



BEDESCHI

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SHIPLOADER SHL-W 1000/32

Date	15/10/2013
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SUMMARY

1.1 REVISIONS

REVISION NR	0	First release	Date:	27/09/2013
REVISION NR		Second release	Date:	14/10/2013
REVISION NR		Third release	Date:	15/10/2013

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2. GENERAL DATA

2.1 CODES AND STANDARD

Electrical Standard	EN 60204-1 IEC -UL
Mechanical standard	ISO – FEM – DIN

2.2 ENVIRONMENTAL CONDITIONS

Altitude above sea level	: m	0
Max. temperature	: °C	+40
Min. temperature	: °C	-20
Relative humidity	: %	88

2.3 PAINTING

- Surface preparation by sandblasting SA 2,5
- Primer: one layer of shop primer (thickness 50 micron)
- Intermediate coats: two layers of epoxy coating, 50 microns each
- Finish coats: one layer of epoxy (thickness 75 micron)

Colour of final coat will be in accordance with Customer's requirements.

As regards electrical and mechanical equipment as well as other purchased articles, the finishing paint colour will of the maker's standard.

2.4 PLANT ELECTRICAL DATA

Main Voltage / frequency	: V/ Hz	400/50
Aux. Voltage	: V	230/24 d-c (by machine electric board)

2.5 PROJECT DATA

Material	:	Solid sulphur pastilles
Bulk density	:	t/m ³ 1,15 (loose) – 1,32 (agitated)
Moisture	:	% 0,5
Grain size	:	mm 4
Angle of repose	:	° 25
Capacity	:	t/h 250

2.6 WORKING CONDITIONS

The bulk solid sulphur is transported by means of 23 t trucks and unloaded into the feeder of the shiploader. By means of the latter the material is unloaded into:

- Vessel type: Dry bulk carriers up to 7000 DWT
 Max beam dimensions = 20,00 m
 Max free board height = 8,50 m

 With boom outreach: 13,00 m from quay limit

2.7 COMPOSITION OF THE MACHINE

The shiploader is composed of:

- Apron feeder with metal apron CNT 10/2200
- Stacking boom with corresponding conveyor belt and telescopic chute
- Trolley with wheels for the support of the machines which allows the movement on the wharf

2.8 WORKING PRINCIPLE

The shiploader is connected by means of electric cable to the power feeding (provided by the customer) which is positioned on the wharf.

After having electrically connected the cable and therefore having provided for the electric feeding of the board, the operator can proceed with the positioning of the machine. The shiploader can:

- move forward and backward in:
 - longitudinal direction perpendicular to the vessel
 - longitudinal direction parallel to the vessel
 for stacking operation.
- rotate all around (for positioning)



The shiploader moves on the dock with boom in upright position and retracted telescopic chute and so it is positioned in the working area with its discharging chute over the hatch of the ship.

After having positioned the shiploader in its working position, the unit (trolley, apron feeder and shiploader) is laid on the ground by means of jacks.

The material is transferred from the feeder to the vessel through the loading conveyor and the telescopic chute. The operator, using the joy sticks on the control desk, can direct the flow of material inside the hatch of the ship, in order to uniformly distribute the load.

3. TECHNICAL DESCRIPTION

3.1 APRON FEEDER CNT 10/2200

3.1.1 MECHANICAL DATA – APRON FEEDER

TYPE OF UNIT	:	CNT 10/2200
Apron useful width at the discharge	: mm	2200
Interaxis of heads	: m	7 + 3
Lateral guides	: no.	2
Central sliding guides of apron	: no.	3
Rear part inclination	: °	0
Front part inclination	: °	20
Hopper volume (with running apron)	: m ³	21
Installed electric power of apron	: kW	22

3.1.2 GENERAL DESCRIPTION – APRON FEEDER

- Structure and frame are composed by strong steel sections.
- The rear part of the structure is horizontal to allow for a bigger hopper volume in the loading zone.
- The rear hoppers is equipped with a level sensor for filling control.
- The structure front part is inclined to lift the material to the discharge zone.
- Apron made of steel pans to support the material load. One belt conveyor is applied by screw on the apron steel surface allowing the sealing and creating a smooth surface that can easily get cleaned by a scraper applied in the towing area. The apron is supported along its width by a set of guides: side guides for chain running and center guides for maximum apron strength under the material load. The wheels of the chain run on side guides and the center wheels run on center guides, located under the apron plates.
- Sliding guides are protected by interchangeable wear resistant steel plates.
- Apron driving chain is made of steel links.
- Heat treated steel pins and wheels.
- Driving shaft supported by self-aligning roller bearings with adapter sleeves.
- Idle shaft supported by plummer blocks housing roller bearings with adapter sleeves.
- Tightening adjustments are performed via screws connected to plummer blocks.
- Planetary gearbox with hardened steel gears in oil bath.
- Machine driven by hydraulic motors.
- Drip feed chain lubrication by means of a 90 W electric pump complete with an oil tank.
- The machine is equipped with centralized grease lubrication system.
- No special tools are required for maintenance.

3.2 SHL-W SHIPLOADER

3.2.1 SHIPLOADER TYPE SHL-W 1000/32

3.2.1.1 MECHANICAL DATA

TYPE OF UNIT	SHL-W	
<i>BOOM</i>		
max. inclination	: °	25
min. inclination	: °	16
power for boom lifting	: kW	4
conveyor belt length center to center	: m	32,5
belt width	: mm	1000
belt speed	: m/s	2
installed belt power	: kW	15

3.2.1.2 BOOM AND BELT CONVEYOR FEATURES

The boom is made of lattice steel structure; it is hinged in the rear part to the chassis by means of duly sized pins.

The boom is of the luffing type, controlled by a couple of hydraulic cylinders.

The boom supports the belt conveyor which is covered on its whole length in order to reduce dust emission.

3.2.1.3 RUBBER BELT

Chevron type.

Minimum 4 plies with minimum top rubber cover equal to 5 mm and bottom one 2 mm. The belt joint has to be made at site during erection works by the client.

3.2.1.4 CARRYING AND RETURN IDLERS

Upper idlers three rolls type, 30° troughing angle spaced at 1000 mm along conveyor, except in loading zone where are spaced at 300 mm, with slotted brackets to allow accurate alignment.

Rolls are heavy-duty type.

Rolls at loading points are impact type with rubber rings.

Lower idlers one roll type are spaced at 3000 mm, with slotted brackets.

3.2.1.5 HEAD UNITS

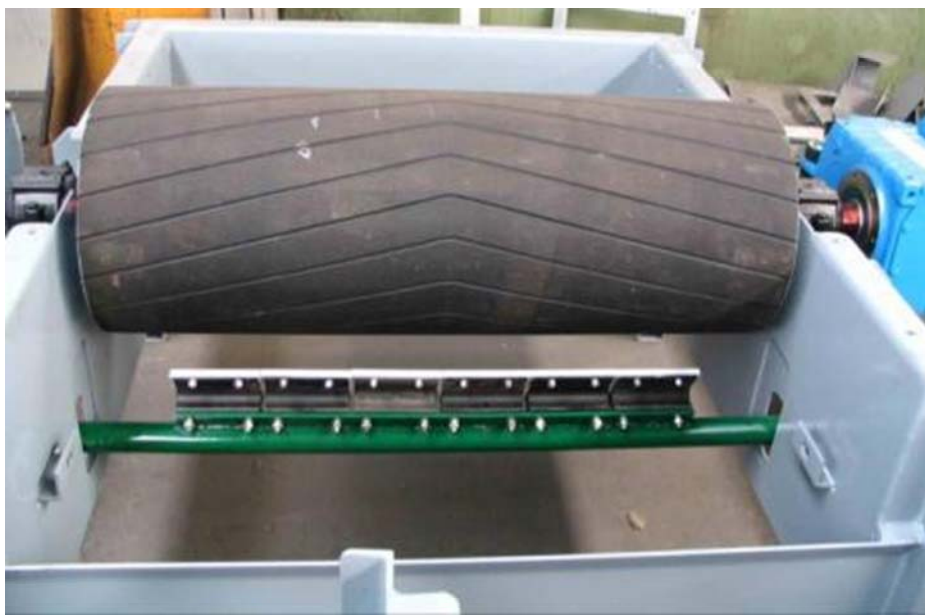
Head frame in the front part of the boom, including housing of pulley and drive unit are made of welded steel sheet and shapes, with protection cover of pulley and take-up device.

3.2.1.6 TAKE-UP UNIT

It is formed by a couple of tensioning screws which let move the supports of idle drum in the back part of the boom on duly shaped guides.

3.2.1.7 PULLEYS

Pulleys are made of steel rolled tube, with special steel shaft mounted with locking tape units fitted on self-aligning pillow blocks. Ball bearings are evaluated for a minimum life of 50.000 hours. Drive pulleys are lagged with vulcanized chevron grooved rubber. Snub pulley working on return belt is lagged with smooth rubber too.



3.2.1.8 BELT DRIVE UNITS

It includes one hydraulic motor and relevant gear box, directly assembled on drive pulley.

3.2.1.9 TELESCOPIC CHUTE

On the extremity of the boom a telescopic chute is hinged that receives the material from the loading belt conveyor and guides it into the hatch of the ship. A suitable jack assures the inclination of the chute.

It has two parts, one fix and one movable, to adapt the length at the material level. Material: stainless steel.

The lifting of the telescopic part of the chute is carried out by means of winch and rope.

At the bottom a rotating spoon chute is installed to spread the material inside the vessel hatch. It is mounted on a slewing ring and powered by a motor.

3.2.2 FLAT BED TROLLEY FBT 52T

3.2.2.1 MECHANICAL DATA – FLAT BED TROLLEY

Max. length	: mm	Approx.. 12000
Track	: mm	5000
All out width	: mm	6600
Minimum height (on longitudinal beam)	: mm	1350
Lifting stroke on outriggers	: mm	200
Travelling speed	: m/min	0 - 15
Affordable slope (on concrete or tarmac)	: %	5
No. of wheels		8
No. of driving wheels		8
Load per each wheel	: kN	100
Power of hydraulic unit	: kW	15
Steering (front and rear independent continuous within)	: °	+ 90° ±5°
Commands via remote control + control panel positioned in the front part of the trolley	:	

3.2.2.1 FLAT BED TROLLEY FEATURES

The trolley is composed of a chassis of welded sheet steel, box-type, and forms a rigid structure able of supporting the loads due to the apron feeder and the shiploader boom.

The trolley is equipped with 4 wheel groups that can rotate, controlled by hydraulic slew drive.

Special steering system, achieved via powered slew drives and controlled via micro-processor, that the following steering options:

- Steerin on 4 wheel groups
- Steering on the two front wheel groups
- Steering on the two rear whell groups
- Along a diagonal (“crab” steering) from 0° to 90°
- At 90° ± 5°
- All-round (“carousel”)

On the trolley there is placed the cabin as well as the hydraulic unit for the control of the various users (wheels running and steering and lifting pistons).

3.3 ELECTRIC EQUIPMENT

3.3.1 ELECTRICAL UNIT

Formed by:

- Power and control board containing all the necessary components for the starting, the protection and the stopping of all electric motors and accessories; the front door is complete with push-buttons and signaling lights for machine operation in manual or automatic mode.



The system is complete with:

- PLC system
- Limit switches and sensors Atex 22
- 50 m of flexible cable for connection to the client's power plugs/sockets
- Power and control cables on the machines
- Cables and cable ducts on the machine
- Electric motors Atex 22

3.3.2 REMOTE CONTROL

All the machine displacements are commanded from the electric board and via a remote control (the operator will be free to move around the machine, having the best visual over all of the machine's points).

Moreover the remote control is provided with a ABS tough case, having a shoulder belt for the operator. It is supplied with a battery already installed in the battery chamber, no. 2 spare batteries and no. 1 battery charger.

3.3.3 ELECTRICAL CABIN

One cabin equipped with glass window is installed above the trolley, it contains the electric board and allows the correct control and drive of the machine. The cabin is equipped with air conditioning.

4. VENDOR LIST

Electricals	Siemens, Télémécanique
Automation	Siemens, Télémécanique
Motors	ABB, Siemens
Gear boxes	Brevini, Flender, PIV
Hydraulic coupling	Voith, Transfluid
Bearing	SKF
Belts	Sig, Continental, Phoenix
Rolls	Dugom, Rulmeca

5.SERVICES

5.1 ENGINEERING

5.1.1 BASIC ENGINEERING

Including:

- Lay out drawing of machines
- Loads for foundations calculation

5.1.1.1 MECHANICAL

- Drawing of machines
- Installation drawing of machines
- Technical specifications
- Spare parts list
- Use and maintenance manuals of machines

5.1.1.2 ELECTRICAL

- Location drawing for electrical devices
- General single line drawing
- Electric panel diagrams
- Drawing of routing cables and cables ducts
- Typical installation drawing

5.2 EXCLUSIONS

- Foundations
- Civil works
- Oils and lubricants
- Erection (supervision and manpower)
- Commissioning and start-up (supervision and manpower)
- All necessary tools and equipment during assembling (fork lift ..)
- Power feeding on the wharf
- Atex conformity
- Diesel generator
- Lighting system
- Walkways on shiploader boom
- Transport
- All other equipment, installation and work not mentioned in our proposal.