

**Finished Drawing**  
**Shipyard: Oshima Shipyard**  
**Hull No.: 10548**

**Model CFL-C66E**

**F.R.P Freefall Lifeboat**



**Fassmer-Marland Ltd.**

*Hong Kong Office:*

Room 702, Fortress Tower  
250 King's Road, North Point, HKSAR

☎ +852-2571 9322

📠 +852-2806 3153

✉ info@fassmer-marland.hk

🌐 [www.fassmer-marland.hk](http://www.fassmer-marland.hk)

*ZhongShan Factory:*

Xi Er Wei, Hengmen, Hi-Tech Torch  
Development Zone, ZhongShan City,  
Guangdong Province, China 528437

☎ +86 760 8528 1028

📠 +86 760 8528 1022

Approved by	
Checked by	
Drawn by	
Date	

**CFL-C66E Free Fall Lifeboat**  
**Specification and Drawings**

# INDEX

	Description	Drawing No.
A.	<b>Specification</b> 1. General 2. Principal particulars 3. Construction Details w/ equipment list	
B.	General Arrangement Plan	FM660200
C.	Seating Plan	FM661200
D.	Accessories arrangement	FM661201
E.	Hoisting wire	FM661702
F.	Arrangement of release hook	FM661756
G.	Engine – Yanmar 3JH30A	FM661801
H.	Engine Spare Parts & Tools List	--
I.	Circuit Diagram	FM662002
J.	Battery Charging Diagram	FM662200
K.	Lubrication Oil Chart	--

## 1. GENERAL

1.1 The lifeboat is built in compliance with latest SOLAS regulation and LSA code. It is made by fire retardant glass reinforced plastic (FRP) material with self-righting features.

### 1.2 Evaluation, Testing and Approval

Hull NO.	10548
Classification	DNV
Flag	SINGAPORE
Certification	MED

### 1.3 Shop Test

The following tests except launching tests for individual boats have already been effected at the factory:

- visual inspection
- speed and maneuverability test
- function test of other equipment
- Hook release mechanism test
- inventory check of fixed & loose equipment
- water spray test *(for tanker version only)*
- air supply test *(for tanker version only)*

## 2. PRINCIPAL PARTICULARS

### 2.1 Main dimensions

Length of hull	6.73 m
Breadth	2.70 m
Registered Height	1.40 m
Max. Height	3.35 m
Max. Freefall Certified Height	23 m

2.2 Number of persons Max. 28 persons

### 2.4 Weight

Standard Boat with equipment(included fuel oil)	3700 kgs
Persons	2310 kgs
Full loaded	6010 kgs

Remark: Basic weight for boat fully equipped but without persons. For launching weight incl. Persons add 82.5 kg for each person. This is a standard specification. Deviations due to certifying authority or technical advance are possible.

### **3. CONSTRUCTION**

#### **3.1 General**

The boat is manufactured in round framed construction with transom stern.

A special shape which is the result of comprehensive model experiments guarantees good behaviour and low accelerations to the crew when touching the water surface.

For improved seaworthiness sufficient freeboard is provided.

At the aft ship a platform is situated which enables persons to enter the boat from the water serving also for salvage by helicopter. The gunwale to be provided with antislip surface for walking alongside of canopy.

In addition to the prototype tests the GRP strength is calculated by Germanischer Lloyd according to FE-method in order to provide maximum safety under all conditions.

#### **3.2 Hull**

To be built with isophtalic gelcoat outside, coloured orange RAL3031, followed by alternating glass mats and rowings in orthophtalic self extinguishing polyester resin.

All laminates in high quality hand-lay-up-method without use of sandwich materials. Hull strengthened with longitudinal laminated girders.

#### **3.3 Hull inner liner**

Constructed of laminate with glass mats and rowings in orthophtalic polyester resin. Smooth surface towards the inside with gelcoat coloured grey RAL7035

All fitting areas are reinforced by corrosion-resistant backplates.

Hull and inner liner are glued and flange-like screwed together in the gunwale area.

#### **3.4 Hull air cases**

Air cases formed by hull and inner liner to be filled with approved polyurethane foam providing good stability conditions under all circumstances, good insulation and safety against sinking of the boat when having been damaged.

#### **3.5 Canopy**

To be built similar to the hull. Canopy outside coloured orange RAL3031.

#### **3.6 Connection of hull and canopy**

Glued with flexible gluing compound and screwed additionally.

#### **3.7 Canopy air cases**

Canopy air cases are provided as GRP inner liner to the canopy to provide self-righting also in flooded condition with open hatch.

Smooth surface towards the inside with gelcoat coloured grey RAL7035

### **3.8 Door**

One large door with integrated air vent for air supply from outside and window provided on aft bulkhead. Door can be secured in open position for ventilation when afloat.

### **3.9 Windows**

Large front and side windows provided at steering stand made of polycarbonate.

### **3.10 Hatch**

One forward hatch provided in the fore ship as emergency escape and for access to towing device and sea anchor. Hatch can also be opened from outside and can be secured in open position.

### **3.11 Ladders and steps**

A rope ladder can be fitted at the transom for embarkation either on portside or starboard. One hinged step provided for the access to the helmsman's seat.

### **3.12 Handrails**

Outside: Two handrails on canopy for walking on gunwale. One handgrip above aft entrance door for quick access. Inside: One longitudinal handrail in the aisle. Handgrips in front of each seat, where possible.

### **3.13 Railing**

Two railing stanchions aft. Entrance area of platform deck secured by means of removable lifeline.

### **3.14 Bollards**

Hook or handgrip in release device to be used for liferaft towing, mooring etc. Forward heaving device also to be used for towing or mooring of the boat.

### **3.15 Flooring**

Areas destined for walking equipped with antislip surface. Flooring inside shaped like rounded steps as known from gangways to provide quick and easy embarkation in stowed position.

### **3.16 Launching rail**

The gunwale in the roller area is protected by an aluminium rail. This rail is let up the gunwale to serve also as shear guard for the boat.

### **3.17 Insulation**

Exhaust line insulated with rockwool covered with water-repellent glass cloth, all asbestos free.

### **3.18 Seats**

Seat are designed to screw to the inner liner with waterproof seat cushion and back/head rest.

All seats except the helmsman seat - facing in opposite launching direction.

### **3.19 Seat belts**

One seat belt provided for each seat. Endless belt with s/s quick lock / quick release fitting with integrated adjusting device.

### **3.20 Inventory stowage**

Stowage for inventory provided in front of engine compartment below seat level. Access through one large hatch in the aisle.

### **3.21 Battery case**

Battery case integrated in inner liner with watertight bottom and sides. Cover provided. Battery secured against capsizing by lashing belts. Drain hose provided to prevent submerging of battery connections. Ventilation for battery case provided.

### **3.22 Hoisting fittings**

One hoisting fitting also to be used as towing device forward and two hoisting eyes at aft bulkhead, all made of casted bronze.

### **3.23 Hoisting wires**

Four hoisting wires with galvanized shackles and two high strength long links for two point suspension. Galvanized chain links aft for variation of hanging angle to be adapted to the Davit or the crane system, respectively. Wire material **stainless steel**.

### **3.24 Release arrangement**

Consisting of: manual operated hydraulic pump with stainless steel tank, oil level indicator and release lever with securing pin. Connection to stainless steel hydraulic cylinder at aft bulkhead. For launching manual pump has to be operated 5 to 10 times until the hydraulic plunger opens a hook which releases the boat. Emergency release provided by turning a hand wheel. At re-insetting a shipside retaining chain has to be placed under the release hook and this has to be closed manually.

### **3.25 Engine compartment cover**

Engine compartment is covered by GRP construction supported by aluminium girders. Easy removable hatches in the aisle provide quick access to the engine for all main services.

### **3.26 Colours**

- Hull outside: orange RAL 3031
- Canopy outside: orange RAL 3031
- Hull inside: light grey RAL 7035
- Canopy inside: light grey RAL 7035

### **3.27 Lettering**

Ship's name and home port to be fitted on the forward bow on both sides. Call sign of ship if requested by administration is painted on top of the canopy to be seen from above.

Instructions for using boat, engine and release device are fitted inside the boat.

### **Retroreflective material**

To be fitted on canopy to be seen from top and from the sides.

### 3.28 Fuel tank

Made of aluminium and fitted in hull inner liner under floor. Ventilation to the outside, filling connection and inspection cover provided. Easy access to fuel valve. Possibility for draining water. Fuel tank capacity sufficient for more than 24 working hours at 6 knots.

### 3.29 Shaft plant

Propeller shaft is made of stainless steel with bronze bearings. Shaft plant can run dry 5 minutes when boat is on trackway.

### 3.30 Propeller

Propeller is designed of special execution to run in rudder nozzle.

### 3.31 Engine

Water-cooled boat diesel engine with reverse and reduction gear. A minimum speed of 6 knots is guaranteed.

Engine starting electrically with two independent batteries.

Engine fixed mounted to GRP engine foundation.

Item	Model	3JH30A	
Manufacturer		Yanmar, Japan	
Type		Vertical, water-cooled, 4-cycle	
Continuous rated output		30hp / 2900RPM	
No. of Cylinders		3	
Dimension (LxBxH)		863 x 470 x 710 mm	
Electric System		12V x 1.5HP (1.1kW) start motor 14V – 50Amp, 700W alternator	
Cooling System		Keel cooling (fresh water)	
Exhaust Type		Dry Exhaust	
Propeller Reduction Gear Ratio		FWD 2.360 / REV 3.160	
Fuel oil consumption		6.2 Litres/hour	
Dry Weight		183 kgs	
Starting system		Dual Electric Starting	
Fuel oil	Capacity in total	160 liters for 24 hours continuous operation at a specified speed.	
	Quality	BS 2869, Class A, Equivalent to JIS K2204 no.3	
Lub oil	Capacity	Engine	7.0 liters
		reduction gear	0.35 liters
	API service ranking		CC or CD
	SAE viscosity number		SAE 15W40 Multi Grade
Propeller Shaft		Stainless Steel	
Propeller		High strength brass	

### 3.32 Cooling system

One closed cooling circuit going through keel-pipes. Cooling system filled with anti-freezer. Thus, when freezing no draining in the boat is requested.



### **3.33 Rudder**

Rudder nozzle with blade. Shaft made of stainless steel. Bearings: two pieces in rudder trunk and one below the nozzle. Nozzle to protect propeller against impacts. Rudder and propeller protected by solid rudder shoe.

### **3.34 Steering**

Bowden wire steering cable connected to brass tiller on the rudder shaft. An emergency tiller can be simply pushed into the tiller fitting. Bowden wire can be easily disconnected.

### **3.35 Bailing**

Bailing pump installed with suction hose and outlet.

### **3.36 Electric switch board**

Installed at helmsman position with 4 fuses (single wire system) and 4 switches.

### **3.37 Position indicating light**

One waterproof light on top of canopy, light intensity 4.3 cd.

### **3.38 Inside lights**

Three water sheltered inside lamps to be operated by helmsman.

### **3.39 Search light**

One watertight 12V DC search light provided with holder.

### **3.40 Batteries**

Two totally capsuled maintenance free type batteries provided. Capacity 65Ah at 12V DC. Battery change over switch for selection of one battery installed.

### **3.41 Compass**

Approved globe compass installed at helmsman position provided with lightning.

### **3.42 Radar reflector**

Radar reflector (part of loose inventory) to be supported in aft railing stanchion.

### **3.43 Engine control**

From the helmsman's seat provided by single lever operation.

### **3.44 Engine instruments**

Engine switch board provided at helmsman position including starter, temperature and oil alarm.

### **3.45 Deck equipment**

Lifelines on the boat side, secured against obstructing launching. One lifeline at transom. Rainwater catcher fitted at canopy.

### **3.46 Fixed and Loose equipment**

Standard equipment delivered with the boat. Alterations are possible, depending on authority. (see next page)

Specification of Freefall Lifeboat CFL-C66E



CFL-C66E EQUIPMENT LIST

Hull No.1054

G23-00

ITEM	NAME	Illustration	Material	QTY/ Boat	Part Nr.	REMARK
1	Boat Hook		Al	2	G23-01	L=2.5m
2	Buoyant Bailer		Plastic	1	G23-02	with lanyard
3	Bucket		Plastic	2	G23-03	22 Liter with lanyard
4	Compass		Plastic	1	G23-04	Fitted inside of boat
5	Sea anchor		Canvas	1	G23-05	with 15m rope
6	Painter		Polypropylene Rope	2	G23-06	Dia 16mm 50 m in length
7	Hatchet		Forged steel	2	G23-07	
8	Fresh Water		--	3 litres/ person	G23-08	28 persons <i>Dealer Supply</i>
9	Dipper		SUS	1	G23-09	with chain
10	Drinking Cup		Plastic	1	G23-10	
11	Food Ration		--	1 set/ person	G23-11	Approved type 2,400kcal/Person 28 persons <i>Dealer Supply</i>
12	Waterproof Electric Torch		Plastic	1	G23-12	with spare bulb + battery











# Specification of Freefall Lifeboat CFL-C66E



ITEM	NAME	Illustration	Material	QTY/ Boat	Part Nr.	REMARK
13	Rocket Parachute Flare		--	4	G23-13	Approved type <i>Dealer Supply</i>
14	Hand Flare		--	6	G23-14	Approved type <i>Dealer Supply</i>
15	Buoyant Smoke Signal		--	2	G23-15	Approved type <i>Dealer Supply</i>
16	Daylight Signaling Mirror		--	1	G23-16	Approved type
17	Whistle		Plastic	1	G23-17	
18	First-aid Outfit		--	1	G23-18	Approved type <i>Dealer Supply</i>
19	Jack Knife		SUS	1	G23-19	
20	Can Openers		--	3	G23-20	
21	Buoyant Rescue Quoit		Rubber/ Polypropylene rope	2	G23-21	With 30m buoyant line
22	Manual bailing Pump		Plastic	1	G23-22	Fitted inside of boat
23	Fishing Tackle		--	1	G23-23	
24	Portable Fire Extinguisher		Steel	1	G23-24	Approved type <i>Dealer Supply</i>
25	Search Light		Rubber	1	G23-25	Approved type Fitted inside of boat
26	Thermal protective aids		Polycarbonate	3	G23-26	Approved type

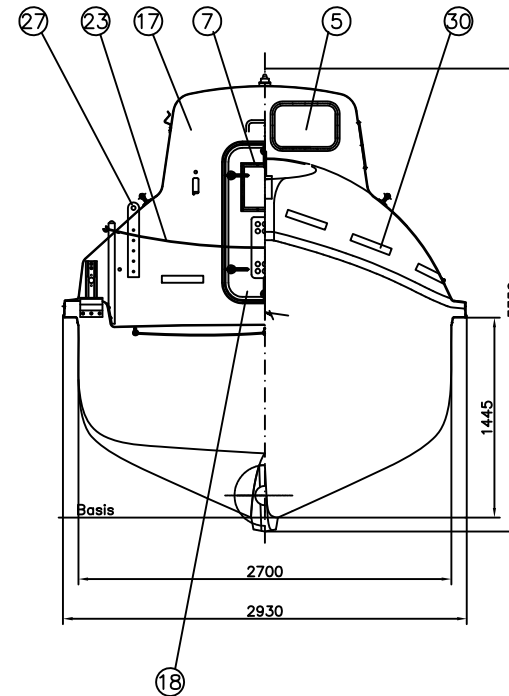
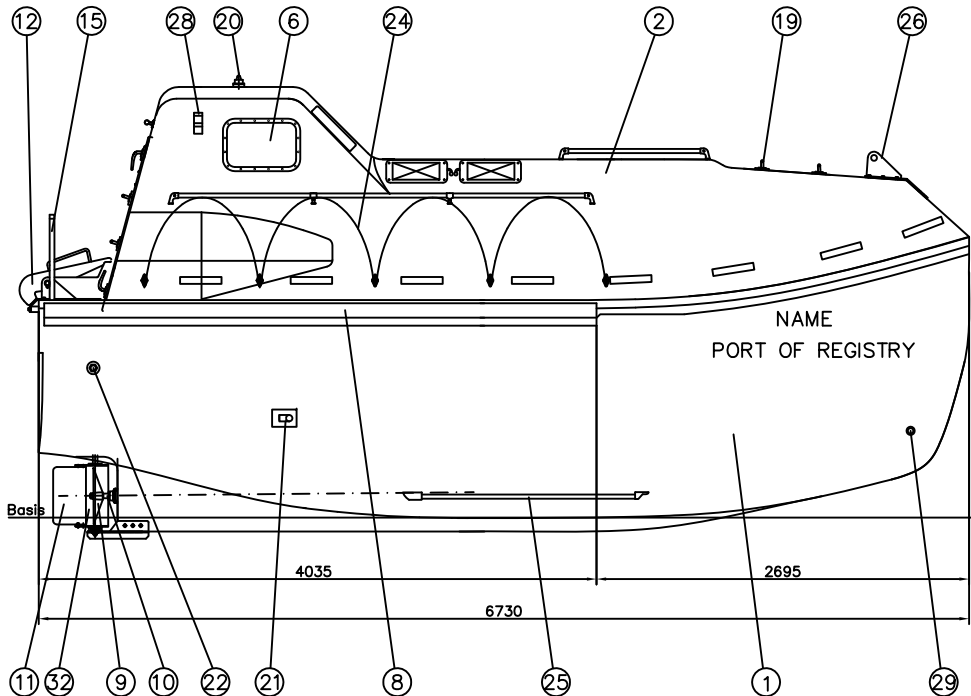
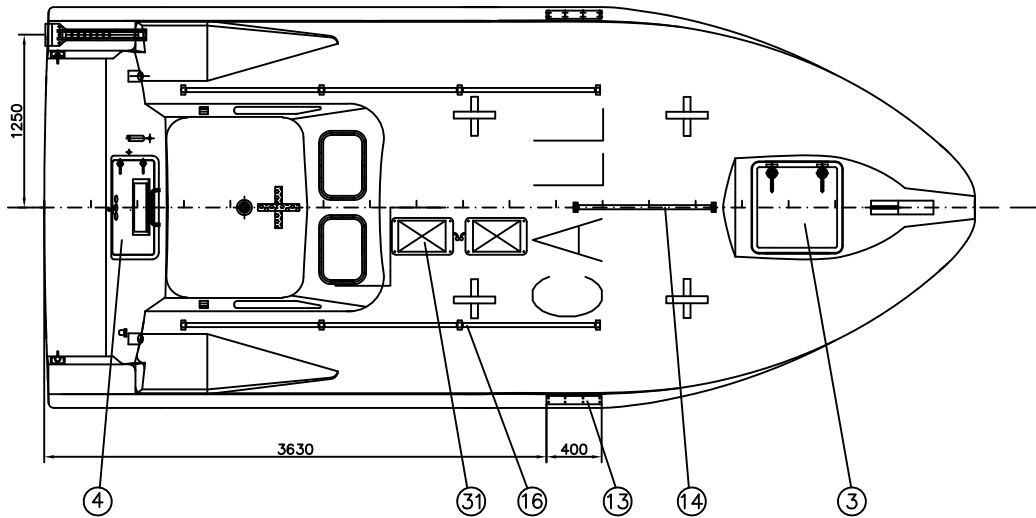
# Specification of Freefall Lifeboat CFL-C66E



ITEM	NAME	Illustration	Material	QTY/ Boat	Part Nr.	REMARK
27	Anti-Seasickness Medicine		--	6 doses/ person	G23-27	28persons <i>Dealer Supply</i>
28	Life-Saving Signal Table		Paper	1 Sheet	G23-28	Waterproof
29	Rope Ladder For Embarking		Plastic	1	G23-29	
30	Tool set for engine with Box		--	1	G23-30	See separate sheet -- details of tool set
31	Safety Belt		--	1 set/ person	G23-31	Fitted 28 persons
32	Seasickness Bag		Plastic	1 pce/ person	G23-32	28 persons
33	Radar Reflector		Polypropylene / wood	1 set	G23-33	Approve type with Erect Pole and Socket
34	Survival Manual		Paper	1	G23-34	
35	Rain Water Collection Tank		Plastic	1	G23-35	15 Liter
36	Solar charger		--	2	G23-36	Fitted on the top of boat

# BOAT SPECIFICATION

技术规格



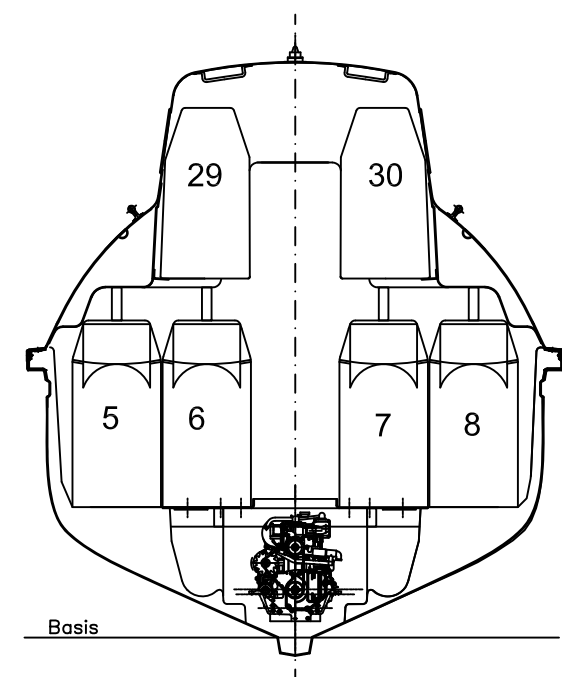
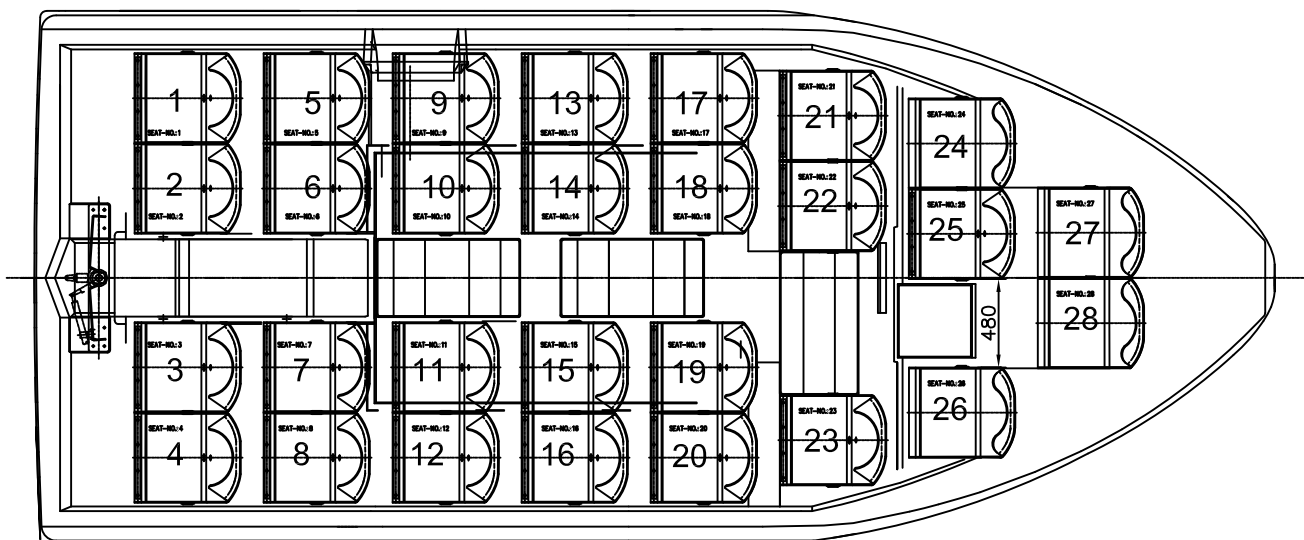
length over all: 总长	6.73 m
width: 船宽	2.70 m
width over all: 总宽度	2.93 m
hight over all: 总高度	3.35 m
boat weight with equipment (without persons): 船壳含属具 (无人)	3700 kg
max. number of persons: 最大人数	28
person weight (82.5kg/one): 乘员重量	2310 kg
max. boat weight: 最大船重	6010 kg
max. certificated freefall height: 最大认可降落高度	26.0 m

No	NAME	MATERIAL	QUANTITY	MASS	REMARK
32	RUDDER NOZZLE 导流罩	GRP 玻璃钢	1		
31	SOLAR PANEL 太阳能板	PLASTIC 塑料	2		
30	RETRO REFLECTIVE TAPE 反光带	NYLON 尼龙	28		
29	DRAIN PLUG 放水阀	BRASS 黄铜	1		
28	SLING WIRE HOOK 系绳支架	ST.STEEL 不锈钢	2		SUS 316
27	AFT HOISTING WIRE FITTING 后吊绳	SPECIAL ALLOY 合金	2		
26	FORE HOISTING WIRE FITTING 前吊绳	SPECIAL ALLOY 合金	1		
25	KEEL COOLER 龙骨冷却管	COPPER 铜	1		
24	LIFE LINE 救生绳	SYNTHETIC 尼龙	2		
23	SAFETY LINE 安全绳	SYNTHETIC 尼龙	1		
22	BILGE HOLE 排水口	PLASTIC 塑料	1		
21	EXHAUST HOLE 排烟管	ST.STEEL 不锈钢	1		SUS 316
20	INDICATION LIGHT 示位灯	PLASTIC 塑料	1		WITH GUARD
19	HATCH LOCK FITTING 把手	ALUMINUM 铝	1		
18	VENTILATOR 通风口	ALUMINUM 铝	1		
17	SART STAND 雷达应答器支架	PLASTIC 塑料	1		Manseil supply
16	SIDE HAND RAIL 侧侧扶手	SUS 304 不锈钢	2		
15	AFT HAND RAIL 侧后部扶手	SUS 304 不锈钢	2		
14	FORE HAND RAIL 侧前部扶手	SUS 304 不锈钢	1		
13	LASHING PLATE 绑扎板	SUS 304 不锈钢	2		
12	RELEASE HOOK 释放吊钩	ALLOY STEEL 合金钢	1		
11	GUIDER 导流罩挡板	GRP 玻璃钢	1		
10	PROPELLER SHAFT 螺旋桨传动轴	ST.STEEL 不锈钢	1		SUS 316
9	PROPELLER 螺旋桨	Mn BRONZE 青铜	1		
8	GUNWALE PROTECTOR 护舷	ALUMINUM 铝	2		
7	AFT WINDOW 后窗	POLYCARBONATE 聚碳酸酯	1		
6	SIDE WINDOW 边窗	POLYCARBONATE 聚碳酸酯	2		
5	FORE WINDOW 前窗	POLYCARBONATE 聚碳酸酯	2		
4	AFT DOOR 后舱门	GRP 玻璃钢	1		
3	FORR HATCH 前顶门	GRP 玻璃钢	1		
2	CANOPY 顶篷	GRP 玻璃钢	1		
1	HULL 艇体	GRP 玻璃钢	1		

## GENERAL ARRANGEMENT OF FREE-FALL BOAT CFL-C 66E 总布置图

PROJECTION				
Scale:	Date:	Drawing by:	Checked by:	DWG.NO
1:30	12.04.10	Kenneth Gu	James Qian	

This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.

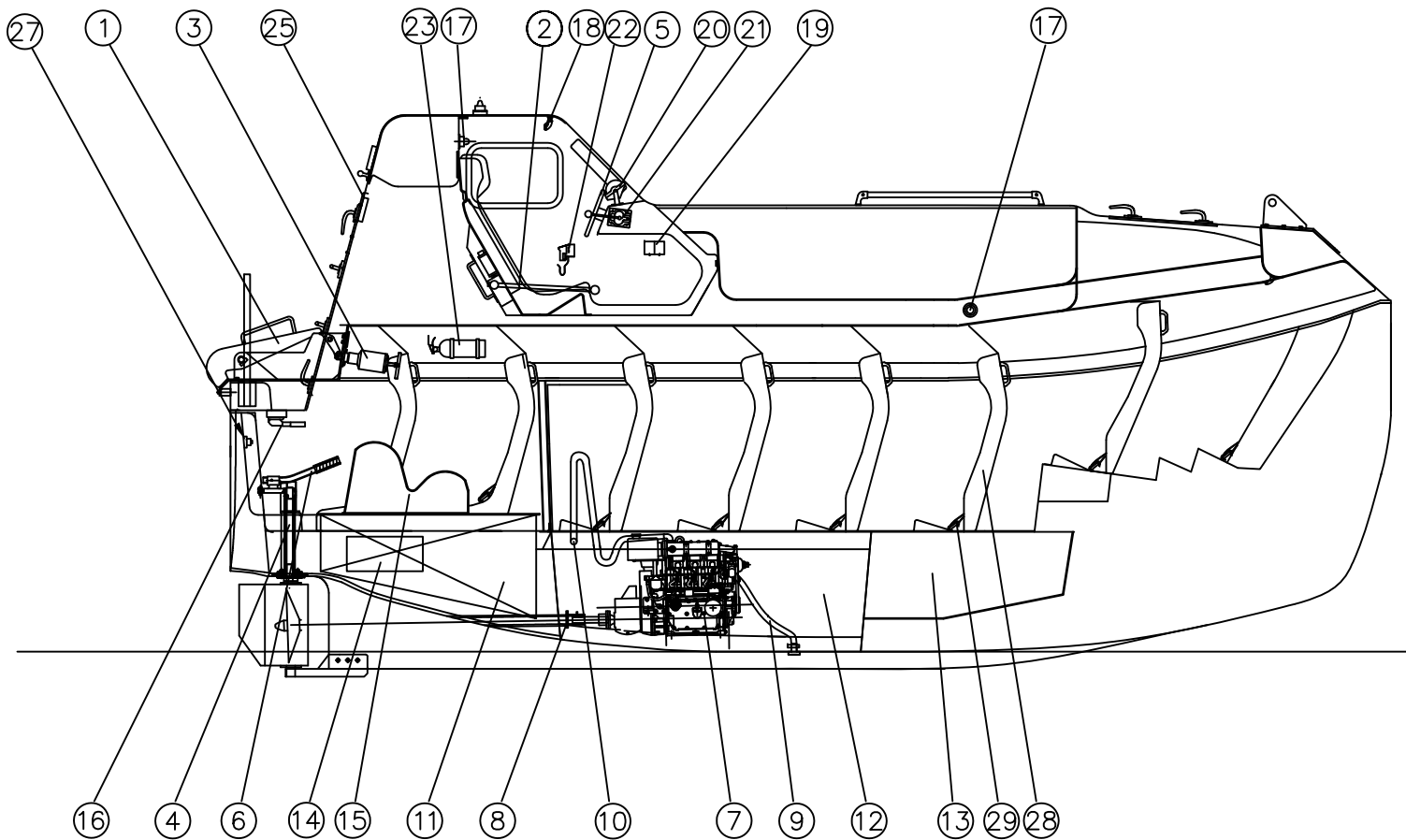


SEATS FOR VARYING NO. OF PERSONS  
乘员变化时，增减座椅顺序

NO. OF PERSONS 乘员数量	FOLLOWING SEAT NO. TO BE REDUCED 座椅增减顺序
30	—
29	2
28	2 18
27	2 18 19
26	2 18 19 14
25	2 18 19 14 15
24	2 18 19 14 15 6
23	2 18 19 14 15 6 22
22	2 18 19 14 15 6 22 3
21	2 18 19 14 15 6 22 3 5
20	2 18 19 14 15 6 22 3 5 17
19	2 18 19 14 15 6 22 3 5 17 7
18	2 18 19 14 15 6 22 3 5 17 7 20

This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.

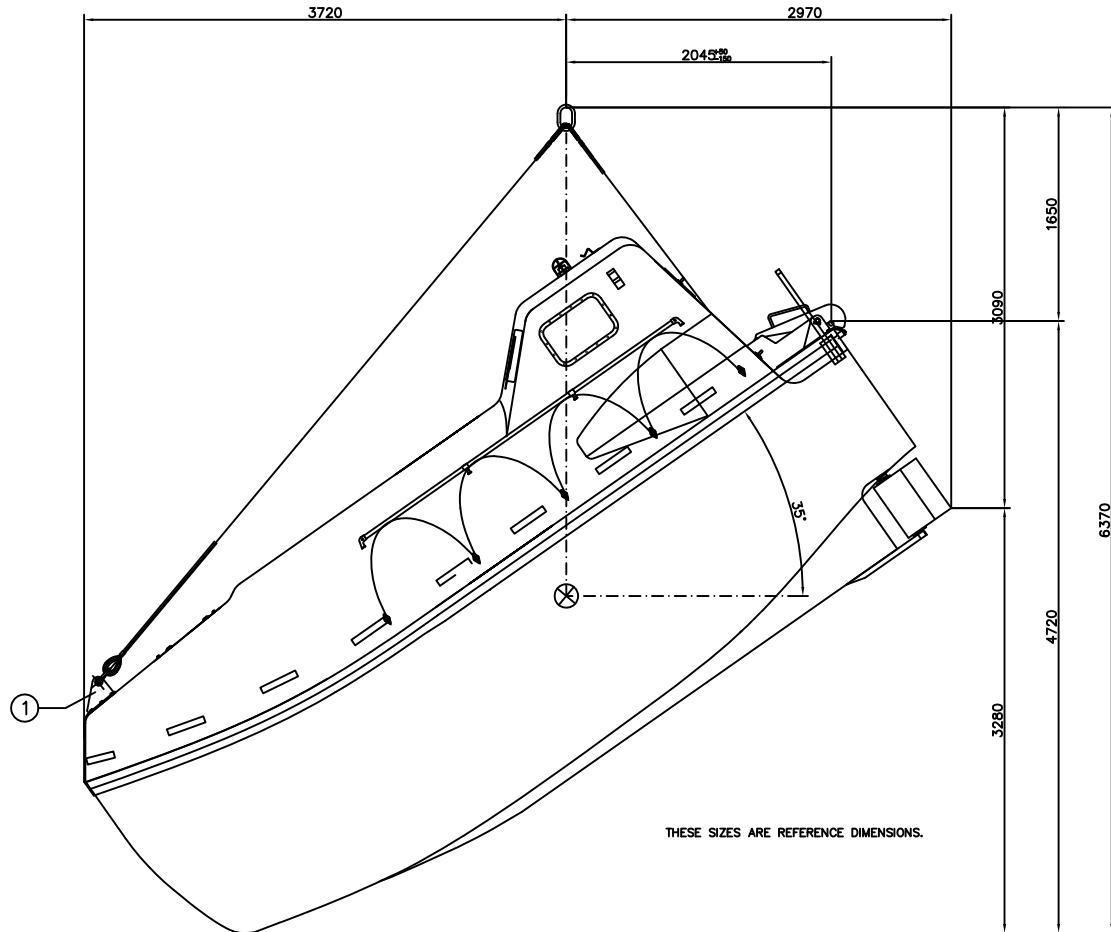
No	NAME	MATERIAL	QUANTITY	MASS	REMARK
1	XX	XX	X		
CFL-C 66E SEAT ARRANGEMENT 座椅布置					
Ver.	Date	Description	PROJECTION		
<b>Fassmer Marland Ltd. ZhongShan China</b>					
Scale:	Date:	Drawing by	Checked by	DWG. NO	
1:15	08.04.10	Kenneth	James Qian	FM661200	



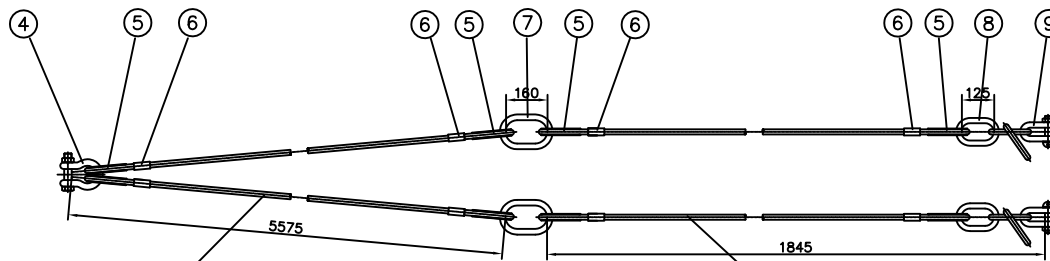
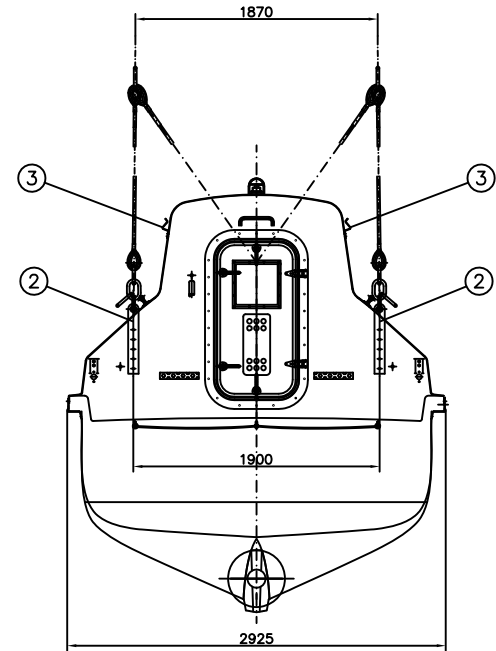
29	SEAT BELT	座椅安全带	ST.STEEL	不锈钢	30		SUS 316
28	SEAT	GRP	玻璃钢	玻璃钢	30		
27	BATTERY SWITCH	电瓶开关	PLASTIC	塑料	1		
26							
25	SART STAND	雷达应答器支架	-		1		YARD SUPPLY
24							
23	FIRE EXTINGUISHER	灭火器	STEEL	钢制	1		
22	SEARCH LIGHT	探照灯	RUBBER	橡胶	1		
21	STEERING CONTROL LEVER	操纵杆	PLASTIC	塑料	1		
20	COMPASS	罗经	PLASTIC	塑料	1		
19	SOLAR CHARGE REGULATOR	太阳能调节器	PLASTIC	塑料	2		
18	HAND GRIP	铝把手	ALUMINUM	铝	1s		
17	CEILING LIGHT	舱顶灯	PLASTIC	塑料	2		
16	BILGE PUMP	手摇泵	PLASTIC	塑料	1		
15	BOARDING STEP	脚踏	GRP	玻璃钢	1		
14	BATTERY BOX	电瓶箱	GRP	玻璃钢	1		
13	STORAGE BOX	工具箱	GRP	玻璃钢	1		
12	ENGINE ROOM	机舱	GRP	玻璃钢	1		
11	FUEL TANK	油箱	ALUMINUM	铝	1		
10	EXHAUST FLANGE	排烟管法兰	SUS 316		1		
9	KEEL COOLING HOSE	龙骨冷却连接管	RUBBER	橡胶	2		
8	ENGINE FRAME	主机底座	Q235		1		
7	ENGINE	主机	-		1		YANMAR 3JH30A
6	EMR.STEERING LEVER	应急操纵杆	ST.STEEL	不锈钢	1		DETACH TYPE
5	STEERING WHEEL	方向盘	PLASTIC	塑料	1		
4	RUDDER SHAFT	舵轴	SUS 316		1		
3	EMER.RELEASE DEVICE	应急释放装置	SUS 316		1		
2	RELEASE LEVER	脱钩手柄	SUS 316		1		
1	RELEASE HOOK	释放吊钩	GALV.STEEL	镀锌钢	1		

No	NAME	MATERIAL	QUANTITY	MASS	REMARK
ACCESSORIES ARRANGEMENT					
CFL-C 66E 内部设备布置					
PROJECTION		 <b>Fassmer Marland Ltd.</b> ZhongShan China			
Scale:	Date:	Drawing by:	Checked by:	DWG.NO	
1:15	08.04.10	Kenneth	James Qian		

This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.



THESE SIZES ARE REFERENCE DIMENSIONS.



FORE LIFTING WIRE ⑪

16mm DIA STAINLESS STEEL WIRE

⑩ AFT LIFTING WIRE

16mm DIA STAINLESS STEEL WIRE

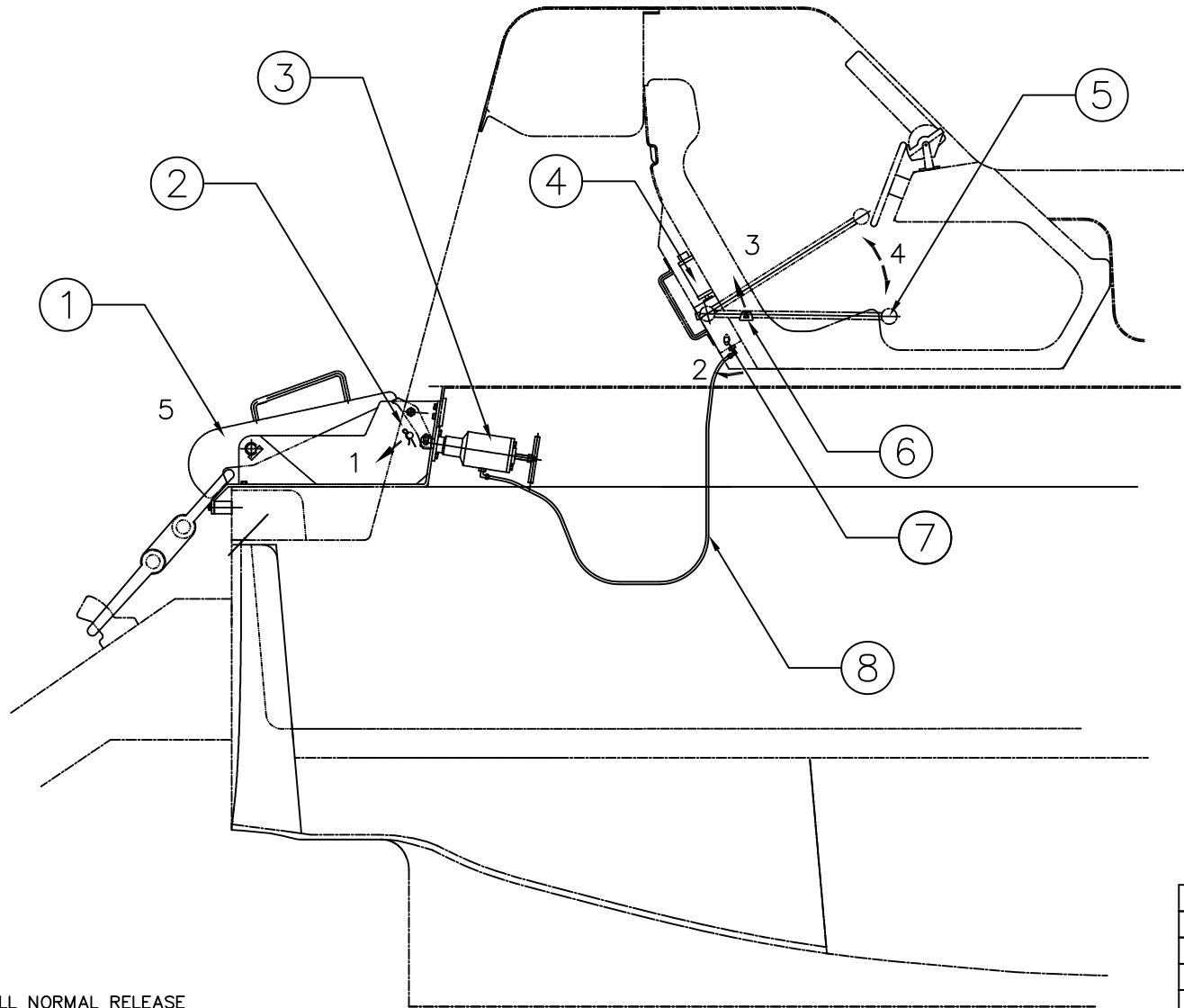
This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.

11	FORE LIFTING WIRE	GALV.STEEL	2		16mm DIA
10	AFT LIFTING WIRE	GALV.STEEL	2		16mm DIA
9	SHACKLE DIN 82101-C	GALV.STEEL	2		
8	ADJUST CHAIN DIN 763	GALV.STEEL	2		
7	LIFTING LINK DIN 5687/B	GALV.STEEL	2		
6	PRESS SLEEVE	ST.STEEL	8		16
5	THIMBLE	GALV.STEEL	8		DIA 16
4	HIGH STRENGTH SHACKLE	GALV.STEEL	1		
3	RING SET BRACKET	ST.STEEL	2		WITH FIX BELT
2	AFT SIDE LIFTING EYE	G-CU-AL9N1	2		SWL 3.6t
1	FORE SIDE LIFTING EYE	G-CU-AL9N1	1		SWL 7.6t
No	NAME	MATERIAL	QUANTITY	MASS	REMARK

DETAIL OF LIFTING WIRE

PROJECTION					
Scale:	Date:	Drawing by:	Checked by:	DWG.NO	
A3 1:40	13.04.10	Kenneth Gu	James Qian		





**FREEFALL NORMAL RELEASE**  
吊钩释放步骤:

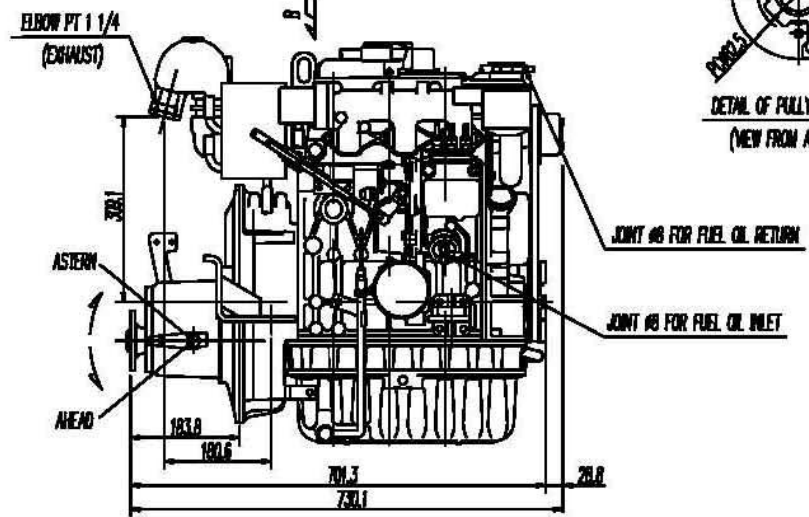
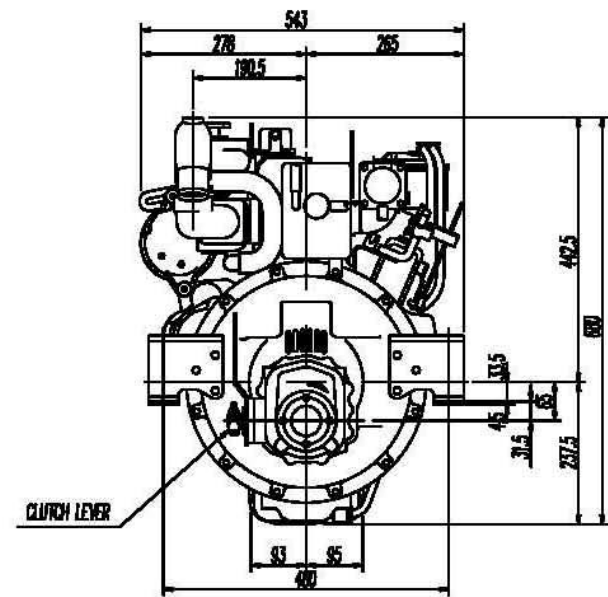
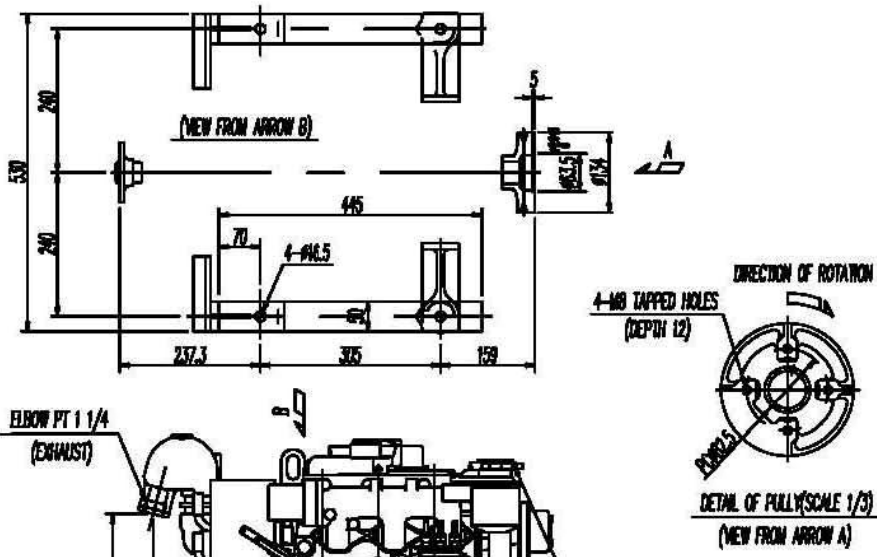
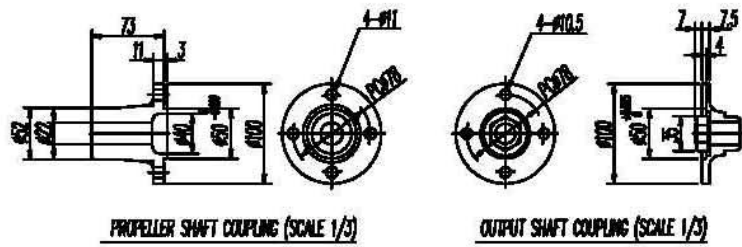
1. PULL OUT THE HOOK SAFETY PIN  
拔出吊钩安全销
2. CLOSE THE BYPASS VALVE.(CLOCKWISE ROTATION  
关闭控制阀(顺时针转动)
3. PULL OUT THE HANDLE SAFETY PIN.  
拔出转动手柄安全销
4. RELEASE HANDLE OPERATED 5 TO 10 TIME  
扳动手柄5到10下
5. RELEASE HOOK IS OPENED  
吊钩被释放
6. THE BOAT SLIDES DOWN THE LAUNCHING RAMP.  
救生艇顺滑道滑下

8	HYDRAULIC HOSE 液压管	PLASTIC 塑料	8X5450		2SN-DN
7	BYPASS VALVE 控制阀	ST.STEEL 不锈钢	1		
6	HANDLE SAFETY PIN 手柄安全销	ST.STEEL 不锈钢	1		
5	RELEASE HANDLE 脱钩手柄	ST.STEEL 不锈钢	1		
4	HYDRAULIC OIL TANK 液压油缸	ST.STEEL 不锈钢	1		type 14510 PN150
3	EMERGENCY RELEASE DEVICE 液压脱钩装置	ST.STEEL 不锈钢	1		
2	HOOK SAFETY PIN 吊钩安全销	ST.STEEL 不锈钢	1		
1	RELEASE HOOK 释放吊钩	GALV.STEEL 镀锌钢	1		
No	NAME	MATERIAL	QUANTITY	MASS	REMARK

This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.

ARRANGEMENT OF RELEASE HOOK SYSTEM					
吊钩释放系统布置					
No	Description	Date	PROJECTION		
			Scale:	Date:	DWG.NO
			A3 1:40	13.04.10	
			Alan Gu	James Qian	FM661756

Fassmer Marland Ltd.ZhongShan China



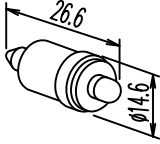
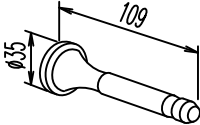
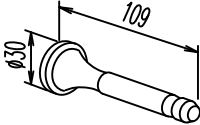
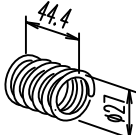
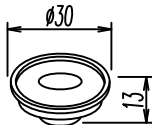
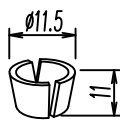
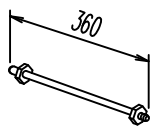
Specification of engine			
Maker	YANMAR CO., LTD.	Rotation of crank shaft	Anti-clockwise (View from stern side)
Model	3A/C30A	Rotation of propeller shaft	Clockwise (View from stern side)
No. of Cylinder	4	Cooling system	FRESH WATER COOLING WITH KEEL COOLER
Bore x Stroke	82 x 86 mm	Lubrication system	Pressure lubrication with inboard pump
Displacement	1.363 L	Starting system	Electric motor start
Output (Continuous rating)	22.1 kW 30 Ps	Reduction ratio	Ahead 2.36 Astern 3.16
Engine speed	2900 rpm	Dry mass (about)	183 kg

This drawing specification is our property and shall be treated as confidential. It must not be reproduced or used in any way without our prior permission in writing.


No.	Modification	Date	Name
Product-Code		Model	
CFL-C/T		Yanmar Engine	
Date	IMP-NO.	Doc- No.	REV-NO.
			FW661801
Date	Date	Date	Date
1	2009-09-03	2009-09-04	2009-09-04
No.	Date	No.	Date



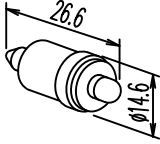
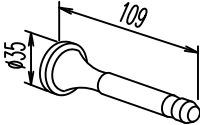
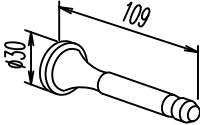
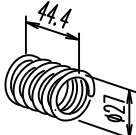
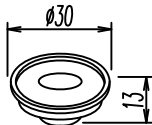
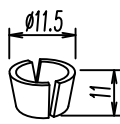
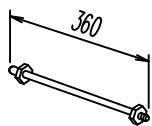
Engine maker: YANMAR CO.,LTD.

Model 3JH30A		Title SPARE PARTS FOR DIESEL ENGINE						
No.	Name	Sketch	Material	Quantity		Mass		Remarks
				Work	Spare	/One	Total	
1	Nozzle assy		Complete		1Set			Parts No. 129100-53000
2	Suction valve		SUH3		1			Parts No. 129100-11100
3	Exhaust valve		SUH3		1			Parts No. 129100-11110
4	Valve spring		SWOSC-V		2			Parts No. 129795-11120
5	Retainer for valve spring		S45C		2			Parts No. 129795-11180
6	Cotter for valve spring		S48C		2Sets			Parts No. 27310-080000
7	Fuel injection pipe		Complete		1Set			Parts No. 129198-59810
8								


<p>This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.</p>			Production-type: CFL-C/T		Title: Yanmar Engine - Spare part list	
			Scale:		Hull-No.:	...
			Date:	Name:	Draw.- No:	FM-661801-2
	1	2009-09-03	Drawn:	2009-06-14	James	
	Ver.	Date	Checked:	2009-06-14	Ken Hui	


**Fassmer Marland Ltd.**

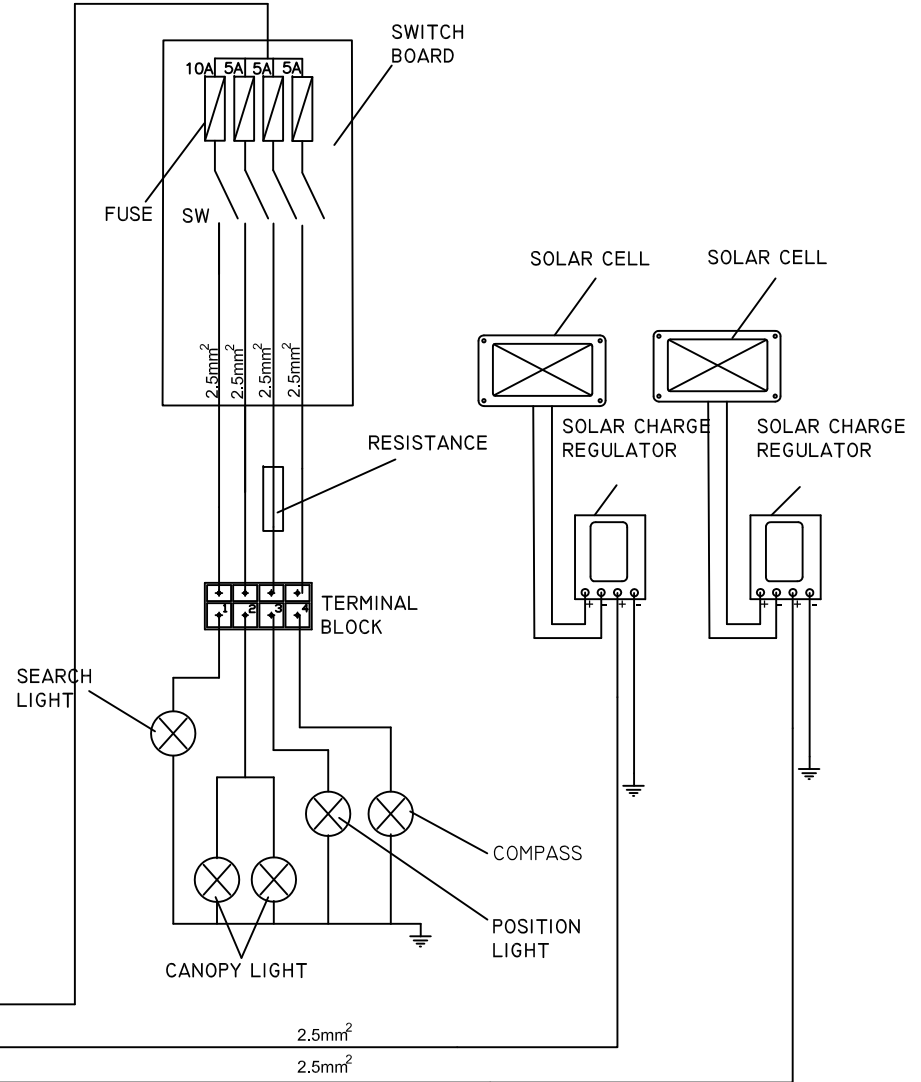
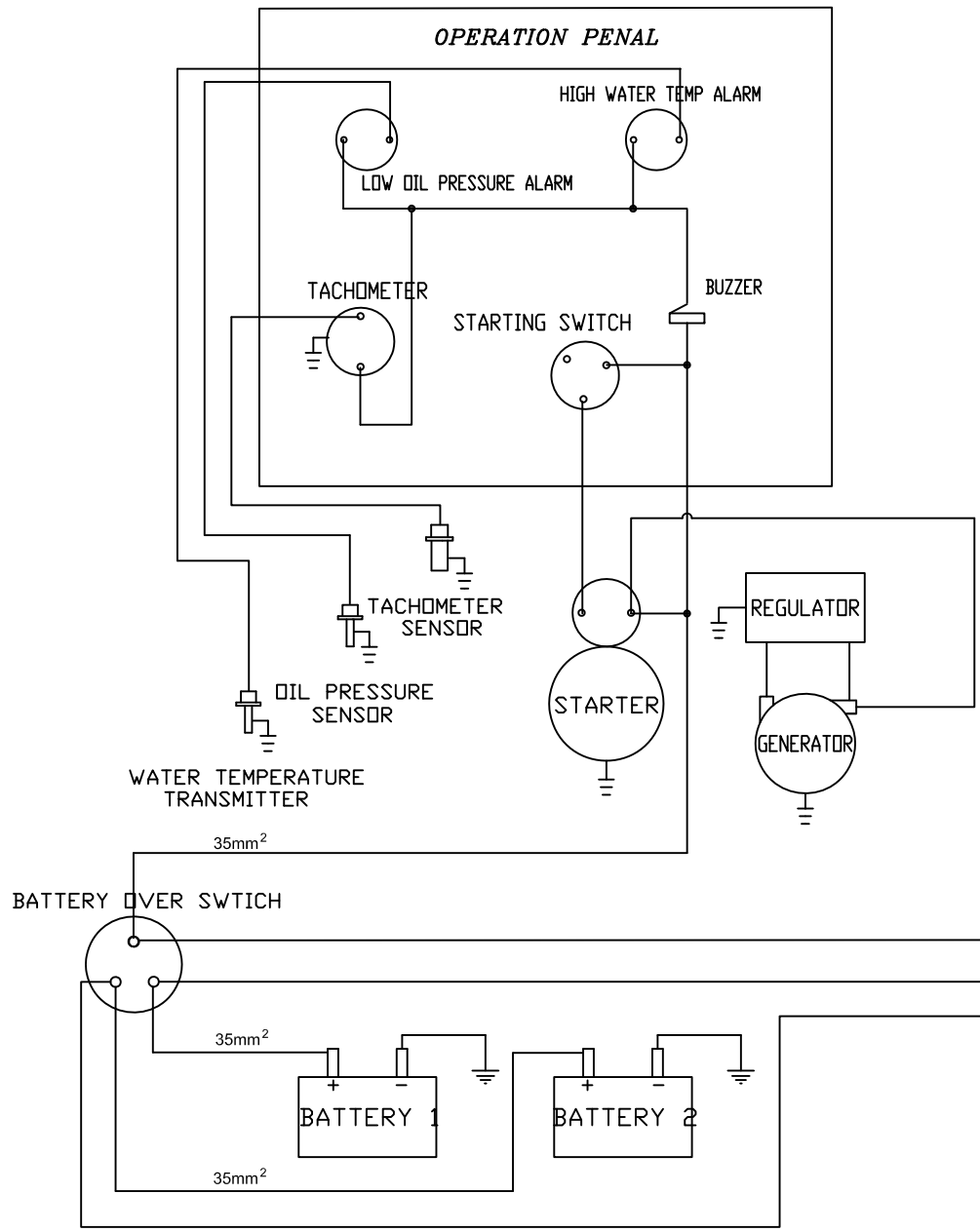
Engine maker: YANMAR CO.,LTD.


Model 3JH30A		Title SPARE PARTS FOR DIESEL ENGINE						
No.	Name	Sketch	Material	Quantity		Mass		Remarks
				Work	Spare	/One	Total	
1	Nozzle assy		Complete		1Set			Parts No. 129100-53000
2	Suction valve		SUH3		1			Parts No. 129100-11100
3	Exhaust valve		SUH3		1			Parts No. 129100-11110
4	Valve spring		SWOSC-V		2			Parts No. 129795-11120
5	Retainer for valve spring		S45C		2			Parts No. 129795-11180
6	Cotter for valve spring		S48C		2Sets			Parts No. 27310-080000
7	Fuel injection pipe		Complete		1Set			Parts No. 129198-59810
8								

<p>This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.</p>			Production-type: <b>CFL-C/T</b>	Title: <b>Yanmar Engine - Spare part list</b>		
			Scale:	Hull-No.:	...	Draw.- No: <b>FM-661801-2</b>
			Date:	Name:		
	1	2009-09-03	Drawn:	2009-06-14	James	
	Ver.	Date	Checked:	2009-06-14	Ken Hui	

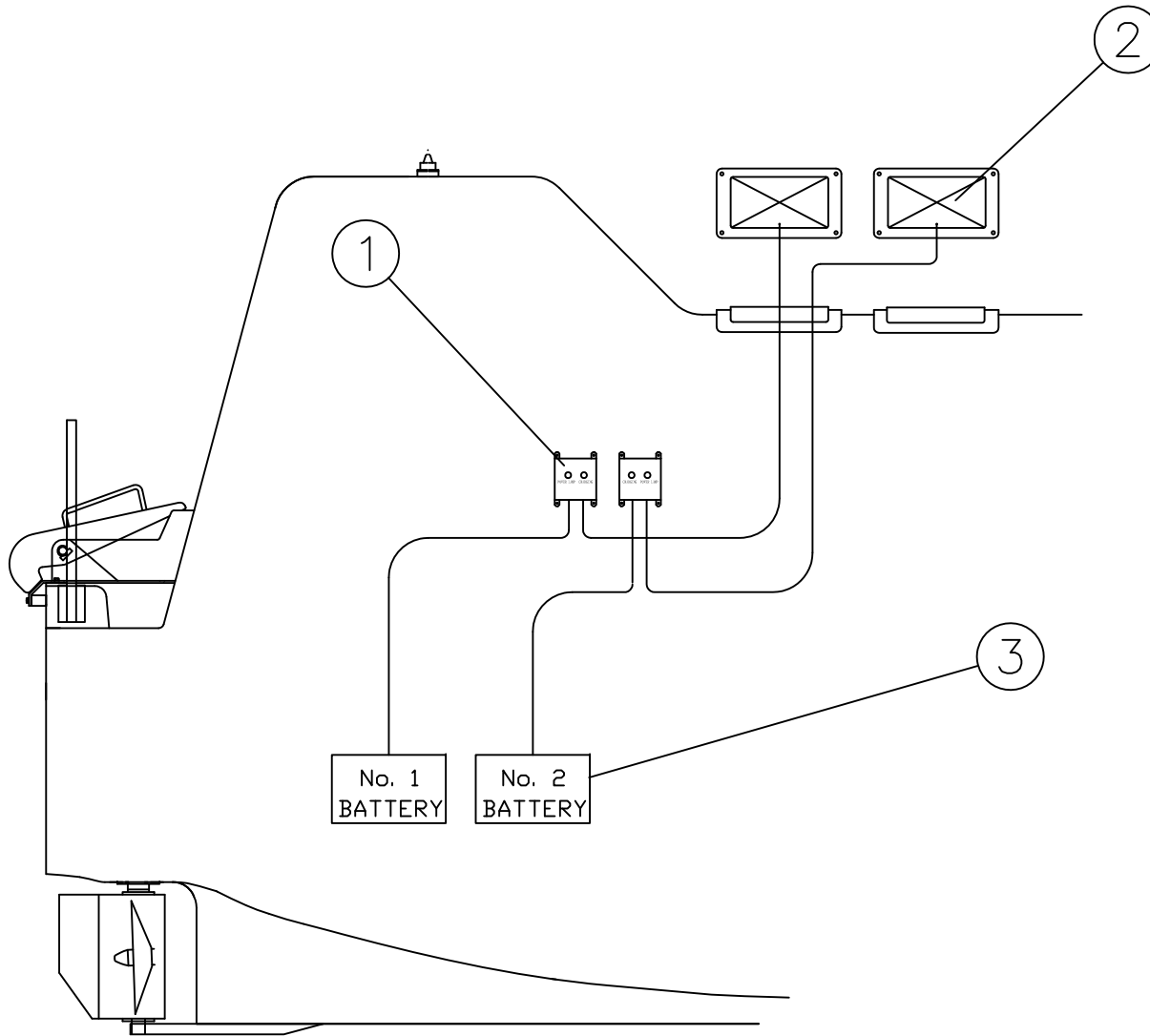


**Fassmer Marland Ltd.**



No	NAME	MATERIAL	QUANTITY	MASS	REMARK
	ELECTIC CIRCUIT DIAGRAM CFL-66E 电气原理图				
	 <b>Fassmer Marland Ltd. ZhongShan China</b>				
	PROJECTION				
	Scale:	Date:	Drawing by:	Checked by:	DWG.NO
	A3 1:15	07.07.10	Kenneth Cu	James Qian	FM662002

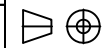
This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.



1	BATTERY 12V 70AH	PLASTIC	2		
2	SOLAR CELL	PLASTIC	2		
1	SOLAR CHARGE REGULATOR	PLASTIC	2		
No	NAME	MATERIAL	QUANTITY	MASS	REMARK

BATTERY CHARGE SYSTEM  
CFL-66E  
电瓶充电布置

PROJECTION



Fassmer Marland Ltd. ZhongShan China

Scale:	Date:	Drawing by	Checked by	DWG.NO
A3 1:15	08,04.10	Alan Gu	James Qian	FM662200

This drawing specification is our property for which we reserve all rights including those relating to patents or registered designs. It must not be reproduced or used otherwise or made available to any third party without our prior permission in writing.

# Specification of Freefall Lifeboat CFL-C66E



## SPARE PARTS FOR ELECTRIC PARTS

G23-00

ITEM	NAME	Illustration	Material	QTY/ Boat	Part Nr.	REMARK
1	Fuse		--	3	G23-01	5A
2	Fuse		--	1	G23-02	10A
3	Bulb for position light		--	1	G23-03	DC12V/13W 5A
4	Bulb for canopy light		--	2	G23-04	DC12V/13W 5A
5	Bulb for search light		--	1	G23-05	DC12V/75W 10A



**Fassmer  
Marland**

FMC

Lubricant selection table freefall boats with Yanmar 3JH30A

00.0000-530.01.06.1

Remark: Equivalent lubricants of other manufacturers can also be used

Schmierstelle lubrication point	Spezifikation specification	Herstellermarke / manufactures brand											
<b>main engine</b> Initially filled at 0°: 3.100/4.150: 4.5ltr. 4.220: 7.5ltr. at 15°: 3.100: 3.5ltr. 4.38: 4ltr. 4.220: 6ltr.	Motorenöl API CD - SAE 15W40  engine oil API CD - SAE 15W40	Disola M 3015	---	Vanellus Multigrad SAE 15W-40	Deusol RX Super 15W-40	---	RPM-DELO Motoröl 15W-40	---	Essolube HDX Plus 30	---	Mobil Gard SHC 120 Delvac 1	---	Gadina Multigrad
<b>gear box</b> Initially filled 3.100: 0.35ltr. 4.38: 0.55ltr. 4.220: 0.8ltr.	Automatic Transmission Fluid (ATF), Type A  Automatic Transmission Fluid (ATF), Type A	Turboral M30  Disola M 3015	---	Vanellus Multigrad SAE 15W-40	Deusol RX Super 15W-40	---	RPM-DELO Motoröl 15W-40	---	Essolube HDX Plus 30	---	Mobil Gard SHC 120 Delvac 1	---	Gadina Multigrad
<b>shafting</b>  1,25 kg initially filled	Wasserfestes Calciumseifenfett bzw. Lithiumseifenfett Klasse 2 DIN 51818  sea water resistant grease class 2 NLGI on Calcium or Lithium base	EPEXA 2	---	ENERGREASE MM-EP 2	Grease MT	---	Dura-Lith Grease EP 2	---	Beacon 2 CazarK2	Centoplex 2	Mobilgrease HP	---	Alvania G2
<b>rudder bearing</b>  0,05 kg initially filled	Wasserfestes Calciumseifenfett bzw. Lithiumseifenfett Klasse 2 DIN 51818  sea water resistant grease class 2 NLGI on Calcium or Lithium base	EPEXA 2	---	ENERGREASE MM-EP 2	Grease MT	---	Dura-Lith Grease EP 2	---	Beacon 2 CazarK2	Centoplex 2	Mobilgrease HP Mobilith SHC 460	---	Alvania G2
<b>Hydraulic steering</b>  0,2 ltr. initially filled	Hydrauliköl  hydraulic oil	ARALUB HLP 2	---	Bartran HV 32	HYPIN AWH 32	---	Mechanism LPS 32	---	HLP AF 46	LAMORA HLP 32	DTE 13M	---	Tellus T 32
<b>hoisting hook</b>  0,15 kg initially filled	Seewasserbeständiges, nicht eindickendes Fett Klasse 2 DIN 51818  sea water resistant grease class 2 NLGI	---	---	---	---	Trenn-/Schmierstoff 785	---	---	---	---	---	Bariplex	---
<b>hook release cable</b>  0,2 kg initially filled	Spezialfett, Lieferung durch Fassmer special grease to be delivered by Fassmer	---	---	---	---	---	---	---	---	---	---	---	---
<b>battery connection</b>  0,01 kg initially filled	säurefreies Fett / Vaseline  non corrosive acid	---	Polfett FT 40 V 1 No. 5700102025	---	---	---	---	---	---	---	---	---	---

Technische sowie zwischenzeitliche Änderungen der Produktbezeichnungen vorbehalten - Technical modifications and variations of product denominations reserved

00.0000-530.01.06.1

00.0000-530.01.06.1