

INSTRUCTION MANUAL

HYDRAULIC WINDLASS AND MOORING WINCH

TYPES

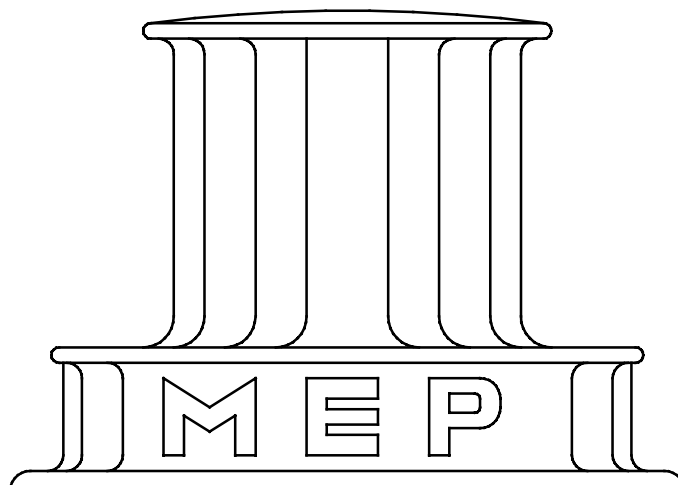
WINDLASS *SALP 68*

Serial Numbers 5241 and 5242

MOORING WINCH *AS 1500/D*

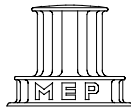
Serial Numbers 7118, 7119, 7120 and 7121

<i>CLIENT</i>	SHINA SHIPBUILDING
<i>HULLS</i>	SAS 412
<i>CLASSIFICATION</i>	ABS



PELLEGRINI MARINE EQUIPMENT

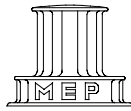
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1. GENERAL

M.E.P. system is high pressure hydraulic drive deck machinery.

The main construction, machinery and equipment including system are of M.E.P.-HYDROTEK's standards satisfied with rule requirements of the Classification Society for the ship.

1.1 RULES

- RINA
- International Standard Organisation (ISO) and MEP/HYDROTEK's standard in detail.
- OCIMF Guidelines.

1.2 SCOPE OF THE MANUFACTURER'S SUPPLY

A set of hydraulic drive deck machinery high pressure type:

- 1) Windlass with Mooring winch with two drums (with split flanges)..... 2 pieces
- 2) Mooring Winch with two drums (with split flanges)..... 4 pieces

1.3 SCOPE OF SHIPYARD PREPARATION

- 1) Installation works and its fitting
(holder piece and chock liner)
- 2) Hydraulic pipes and piping accessories
- 3) Hydraulic line piping and flushing works
- 4) All hydraulic fluid and lubricant (system oil, grease, flushing oil, etc.)
- 5) Tests and inspections after installation
- 6) Anchor, chain, rope, wire, etc.
- 7) Foundation bed for the all installation
- 8) All stoppers and cotters

1.4 MATERIAL

Materials for main parts of each deck machinery are as follows.

Frame	Rolled steel for general structure
Hawser or wire drum.....	Rolled steel for general structure
Warping end.....	Nodular graphite iron casting
Chain wheel.....	Steel casting
Gear wheel	Carbon or Low alloy steel casting
Pinion	Carbon steel for machine structural use or Low alloy steel casting
Shaft	Carbon steel for machine structural use or Chromium molybdenum steel
Clutch gear	Rolled steel for general structure
Brake gear	Rolled steel for general structure
Bearing metal	Bronze casting or leaded bronze casting
Brake lining.....	Ferodo non-asbestos



2. CONSTRUCTION

- 2.1 The following operation of each winch are regulated by manual operation.
- 1) Speed control and directional control of rotation (the mentioned manoeuvres are fed by hyd. power)
 - 2) Operation of brake and clutch gear (the brake and clutch do not need hydr. power feeding)
 - 3) Auto tension working mode (the auto tensioning is fed by hyd. power)
- 2.2 Bearings, screwed spindles, pins and other linkages are lubricated with grease through each grease nipple type JIS B 1575 PT 1/8" ball type or equivalent (M10), stainless steel or brass.
- 2.3 All external connection of nominal diameter 15A (1/2") & above are of JIS type flange, otherwise counter flange (slip on type) with bolts/nuts and gaskets are supplied by MEP/HYDROTEK.
- 2.4 Teeth of pinion and gear machined by hob are provided open type protection cover and lubricated with the opened gear grease by means of brush.
- 2.5 Type of warping end is in according with UNAV rules.
- 2.6 Clutch is a claw type and brake is a frictional band type.
- 2.7 All brakes drums are steel lined.
- 2.8 Each winding direction of rope and chain cable is as shown in the drawing of each winch.
- 2.9 ISO metric screw is adopted for all bolts and nuts in these deck machinery.
- 2.10 All the elements are marine type and suitable for deep-water navigation.

3. DESIGN CONDITION

3.1 Classification: RINA

3.2 Temperature

- | | | |
|---------------------------|---|-----------------|
| 1) Ambient temperature | : | +5° C ~ + 50° C |
| 2) Sea water temperature | : | +32°C |
| 3) System oil temperature | : | +25°C ~ +50° C |

3.3 Viscosity of system oil

The best performance of the deck machinery is obtained in viscosity range of 32 ~ 75 centistokes.

And the viscosity of 20 ~ 500 centistokes, in which the oil can maintain its efficiency corresponds to a temperature of 0°C ~ +80° C.



4. HYDRAULIC FLUIDS AND LUBRICANTS SUGGESTED

- | | | | |
|-----------------------------|---|------------------|---------------|
| 1) Working oil | : | ISO VG-46 | or equivalent |
| 2) Open gear | : | Gear compound | or equivalent |
| 3) Enclosed gear | : | ISO VG-220 | or equivalent |
| | | Gear oil class 2 | or equivalent |
| 4) Bearing metal & linkage: | | Grease class 2 | or equivalent |

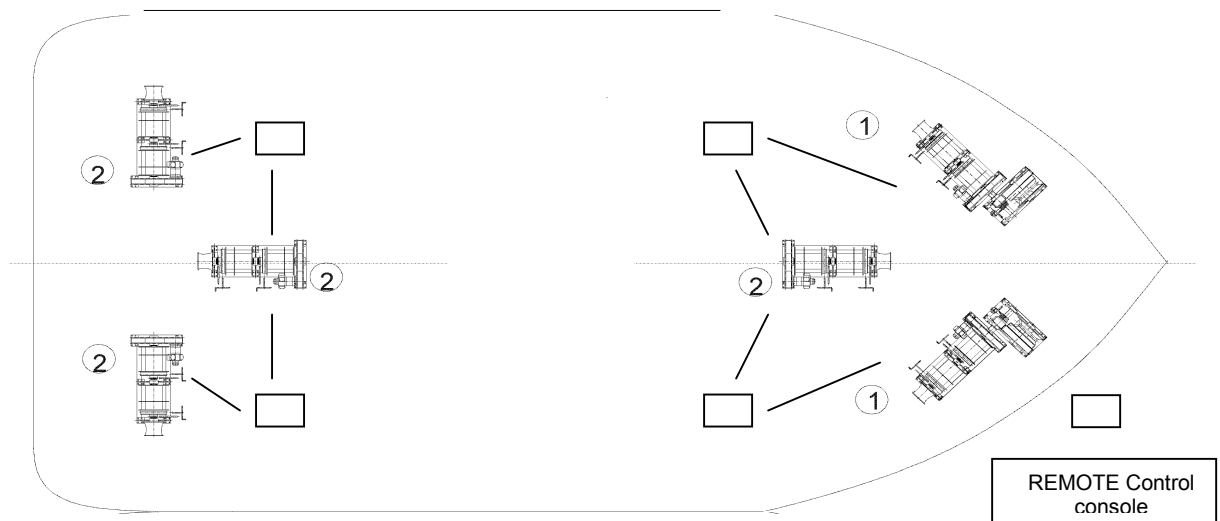
See also paragraph 8 showing the lubricant table

5. GENERAL ARRANGEMENT

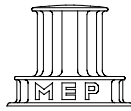
MEP-HYDROTEK system is high pressure hydraulic drive deck machinery.

General arrangement of MEP-HYDROTEK deck machinery.

For detail refer to dwgs. 152-1325 and 152-1338 layout of machinery on ship
(the following is only for reference):



- Item No. 1 Windlass with Mooring winch x 2 sets
Item No. 2 Mooring winch x 4 sets
Item No. 3 Control stand x 4 sets



6. TECHNICAL DESCRIPTION

- a. Winding capacity and brake capacity of the gypsy wheel shows the one on the gypsy wheel.
- b. Winding capacity and brake capacity of the mooring drum shows the one at the 1st layer on drum.

Item number 1

Name of machine **Windlass with Mooring Winch**

Type **SALP 68**

WINDLASS OUR MODEL SALP 68

Form of machine

Gypsy wheel

Type of gear Open type

Gear ratio 1:4

Brake Manual type

Clutch Manual lever type

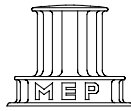
Mooring drum

Type of gear Enclosed type

Gear ratio 1:15/1:4

Brake Manual type

Clutch Manual lever type



Particulars

Feeding: By Framo cargo pumps

Gypsy wheel:

1 range 225,6 kN at approx.0-9 m/min
Chain diameter \varnothing 68 mm grade U3 kenter shackle
Brake capacity 1574 kN
Required oil flow 180 l/min
Overload 338 kN

Mooring drum:
With

split flange: Winding capacity
1 range 147 kN at approx.0-15 m/min
Light line and speed at approx.0-45 m/min

Drum number 2
Stowing capacity \varnothing 55 mm x 200 m
..... nylon on 8 layers
..... (stowage section)
..... \varnothing 55 mm x 20 m
..... nylon on 3 layers
..... (working section)

Size of drum \varnothing 330mm x 1360mm x 1040 mm lg
Brake capacity 385 kN
Required oil flow 150 l/min

Note Portside windlass – SPM Drum Capacity 150m rope \varnothing 80mm
(\varnothing 330 x 1650 x 1040 mm).

Warping end:

Size \varnothing 500 mm x 500 mm
Speed 21,5m/min /43m/min
Pull Max. 102kN
Oil working pressure (nominal pull) 180 bar
Oil maximum pressure (overload pull) 270 bar

Cable lifter unit:

Main components:

Chain wheel for 68mm. dia. Grade U3 chain cable.
Chain wheel shaft
Gear wheel



Frames

Drive shaft

Claw coupling

Band-brake two halves type hand operated by means mechanical lever

Rigid claw coupling half for connection to mooring winch

Bell mouth supplied as separate unit to be welded to the chain pipe supplied by the shipyard

Brake Non-asbestos brake lining

Mooring drum unit:

Main components:

Drive unit with hydraulic motor

Drive-wheel, enclosed

Gear-wheel, enclosed

Support bearing

Drum shaft

Drums (two pieces)

Band-brakes two halves type hand-operated (two pieces)

Claw coupling-disengageable (two systems)

Frames

Warping end

Each drum has a manually operated brake

Hydraulic motor radial piston type, 2 speeds, bi-directional with flange mounted operating valve

Brake drum Mild steel

Non asbestos brake lining

Classification and certificate RINA.

Weight each..... approx. 5,3 Tons plus 4,8 Tons

Drawing: 152-1312

Item number **2**

Name of machine **Mooring Winch**

Type **AS 1500/D**

Form of machine

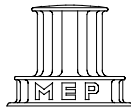
Mooring drum number 2

Type of gear Enclosed type

Gear ratio..... 1:15

Brake Manual type

Clutch Manual lever type



Particulars

Feeding: By Framo cargo pumps

Mooring drum:
with split flange 1st layer

Winding capacity
1 range 147 kN at approx. 0-15 m/min
light line speed at approx. 0-45 m/min

Drum Number 2
Stowing capacity \varnothing 55 mm x 200 m
..... nylon on 8 layers
..... (stowage section)
..... \varnothing 55 mm x 20 m
..... nylon on 3 layers
..... (working section)

Size of drum \varnothing 330 mm x 1360mm x 1040mm lg
Brake capacity 385 kN
Required oil flow 150 l/min

Warping end:

Size \varnothing 500 mm x 500 mm
Speed 21,5m/min /43m/min
Pull Max. 102kN
Oil working pressure (nominal pull) max. 277 bar

NOTE: All the mooring drums have the capacity to accommodate polypropylene rope \varnothing 64mm x 200m in the stowing part.

Main components:

- Drive unit with hydraulic motor
- Drive-wheel, enclosed
- Gear-wheel, enclosed
- Support bearing
- Drum shaft
- Drum (two pieces)



Band-brake two halves type hand-operated (two pieces)

Claw couplings-disengageable (two systems)

Frames

Warping end

Each drum has a manually operated brake.

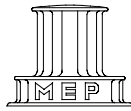
Hydraulic motor: Radial piston type, 2 speeds, bi-directional with flange
mounted operating valve

Brake drum: Mild steel
..... Non asbestos brake lining

Classification and certificate RINA

Weight each: approx. 4,8 Tons

Drawing: 152-1325 Rev.B



7. MISCELLANEOUS

When the drum and warping end on the same winch are engaged at the same time, they are mechanically locked to the same shaft, and the combined pull equal the pull of one drum or warping end.

Each winch is supplied with a pressure/flow control valve.

The arrangement includes the following installation equipment according to piping diagram.

1. The control handle with the control valve is provided near the driving motor of each windlass and mooring winch
2. In addition to local control the two winches placed on the main deck are remotely operated from a remote control station on both ship sides for speed and direction
3. All the drums have fittings to install the brake test kit
4. One brake test kit is supplied
5. The brake lining are bolted to the brake band in stainless steel (SUS 304) for all winches
6. The cable lifters are provided with disengaging plate
7. Windlass, mooring winches foundation are suitable for CHOCKFAST (Philadelphia or equivalent). Thrust block are installed.
8. International standard measurement
9. All winches are finished greased.

Approx. quantity each type bearing	0,5 kg
Approx. quantity drum gears	0,5 kg
Approx. quantity windlass gears.....	1,0 kg

Grease type to be in accordance with grease list.
10. No special tools are requested for dismantling and repair of equipment.
11. The equipment supplied, include all the fenders or necessary security elements to avoid damages to the persons.
12. Asbestos and Asbestos-base materials are not used.



8. LUBRICANTS TABLE

LUBRIFICANTI / LUBRICANTS						
Applicazione Application	Temperature Temperature					
Riduttori ad assi paralleli <i>Parallel shafts gearboxes</i>	10 ÷ 50 °C	BLASIA 220	REDUCTELF 220	SPARTAN EP 220	MOBILGEAR 630	OMALA OIL 220
Ruote dentate esterne <i>External toothed wheel</i>	10 ÷ 50 °C	TUFGEAR 85	CARDREXA DC1	CAZAR K 2	MOBILTAC 81	MALLEUS GL 95
Ingrassatori <i>Greaser</i>	10 ÷ 50 °C	SAPPHIRE 2	EPEXA 2	BEACON EP 2	MOBILUX EP 2	CALITHIA EPT 2
Impianti oleodinamici <i>Hydraulic plant</i>	10 ÷ 50 °C	ARNICA 46	ELFOLNA 46	INVAROL EP 46	MOBIL DTE 25	TELLUS OIL 46



9. WARRANTY CONDITIONS AND TECHNICAL ASSISTANCE

WHOM TO CONTACT IN CASE OF DEFAULT

In case of need or for possible clarifications, the customer can apply to the technical and commercial support of the area agent or of the importers, who are always in direct touch with the builder PELLEGRINI MARINE EQUIPMENT.

In most of the cases, many technical inconveniences can be solved with small interventions and therefore we advise to carefully read this booklet before calling the Assistance Service.

In case of anomalies or bad functioning which are not solvable, the user can apply to the builder.

PELEGRINI MARINE EQUIPMENT
Via E. Torricelli 2/A - 37135 VERONA - ITALY-
☎ 39-45-508877 - Fax 39-45-508855

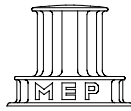
WARRANTY

The warranty covers anomalies or working malfunctions due to substantiated original and manufacturing defaults. Marine Equipments Pellegrini S.r.l. provides only to repair and/or replace the malfunctioning components, free of charge for material and labour.

In case of faulty components replacing, the Client should be obliged to send back the same at his own shipping charges to M.E.P. S.r.l. for the opportune employment (technical analyse, check for reparation, scrapping , etc.)

The warranty starts from the date of Ship delivery to the Shipowner Company and it has 18 months validity and, anyway not beyond 24 months from the delivery date of the goods (if no other special conditions are indicated on the Purchase Order/Contract).

The warranty does not cover damages caused by accidents, tampering, negligence, abuse or improper employment, improper or unreasonable maintenance, corrosion, wrong assembly, improper reparation or spare parts improperly installed, employment of spares or accessories not in conformity with M.E.P. S.r.l. Specification, employment of components neither produced nor supplied by M.E.P. S.r.l., modifications neither recommended or approved in writing by M.E.P. S.r.l., normal wear and deterioration due to the usual machines employment.



Furthermore, the warranty does not cover neither tools, lubricants and other consumables nor any damage caused to people or things by the machine employment and no compensation is due for any eventual inconvenience caused by the unworking machine or while machines or components are in process of reparation or replacing.

The warranty is offered only to the first Owner of the product and it cannot be extended to third parties (unless a special written delegation has been accepted and undersigned).

Except to what expressly foreseen by the warranty, M.E.P. S.r.l. should not be considered responsible for any eventual indirect or connected damage occurred during the machine employment.

The warranty validity is subordinated to the fulfilment of payment modality or conditions agreed upon and to the correct compliance of what it is indicated in the employment and use manual supplied with the machine.

TECHNICAL ASSISTANCE

M.E.P. S.r.l. guarantees its own personnel availability to perform National and International missions.

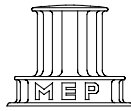
M.E.P. S.r.l.'s personnel intervention, must be planned at least 10 (ten) days in advance.

Missions expenses (travels, board and lodging in Hotel, etc.) are completely at Client's charge.

For all technical interventions for substantiated original or manufacturing defects occurred during the period covered by the warranty, the replacing components and labour are completely at M.E.P. S.r.l.'s charge, except all travel expenses (travels, board and lodging in Hotel etc.) for which all expenses reimbursement are required.

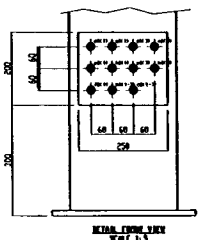
For all the technical assistance required for a period not covered by the warranty or anyway an intervention required for an inconvenience not to be imputed to original or manufacturing defects, an additional charge has to be calculated in accordance with ANIMA tariffs (in force in that moment) plus reimbursement of the replacing material and any eventual expenses (travels, board and lodging in Hotel, etc.).

The travel expenses payment has to be performed as follows: bank receipt 30 days after receipt of invoice at the end of the month.

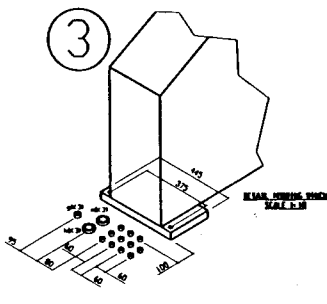
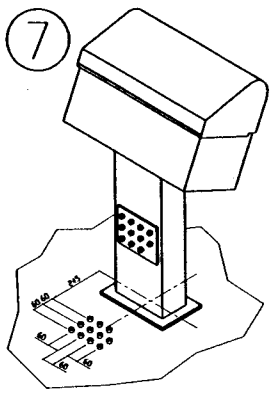


10. GENERAL TABLES

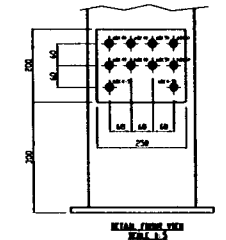
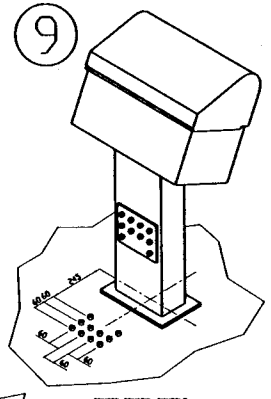
-- PIPING LAYOUT AND GENERAL DESCRIPTION	TABLE 20-439
-- GENERAL ARRANGEMENT OF DECK MACHINERY	TABLE 152-1338
-- LOCAL AND REMOTE CONSOLE FOR SALP 68 AND AS 1500/D	TABLE 21-320
-- REMOTE CONSOLE	TABLE 21-321
-- HYDRAULIC DIAGRAM FOR WINCHES CONNECTED TO FRAMO CARGO PUMPING SYSTEM	TABLE 20-456



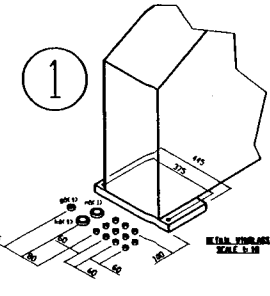
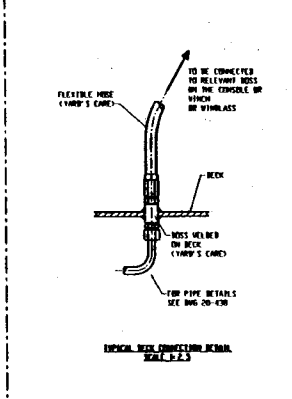
REF.	FUNCTION DESCRIPTION	THREAD
W011	MANUVERING DOWN	1/4" BSP - FEMALE
W012	MANUVERING UP	1/4" BSP - FEMALE
W021	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W022	MAIN LINE PRESSURE	1/4" BSP - FEMALE
W023	PULL SETTING PRESSURE	1/4" BSP - FEMALE
W024	PISTON LINE PRESSURE	1/4" BSP - FEMALE
W025	MAIN	1/4" BSP - FEMALE
W026	MANUVERING DOWN	1/4" BSP - FEMALE
W027	MANUVERING UP	1/4" BSP - FEMALE
W028	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W029	MAIN LINE PRESSURE	1/4" BSP - FEMALE



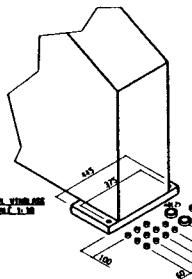
REF.	FUNCTION DESCRIPTION	THREAD
W011	MAIN LINE PRESSURE	1-1/4" BSP - FEMALE
W012	LINE	1-1/4" BSP - FEMALE
W013	MAIN	1/2" BSP - FEMALE



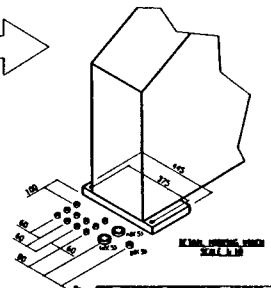
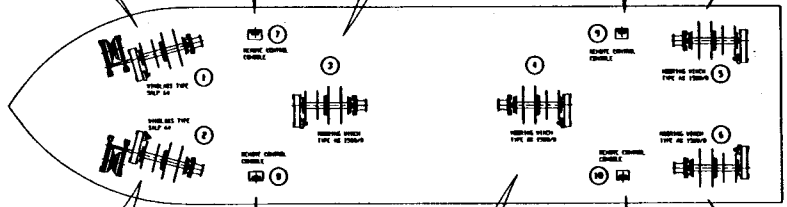
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W012	MANUVERING UP	1/4" BSP - FEMALE
W021	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W022	MAIN LINE PRESSURE	1/4" BSP - FEMALE
W023	PULL SETTING PRESSURE	1/4" BSP - FEMALE
W024	PISTON LINE PRESSURE	1/4" BSP - FEMALE
W025	MAIN	1/4" BSP - FEMALE
W026	MANUVERING DOWN	1/4" BSP - FEMALE
W027	MANUVERING UP	1/4" BSP - FEMALE
W028	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W029	MAIN LINE PRESSURE	1/4" BSP - FEMALE
W030	PULL SETTING PRESSURE	1/4" BSP - FEMALE
W031	MAIN	1/4" BSP - FEMALE



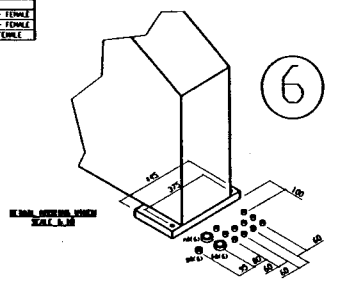
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W012	LINE	1-1/4" BSP - FEMALE
W013	MAIN	1/2" BSP - FEMALE



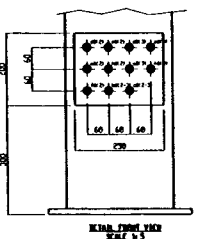
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W012	LINE	1-1/4" BSP - FEMALE
W013	MAIN	1/2" BSP - FEMALE



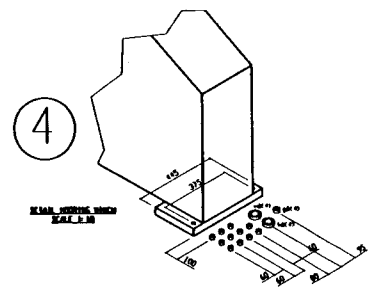
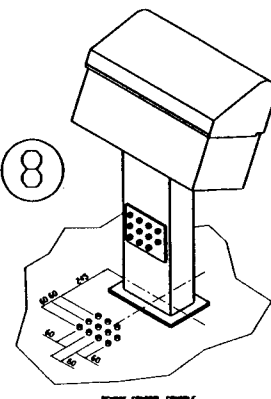
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W013	MAIN	1/2" BSP - FEMALE



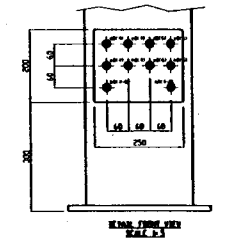
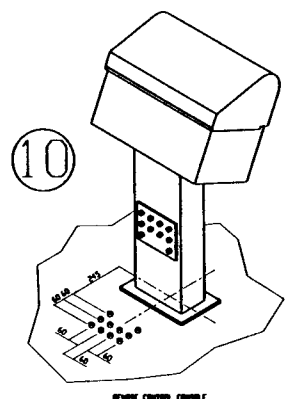
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W012	LINE	1-1/4" BSP - FEMALE
W013	MAIN	1/2" BSP - FEMALE



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W012	MANUVERING UP	1/4" BSP - FEMALE
W021	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W022	MAIN LINE PRESSURE	1/4" BSP - FEMALE
W023	PULL SETTING PRESSURE	1/4" BSP - FEMALE
W024	PISTON LINE PRESSURE	1/4" BSP - FEMALE
W025	MAIN	1/4" BSP - FEMALE
W026	MANUVERING DOWN	1/4" BSP - FEMALE
W027	MANUVERING UP	1/4" BSP - FEMALE
W028	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W029	MAIN LINE PRESSURE	1/4" BSP - FEMALE



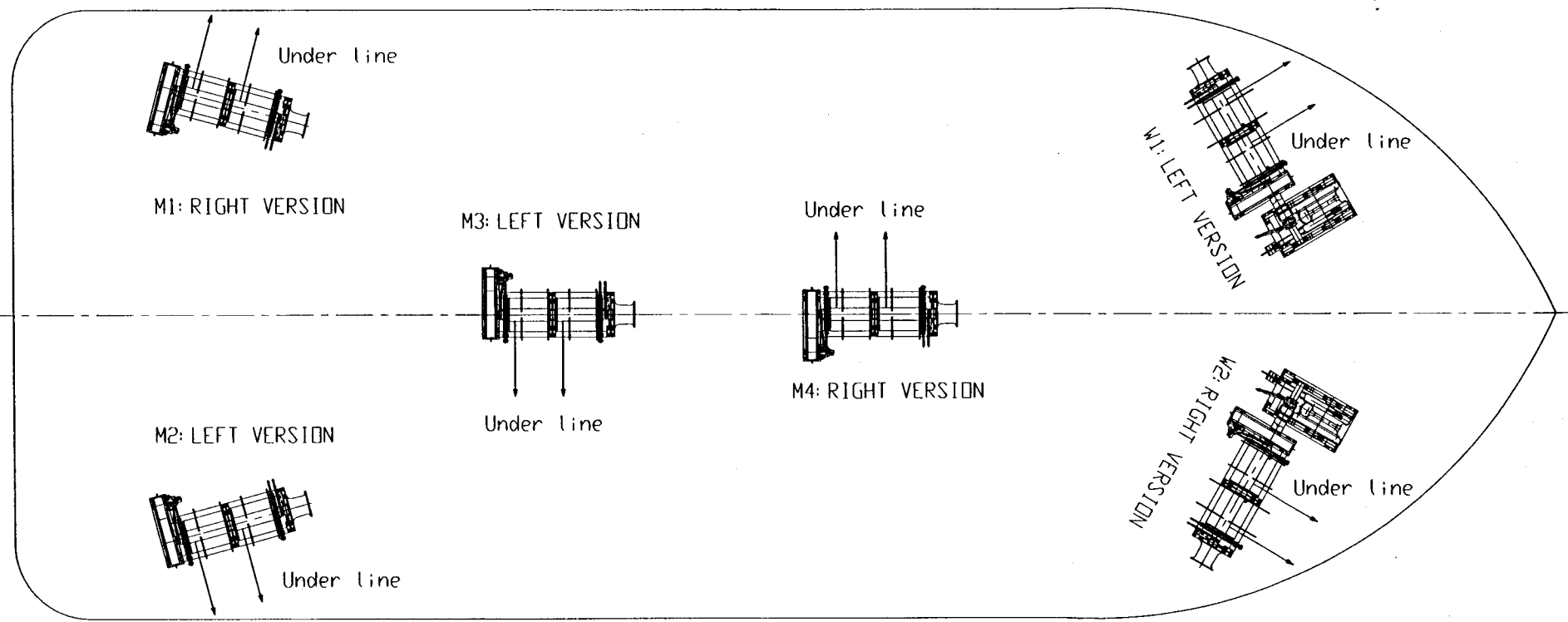
REF.	FUNCTION DESCRIPTION	THREAD
W011	MAIN LINE PRESSURE	1-1/4" BSP - FEMALE
W012	LINE	1-1/4" BSP - FEMALE
W013	MAIN	1/2" BSP - FEMALE



REF.	FUNCTION DESCRIPTION	THREAD
W011	MANUVERING DOWN	1/4" BSP - FEMALE
W012	MANUVERING UP	1/4" BSP - FEMALE
W021	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W022	MAIN LINE PRESSURE	1/4" BSP - FEMALE
W023	PULL SETTING PRESSURE	1/4" BSP - FEMALE
W024	PISTON LINE PRESSURE	1/4" BSP - FEMALE
W025	MAIN	1/4" BSP - FEMALE
W026	MANUVERING DOWN	1/4" BSP - FEMALE
W027	MANUVERING UP	1/4" BSP - FEMALE
W028	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
W029	MAIN LINE PRESSURE	1/4" BSP - FEMALE
W030	PULL SETTING PRESSURE	1/4" BSP - FEMALE
W031	MAIN	1/4" BSP - FEMALE

		PIPELINE LAYOUT AND GENERAL DESCRIPTION	
Part No. 20-439 Rev. 1 Date: 10/1/58 Drawn: [Name] Checked: [Name] Approved: [Name]	Scale: 1:1 Sheet: 1 of 1 Total: 1 of 1	Project: [Name] Drawing No. 20-439 Title: PIPELINE LAYOUT AND GENERAL DESCRIPTION	Date: 10/1/58 Scale: 1:1 Sheet: 1 of 1 Total: 1 of 1


PORTSIDE

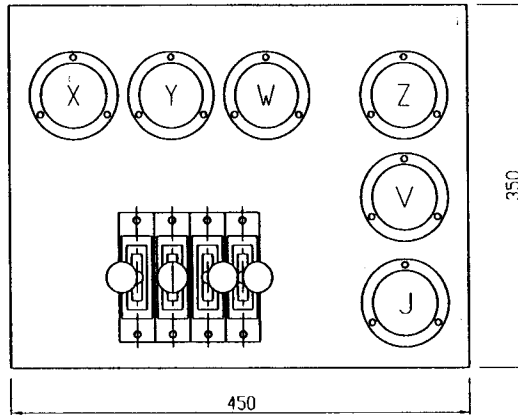


STARBOARD

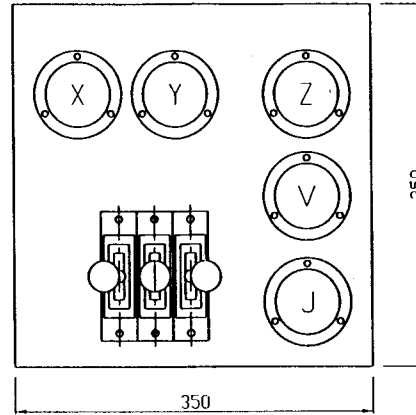
M1-M2-M3-M4 : rope Dia. 55mmx220m
 W1 sea side : rope Dia. 55mmx220m or Dia. 80mmx150m
 W1-W2 : rope Dia. 55mmx220m

Indice			
DATA			
REVISIONI			
MODIFICAZIONI			

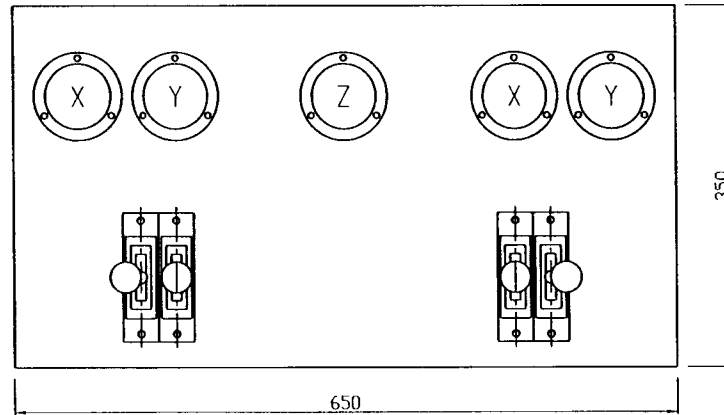
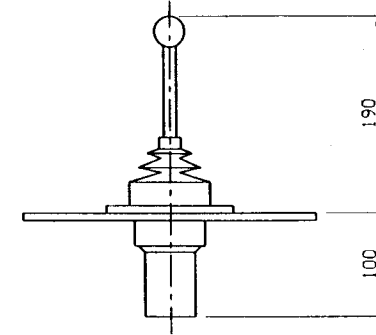
Pos.	Denomination	Pieces	Material	Weight Kg	Note
 marine equipment PELEGRINI Via E. Ferricelli 2/A - 37135 VERONA - ITALY ALLOWANCES NOT INDICATED		Group 152		Class ILLUSTR.	SCALE 1:20
Denomination GENERAL ARRANGEMENT OF DECK MACHINERY					
Molden parts		Material	Model Nr.	Weight Kg.	
Worked parts					
Length					
Diameter			Quantity	SH. OF.	
Drawn	ENGR/BSGM	Treatment	N° 152-1338		
2-2002			File	Index	
Checked	Approved		HE 1338-A		
Is strictly forbidden reproduce or transmit to others the object of the present drawing.					



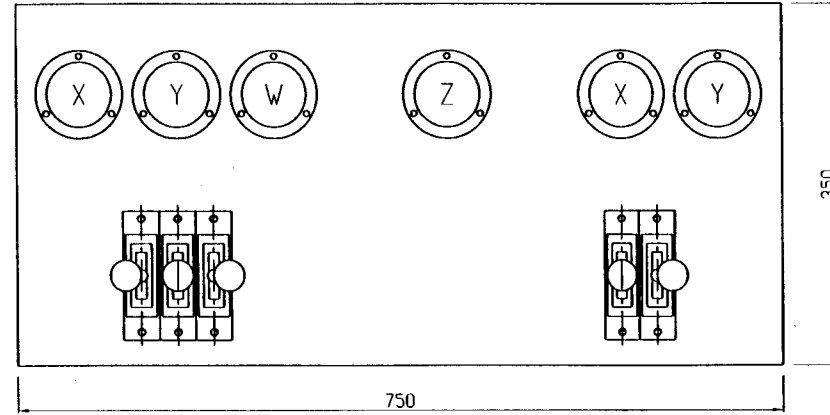
LOCAL CONSOLE FOR WINDLASS



LOCAL CONSOLE FOR MOORING WINCH



REMOTE CONSOLE FOR MOORING WINCH + MOORING WINCH



REMOTE CONSOLE FOR WINDLASS + MOORING WINCH

MANDOMETER	READ OUT DATA
x	MAIN LINE PRESSURE
y	MOTOR DISPLACEMENT CHANGE
w	PULL SETTING PRESSURE
z	PILOT LINE PRESSURE
v	PILOT AUTOTENSIONING PRESSURE
j	AUTOTENSIONING PRESSURE

Pos.	Denomination	Pieces	Material	Weight Kg.	Note
	marine equipment PELEGRINI Via E. Torricelli, 2/A - 37135 VERONA - ITALY - ALLOWANCES NOT INDICATED	Group 21			Class. SALP 68
					Denomination LOCAL AND REMOTE CONSOLE FOR SALP 68 AND AS 1500/D
					SCALE 1:5
			Material	Model Nr.	Weight Kg.
				Quantity	SH. 1 OF 1
	Drawn 04-05-2001	ENGR/DSGN			N° 21-320
	Checked	Approved	Treatment	File AY0320AA	Index A
					MOD. P00DT003MFP

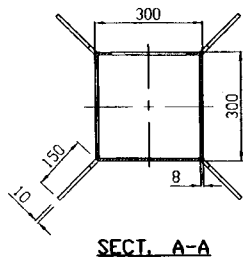
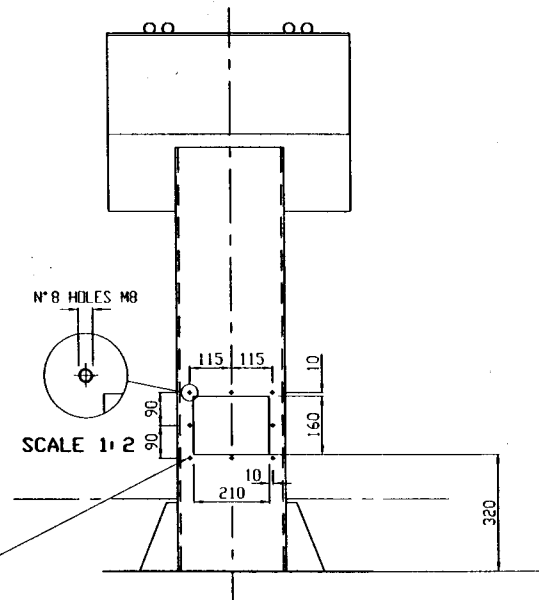
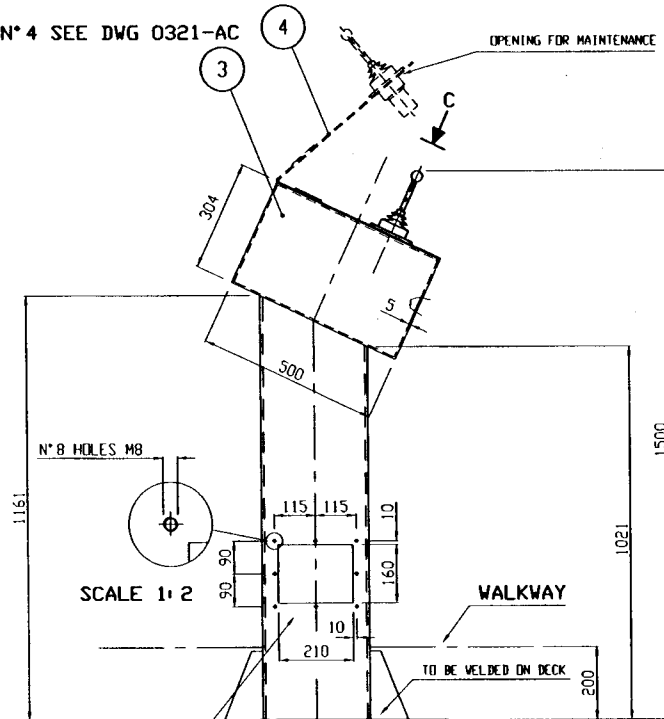
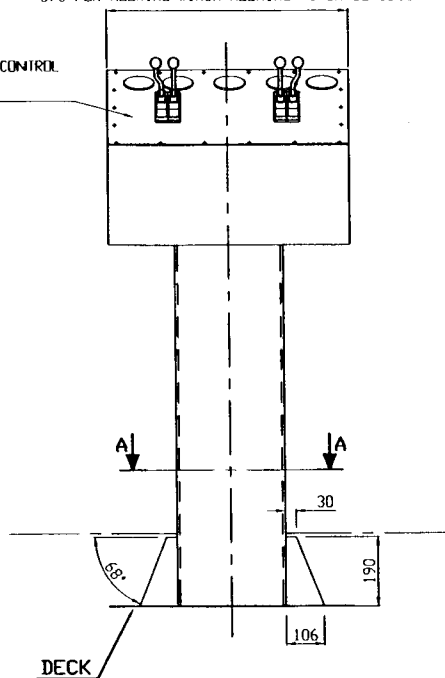
Is strictly forbidden reproduce or transmit to others the object of the present drawing.

Index A
Date 06/09/02 AM
Initial Modification
ADDED MANDOMETER 'V' AND 'J'

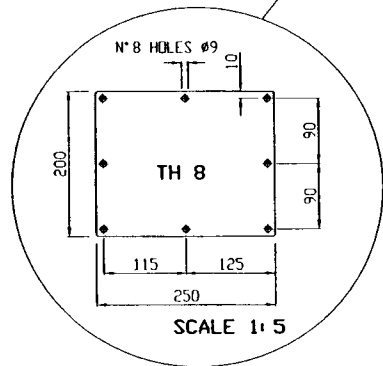
FOR POS. N°3 , N°4 SEE DWG 0321-AC

670 FOR MOORING WINCH+MOORING WINCH CONSOLE

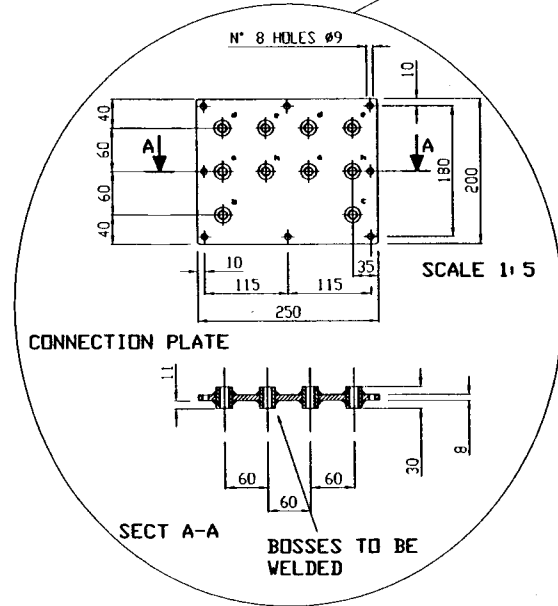
MANOEUVRE CONTROL PLATE



SECT. A-A



INSPECTION COVER



CONNECTION PLATE

SECT A-A

BOSSES TO BE WELDED

REF.	FUNCTION DESCRIPTION	THREAD
d	MANOEUVRE DOWN	1/4" BSP - FEMALE
e	MANOEUVRE UP	1/4" BSP - FEMALE
a	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
h	MAIN LINE PRESSURE	1/4" BSP - FEMALE
d	MANOEUVRE DOWN	1/4" BSP - FEMALE
e	MANOEUVRE UP	1/4" BSP - FEMALE
a	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
h	MAIN LINE PRESSURE	1/4" BSP - FEMALE
b	PILOT LINE PRESSURE	1/4" BSP - FEMALE
c	DRAIN	1/4" BSP - FEMALE

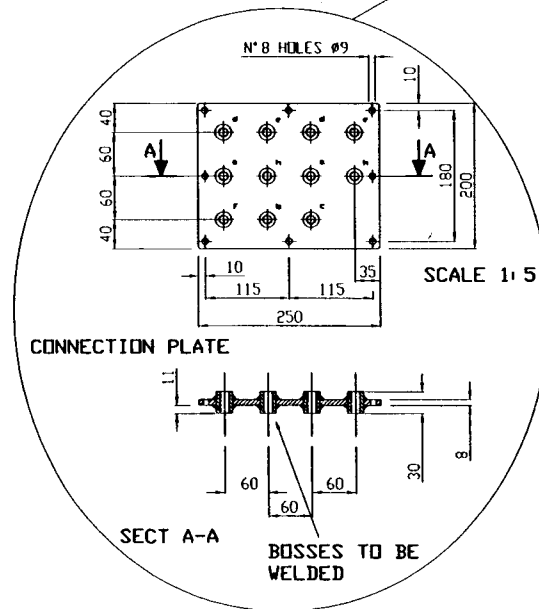
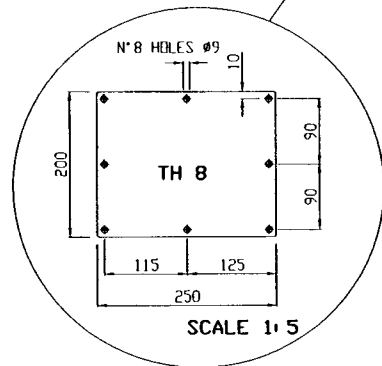
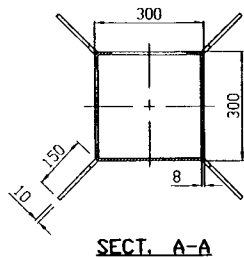
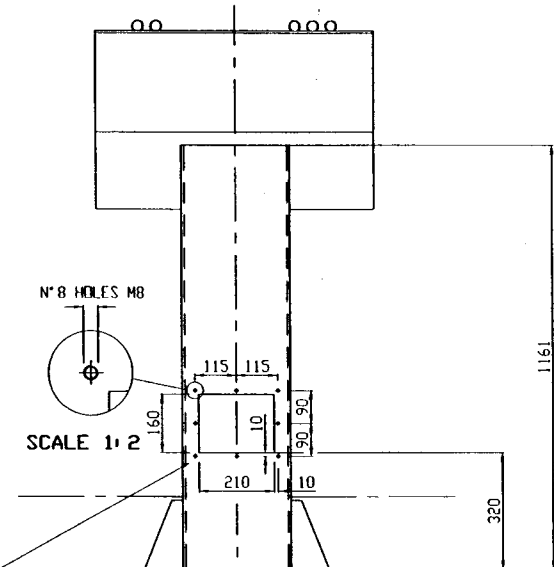
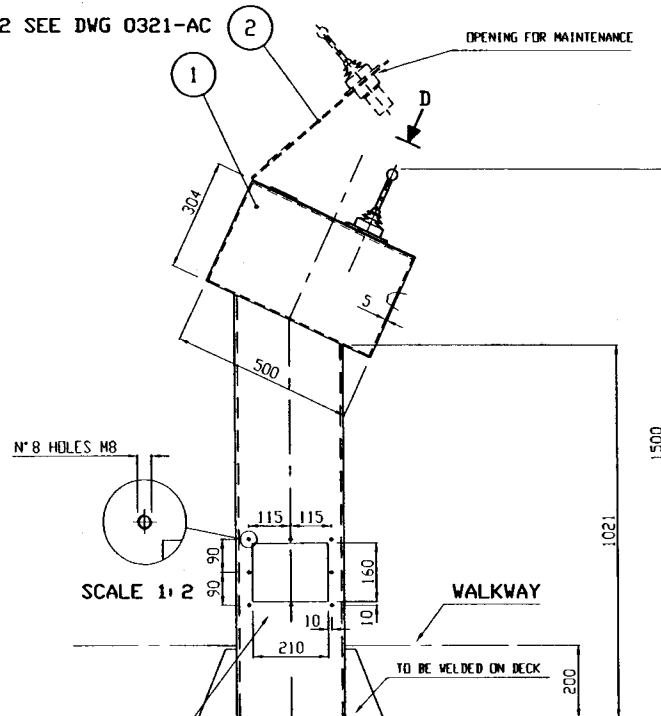
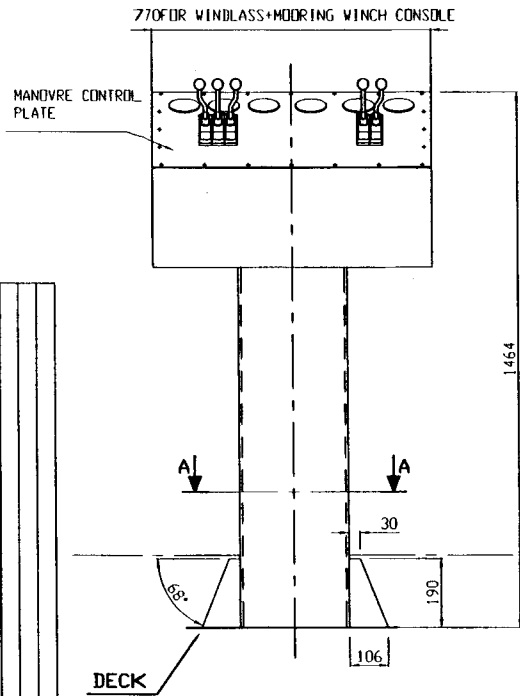
TO CONSTRUCT 1 RIGHT VERSION , 1 LEFT VERSION

Pos.	Denomination	Pieces	Material	Weight Kg	Note
	marine equipment PELLEGRINI Via E. Torricelli 2/A - 37135 VERONA - ITALY ALLOVANCES NOT INDICATED				Group 21 Class. SALP 64 N° 5235-36-37-38
					Denomination REMOTE CONSOLE FOR MOORING WINCH + MOORING WINCH SCALE 1:10
			Material	Model N°	Weight Kg
					Quantity 1DX 1SX PER SHIP SH. 1 OF 3 N° 21-321
	Drawn ENGR/BSGN		Treatment	File	Index
	G.P. 07/09/2001			AY0321AA	A
	Checked	Approved			

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Index Date Control Mod. Fraction
 a. 02/09/2001 G.P. UPDATED DIMENSIONS

FOR POS. N°1, N°2 SEE DWG 0321-AC



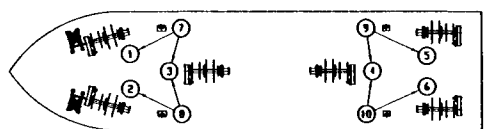
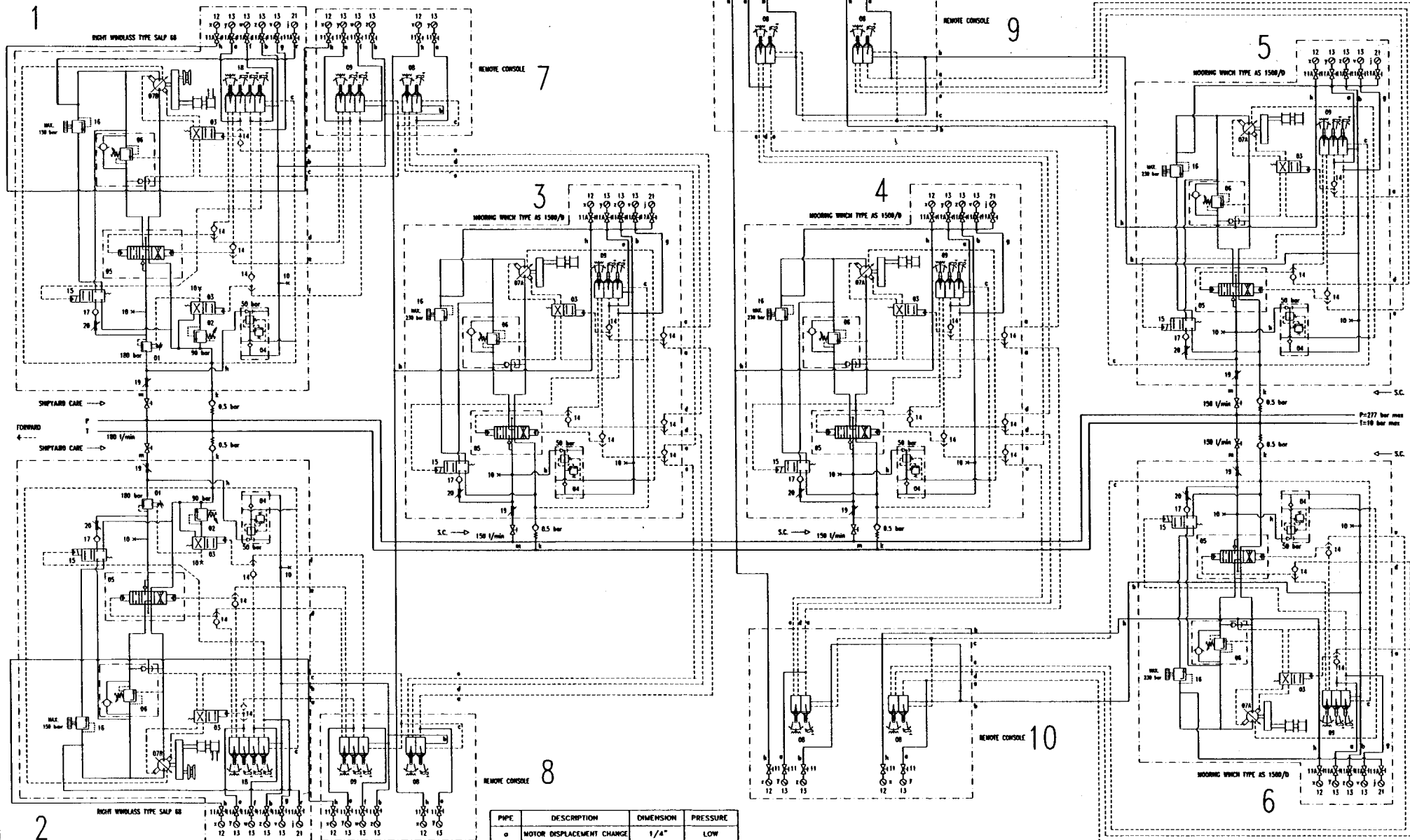
REF.	FUNCTION DESCRIPTION	THREAD
d	MANOEUVRE DOWN	1/4" BSP - FEMALE
e	MANOEUVRE UP	1/4" BSP - FEMALE
a	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
h	MAIN LINE PRESSURE	1/4" BSP - FEMALE
f	PULL SETTING PRESSURE	1/4" BSP - FEMALE
b	PILOT LINE PRESSURE	1/4" BSP - FEMALE
c	DRAIN	1/4" BSP - FEMALE
d	MANOEUVRE DOWN	1/4" BSP - FEMALE
e	MANOEUVRE UP	1/4" BSP - FEMALE
a	MOTOR DISPLACEMENT CHANGE	1/4" BSP - FEMALE
h	MAIN LINE PRESSURE	1/4" BSP - FEMALE

TO CONTRACT 1 RIGHT VERSION , 1 LEFT VERSION

Pos.	Denomination	Pieces	Material	Weight Kg.	Note
	marine equipment PELLEGRINI Via E. Torricelli 2/A - 37125 VERONA - ITALY ADVANCES NOT INDICATED	Group 21		Class. SALP 64 N° 5235-36-37-38	SCALE 1:10
	Denomination REMOTE CONSOLE FOR WINDLASS + MOORING WINCH				
Molden parts					
Worked parts					
Length					
Diameter					
Drawn G. P. 07/09/2001	ENGR/BSCAI			Quantity PER SHIP N° 21-321	SH. 2 OF 3
Checked	Approved		Treatment	File AY0321AB	Index A

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Index	Modification
A	UPDATED DIMENSIONS



KEY PLAN

PIPE	DESCRIPTION	DIMENSION	PRESSURE
a	MOTOR DISPLACEMENT CHANGE	1/4"	LOW
b	PILOT LINE PRESSURE	1/4"	LOW
c	DRAIN	1/4"	LOW
d	MANOEUVRE DOWN	1/4"	LOW
e	MANOEUVRE UP	1/4"	LOW
f	PULL SETTING CONTROL	1/4"	LOW
g	AUTOTENSIONING CONTROL	1/4"	LOW
h	MAIN LINE PRESSURE	1/4"	HIGH
k	TANK	1" 1/4	LOW
m	MAIN LINE PRESSURE	1"	HIGH
r	AUTOTENSIONING PRESSURE	1/4"	HIGH

MANOMETER	READ OUT DATA
x	MAIN LINE PRESSURE
y	MOTOR DISPLACEMENT CHANGE
w	PULL SETTING PRESSURE
z	PILOT LINE PRESSURE
v	PILOT AUTOTENSIONING PRESSURE
j	AUTOTENSIONING PRESSURE

--- Limit of M.E.P. supply


SHINA SHIPBUILDING HULL NOS. SAS. 4118426

Pos.	Designation	Pieces	Material	Weight	Note
<p>Group 20 Class: HYDR. DIAGRAM</p> <p>Designation: HYDRAULIC DIAGRAM FOR WINCHES CONNECTED TO FRAMM CARGO PUMPING SYSTEM</p> <p>SCALE: 1/100</p> <p>FOR 1 SHIPSET</p> <p>Quantity: 30</p> <p>N° 20-456</p> <p>File: A01568A Index: A B I</p>					

Material: Steel
 Weight: 30 kg
 Checked: Approved

Index	Date	Initial	Modification
A	23-01-02	M. L.	Updated
B	25-02-02	G. R.	Updated

56920022	21	MANOMETER MEDIUM PRESSURE	6			
56917011	20	FLOW CONTROL VALVE	6			
56917012	19	FLOW CONTROL VALVE	6			
56914192	18	SINGLE ACTING REMOTE CONTROL 1 RETAINED POS	2			
56910453	17	NO RETURN VALVE	6			
56910522	16	PRESSURE RELIEF VALVE	6			
56914164	15	VALVE	6			
56910858	14	*SELECTOR* VALVE	26			
56920003	13	MANOMETER LOW PRESSURE	34			
56920044	12	MANOMETER HIGH PRESSURE	14			
56921023	11A	MANOMETER COCK	32			
56921020	11	MANOMETER COCK	22			
57040050	10	MANOMETER CONNECTION	14			
56914186	9	SINGLE ACTING REMOTE CONTROL 2 RETAINED POSITION	6			
56914185	8	BI-DIRECTIONAL REMOTE CONTROL	6			
56400398	7B	RADIAL PISTON VARIABLE DISPLACEMENT MOTOR	2			
56400397	7A	RADIAL PISTON VARIABLE DISPLACEMENT MOTOR	4			
56910696	6	LOAD CONTROL VALVE	6			
56914163	5	MAIN DIRECTIONAL VALVE	6			
56914187	4	DIRECT OPERATING PRESSURE REDUCING VALVE WITH SUPPORT	6			
56914188	3	4W/2P HYDRAULIC OPERATOR VALVE+SUBPLATE	8			
56910038	2	PRESSURE RELIEF VALVE	2			
56921043	1	PILOT OPERATING PRESSURE REDUCING VALVE+SUBPLATE	2			
Code	Pos.	Denomination	Pieces	Constructor	Refer to dwg n°	Note

 marine equipment PELLEGRINI Via E. Torricelli, 2/A - 37135 VERONA		Group 20	Class. HYDR. DIAGRAM
ALLOWANCES NOT INDICATED Melden parts Worked parts Length Diameter		Denomination HYDRAULIC DIAGRAM FOR WINCHES CONNECTED TO FRAMO CARGO PUMPING SYSTEM SCALE /	
Drawn 25-10-2001	ENGR/DSGN	Material Treatment	Model Nr. Weight Kg SH. 2 OF. 2
Checked	Approved	Quantity FOR 1 SHIPSET	N° 20-456 Index AB
		File AX0456BB	MGD. P000T004MEP

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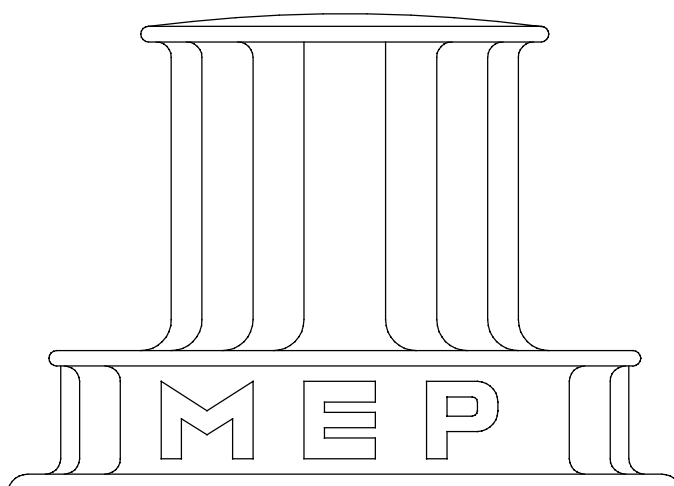
marine equipment
PELEGRINI

11. WINDLASS SALP 68

HYDRAULIC WINDLASS

TYPE
SALP 68

Serial Number: 5241-5242



PELEGRINI MARINE EQUIPMENT
Via E.Torricelli, 2/A - 37135 VERONA - ITALY
Tel. 045/508877-508896 Tlx 434255 MEPELL I Fax 045/508855



FOREWORD

This documentation is an integral part of the machine and must therefore accompany every transfer of property.

Before proceeding to the installation and the use of the machine, it is necessary to carefully read and understand the content of this booklet as it gives important information concerning safety of installation, rules for the use and operations for the maintenance.

TO IDENTIFY THE MACHINE


The immediately subsequent pages of this booklet show the user how to identify the product; this information is very important in time in order to guarantee the builder the possibility to give the user quickly and safely technical information of whichever type or to facilitate the management of the spare parts.

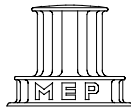
It is therefore **advised** not to damage or remove the means which are necessary for the identification of the product.

WHAT IDENTIFIES THE MACHINE

The identification means are the plate on which you can find all data you should mention to the firm PELLEGRINI MARINE EQUIPMENT in case of need.

This plate is the only one recognised by the builder as a means of identification of the product. Hereafter you can find a facsimile of the plate.

		marine equipment PELEGRINI	
<small>VERONA-Via Torricelli 2A-Tel. 045/508896-77-Teltext434255-ITALIA</small>			
HYD. WINDLASS			
SALP 68			
CAPACITA' CAPACITY	23 TONx9 M/MIN	PRESS. MAX DI LAVORO MAX WORKING PRESSURE	270KG/CM2
CAPACITA' FRENO BRAKE CAPACITY	160, 5TON	P. TARATURA VALVOLE SAFETY V/V SET. PRE.	180+90KG/CM2
MATRICOLA SERIAL NO	5241-5242	ANNO DI COSTRUZIONE DATE OF MANUFACTURE	2002
Hydrotec Co., Ltd CHANG WON, KYUNGNAM, KOREA			



DIRECTIONS FOR INSTALLATION

TIGHTENING BOLTS: Go on to cross, beginning from the first lateral bolt, to go on with the one diametrically opposite, and then with the second of the first lateral, and so on. Use dynamometric keys to hit (+/- 5%) the tightening moment (see the enclosure TM table). Effect the pretightening to 60% TM, so, tighten to 100% TM.

CONTROL OF TIGHTENING OF BOLTS (on 10% of bolts): Mark the position between the tightening nut and screw; slacken the screws of 1/6 of turn and tighten again. The new position of the tightening nut with TM must be the which one marked other wise repeat.

Table of **TIGHTENING MOMENT**

Diameter	Tightening Moment kgm			
	5.6 - 5 D	8.8 - 8 G	10.9 - 10 K	12.9 12 K
M 16x2	7.61	17.41	24.52	29.54
M 18x2.5	10.51	24.02	34.03	40.56
M 20x2.5	14.81	34.03	47.55	57.04
M 22x2.5	19.91	45.55	64.06	76.58
M 24x3	25.51	58.06	82.09	98.06
M 27x3	37.55	85.59	121.12	145.10
M 30x3	51.02	116.12	164.18	197.24

Control, the first days of work, the tightening of the bolts, particularly the bolts submitted to vibrations. Be careful that between the connected surfaces with bolts there are not dirty, grease or other, eventually clean with thinner.



INSTRUCTION FOR MAINTENANCE

GENERAL RULES :

It is often necessary to control the painting condition and quickly take care in case of rust. It will be a good thing coat with protective grease the more exposed bolts to make easier the eventual disassembly.

It is suitable to control, after 100 hours about of work, all nuts and bolts and, above all, the mechanisms more subjected to vibrations. This control must be made, at least, every 500 working hours.

EVERY SIX MONTHS :

It is necessary make a control of all couplings and that between shafts and hubs there are not created backlashes so that guarantee the drive of motion.

Protect from the bad weather the different movements with protective grease.

- **Bearing** : Monthly check through the acoustic feeler and provide their replacement when it is remarkable from these apparatus traces of wear or breakdown.

- **Verification of the structure**: It is necessary control and tighten all the bolts of the structure; control that the same structure doesn't present distortion or twists.

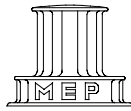
- **Brake of parking**: Check periodic that the state of the surface of the band brake of the drum is in good person state and doesn't present trace of oils, verify the usury of the ribbon besides I brake and replace immediately when necessary.



The mentioned periods are indicative, and the crew can reduce or lengthen them, in function of the use and of the exercise conditions of the windlass.

PAINTING

Careless painting is the most frequent source of trouble with windlass. When painting it is essential to ensure that no paint is applied to lubricating points, or to bearings or any moving parts in such a way as to impede their free movement.



INSTRUCTION FOR LUBRICATION

- TOOTHED WHEEL

Periodically lubricate the toothed wheel with grease (see Table).

- HYDRAULIC GREASERS

Monthly pump grease **AGIP SAPPHIRE 2** with the suited pump.

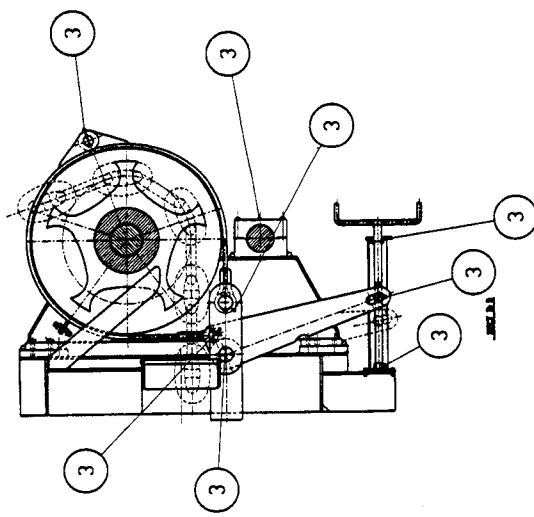
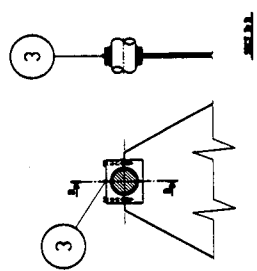
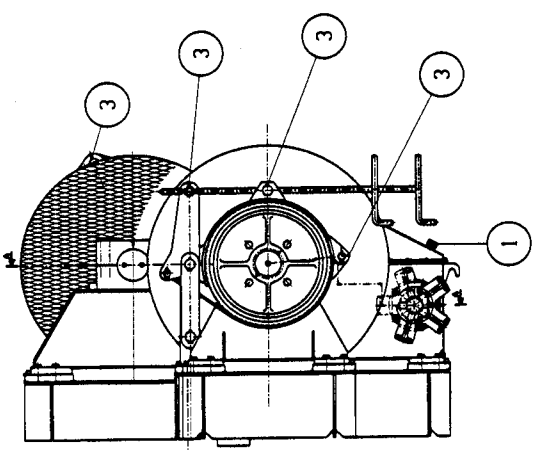
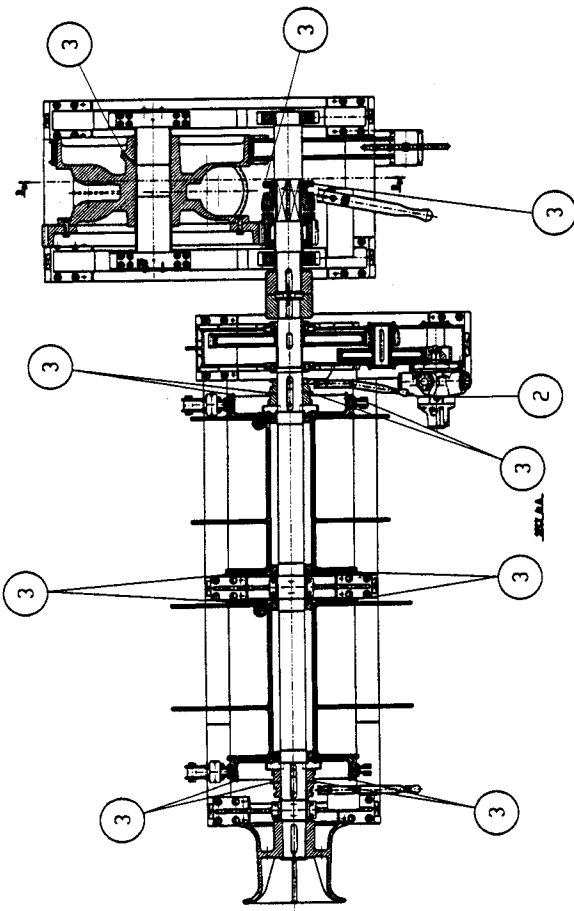
- PIVOTS AND ARTICULATIONS

The pivots of the varied articulations graft and clean release and lubricated with fat **AGIP SAPPHIRE 2** for protect them from the rust, facility the movements and the possible disassembling.

LUBRICATION POINT

Reference for the following drawings (5-2935):

1. Oil for Gearboxes;
2. Oil for Hydraulic Motors (Hydraulic plant);
3. Grease for greaser of bushings, clutches, bearings and band brakes.



Pos.	Designation	Pieces	Material	Weight kg	Note
	marine equipment	5			SALP 68
	PELLEGRIN				Class. N° 5239652
	Vis. E. Toricelli: RA - 3115 ver. 11M.				SCALE
	ALLIANCE NOT INDICATED				1:25
	Marked parts				Model N°
	Length				Quantity
	Blower				1 RICH
	G. P. 20/06/2002				FILE
	Checked				AE2935-A
					Index
					N° 5-2935
					SR OF
					FILE 20020000

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INDEX	DATE	INITIAL	MODIFICATION



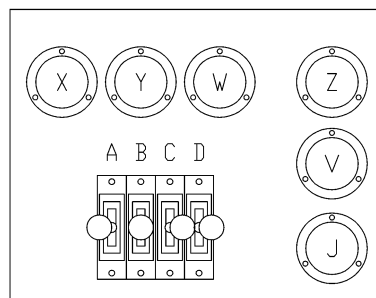
INSTRUCTION FOR USE

Before use the windlass, be sure that the following preliminary operations have been carried out:

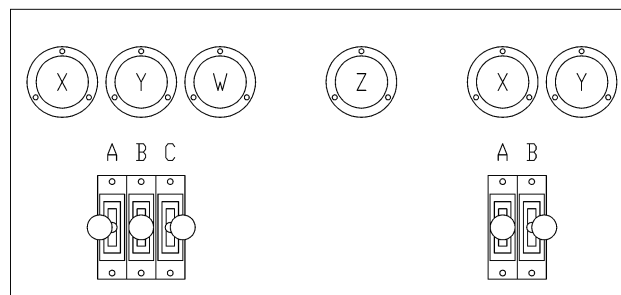
1. that has been made a correct maintenance
2. that has been made a correct lubrication
3. that has been performed the hydraulic connection in accordance with the enclosed drawings.

Use the windlass according to the plate under brought again:

LOCAL CONSOLE



REMOTE CONSOLE 7-8



SALP 68

AS 1500/D

MANDMETER	READ OUT DATA
x	MAIN LINE PRESSURE
y	MOTOR DISPLACEMENT CHANGE
w	PULL SETTING PRESSURE
z	PILOT LINE PRESSURE
v	PILOT AUTOTENSIONING PRESSURE
j	AUTOTENSIONING PRESSURE
A	HOISTING / LOWERING
B	MOTOR DISPLACEMENT CHANGE
C	EXTRA PULL
D	AUTOTENSIONING



SUMMING UP

IMPORTANT

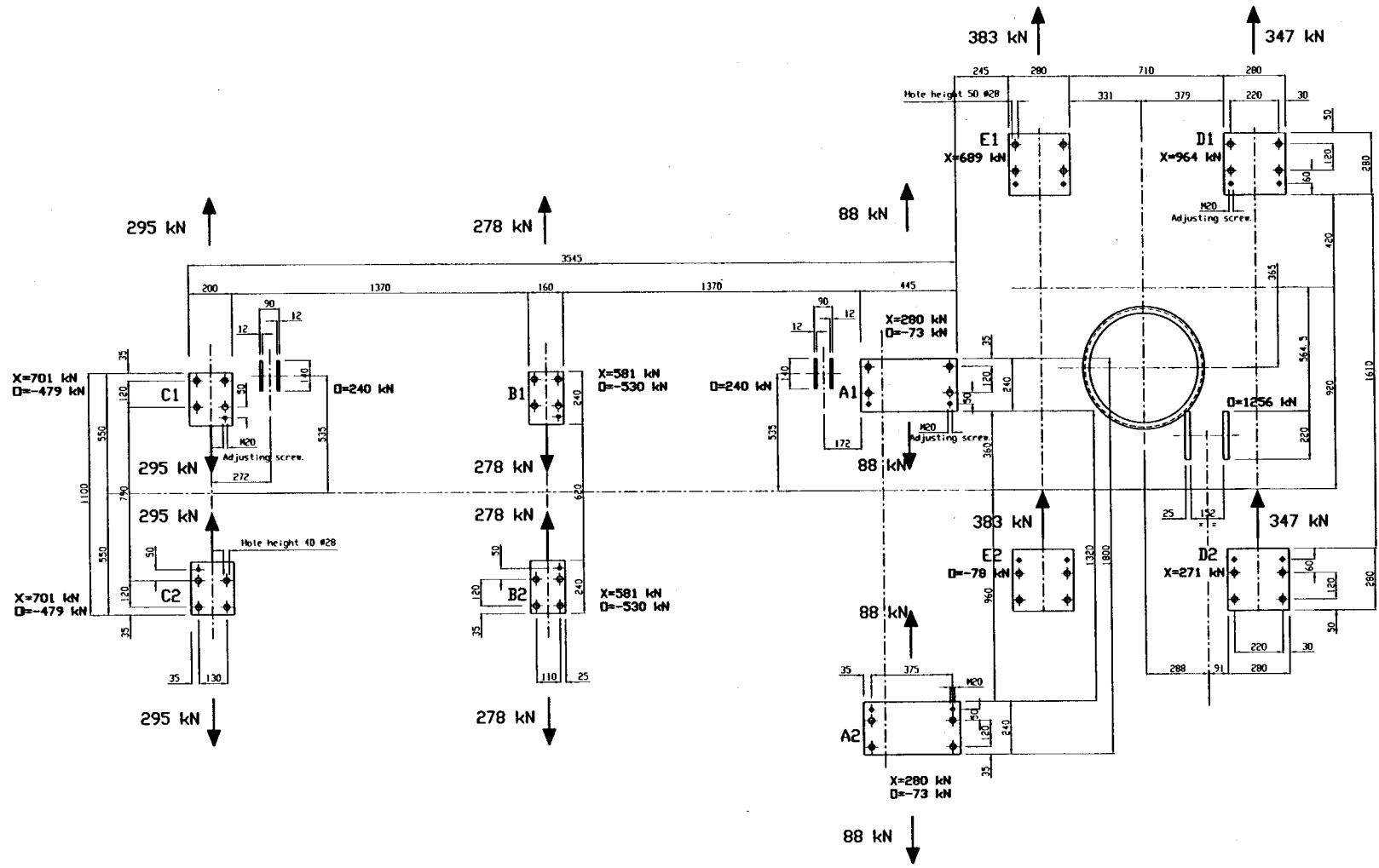
It is necessary to follow carefully the present directions for installation, and maintenance, and to complete them with everything which may be suggested by good sense and experience.

Each mechanism or part of machine, either moving or fixed, has to be submitted to a periodic maintenance (greasing, oiling, to ensure a regular and long life to the machine).

All eventual further instructions about use, maintenance and adjustments, as well as all information's about mechanism data, parts or groups forming the machine finding on the market, must be directly required to manufacturers or suppliers.

TABLES

-- GENERAL ASSEMBLY	TABLE 5-2788
-- SKETCH AND DIMENSION WINDLASS	TABLE 152-1312
-- RADIAL PISTON MOTOR	TABLE 20-429
-- BRAKE	TABLE 16-2119
-- BRAKE GENERAL ASSEMBLY	TABLE 5-2873
-- BARBOTIN CLUTCH ASSEMBLY	TABLE 5-2881
-- REDUCTION GEAR RATIO 1:15	TABLE 5-2758
-- BRAKE TEST KIT	TABLE 5-2809

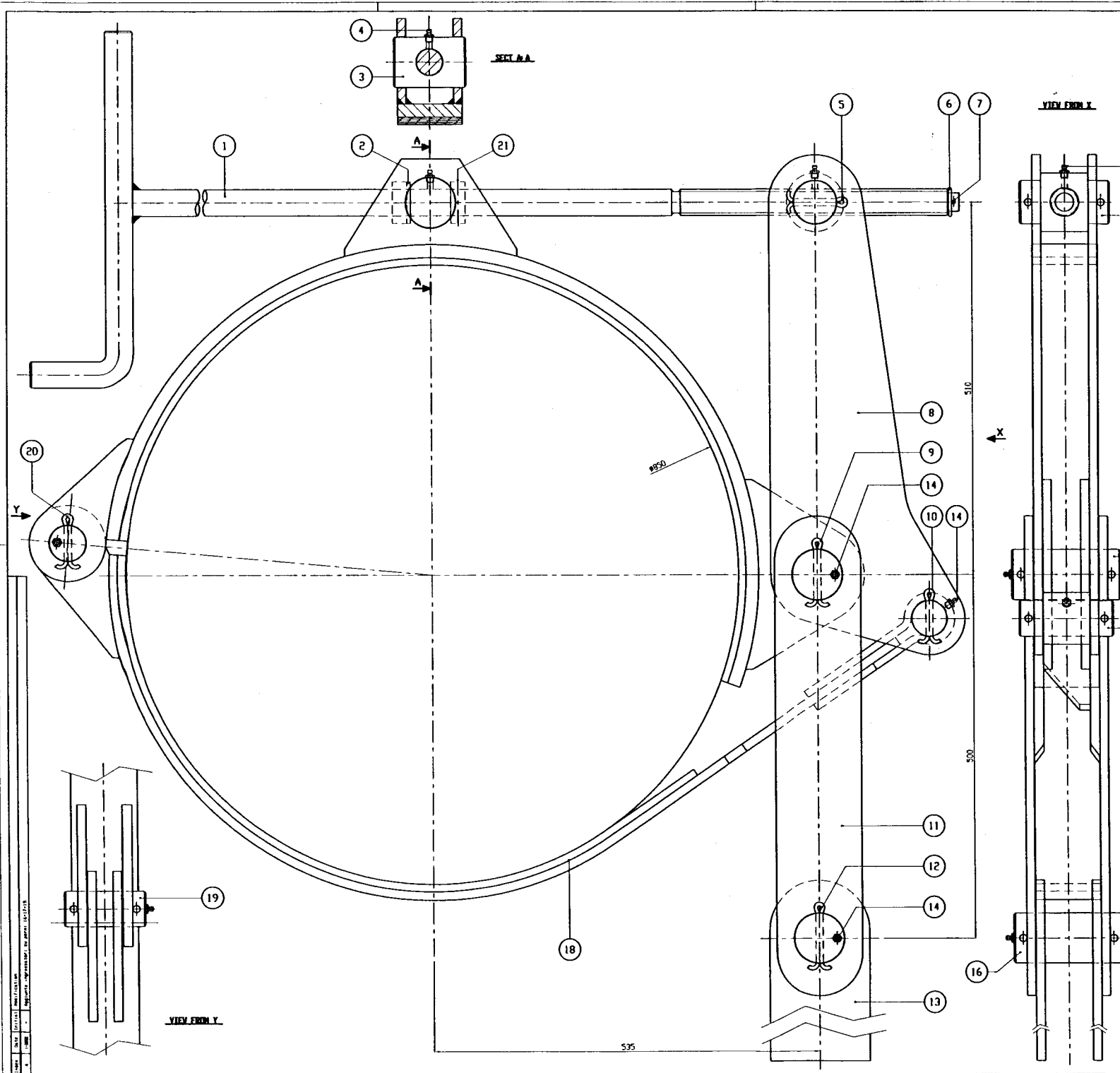


MAXIMUM STRENGTH ON FOUNDATIONS COMING FROM THE MAX SOLICITATIONS
 X = COMPRESSION STRENGTH (VERTICALLY TO DOWNWARD)
 D = TRACTION STRENGTH (VERTICALLY TO UPWARD)

NOTE : SPECULAR FOR THE RIGHT VERSION.

Pos.	Denomination	Pieces	Material	Weight kg	Note
	marine equipment				Group 5
	PELLEBIN				Class: S.M.P. 68
	Via C. Ferrarini, 8/A - 37139 Verona - Italy				279052
	ALLQUANCES NOT INDICATED				GENERAL ASSEMBLY
					WINDLASS FRAME BASEMENT
					LEFT VERSION
Hidden parts					SCALE 1:10
Number per 10			Material	Model No.	Weight kg
Length					
Diameter				Quantity	SH
Color	Brown	EN8/P558			N°5-2788
Checked	Approved		Treatment	File	Index
				AC2788AB	

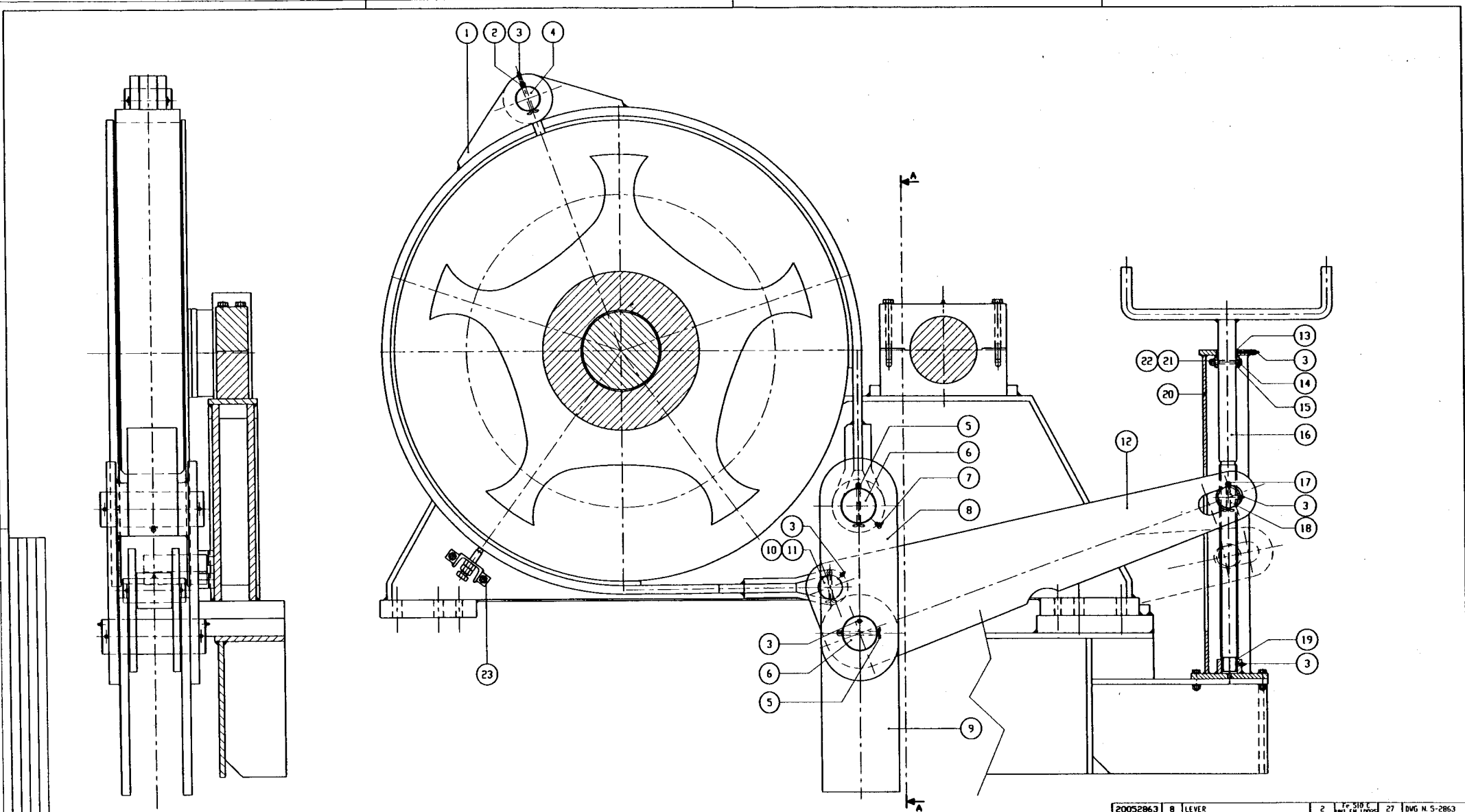
It is strictly forbidden to reproduce or transmit in any way the object of the present drawing.



X	21	SPRING PIN #5x55	1	COMMERCIAL	---	UNI 8752
X	20	SPLIT PIN #10x63	2	COMMERCIAL	---	UNI 1336
20162167	19	PIN	1	257964 UNI 2874	1.7	BWG N°16-2167
20162166	18	BAND BRAKE	1	---	48	BWG N°16-2166
20162169	17	PIN	1	257964 UNI 2874	2	BWG N°16-2169
20162168	16	PIN	2	257964 UNI 2874	4.6	BWG N°16-2168
20162171	15	BRAKE SCREW PIN	1	UNI 1701	5.5	BWG N°16-2171
50020016	14	GREASE NIPPLE	6	COMMERCIAL	---	OGN 1/8
20162162	13	LEVER	2	Fe 510 L UNI EN 10025 COMMERCIAL	8.3	BWG N°16-2162
X	12	SPLIT PIN #10x90	2	COMMERCIAL	---	UNI 1336
20162163	11	LEVER	2	Fe 510 L UNI EN 10025 COMMERCIAL	7.4	BWG N°16-2163
X	10	SPLIT PIN #10x63	2	COMMERCIAL	---	UNI 1336
X	9	SPLIT PIN #10x90	2	COMMERCIAL	---	UNI 1336
20162164	8	LEVER	2	Fe 510 L UNI EN 10025 COMMERCIAL	10.8	BWG N°16-2164
X	7	SPLIT PIN #5x36	1	COMMERCIAL	---	UNI 1336
X	6	WASHER #e=39 #i=25 Th=4	1	COMMERCIAL	---	UNI 1750
X	5	SPLIT PIN #10x80	2	COMMERCIAL	---	UNI 1336
X	4	GREASE NIPPLE	1	COMMERCIAL	---	PT 1/8
20162170	3	PIN	1	UNI 1701	3	BWG N°16-2170
20162173	2	SPACER	1	UNI 1701	---	BWG N°16-2173
20162165	1	SPINDLE	1	---	16.5	BWG N°16-2165

Code	Pos	Denomination	Pieces	Material	Weight	Note
<p>non-line equipment</p> <p>PELLEGRINI</p> <p>via C. Farini 2/a - 37139 VERONA</p>						
ALLOWANCES NOT INDICATED			Group: 16		Class: AS 1500/B	
Marked parts			Denomination: BRAKE		N° 710289	
Length			SCALE: 1:2.5			
Quantity			Material		Model No.	
Brand			Quantity		SP. 1 OF 1	
TREATMENT			Quantity		N°16-2119	
Checked			City		Date	
Approved			ATZ119AA		Index	

Scale: 1:2.5
 Date: 08-10-2001
 Checked: [Signature]
 Approved: [Signature]

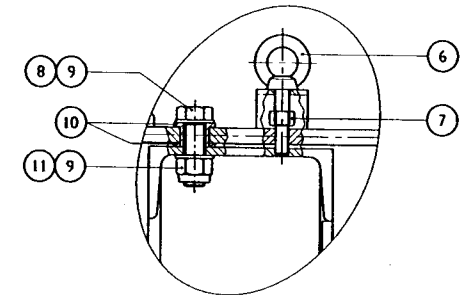
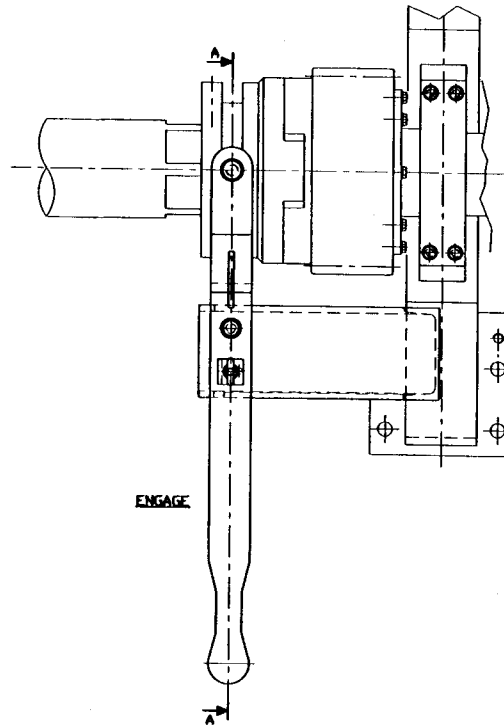
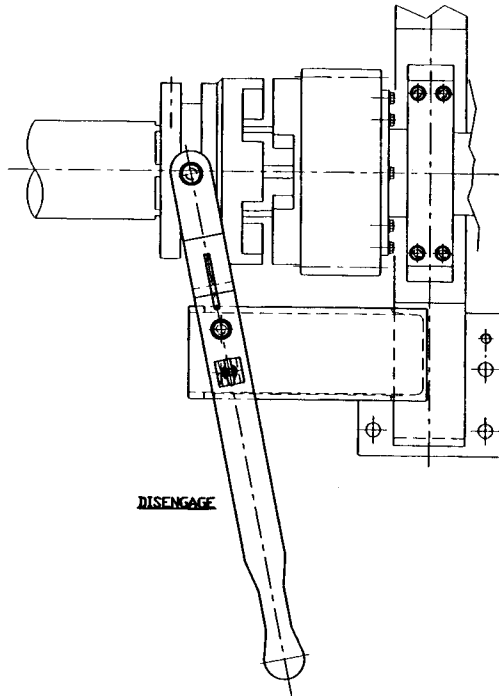
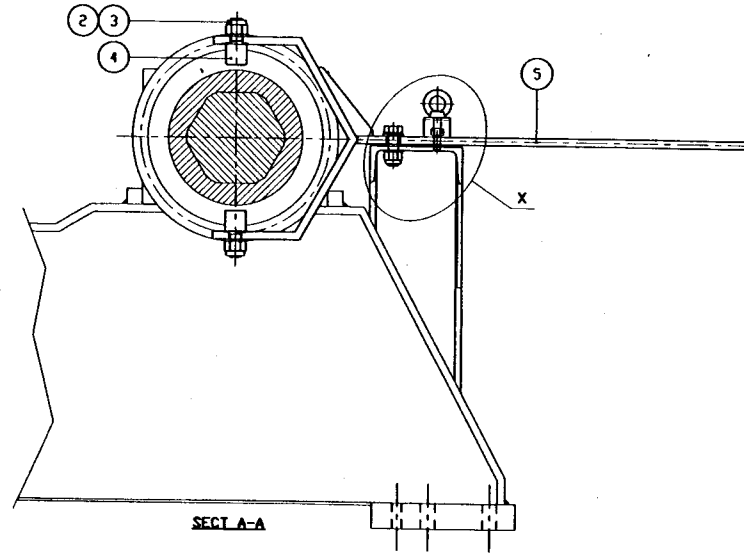
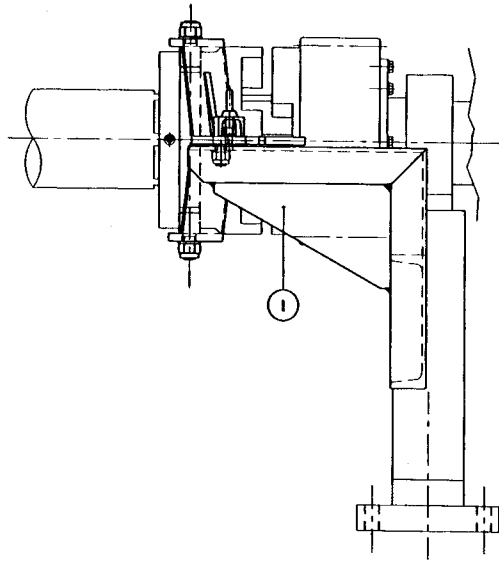


SECT. A-A

Code	Pos.	Denomination	Pieces	Material	Weight (kg)	Note
20052891	23	BRAKE SUPPORT	1	STEEL	-	DWG N. 5-2891
X	22	WASHER ID. 5x21	1	65	-	UNI 6592
X	21	SELF LOCKING NUT M10	1	UNI 7473	-	UNI 7473
20052778	20	SPINDLE SUPPORT	1	SI 37-2 UNI EN 10025 SI 37-2	39	DWG N. 5-2778
20052781	19	BUSHING	1	UNI 1701	0.2	DWG N. 5-2781
20052769	18	PIN	1	UNI 1701	6	DWG N. 5-2769
X	17	SPLIT PIN #10x80	2	COPPERAL	-	UNI 1336
20052779	16	SPINDLE	1	FC 510 C UNI EN 10025 FC 510 C	19.5	DWG N. 5-2779
20052782	15	STOP RING	1	SI 37-2 UNI EN 10025 SI 37-2	0.4	DWG N. 5-2782
X	14	SCREW M10x85	1	8.8	-	UNI 5739
20052780	13	BUSHING	1	UNI 1701	0.2	DWG N. 5-2780
20052862	12	LEVER	2	UNI EN 10025 COPPERAL	46	DWG N. 5-2862
X	11	SPLIT PIN #10x90	2	COPPERAL	-	UNI 1336
20052772	10	PIN	1	UNI 1701 UNI EN 10025 FC 510 C	5.5	DWG N. 5-2772
20052864	9	LEVER	2	UNI EN 10025	23	DWG N. 5-2864

Code	Pos.	Denomination	Pieces	Material	Weight	Note
20052863	8	LEVER	2	FC 510 C UNI EN 10025	27	DWG N. 5-2863
X	7	GREASE NIPPLE	1	UNI 18-90°	-	DGN 18-90°
20052770	6	PIN	2	UNI 1336	18	DWG N. 5-2770
X	5	SPLIT PIN #10x112	4	COPPERAL	-	UNI 1336
20052865	4	PIN	1	UNI 1336	4	DWG N. 5-2865
X	3	GREASE NIPPLE	7	UNI 18	-	DGN 18
X	2	SPLIT PIN #10x90	2	COPPERAL	-	UNI 1336
20052841	1	RAND BRAKE	1	195	-	DWG N. 5-2841

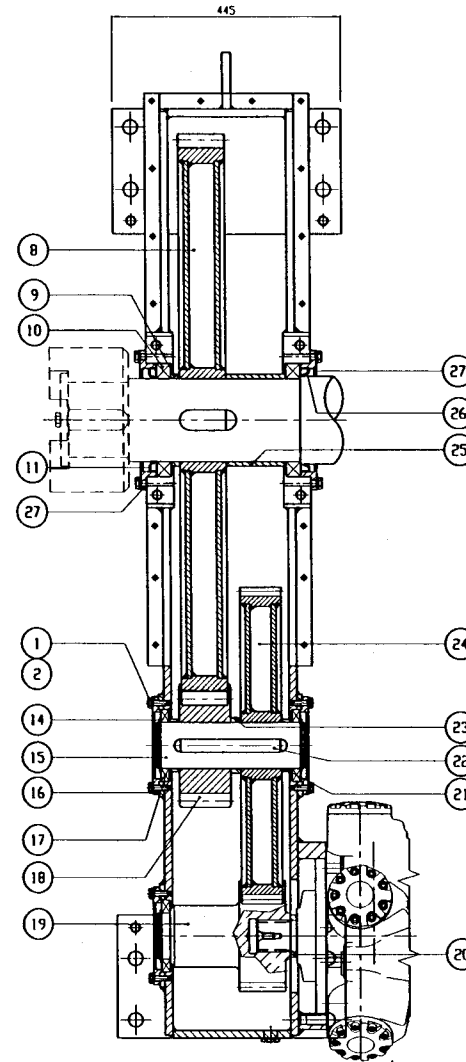
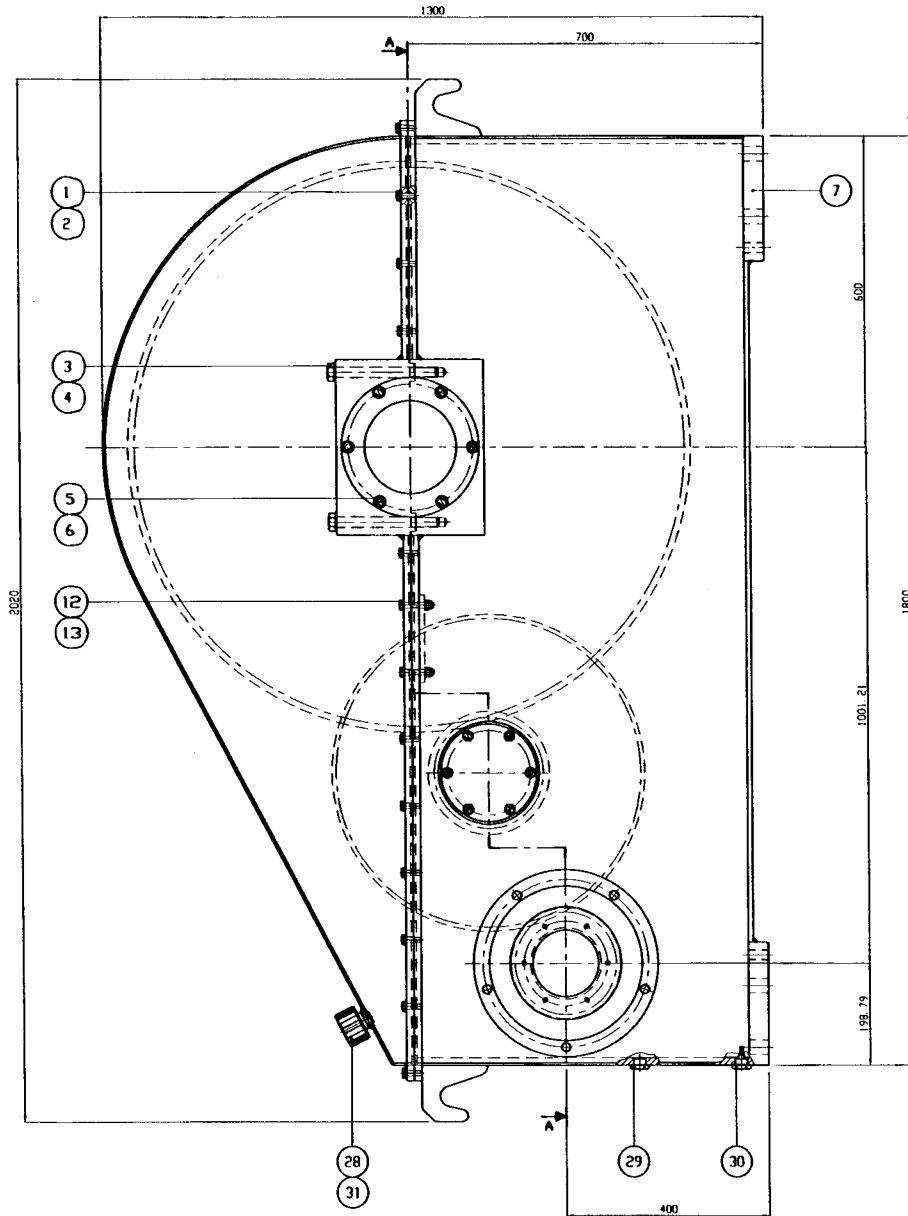
		Group	5	Class	SALP 68
Via E. Matteotti, 2/A - 20128 Milano ALL ADVANCES NOT INDICATED		Denomination	BRAKE GENERAL ASSEMBLY		
No. of parts: _____ Machined parts: _____ Length: _____ Diameter: _____		Material	UNI 1336	UNI 1336	UNI 1336
Checked	Approved	Quantity	1	Scale	1:5
		File	N°S-2873		
		Index			



NOTE : THIS DRAWING SHOWS THE BARBOTIN CLUTCH ASSEMBLY
 SUITABLE FOR WINDLASS "RIGHT VERSION" TYPE
 FOR WINDLASS "LEFT VERSION" TYPE SPECULAR TO DRAWING.

Code	Pos.	Denomination	Pieces	Material	Weight kg	Note
50080220	11	SELF LOCKING NUT M20	1	6.5	---	UNI 7473
20052755	10	BUSHING AND WASHER	1x1	STL	---	BWG N° 5-2755
50080421	9	WASHER 21x37	2	STEEL	---	UNI 6592
-	8	SCREW M20x65	1	8.8	---	UNI 5739
50080014	7	NUT M14	1	6.5	---	UNI 5588
20162178	6	STOP PIN	1	---	0.4	BWG N° 16-2178
20052753	5	LEVER	1	St 37-2 UNI 17100	14	BWG N° 5-2753
20052754	4	PIN	1	---	0.6	BWG N° 5-2754
50080425	3	WASHER 25x44	2	STEEL	---	UNI 6592
-	2	SELF LOCKING NUT M24	2	6.5	---	UNI 7473
20052888	1	SUPPORT	20	St 37-2 UNI 17100	20	BWG N° 5-2888

 Via S. Tomaso 2/A - 37139 VERONA ALLOWANCES NOT INDICATED		Group : 5 Class : SALP 68 N° 5239552
Denomination : BARBOTIN CLUTCH ASSEMBLY		Scale : 1:5
Number parts : Length : Diameter : Weight :	Material : Heat treatment : Quantity : Weight kg :	Model No. : Weight kg : 36
Checked : Approved :	See note : N° 5-2881	File : AE2881-A



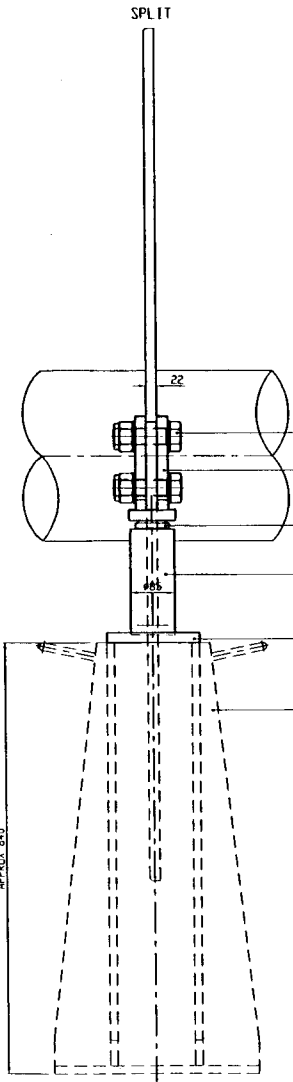
SECT A-A

NOTE: FORESEE GASKETS TYPE "MOTORSEAL" OR EQUAL BETWEEN COVERS AND BOX.

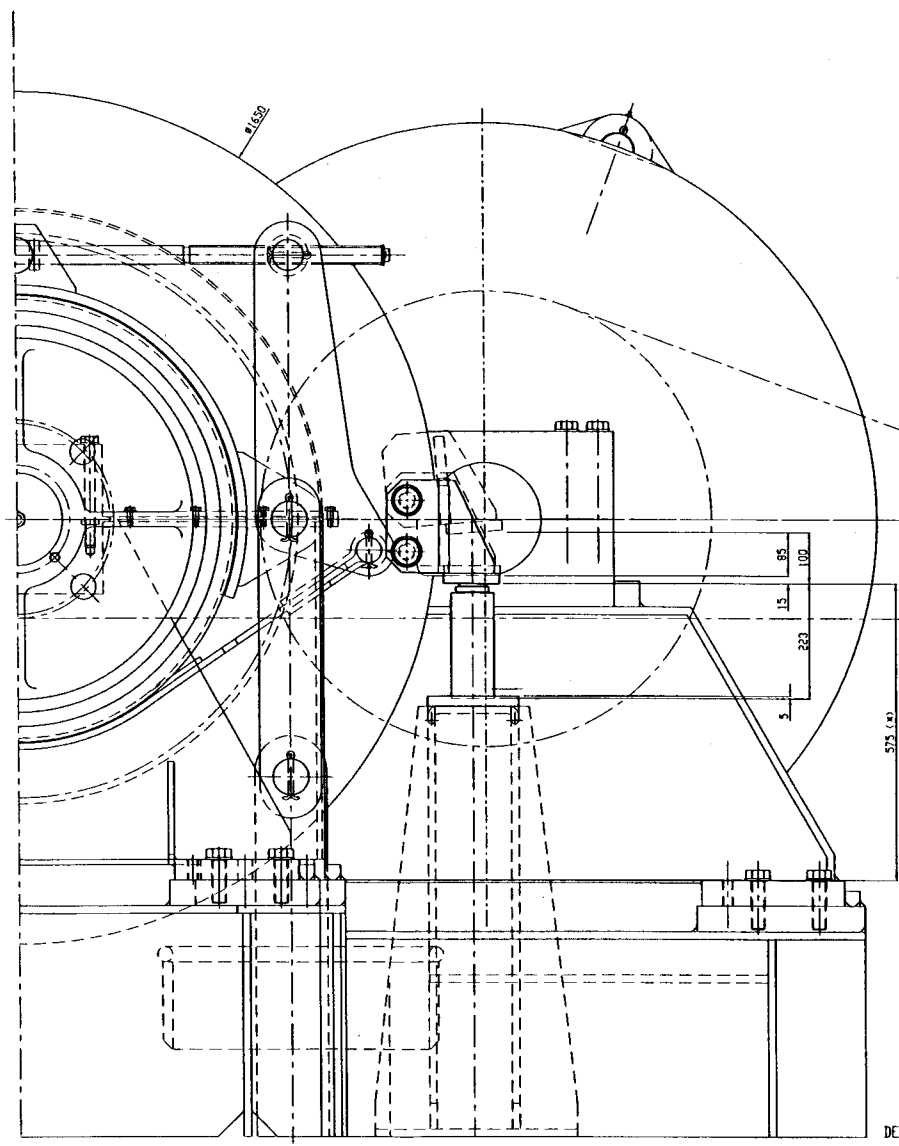
Code	Pos	Denomination	Quantity	Material	Weight kg	Note
58501543	31	OIL	1	ADIP	87.1	BLASIA 220
52001594	30	OIL DRAIN PLUG	1	ELESA	-	IN. 3/4x1.4x1.32-S
52001506	29	OIL LEVEL PLUG	1	ELESA	-	HGF. 16-3/4 14001
52001420	28	OIL PLUG	1	ELESA	-	SFM. 40-3/4
20162146	27	COVER	2	SE 37-2 RIM 17100	16	DWG N° 16-2146
50095240	26	OIL SEAL	1	-	-	-
20162148	25	SPACER	1	SE 37-2 RIM 17100	4.3	DWG N° 16-2148
20162138	24	CROWN GEAR 275 m8	1	-	70	DWG N° 16-2138
20162150	23	SPACER	1	SE 37-2 RIM 17100	0.5	DWG N° 16-2150
53000365	22	TONGUE B 25x14x195	2	UNI 7074	-	UNI 6604
20162151	21	SPACER	2	SE 37-2 RIM 17100	0.3	DWG N° 16-2151
20052741	20	SPACER	1	SE 37-2 RIM 17100	0.6	DWG N° 5-2741
20052737	19	PINION REDUCTION GEAR-MITER 225 m8	1	RIM 17100 UNI 7074	79	DWG N° 5-2737
20162139	18	REDUCTION GEAR PINION 218 m12	1	UNI 7074 RIM 17100	23	DWG N° 16-2139
51000451	17	BEARING	3	-	-	-
20162147	16	COVER	3	SE 37-2 RIM 17100	4.6	DWG N° 16-2147
20162152	15	SMAT	1	UNI 7074 RIM 17100	14.7	DWG N° 16-2152
50200090	14	SEALER E90	3	Comm.	-	UNI 7435
-	13	SELF-LOCKING NUT M10	2	B. 8	-	UNI 7473
-	12	SCREW M10x60	2	B. 8	-	UNI 5739
-	11	OIL SEAL	1	-	-	-
51001442	10	BEARING	2	-	-	-
20162149	9	SPACER	1	SE 37-2 RIM 17100	0.7	DWG N° 16-2149
20162137	8	CROWN GEAR	1	-	221	DWG N° 16-2137
20052742	7	REDUCTION GEAR BOX	1	CS 310 E UNI 1.6 LOGG	563	DWG N° 5-2742
50080413	6	WASHER #13x24	12	STEEL	-	UNI 6592
50000259	5	SCREW M12x45	12	B. 8	-	UNI 5739
50080421	4	WASHER #21x37	4	STEEL	-	UNI 6592
50000489	3	SCREW M20x200	4	B. 8	-	UNI 5737
50080410	2	WASHER #10.5x21	50	STEEL	-	UNI 6592
50000207	1	SCREW M10x32	46	B. 8	-	UNI 5739

		Group 5	Class. SAMP 64
Via E. Mattei 8/A - 31039 MERON ALLOWANCES NOT INDICATED		Reduction	N° 523588
No. fab. parts No. length parts Length Diameter Mass PERILLI INT. 25-10-0001 Checked		REDUCTION GEAR RATIO 1:15	SCALE 1:5 N° 5-2758 Index
Drawn ENGR/PSH Approved		Model No. Quantity Treatment File AC2758-A	Weight kg 1150 1 1

It is strictly forbidden to reproduce or disseminate the subject of the present drawing.



- ① HYDROTEC SUPPLY
- ② HYDROTEC SUPPLY
- ③ HYDROTEC SUPPLY
- ④ HYDROTEC SUPPLY
- ⑤ MEP SUPPLY
- ⑥ MEP SUPPLY
- ⑦ HYDROTEC SUPPLY
- ⑧ SHIPYARD CARE (THIS IS ONLY AN EXAMPLE)



ROPE EXIT

(*) SUGGESTED STARTING TEST POSITION

Code	Pos	Designation	Pieces	Material	Weight (kg)	Note
-	8	SUPPORT	1	Fe 430 B	-	-
-	7	CYLINDER SUPPORT	1	UNI-EN10025	-	-
-	6	SPRING RETURN CYLINDER	1	EPP	7.5	CW102504
-	5	SWIVELLING HEAD	1	EPP	-	ACT0031
-	4	JAW	1	Fe 430 B UNI-EN10025	-	DWG N 16-2144
-	3	SELF-LOCKING MUT M33	2	Fe 430 B UNI-EN10025	-	UNI 7473
-	2	WASHER #34x60	4	STEEL	-	UNI 6592
-	1	SCREW M33x110	2	B 8	-	UNI 5739

COMPARABLE STEEL GRADES		
EN 10027-1	EN 10025	BIN 17100
S235JR	Fe 360 B	St 37-2
S235JD	Fe 360 C	St 37-3 U
S235J2G3	Fe 360 B1	St 37-3 N
S275JR	Fe 430 B	St 44-2
S275JD	Fe 430 C	St 44-3 U
S275J2G3	Fe 430 B1	St 44-3 N
S355JR	Fe 510 B	St 52-3 U
S355JD	Fe 510 C	St 52-3 U
S355J2G3	Fe 510 B1	St 52-3 N

marine equipment

PELLEGRIN

Via C. Terracini, 2/A - 31038 VERONA

ALLOWANCES NOT INDICATED

Material parts

Hardware parts

Length

Diameter

Drawn

Checked

Group: 5

Class: SALP 68 N 5239652

Designation: BRAKE TEST KIT

Scale: 1:5

Material

Model No.

Weight (kg)

Quantity

Sh

Dr

Drawn: ENGR/BSGH

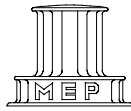
Tray bent

File: N°5-2809

Approved: AC2809-A

Index

It is the client's responsibility to check the object of the present drawing.



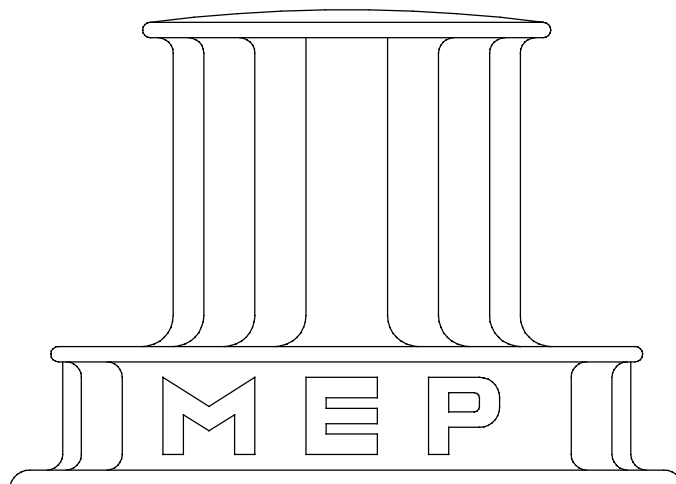
marine equipment
PELEGRINI

12. MOORING WINCHES AS 1500/D

MOORING WINCHES

TYPE AS 1500/D

Serial Number: 7118-7119-7120-7121



PELEGRINI MARINE EQUIPMENT
Via E. Torricelli, 2/A - 37135 VERONA - ITALY
Tel. 045/508877-508896 Tlx 434255 MEPELL I Fax 045/508855



FOREWORD

This documentation is an integral part of the machine and must therefore accompany every transfer of property.

Before proceeding to the installation and the use of the machine, it is necessary to carefully read and understand the content of this booklet as it gives important information concerning safety of installation, rules for the use and operations for the maintenance.

TO IDENTIFY THE MACHINE


The immediately subsequent pages of this booklet show the user how to identify the product; this information is very important in time in order to guarantee the builder the possibility to give the user quickly and safely technical information of whichever type or to facilitate the management of the spare parts.

It is therefore **advised** not to damage or remove the means which are necessary for the identification of the product.

WHAT IDENTIFIES THE MACHINE

The identification means are the plate on which you can find all data you should mention to the firm PELLEGRINI MARINE EQUIPMENT in case of need.

This plate is the only one recognised by the builder as a means of identification of the product. Hereafter you can find a facsimile of the plate.

		marine equipment PELEGRINI	
<small>VERONA-Via Torricelli 26-Tel. 045/508896-77-Telex434255-ITALIA</small>			
HYD. MOORING WINCH			
AS 1500/DUPLEX			
CAPACITA' CAPACITY	15TONx15M/MIN	PRESS. MAX DI LAVORO MAX WORKING PRESSURE	270 KG/CM2
CAPACITA' FRENO BRAKE CAPACITY	45.66TON	P. TARATURA VALVOLE SAFETY V/V SET. PRE.	270 KG/CM2
MATRICOLA SERIAL NO	7118-7119-7120-7121	ANNO DI COSTRUZIONE DATE OF MANUFACTURE	2002
Hydrotec Co., Ltd CHANG WON, KYUNGNAM, KOREA			



DIRECTIONS FOR INSTALLATION

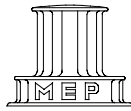
TIGHTENING BOLTS: Go on to cross, beginning from the first lateral bolt, to go on with the one diametrically opposite, and then with the second of the first lateral, and so on. Use dynamometric keys to hit (+/- 5%) the tightening moment (see the enclosure TM table). Effect the pretightening to 60% TM, so, tighten to 100% TM.

CONTROL OF TIGHTENING OF BOLTS (on 10% of bolts): Mark the position between the tightening nut and screw; slacken the screws of 1/6 of turn and tighten again. The new position of the tightening nut with TM must be the which one marked other wise repeat.

Table of **TIGHTENING MOMENT**

Diameter	Tightening Moment kgm			
	5.6 - 5 D	8.8 - 8 G	10.9 - 10 K	12.9 12 K
M 16x2	7.61	17.41	24.52	29.54
M 18x2.5	10.51	24.02	34.03	40.56
M 20x2.5	14.81	34.03	47.55	57.04
M 22x2.5	19.91	45.55	64.06	76.58
M 24x3	25.51	58.06	82.09	98.06
M 27x3	37.55	85.59	121.12	145.10
M 30x3	51.02	116.12	164.18	197.24

Control, the first days of work, the tightening of the bolts, particularly the bolts submitted to vibrations. Be careful that between the connected surfaces with bolts there are not dirty, grease or other, eventually clean with thinner.



INSTRUCTION FOR MAINTENANCE

GENERAL RULES :

It is often necessary to control the painting condition and quickly take care in case of rust. It will be a good thing coat with protective grease the more exposed bolts to make easier the eventual disassembly.

It is suitable to control, after 100 hours about of work, all nuts and bolts and, above all, the mechanisms more subjected to vibrations. This control must be made, at least, every 500 working hours.

EVERY SIX MONTHS :

It is necessary make a control of all couplings and that between shafts and hubs there are not created backlashes so that guarantee the drive of motion.

Protect from the bad weather the different movements with protective grease.

- **Bearing** : Monthly check through the acoustic feeler and provide their replacement when it is remarkable from these apparatus traces of wear or breakdown.

- **Verification of the structure**: It is necessary control and tighten all the bolts of the structure; control that the same structure doesn't present distortion or twists.

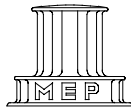
- **Brake of parking**: Check periodic that the state of the surface of the band brake of the drum is in good person state and doesn't present trace of oils, verify the usury of the ribbon besides I brake and replace immediately when necessary.



The mentioned periods are indicative, and the crew can reduce or lengthen them, in function of the use and of the exercise conditions of the windlass.

PAINTING

Careless painting is the most frequent source of trouble with windlass. When painting it is essential to ensure that no paint is applied to lubricating points, or to bearings or any moving parts in such a way as to impede their free movement.



INSTRUCTION FOR LUBRICATION

- TOOTHED WHEEL

Periodically lubricate the toothed wheel with grease (see Table).

- HYDRAULIC GREASERS

Monthly pump grease **AGIP SAPPHIRE 2** with the suited pump.

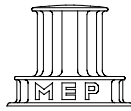
- PIVOTS AND ARTICULATIONS

The pivots of the varied articulations graft and clean release and lubricated with fat **AGIP SAPPHIRE 2** for protect them from the rust, facility the movements and the possible disassembling.

LUBRICATION POINT

Reference for the following drawings (16-2195):

1. Oil for Gearboxes;
2. Oil for Hydraulic Motors (Hydraulic plant);
3. Grease for greaser of bushings, clutches, bearings and band brakes.

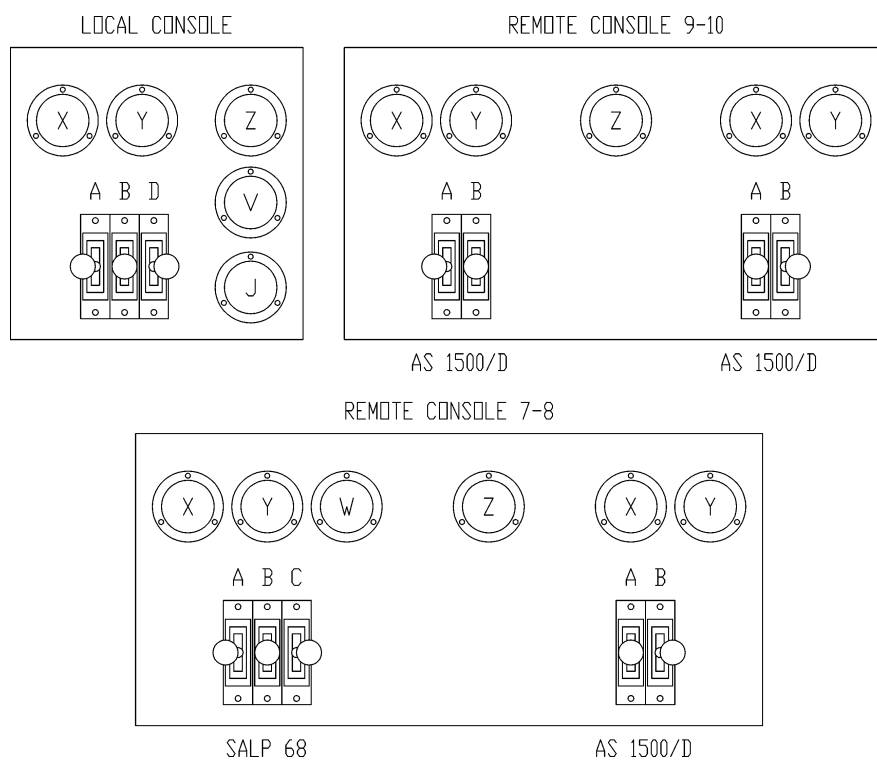


INSTRUCTION FOR USE

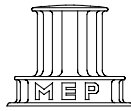
Before use the windlass, be sure that the following preliminary operations have been carried out:

1. that has been made a correct maintenance
2. that has been made a correct lubrication
3. that has been performed the hydraulic connection in accordance with the enclosed drawings.

Use the windlass according to the plate under brought again:



MANOMETER	READ OUT DATA
x	MAIN LINE PRESSURE
y	MOTOR DISPLACEMENT CHANGE
w	PULL SETTING PRESSURE
z	PILOT LINE PRESSURE
v	PILOT AUTOTENSIONING PRESSURE
j	AUTOTENSIONING PRESSURE
A	HOISTING / LOWERING
B	MOTOR DISPLACEMENT CHANGE
C	EXTRA PULL
D	AUTOTENSIONING



SUMMING UP

IMPORTANT

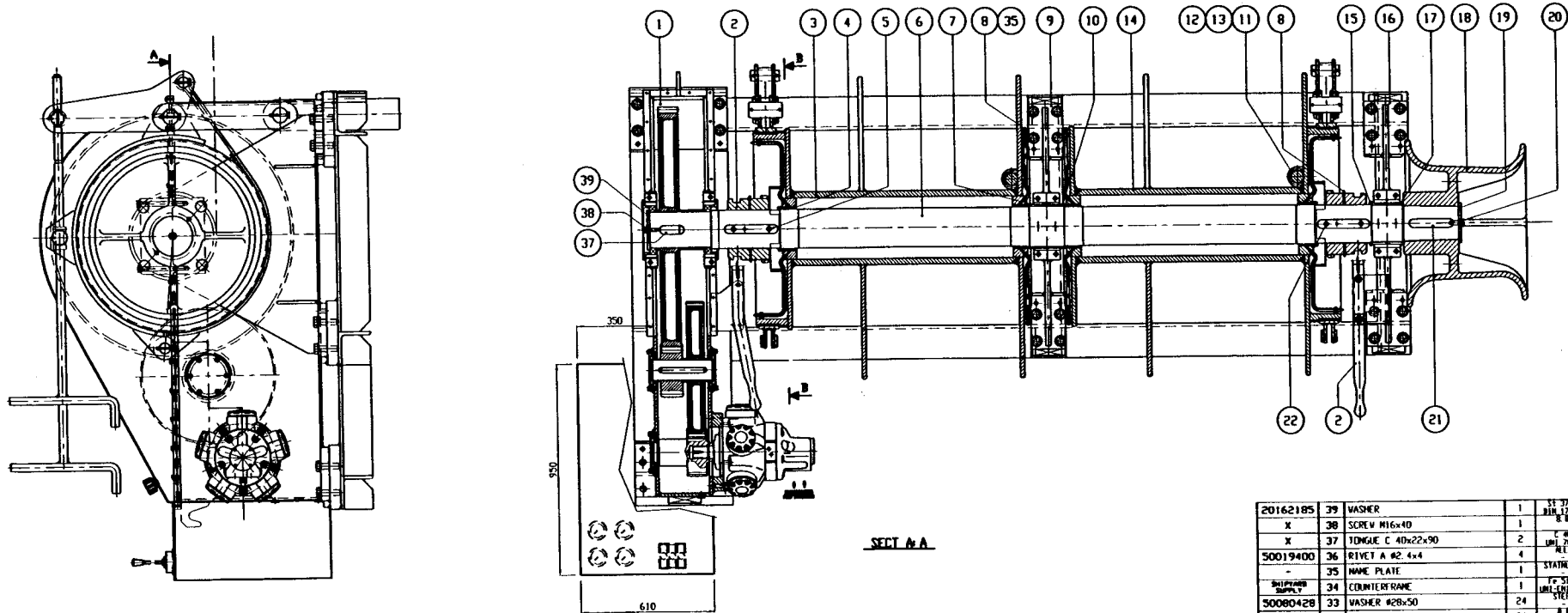
It is necessary to follow carefully the present directions for installation, and maintenance, and to complete them with everything which may be suggested by good sense and experience.

Each mechanism or part of machine, either moving or fixed, has to be submitted to a periodic maintenance (greasing, oiling, to ensure a regular and long life to the machine).

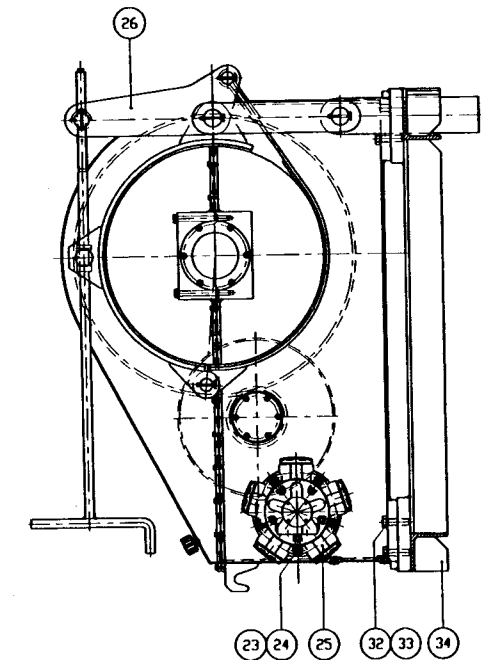
All eventual further instructions about use, maintenance and adjustments, as well as all information's about mechanism data, parts or groups forming the machine finding on the market, must be directly required to manufacturers or suppliers.

TABLES

-- GENERAL ASSEMBLY	TABLE 16-2188
-- SKETCH AND DIMENSION AS 1500/D	TABLE 152-1325
-- RADIAL PISTON MOTOR	TABLE 20-423
-- REDUCTION GEAR RATIO 1:15	TABLE 16-2114
-- BRAKE	TABLE 16-2119
-- BRAKE TEST KIT	TABLE 16-2194

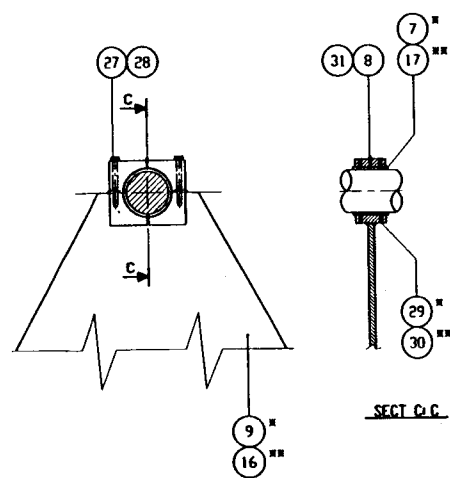


SECT A-A



SECT B-B

⊖ : for middle shoulder.
 ⊕ : for bell side shoulder.

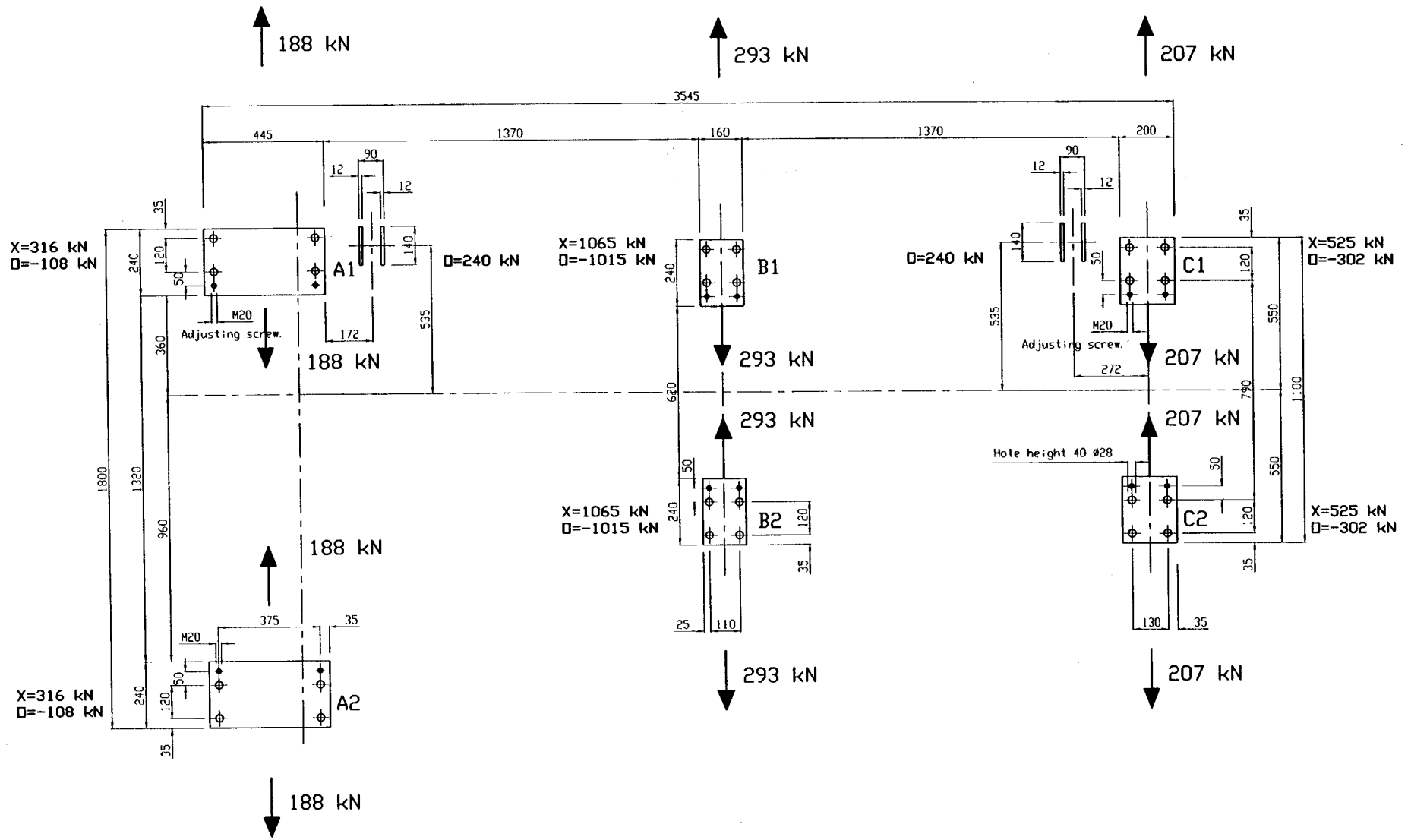


SECT C-C

Code	Pos	Designation	Quantity	Material	Weight	Note
20162185	39	WASHER	1	SE 37-2 A19-13100	3	DWG N. 16-2185
X	38	SCREW M16x40	1	B.B.	-	UNI 5739
X	37	TONGUE C 40x22x90	2	C 40 UNI 7874	-	UNI 6604
50019400	36	RIVET A #2.4x4	4	ALU.	-	-
-	35	NAME PLATE	1	STAINLESS	-	-
50080428	34	COUNTERFRAME	1	FR 5100 UNI 15100	640	DWG N. 16-2111
50080618	33	WASHER #28x50	24	STEEL	-	UNI 6592
50000618	32	SCREW M27x90	24	B.B.	-	UNI 5739
50501583	31	GREASE	-	ADIP	1	SAPPHIRE 2
50017162	30	GRUB SCREW M10x35	4	12.9	-	UNI 5925
50017161	29	GRUB SCREW M10x30	4	12.9	-	UNI 5925
50080421	28	WASHER #21x37	4	STEEL	-	UNI 6592
50000482	27	SCREW M20x160	4	B.B.	-	UNI 5737
20162119	26	BRAKE	2	-	140	DWG N. 16-2119
56400397	25	HYDRAULIC MOTOR	1	-	150	-
50080419	24	WASHER #19x34	5	STEEL	-	UNI 6592
50000412	23	SCREW M18x60	5	B.B.	-	UNI 5739
50040255	22	SCREW M12x25	8	B.B.	-	UNI 5931
53000385	21	TONGUE 40x22x200	1	C 40 UNI 7874	-	UNI 6604
50000458	20	SCREW M20x40	1	B.B.	-	UNI 5739
20162159	19	WASHER	1	SE 37-2 A19-13100	3	DWG N. 16-2159
20162136	18	WARPING END #500	1	UNI 5207	400	DWG N. 16-2136
20162156	17	BUSHING BELL SIDE SHOULDER	1	UNI 1714	12.5	DWG N. 16-2156
20162118	16	BELL SIDE SHOULDER	1	FR 5100 UNI 15100	168	DWG N. 16-2118
20162161	15	SPACER	3	SE 37-2 A19-13100	0.9	DWG N. 16-2161
20162190	14	DRUM	1	UNI 1700	880	DWG N. 16-2190
50080417	13	WASHER #17x30	6	STEEL	-	UNI 6592
50082316	12	NUT M16	6	6.5	-	UNI 5588
20162191	11	ROPE FASTENER	6	40T UNI 37-2	0.3	DWG N. 16-2191
20162175	10	SPACER	2	SE 37-2 A19-13100	0.9	DWG N. 16-2175
20162143	9	MIDDLE SHOULDER	1	FR 5100 UNI 15100	160	DWG N. 16-2143
50020016	8	GREASE NIPPLE	14	UNI 1700	-	DCAN 10
20162172	7	BUSHING MIDDLE SHOULDER	1	UNI 1701	11.5	DWG N. 16-2172
20162117	6	SHAFT	1	UNI 7874	680	DWG N. 16-2117
20162141	5	TONGUE	4	C 40 UNI 7874	-	DWG N. 16-2141
20162160	4	DRUM BUSHING	4	UNI 1701	3.5	DWG N. 16-2160
20162189	3	DRUM	1	-	880	DWG N. 16-2189
20162115	2	CONNECTING DEVICE	1	-	145	DWG N. 16-2115
20162114	1	REDUCTION GEAR RATIO 1:15	1	-	1150	DWG N. 16-2114

marine equipment		Group	16	Class	AS 1500/D.
PALLERON		Designation	GENERAL ARRANGEMENT		
Via E. Torricelli, 2/A - 37139 VERONA		Scale	1:10		
ALLOWANCES NOT INDICATED					
Material		Material		Material	
Length		Quantity		Weight	
Diameter		Part No.		Part No.	
Color	Grey	File		File	
Checked		Approved		Approved	
N° 16-2188		N° 16-2188			

NOTE:
 FOR THE MACHINERY ASSEMBLY SEE THE GENERAL
 ARRANGEMENT OF BECK MACHINERY DWG N. 132-1338

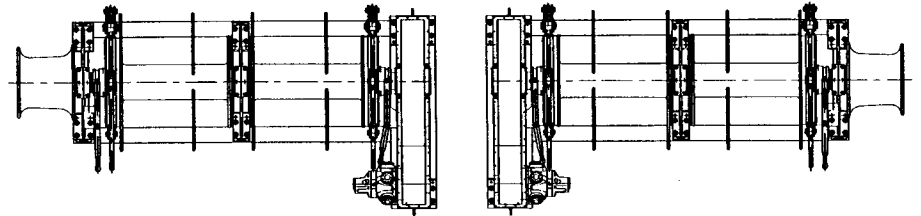
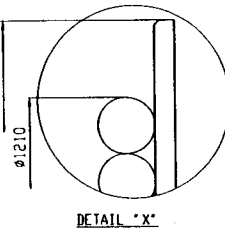
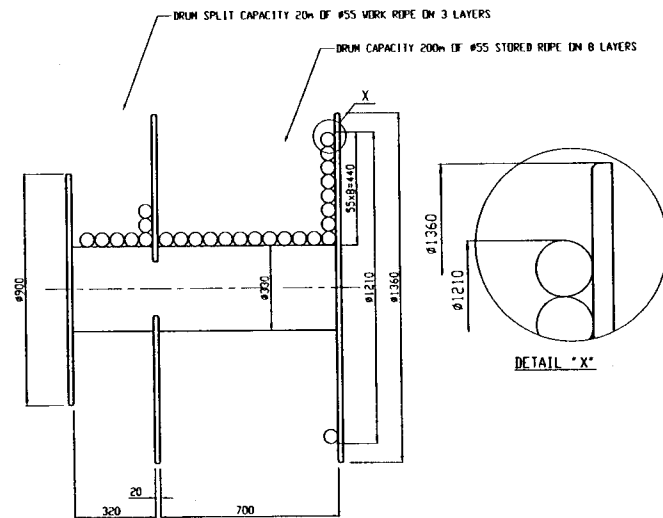
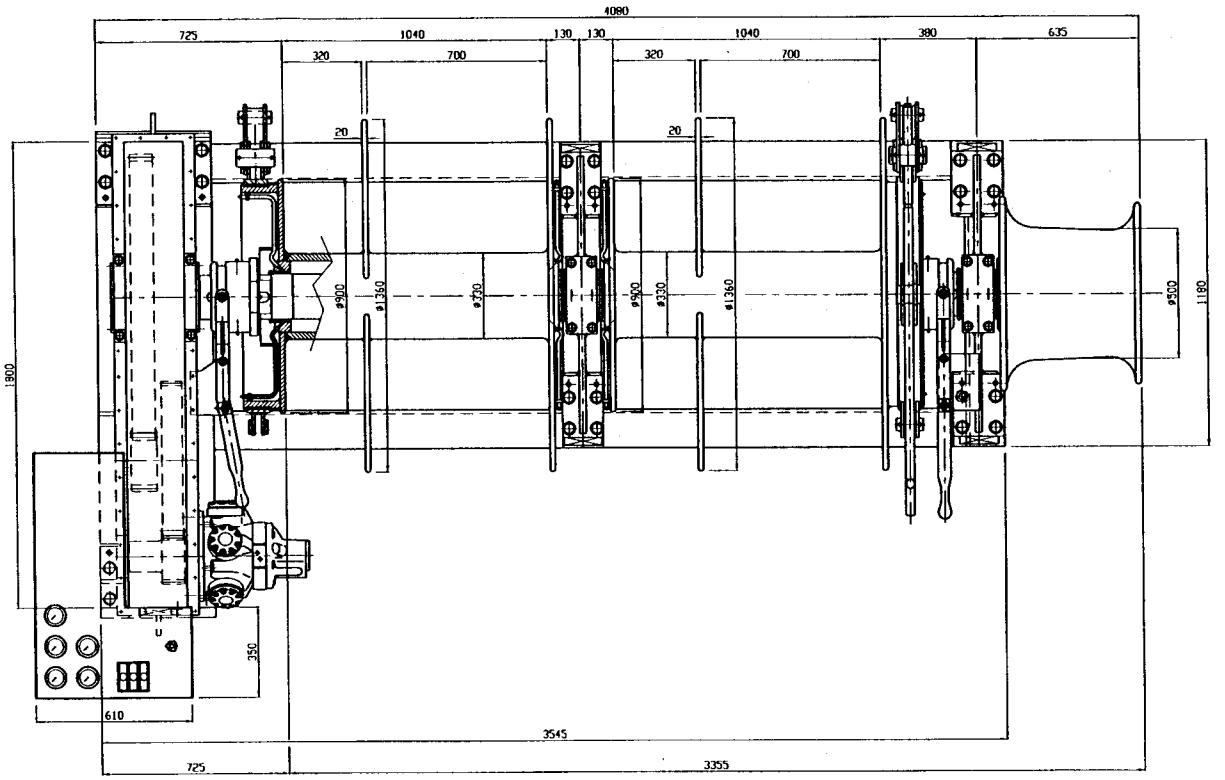
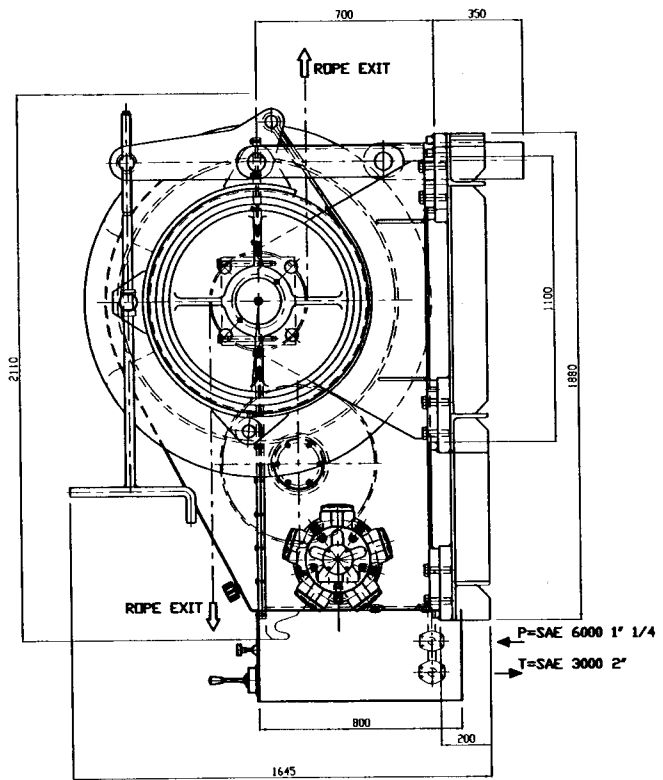


MAXIMUM STRENGTH ON FOUNDATIONS COMING FROM THE MAX SOLICITATIONS
 X = COMPRESSION STRENGTH (VERTICALLY TO DOWNWARD)
 Q = TRACTION STRENGTH (VERTICALLY TO UPWARD)

Drawn	ENGR/DSGN
Checked	APPROVED

Pos.	Denomination	Pieces	Material	Weight Kg	Note
	marine equipment PELLEGRINI Via E. Torricelli 2/A - 37135 VERONA - ITALY ALLOWANCES NOT INDICATED	Group 16		Class. AS 1500/D N. 7114641	SCALE 1: 10
		Denomination GENERAL ASSEMBLY WINCH FRAME BASEMENT			
			Material	Model No.	Weight Kg
					Sh. 2 OF 2
			Treatment		N° 16-2188
			File		INDEX
			AT2188BB	Index	A B

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LEFT VERSION

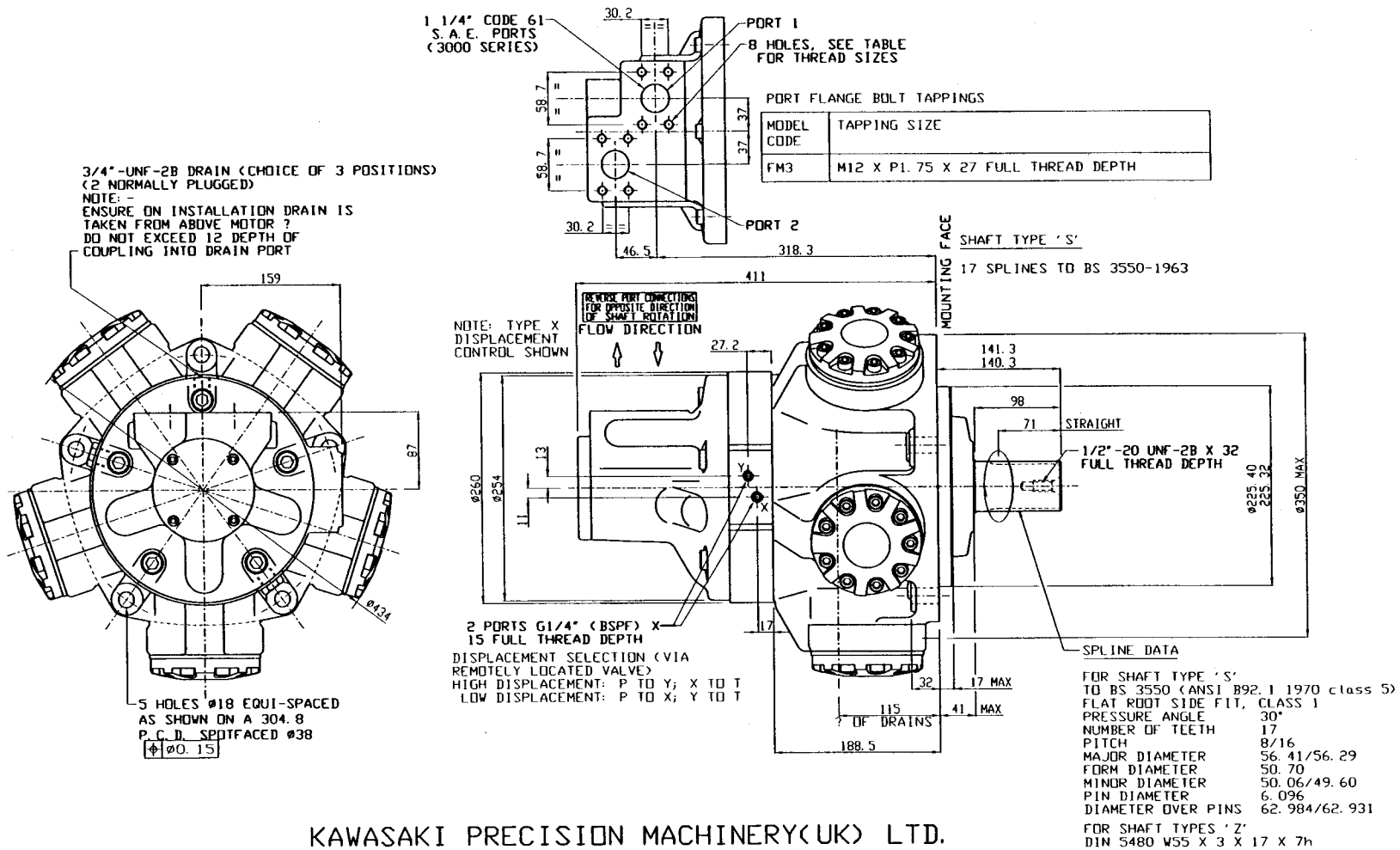
RIGHT VERSION

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Code	Pos	Designation	Pieces	Material	Weight Kg	Note
 Via E. Matteotti Str. - 21028 VERONA		Group ... 152 ...	Class. AS 1500/D ...		SCHE	
ALLOWANCES NOT INDICATED No item parts Hatched parts Length Diameter Drum 12-2001 Checker		Designation SKETCH AND DIMENSIONS HOORING WINCH AS 1500/D Material Treatment ENR/BSN Approved		Weight Kg SH 1 D 1 Quantity File HE1325BA Index	N° 152-1325 A B	
It is strictly forbidden to reproduce or transmit by any means the object of the present drawing.						

HMC045 MOTOR WITH TYPE 'FM3' (1 1/4" SAE) MAIN PORT CONNECTION

TYPE X DISPLACEMENT CONTROL CONNECTIONS



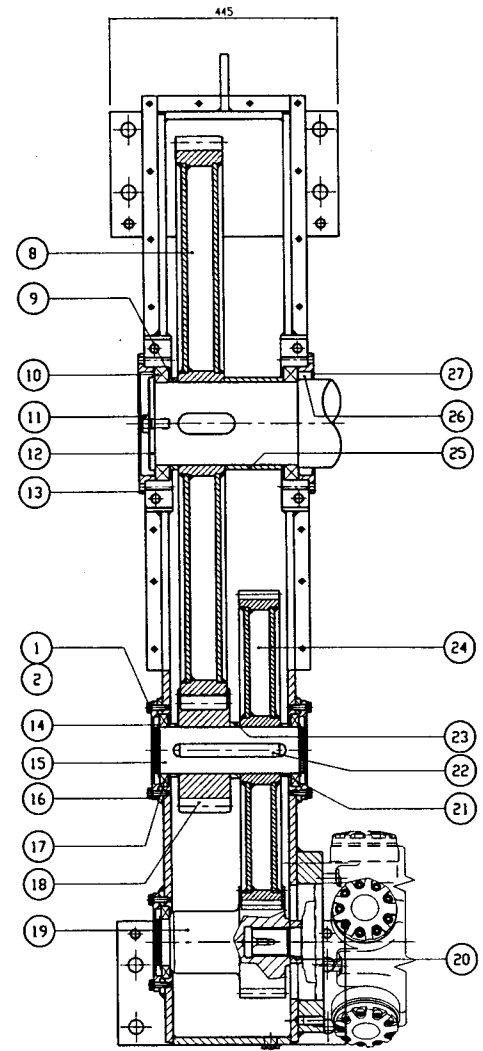
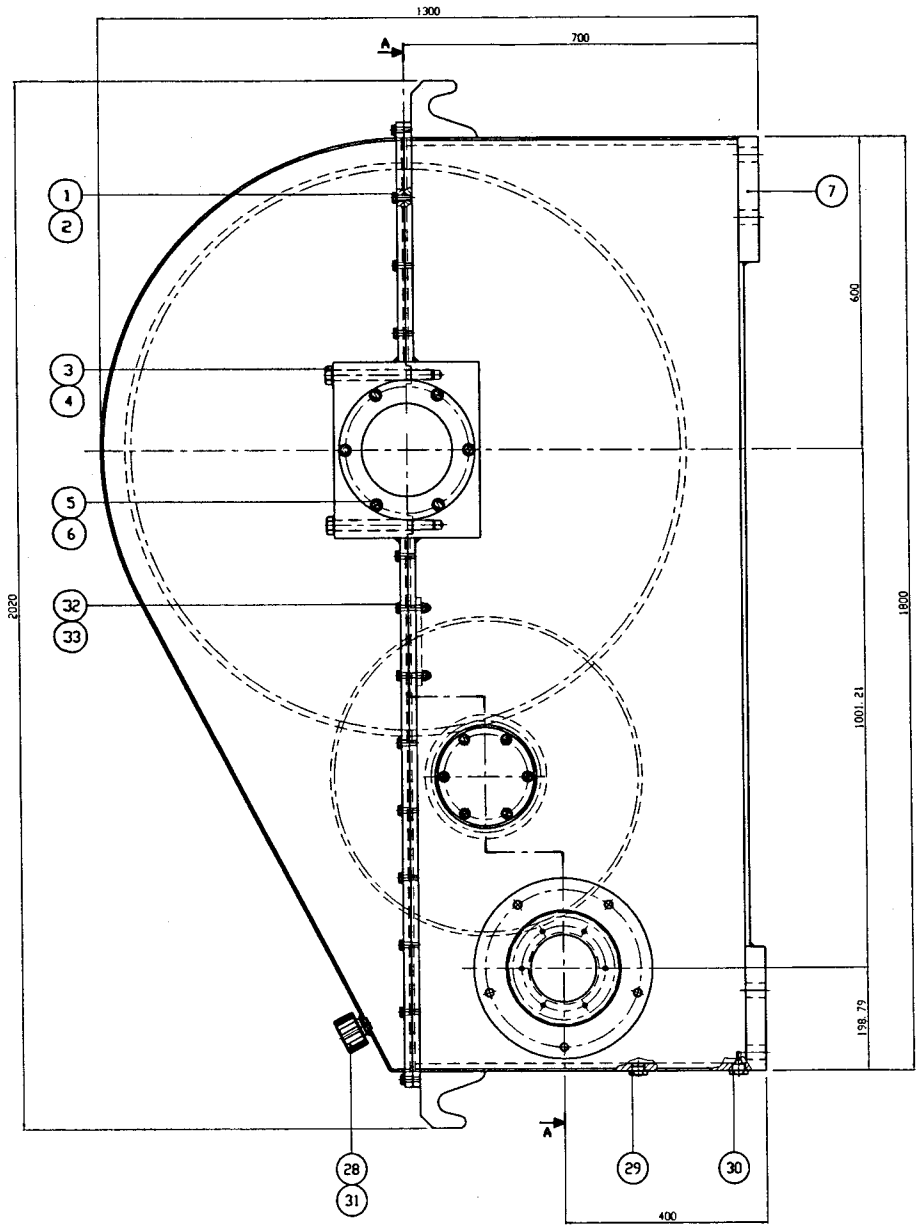
KAWASAKI PRECISION MACHINERY(UK) LTD.
ERNESETTLE, PLYMOUTH, PL5 2SA. TEL: 01752 364394. FAX: 01752 364816

INSTALLATION OF HMC045

NOTE: NON TOLERANCED DIMENSIONS
ARE FOR REFERENCE ONLY

Pos.	Denomination	Pieces	Material	Weight kg	Note
	marine equipment	Group 20	Class AS 1500/B		
	PELLEON		Radial PISTON	N° 7102009	SCALE
	Via E. Sarracelli Str. - 31030 VENEZIA - ITALY		VARIABLE DISPLACEMENT MOTOR TYPE		
	ALL DIMENSIONS NOT INDICATED		HMC 045-S-45/15-FM3-X-10 bar		
	Material		Material	Heat No.	Weight kg
	Machine parts		"STAFFA"		
	Length		Quantity	SH 1 OF 1	
	Diameter		4	N° 20-423	
	Item		File		
	95-200		Approved		
	Checked		Approved		
			AN0423-A		

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SECT A-A

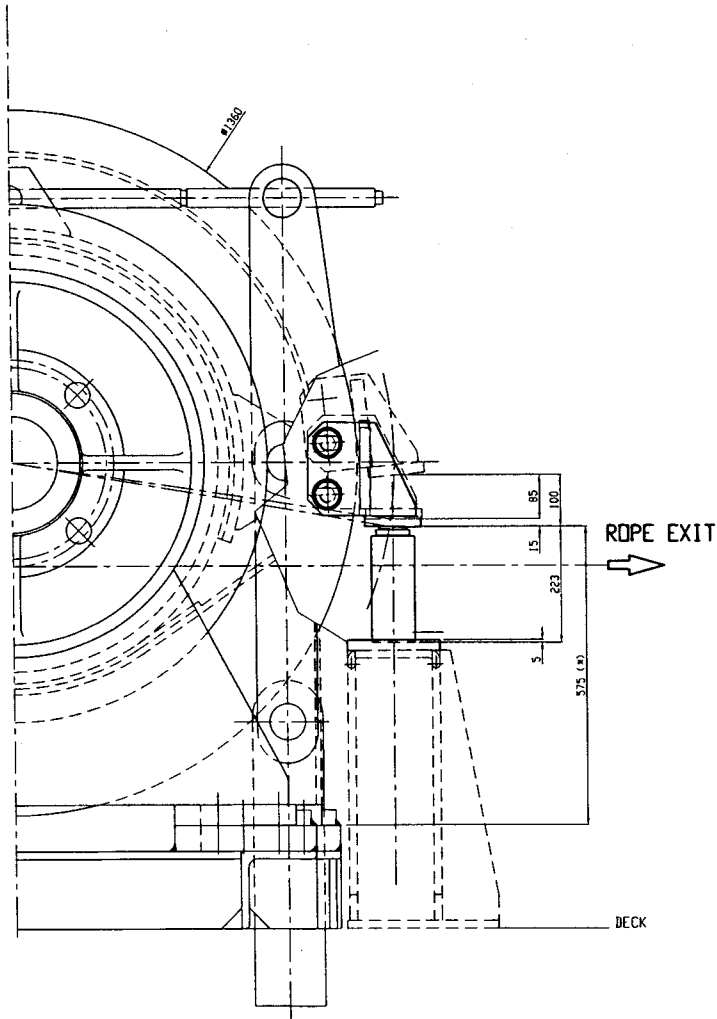
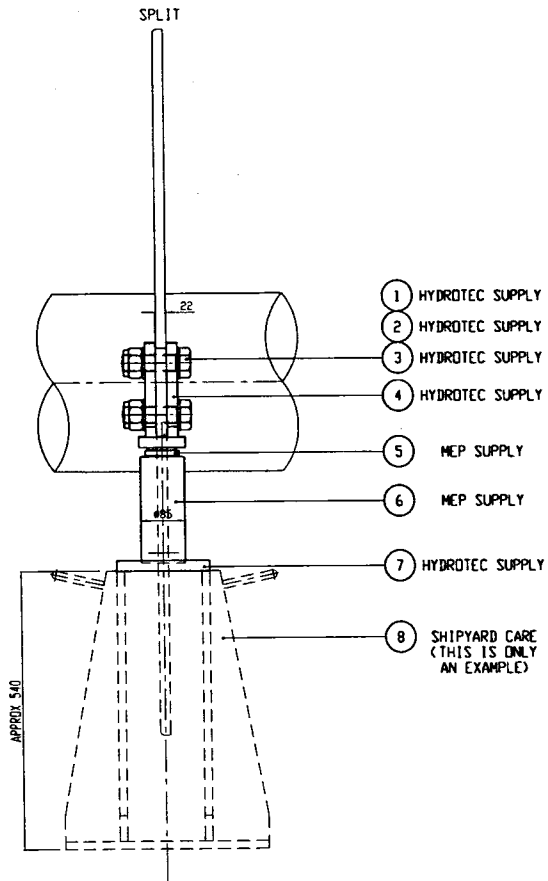
NOTE: FORESEE GASKETS TYPE "MOTORSEAL" OR EQUAL BETWEEN COVERS AND BOX.

Code	Pos.	Denomination	Quantity	Material	Weight	Note
-	33	SELF-LOCKING NUT M10	2	B.3	-	UNI 7473
-	32	SCREW M10x60	2	B.8	-	UNI 5739
58501543	31	DIL	1	ALUF	87.1	BLASIA 220
52001594	30	DIL DRAIN PLUG	1	ELESA	-	TN. 3/4"MH. 32-S
52001506	29	DIL LEVEL PLUG	1	ELESA	-	MGF. 16-3/4 14001
52001420	28	DIL PLUG	1	ELESA	-	SFN. 40-3/4
20162146	27	COVER	1	ST 37-2 BIN 17100	16	ING N° 16-2146
50095240	26	OIL SEAL	1	---	---	---
20162148	25	SPACER	1	ST 37-2 BIN 17100	4.3	ING N° 16-2148
20162138	24	CROWN GEAR 275 m8	1	---	70	ING N° 16-2138
20162150	23	SPACER	1	ST 37-2 BIN 17100	0.5	ING N° 16-2150
53000365	22	TONGUE B 25x14x195	2	UNI 7874	-	UNI 6604
20162151	21	SPACER	2	ST 37-2 BIN 17100	0.3	ING N° 16-2151
20162153	20	SPACER	1	ST 37-2 BIN 17100	0.8	ING N° 16-2153
20162140	19	PINION REDUCTION GEAR-MOTOR 225 m8	1	42CrMo4 UNI 7874	79	ING N° 16-2140
20162139	18	REDUCTION GEAR PINION 218 m12	1	42CrMo4 UNI 7874	23	ING N° 16-2139
51000451	17	BEARING	3	---	---	---
20162147	16	COVER	3	ST 37-2 BIN 17100	4.6	ING N° 16-2147
20162152	15	SHAFT	1	42CrMo4 UNI 7874	14.7	ING N° 16-2152
50200090	14	SEEGER E90	3	Com.	-	UNI 7425
20162145	13	COVER	1	ST 37-2 BIN 17100	16	ING N° 16-2145
20162159	12	WASHER	1	ST 37-2 BIN 17100	3	ING N° 16-2159
50000458	11	SCREW M20x40	1	B.8	-	UNI 5739
51001442	10	BEARING	2	---	---	---
20162149	9	SPACER	1	ST 37-2 BIN 17100	0.7	ING N° 16-2149
20162137	8	CROWN GEAR	1	---	221	ING N° 16-2137
20162154	7	REDUCTION GEAR BOX	1	FC 310 C UNI 100025	571	ING N° 16-2154
50080413	6	WASHER #13x24	12	STEEL	-	UNI 6592
50000259	5	SCREW M12x45	12	B.8	-	UNI 5739
50080421	4	WASHER #21x37	4	STEEL	-	UNI 6592
50000489	3	SCREW M20x200	4	B.8	-	UNI 5737
50080410	2	WASHER #10.5x21	50	STEEL	-	UNI 6592
50000207	1	SCREW M10x32	46	B.8	-	UNI 5739

		Group 16	Class AS 1500/B
Denomination: REDUCTION GEAR RATIO 1:15		Scale: 1:5	
Material	Model No.	Weight Kg.	
Number	Quantity	Dr. Nr.	
Drawn	ENGR/ESSE	Treatment	
Checked	Approved	File	
		AI2114-A	Index

Scale: 1:5
 Date: 10/11/13
 Model: 16-2114

In strictly form-like reproduction or reprint to others the object of the present drawing.



(* SUGGESTED STARTING TEST POSITION

EN 10027-1	EN 10025	EN 17100
S275JR	Fe 360 B	St 37-2
S275JD	Fe 360 C	St 37-3 U
S275JRG3	Fe 360 BI	St 37-3 N
S275JR	Fe 430 B	St 44-2
S275JD	Fe 430 C	St 44-3 U
S275JRG3	Fe 430 BI	St 44-3 N
S355JR	Fe 510 B	-
S355JD	Fe 510 C	St 52-3 U
S355JRG3	Fe 510 BI	St 52-3 N

Code	Pos.	Designation	Quantity	Material	Weight	Note
-	B	SUPPORT	1	-	-	-
-	7	CYLINDER SUPPORT	1	Fe 430 B UNI-EN10025	-	-
-	6	SPRING RETURN CYLINDER	1	EPB	7.5	CH102504
-	5	SWIVELLING HEAD	1	EPB	-	ACT0031
-	4	JAW	1	Fe 430 B UNI-EN10025	-	DWG N. 16-2144
-	3	SELF-LOCKING NUT M33	2	-	-	UNI-7473
-	2	WASHER #34x60	4	STEEL	-	UNI-6592
-	1	SCREW M33x110	2	B 8	-	UNI-5739

 marine equipment Via E. Terracini, 2/A - 20128 VERONA		Group: 16 Class: AS 1500/D N. 7114041
ALLOWANCES NOT INDICATED		Designation: BRAKE TEST KIT SCALE: 1:5
Material parts		Material
Welded parts		Weight kg
Length		Quantity
Diameter		SH IP
Drawn	ENGR/SSM	1
Checked	Approved	Treatment
		File
		AT2194AA
		Index
		A