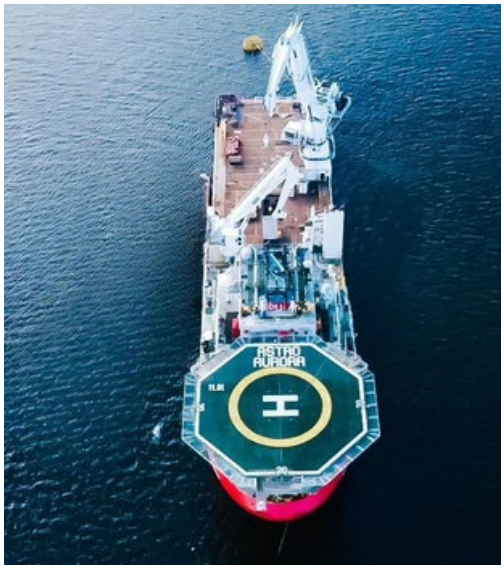
Astro Offshore
An Adani Group Company

ASTRO AURORA

100M DP3 MULTIPURPOSE SUPPORT VESSEL





GENERAL

Flag:	Tuvalu
Builder:	Zhejiang Shipbuilding Co.
Year Built:	2014
Classification:	BV I ✠ HULL ✠ MACH, Oil Recovery Ship, Chemicals products, Oil products, Special service/Stand by rescue Vessel (150 survivors in tropical area) Fire-Fighting Ship 1 - Water Spraying, unrestriced navigation ; ✠ AUT-UMS, ✠ ALM, ✠ DYNAPOS-AM/AT-RS, + SDS, COMF-NOISE 2, COMF-VIB 1 , CLEANSHIP SUPER 7+

PRINCIPAL PARTICULARS

Length OA:	100.00m
Breadth Moulded:	21.00m
Depth Moulded:	8.00m
Draft (Minimum):	5.40m
Draft (Design):	6.00m
Gross Tonnage:	6,000T
Deadweight:	4,858T
Bollard Pull:	70T
Dynamic Positioning:	DP3

DYNAMIC POSITIONING

DP Class:	DP3
DP Reference Systems:	3 x DGPS Aquarius Thales Type 1 & 2 DMS05 @ RP25, 2 wind sensors, 3 Meridian TSS gyro Kongsberg HiPAP | Sonardyne Ranger 2 USBL Fanbeam and Mini RadaScan

PERFORMANCE

Max Speed:	12 Knots – 26T / day
Service Speed:	10 Knots – 18T / day
Stand-by at port:	3T / day
Stand-by on DP:	10T / day

DECK EQUIPMENT

Total Deck Space:	1,000m² @ 5T / m² & 10T / m² aft
Deck Cargo:	2,000T / 1,300T
Capstan:	2 x 10T
Tugger Winch:	1 x 15T
Moonpool:	Provision for 8m x 8m Moon Pool
Helideck (Dia / Tonnage):	20m 11T

CRANE EQUIPMENT

Offshore Crane 1:	MacGregor AHC Knuckle boom
Harbour Capacity:	DAF 1.2 – 150T @ 10m – 35T @ 35m
Offshore Capacity:	DAF 1.4 – 150T @ 10m / 25T @ 35m
Main Winch:	150T / 87T – 2,500m - AHC
Auxiliary Winch:	20T / 10T – 2,500m AHC – Man Riding
Offshore Crane 2:	SMST Knuckle Boom
Harbour Capacity:	DAF 1.3 – 40T @ 9.5m – 15T @ 21.5m
Offshore Capacity:	DAF 1.6 – 30T @ 9.5m / 11T @ 21.5m
Main Winch:	40T / 1T – 2,500m – AHC – Man Riding

MACHINERY

Main Engines:	6 x 1,235kW – 600 V
Stern Azimuthing Propellers FP:	3 x 1,686kW
Bow Thruster FP:	2 x 843kW tunnel
Auxiliary Generator:	1 x 1,235kW – 480V
Emergency Generator:	1 x 170kW – 480V
Emergency Diesel Generator:	1 x 200kW, 440V 3P / 60H
Deck Service Air Compressor:	1,200m³ / h @ 6.5 bars
Deck ROV Power Supply:	2 x 500kW – 480V

For enquiries, please contact commercial@astro-offshore.com
www.astro-offshore.com

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NAVIGATION & COMMUNIATION

Radar S-band:	1
Radar X-band:	1
Radar Slave:	1
Inmarsat:	2 x SatC
Communication:	VHF/MF, DSC, EPIRB, AIS – SART, Gyro Compass, ECDIS, Automatic Tracking Aid, Electronic Plotting Aid, VDR, LRIT

ACCOMMODATION

One Man Cabins:	33
Two Man Cabins:	36
Total POB:	105

4 x Offices | 1 x Hospital | 1 x Mess | 2 x Day Rooms | 4 x Laundry | 1 x Galley | 2 x Workshops

SAFETY EQUIPMENT

FiFi Class 1:	2 x pumps @ 1,200m³ / hr – 2 monitors x 1,200m³ / hr

CAPACITIES

Fresh Water:	946m³
Fuel Oil:	1,096m³
Drill / Ballast Water:	2,540m³
Oil Recovery:	300m³
Antiheeling:	750m³
Methanol:	197m³
Dispersant:	5m³
Foam:	1.8m³

DISCHARGE RATES

Fresh Water:	150m³ / hr @ 7 bars
Fuel Oil:	150m³ / hr @ 7 bars
Drill / Ballast Water:	150m³ / hr @ 7 bars
Antiheeling:	2 x 1,500m³ / hr
Methanol:	2 x 100m³ / hr @ 9 bars
Water Maker:	2 x Evaporators – 2 x 4m³ / day (DP Mode)

RESCUE EQUIPMENT

Life Boats:	2 x 40 Men
Life Rafts:	4 x 25 men

150T AHC CRANE

150T AHC CRANE PRINCIPAL PARTICUALRS

Area Classification:	Safe Zone + EX Zone
List / Trim:	5 / 2°
Dynamic offlead angle:	8 / 3°
Operational Max Wind Speed:	25m / s
Emergency Pay Out Function:	AOPS & MOPS
Personnel Life Capacity:	10T
Max Hoisting speed (0-50-100-150T):	0-80-40-20m / min
Max hoisting speed (whip line:0-20T):	0-100m / min
Max Speed (tuggers):	0-60m /min
Classification:	Det Norske Veritas rules for certification of lifting appliances 2007 (Harbour lift, DAF 1.4, 1.6, and 2.0 curves) Bureau Veritas rules for certification of cranes onboard ships 2007 (Harbour lift - Curve 4 - seastate 3-4 HS = 2.0m)

PERFORMANCES

Lifting Range (Max Radius):	25T – 35m 150T – 10m 20T – 36m (Whip Winch)
Luffing Speed (0 – Max Angle):	Main Jib – 100sec Knuckle Jib – 80 sec
Slew:	Ring Dia – 3,568m Slew Sector, unlimited - 360° Slew Speed - 0 – 1 – 0.5 RPM (0 – 15 - 35m) Max Working Radius – 6.5m

CRANE LOAD CHARTS

Main Line:

Radius	Capacity DAF 1.4	Capacity DAF 1.6
10m (knuckle down)	150T	130T
10m (knuckle up)	100T	87.5T
35m (max reach)	25T	21.5T

Whip Line:

Radius	Capacity DAF 1.4	Capacity DAF 1.6
6m to 36m	20T	17.5T

LOAD BELOW HOOK VERSUS DEPTH

Main Line:

Water Depth (m)	1,000	1,500	2,500	3,000
DNV DAF 1.4	125T	112.5T	87.5T	75T
DNV DAF 1.6	105T	92.5T	67.5T	55T
DNV DAF 2.0	80T	67.5T	42.5T	30T
BV Rating Hs=2m	110T	97.5T	72.5T	60T

Water Depth (m)	1,000	1,500	2,500	3,000
DNV DAF 1.4	125T	112.5T	87.5T	75T
DNV DAF 1.6	105T	92.5T	67.5T	55T
DNV DAF 2.0	80T	67.5T	42.5T	30T
BV Rating Hs=2m	110T	97.5T	72.5T	60T

MILLENNIUM PLUS ROV (2 QTY)

VEHICLE SPECIFICATIONS

Weight in Air:	8,800 lb / 4,000 kg
Dimensions:	10.8 x 5.5 x 6.3 ft / 3.3 x 1.7 x 1.9m
Depth Rating:	10,000 ft / 3,000m (standard) 13,000 ft / 4,000m (optional)

POWER AND PERFORMANCE

Hydraulic Power Units:	2 x 110 hp(E)
Propulsion:	4 x vectored horizontal 4 x vertical
Thrust:	
Forward / Reverse:	2,000lb / 900kg
Lateral:	2,000lb / 900kg
Vertical:	2,080lb / 950kg

MANIPULATORS AND TOOLING

Manipulators (2):	5 or 7 function: rate, SC, or hybrid control
Luffing Speed (0 – Max Angle):	Multiple directional control valves with proportional pressure and flow control Maximum 40 gal / min

CAMERAS AND LIGHTING

Cameras:	Standard definition (SD) High definition (HD) 3D HD (optional)
Lighting:	Up to 8 x 250 W (quartz halogen or high-intensity LED)

CONTROL AND NAVIGATION

Automatic Control:	Fly-by-wire station keeping system Auto heading / depth / altitude / pitch cruise control
Heading and Altitude Sensors:	Survey-grade gyro backup flux gate compass
Depth Sensor:	High-resolution digiquartz backup analog depth sensor
Navigation Sensor:	Doppler velocity log
Obstacle Avoidance Sonar:	Kongsberg 1071 or 1171, Tritech SeaKing

OPTIONAL POWER AND DATA INTERFACES

Data Links:	Multiple RS232 and RS485 Ethernet Optical fiber
Power:	24 V DC and 110 V AC

TETHER MANAGEMENT SYSTEM (TMS)

Type:	Side entry cage or top-hat
Propulsion:	2 x horizontal (cage only)
Hydraulic Power Unit:	1 x 110 hp(E)
Electro-optical Tether:	2,000 ft / 600m (cage) 4,000 ft / 1,200m (cage) optional 1,300 ft / 400m (top-hat)
Cameras:	2 x charge-coupled device (CCD)
Lighting:	2 x 250 W (quartz halogen or high intensity LED)

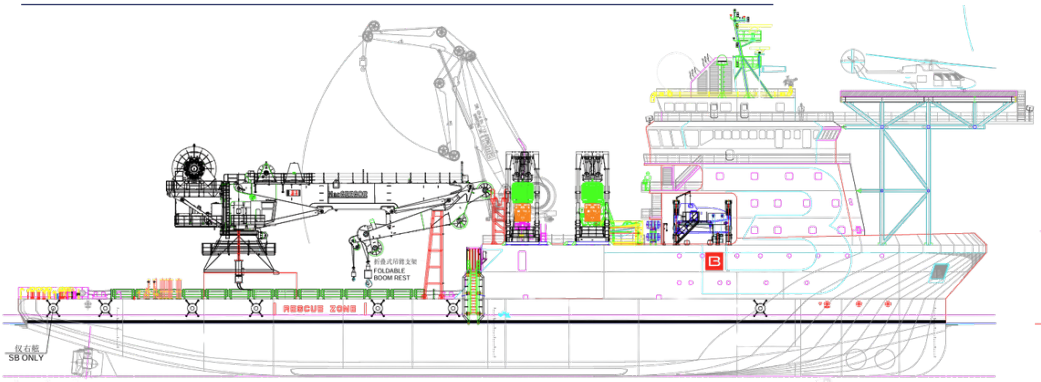
LAUNCH AND RECOVERY SYSTEMS (LARS) (choice of)

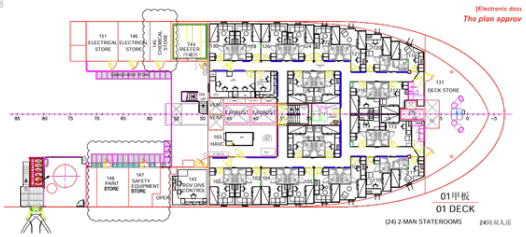
Overboarding
A-frame w/ or w/o docking head
Heavy-weather overboarding system
Cursor
Winch
Heavy lift winch with conventional or OHRA level wind

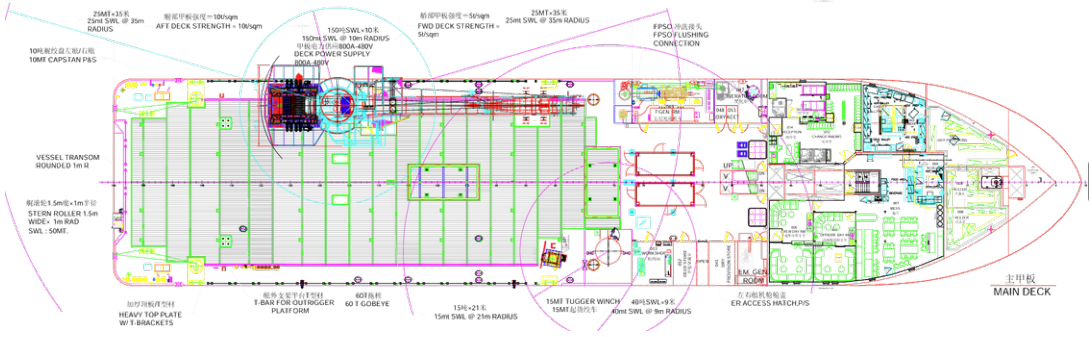
The **Millennium**® Plus ROV is a side entry cage deployed, dual manipulator 220 hp heavy work class ROV. The cage or Tether Management System (TMS) supplies an additional 110 hp and is capable of powering skids, and has thruster control and auto heading.

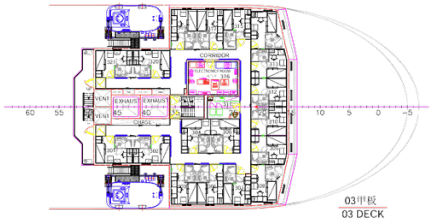


GENERAL ARRANGEMENTS

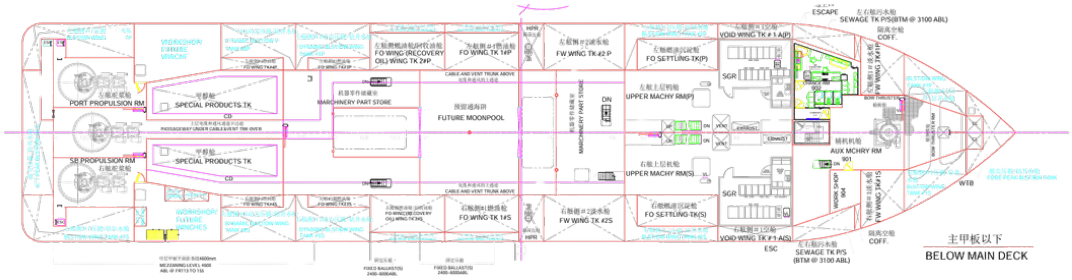


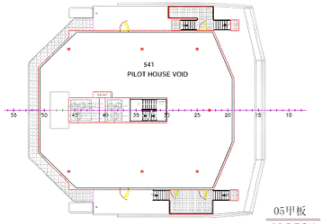


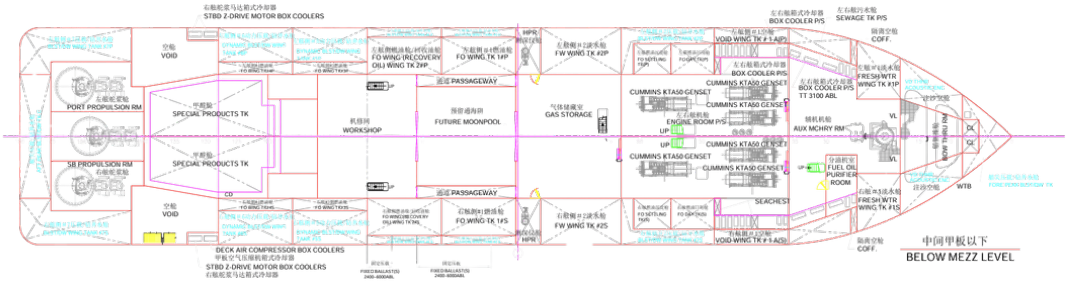


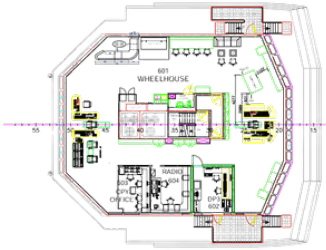


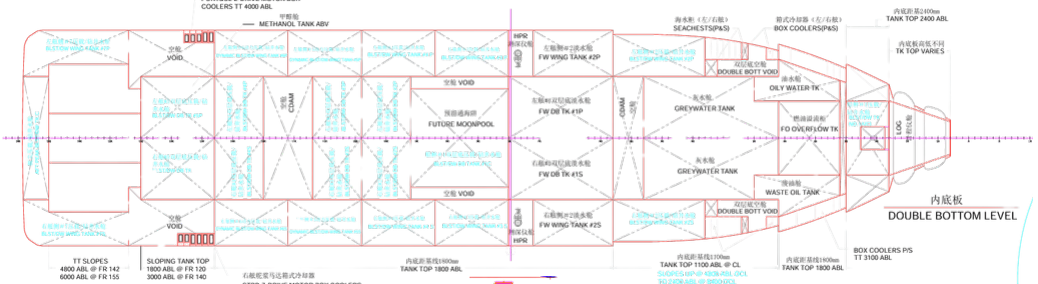


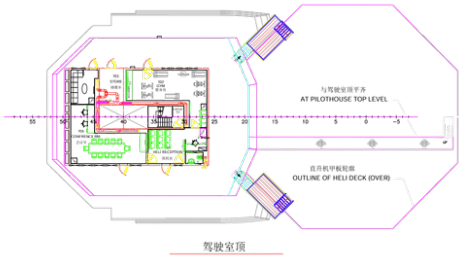


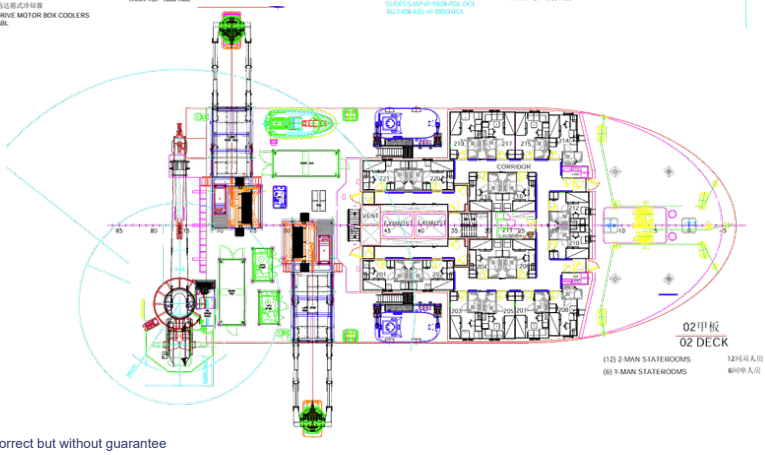


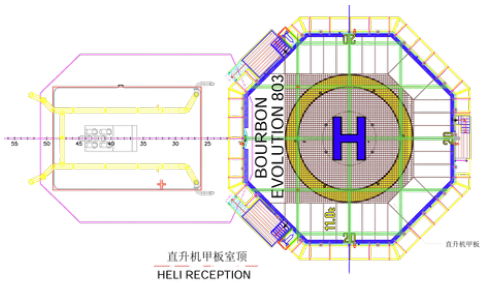




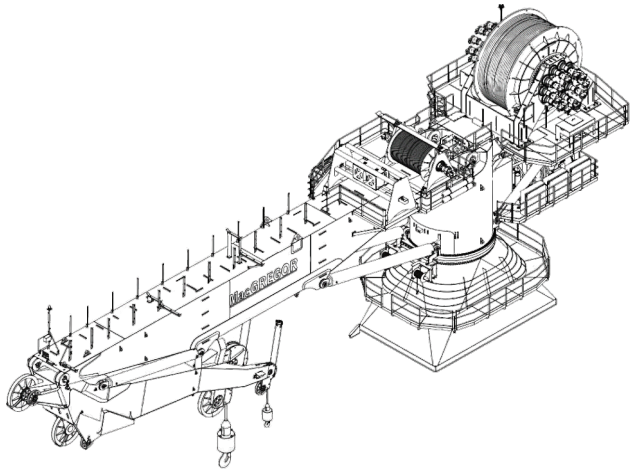


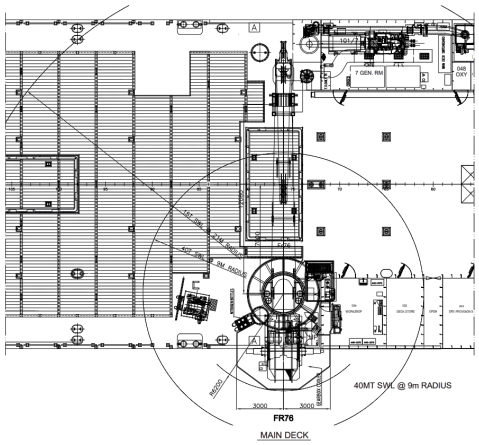


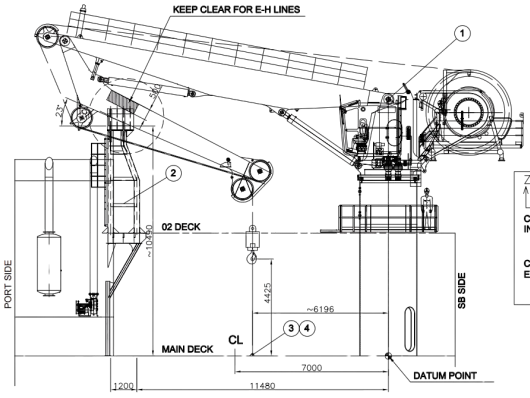




All particulars are believed to be correct but without guarantee





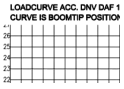


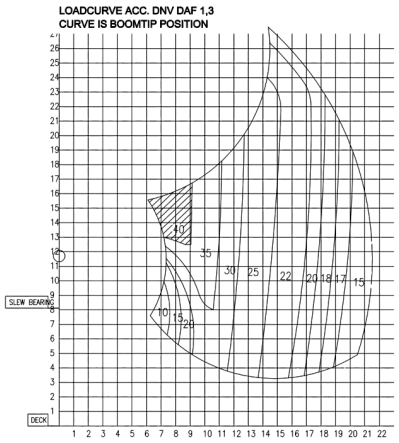
Rev.	DESCRIPTI

GENERAL NOTES:

PEDESTAL WEIGHT:	5 mt
HPU WEIGHT:	15 mt
TOPSECTION WEIGHT:	90 mt (EXCL. WINCH WIRE)
WIRE WEIGHT:	30 mt (FOR 2600 MTR)
TOTAL WEIGHT:	140 mt

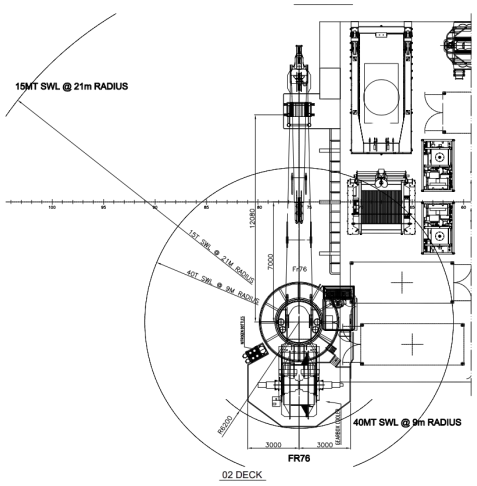
	X	Z
COG STORED POSITION INCL. PEDESTAL & HPU	0.1 MTR	9.9 MTR
COG STORED POSITION EXCL. PEDESTAL & HPU	0.1 MTR	10.8 MTR

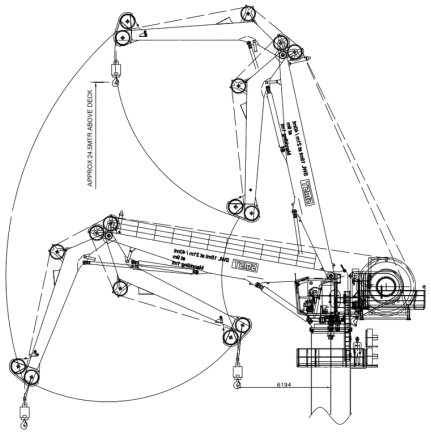




TECHNICAL DATA:

CRANE MODEL:	OC.K.EH.40/9-15/21
MAIN WINCH, 1 FALL, DAF 1,3:	
SWL:	40mt NORMAL LIFTING MODE
SWL:	40mt AHC MODE
SWL:	1mt MANRIDING (FULL RANGE)
WIRE DIAMETER:	Ø48mm
MBF:	2170 kN
WEIGHT IN AIR:	11,8 kg
SPOOLING CAPACITY:	3000 mtr
TUGGER WINCH (2-off):	
SWL:	5mt
PEDESTAL WEIGHT:	5 mt
HPU WEIGHT:	15 mt
TOPSECTION WEIGHT:	82 mt (EXCL. WINCH WIRE)
WIRE WEIGHT:	30 mt (FOR 2600 MTR)





EXTREME POSITIONS ARR.

No.	CODE	NAME	QTY.	MATERIAL	MASS PIECE	MASS TOTAL	REMARKS
4	ZJ2001-322-201-01	EYE PLATE	1	Q235-A			GALV.
3		HOOK SEA LASHING	6M	STEEL WIRE ROPE			GALV.
2	ZJ2001-322-202	JIB REST	1	ASSEMBLY			
1		AUXILIARY CRANE	1	ASSEMBLY	140T	140T	SMST

SDA-M696-322-202 Jib Rest for Auxiliary Crane

REFERENCE

APPROVAL

OWNER:

CLASS:

COR.MARKS	SIGN	DATE
DESIGNED		
CHECKED		
APPROVED1		
CHK OF STAND.		
APPROVED2		
DATE		

GPA696 IMR

AUXILIARY CRANE ARR.

GUIDO PERLA & ASSOCIATES, Inc.

FINAL DRAWING

HULL NO. : ZJ2007

DRAW. NO.: ZJ2001-322-201 Rev O

PAGE 1 / 1 WEIGHT SCALE 1:125

ZHEJIANG SHIPBUILDING Co. LTD.

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