

TRAINING MANUAL



**TYPE RATING
AS 350/H125/EC130**

1. A-THE TRAINING PLAN

1.1 THE AIM OF THE COURSE

The aim of the training is that after completing the course the student should be able to handle an AS350 helicopter in different types of situations and environments and be able to handle different types of emergency situations.

Training described in this manual is intended to be carried out on the AS 350 B3e (H125)

AIRBUS HELICOPTERS - SE Turbine	Helicopters Variants of Type Rating (models)	Differences	Licence endorsement
ECUREUIL (SINGLE ENGINE FAMILY)	AS350 series (AS350 B, D, B1, B2, BA, BB)	(D)	AS350 / EC130
	AS350 B3		
	AS350 B3 ARRIEL2B1 and AS350 B3e		
	EC130 B4 and EC130 T2		

1.2 PRE-ENTRY REQUIREMENTS

An applicant for the AS 350 Type Rating course shall have at least:

For ITR (Initial type rating)

- Valid certificate for helicopter.
- Medical certificate
- ICAO English proficiency level minimum 4

For ATR (Additional type rating)

- Valid certificate for helicopter
- Valid type rating for a SET (Single engine turbine) helicopter

1.3 CREDITS FOR PREVIOUS EXPERIENCE

Holders of a valid type rating for another SET (Single engine turbine) type helicopter can follow the time table for additional type rating (ATR).

1.4 TRAINING SYLLABI

The training is divided into three parts, theory, training in FTD and training in a helicopter.

In general the course is based on the structure defined in OSD for AS 350

The ground training and familiarization is based on the requirements in PART-FCL; AMC1 FCL.725(a).

The flight lesson part meets the requirements in AMC1 FCL.210.H.

1.4.1 THEORETICAL TRAINING

The theoretical training includes approximately 20 hours of training and exam. It complies with the requirements of 7.4.1 of the OSD for AS350/H125

Stoflight only provide training on AS 350 B3/2B1/B3e (H125)

1.4.2 FLIGHT TRAINING TYPE RATING

The flight training phase starts after completion of the theoretical exams. In accordance with OSD 7.5.2, the training can be held as either training in a helicopter, combination of helicopter and FSTD or combination of helicopter and FFS. Times in the table below refer to training in a helicopter, which for a ITR includes a total of at least 5 hours and for ATR at least 3 hours

Stoflight only provide training as a combination of FFS and helicopter or FSTD and Helicopter, not only in helicopter.

In the first instance, the combination FFS and helicopter shall be used, but in cases where an FFS would not be available or accessible, HT may decide to use the alternative training plan that includes the combination of FSTD and helicopter.

In combination helicopter and FFS, the training must cover a total of at least 6 hours, of which 4 can be done in FFS or 2 in FSTD. The table below from OSD is for reference. For ATR the time is 1h in helicopter an 2h in FFS or 3 in FSTD.

In flight training. Applying on	ITR (1)	ATR (2)	Difference from (3) AS350 series	Difference from (3) AS350 B3	Difference from (3) AS350 2B1/B3e	Difference from (3) EC130 B4/T2
AS350 series	05h00	03h00	N/A	01h30	01h30	03h00
AS350 B3	05h00	03h00	02h00	N/A	01h00	02h00
AS350 2B1/B3e	05h00	03h00	01h00	01h00	N/A	02h00
EC130 B4/T2	05h00	03h00	03h00	02h00	02h00	N/A
Skill test	required	required	N/A	N/A	N/A	N/A

- (1) If FFS C/D used, at least 02h00 in helicopter and 06h00 total.
If FTD 2/3 used, at least 04h00 in helicopter and 06h00 total.
- (2) If FFS C/D used, at least 01h00 in helicopter and 03h00 total.
If FTD 2/3 used, at least 01h00 in helicopter and 04h00 total.
- (3) If FFS C/D or FTD 2/3 used, at least 01h00 in helicopter.

1.5 THE TIME SCALE

The time scale for the AS350 Type Rating course is illustrated graphically below. The course duration is approximately 1 week. 5-7 days depending on the students previous experience.

PHASE	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Theoretical							
Flight FTD							
Helicopter							
Skilltest							

1.6 TRAINING PROGRAM

The training program is divided in 3 sections:

- Theoretical Training
- Flight Training in FTD
- Helicopter Training

1.6.1 THEORETICAL TRAINING TYPE RATING

The theoretical phase is the first part of the AS 350 Type Rating course. It covers all theoretical instruction including examination.

1.6.3 FLIGHT TRAINING IN HELICOPTER AND FTD

The practical training is structured according to AS350 OSD which complies with the requirements of Part FCL.

The training is carried out as a combination of flying in a helicopter and FTD

1.6.6 FLIGHT DUTY PERIOD AND FLIGHT TIME LIMITATIONS

The flight duty period and flight time limitations are described in Stoflight OM 1.14 – 1.15.

1.7 TRAINING RECORDS

1.7.1 GENERAL

Training records are kept and stored according to the Stoflight retention of documents procedure found in OM 1.11.

Stoport has been designed in such way that should the system for any reason be unavailable, the training can be conducted using this manual's attached training forms and later be uploaded to Stoport.

The actual written exams are not required to be stored as long as the result has been entered into the student folder and saved in Stoport.

1.7.2 ATTENDANCE RECORDS

The instructor is responsible for filling the student attendance record using Stoport. After completion of each session, the instructor will complete the session using Stoport. The system will give the option of "Attended, Didn't attend or Attended partially with the option of choosing for example if the student came late". This will then be kept in the student folder of that specific user. The theory attendance can be viewed under each student folder -> theory, with absence report that gives a percentage of the attendance per subject and overall attendance.

1.7.3 STANDARDIZATION OF ENTRIES IN TRAINING RECORDS

The instructor is responsible for all entries in the student folder. Before the skill test, the HT must check the student folder containing all training records and sign the skill test release form, to release the student for skill test.

To ensure standardization of entries in training records, Stoflight will provide related training to all instructors during the initial and refresher instructor training. The student can't make any entries in the student folder except to review his or her sessions and formally accept the feedback of each session by a digital "acceptance".

1.7.4 RULES CONCERNING LOG BOOK ENTRIES

The TRI or FI may sign the student log book after completion of the simulator training.

1.7.5 TRAINING RECORD SHEET

TRAINING RECORDS	
STUDENT NAME	START DATE
SAFETY TRAINING PERFORMED ON	
Student sign	Instructor sign

TK #	Date	Check in / out	Time	Total	Student sign	Instructor sign
1						
2						
3						
4						
5						
6						
7						

THEORETICAL KNOWLEDGE EXAMINATION RESULTS	
COURSE	RESULT
Theoretical exam	
Student sign	Instructor sign Passed <input type="checkbox"/>

FTD #	Date	Check in / out	Time	Total	Student sign	Instructor sign
1						
2						

HT #	Date	Check in / out	Time	Total	Student sign	Instructor sign
1						
2						
3						
4						

FINAL CHECKS	
CHECK TYPE	HT/Exam Sign
Theoretical course passed	
FTD passed	
HT passed	
Released for skilltest	

1.8 SAFETY TRAINING

The safety training can be found in OM 1.20, which describes:

- Theoretical training
- Simulator training
- Aircraft training

It is the responsibility of the instructor to ensure that the student has received and understood the safety training by signing the student safety training form appendix to SMM. However, before released for skill test, the CFI HELI or HT must confirm the student's safety training, by checking the student folder, before releasing him or her for skill test.

1.9 TESTS AND EXAMINATIONS

1.9.1 GENERAL

The student will be tested several times during the training period, both written exams as well as checks during simulator training. Before releasing a student for an examination (written and practical), the responsible manager must be informed.

Should a student fail any exam, extra training shall be provided as necessary. The responsible instructor in cooperation with CFI HELI and or HT will decide the necessary training required.

All final tests and exams shall be entered into the student folder by the responsible instructor.

1.9.2 PROGRESS TEST (theoretical)

Before the theoretical examination, the student has the opportunity to take a test with questions similar to the exam in order to check that the level is sufficient for the examination.

1.9.3 THEORETICAL EXAMINATION

The student will write one exam during the AS 350 type rating course.
The test is designed as multiple-choice questions and the pass threshold is 75%

1.9.4 PROGRESS CHECK (practical)

The instructor must continuously assess whether the student is making acceptable progress and make decisions about extra training if required.

1.9.5 PRACTICAL EXAMINATION (SKILL TEST)

After completed training and when the instructor determines that the student is suitable for the skill test, HT or CFI HELI must compile the student's results and make a release to skill test.

1.10 TRAINING EFFECTIVENESS

1.10.1 GENERAL

The aim is to offer a highly effective training program, and this can be achieved by several procedures described in the following sections.

1.10.2 INDIVIDUAL RESPONSIBILITIES

The responsibilities of Stoflight personnel are described in OM 1.3.

The student is responsible to:

- be present throughout the course
- follow the rules and instructions given by Stoflight and its personnel
- always strive for good performance and good airmanship

1.10.3 LIAISON BETWEEN DEPARTMENTS

Once a student has completed the theoretical training, TRI/FI shall inform the CFI HELI that the training has been completed with a copy of relevant documents (e.g, training records).

Should any problems occur between instructors or students of different departments, the responsible manager of the related department shall be contacted.

CFI HELI runs the day-to-day operations for the flight training department for helicopter. HT is responsible for all training departments and ensuring good cooperation between the different departments.

1.10.4 IDENTIFICATION OF UNSATISFACTORY PROGRESS

During flight training a maximum of 1 item is allowed to be graded; below required standard (B) per session. Each time an exercise item has been graded B, it will be added to the Subgrades list in Stoport which will leave a digital print of the lesson, exercise, grade and comment. This procedure will allow the instructors to easily see an overview of the student progress, which also gives the instructor a chance to practice that specific item in another lesson should time allow. However, during each progress check, the responsible instructor must verify and check that all subgrades in that phase are up to grade standard (S).

If any lesson is graded with more than 1 exercise item; below standard (B), then repetition training is needed prior to the next lesson.

If Stoport for any reason should be unavailable and unsatisfactory progress has been identified, the instructor must file the Incomplete Item List (IIL), appendix to. This report shall be sent to the CFI HELI and a copy to HT, by e-mail.

During theoretical training, should the instructor identify unsatisfactory progress of a student, he or she shall inform the CFI HELI and take action on additional training, if necessary. This can be added as an comment to that specific theory lesson, Stoport will automatically notify the necessary personnel.

1.10.5 PROCEDURE FOR CHANGING INSTRUCTOR

The CFI HELI is responsible for the planning of any necessary changes to the schedule. The CFI HELI shall gather all necessary training records and documents, prepare an easy transaction for the instructor as well as the student. The previous instructor shall contact the new instructor in coordination with the CFI HELI and brief the new instructor with a general overview and student progress as well as any useful tips. This shall be performed prior to any scheduled training session. The related documents will be sent by the CFI as stated above or uploaded to the digital online portal, Stoport. The student must be informed prior to any training session with the new instructor.

1.10.6 MAXIMUM NUMBER OF INSTRUCTOR CHANGES

For flight training, Stoflight believes that 2 instructors are optimum for student performance. The maximum number of flight instructor changes per student should not exceed 3.

For theoretical training, Stoflight believes that 2 instructors are optimum for student performance. The maximum number of theoretical instructor changes per student should not exceed 4.

1.10.7 INTERNAL FEEDBACK SYSTEM FOR DETECTING TRAINING DEFICIENCIES

The main tool in detecting training deficiencies is our safety & compliance monitoring system, which is the backbone of the quality assurance of Stoflight. After course completion, an evaluation survey will be sent to all students asking for feedback of the entire course, this is also an important step towards increasing our training standards.

1.10.8 PROCEDURES FOR SUSPENDING A STUDENT FROM TRAINING

Only the HT has the mandate to suspend a student. The procedure when a student is suspended from training is that, HT shall notify the Authorities. Stoflight shall assist the student with necessary documents upon request (documents shall be directly forwarded to e.g. new training organization). The suspension must be in written and documented according to Stoflight retention of documents procedure (OM 1.11).

1.10.9 DISCIPLINE

All students must follow the rules and regulations of Stoflight. He or she is allowed to deviate from instructions given for safety reasons, however should such incident occur, a mandatory Occurrence Report must be filed.

All students must attend classes as given by the training schedule. Should the student feel ill in any way and not medically fit for classroom instruction or flight, he or she must inform Stoflight as soon as possible. The student may request leave of absence, however based on the nature of this training (simulator costs etc.) financial arrangements may be necessary. Absence from a flight lesson will be charged.

1.10.10 REPORTING AND DOCUMENTATION

All actions that require intervention from CFI HELI or HT must be in written and documented according to Stoflight retention of documents procedure (OM 1.11).

Stoflight encourages all students and instructors to report anything they need-feel-to report, e.g. suggestions, complaints, safety issues etc. To file a report, use the OR.

1.11 STANDARDS AND LEVEL OF PERFORMANCE AT VARIOUS STAGES

1.11.1 INDIVIDUAL RESPONSIBILITIES

HT is responsible for the overall standard of the Type Rating course.
CFI HELI is responsible for the flight training and instruction standards for helicopter training.
Students are responsible to follow the rules and training given by Stoflight. At all times strive for an increasing performance.

1.11.2 STANDARDIZATION

Standardization is a key factor in order to ensure an even distribution of performance amongst instructors and students. With regards to instructor standardization, all new instructors will be given the required training in order to ensure a high level of standard. This is conducted as a part of the Initial and Refresher Instructor Training (Syllabus described as appendix to OM).

1.11.3 STANDARDIZATION REQUIREMENTS AND PROCEDURES

The grading system used for flight exercises is based on alphabetic characters. These grades are applicable per item basis during flight exercises. Stoflight doesn't apply the classical grading method and has therefor implemented a "standard-only" method which means that either the student meets the required standard or does not.

Grading description:

H = Hold item, is not completed (e.g. due to lack of time, weather or other reasons).
B = Item is below required standard.
S = Item is accepted as standard.

All items during the training phase require a minimum of grade standard (S). During each session, a maximum of 1 items below standard (B) grade is allowed and maximum 5 items marked as H, hold item, however, this should be completed at the end of each phase.

1.11.4 APPLICATION OF TEST CRITERIA / FLIGHT TEST TOLERANCE

During a skill test, the following criteria's shall be met, according to *Part-FCL appendix 9*.

The student shall demonstrate the ability to:

- a) operate the helicopter within its limitations,
- b) complete all maneuvers with smoothness and accuracy,
- c) exercise good judgement and airmanship,
- d) apply aeronautical knowledge,
- e) maintain control of the aircraft at all times in such a manner that the successful outcome of a procedure or maneuver is always assured,
- f) understand and apply crew coordination and incapacitation procedures, if applicable,
- g) communicate effectively with the other crew members, if applicable.

The student shall apply the following limits, corrected to make allowance for turbulent conditions and the handling qualities and performance of the helicopter used:

VFR flight limits

Height:

Generally ±100 ft

Heading:

Normal operations ±5°

Abnormal operations/emergencies ±10°

Speed:

Generally ±10 knots

With simulated engine failure +10 knots/-5 knots

Ground drift:

T.O. hover I.G.E. ±3 ft

Landing ±2 ft (with 0 ft rearward or lateral flight)

2. B-BRIEFING AND AIR EXERCISES

2.1 AIR EXERCISE

The student must perform the helicopter training on the studied type.
 For this particular training, the Helicopter Training form should be used TM 2.1.1.
 The weather minima during this training can be found in Stoflight OM 3.4.

2.1.1 AIR EXERCISE – OVERVIEW

This section describes training conducted in a helicopter. All training must be carried out in a helicopter of the same type.

TOPIC DESCRIPTION	ITR	ATR
HT1. Safety and introduction for practical training	xx	xx
HT2A. Basic flying	1:00	0:30
HT3A. Emergency procedures	1:00	0:30
TOTAL	2:00	1:00

2.1.1.1 ALTERNATIVE TRAINING PLAN FSTD

TOPIC DESCRIPTION	ITR	ATR
HT1A. Safety and introduction for practical training	xx	xx
HT2A. Familiarization	1:00	
HT3A. Various landings	1:00	0:30
HT4A. Systems and emergency procedures	1:00	0:30
HT5A. Normal and Emergency procedures	1:00	
TOTAL	4:00	1:00

2.4 Training Areas of Special Emphasis (TASE)

In some lessons there are points marked with red text. These are risky steps and must be carried out with special care. During these exercises, the instructor must pay particular attention to the advice and guidelines given in OSD section TASE. Attached are excerpts from current pages.

7.6.2.1 Autorotation / Engine off landing:

Autorotation training shall only be performed with a qualified instructor as Pilot in Command. As mentioned in the RFM, autorotation/engine off training shall be conducted within gliding distance of a running landing suitable area.

The engine reduction to IDLE position shall be performed when the helicopter is established in an autorotative descent, on the glide path to the appropriate suitable area:

- The first exercise shall be a power recovery autorotation up to the flare manoeuvre, with Fuel Flow Control Lever (FFCL) or Twist Grip remaining on FLIGHT position. Perform a go-around.
- The next autorotation/engine-off training could be performed with engine at idle rating (FFCL set to obtain 67/70 % Ng or Twist Grip on IDLE position).
 - Engine parameters are to be checked after power reduction.

Specificities for simulated engine failure on AS350 B/BA/B1/BB/B2 equipped with a FFCL on the cabin floor:

Except for latter version of AS350 B2 Post-MOD 07 3283 (new FFCL with an IDLE notch):

- There is no mechanical IDLE notch on the FFCL.
- An excessive or abrupt lever reduction may lead to an actual engine flame-out. The FFCL shall be cautiously reduced to 67/70 %Ng. Make sure to maintain the Ng above 67% at all times.
- A fast repositioning of the FFCL above the FLIGHT position can lead to a rotor and engine overspeed.

Specificities for simulated engine failure on AS350 B3, AS350 B3 2B1 or AS350 B3e:

- For AS350 B3, the Twist-grip friction system must be fully released before starting the autorotation training. The Twist-grip is not fitted with a spring load as for B3 2B1 or B3e.
- For AS350 B3 2B1, AS350 B3e and all models of EC130, the Twist-Grip automatically returns from IDLE to FLIGHT position with a spring load assistance as soon as the grip is set out of the IDLE notch. There is no friction system.

Pay a specific attention to the following points:

- Do not lower the nose too abruptly when engine power is reduced, to avoid a significant NR loss and a consecutive steep dive.
- Maintain NR in normal operating range during the descent.
- Wait to reach an adequate height before applying a large collective pitch input to avoid a large NR droop at a significant height possibly leading to a hard landing, loss of heading control, damage to the tail rotor and to the main rotor blade stops.
- Use adequate yaw pedal travel when collective is reduced or raised quickly, especially on a Fenestron® equipped helicopters (EC130 all models).
- In autorotation configuration and during flare maneuver, keep in mind that a high All Up Weight increases the risk of NR overspeed and hard landing.
- For AS350 Series equipped with FFCL on the cabin floor:
 - After engine fuel flow reduction, anticipate the go-around decision/process early enough to be able to recover full engine power for the go-around in due time.
 - A quick repositioning of the FFCL at or above the flight detent can lead to a rotor and engine overspeed.
- For AS350 B3 Arriel 2B Pre-MOD 07 3084 (Twist Grip with FLIGHT detent mechanical locking device):

CAUTION: The pilot must check that the FLIGHT detent locking device is correctly set before reducing the Twist Grip to IDLE. Risk of engine and rotor overspeed is the Twist Grip is abruptly reset above the FLIGHT detent.

Check that the FLIGHT detent locking device is correctly set before beginning the training and before reducing the Twist Grip to IDLE.

7.6.2.2 Simulated Hydraulic failure

For AS350 models fitted with single hydraulic system.

WARNING: FAILURE TO STRICTLY COMPLY WITH THE FLIGHT MANUAL TRAINING PROCEDURE INCREASES DRAMATICALLY THE RISK OF H/C LOSS OF CONTROL.

- The hydraulic failure training procedure is performed in two phases:
 - First phase, in steady flight conditions, the hydraulic failure is simulated by the instructor only by activating the [ACCU TST] (or [HYD TST]) pushbutton (on the Honeywell block or SCU on center console): HYD + Gong (or Horn) sounds. The trainee, then, shall adjust the airspeed to the safety speed range, i.e. between 40 and 60 KIAS when the HYD warning appears. Once safety speed is set, and prior to activate the HYD CUT-OFF switch, the instructor shall reset the [ACCU TST] (or [HYD TST]) pushbutton to OFF (switch released) position to end the simulation phase. For AS350 B1, B2 and B3 models, resetting the [ACCU TST] (or [HYD TST]) pushbutton to OFF allows to recharge the tail rotor load compensator accumulator.
 - In the second phase, the trainee activates the HYD CUT-OFF switch and applies the emergency procedure for landing.

Note: If necessary during the training, hydraulic assistance can be immediately recovered:

- **During hydraulic failure simulation phase, by resetting [ACCU TST] (or [HYD TST]) pushbutton to OFF (switch up position).**
- **During the second phase, by resetting the HYD CUT-OFF switch to ON (switch in forward position).**
- Before hydraulic power cut-off on the collective lever, reset [ACCU TST] (or [HYD TST]) pushbutton to off (up position) on center console. If not reset, no hydraulic assistance can be restored.
- To avoid any risk of loss of control, hover flight or low speed maneuver attempt are prohibited as the intensity and direction of the control feedback forces will change rapidly.
- For AS350 series fitted with an optional Twist Grip and for AS350 B3 Arriel 2B1 or AS350 B3e, as general control loads increase with airspeed when flying without hydraulic assistance undesired Twist Grip actions may be induced. So, be fully attentive that the Twist Grip is not inadvertently moved out of FLIGHT detent.

Specificities for simulated hydraulic failure on AS350 B/BA/B1/BB/B2:

For former versions of AS350 (B, B1, Ba, B2 without VEMD), the HORN warning will sound as soon as the [ACCU TST] (or [HYD TST]) pushbutton is pressed.

CAUTION: If the HORN is silenced using the HORN switch during this phase, there is a significant risk to forget to set the HYD CUT-OFF switch to OFF during the procedure.

This could lead to abrupt unbalanced lateral cyclic feedback forces, especially at low speed, when one of the lateral accumulators depletes before the other one. Moreover, deactivating the HORN using the HORN switch makes low and high rotor RPM warnings unavailable.

Do not silence the HORN by using the HORN switch. The HORN will be automatically silenced when the pilot selects the HYD CUT-OFF switch to OFF.

For AS350 B3 family and B2 VEMD, a GONG sounds when [ACCU TST] (or [HYD TST]) pushbutton is pressed.

Pay a specific attention to the following points:

- Hydraulic accumulators give hydraulic assistance for approximately 20 seconds according to of controls inputs, so reduce to safety speed within this timeframe.
- Anticipate trajectory to perform a shallow approach.
- Anticipate the power application to avoid induced increase in nose-up attitude.
- Perform a no-hover running landing at approximately man-walking pace.
- Hover flight or any low speed maneuvers are prohibited.
- Keep in mind that higher All Up Weight increases the risk of aircraft loss of control at low speed.
- When hydraulic pressure is restored in flight, the controls forces disappear instantly which can lead to an abrupt left roll movement.

7.6.2.3 AS350 B3 (Arriel 2D) single channel FADEC failure training

The AS350 B3 FADEC failure is simulated by setting the AUTO/MAN switch on the overhead panel to MAN. The fuel flow is then manually adjusted by the collective Twist Grip.

- Upon Twist Grip position, resetting to AUTO mode after manual fuel flow training may activate the IDLE switch leading to a loss of power.
Reselection to AUTO should only be made on ground after landing or in a flight condition allowing a landing in autorotation.
- In all cases during the training, the NR must be controlled so that the max NR alarm is not activated.

Note: It is possible to reset the AUTO/MANU selector to AUTO (automatic fuel control mode) at any time and for any NR value.

At the end of the exercise:

- Check that the Twist Grip is correctly reset in the FLIGHT position.
- For Twist grip before MOD 07 3084 (mechanical FLIGHT detent locking device), ensure that the Twist Grip mechanical FLIGHT detent locking device is correctly reset when the exercise is finished.
- For Arriel 2B FADEC PRE-MOD 07 3222 :
 - The time spent in FADEC failure training configuration – i.e. with AUTO/MANU governing mode selector set to MAN- shall not exceed 15 consecutive minutes.
 - Wait at least 15 minutes between two operations on MAN setting even if it had been selected for a few seconds only.

Pay a specific attention to the following points:

- Take care to turn the Twist Grip in the correct way: risk of inverse reaction under high workload situations.
- Apply slight collective variations on short final.
- After the touchdown, first reduce the fuel flow then lower the collective.
- The Instructor has to be fully attentive and prepared to an excessive variation of the Twist Grip when trainee is in manual governing.
- Single channel FADEC failure training shall only when from a stabilized flight.

7.6.2.4 Tail Rotor control failure procedure

- Plan to use the entire length of the runway or running landing suitable area.
- In case of an actual T/R control failure, using a hard surfaced runway may allow for a little sideslip. Training procedure on such surface should be performed with specific protective skid shoes.
- The procedure is made easier by landing with a RH wind component (and at light all-up weight). The procedure may not be possible with a LH wind component.
- Perform a shallow approach. During the final phase close to the ground, remember to slightly push the cyclic forward during sideslip cancelation to maintain current airspeed. Avoid re-accelerating.

Pay a specific attention to the following points:

- Do not flare during final phase parallel part to the runway (ground effect will be lost resulting to a descent rate can only be countered by increasing power, which will induce a LH yaw).
- Try to be close to the ground during parallel part.
- Do not induce left yaw during parallel part before touchdown.
- Proceed with a very progressive airspeed reduction.
- In case of an actual failure, when airspeed is lower than 20 kt, a go-around is impossible due to loss of vertical fin efficiency. In these conditions, for simulated failure, pedals control shall be recovered.
- Do not touchdown with sideslip, especially when landing on a grass or soft area.

7.6.3 Demonstration methodology for Flight Instructors and Type Rating Instructors

7.6.3.1 Autorotation / Engine off landing:

For AS350 series equipped with a FFCL on the cabin floor (except for latter version of AS350 B2 Post-MOD 07 3283 equipped with a new FFCL with an IDLE notch):

- An excessive/abrupt FFCL reduction may lead to an actual engine flame-out.
- The instructor shall take great care when reducing the lever to 67/70 %Ng. Make sure to maintain the NG above 67%.

7.6.3.2 Simulated Hydraulic failure

For all AS350 series fitted with a single hydraulic system.

- To avoid trainee misunderstandings, all the hydraulic simulation pushbutton actions shall only be performed by the instructor.
- Simulation phase may be skipped upon instructor's choice and trainee experience.

Pay attention to the following points:

- LH collective lever is not equipped with an HYD CUT-OFF switch:
 - If the instructor takes over the controls during the second phase, he must plan to continue the flight up to the landing without hydraulic assistance.
 - The trainee should be briefed by the instructor to be ready to reset the collective HYD CUT-OFF switch to ON if necessary.
- To avoid any risk of loss of control, any hover flight or low speed maneuver attempt shall be strictly prohibited as the intensity and direction of the control feedback forces will change rapidly.
- Be fully attentive that the Twist Grip is not inadvertently moved out of FLIGHT detent during the exercise.

Note: AIRBUS Helicopters has issued the Safety Information Notice (SIN) 3246-S-29 introducing the video "HYDRAULIC FAILURE TRAINING PROCEDURE FOR FLIGHT INSTRUCTORS ON AS350 single hydraulic". This video clip is to be used as supplemental training material and is available on the following link:

<https://dai.ly/k35kjq5f47SQcrffPU>

Or

<https://www.airbus.com/helicopters/safety/SafetyVideo-e-learnings.html>

7.6.3.3 Servo-transparency (also named servo-reversibility or jack stall) demonstration

For all AS350 series fitted with a single hydraulic system.

The servo-transparency demonstration could be performed as follows:

- The exercise should be performed above 1500 ft AGL.
- Achieve airspeed between 130 KIAS and VNE.
- Perform a 30 to 45° LH turn.
- Increase progressively but continuously the load factor by a backwards cyclic action.
- When the servo-transparency onsets are reached, backwards and RH side feedback forces are felt on the cyclic and downward on the collective. Those force feedbacks tend to make the H/C to roll right and pitch up.
- As pitch up and collective down tend to reduce speed and flight loads in the flight controls, servo-transparency generally disappears by itself if the pilot doesn't try to maintain the previous flight conditions.

Pay attention to the following points:

- Due to control loads linked to servo-transparency, the collective pitch tendency is to decrease. Pitch up and significant collective pitch down may lead to significant rotor rpm increase. Monitor NR.
- The procedure should not be demonstrated too aggressively.
- The phenomenon is easier to reach at high All Up Weights and/or high density altitude.
- It is forbidden to remain in the servo-transparency state.

2.5 AIR EXERCISE REFERENCE LIST

FFS course

LESSON	REF	OSD.REF	LESSON NAME
1	2.2.1	N/A	Introduction and safety
2	2.2.2	Flight 1+2	Basic flying
3	2.2.3	Flight 3+4	Emergency procedures

FSTD course

LESSON	REF	OSD.REF	LESSON NAME
1	2.3.1	N/A	Introduction and safety
2	2.3.2	Flight 1	Familiarization
3	2.3.3	Flight 2	Various landings
4	2.3.4	Flight 3	System and emergency procedures
5	2.3.5	Flight 4	Normal and emergency procedures

2.6 COURSE STRUCTURE: PHASE OF TRAINING

Training in the helicopter takes place after the simulator sessions have been completed with satisfactory results.

2.7 COURSE STRUCTURE: INTEGRATION OF SYLLABI

Flying in a helicopter takes place in immediate connection with training in a simulator and gives the student the opportunity to deepen their skills in an authentic environment. Both in terms of theory and practice.

2.8 STUDENT PROGRESS

After each session, the instructor must assess whether the student has reached a sufficient level to move on to the next session or whether extra training is required. To the extent that doubts arise, the decision must be made in consultation with the CFI HELI.

2.9 INSTRUCTIONAL METHODS

The instructor must hold a briefing with the student before and after the flight. During the exercise, the instructor must satisfy the student's need for instruction and feedback as much as possible.

2.10 PROGRESS CHECK (practical)

After the last session, the instructor and CFI HELI must make a joint assessment of whether the student is suitable for the skill test.

3. C-SYNTHETIC FLIGHT TRAINING

3.1 FTD EXERCISE

In the first place, training must be carried out in FFS C/D. If FFS is not available and accessible, training may be performed as an alternative in FSTD level 3.

3.1.1. FFS TRAINING – OVERVIEW

TOPIC DESCRIPTION	ITR	ATR
FFS 1. Familiarization	1:00	0:30
FFS 2. Various landings	1:00	0:30
FFS 3 Systems and emergency procedures	1:00	1:00
FFS 4 Normal and emergency procedures	1:00	
	4:00	2:00

3.1.1.1 FSTD TRAINING- OVERVIEW (alternative training plan)

TOPIC DESCRIPTION	ITR	ATR
FSTD 1. Introduction and basic flying	1:00	1:00
FSTD 2. Emergency procedures	1:00	2:00
	2:00	3:00

3.3 AIR EXERCISE REFERENCE LIST

FFS course

LESSON	REF	OSD.REF	
1	FFS 1	Flight 1	Familiarization
2	FFS 2	Flight 2	Various landings
3	FFS 3	Flight 3	Systems and emergency procedures
4	FFS 4	Flight 4	Normal and emergency procedures

FSTD course

LESSON	REF	OSD.REF	
1	FSTD 1	Flight 1&2	Familiarization and basic emergency training
2	FSTD 2	Flight 3&4	Normal and emergency procedures

3.4 COURSE STRUCTURE: PHASE OF TRAINING

Training in the helicopter takes place after the simulator sessions have been completed with satisfactory results.

3.5 COURSE STRUCTURE: INTEGRATION OF SYLLABI

Flying in a simulator takes place in immediate connection with training in a helicopter and gives the student the opportunity to practice procedures under safe conditions.

3.6 STUDENT PROGRESS

After each session, the instructor must assess whether the student has reached a sufficient level to move on to the next session or whether extra training is required. To the extent that doubts arise, the decision must be made in consultation with the CFI HELI.

3.7 INSTRUCTIONAL METHODS

The instructor must hold a briefing with the student before and after the flight. During the exercise, the instructor must satisfy the student's need for instruction and feedback as much as possible.

3.8 PROGRESS CHECK (practical)

After the last session, the instructor and CFI HELI must make a joint assessment of whether the student is suitable for the Helicopter training.

4. D-THEORETICAL KNOWLEDGE INSTRUCTION

4.1 STRUCTURE OF THE THEORETICAL KNOWLEDGE COURSE TYPE RATING

The theoretical training follows the system that Airbus set up in the OSD for the type. It is the same training for both initial and additional type rating with the exception of the first two hours which are for introduction to the first type rating for a turbine helicopter.

The training is carried out in classroom.

4.1.2 THEORETICAL TOPICS TYPE RATING

TOPIC DESCRIPTION	DURATION
1. Safety course	xx
2. Pre-entry course for first turbine engine course	2:00
3. Helicopter structure, transmissions, normal and abnormal operation of systems	8:00
4. Limitations	1:00
5. Performance, Flight Preparation and Control	1:30
6. Weight and Balance – Servicing on ground	1:00
7. Emergency Procedures	3:00
8. Electronic flight instrument systems (Avionics and systems)	3:00
9. Theoretical examination	2:00
TOTAL	21:30

4.1.3 SCHEDULE TYPE RATING

The following schedule only shows the active days. During a normal week (5 business days), the student will receive a minimum of 2 days off per week according to Stoflight OM 1.17, Rest Periods Students.

DAY 1	DAY 2	DAY 3
<ul style="list-style-type: none"> - Pre-entry course for a first turbine engine course (ITR only) - Helicopter structure, transmissions, normal and abnormal operation of systems 	<ul style="list-style-type: none"> - Limitations - Performance, Flight Preparation and Control - Weight and Balance – Servicing on Ground - Emergency Procedures - Electronic flight instrument systems (Avionics and systems) 	<ul style="list-style-type: none"> - Optional Equipment - Exam

4.1.3.1 CONTENTS DAY 1 (TECHNICAL COURSE)

INTRODUCTION TO TURBINE

The turbine engine
 Different in characteristics
 Start up procedures
 Shut down procedures
 Potential areas of mistakes
 Modulated start
 Hot start
 Hung start
 Starter limits
 Battery limits
 Cooling

AS 350 GENERAL

Aircraft Presentation
 Main dimensions and weights
 Special configurations
 Air frame reference points
 Aircraft operating documentation

AIRFRAME / STRUCTURE

General
 Body structure
 Bottom structure and bottom floor
 Canopy
 Rear structure
 Tail boom
 Tail unit
 Doors
 Cowling - Fairings - Bulkheads
 Skid type landing gear

POWER TRANSMISSION TO MAIN ROTOR

General
 Engine to main gear box coupling
 Main gear box
 Rotor brake
 Main gear box suspension

MAIN ROTOR

General
 Main rotor shaft
 Main rotor head
 Main rotor blades

TAIL ROTOR TRANSMISSION SYSTEM

General
 Tail rotor drive shaft
 Tail rotor gear box assembly

TAIL ROTOR

General
 Tail rotor design principles
 Tail rotor functional description
 Tail rotor data

Tail rotor components
 Tail rotor gearbox

ELECTRICAL POWER SYSTEM

General
 Electrical power system components and function
 Location of electrical power system components
 Electrical power system operation
 Power distribution to aircraft circuits.
 250 V.A. AC Power system

SERVO CONTROL AND HYDRAULIC SYSTEM

Serve controls
 Serve control hydraulic system

FLIGHT CONTROLS

-General
 -Main rotor controls
 -Tail rotor control

FUEL SYSTEM

General
 Fuel system components and functions
 Fuel system operation
 Fuel system component location
 Fuel system component data

INSTRUMENTS

Instrument panel and console
 Pitot / Static system and instruments
 Attitude and directional control instruments

LIGHTING

General
 Cabin ambient lighting
 Instrument lighting
 Position lights
 Landing lights
 Anti-collision lights

EQUIPMENT AND FURNISHING

Cabin arrangement
 Windshield wiper
 Fire protection

ENGINE INSTALLATION

General
 Power plant attachment
 Engine oil cooling system - and oil system monitoring
 Engine controls

Engine power monitoring

Engine starting system and procedure

4.1.3.2 CONTENT DAY 2 & 3

LIMITATIONS

General
Weight and balance limitations
Flight envelope limits
Vehicle limitations
Miscellaneous limitations
Placards

PERFORMANCE FLIGHT

PREPARATION AND CONTROL
Introduction
Demonstrated wind envelopes
Engine health check
Air data system calibration
Height-Velocity diagram
Hover in ground effect
Hover out of ground effect
Corrected weight
Rate of climb
Glide distance in autorotation
Noise level
Additional performance data

WEIGHT AND BALANCE

SERVICING ON GROUND
General
Weight standard definitions
Longitudinal CG
GC charts
Lateral CG
Special equipment
Handling
Servicing instructions
Test sheets
Daily checks

EMERGENCY PROCEDURES

General
Engine flame-out
Tail rotor failures
Smoke in cabin
VEMD failure
Caution and warning panel
Various warnings

INSTRUMENTATION

Cockpit panels
VEMD
Flight instruments

4.4 TEACHING MATERIALS

- OSD AS 350 family
- HFM- AS 350 (for applicable type)
- Cockpit reference guide
- Type certificate - <https://www.easa.europa.eu/en/downloads/7945/en>
- Operations manual and Standard operation procedures

4.5 STUDENT PROGRESS

After the end of the day, the instructor must evaluate the day and assess whether there are any elements that will require more time. Time for that is set aside during day 3.

4.6 PROGRESS TESTING (theoretical)

Progress is monitored through test questions similar to the exam. The instructor is responsible for the questions being completed and evaluated.

4.7 REVIEW PROCEDURE

If a student does not achieve an acceptable level, the CFI HELI must, in consultation with the instructor, make a plan for how the student will reach the set goals. The plan must be communicated with the student and the student must be offered extra training if necessary.

Appendix 1

A.1 Distribution of exercises HEL/FSTD (risk assessment)

The basic principle in the distribution is that maneuvers and exercises that involve increased risk must mainly be trained in FSTD. Exercises that are easiest to instruct in a helicopter and that involve normal risk are carried out in a helicopter.

Flight nr	Moment	FSTD	HEL	Comment
1	Visual displays - Flight controls - Helicopter responses	x	x	The exercise can be carried out in both. Initial training in a Helicopter and then in a FSTD.
	Normal take-off and landing procedures.	x	x	The exercise can be carried out in both. Initial training in a FSTD and then in a Helicopter.
	VEMD environment		x	The exercise is best suited in Helicopter as systems can vary slightly between models and it facilitates instruction to point and try in practice.
	Use of symbols		x	The exercise is best suited in Helicopter as systems can vary slightly between models and it facilitates instruction to point and try in practice.
	Servo Transparency	x		This exercise should only be carried out in a FSTD as it is partly difficult to practice in a helicopter and also a risky part.
2	Various landings.		x	Normal risk level is suitable for training in a helicopter
	Familiarization with optional equipment.		x	Training in a helicopter based on the individual's equipment
	Emergency procedures:			
	Engine failure (familiarization).	x		The exercise is primarily suitable for practice in a FSTD as it is an exercise with increased risk and where procedures can be practiced well in a simulator.
	Simulated hydraulic system failures .	x	x	Practiced fully in FSTD and with limitations in helicopter. In according to OSD.
	Simulated electric generation failures.	x		Best suited for practice in a simulator as simulator training gives a high degree of efficiency in being able to practice many parts in a short time.
3	CAT.B operations.			
	Use of VEMD:			
	Engine Power Check.		x	The exercise is a central part of the helicopters' normal handling
	Use of VEMD in degraded mode.	x		The exercise is best suited for a simulator as it facilitates the construction of exercise scenarios and reduces risk

	Emergency procedures	x	x	The exercise is split between simulator and helicopter. Exercises are practiced first in the simulator and then in the helicopter.
				The following elements are only practiced in the Simulator, Autorotation with full landing, Engine restart and Tail rotor drive shaft failure.
4	CAT.B operations.			
	Operating the VEMD.	x	x	Elements are trained first in a simulator and then in a helicopter.
	Emergency procedures.	x	x	Elements are trained first in a simulator and then in a helicopter.