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FLIGHT MANUAL SUPPLEMENT

ID:	**AEF-0819-FMS-0005**
STC title:	**HEC_5_H125**
Issue:	**03**
Aircraft type:	AIRBUS Helicopter AS350 B3 (H125)
Aircraft manufacturer:	AIRBUS Helicopter
Company data:	AeroFEM GmbH Aumühlestrasse 10 CH-6373 Ennetbürgen Switzerland
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RECORD OF REVISIONS

Issue No.	Pages Revised	Description	Date	EASA Approval
01	n/a	Initial Issue	18-11-2024	
02	Chapter 2.3	Inclusion of additional ONBOARD swing & cargo hook P/N's in the compatibility tables in chapter 2.3.	28-05-2025	
03	Chapter 2.3.1 Chapter 4.1 Chapter 6 All	Inclusion of additional end fitting variants and minor corrections of component weights. Editorial corrections.	04-07-2025	

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References

Ref [1]	AS350 B3 flight manual (AIRBUS Helicopters)	350 B3e, latest revision
Ref [2]	FMS cargo swing installation (AIRBUS Helicopters)	350 B3e, SUP 13.2, latest revision
Ref [3]	FMS cargo swing installation (ONBOARD Systems)	121-012-02, latest revision
Ref [4]	FMS cargo swing installation (ONBOARD systems)	121-073-00, latest revision
Ref [5]	FMS HEC dual cargo hook system (BOOST Systems)	FMS-B1310-EASA, latest revision
Ref [6]	FMS mirror kit (Aviation Support)	FMS-ASE-90824, latest revision
Ref [7]	Instructions for continued airworthiness	AEF-0819-ICA-0007, latest revision
Ref [8]	Instructions for use & maintenance (AirWork & Heliseilerei, A&H)	AWA_HEC_5_H125, latest revision
Ref [9]	EASA STC, BOOST dual cargo hook system	10081304, latest revision
Ref [10]	EASA STC, Aviation Support mirror kit	10030519, latest revision
Ref [11]	FAA STC, ONBOARD cargo swing with TALON LC hydraulic cargo hook	SR01164SE, latest revision
Ref [12]	Installation manual HEC dual cargo hook system (BOOST Systems)	INSTALL-B1310-E

Abbreviations

Abbreviation	Description
AoB	Angle of bank
CG	Center of gravity
FMS	Flight manual supplement
FWD	Forward
HEC	Human external cargo
ICA	Instructions for continued airworthiness
PCDS	Personnel carrying device system
PoB	Persons on board
RFM	Rotorcraft Flight Manual
RoD	Rate of descent
SEP	Sharp edge protection
STC	Supplemental type certificate
VFR	Visual flight rules
WLL	Working load limit

Table 1: Abbreviations

1 General

The information contained herein supplements the information of the AS350 B3 (H125) Rotorcraft Flight Manual, Ref [1], applicable when using the HEC equipment HEC_5_H125 as certified by the EASA STC 10085893. Furthermore, information contained in flight manual supplements (FMS) related to additionally installed equipment being a prerequisite for the use of the HEC_5_H125 system or any other equipment must be regarded as well.

The human external cargo (HEC) system, AirWork & Heliseilerei GmbH (A&H) name HEC_5_H125, is used for human external cargo with up to 500kg. The rope assembly is attached to the helicopter dual cargo hook system consisting of the cargo swing supplied by AIRBUS Helicopter (see supplement SUP 13.2 as part of Ref [1]) or ONBOARD Systems (FAA STC SR01164SE, Ref [11], FMS Ref [3] and Ref [4]) and the HEC dual cargo hook system supplied by BOOST Systems (see installation manual Ref [12] and FMS Ref [5]), certified per EASA STC 10081304, Ref [9].

Figure 1 shows an overview of the HEC system for information.

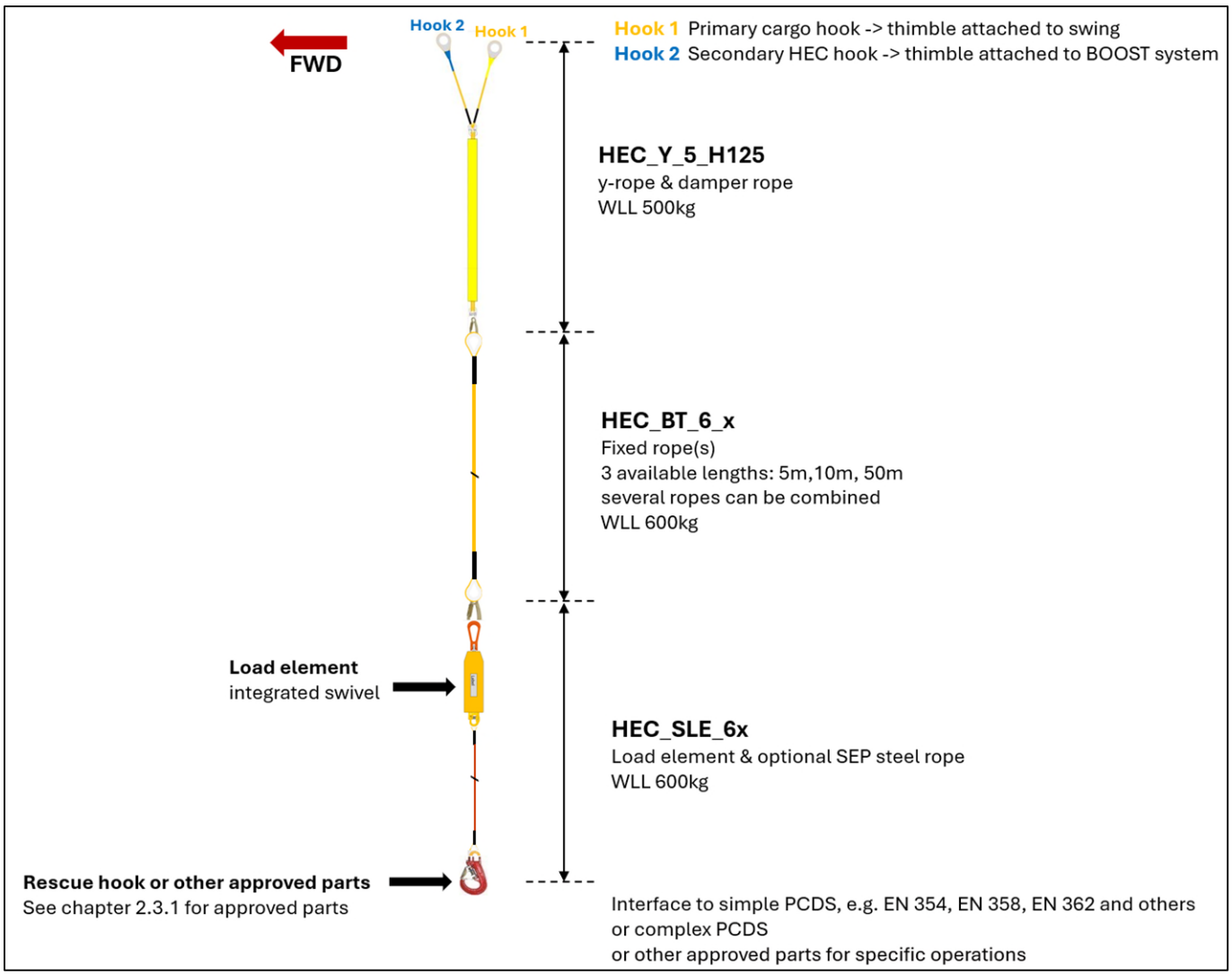


Figure 1: HEC equipment A&H name HEC_5_H125 - overview

2 Limitations

The limitations stated in the rotorcraft flight manual Ref [1] and other relevant supplements remain applicable and are supplemented by the following limitations related to the HEC equipment HEC_5_H125.

2.1 Type of operation

Human external cargo (HEC) operation of the AIRBUS Helicopters AS350 B3 (H125) rotorcraft is approved under VFR conditions.

The approval for external load operations must be granted by the national aviation authority.

2.2 Persons on board (PoB)

According to the operations manual of the operator.

2.3 Approved configurations

2.3.1 HEC_5_H125 components

The approved configurations of the HEC_5_H125 system consist of the components A to I per Figure 2 and Figure 3, whereas various compositions of the fixed ropes (E) are possible to adjust the total length of the rope system to the individual needs. Three types of end fittings (I) are available.

The minimum and maximum lengths of the total rope system as indicated below must be regarded.

Minimum length configuration

Item	P/N	Part count	Length/part	Mass
Double cargo hook y-rope (A/B/C)	HEC_Y_5_H125	1	2.2m (7.2ft)	2.8kg (6.0lbs)
Fixed rope (E)	HEC_BT_6_5	1	5.0m (16.4ft)	1.7kg (3.7lbs)
Load element (G) and end fitting (I) *see Figure 3 for approved end fittings*	HEC_SLE_6l-HUB	1	0.5m (1.8ft)	11.2kg (24.7lbs)
Total length & mass:	**HEC_5_H125**		**7.7m (25.4ft)**	**15.7kg (34.6lbs)**

Maximum length configuration

Item	P/N	Part count	Length/part	Mass/part
Double cargo hook y-rope (A/B/C)	HEC_Y_5_H125	1	2.2m (7.2ft)	2.8kg (6.0lbs)
Fixed rope (E)	HEC_BT_6_50	4	50.0m (164.0ft)	8.8kg (19.4lbs)
Load element (G) with SEP steel rope (H) and end fitting (I) *see Figure 3 for approved end fittings*	HEC_SLE_6l-5-HUB	1	5.6m (18.4ft)	13.5kg (29.8lbs)
Total length & mass:	**HEC_5_H125**		**207.8m (681.8ft)**	**51.5kg (113.5lbs)**

Figure 2: Approved configurations for the HEC_5_H125 system

Available variants of fixed rope (E):			
HEC_BT_6_5		5.0m (16.4ft)	1.7kg (3.7lbs)
HEC_BT_6_10		10.0m (32.8ft)	2.5kg (5.5lbs)
HEC_BT_6_50		50.0m (164.0ft)	8.8kg (19.4lbs)
Available variants of load element (G) with end fitting (I) :			
HEC_SLE_6l-HUB	(rescue hook) 	0.5m (1.8ft)	11.2kg (24.7lbs)
HEC_SLE_6l-AW	(oblong ring) 	0.5m (1.8ft)	10.8kg (23.7lbs)
HEC_SLE_6l-CAR	(carabiner) 	0.5m (1.8ft)	10.7kg (23.5lbs)
Available variants of load element (G) with SEP steel rope (H) and with end fitting (I) :			
HEC_SLE_6l-2-HUB	(rescue hook) 	2.6m (8.5ft)	12.4kg (27.3lbs)
HEC_SLE_6l-5-HUB	(rescue hook)	5.6m (18.4ft)	13.5kg (29.8lbs)
HEC_SLE_6l-2-AW	(oblong ring) 	2.6m (8.5ft)	12.0kg (26.5lbs)
HEC_SLE_6l-5-AW	(oblong ring)	5.6m (18.4ft)	13.2kg (29.1lbs)
HEC_SLE_6l-2-CAR	(carabiner) 	2.6m (8.5ft)	11.9kg (26.2lbs)
HEC_SLE_6l-5-CAR	(carabiner)	5.6m (18.4ft)	13.0kg (28.7lbs)

Figure 3: Approved components of the HEC_5_H125 system showing length and weight

All lengths are subject to certain tolerances which can add up to approx. ±5% length variation to the above indicated values.

The fixed rope (E) is available in 3 different lengths as indicated in Figure 3. Any combination of lengths and number of ropes is approved as long as the total HEC system length stays within the range of lengths as indicated in Figure 2 (including acceptable tolerances as stated above). The end fitting (I) is available in 3 different variants (rescue hook, oblong ring, carabiner) and can be used with or without SEP steel rope (H).

2.3.2 Dual cargo hook systems

The HEC equipment is compatible with the dual cargo hook system composed from:

- ❑ The primary cargo hook located on the cargo swing
  - ❑ supplied by AIRBUS Helicopters

  OR:
  - ❑ supplied by ONBOARD Systems
- ❑ The HEC dual cargo hook system supplied by BOOST Systems per EASA STC 10081304, Ref [9]

The cargo swings & mounted cargo hooks as listed in Table 2 are compatible with the HEC_5_H125 complex PCDS system.

Part	Manufacturer	P/N, Kit P/N	EASA STC	FAA STC	FMS	Remarks
Cargo swing	AIRBUS Helicopters				Supplement 13.2 to AS350 B3e flight manual	Legacy type. Delivered with the ONBOARD hook with mechanical release, P/N 528-023-51.
	ONBOARD Systems	200-280-01 to -08	10016937	SR01164SE	121-012-02 or 121-073-00	Fitted with the hydraulic hooks P/N 528-028-00 or 528-029-00.
	ONBOARD Systems	200-455-00	10077086	SR02719SE	121-071-00	Used on the new AS350B3 with crash resistant fuel tank. Fitted with the hydraulic hook P/N 528-028-04.
Cargo hook	ONBOARD Systems	528-023-01				Mechanical release. For cargo swing delivered by AIRBUS helicopters (legacy type).
	ONBOARD Systems	528-023-51				Mechanical release. For cargo swing delivered by AIRBUS helicopters (legacy type).
	ONBOARD Systems	528-028-00				Hydraulic release. For cargo swing ONBARD Systems Kit P/N 200-280-01 to -08.
	ONBOARD Systems	528-029-00				Hydraulic release. For cargo swing ONBARD Systems Kit P/N 200-280-01 to -08.
	ONBOARD Systems	528-028-04				Hydraulic release. For cargo swing ONBARD Systems Kit P/N 200-455-00. Used on the new AS350B3 with crash resistant fuel tank.

Table 2: Compatibility table - cargo swings & hooks

2.3.3 Other equipment

For HEC operation, at minimum one mirror (or an alternative means to see the hook) on the pilot side must be installed allowing to monitor the external load by the pilot. A suitable mirror installation is provided by:

- ❑ Cargo Mirror installation supplied by Aviation Support, EASA STC 10030519, Ref [10], with FMS FMS-ASE-90824, Ref [6].

2.4 Mass and CG limits

The following mass limits apply:

Maximum HEC external load (BOOST dual hook system)	500kg (1102lbs)	Ref [5]
Maximum approved HEC load for HEC_5_H125	500kg (1102lbs)	Ref [8]

Refer always to gross weight vs. CG cards presented in the flight manual AS 350 B3e, Ref [1].

The CG calculation shall cover the conditions when the HEC mass is attached to one of the hooks only (extremes). Refer to chapter 6 for the moment arms of the primary cargo hook and secondary HEC hook.

IMPORTANT: The external load indication mounted to the primary cargo hook (located on the swing) shows only a fraction of the attached external load since both hooks are load carrying. The amount of loading on the two hooks varies with the flight condition and attitude of the helicopter. In vertical climb/hover the following approximate loading is indicated (tolerances up to ±10% to be expected):

500kg external load is indicated as approximate 300kg

See also Ref [8], chapter 4.2.

2.5 Airspeed limits

For operation using the HEC equipment HEC_5_H125, the maximum permissible airspeed is 60KIAS.

2.6 Angle of bank (AoB) limits

For operation using the HEC equipment HEC_5_H125, the maximum permissible angle of bank (AoB) is 30 degrees.

2.7 Rate of descent (RoD) limits

For operation using the HEC equipment HEC_5_H125, the maximum permissible rate of descent (RoD) is 1500ft/minute.

2.8 Wind limits

The maximum permissible relative wind velocity for HEC operation is 35kts.

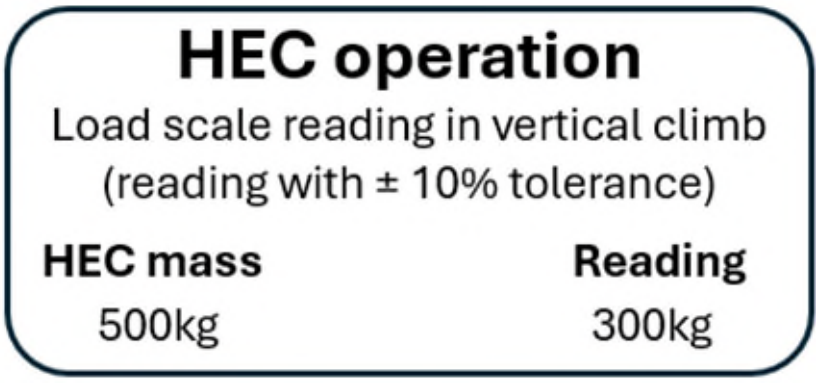
2.9 Equipment usage

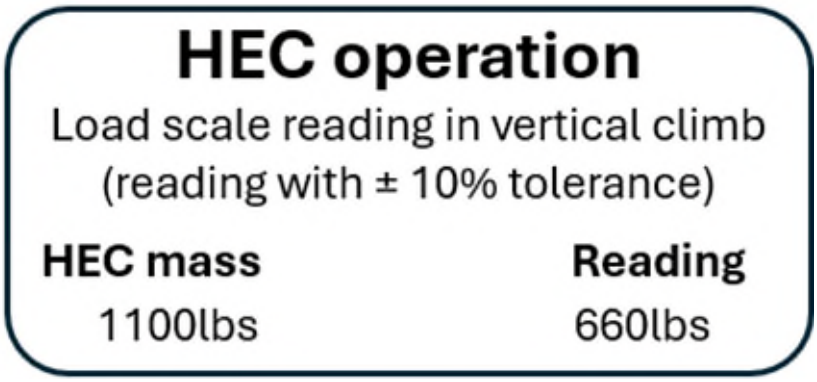
The HEC equipment must ONLY be used for HEC operation.

The flight cycles of the y-rope HEC_Y_5_H125 must be logged in a component logbook (form included in Ref [7]).

2.10 Placards

The placard as shown below (either in metric units or imperial units) must be installed close to the cargo hook weight scale display in the cockpit.





3 Emergency procedures

The release of the external human cargo in case of an emergency can be achieved by either using the electrical release (primary means) or the mechanical release (secondary means, in case of malfunction of the electrical release). Both release procedures by either using the electrical releases (primary means) as well as the mechanical releases (secondary, backup means) are described in Ref [2] (AIRBUS Helicopters cargo swing), Ref [3] and/or Ref [4] (ONBOARD systems cargo swing) and Ref [5] (secondary HEC hook) in detail.

In case the electrical release (primary means) shows malfunction, the cargo needs to be released by pulling the mechanical release handles.

NOTES:

- The release using the mechanical handles requires considerable hand forces.
- The CG of the attached HEC load may vary within the above stated hook positions depending on the flight attitude of the rotorcraft (load distributes between the two hooks). Releasing one of the hooks shifts the CG of the HEC mass to the position of the remaining attached hook.

It is advised to release the external load before the helicopter is contacting the ground. If the external load is already on ground, it shall be jettisoned as long as the helicopter is still above the load. If possible, the secondary HEC hook shall be released first to minimize the CG shift during release.

4 Normal operations

4.1 Preflight checks & preparation

All pre-flight checks according to the RFM, Ref [1] and flight manual supplements for other installed equipment remain valid.

When using the HEC equipment HEC_5_H125, comply with the following instructions (extract from Ref [8]):

1) Inspect the equipment for defects, unusual wear or other defects before every usage.

In case of findings, the equipment must be considered as NOT flightworthy. Consult the ICA's, Ref [7] and the usage & maintenance instructions, Ref [8] for the further steps.

2) Prepare the complete rope system HEC_5_H125 on the ground

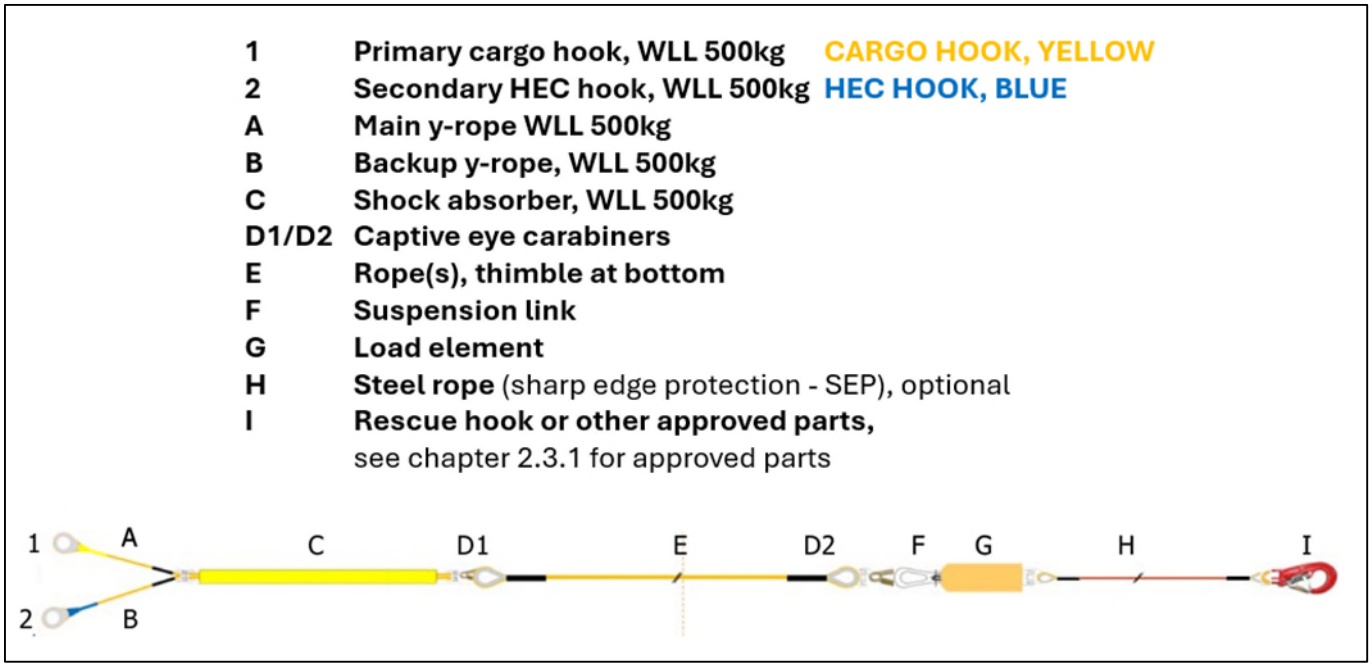


Figure 4: Complete rope system HEC_5_H125

Fixed Rope(s) E: combine the desired number and individual lengths of fixed ropes (5m, 10m or 50m length available, see Figure 2) and connect the parts to each other with the captive eye carabiners into the thimble of the next rope. The upper end of the rope assembly shall have the thimble, the lower end the captive eye carabiner.

Connection D1: Connect the y-rope lower end with the captive eye carabiner (fix installed on the y-rope shock absorber C) to the thimble of the fixed rope E upper end (w/o carabiner).

Connection D2: Connect the fixed rope lower end with the captive eye carabiner (fix installed on the fixed rope E lower end) to the thimble (F) of the load element.

The total HEC rope assembly length must comply with the minimum and maximum length limitations as stated in Figure 2.

3) Attach the thimbles (1) and (2) to the helicopter hooks

When attaching the y-rope to the helicopter hooks, make sure that there are no drills into and between the two legs of the y-ropes.

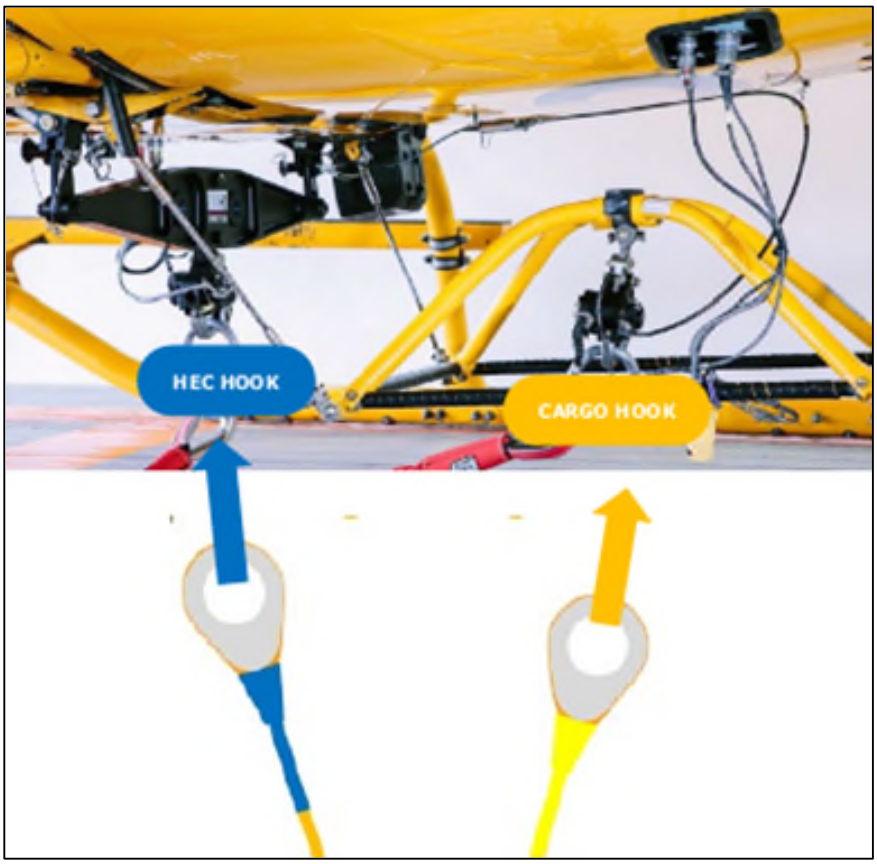


Figure 5: y-lanyard P/N HEC_Y_5_H125 connection to helicopter hooks

4.2 Flight operation conclusion

At the end of the flight operation, an instructed person shall help to deposit the ropes on ground. The ropes shall be laid down in forward direction within the pilots visibility.

In case, no instructed person is available on ground, the landing site shall be selected such, that the rope can be laid down on ground without the danger of entangling with the tail rotor or being deposited underneath the landing skid or wheels.

5 Performance data

The performance given in the basic flight manual and relevant flight manual supplements remain applicable.

6 Weight and Balance

The weight and balance procedure shall be carried out as defined in the RFM, Ref [1].The human external cargo (HEC) mass attached to the dual cargo hook system by the use of the HEC equipment HEC_5_H125 needs to be accounted with the following moment arms:

Moment arm primary cargo hook (swing): x = 3437mm (135.32 inch) Ref [4]

Moment arm secondary HEC hook (BOOST dual cargo hook): x = 2630mm (103.54 inch) Ref [5]

The mass of the HEC rope assembly shall be determined using the information as shown in Figure 6 (extract from Ref [8], chapter 4.2). Alternatively, it can be determined by weighting.

Item	P/N		Length	Mass
Double cargo hook y-rope (A/B/C)	HEC_Y_5_H125		2.2m (7.2ft)	2.8kg (6.0lbs)
Fixed rope (E)	HEC_BT_6_5		5.0m (16.4ft)	1.7kg (4.0lbs)
	HEC_BT_6_10		10.0m (32.8ft)	2.5kg (5.5lbs)
	HEC_BT_6_50		50.0m (164.0ft)	8.8kg (19.4lbs)
Load element without SEP steel rope (G/I) and 3 end fitting variants	HEC_SLE_6l-HUB	(rescue hook)	0.5m (1.8ft)	11.2kg (24.7lbs)
	HEC_SLE_6l-AW	(oblong ring)	0.5m (1.8ft)	10.8kg (23.7lbs)
	HEC_SLE_6l-CAR	(carabiner)	0.5m (1.8ft)	10.7kg (23.5lbs)
Load element with SEP steel rope (G/H/I) and 3 end fitting variants	HEC_SLE_6l-2-HUB	(rescue hook)	2.6m (8.5ft)	12.4kg (27.3lbs)
	HEC_SLE_6l-5-HUB	(rescue hook)	5.6m (18.4ft)	13.5kg (29.8lbs)
	HEC_SLE_6l-2-AW	(oblong ring)	2.6m (8.5ft)	12.0kg (26.5lbs)
	HEC_SLE_6l-5-AW	(oblong ring)	5.6m (18.4ft)	13.2kg (29.1lbs)
	HEC_SLE_6l-2-CAR	(carabiner)	2.6m (8.5ft)	11.9kg (26.2lbs)
	HEC_SLE_6l-5-CAR	(carabiner)	5.6m (18.4ft)	13.0kg (28.7lbs)

Figure 6: HEC_5_H125 components weights