7. SUPPLEMENTS

7.1 Introduction

7.2 List of inserted supplements

Date of insertion	Doc.No.	Title of inserted supplement
13.12.2017	304eS/MM SUP2 Issued 11/17	MAINTENANCE MANUAL SUPPLEMENT FOR Glasflügel 304eS - repair of battery compartment

7.3 List of Effective Pages

Section	Page	Date	Section	Page	Date	Section	Page	Date
	Cover page							
	i	11/17						
	ii	11/17						
	iii	11/17						
7	7-0	11/17						
	7-1	11/17						
	7-2	11/17						
	7-3	11/17						
	7-4	11/17						
	7-5	11/17						
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	7-7	11/17						
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7.4 Record of revisions

Any revision of this Manual must be recorded in the following table and in case of approved Sections endorsed by the responsible airworthiness authority.
The new or amended text in the revised page will be indicated by a black vertical line in the left hand margin, and the Revision No. and the date will be shown on the bottom left hand of the page.

Rev. No.:	Affected Section	Affected Page	Date of Issue	Approval	Date of approval	Date Inserted	Signature

MAINTENANCE MANUAL SUPPLEMENT

FOR THE SAILPLANE

Glasflügel 304eS

Repair of battery compartment

1. REPAIR DESCRIPTION

1.1 Damage description

Follow procedures described in this maintenance manual supplement to repair heat caused damages in the battery compartment and related structures. The damage may be initiated by heat emitted during unusual battery state.

1.2 List of material and spare parts

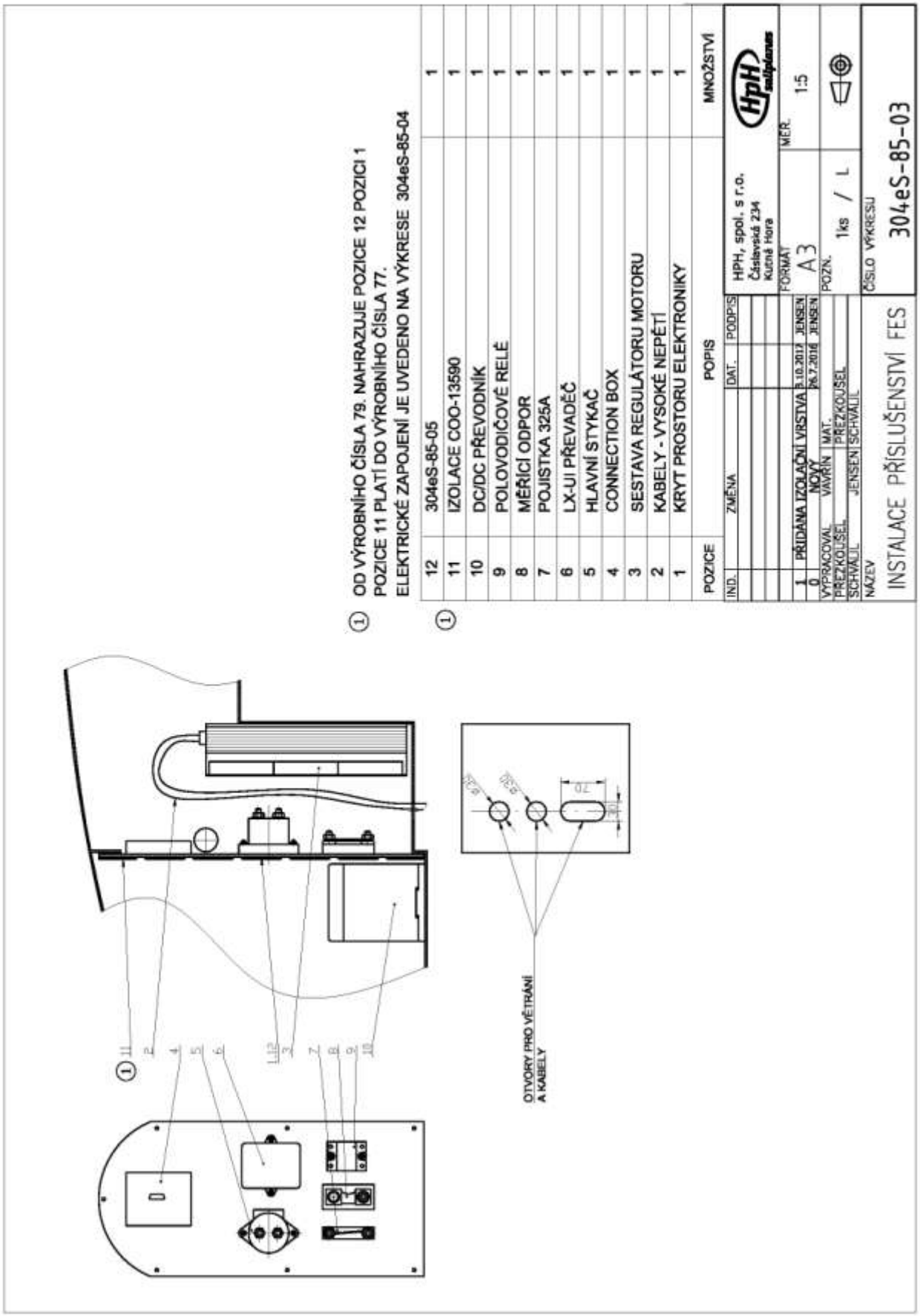
Epoxy resin L285 (MGS)
Hardener H285 (MGS)
Carbon tape KDU1009 (300g/m² width 75mm)
Carbon fabric CCC450 (200g/m²)
Glass fabric 90070 (81g/m²)
Glass fabric 92110 (160g/m²)
Foam Divinycell H60 thickness. 6mm
Shim in the shape of the fuselage skin made of (2x92110 (glass 160g/m2))
Battery holding ribbons (P/N 304eS-85-101)
Battery compartment cover (P/N 304eS-85-06)
Adhesive Backed Heat Barrier ThermoTEC-13590
Paint FEYCOPUR 611 (grey)
Paint PLAMOSTOP P9
Rubber plate thickness 1mm
Smoke and fire alarm JABLOTRON SD-283ST

1.3 Repair procedure

1	Open battery compartment lid, remove foam padding from the compartment, clean the compartment floor and walls and remove all debris.
2	Unscrew front bulkhead, disconnect wires and remove all equipment attached to the bulkhead. Take the bulkhead and all equipment including motor controller out of the sailplane.
3	Sent the following accessories to manufacture for check, repair or replacement: Drawing 304eS-85-03 Position 3, 4, 5, 6, 7, 8, 9, 10 (Motor controller, Connecting box, Main contactor, LX-UI unit, Fuse 325A, Measuring resistor, semiconductor relay, DC/DC convertor)
4	Check condition of battery compartment cover and frond bulkhead cover. If damaged order new from manufacturer. If the battery compartment cover was not damaged perform changes shown on drawing 304eS-85-06.
5	Remove all low voltage wires in the area of battery compartment. Also remove High voltage wires installed in battery compartment (wires between motor controller and battery packs).
6	Check condition of other high voltage wires (resistance, possible damage of insulation. Wires must be replaced in case of any detected damages.
7	Check composite structural members shown on 304eS-85-112 drawing for high temperature damages.
8	After preliminary check start to remove damaged structures in the following order: 1) Battery compartment side rails 2) Fuselage skin (start gradually from compartment opening until undamaged composite is reached) 3) Compartment side walls (start gradually from the top of the compartment until undamaged composite is reached) 4) If other structures were damaged remove them too (start from most damaged areas and gradually proceed until undamaged composite is reached)
9	Prepare undamaged fuselage structures for gluing according methods described in Technical Description, Operating, Maintenance and Repair Manual Glasflugel 304S (304S Maintenance Manual) chapter 6. Pay special attention in area where reinforcement carbon tapes are situated (see drawing 304eS-85-112). Fuselage skin in this area must be tapered in ratio 1:100 in tapes direction.
10	Using methods described in 304S Maintenance Manual chapter 6 replace damaged parts of inner compartment structures (Side walls). Do not repair side wall cover in this step.
11	Use the plate in the shape of fuselage skin. Trim the plate according the shape of missing parts of fuselage skin with overlap at least 30mm and glue it together with inner side of the skin to cover all missing skin parts.
12	Repair outer fuselage skin according material composition listed in drawing 304eS-85-112 and methods described in 304S Maintenance Manual chapter 6.
13	Reinforce the corner between fuselage skin and side wall by three layers of ※ CCC450 (carbon 200g/m²) tapes with 70, 65 and 60 mm

14	Repair side wall cover according material composition listed in drawing 304eS-85-112 and methods described in 304S Maintenance Manual chapter 6 and reinforce its joint with side wall, fuselage skin and front bulkhead cover by three layers of ※ CCC450 (carbon 200g/m²) tapes width 70, 65 and 60 mm.
15	Glue new battery side rails in to the compartment. Set its position according drawing 304eS-85-112.
16	Made new supporting hem for compartment lid (along the opening for this lid). Use composite tape with the same composition as fuselage skin.
17	Let the repaired area to cure for at least 24 hours / 20°C, and then cure 50°-55°C for at least 15 hours.
18	Repair paint of the fuselage skin according procedure described in 304S Maintenance Manual chapter 6.
19	Cover front bulkhead cover with Adhesive Backed Heat Barrier COO-13590 from battery compartment side. Drill again covered holes.
20	Paint all inner surfaces of battery compartment paint with two layers of PLAMOSTOP P9 paint. Then paint all inner surfaces with grey FEYCOPUR 611 paint (let each layer dry before application of next layer).
21	Cover top surfaces of battery compartment (next to the opening) with Adhesive Backed Heat Barrier ThermoTEC-13590.
22	Install all electrical equipment and wires according wiring scheme 304eS-85-04 and drawing 304eS-85-03. Install the front bulkhead cover (304eS-85-05) in to the compartment again.
23	Glue rubber plate 1 mm thick to the bottom of battery compartment (in the area of battery packs - rectangular plate 440x154mm).
24	Install Smoke and fire alarm JABLOTRON SD-283ST according 304eS-85-07 drawing.
25	Glue new padding in to the battery compartment using adhesive tape. Do not cover venting hole.
26	Weight the sailplane, check position of CG and limited masses and issue new weighting protocol.
27	Record the repair in to the sailplane Log book and documentation.

1.4 Drawings


① OD VÝROBNÍHO ČÍSLA 79. NAHRAZUJE POZICE 12 POZICI 1
POZICE 11 PLATÍ DO VÝROBNÍHO ČÍSLA 77.
ELEKTRICKÉ ZAPOJENÍ JE UVEDENO NA VÝKRESE 304eS-85-04
POZICE | POPIS | MNOŽSTVÍ
12 | 304eS-85-05 | 1
11 | IZOLACE COO-13590 | 1
10 | DC/DC PŘEVODNÍK | 1
9 | POLOVODIČOVÉ RELÉ | 1
8 | MĚŘÍCÍ ODPOR | 1
7 | POJISTKA 325A | 1
6 | LX-UI PŘEVADĚČ | 1
5 | HLAVNÍ STYKAČ | 1
4 | CONNECTION BOX | 1
3 | SESTAVA REGULÁTORU MOTORU | 1
2 | KABELY - VYSOKÉ NEPĚTÍ | 1
1 | KRYT PROSTORU ELEKTRONIKY | 1
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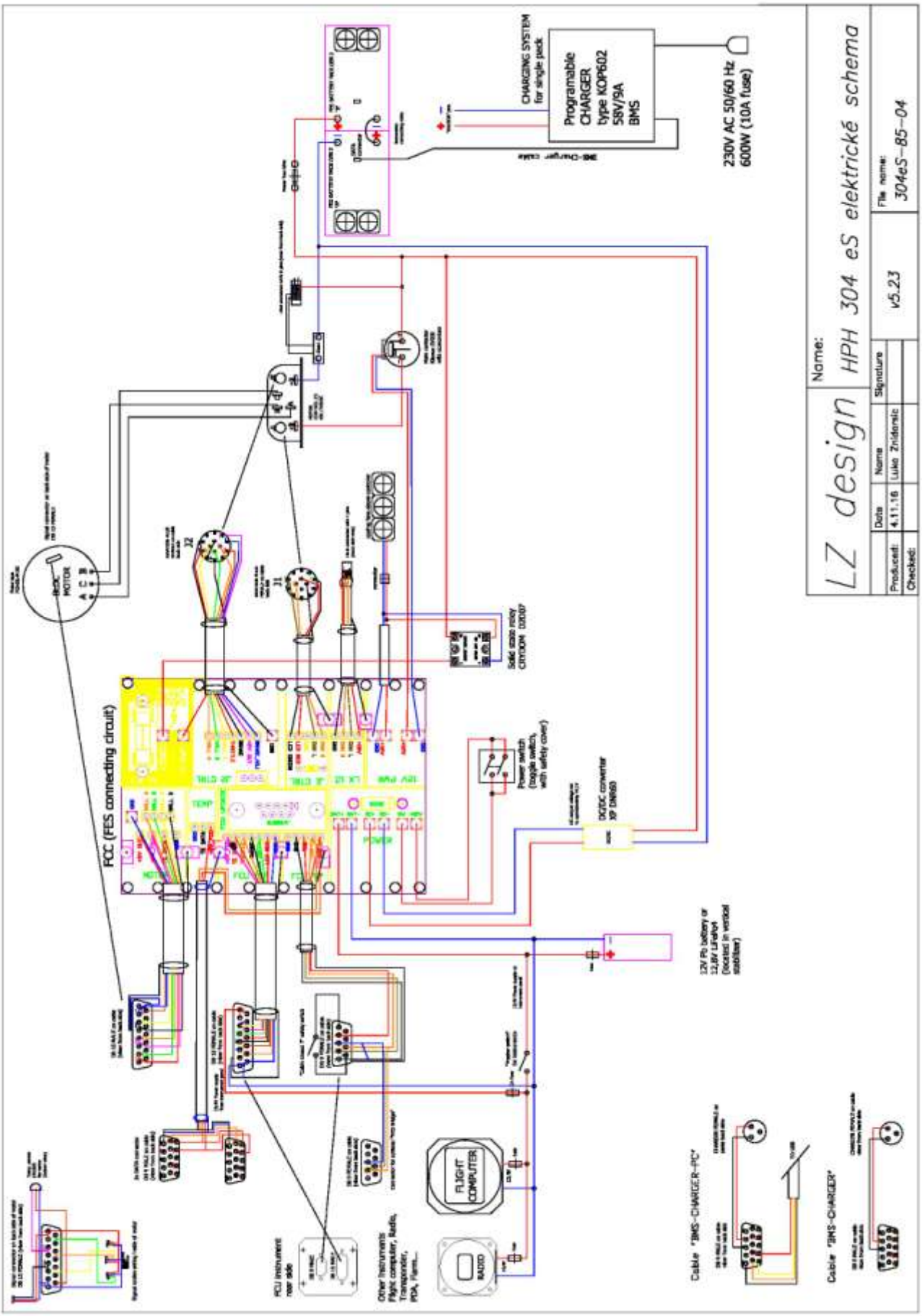
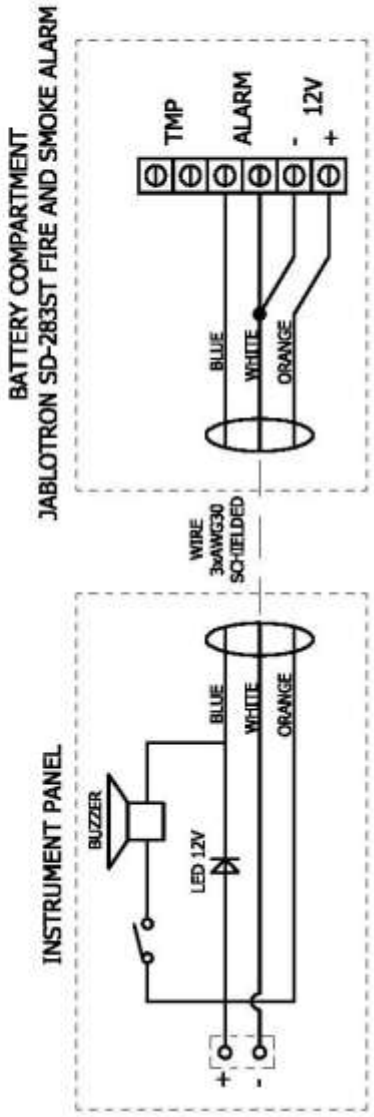
ČÍSLO VÝKRESU 304eS-85-03
OTVORY PRO VĚTRÁNÍ A KABELY


CHARGING SYSTEM for single pack
Programable CHARGER type KOP602 58V/9A BMS
230V AC 50/60 Hz 600W (10A fuse)
FCC (FES connecting circuit)
Power switch (toggle switch, with safety cover)
DC/DC converter XP DN60
FLIGHT COMPUTER
RADIO
Other instruments Flight computer, Radio, Transponder, PDA, Flarm...
Cable "BMS-CHARGER-PC"
Cable "BMS-CHARGER"
LZ design
Name: HPH 304 eS elektrické schema
Signature
Date
Name
Produced: 4.11.16 Luka Znidarsic
Checked:
v5.23
File name: 304eS-85-04



USE STAINLESS STEEL JACKET ⌀10mm (010/000-FX000-16649) FOR COVERING OF WIRES INSIDE BATTERY COMPARTMENT
ALARM SETTING (JABLOTRON SD-283ST ALARM)
CONNECT SIR (4) AND NO (6) TERMINALS

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VYPRACOVAL	VAVŘÍN	MAT.	
PŘEZKOUŠEL		ROZM.MAT.	
SCHVÁLIL	JENSEN	DATUM	9.10.2017

HPH, spol. s r.o.
Čáslavská 234
Kutná Hora

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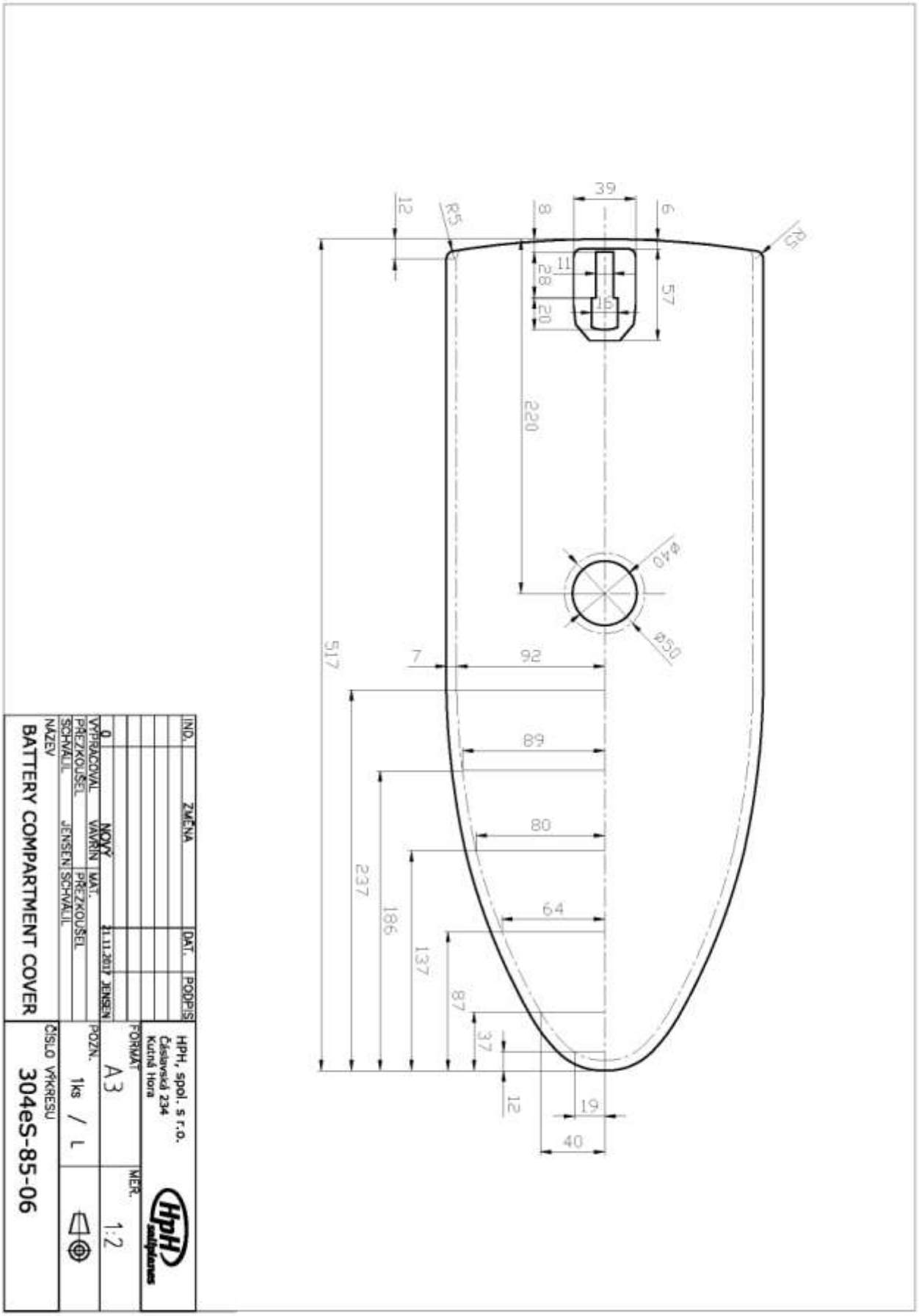
FIRE AND SMOKE WIRING DIAGRAM

ČÍSLO VÝKRESU
304ES-85-07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JENSEN
VYPRACOVAL
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PŘEZKOUŠEL
PŘEZKOUŠEL
SCHVÁLIL
JENSEN
SCHVÁLIL
NÁZEV
BATTERY COMPARTMENT COVER
ČÍSLO VÝKRESU
304eS-85-06
HPH, spol. s r.o.
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Kutná Hora
FORMÁT
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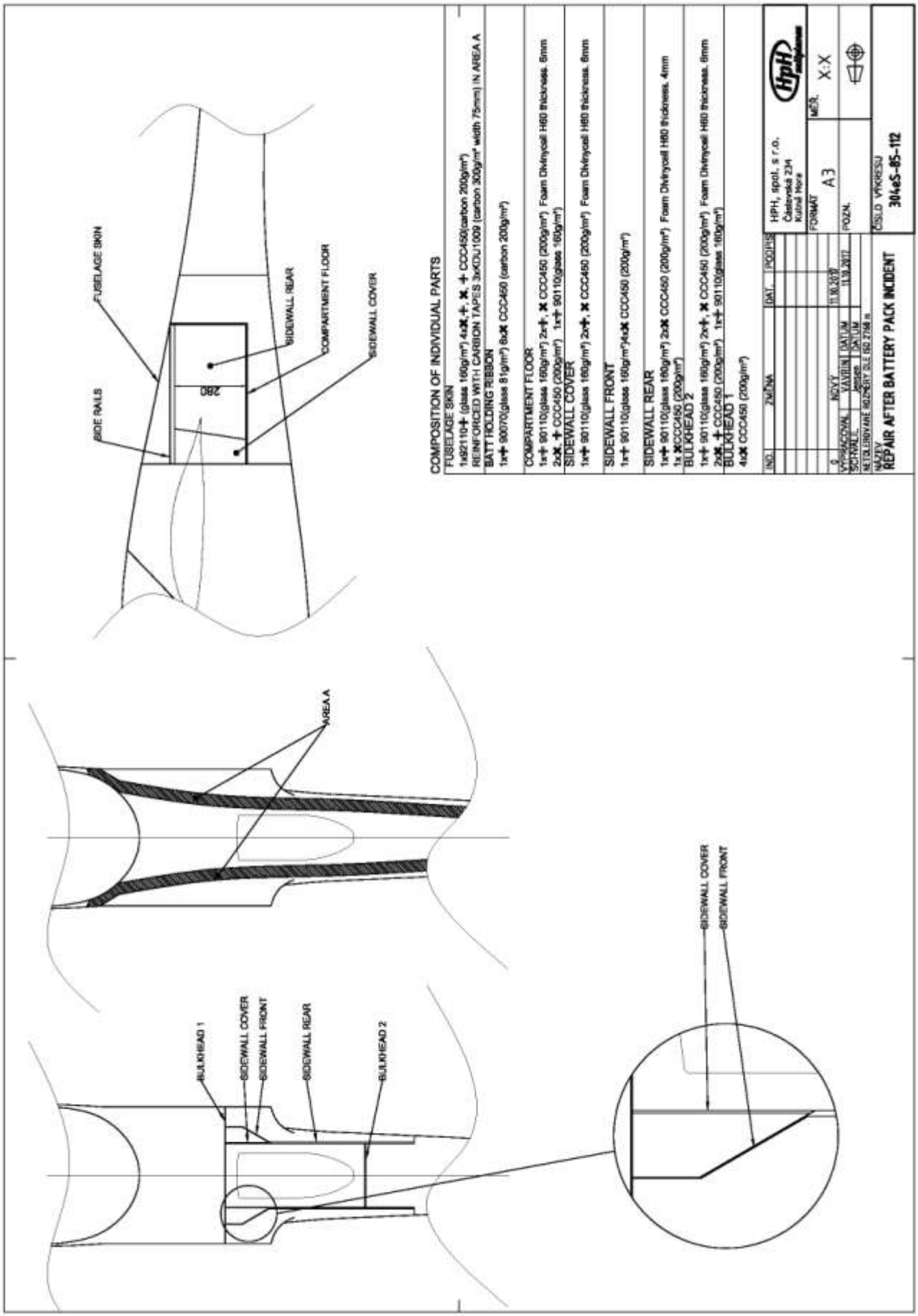
FUSELAGE SKIN
SIDEWALL REAR
COMPARTMENT FLOOR
SIDEWALL COVER
SIDE RAILS
280
AREA A
BULKHEAD 1
SIDEWALL COVER
SIDEWALL FRONT
SIDEWALL REAR
BULKHEAD 2
SIDEWALL COVER
SIDEWALL FRONT
COMPOSITION OF INDIVIDUAL PARTS
FUSELAGE SKIN
1x92110 (glass 160g/m²) 4x CCC450(carbon 200g/m²)
REINFORCED WITH CARBON TAPES 3xKDU1009 (carbon 300g/m² width 75mm) IN AREA A
BATT.HOLDING RIBBON
1x 90070(glass 81g/m²) 6x CCC450 (carbon 200g/m²)
COMPARTMENT FLOOR
1x 90110(glass 160g/m²) 2x CCC450 (200g/m²) Foam Divinycell H80 thickness. 6mm
2x CCC450 (200g/m²) 1x 90110(glass 160g/m²)
SIDEWALL COVER
1x 90110(glass 160g/m²) 2x CCC450 (200g/m²) Foam Divinycell H80 thickness. 6mm
SIDEWALL FRONT
1x 90110(glass 160g/m²)4x CCC450 (200g/m²)
SIDEWALL REAR
1x 90110(glass 160g/m²) 2x CCC450 (200g/m²) Foam Divinycell H80 thickness. 4mm
1x CCC450 (200g/m²)
BULKHEAD 2
1x 90110(glass 160g/m²) 2x CCC450 (200g/m²) Foam Divinycell H80 thickness. 6mm
2x CCC450 (200g/m²) 1x 90110(glass 160g/m²)
BULKHEAD 1
4x CCC450 (200g/m²)
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NOVÝ 11.10.2017
VYPRACOVAL VAVŘÍN DATUM 11.9.2017
SCHVÁLIL Jesse DATUM
NETOLEROVANÉ ROZMĚRY DLE ISO 2768 m
ČÍSLO VÝKRESU 304eS-85-112
NÁZEV
REPAIR AFTER BATTERY PACK INCIDENT