Service Bulletin.

PART II: Pilot Collective Stick Tube M207-20M301-043 Upgrade

1. Prepare the helicopter for maintenance.

2. Remove pilot collective stick and grip assembly (1, Figure 1) (DMC-505-A-67-11-01-00A-520A-A) from jackshaft assembly (2).

-NOTE-

If a right crew seat pilot collective stick assembly M207-20M478-041 is found installed, contact productsupport@bellflight.com for further instructions.

3. Accomplish pilot collective stick tube M207-20M301-043 replacement procedure. Reference attached supplier instructions starting on page 11 of 21, provides rework instructions for a basic collective stick and grip assembly.

   a. For those upgrading a M207-20M478-043 pilot collective stick and grip assembly, if applicable, during reassembly it is acceptable to add an insulation sleeve 130-005-7 (M23053/5-107) cut to length onto the wire bundle portion exiting grommet from collective stick tube as shown in Figure 17 of supplier instructions.

   b. For any kits or customizing part of assembly, remove and re-install in reference with applicable kit or customizing instructions.

4. Install upgraded pilot collective stick and grip assembly (DMC-505-A-67-11-01-00A-720A-A) that meets the intent of Revision C of this Alert Service Bulletin. The incorporation of M207-20M301-043 pilot collective stick tube upgrading M207-20M478-043/-047 pilot collective stick and grip assembly to a M207-20M478-051FM or M207-20M478-053FM assembly respectively are considered as a terminating action to **PART I** of this ASB.

5. Reference BHT-505-MPI for records keeping. Pilot collective stick tube M207-20M301-043 will have an initial retirement life published in Chapter 4 and is anticipated to increase once fatigue testing is completed.

    a. Annotate Historical Service Record sheet with ASB 505-21-20 Rev C **PART II** details and track M207-20M301-043 pilot collective stick tube by serial number per newest Chapter 4 requirements.

6. Report to Product Support Engineering at productsupport@bellflight.com once upgrade is complete.

    a. The purpose for this information requirement is for the eventual cancelling of 505 Rotorcraft Flight Manual (RFM) Temporary Revision TR-6 / TR-1. Make sure that the following is in the e-mail:

        1. (Subject Line) Service directive number: 505-21-20 Revision C.
        2. Helicopter serial number.
        3. Total time in service.
        4. Part number of pilot collective stick and grip assembly installed.
        5. Serial number of pilot collective stick tube M207-20M301-043 installed.

    -NOTE-

    Communicate to the Model 505 pilots and maintenance personnel the completion of **PART II** and removal of contents of the Temporary Revision.

7. Remove applicable Temporary Revision (TR-6) or (TR-1) in Section 1 of the Rotorcraft Flight Manual.

8. Make an entry in the helicopter logbook and historical service records indicating compliance with **PART II** of this Alert Service Bulletin.

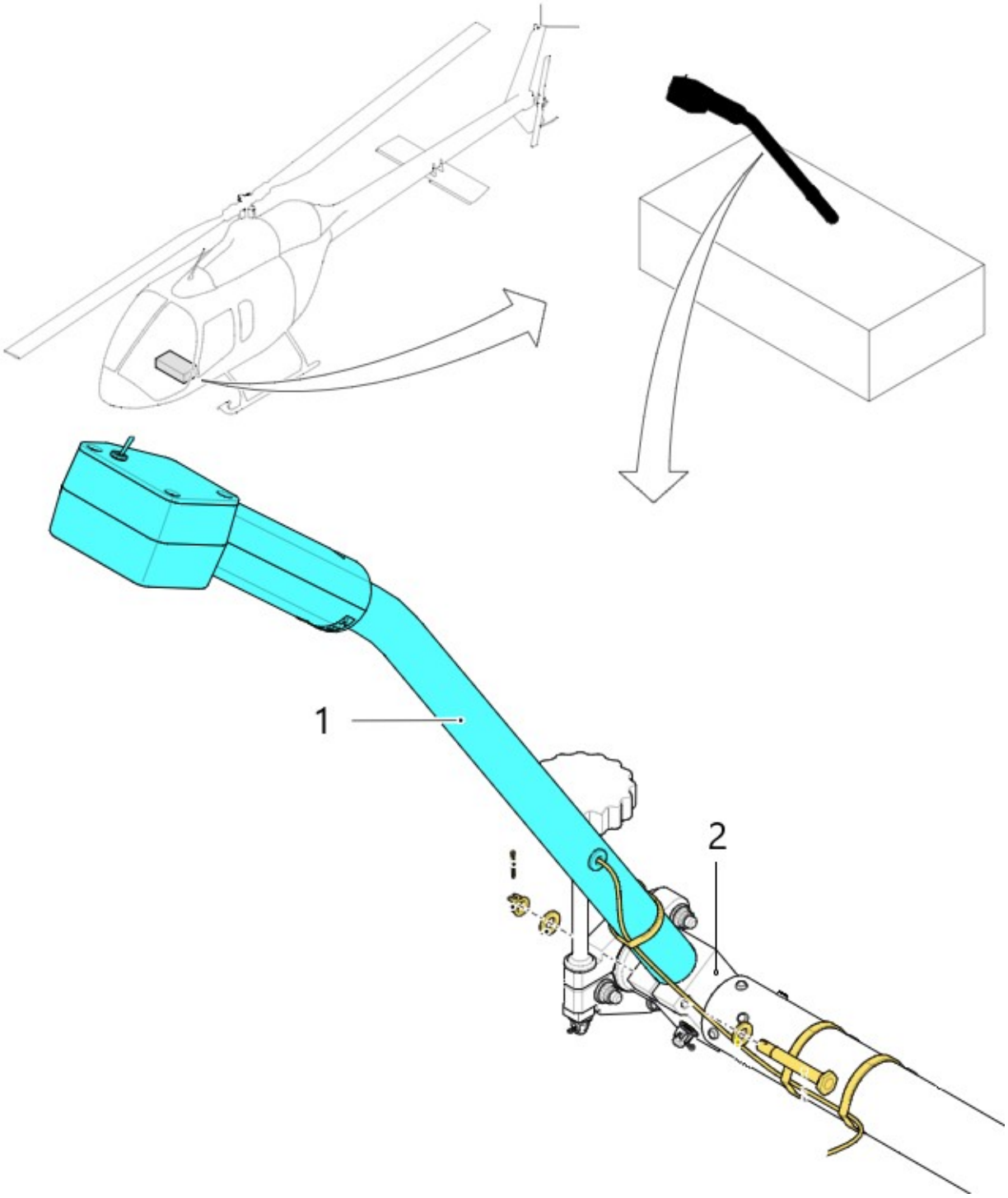


FIGURE 1 – Pilot Collective Stick and Jackshaft Assembly

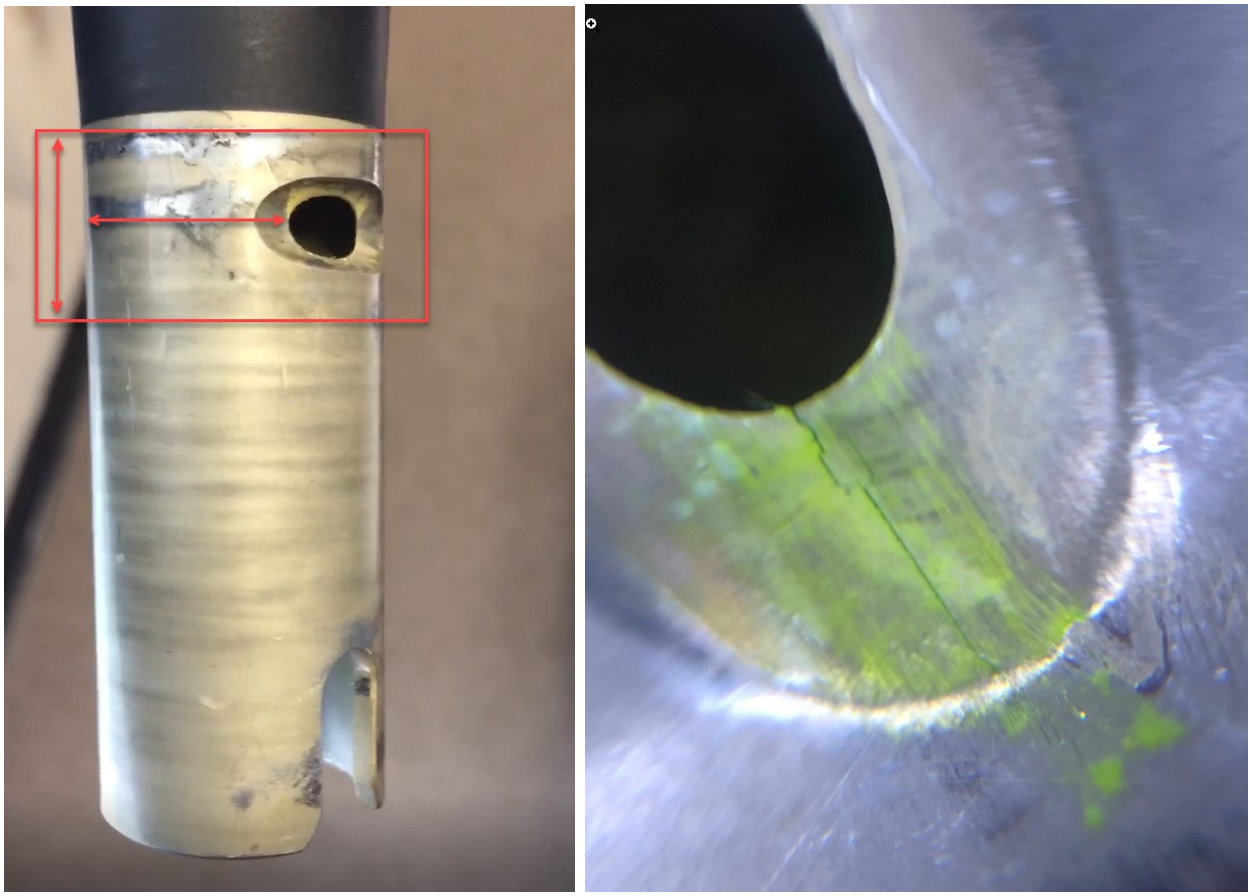


FIGURE 2 - Inspect Complete Circumference in Areas Identified

PILOT STICK TUBE REPLACEMENT PROCEDURE

A. PURPOSE

The present document provides the procedure to remove the Pilot Stick Tube, Collective P/N M207-20M301-101, installed on the Collective stick and grip assembly P/N M207-20M478-043 or M207-20M478-047 and replace it with the Pilot Collective Stick Tube Assembly P/N M207-20M301-043, which includes an improved Pilot Stick Tube, Collective P/N M207-20M301-105 with previously installed Internal doubler P/N M207-20M308-101.

B. REFERENCES

Figure 1 - Collective stick and grip assembly P/N M207-20M478-043 or M207-20M478-047

Figure 2 - Pilot Stick Tube, Collective P/N M207-20M301-101

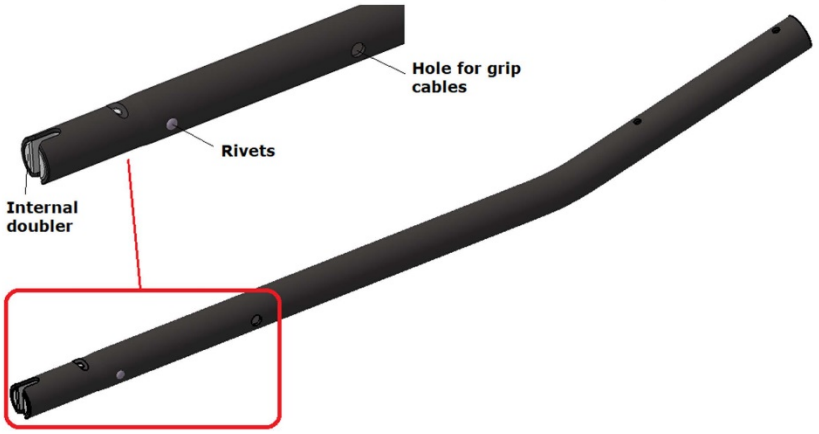


Figure 3 - Pilot Collective Stick Tube Assembly P/N M207-20M301-043

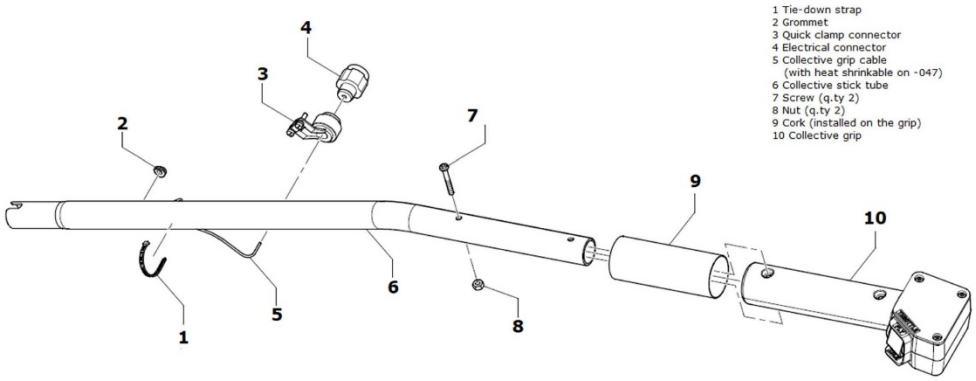


Figure 4 – Items numbering

C. MATERIALS, TOOLS AND CONSUMABLES

The following materials are required:

P/N	Description	Q.ty
M207-20K478-041, which includes:	Collective stick + grip supply kit	1
M207-20M301-043	Pilot Collective Stick Tube Assembly	1
MS3367-1-9	Tiedown strap	1
MS35489-144	Grommet	1
MS21083N08	Nut	2
MS27488-22-2	Electrical connector plug	AR
M39029/58-360	Electrical connector contact pin	AR

Table 1 - Required Materials

The following consumable materials are required:

Specification	Description	P/N	Q.ty
-	Pin extractor	Commercial	AR
-	Cord	Commercial	AR
-	Paper tape	Commercial	AR
-	Petrolatum or equivalent	Commercial	AR
Federal Mogul 67N (ABS5334-A01B, A-A-59163 Type II or III) or equivalent	Self-agglomerating silicone tape	Commercial	AR
299-947-117, T. II or T. III or equivalent	Polyurethane enamel, clear	Commercial	AR

Table 2 - Required Consumable Materials

The following tools are required:

P/N	Description	Task	Source
-	Scissors/ Cutter	Cutting	Commercial
-	Flat screwdriver	Disassembly and assembly	Commercial
-	Crosshead screwdriver	Disassembly and assembly	Commercial
-	Plastic pliers	Disassembly and assembly	Commercial
-	Pin extractor	Connector removal	Commercial
-	Vise	Holding parts	Commercial
-	Rubber jaws	Protection	Commercial
-	Heater	Assembly	Commercial
-	Permanent marker, white	Marking	Commercial
-	Multimeter	Testing	Commercial

Table 3 - Required Tooling

D. PROCEDURE

1. Refer to Figure 5. Get the marking data of the Collective stick and grip assembly P/N M207-20M478-043 or M207-20M478-047 in the location shown in Figure 5.

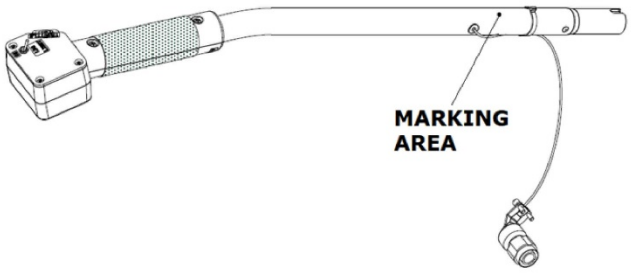


Figure 5 – Position of marking data

2. Cut and remove the tie-down strap (**1**). Discard the strap.

3. Refer to Figure 6. Unscrew the two screws of the quick clamp connector (**3**) and remove them with the two helicoil washers and the clamp. As an alternative, you may remove only one screw and one washer and turn the clamp away from the cable.

Figure 6 – Removal of the clamp of the quick clamp connector

4. Refer to Figure 7. Unscrew the quick clamp connector (**3**) with plastic pliers and move it along the cable, away from the electrical plug connector (**4**).

Figure 7 – Removal of the quick clamp connector

CAUTION

BE CAREFUL NOT TO DAMAGE THE WIRINGS.

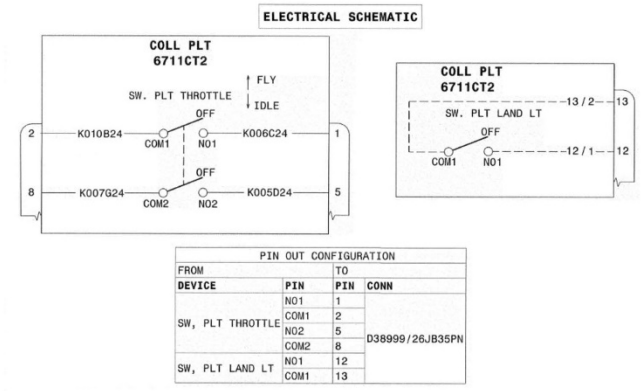
5. Refer to Figure 8. Cut the self-agglomerating silicone tape and discard it.

Figure 8 – Cutting the self-agglomerating silicone tape

6. Refer to Figure 9. Move the heat shrinkable (**5**, installed on Collective stick and grip assembly P/N M207-20M478-047 only) and the wiring labels away from the electrical plug connector (**4**).

Figure 9 – Getting access to the connector pins

7. Refer to Figure 10 for the wiring diagram of the basic configuration of the collective grip assembly. If the actual wiring diagram differs from Figure 10, record it. This will help you during assembly.



PIN OUT CONFIGURATION			
FROM		TO	
DEVICE	**PIN**	**PIN**	**CONN**
SW, PLT THROTTLE	NO1	1	D38999/26JB35PN
	COM1	2	
	NO2	5	
	COM2	8	
SW, PLT LAND LT	NO1	12	
	COM1	13	

Figure 10 – Wiring diagram for the basic configuration

CAUTION

BE CAREFUL NOT TO REMOVE THE PLUGS OR DAMAGE THE PINS. REPLACE THEM IF NECESSARY.

8. Refer to Figure 11. Remove the wiring from the connector (**4**) as follows:
   a. Use a standard pin extractor.
   b. Insert the pin extractor until it engages the pin.
   c. Gently pull the cable and the pin extractor at the same time.
   d. Remove the pin extractor from the pin.
   e. Repeat steps b to d for the other wires.

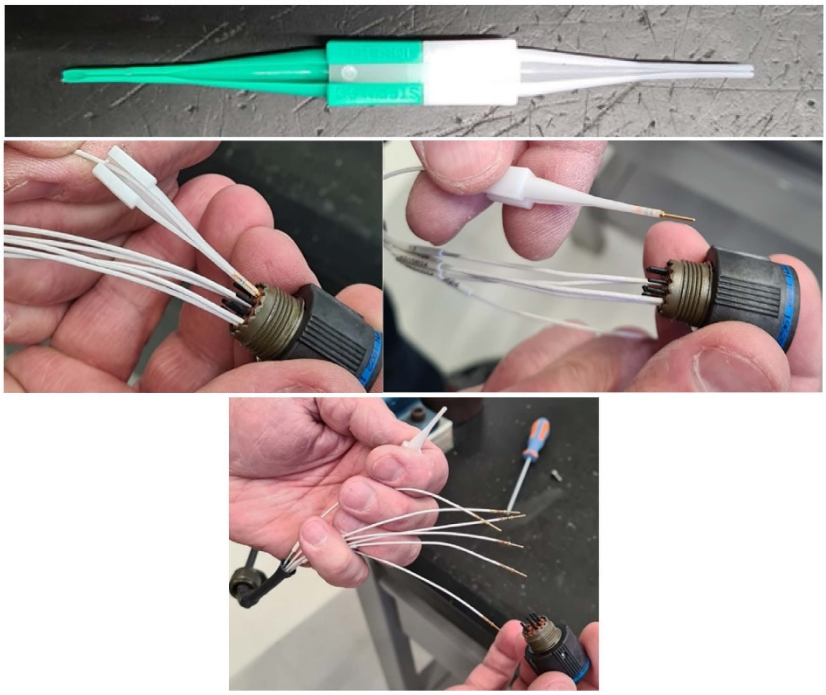


Figure 11 – Removal of the connector

9. Slide the heat shrinkable (**5**, installed on Collective stick and grip assembly P/N M207-20M478-047 only) and the wiring labels back in their place. Make sure that you can read the labels.
10. Refer to Figure 12. Remove the grommet (**2**) from the stick tube (**6**). Slide it along the cable (**5**) and remove it. Discard the grommet.

Figure 12 – Removal of the grommet

11. Remove the two screws (**7**) and the two nuts (**8**) from collective grip assy (**10**). Discard the two nuts.

CAUTION

APPLY MINIMUM PRESSURE NECESSARY TO HELP YOU REMOVING THE GRIP. DO NOT APPLY TOO MUCH PRESSURE TO THE TUBE. YOU CAN DAMAGE IT.

12. Refer to Figure 13. Hold the straight portion of the tube in a vise with protective rubber jaws installed.

Figure 13 – Holding the tube

CAUTION

BE CAREFUL NOT TO DAMAGE THE CABLE OR THE INSULATION SLEEVING WHEN YOU SLIDE IT IN THE HOLE FOR GRIP CABLES.

13. Refer to Figure 14. Remove the collective grip (**10**) from stick tube (**6**). To do so, gently pull the grip while you guide the wiring inside the hole for grip cables.

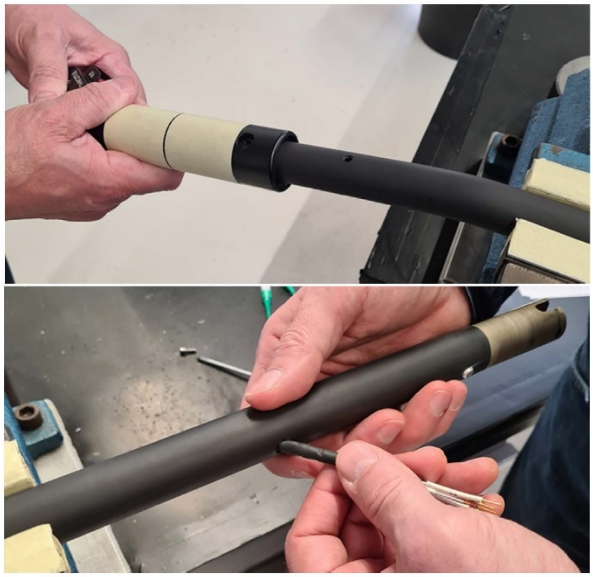


Figure 14 – Removal of the grip

14. Put a puller cord through the hole for grip cables on the new Pilot Collective Stick Tube Assembly P/N M207-20M301-043 and make it come out from the upper end of the replacement tube as shown in Figure 15.

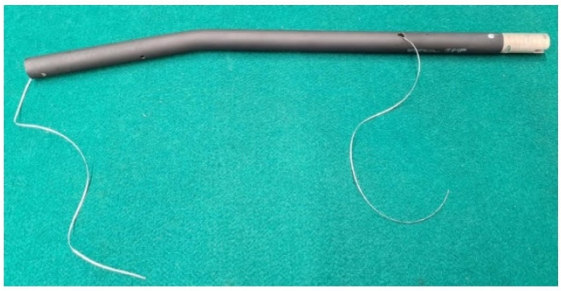


Figure 15 – Puller cord

15. Refer to Figure 16. Tie the puller cord to the end of the wiring.
16. Wrap the end of the wiring and the puller cord with paper tape. Make the end of the wrapped tape as thin as possible.

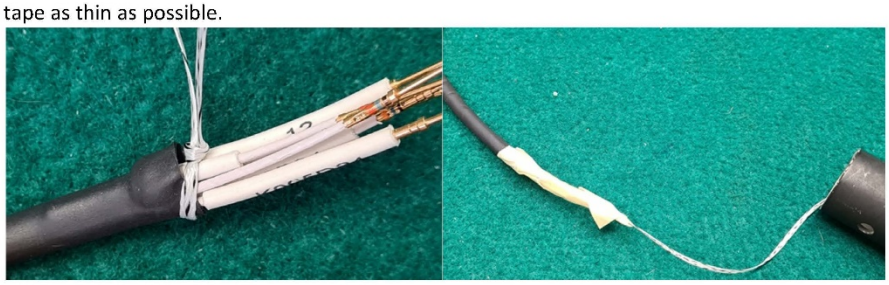


Figure 16 – Securing the wiring to the puller cord

CAUTION

BE CAREFUL NOT TO DAMAGE THE CABLE OR THE INSULATION SLEEVING WHEN YOU SLIDE IT IN THE HOLE FOR GRIP CABLES.

17. Refer to Figure 17. Gently pull the puller cord while you guide the wiring to make it come out of the hole for grip cables.

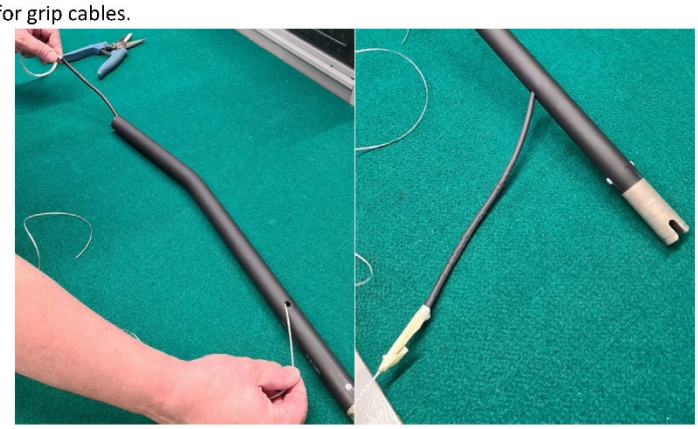


Figure 17 – Insertion of the wiring in the tube

18. Slide the collective grip assy (**10**) on the stick tube assembly (**6**).
19. Make sure that the holes in the grip assy (**10**) are aligned with the holes on the stick tube assembly (**6**).
20. Make sure that the length of the cable (**5**) protruding from the tube at the connector side is 300 mm (11.81 in) minimum.

CAUTION

BE CAREFUL NOT TO DAMAGE THE WIRING INSIDE THE GRIP WHEN YOU INSTALL THE TWO SCREWS.

21. Install the two screws (**7**) and the two nuts (**8**).
22. Torque the two screws (**7**) to 1.0 thru 1.3 Nm (8.85 thru 11.5 lbin).
23. Refer to Figure 18. Install the new grommet (**2**). To do so, do as follows:
    a. Insert the grommet on the end of the wiring.
    b. Put a puller cord inside the grommet. Do not get the wires.
    c. Use the puller cord to slide the grommet along the cable.
    d. Install the grommet on the tube. You can apply some petrolatum and use a screwdriver with tape on its bit or an equivalent tool to help you.

Figure 18 – Installation of the grommet

24. Refer to Figure 19. Insert and slide the quick clamp connector (**3**) along the cable.

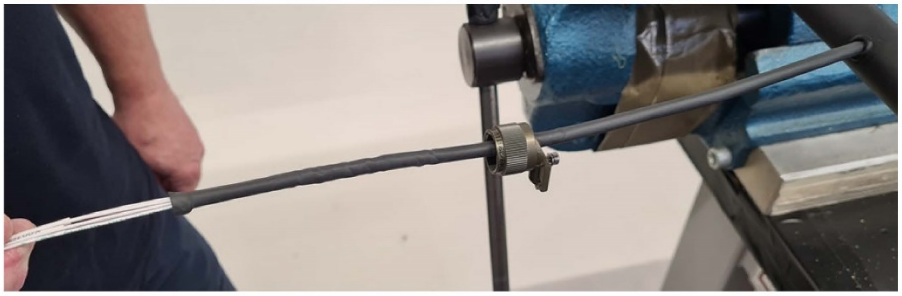


Figure 19 – Positioning of the quick clamp connector

25. Refer to Figure 10 or to the wiring diagram that you recorded at step 7. Insert the wires contact pins of the collective grip cable (**5**) in the electrical plug connector (**4**).

Figure 20 – Installation of the electrical plug connector

26. Refer to Figure 21. Install the quick clamp connector (**3**) on the electrical plug connector (**4**).

Figure 21 – Installation of the quick clamp connector

27. Refer to Figure 22. Apply the self-agglomerating silicone tape where you will lock the clamp.

Figure 22 – Installation of the self-agglomerating silicone tape

CAUTION

DO NOT PULL THE CABLE WHILE YOU LOCK THE CLAMP. LEAVE A SMALL PORTION OF THE CABLE FREE BETWEEN THE CLAMP AND THE CONNECTOR, AS SHOWN IN Figure 23.

28. Refer to Figure 23. Lock the quick clamp connector (**3**) on the cable with the two nuts, the two helicoil washers and the clamp.

Figure 23 – Locking of the quick clamp connector

29. If necessary, apply heat to the heat shrinkable sleeve (**5**, installed on Collective stick and grip assembly P/N M207-20M478-047 only) to smooth and close it.

CAUTION

MAKE SURE THAT CABLE ORIENTATION IS AS SHOWN IN VIEW **A** OF Figure 24.

30. Install tie-down strap (**1**) to lock cable to stick tube (**6**) as shown in Figure 24.

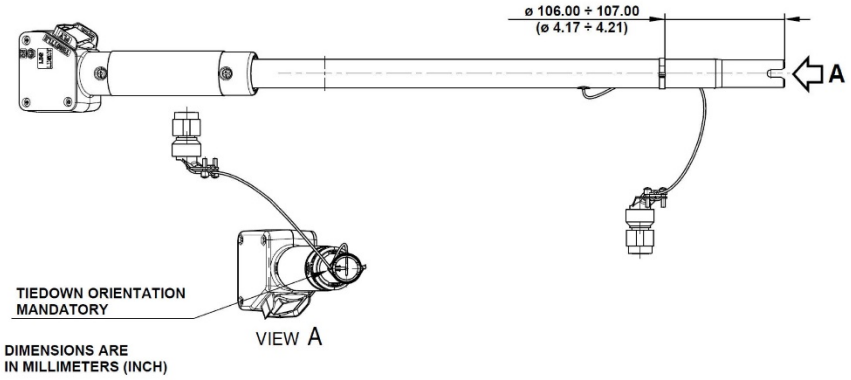


Figure 24 – Tie-down strap position and cable orientation

31. Test the correct functioning of the grip: perform a continuity test of the wiring with a multimeter. Refer to schematic on Figure 10.
32. Mark the new P/N, WO number and apply quality stamp (as applicable) in the area shown in Figure 5. Use a white ink stamp or a permanent ink marker. Mark the following P/N:
    - If you rework P/N M207-20M478-043, mark P/N M207-20M478-051.
    - If you rework P/N M207-20M478-047, mark P/N M207-20M478-053.
    - If you are reworking parts on-field, add FM after the collective stick and grip assembly P/N.
33. Let the ink dry, then cover the marked area with clear polyurethane lacquer. Let the lacquer dry.