

332.001.012-AFT CRANE
FINAL BASIC DESIGN INFORMATION
AS CONFIRMED BY OWNER


APPROVAL DRAWINGS BOOKLET	:	CA/G5005~06/ISSUE-C
PROJECT REFERENCE NO.	:	G5005~G5006
TYPE OF EQUIPMENT	:	Deck Machinery: – Hydraulic Knuckle Jib Crane
PROJECT NAME	:	82.9m VS482 GTRV Multipurpose Offshore Vessel
BUYER	:	Fugro Gulf, Inc
HULL NO	:	155~156
CLASS	:	Pedestal – DNV Cert
DATE OF ISSUE	:	01 March 2011

Cargotec CHS Asia Pacific Pte Ltd**Offshore Load Handling***Mailing and Site Address:*

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Singapore 638500
Tel +65 6861 3922
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Domicile

Singapore
Co. Reg. No. 199404157W
GST No. M2-0125279-2
Registered Address
No. 15 Tukang Innovation Drive
Singapore 618299

Type Of Submission	:	Approval Drawings	Product Manager John Wong
Project No.	:	G5005~G5006	
Project Name	:	82.9m VS482 GTRV Multipurpose Offshore Vessel	
Buyer	:	Fugro Gulf, Inc	
Owner	:	NA	
Hull No.	:	155~156	

CONTENTS

- 1.0) **Technical Specification Data Sheet**
- 2.0) **Mechanical General Arrangement Drawings**
- 3.0) **Hydraulic Control System Drawings**
- 4.0) **Electrical Control System Drawings**

1.0) Technical Specification Data Sheet - Rev 2



TECHNICAL SPECIFICATION


DATA SHEET

REV. : 2

No. of sheet : 1

EQUIPMENT : HYDRAULIC KNUCKLE JIB CRANE
MODEL : HMC 1610 LK 50-17
JOB NO. : G5005 / G5006

HULL NO. : 155 / 156
QTY. : 1 SET / JOB NO.

1	HOISTING WINCH	
1.1	Winch, model/ manufacturer :	BW 5200 Man Riding Winch/ Brevini
1.2	Max. pull, 1st layer/ 4th layer :	75kN/ 57kN 
1.3	Brake:	Dual brakes with: Main brake: 5000kg SWL Secondary brake: 2500 kg (Man Riding) SWL
2	SLEWING RING DATA	
2.1	Manufacture :	ROTHE ERDE
2.2	Model no : *	062.35.1610.000.49.1503
3	WIRE ROPE	
3.1	Rope specifications :	Ø19mm DYFORM 34x7 MBL 30.7T
4	CYLINDER - KNUCKLE JIB	
4.1	Bore Dia. :	200mm
4.2	Rod Dia. :	160mm
4.3	Fully closed length :	3355mm
4.4	Stroke :	2605mm
5	CYLINDER - MAIN JIB	
5.1	Bore Dia. :	220mm
5.2	Rod Dia. :	160mm
5.3	Fully closed length :	3340mm
5.4	Stroke :	2640mm
6	HYDRAULIC SYSTEM	
6.1	Hydraulic oil grade, ISO :	See specification sheet LSS-05
6.5	Pump, model/ manufacturer :	R1A PUMP/ David Brown
6.6	Tank Capacity :	1350 Liter
7	CRANE HOOK	
7.1	Model/ Manufacturer :	BSS 16 CERTEX SWIVELHOOK
7.2	Safe working load :	8.1 ton
8	PAINTING	
8.1	Painting Specifications :	According to International 2D or equivalent
8.2	Top Coat Colour :	RAL9010 White
9	DIRECTIONAL CONTROL VALVE	
9.1	Model/ Manufacturer :	PVG 32 Proportional Valve/ Danfoss

Maintenance system for Hydramarine products		MacGREGOR MacGREGOR Hydramarine AS
Doc. ID. : LSS-05 Hydraulic oil.docx	Rev. / date : <u>02 / 26.10.05</u>	Page: <u>1 of 1</u>

HYDRAMARINE STANDARD LUBRICATION SPECIFICATION																										
Specification no. : LSS- 05																										
Lubrication equipment: HYDRAULIC SYSTEM OIL																										
General Instruction: Oil levels and quantity specified in the maintenance procedure in the User manual																										
General Lubrication Specification: <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">DIN 51524 / 3 HVLP</td> <td style="width: 33%;">ISO VG 68</td> <td style="width: 33%;">For temp >+35 °C</td> </tr> <tr> <td>DIN 51524 / 3 HVLP</td> <td>ISO VG 46</td> <td>For temp >+20 °C <+35 °C</td> </tr> <tr> <td>DIN 51524 / 3 HVLP</td> <td>ISO VG 32</td> <td>For temp >÷10 °C <+20 °C</td> </tr> <tr> <td>DIN 51524 / 3 HVLP</td> <td>ISO VG 22</td> <td>For temp <÷10 °C **)</td> </tr> </table>			DIN 51524 / 3 HVLP	ISO VG 68	For temp >+35 °C	DIN 51524 / 3 HVLP	ISO VG 46	For temp >+20 °C <+35 °C	DIN 51524 / 3 HVLP	ISO VG 32	For temp >÷10 °C <+20 °C	DIN 51524 / 3 HVLP	ISO VG 22	For temp <÷10 °C **)												
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DIN 51524 / 3 HVLP	ISO VG 22	For temp <÷10 °C **)																								
Suppliers Lubrication Specification: <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">Texaco</td> <td style="width: 40%;">RANDO OIL HDZ68</td> <td style="width: 40%;">For temp >+35 °C</td> </tr> <tr> <td></td> <td>RANDO OIL HDZ46</td> <td>For temp >+20 °C<+35 °C</td> </tr> <tr> <td></td> <td>RANDO OIL HDZ32</td> <td>For temp >÷10 °C<+20 °C</td> </tr> <tr> <td></td> <td>RANDO OIL HDZ22</td> <td>For temp <÷10 °C</td> </tr> <tr> <td>Castrol</td> <td>HYSPI AWH 68</td> <td>For temp >+35 °C</td> </tr> <tr> <td></td> <td>HYSPI AWH 46</td> <td>For temp >+20 °C<+35 °C</td> </tr> <tr> <td></td> <td>HYSPI AWH 32</td> <td>For temp >÷10 °C<+20 °C</td> </tr> <tr> <td></td> <td>HYSPI AWH 15</td> <td>For temp <÷10 °C</td> </tr> </table>			Texaco	RANDO OIL HDZ68	For temp >+35 °C		RANDO OIL HDZ46	For temp >+20 °C<+35 °C		RANDO OIL HDZ32	For temp >÷10 °C<+20 °C		RANDO OIL HDZ22	For temp <÷10 °C	Castrol	HYSPI AWH 68	For temp >+35 °C		HYSPI AWH 46	For temp >+20 °C<+35 °C		HYSPI AWH 32	For temp >÷10 °C<+20 °C		HYSPI AWH 15	For temp <÷10 °C
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	HYSPI AWH 15	For temp <÷10 °C																								
Comments / notes : **) For low temperature operation below ÷20 °C, special arctic oil is recommended. Please contact relevant supplier for exact specification. Ex.: Statoil: HYDRAULIC OIL 131 For temp >÷40 °C < +65 °C																										

FOR APPROVAL

2.0) Mechanical General Arrangement Drawings

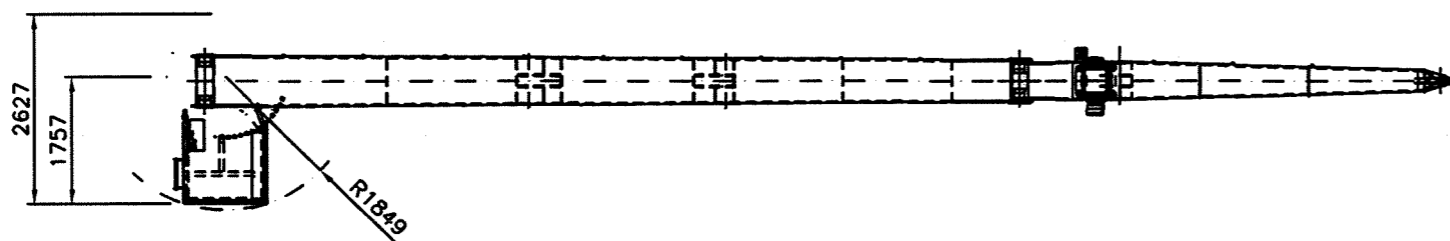
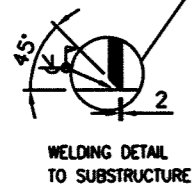
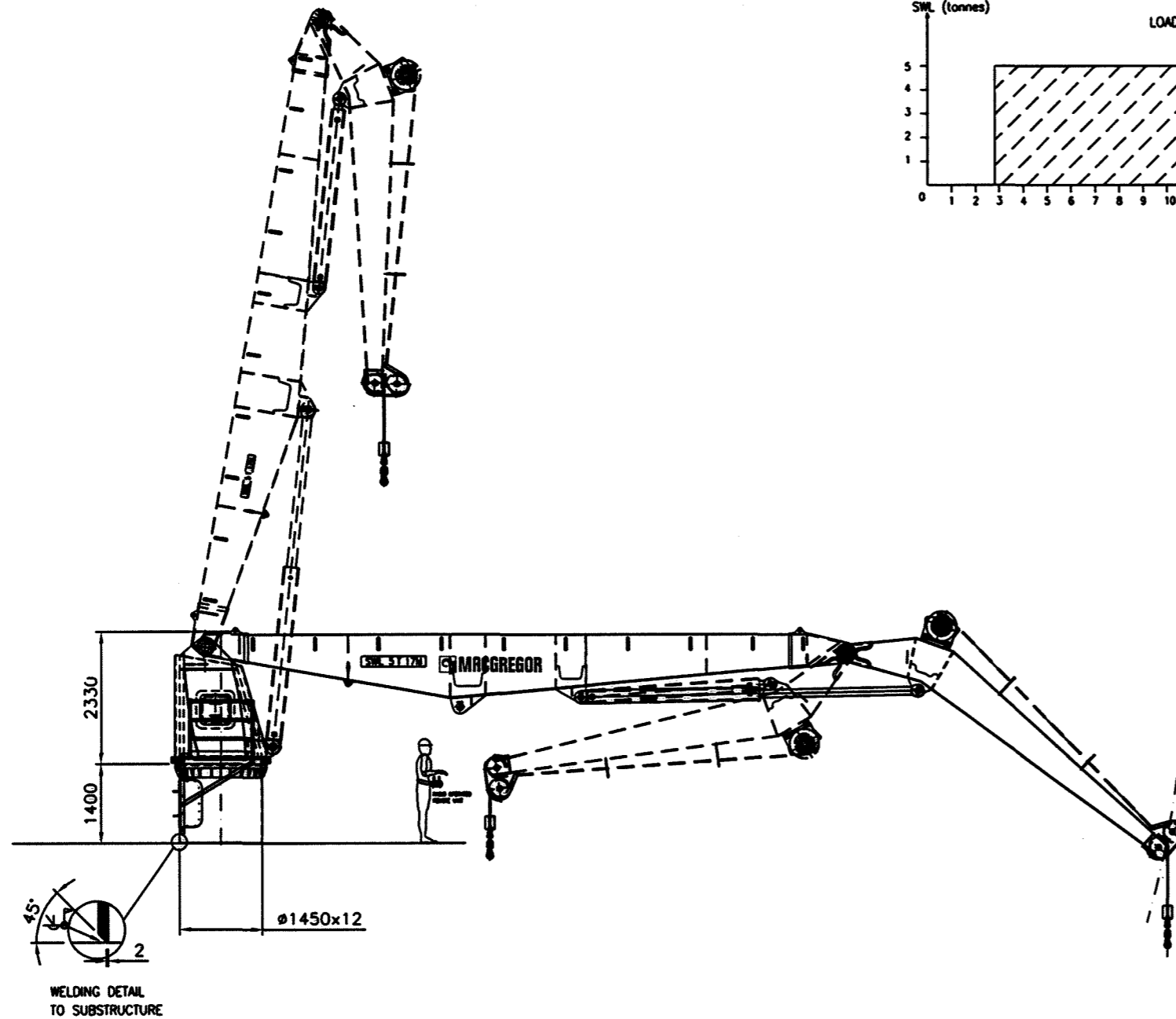
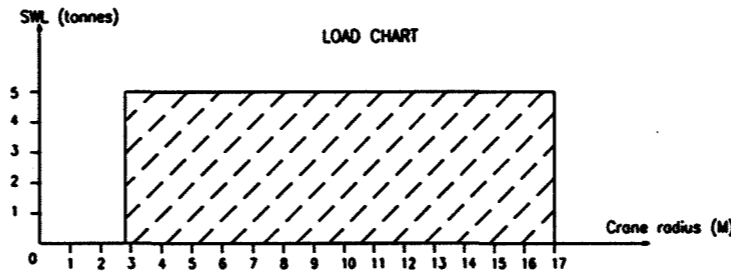
Item	Title	Drawing No.	Page	Revision
1.	Hydraulic Knuckle Jib Crane General Arrangement	C.1610.188.GA	1 Of 1	0
2.	Hydraulic Knuckle Jib Crane King Main Assembly	C.1610.188.AB01.A	1 Of 1	0

ITEM NUMBER: C1610188GA

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Dimensions without tolerances refer to comply with: NS/ISO 2768/1 tolerance class "medium".
 Made to comply with: GRADE B NS 470.

Rev.	Description	Drawn	Checked	Date
0	ISSUED FOR APPROVAL	rmg		18.10.10



FOR APPROVAL

MAX. MOMENTS GIVEN ARE INCL. DYN. FACTOR 1,15 AND TRIM/LIST = 2°/5°

Mz = 1600 kNm, JIB HORIZONTAL
 My = 170 kNm, JIB HORIZONTAL

Total weight approx. 13 Ton, (SWL not included)

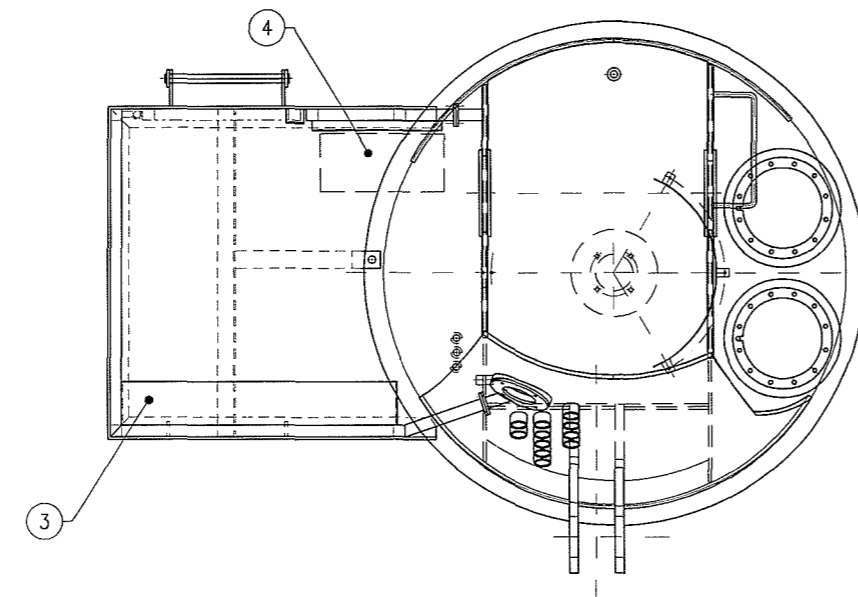
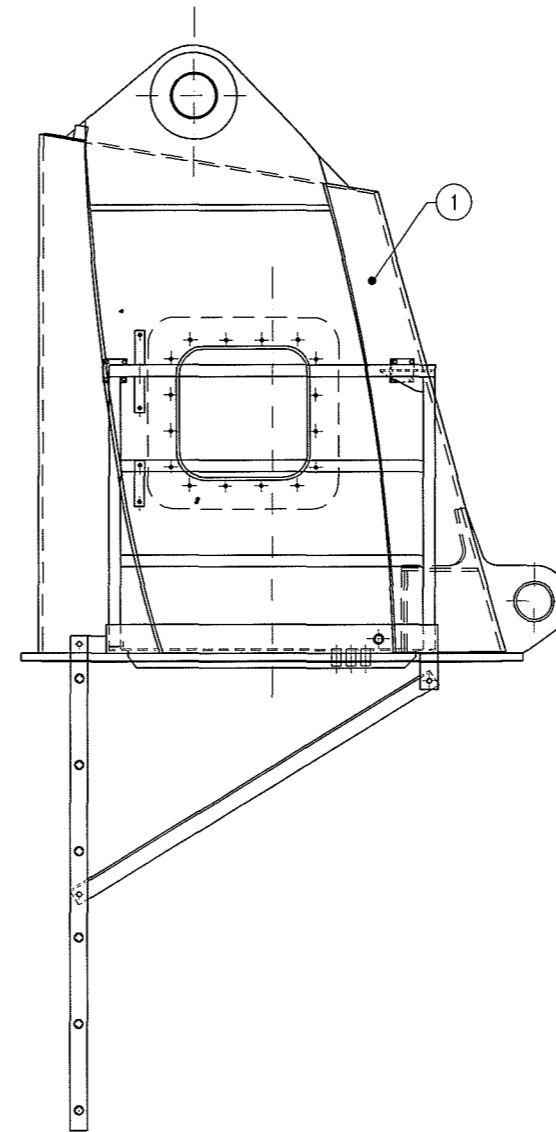
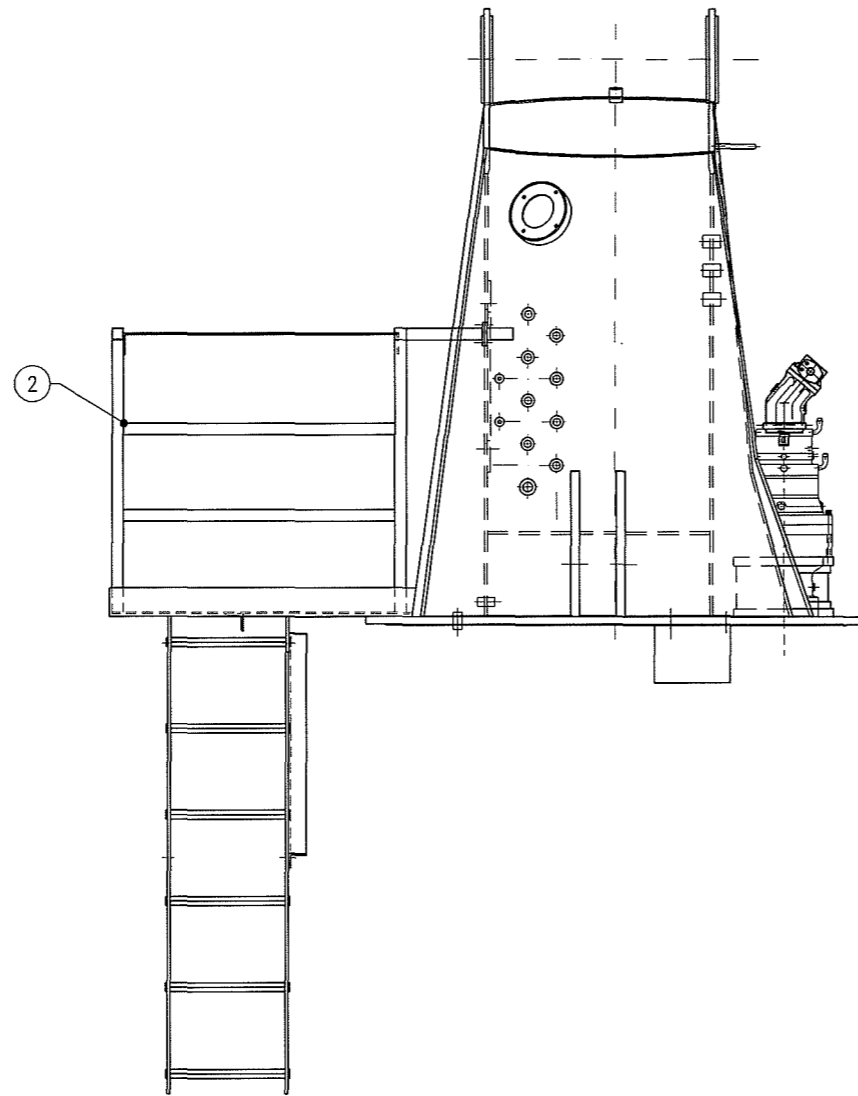
Drawn/Date: RMA 18.10.10	Projection: 1:100/A3	Scale/Format: 1:100/A3	MacGREGOR MacGREGOR Hydramarine AS Tel: +47 91 68 60 00 Fax: +47 91 68 60 01
Hydramarine Item Number:	Project/Custom: HMC 1610 LK 50-17(MR9)	AutCAD File: G5005-1 C1610188GA	REV.:
GENERAL ARRANGEMENT		C.1610.188.GA	0

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ITEM NUMBER: C1610188AB01

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Dimensions without tolerances tolerances to comply with: NS/ISO 2768/1 tolerance class "medium".		Welds to comply with: GRADE B NS 470.		
Rev.	Description	Drawn	Checked	Date
0	ISSUED FOR INFO	THAM		06.01.11



FOR APPROVAL

1	4	RADIO REMOTE CABINET	-A97	15	INFO
1	3	MAIN CTRL. VALVE	C.1610.188.HF. pos. MH-06	50	INFO
1	2	PLATFORM	C.1610.H021.01	205	
1	1	STEEL ASSEMBLY	C.1610.188.AB50	1717	
No. Of.	Pos. No.	Description	Specification	Weight	Reference No.
Drawn/Date:		Projection		Scale/format:	
MJA 17.11.10		1:25/A3		MacGREGOR	
Hydramarine Item Number:		Project/Customer		AutoCAD File:	
65005-1		C1610188AB01		REV.	
HMC 1610			C.1610.188.AB01.A		
KING			0		
MAIN ASSEMBLY					

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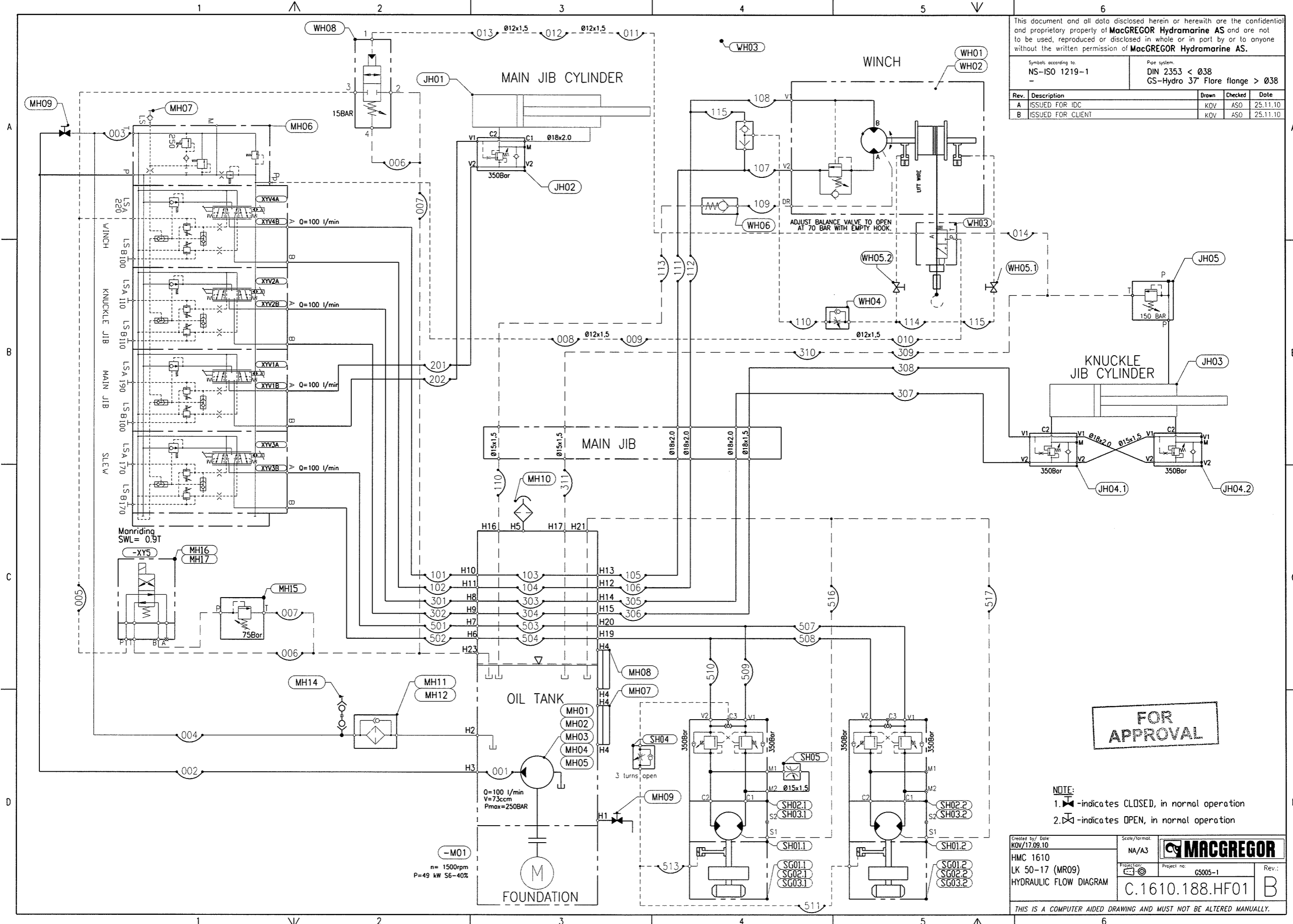
3.0) Hydraulic Control System Drawings

Item	Title	Drawing No.	Page	Revision
1.	Hydraulic Knuckle Jib Crane Hydraulic Flow Diagram	C.1610.188.HF01	1 of 1	B

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Symbols according to NS-ISO 1219-1
 Pipe system: DIN 2353 < Ø38 GS-Hydro 37" Flare flange > Ø38

Rev.	Description	Drawn	Checked	Date
A	ISSUED FOR IDC	KOV	ASO	25.11.10
B	ISSUED FOR CLIENT	KOV	ASO	25.11.10



FOR APPROVAL

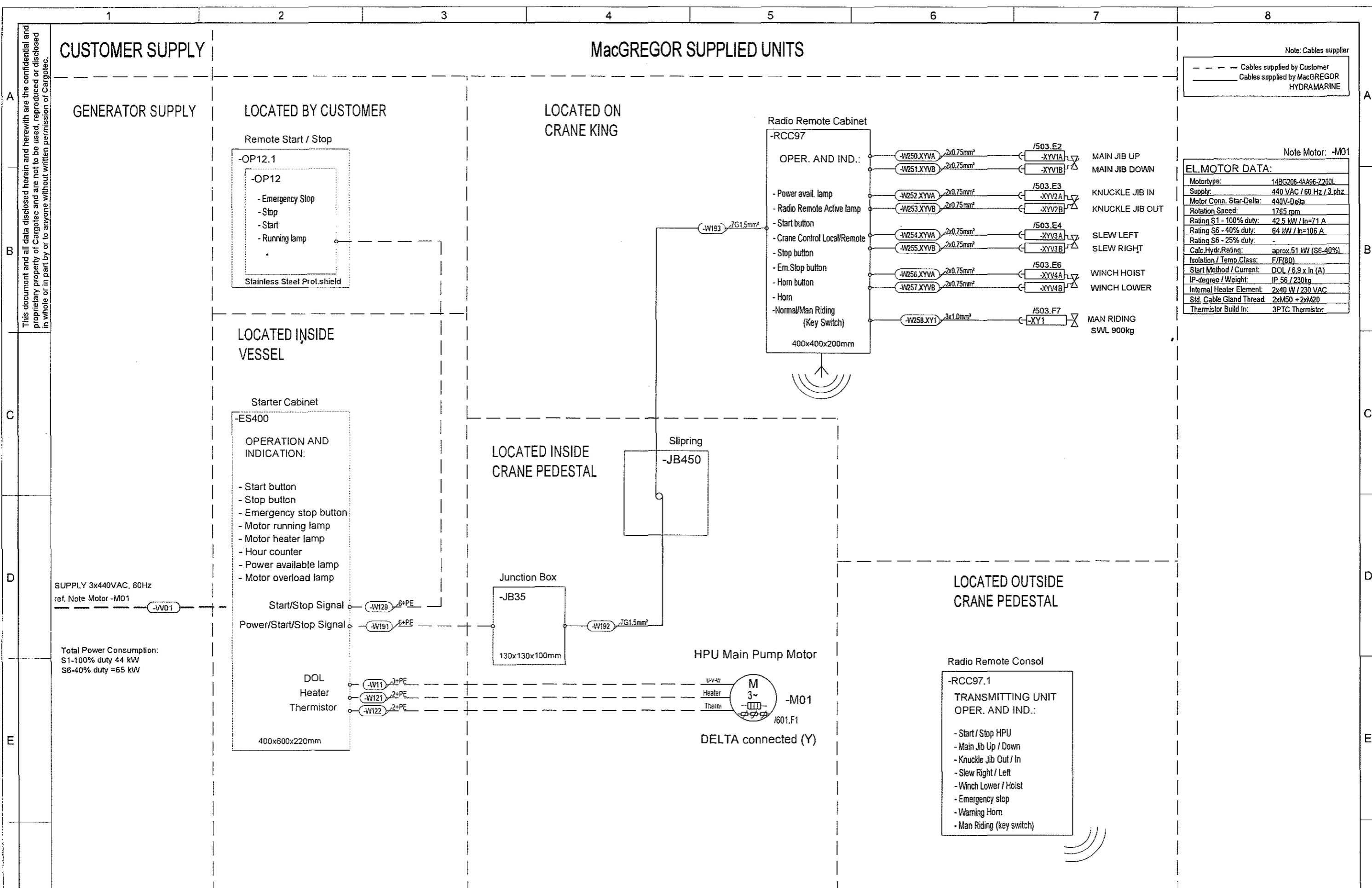
- NOTE:**
1. - indicates CLOSED, in normal operation
 2. - indicates OPEN, in normal operation

Created by/ Date KOV/17.09.10	Scale/Format NA/A3	
HMC 1610 LK 50-17 (MR09) HYDRAULIC FLOW DIAGRAM	Project no: GS005-1	
C.1610.188.HF01		Rev.: B

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4.0) Electrical Control System Drawings

Item	Title	Drawing No.	Page	Revision
1.	Hydraulic Knuckle Jib Crane Main Block Diagram – Electrical Block Diagram	G5005-1 +XO 101	1 of 1	2
2.	Hydraulic Knuckle Jib Crane Layout Diagram -RCC97	G5005-1 +AB-XM 701	1 of 1	0
3.	Hydraulic Knuckle Jib Crane Layout Diagram –ES400	G5005-1 +AP-XM 751	1 of 1	0
4.	Hydraulic Knuckle Jib Crane Layout Diagram –OP12	G5005-1 +AP-XM 752	1 of 1	0
5.	Hydraulic Knuckle Jib Crane Layout Diagram –JB35	G5005-1 +AP-XM 753	1 of 1	0
6.	Hydraulic Knuckle Jib Crane Layout Diagram –RCC97. 1	57163i1A-SPxxxx-x	1 of 2 2 of 2	A



Note: Cables supplier

--- Cables supplied by Customer

— Cables supplied by MacGREGOR

HYDRAMARINE

Note Motor: -M01

EL.MOTOR DATA:

Motor type:	14RG208-4A96-22001
Supply:	440 VAC / 60 Hz / 3 phz
Motor Conn. Star-Delta:	440V-Delta
Rotation Speed:	1765 rpm
Rating S1 - 100% duty:	42.5 kW / In=71 A
Rating S6 - 40% duty:	64 kW / In=106 A
Rating S6 - 25% duty:	-
Calc. Hydr. Rating:	aprox. 51 kW (S6-40%)
Isolation / Temp. Class:	F/F(80)
Start Method / Current:	DOL / 6.9 x In (A)
IP-degree / Weight:	IP 56 / 230kg
Internal Heater Element:	2x40 W / 230 VAC
Std. Cable Gland Thread:	2xM50 + 2xM20
Thermistor Build In:	3PTC Thermistor

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Rev.	Description	Date	Modified by	Approved
2	Changed -W191 cable	16.02.2011	RPB	THE
1	Text, motor data and power supply changed	16.11.2010	RPB	THE
0	Issued for information	01.11.2010	RPB	MSP
A	Issued for DC	01.11.2010	RPB	MSP

Furgo McClelland Marine
G5005-1
HMC 1610 LK 50-17

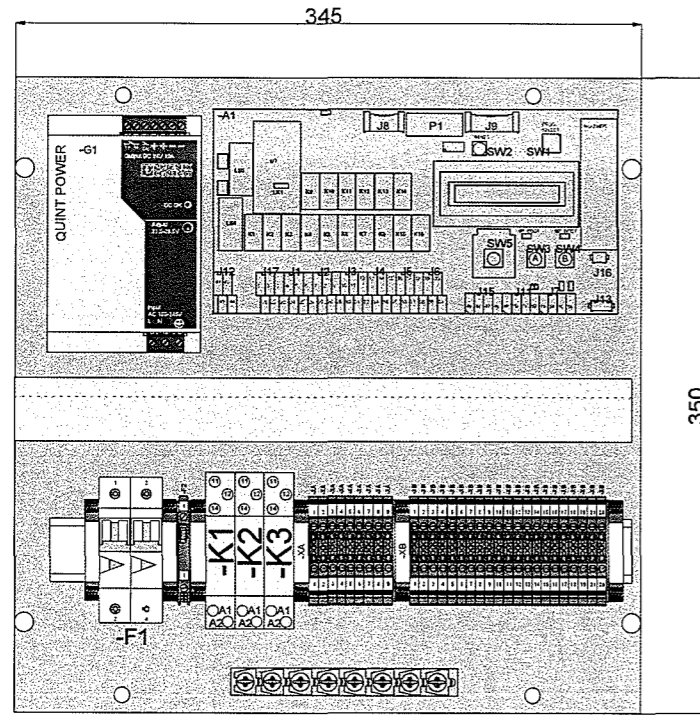
Drawn by: RPB
Date: 11.10.2010
Project rev.: 2

MAGGREGOR

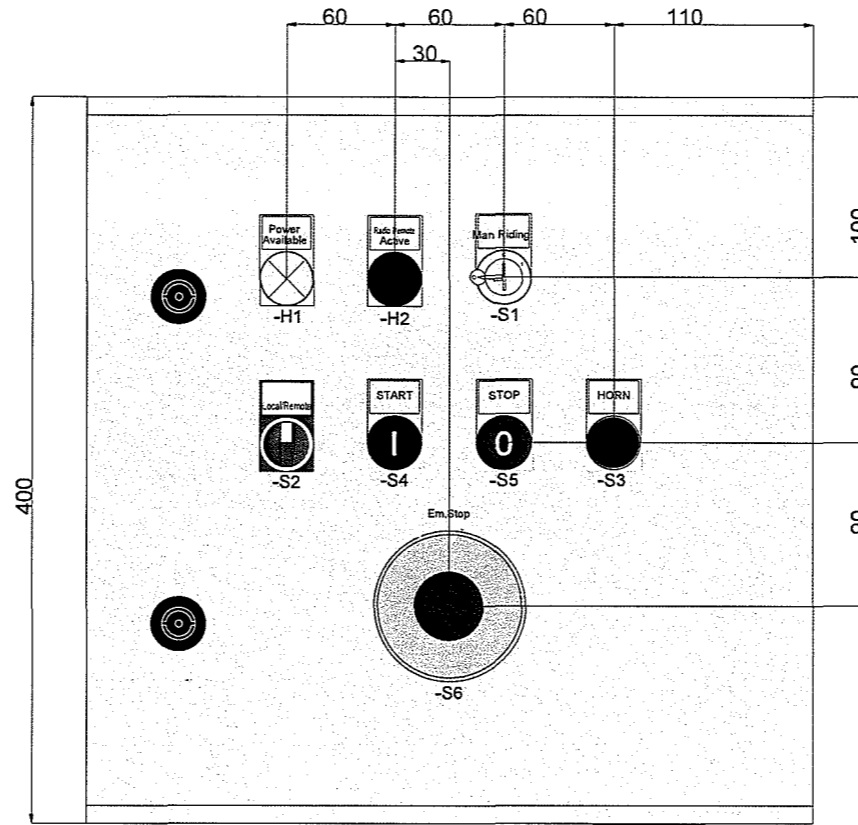
Main Block Diagram
Electrical Block Diagram

Dwg. No.	G5005-1	+XO	101
HLA:		Sheet rev.	2
Loc:		Next sheet	401

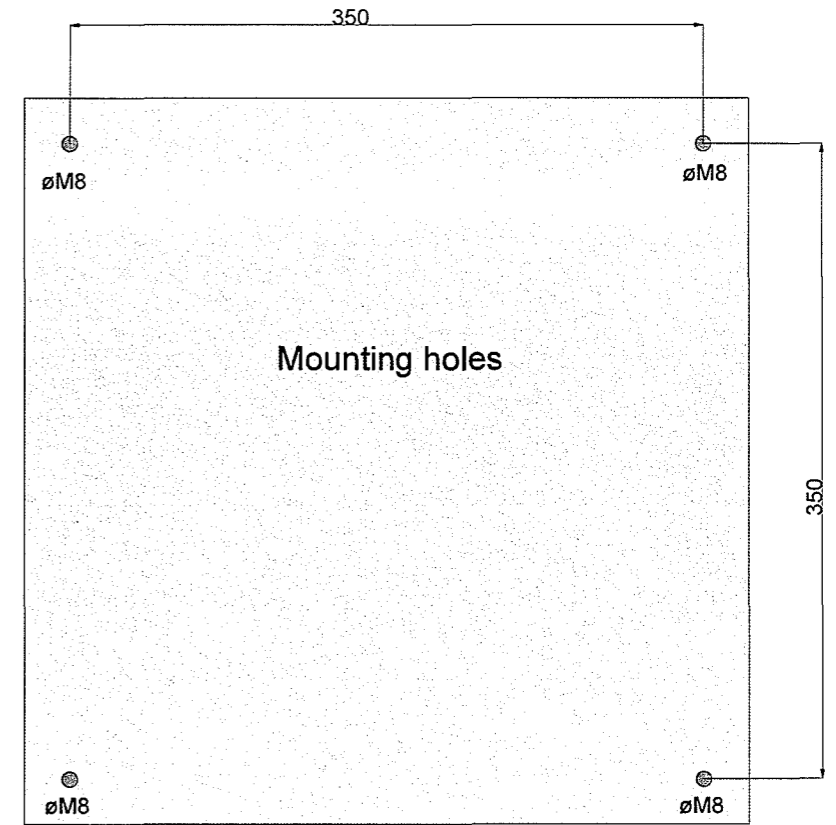
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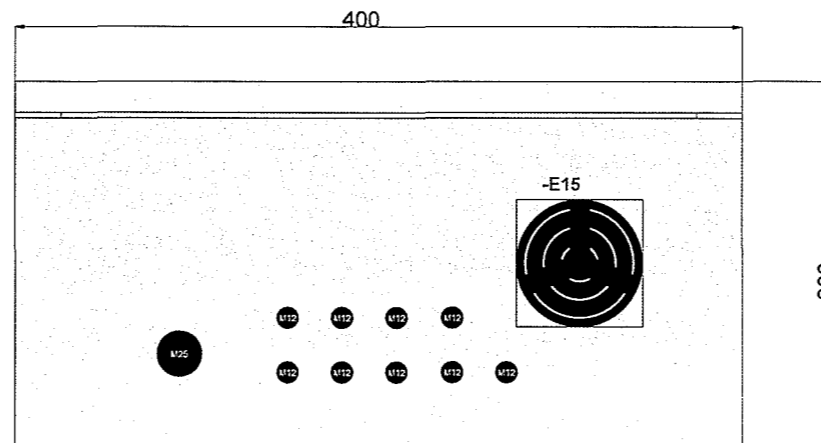
MOUNTING PLATE



FRONT VIEW



BACK VIEW



BOTTOM VIEW

FOR APPROVAL

Rev.	Description	Date	Modified by	Approved
0	Issued for production/information	17.11.2010	RPB	THE
A	Issued for DC	16.11.2010	RPB	THE

Fugro McClelland Marine
G5005-1
HMC 1610 LK50-17

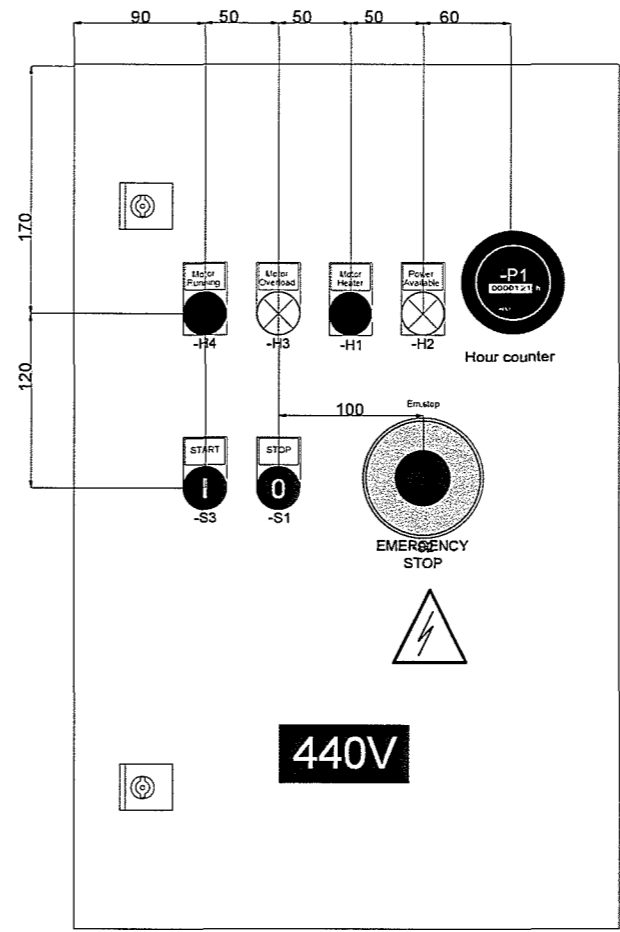
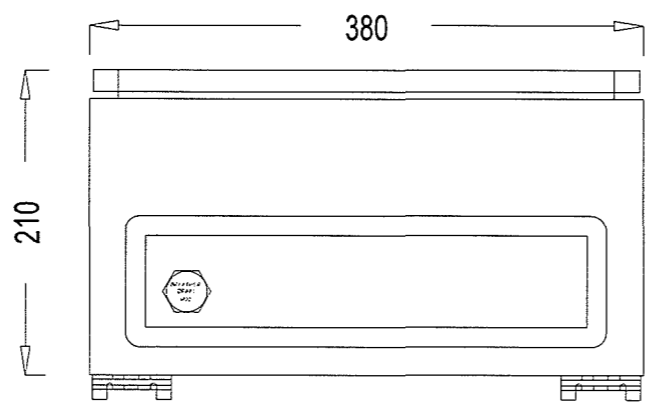
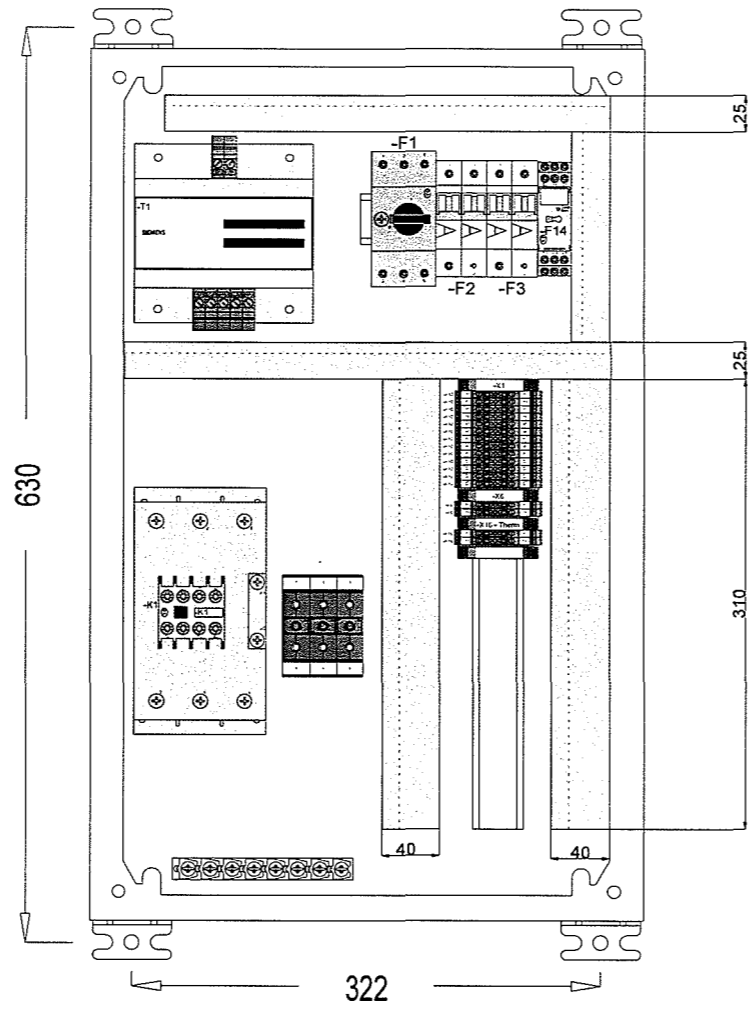
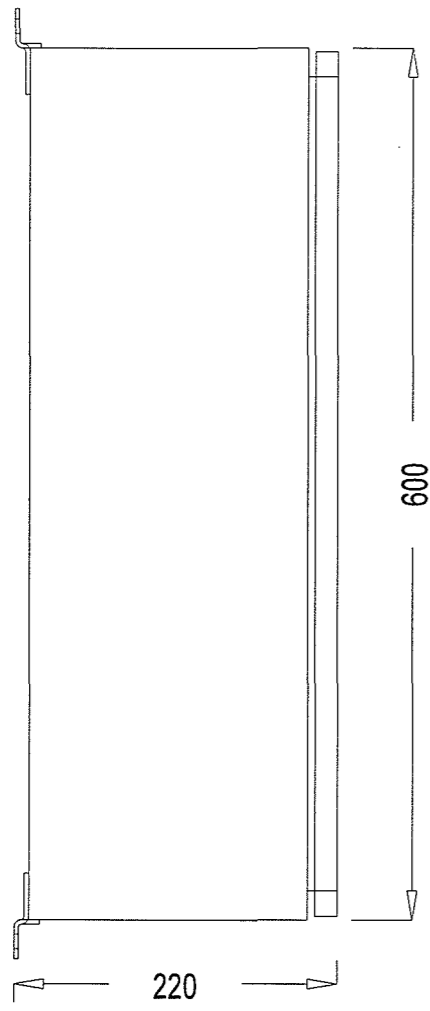
Drawn by RPB
Date 11.10.2010
Project rev. 1



Layout diagram
-RCC97

Dwg. No. G5005-1	+AB-XM	701
HLA:	Sheet rev. 0	Next sheet 751
Loc: +RCC97		

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0	Issued for production/information	17.11.2010	RPB	THE
A	Issued for DC	16.11.2010	RPB	THE

Fugro McClelland Marine
G5005-1
HMC 1610 LK50-17

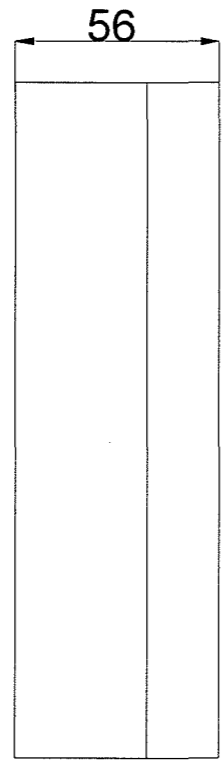
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Project rev.	1



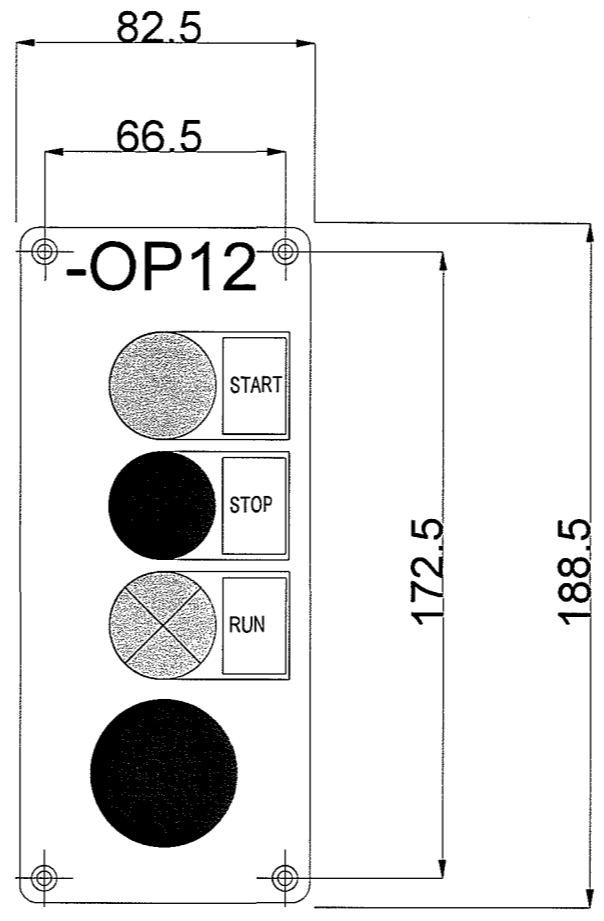
Layout diagram
-ES400

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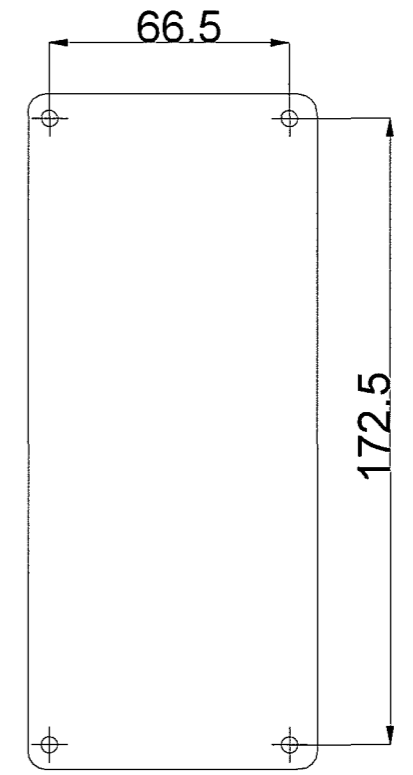
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Side view



Front view



Mounting holes

FOR APPROVAL

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0	Issued for production/information	17.11.2010	RPB	THE
A	Issued for DC	16.11.2010	RPB	THE

Fugro McClelland Marine
G5005-1
HMC 1610 LK50-17

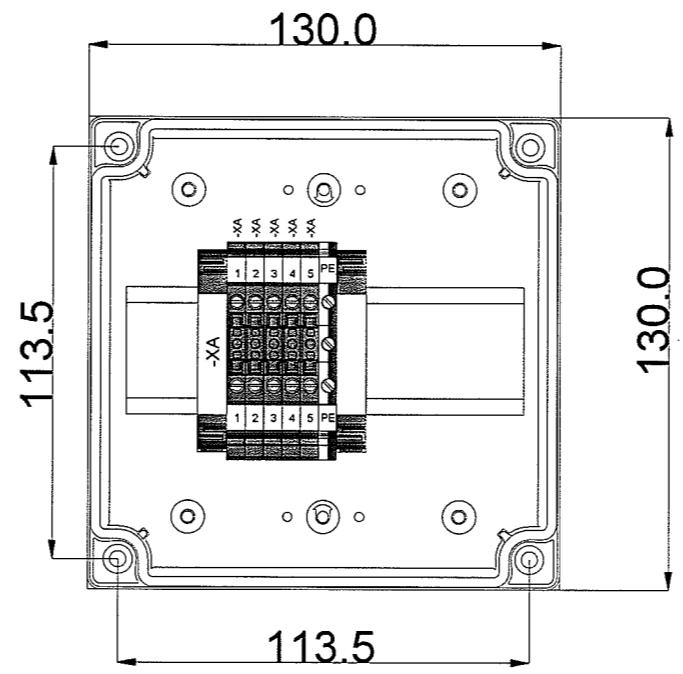
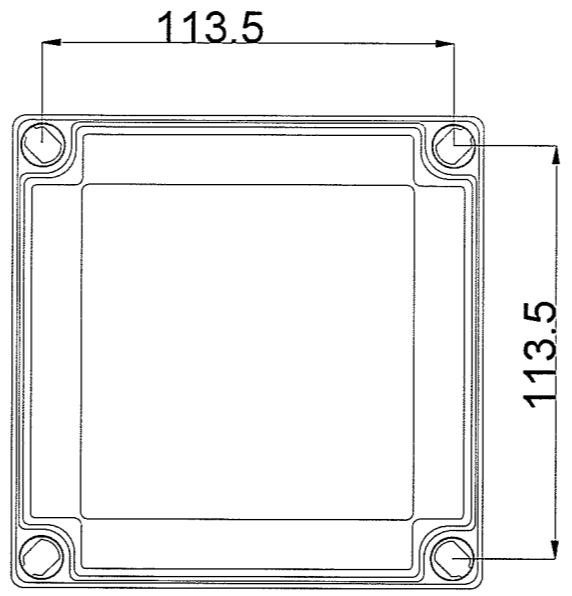
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Date	11.10.2010
Project rev.	1



Layout diagram
-OP12

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Loc:	+OP12	Next sheet	753

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0	Issued for production/information	17.11.2010	RPB	THE
A	Issued for DC	16.11.2010	RPB	THE

Fugro McClelland Marine
G5005-1
HMC 1610 LK50-17

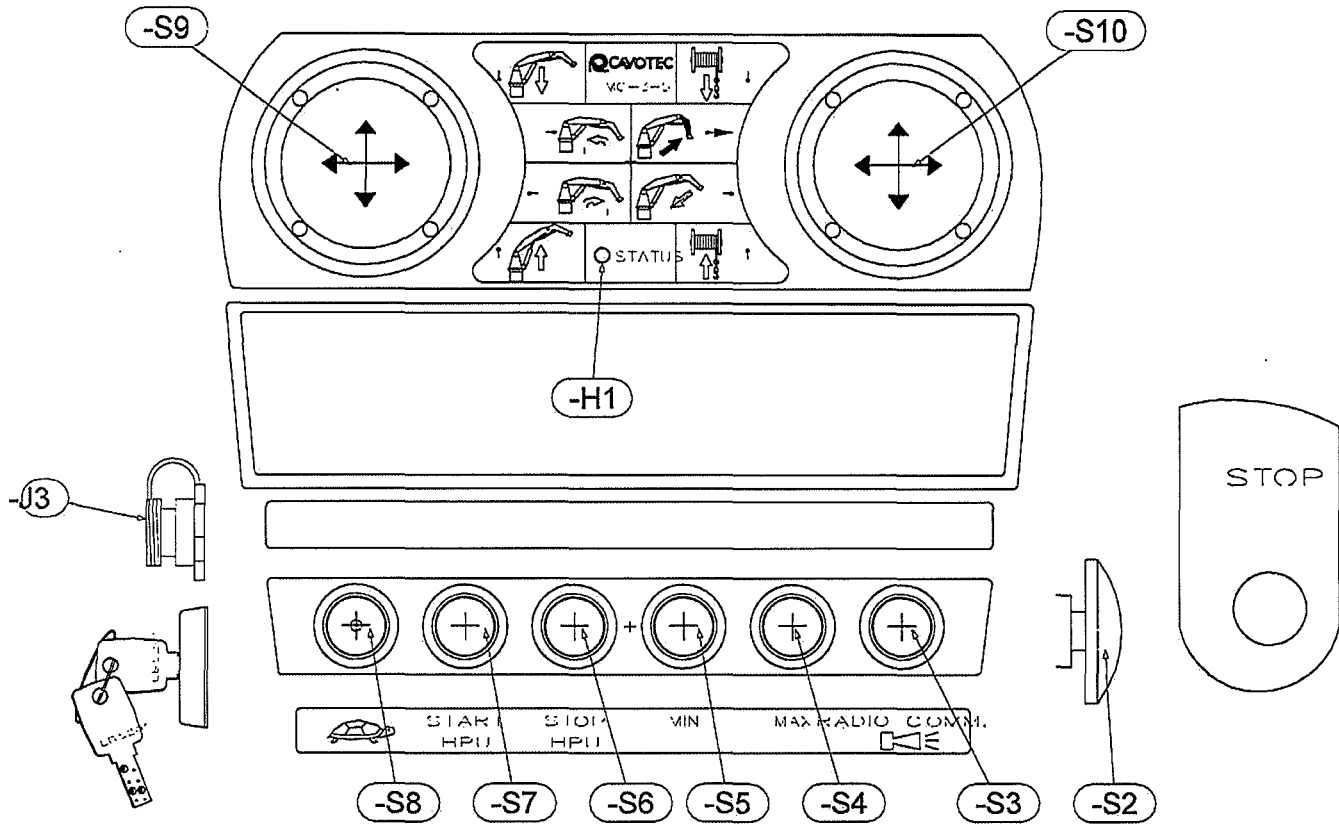
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Date	11.10.2010
Project rev.	1



Layout diagram
-JB35

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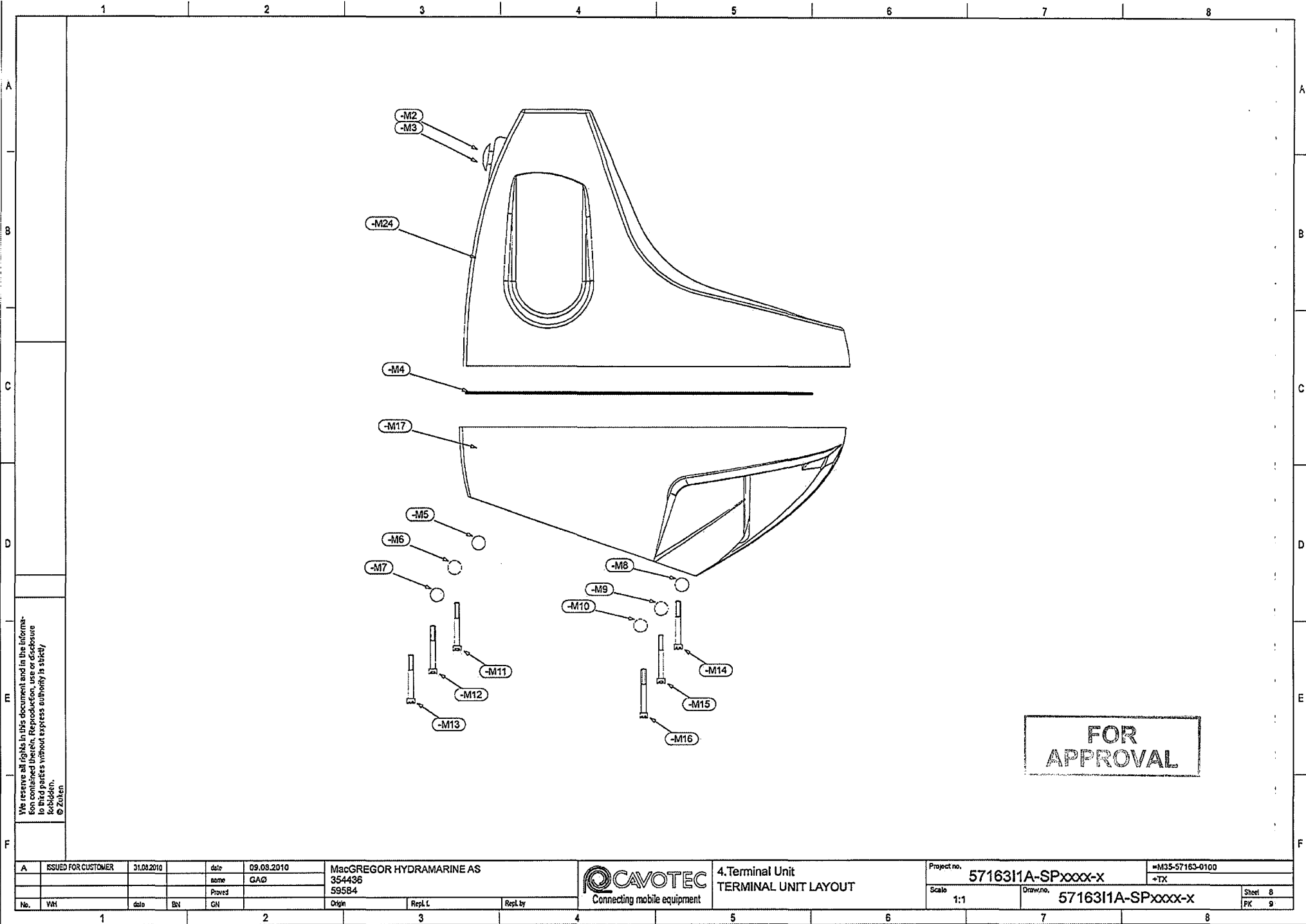


FOR APPROVAL

A	ISSUED FOR CUSTOMER	31.08.2010	date	09.08.2010	MacGREGOR HYDRAMARINE AS	Project no.	5716311A-SPxxxx-x		=M55-57163-0100
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No.	WH	date	BN	CN	Origin	Repl.L	Repl.by	Sheet	7
								PX	81



4.Terminal Unit
 TERMINAL UNIT LAYOUT



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A		ISSUED FOR CUSTOMER	31.03.2010	date	09.08.2010	MacGREGOR HYDRAMARINE AS	Project no.		5716311A-SPxxxx-x	=M35-57163-0100	
				name	GAG	354436	Scale		1:1	+TX	
				Prøved		59584	Drawn no.		5716311A-SPxxxx-x	Sheet 8	
No.	VH	date	BN	GN	Origin	Repl.L	Repl.by			PK 9	



4.Terminal Unit
 TERMINAL UNIT LAYOUT