

QRH : quick reference handbook

What is a QRH ?

Every aircraft has a QRH. This is a small leaflet in which you can find all the checklists plus other useful informations. In this section, you will find normal, emergency, abnormal checklist and speeds.

For a more convenient use, all sections have been designed to be printer friendly.

How to use the QRH ? In case of any failure always pay attention first to warning red messages. Then apply the normal procedure and if any caution amber message appears treat it but only after having applied the appropriate normal procedure. Be advised that some checklist could make other caution messages appear. In that case don't treat them ! Remember that ERJ145 is a computerized aircraft reacting sometimes strangely a bit like Windows...

Normal checklists

Action are normally performed before accomplishing any normal check list but you can use those in read and do.

First of all check overhead panel. Every button should be pressed with stripped bar extinguished except fire and caged buttons.

Speeds

Use them to display your takeoff and landing speeds on the PFD and MFD pending your actual weight.

Emergency and abnormal checklists

Actions have to be perform in read and do. Those check list are not real checklist, they have been adapted to Flight Simulator limitations.

Normal checklist

TRANSIT CHECKLIST

Walkaround----- ACCOMPLISHED
APU-----ON
EMER LIGHTS----- ARMED
AVIONIC MASTERS-----2 ON
EICAS-----CHECKED
Fuel-----CHECKED
FMS-----INITIALIZED
Pressurisation----- SET
PFD/MFD----- check LNAV/TO
SPS-----CHECKED
Trims----- 0/0/7 UP
SPDS-----ENTERED
T/O DATA----- ENTERED

BEFORE START UP CHECKLIST

FSTN BELTS/NO SMKG-----ON
RED BEACON----- ON
FUEL PUMP PWR----- 2ON
PNEUMATIC PANEL----- CHECKED BLACK MIDNIGHT
EMERG/PARK BRAKE-----ON
STEERING-----INOP
DOORS----- CLOSED

TAXI CHECKLIST

HYD ELEC PUMP----- AUTO
EICAS----- BLANK
ICE PROTECTION----- AUTO
FLAPS----- 9 or 18
THRUST RATING-----ALT TO-1 or TO-1

BEFORE TAKE OFF CHECKLIST

EXTERIOR LIGHTS-----ON
TRANSPONDER----- 1 or 2 TA/RA
FLIGHT CONTROLS----- CHECKED
RADAR-----FSBY
T/O CONFIG----- CHECKED

AFTER TAKE OFF CHECKLIST

LDG GEAR-----UP
FLAPS----- 0
THRUST RATING----- CLB
OVERHEAD PANEL----- CHECKED
ALTIMETERS-----SET

BEFORE DESCENT CHECKLIST

FMS/RMU/SPDS----- SET

APPROACH CHECKLIST

ALTIMETERS-----SET
PRESSURISATION----- CHECKED
APU-----ON
FSTN BELTS/NO SMKG-----ON

BEFORE LANDING CHECKLIST

LANDING GEAR----- DOWN
FLAPS-----22 or 45
AUTOPILOT----- OFF

AFTER LANDING CHECKLIST

EXTERIOR LIGHTS----- OFF
ICE PROTECTION----- CHECKED
TRANSPONDER----- STBY
GUST LOCK----- ON
FLAPS/TRIMS-----0 - 0/0/7 UP

PARKING

FSTN BELTS/NO SMKG----- OFF
HYD ELEC PUMPS-----OFF
RED BEACON----- OFF
APU-----OFF
FUEL PUMP PWR (if leaving aircraft)----- OFF
EMER LIGHTS (if leaving aircraft)----- OFF
BATTERY (if leaving aircraft)-----OFF

Speeds

Weight	V1	VR	V2	VFS	VREF 22	VREF 45
14T/30900LBS	113	122	128	142	112	111
14,5T/32000LBS	113	122	127	145	114	113
15T/33100LBS	113	121	126	147	116	115
15,5T/34200LBS	113	121	126	150	118	117
16T/35300LBS	114	121	125	152	120	119
16,5T/36400LBS	116	123	127	154	122	121
17T/37500LBS	119	126	129	156	124	122
17,5T/38600LBS	122	128	131	158	126	124
18T/39700LBS	124	130	133	160	128	126
18,5T/40800LBS	127	132	135	163	129	127
19T/41900LBS	129	134	137	165	131	129
19,5T/42000LBS	132	136	138	167	133	130
20T/43100LBS	134	138	140	169	135	132
20,5T/44200LBS	137	140	142	171	136	133
21T/45300LBS	139	142	144	173	138	135
21,5T/46400LBS	141	144	146	175	140	137
22T/47500LBS	143	146	148	177	142	139

V1, VR and V2 have to be entered in the MFD SPDS menu for take off.
 VREF 22 + 5 or VREF 45 + 5 have to be entered in the MFD SPDS menu under VAP bug for landing.
 VFS has to be entered on the blue speed bug on the PFD for take off and landing using the speed command knob on the glareshield.

Emergency checklists

Electrical

BATT OVTEMP

affected battery	OFF
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Fuel

FUEL LO LEVEL

Thrust levers	Long Range Cruise
Crossfeed	As required

Flight Controls

PITCH TRIM INOP

Pitch trim main system	OFF
Pitch trim backup system	OFF
Speed	REDUCE
Land	ASAP

Anti Ice

ICE COND AI INOP

Ice detection override knob	ALL
Ice condition	GET OUT ASAP

Engine control

E1(2) LOW N1

BEFORE V1	ABORT TAKEOFF
AFTER V1	
FADEC	RESET
FADEC	ALTN
If engine stops	LAND ASAP

Abnormal checklists

Electrical

GEN OVLD

MFD ELEC page	DISPLAYED
Shed bus	OFF
Electrical load	REDUCE
APU	ON
Electrical load	CHECK

GEN OFF BUS

MFD ELEC page	DISPLAYED
Affected generator	OFF then ON
<i>If generator still off bus</i>	
APU	ON

APU GEN OVLD

MFD ELEC page	DISPLAYED
Shed bus	OFF
Electrical load	REDUCE
Electrical load	CHECK

APU GEN OFF BUS

MFD ELEC page	DISPLAYED
Affected generator	OFF then ON

DC BUS OFF

MFD ELEC page	DISPLAYED
Bus tie	OVRD
<i>If message still present</i>	
BUS TIE	AUTO
Affected DC BUS	LOST

ESS DC BUS OFF or SHED BUS OFF

MFD ELEC page	DISPLAYED
Check buses	

ESS 1-2 BUS OFF

MFD ELEC page	DISPLAYED
If DC BUS 1 OK	
BATT 1	OFF
If DC BUS 2 OK	
BATT 2	OFF

BATT OFF BUS

Associated battery	ON
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BKUP BATT OFF BUS

Backup battery	ON
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115V AC BUS OFF

AC PWR	OFF then ON
<i>If message still present</i>	
AC PWR	OFF

Fuel

FUEL LO PRESS

MFD FUEL page	DISPLAYED
Pump PWR	ON
Altitude	UNDER 25000ft

FUEL XFEED FAIL

MFD FUEL page	DISPLAYED
Fuel balance	CHECK

FUEL TANK LO TEMP

MFD FUEL page	DISPLAYED
Altitude	REDUCE

FUEL INBALANCE

MFD FUEL page	DISPLAYED
XFEED	ON
FUEL LEAK	CONSIDER

FUEL SOV CLSD

MFD FUEL page	DISPLAYED
FIRE EXTG handle	CHECKED IN
Engine stops ?	LAND ASAP

APU FUEL SOV CLSD

If persists only	ADVISE MAINTENANCE
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FUEL XFEED OPEN

MFD FUEL page	DISPLAYED
Fuel balance	MONITOR

Hydraulics

HYD SYS FAIL

MFD HYD page	DISPLAYED
Affected HYD ELEC PUMP	ON
Speed	250kt
Autopilot	OFF
Emergency gear extension	USE

HYD SYS OVHT

MFD HYD page	DISPLAYED
Affected ENG PUMP SHUTOFF	PRESSED OFF
Affected HYD ELEC PUMP	OFF
Speed	250kt

HYD PUMP FAIL

MFD HYD page	DISPLAYED
HYD ELEC PUMP	ON
Speed	250kt

HYD SOV CLSD

MFD HYD page	DISPLAYED
Affected ENG PUMP SHUTOFF	PRESSED ON

HYD LO QTY

MFD HYD page	DISPLAYED
Hydraulic failure	CONSIDER

HYD PUMP SELECT OFF

MFD HYD page	DISPLAYED
HYD ELEC PUMP	2 AUTO

Engine control

EOIL LO PRESS

EICAS indication	CHECK
Engine shut down	CONSIDER

ENG REF AI DISAGREE

Anti ice override knob	AUTO
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ENG NOTO DATA

Take off data	ENTERED
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Flight controls

AIL SYS INOP

MFD HYD page	DISPLAYED
Affected HYD ELEC PUMP	ON
Autopilot	OFF
Speed	250kt

RUD SYS INOP

MFD HYD page	DISPLAYED
Affected HYD ELEC PUMP	ON
Autopilot	OFF
Speed	250kt

RUD OVBST

Rudder shutoff sys2	OFF
RUD SYS 2 INOP message	CHECK
Under 135kt	RUD SYS 2 ON

RUD HDOV PROT FAIL

Advise maintenance

FLAP FAIL

No flap landing	PERFORM
Speed	Vref + 30kt

SPOILER FAIL

Speed brake	CLOSE
Landing flaps 22	PERFORM
Approach speed	VREF + 10kt

SPBK LVR DISAGREE

Speed brake lever	CLOSE
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FLAP LOW SPEED

Flap manoeuver	ANTICIPATE
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Landing gear

EMRG BRK LO PRESS

MFD HYD page	DISPLAYED
Emergency braking performance	CONSIDER LOW

BRAKE OVHT

MFD HYD page	DISPLAYED
Speed	200kt
Landing gear	EXTEND
Braking	USE WITH CAUTION

STEER INOP

<i>No take off allowed</i>	
Ground handling	CONSIDER DIFFICULT
Precautionary landing	CONSIDER

Air conditioning

BLD LO TEMP

MFD ECS page	DISPLAYED
Bleed temperature	MONITOR
If temperature still low	INCREASE THRUST

CROSSBLD FAIL

If **CROSS BLD OPEN** is displayed on EICAS

Bleeds 1 and 2	CLOSE
APU bleed	CLOSE
Altitude	Lower than 10000ft

CROSSBLD SW OFF

Cross bleed rotactor	AUTO
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BLD VLV CLSD

Associated pack	OFF then ON
Associated bleed	ON

CROSSBLD OPEN

Normal status with crossbleed rotactor positioned AUTO when :

- ✓. starting engine n°2
- ✓. flying in icing condition with anti ice on

PACK VLV CLSD

Associated pack	OFF then ON
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Antilce

AICE SWITCH OFF

Check all anti ice switches	ON
Crossbleed	AUTO
Ice detection override knob	AUTO

ENG A/ICE FAIL

Thrust levers	ADVANCE
Ice detection override	ALL
Engine air inlet anti icing switch	OFF then ON
If message persists	GET OUT ICE CONDITION

WG A/ICE FAIL

Thrust levers	ADVANCE
Ice detection override	ALL
Wing anti icing switch	OFF then ON
If message persists	GET OUT ICE CONDITION
Clean speed	200kt minimum

STAB A/ICE FAIL

Thrust levers	ADVANCE
Ice detection override	ALL
Stab anti icing switch	OFF then ON
If message persists	GET OUT ICE CONDITION
Clean speed	200kt minimum

WS HEAT FAIL

Windshield heat button	OFF
<i>If message disappears</i>	
Windshield heat button	ON

PITOT INOP

Associated pitot switch	OFF then ON
If message persists	RELY ON STANDBY INSTRUMENTS

AOA HEAT INOP

Associated switch	OFF then ON
If message persists	
Approach speed	VREF + 20kt

TAT HEAT INOP

Associated switch	OFF then ON
TAT and SAT indication	DON'T RELY ON

ICE DETECTORS FAIL

Ice detection override	ALL
Ice condition	GET OUT

ICE CONDITION

CROSSBLD OPEN message	CHECKED
SPS ICE SPEED message	CHECKED
4 open lights on overpanel	CHECKED
Normal operations	PERFORM

Aural warning system

AURAL WARNING FAIL

Check flight instruments

GPWS

GPWS INOP

Check flight path