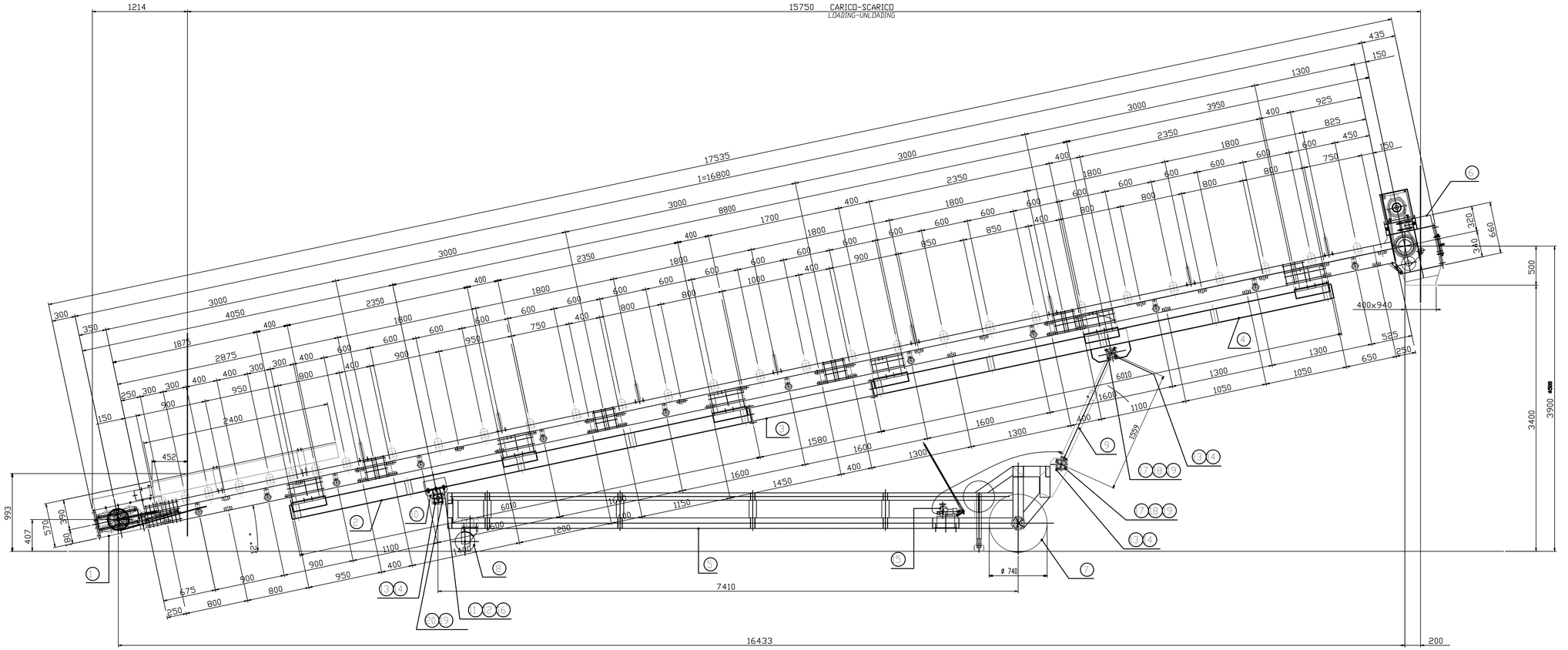


POS.N°	NPEZZI NPIECES	DENOMINAZIONE/ DENOMINATION	DISEGNO N° DRAWN. N°
20	8	VITE M14x45 ZINCATA *BOLT M14x45 ZINC PLATED*	
19	40	RONDELLA PIANA M14 ZINCATA *WASHER M14 ZINC PLATED*	
18	16	DADO AUTOBLOCCANTE M16 ZINCATO *NUT M14 ZINC PLATED*	
17	16	VITE M14x65 ZINCATA *BOLT M14x65 ZINC PLATED*	
16	12	RONDELLA PIANA M16 ZINCATA *WASHER M16 ZINC PLATED*	
15	1	POMPA IDRAULICA *HYDRAULIC PUMP*	GLB-25
14	6	SUPPORTO PER ASSALE DI FULCRO *BEARING FOR PIN*	UCF-209
13	6	PIASTRA PER FISSAGGIO SUPPORTO *PLATE*	NPF80159-030
12	6	DADO AUTOBLOCCANTE M16 ZINCATO *NUT M16 ZINC PLATED*	-
11	6	VITE M16x90 ZINCATA *BOLT M16x90 ZINC PLATED*	-
10	1	ASSALE DI FULCRO *PIN*	NPF80173-009
9	1	CILINDRO IDRAULICO DI SOLLEVAMENTO (CORSA L=800) *HYDRAULIC CILINDER*	NPF80173-016
8	2	RUOTA PIVOTTANTE POSTERIORE *REAR WHEEL*	EP GT/81
7	2	RUOTA ANTERIORE *MAIN WHEEL*	225/70x15"RAD.
6	1	TESTATA TRAENTE *DRIVE HEAD*	NPF8090-087
5	1	CARRELLO PER TRASPORTATORE *CARRIAGE*	NPF80173-002
4	1	TRAVE DI IRRIGIDIMENTO TELAIO *BEAM*	NPF80173-007
3	2	TRAVE DI IRRIGIDIMENTO TELAIO *BEAM*	NPF80159-014
2	1	TRAVE DI IRRIGIDIMENTO TELAIO *BEAM*	NPF80173-005
1	1	TESTATA RINVIO *TAIL HEAD*	NPF8090-070

FINAL ISSUE

PESO KG. WEIGHT KG.	NPEZZI NPIECES	MATERIALE/ MATERIAL	CODICE/ CODE	ITEM
2230	1	.	.	64N1

COMM° JOB° 1E35Z

SCALA SCALE 1:20

BARBIERI MODENA COSTRUZIONI MECCANICHE ITALY

DATA DATE 18-01-2010

DISEGN. DRAWN FZ/M.W.

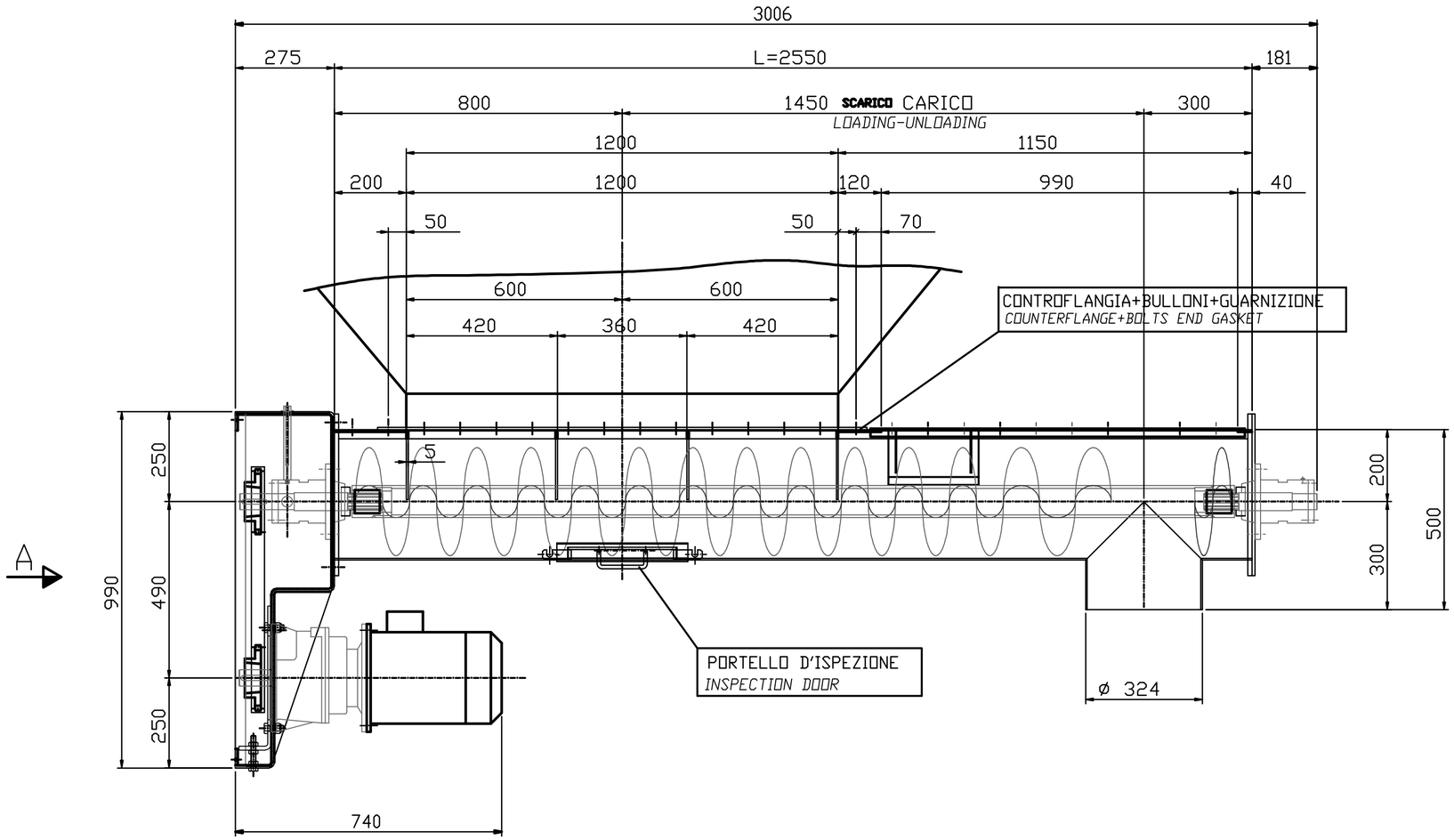
TITOLO TRASPORTATORE A NASTRO DA 800 I=16800

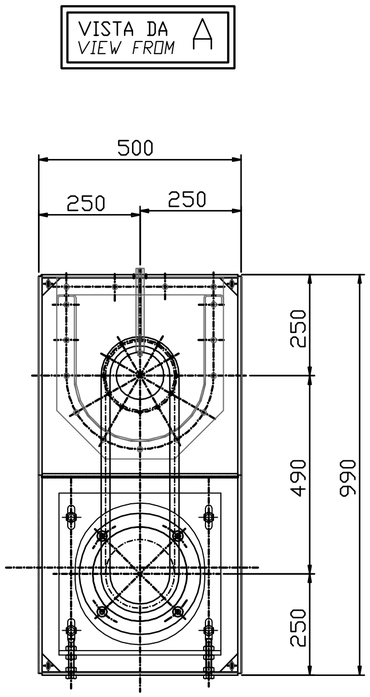
TITLE BELT CONVEYOR WIDTH 800mm. CL=16800

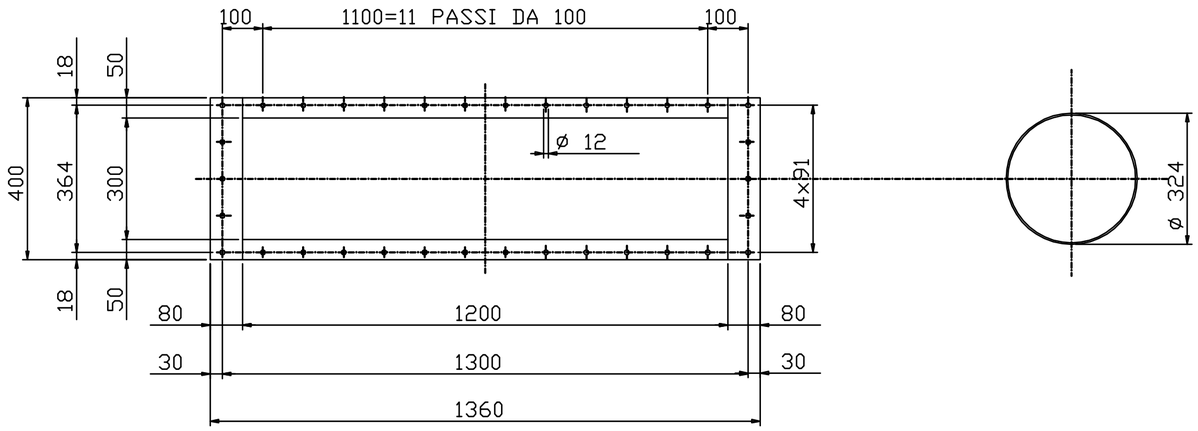
SOST.AL N° - DISEGNO N° DRAWING N° NPF80173-000

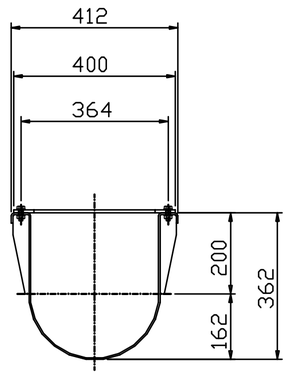
SOST.DAL N°

NOTE









FINAL ISSUE

				62CL1
				62CL2
				62CL3
610	3		.	ITEM
PESO KG. WEIGHT KG.	N°PEZZI N°PIECES	MATERIALE/MATERIAL	CODICE/CODE	

COMMA N° JOBN° 1E357

SCALA SCALE 1:10

BARBIERI COSTRUZIONI MECCANICHE MODENA ITALY

DATA DATE 18-01-2010

DISEGN. DRAWN M.W.

TITOLO COCLEA A CANALE CON ELICA ø 300 L=2550 mm

TITLE SCREW CONVEYOR ø 300 L=2550 mm

SOST.IL N° .

SOST.DAL N°

DISEGNO N° DRAWING N° 041-720-000

NOTE

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
SEDE AMMINISTRATIVA E STABILIMENTO
41100 MODENA - ITALIA - VIA MORANE, 264
TEL. 059 30.00.18 - 059 30.00.23
TELEFAX 059 30.00.95
e-mail: info@barbieri-cm.it

REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 28895/09

Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI FBM

S.R.L. - Cap. soc. € 95.000,00

SPETT.

DESMET BALLESTRA S.P.A.
Via P. Portaluppi, 17
20138 MILANO

30 GIU. 2010

Rif: Vs. ordine n° 291500 del 18-12-2009

Si certifica che il trasportatore a coclea ITEM 62CL1 commessa 1E35Z è stato collaudato a vuoto, con esito positivo, presso il nostro stabilimento e che i materiali impiegati per la costruzione sono idonei a tale impiego.

We certify the screw conveyor ITEM 62CL1 job 1E35Z has been positively tested without material at our factory.
We further certify that all the materials used for this conveyor are suitable for the use.

BARBIERI COSTRUZIONI MECCANICHE S.R.L. MODENA

DESMET BALLESTRA S.p.A.
Inspector
Gatti Davide
30/06/10
WITNESS
SENZA MOTORE - MOVIMENTO MANUALE

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
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Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI FBM

S.R.L. - Cap. soc. € 95.000,00

SPETT.

DESMET BALLESTRA S.P.A.
Via P. Portaluppi, 17
20138 MILANO

30 GIU. 2010

Rif: Vs. ordine n° 291500 del 18-12-2009

Si certifica che il trasportatore a coclea ITEM 62CL2 commessa 1E35Z è stato collaudato a vuoto, con esito positivo, presso il nostro stabilimento e che i materiali impiegati per la costruzione sono idonei a tale impiego.

We certify the screw conveyor ITEM 62CL2 job 1E35Z has been positively tested without material at our factory.
We further certify that all the materials used for this conveyor are suitable for the use.

BARBIERI COSTRUZIONI MECCANICHE S.R.L. MODENA

DESMET BALLESTRA S.p.A.
Ispettore
30/06/10

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
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REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 28895/09

Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI FBM

S.R.L. - Cap. soc. € 95.000,00

SPETT.

DESMET BALLESTRA S.P.A.
Via P. Portaluppi, 17
20138 MILANO

30 GIU. 2010

Rif: Vs. ordine n° 291500 del 18-12-2009

Si certifica che il trasportatore a coclea ITEM 62CL3 commessa 1E35Z è stato collaudato a vuoto, con esito positivo, presso il nostro stabilimento e che i materiali impiegati per la costruzione sono idonei a tale impiego.

We certify the screw conveyor ITEM 62CL3 job 1E35Z has been positively tested without material at our factory.
We further certify that all the materials used for this conveyor are suitable for the use.

BARBIERI COSTRUZIONI MECCANICHE S.R.L. MODENA

DESMET BALLESTRA S.p.A.
Inspector
Gatti Davide
30/06/10

SENZA MOTORE MOVIMENTO MANUALE

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
SEDE AMMINISTRATIVA E STABILIMENTO
41100 MODENA - ITALIA - VIA MORANE, 264
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TELEFAX 059 30.00.95
e-mail: info@barbieri-cm.it

REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 28695/09

BARBIERI FBM

S.R.L. - Cap. soc. € 95.000,00

Codice Fiscale e Partita I.V.A. N.° 00178890364

SPETT.

DESMET BALLESTRA S.P.A.
Via P. Portaluppi, 17
20138 MILANO

30 GIU. 2010

Rif: Vs. ordine n° 291500 del 18-12-2009

Si certifica che il trasportatore a nastro ITEM 64N1 commessa 1E35Z è stato collaudato a vuoto, con esito positivo, presso il nostro stabilimento e che i materiali impiegati per la costruzione sono idonei a tale impiego.

We certify the belt conveyor ITEM 64N1 job 1E35Z has been positively tested without material at our factory.
We further certify that all the materials used for this conveyor are suitable for the use.

BARBIERI COSTRUZIONI MECCANICHE S.P.A. MODENA

DESMET BALLESTRA S.p.A.
Inspector
Gatti Davide

CON MOTORE DI PROVA

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
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TELEFAX 059 30.00.95
e-mail: info@barbieri-cm.it

REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 26895/09

Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI

S.R.L. - Cap. soc. € 95.000,00

DECLARATION OF CONFORMITY CE

The undersigned **BARBIERI COSTRUZIONI MECCANICHE S.R.L.**
Via Morane, 264 - 41125 MODENA (ITALY) TEL. 059/300018 - FAX 059/300095

Herewith declares that:

THE BELT CONVEYOR ITEM 64N1

Job : 1E35Z

MANUFACTURING YEAR: 2010

SERIES No: 10102

Is in conformity with the provisions of the MACHINERY DIRECTIVE (Directive 2006/42/CE)

HARMONIZED STANDARDS:

EN-292 PART 1 PART 2 (SAFETY OF MACHINERY)
EN 294 (SAFETY OF MACHINERY)

IT IS NOT ALLOWED TO PUT THE BELT CONVEYOR INTO SERVICE UNTIL THE MACHINERY INTO WHICH IT IS TO BE INCORPORATED HAS BEEN FOUND AND DECLARED TO BE IN CONFORMITY WITH THE PROVISIONS OF DIRECTIVE 89/392/EEC.

Legal representative
Alberto Barbieri

Modena, 30-06-2010

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
SEDE AMMINISTRATIVA E STABILIMENTO
41100 MODENA - ITALIA - VIA MORANE, 264
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TELEFAX 059 30.00.95
e-mail: info@barbieri-cm.it

REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 28895/09

Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI

S.R.L. - Cap. soc. € 95.000,00

DECLARATION OF CONFORMITY CE

The undersigned **BARBIERI COSTRUZIONI MECCANICHE S.R.L.**
Via Morane, 264 - 41125 MODENA (ITALY) TEL. 059/300018 - FAX 059/300095

Herewith declares that:

THE SCREW CONVEYOR ITEM 62CL1

Job : 1E35Z

MANUFACTURING YEAR: 2010

SERIES No: 10103

Is in conformity with the provisions of the MACHINERY DIRECTIVE (Directive 2006/42/CE)

HARMONIZED STANDARDS:

EN-292 PART 1 PART 2	(SAFETY OF MACHINERY)
EN 294	(SAFETY OF MACHINERY)

IT IS NOT ALLOWED TO PUT THE TUBULAR SCREW CONVEYOR INTO SERVICE UNTIL THE MACHINERY INTO WHICH IT IS TO BE INCORPORATED HAS BEEN FOUND AND DECLARED TO BE IN CONFORMITY WITH THE PROVISIONS OF DIRECTIVE 89/392/EEC.

Legal representative
Alberto Barbieri

Modena, 30 june 2010

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
SEDE AMMINISTRATIVA E STABILIMENTO
41100 MODENA - ITALIA - VIA MORANE, 264
TEL. 059 30.00.18 - 059 30.00.23
TELEFAX 059 30.00.95
e-mail: info@barbieri-cm.it

REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 28895/09

Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI

S.R.L. - Cap. soc. € 95.000,00

DECLARATION OF CONFORMITY CE

The undersigned **BARBIERI COSTRUZIONI MECCANICHE S.R.L.**
Via Morane, 264 - 41125 MODENA (ITALY) TEL. 059/300018 - FAX 059/300095

Herewith declares that:

THE SCREW CONVEYOR ITEM 62CL2

Job : 1E35Z

MANUFACTURING YEAR: 2010

SERIES No: 10104

Is in conformity with the provisions of the MACHINERY DIRECTIVE (Directive 2006/42/CE)

HARMONIZED STANDARDS:

EN-292 PART 1 PART 2	(SAFETY OF MACHINERY)
EN 294	(SAFETY OF MACHINERY)

IT IS NOT ALLOWED TO PUT THE TUBULAR SCREW CONVEYOR INTO SERVICE UNTIL THE MACHINERY INTO WHICH IT IS TO BE INCORPORATED HAS BEEN FOUND AND DECLARED TO BE IN CONFORMITY WITH THE PROVISIONS OF DIRECTIVE 89/392/EEC.

Legal representative
Alberto Barbieri

Modena, 30 june 2010

BARBIERI COSTRUZIONI MECCANICHE s.r.l.
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TELEFAX 059 30.00.95
e-mail: info@barbieri-cm.it

REGISTRO IMPRESE TRIB. DI MODENA N. 3190
ALBO NAZIONALE COSTRUTTORI N. 28895/09

Codice Fiscale e Partita I.V.A. N.° 00178890364

BARBIERI

S.R.L. - Cap. soc. € 95.000,00

DECLARATION OF CONFORMITY CE

The undersigned **BARBIERI COSTRUZIONI MECCANICHE S.R.L.**
Via Morane, 264 - 41125 MODENA (ITALY) TEL. 059/300018 - FAX 059/300095

Herewith declares that:

THE SCREW CONVEYOR ITEM 62CL3

Job : 1E35Z

MANUFACTURING YEAR: 2010

SERIES No: 10105

Is in conformity with the provisions of the MACHINERY DIRECTIVE (Directive 2006/42/CE)

HARMONIZED STANDARDS:

EN-292 PART 1 PART 2	(SAFETY OF MACHINERY)
EN 294	(SAFETY OF MACHINERY)

IT IS NOT ALLOWED TO PUT THE TUBULAR SCREW CONVEYOR INTO SERVICE UNTIL THE MACHINERY INTO WHICH IT IS TO BE INCORPORATED HAS BEEN FOUND AND DECLARED TO BE IN CONFORMITY WITH THE PROVISIONS OF DIRECTIVE 89/392/EEC.

Legal representative
Alberto Barbieri

Modena, 30 june 2010

Section 14 Belt Conveyor ITEM 64N1

(job 1E35Z) – ord. 291500

Step	Description	Reference Documents	Inspection						Notes
			Manufacturer		Ballestra		Third Party		
			Test	Report	Attend	Dept	Attend	Report	
1	Construction Drawing Approval	Equipment specification Data sheet	18/01		H	MAC			
2	Review of mill certificates	Design Code Ballestra Material Requisition	15/02		R				
3	Visual and dimensional check of preassembled machine	Erection drawings Data sheet	17/05	Yes	H	COL			
4	Fabricate parts identification marks (if any)	Erection drawings	H	Yes	H	COL			Not applicable
5	Functional test / Running test	Manufacturer procedure	30/06	Yes	H	COL			CON MOTORE DI PROVA
6	Current Absorption check	Motor nameplate/Data Sheet	30/06	Yes	W	COL			
7	Surfaces treatment/ Painting check	Manufacturer specification Ballestra Material Requisition	30/06	Yes	W	COL			
8	Nameplate Check	Ballestra Material Requisition	30/06		H	COL			"CE" marking if required
9	Accessories and Spare Parts check	Ballestra Material Requisition	30/06	Yes	SW	COL			
10	Documents review	Applicable code Ballestra Material Requisition	30/06	Yes	R	MAC			

DESMET BALLESTRA S.p.A. Inspector Gatti Davide

Section 14 Screw Conveyors

ITEM 62CL1 - 62CL2 – 62CL3
(job 1E35Z) – Ord. 291500

Step	Description	Reference Documents	Inspection						Notes
			Manufacturer		Ballestra		Third Party		
			Test	Report	Attend	Dept	Attend	Report	
1	Construction Drawing Approval	Equipment specification Data sheet	18/01		H	MAC			
2	Review of mill certificates	Design Code Ballestra Material Requisition	10/02		R				
3	Visual and dimensional check of preassembled machine	Erection drawings Data sheet	06/05	Yes	H	COL			
4	Fabricate parts identification marks (if any)	Erection drawings		Yes	H	COL			Not applicable
5	Functional test / Running test	Manufacturer procedure	30/06	Yes	H	COL			* SEMA MOTORS MOVEMENT MANUALS
6	Current Absorption check	Motor nameplate/Data Sheet	30/06	Yes	W	COL			
7	Surfaces treatment/ Painting check	Manufacturer specification Ballestra Material Requisition	30/06	Yes	W	COL			
8	Nameplate Check	Ballestra Material Requisition	30/06		H	COL			"CE" marking if required
9	Accessories and Spare Parts check	Ballestra Material Requisition	30/06	Yes	SW	COL			
10	Documents review	Applicable code Ballestra Material Requisition	30/06	Yes	R	MAC			

MANUAL FOR ERECTION AND MAINTENANCE

BELT CONVEYOR WITH CARRIAGE

Manufacturer: BARBIERI COSTRUZIONI MECCANICHE S.r.l.
via Morane 264 - 41125 Modena
tel. 059 - 300018 - 300023
fax 059 - 300095
e-mail info@barbieri-cm.it
web www.barbieri-cm.it

Client: DESMET BALLESTRA S.p.A.
Via P. Portaluppi, 17
20138 MILANO

Order n° 291500 dated 18-12-2009

Job n° 1E35Z

ITEM n° 64N1

MACHINE SERIAL	DRAWING	LENGTH M.	MANUF. YEAR
10102	NPF80173-000	NPF 800/16,8	2010

INFORMATION

SAFETY

INSTALLATION

OPERATION

PERIODICAL MAINTENANCE

1.1.3 NOTICE TO INSTALLER OR USER

This machine cannot be used alone, but only connected and bolted to other machine.
Never use the conveyor with bare inlet or outlet openings to avoid any possibility of access to rotating or dangerous parts; a furter planning should be carried by the user to make the whole arrangement be in compliance with the safety rules.
It will be care of client or user arrange for setting protection mechanical and electrical (safety barrier, screws, switches etc.) related to dangerous points after survey when the assembling will be at the end.

IMPORTANT

Upon the delivery of the machine, the consumer must make sure that all the devices indicated in the paragraph of the safety manual are present and working correctly.
Furthermore, he must mount in conformity with the instructions indicated those devices which are not mounted at the time of delivery to facilitate transport.

BE CAREFULL

It is forbidden to operate this equipment before the equipment or the machine where this will be built in be declared in compliance to machine directive 89/392 and subsequent modifications.

1.1.4 PURPOSE OF MACHINE

This equipment has been designed to be used in industries to carry product in quantity and quality as stated in technical data.
Using it with any other material should be considered improper and forbidden. See what stated in chapter 1.1.3.

IMPROPER USE

Improper uses, which may place operators in danger and for which the company declines all responsibility for injury or damage, are:

- use of the machine by operators who have not read and UNDERSTOOD this manual;
- use of the plant by unqualified operators;
- failure to maintain or inadequate maintenance and/or control of the plant;
- presence of the operator outside the walkway surfaces;
- walking on the belts, even if not in operation;
- filling up with materials of any kind with the plant in operation;
- operation of the plant without one or more safety devices (housings, limit switches, emergency buttons, parapets, etc.) installed.
- tampering with the safety devices.
- use of the plant for purposes other than those for which it was designed and constructed.
- see what stated in chapter 1.1.3.

SPECIFIC SAFETY PRECAUTIONS

ELECTRICAL RISKS

- If work has to be done on live electrical parts, first disconnect the power supply, then insulate yourself from the ground by means of insulating clothing. Never work with wet hands and/or feet. There are many risks involved.
- Never allow wires to block passage ways and/or to be placed close to heat sources or corrosive substances.
- Check the insulation frequently and report any faults.
- Never remove the safety guards until the power supply has been disconnected.

HYDRAULIC/PNEUMATIC CIRCUIT

Protect your body when carrying out checks for leaks on the hydraulic/pneumatic circuit.

RISKS

During the working time, the operator must NEVER put hands or use tools in the working area.

NOISE LEVEL

When designing this machine, the company has adopted technical solutions intended to keep the level of noise generated as low as possible. In spite of this, for reasons not directly linked to its construction but to the features of the plant in which it is included, high noise levels may be reached during normal conditions of use.

Normally, the operator's working position is separated from the machine, and the constant presence of an operative is not required.

CAUTION: Daily personal exposure in excess of 85 dB(A) may lead to loss of hearing, which must be prevented using soundproof ear plugs and muffs.

HEAT RISK

In case during process it is conveyed hot material dangerous for contact contact are necessary signals or protective barrier a carefull information to the workers about heat danger should be done.

1.1.5 GENERAL CHARACTERISTICS

The machine consist of a rubber belt sliding on V-roller.

The conveyor is made by a steel frame.

The drive and take-up heads are located at end.
The drive pulley is bar type and running on ball bearings.

The tail pulley bar type, has sliding bearings for belt take-up.

The conveyor is equipped with drive unit made by motor gear speed reducer.

Rotating nylon brush under drive pulley.

Electrical equipment are excluded from supply.

1.1.7 OILS CHART

PULLEY BEARINGS
Use litium grease (it guarantee the a broad service conditions)
ESSO Beacon 2

REDUCER
Oil "ISO EP 220"
ESSO "Spartan" EP 220

SLIDE PARTS
Use litium grease

MECHANICAL VARIATOR
(Disc type in oil bath)
Use oil type “ESSO” A.T.F. DEXRON
Oil with viscosity 160
SHELL DONAX TA

HIDRAULIC CYLINDER FOR CARRIAGE
“Esso” Nuto 68

Require security card from oil producer to be informed about specific risks.

1.1.8 SUPPLIED WITH THE MACHINE

Instructions manual for erection operating and maintenance.

Test certificate (together with the instruction manual).

1.1.9 TECHNICAL ASSISTANCE AND MAINTENANCE

For any information or request for repair work contact:

BARBIERI COSTRUZIONI MECCANICHE S.R.L.
Via Morane n°264
41125 MODENA
TEL. 059 / 300018 - 300023
FAX 059 / 300095

We will provide all technical information or arrange for technical assistance on field.

1.1.10 WHERE TO KEEP MACHINE OPERATING MANUAL

Keep this manual in safe place since it must accompany the machine throughout its long operating life.

1.2.1 SAFETY NORMS

In preparing this chapter concerning safety, we have borne in mind the accident prevention laws in force and:

- ECC Directive n. 89/392 dated June 14,1989 and amendments
  To try to harmonise the member states' norms concerning machine-tools.

EN292 - Safety of machinery
Basic concepts - General principles for design.

EN294 - Safety distances to prevent danger zones being reached by upper limbs.

Warning !!!
Strictly follow the safety norms highlighted below to ensure the correct use of the machine as regards the electrical fixtures and to prevent electrocutions, woundings, explosions and the outbreak of fires.

1.2.2 SAFETY

INTRODUCTION

- Never start any repairs and/or maintenance unless the plant is switched off and the measures necessary to prevent it being started up accidentally during the maintenance work have been taken.
- Never start up the motors if staff are doing maintenance work on the machine.

There are two possible maintenance in progress situations:
extraordinary maintenance, during which the entire plant is shut down for reasons not directly linked to the plant's production process, but to allow operations such as cleaning, painting, etc.;
routine maintenance, during which the machines are activated in manual mode for operations such as adjustments, greasing, belt tensioning, etc.
To assure that hazardous situations do not arise, unless otherwise specified all maintenance operations should be carried out in the following conditions:
- warning that maintenance is in progress on the machine placed in a clearly visible position on the plant control panel;
- operating staff informed in advance;
- user control levers and/or switches turned to OFF/0;
- master switch on control panel TURNED OFF;
- plant operating in "local" mode, and control panel keys removed and consigned to the plant maintenance foreman, in order to prevent accidental start-up.
  Depending on the work to be carried out, wear protective clothing such as:
  safety helmet, soundproof ear guards, safety goggles, dust mask, protective gloves, safety shoes, etc.

1.2.6 LIST OF SAFETY DEVICE ON CONVEYOR

1. Protection carter on take-up supports
2. Protection drive transmission
3. Protection on brush transmission
4. Protection on drive head
5. Protection on take-up head
6. See chapter 1.1.3

DEVICES TO BE ASSEMBLED BY INSTALLER OR USER

- Protection panels depending from distance of dangerous point.
- Emergency push button and key switch for safety during maintenance.

1.2.7 NOTES

This chapter outlining the safety devices and norms was drawn up bearing in mind the normal use of the machine as stated in the chapter on the use of the machine and the adequate preparation of the operators as regards the specific risks linked to the operation of the machine.
If the machine is not used according to instruction given in the "PURPOSE OF MACHINE" chapter in this manual, the manufacturer is not responsible for any damage caused to people and things.
Furthermore, the manufacturer is not responsible for any damage to people and things resulting from the non-compliance with the following warnings:

a) adopt all the necessary precautions during the calibration, part replacement, cleaning, reparation or maintenance operations prevent someone else from turning the machine on.

b) do not tamper with the safety devices and guards on the machine.

c) do not remove any of the safety devices and guards on the machine.

d) always make sure that the safety devices and guards have been remounted after their temporary removal for technical reasons ordered by the boss.

1.3.1 LIFTING AND TRANSPORT

Attention: the machine must only be shifted by skilled personnel (sling, trolley or crane operators, etc.) with lifting equipment (cranes, lifttruck, etc) of suitable size.

The lifting and transport shall take place through anchorage by means of hooks to the eyebolt on the machine sides.

The machine must be hoisted using four steel cables with hooks of suitable size.

See drawings for lifting points (if supplied).

STORAGE

During storage, the machine must be kept in a dry and covered place.
Electric equipment must be protected from dampness. Ambient temperature should be between - 10 and + 55℃ and relative humidity is lo wer than 95% without condensation.

1.3.2 OVERALL DIMENSIONS AND FOUNDATIONS

See machine drawing for number, size, and position of anchor bolts, check the correct connection and tighening of machine to foundation.

CLEANING

Before starting the machine, wipe away all protective oil from painted surfaces using alkaloid detergents such as oil of turpentine or petroleum naphtha.

NOTE: These liquids must be used on a cloth and not sprayed.

PACKING DISPOSAL

Pull out nails from wooden boards forming packing tops.
Dispose of wood, cardboard, nylon bags and nails according to regulations in force.

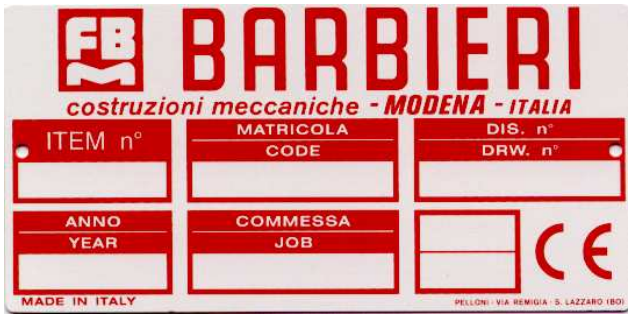
1.3.3 MACHINE INDICATOR PLATES

SAFETY, GUIDANCE AND NOTICE SIGNS

On the machine or plant are settled plates concerning "WARNING" or danger situations. It is compulsory by operators be informed where the plates are and that they are readable. Clean them with clean clothes, avoiding use of solvents.

Fig. 1)

SERIAL PLATE ("CE" IF SUPPLIED)
This sign is located on the right-hand side of the machine head, identifying the data provided by the regulations in force.



"ELECTRIC CURRENT" sign, black on yellow, located on the electric box (if supplied).

Fig. 2)

"CARTER" dangerous gear, located on transmission or revolving objects.

1.3.4 ERECTION MARKS ON MACHINE

See general drawing for erection.

2.2.1 ERECTION

The machinery has been fully assembled and run tested without product at the manufacturer factory with the supporting carriage.

The conveyor erection should have always reference to the general drawing.

CONVEYOR SHIPPED IN 2 PIECES OVERLAPPED

- The conveyor has been fully assembled at our workshop, and the disassembling has been at minimum.
  The frame joint has been opened and the two parts were overlapped leaving inside the belt.

- To overlap the conveyor frame for delivery, and to help to move the belt during the overlapping could be necessary to remove some return roller; near the junction point, and fit in position when the operation is ended.

- Now to execute the opposite operation it is necessary to disassemble the return roller that now are over the belt, slide the top frame of conveyor and fit them again in their correct position.

- Set on the ground the 2 frames, and open the joint plates lift the upper frame and slide it slowly along the lower one and set in line. Approach the frame joints and bolt them together.

- Assemble the intermediate frame of the bottom beam.

- Complete the assembling of the conveyor with all the parts, the roller should be perpendicular to the frame.

- Put the belt in tension acting on the screw take-up.

- Assemble the loading hopper and the top plows.

CONVEYOR WITH CARRIAGE

Assembling

- Fit the front tyred and rear wheels on the carriage, if shipped separately.

- Joint the two conveyor frames together as described in the previous chapter and check the beam below the conveyor.

- Join the carriage to conveyor as follow:
  a) lift the whole conveyor and fit the rear axle to the carriage and bolt the supports
  b) lift the front conveyor frame inclining it until it is possible to assemble the cylinder joint shaft on the carriage front and bolt the supports
  c) assemble the oil rubber pipe to cylinder and fix it to the carriage frame with clamps

- Provide to start the belt as previous instructions for a correctly belt run.

Hydraulic conveyor rising

1) Check oil level in tank with the cylinder fully closed.

2) After the connection of the oil rubber pipe to cylinder, provide to bleed the air in hydraulic circuit: leaving the bolt on the top of cylinder head, moving the bar until the oil leaves from the screw hole; then screw again the belt.

3) Rise the cylinder shaft acting on the bar of the manual pump; to lower the cylinder unscrew the hand grip on the pump.

4) The cylinder is equipped with:
   - Flow control valve to modify the descending speed, by screwing or unscrewing the external part of the valve
   - A security valve in case of breakage of the rubber pipe

5) The security valve operate also in case of fast descending speed, in this case will be necessary lower the speed acting on the flow control valve.

6) To release the safety valve when locked it is necessary operate the bar on the pump and rise slightly the cylinder shaft.

7) The valves are set at our workshop, it is possible any way to modify the setting of the security valve following the instruction attached.

8) Check small loss of oil from cylinder or pump; if necessary refill and bleed the air.

9) To oil refill in the tank use oil “Esso Nuto 68” or similar of other brand.

Use

- Verify periodically the security valve efficiency, acting by a fast cylinder dive.

- To prevent tipping in case of overloads, keep the conveyor's chassis resting in the unloading area.

- If adjustments or cleaning are required along the conveyor, make sure that the machine is at a standstill and that the power supply to the electric motor has been disconnected. Take all appropriate precautions to ensure that it cannot be started up accidentally.

- Leave the safety feet resting on the floor when loading/unloading and only just above it for the rest of the time, to prevent tipping in case of a flat tyre.

Attention: NEVER STAND UNDERNEATH THE CONVEYOR

Maintenance

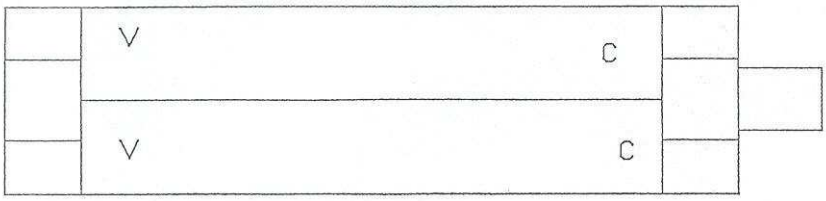
- If the cylinder does not travel for its full stroke, top up with hydraulic fluid and provide air bleed according to what previously explained.

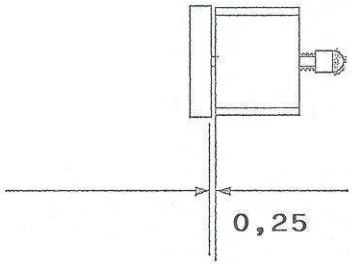
- This operation must be carried out with the cylinder retracted.

- Keep control on the tyre pressure.

Attention:
DO NOT REMOUVE THE COUNTER WEIGHTS BOLTED AT THE END OF THE CARRIAGE WHEN THE CONVEYOR IN FULLY ASSEMBLED.

SIDE “C” TO CYLINDER
SIDE “V” TO SAFETY VALVE





THE SETTING OF THE SAFETY VALVE IS 0,25 mm.

- If the security valve operate at low descending speed increase the distance from plate
- If the valve does not operate decrease the distance from plate

2.2.2 ELECTRIC CONNECTION

First of all, verify that the operation voltage of the electric installation of the machine corresponds to the voltage used in the factory.
Connect the machine power cable to electric panel provided with magnetothermal switch suitable the motor power.
Connect earth wire (yellow/green) after making sure that earth connections are executed in compliance with regulations in force.
To verify the correct connection of the machine to the mains, act as follows:

- Apply voltage to the panel through the main switch.
- Start the motor trough the push button.

The rotation of the motor must take place according to the direction indicated by the arrow and which is printed on the flywheels housing. Otherwise, change a polarity of the connection to the mains.

The wrong rotation due to backstop inside reducer can affect the breakage of the backstop, for this provide to disconnect the motor from reducer.

GENERAL CHECK TO BE CARRIED OUT BEFORE TURNING THE MACHINE ON

Make sure that the safety devices are in place and are working correctly, and there is not damaged parts.
Make sure that the moving parts are not hindered in their movements.
Make sure that there are no damaged parts and that all parts have been mounted and are working correctly.
Any damaged safety devices or parts must be repaired or replaced.

OIL SUPPLY IN THE MACHINE

The machine is supplied with oil in reducer.
If necessary to provide for the supply or add to level before starting.
Introduce through the plug the oil stated in table, in any case.
The level can be checked through the transparent pilot light.

2.2.3 OPERATION BEFORE BELT STARTING

- The following instructions should be carried out at first belt starting as well as after partial disassembling for maintenance purpose.

- See that all bolts fastening mechanical equipment are securely tightened.

- Check that power supply match the data carried on the motor rating plate.

- Check that electrical connections are correct, that the terminal nuts are firmly tightened and that the motor enclosure is soundly earthed.

- See that cover is replaced on motor terminal box, with its sealing gaskets, also making sure that no unused cable holes are blanked off.

- See that motor is away from heat sources and that correct airflow around the motor is allowed.

- Check the drive pulley is perpendicular to the frame.

- Tension the belt acting on the two screws of the take-up pulley, this pulley should be in position perpendicular to the frame.

- See that proper guards are provided to prevent access to the belt conveyor according to safety distances norms.

- Check for and remove any tools, bolts, nuts, etc, that might have been left on the belt or near rotating equipment.

- Check the rotation of electric motor when the speed reducer is equipped with backstop.
  In case of wrong rotation change the electric connection on the motor.

Be careful!! Repeated belt starting with wrong motor rotation can produce heavy damage to backstop unit (if existing).

2.2.4 BELT STARTING

1) Make the belt run unloaded for some minutes and observe belt travel on the whole length.
   At any tendency of the belt to run off, stop it quickly before damage occurs.

2) If the belt runs off, see following instructions:

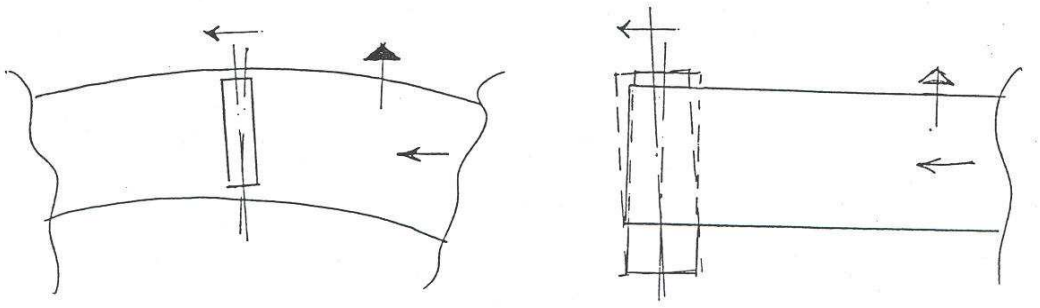
   - Check that drive and tail pulleys are level and square to centreline of conveyors. They should be kept that way and not be shifted as a means of training.

   - Check that carrying and return idlers are level and square to centreline of conveyor (slots are always provided where idlers, or idlers groups, are assembled to the conveyor frame).

   - If the belt is still running off, follow the belt travel in this sequence: drive pulley, return run, tail pulley, carrying run.

   - Find place where the belt runs off: training action should begin at some point preceding the place where run off occurs.

   - On one side of the conveyor, loosen bolts connecting an idler (or idlers group) to the frame; shift the idler forward or backward so that the belt is directed to its centreline.



   If necessary repeat the operation with other idlers (or idlers groups).
   This action should be carried out slowly, in small steps, because the belt requires some time to respond to correcting actions and because reverse belt travel could be badly affected.

   - Immediately reverse the belt travel to check the effect of previous step.
   If the belt runs off, follow again, in small steps, the above instructions.

   - In case it is not possible to find a satisfactory work condition (and only in this case), it is advisable to act on tail pulley: if the belt is running off toward the right side of the conveyor, shift slightly backward the right ball bearing unit of tail pulley.

3) Begin belt loading by degrees.
   Check free flow of material in loading and discharge points.
   The skirt seals of loading hopper should be adjusted to prevent side spillage of material.
   See that material is loaded in the center of the belt: off center loading can cause troubles to correct belt travel.

4) Carry out final belt tensioning (the loaded belt may require a tension increase, with respect to empty belt).
   Belt tension is arranged through the adjustment of screw devices, moving the ball bearing units of tail pulley.
   Adjustment should be balanced, so that pulley axis is always square to the centreline of the conveyor.
   For proper belt tensioning see that:
   - slippage is avoided between belt and drive pulley
   - excessive belt sag is avoided between carrying idlers
   - (on the other hand) excessive belt tension is avoided, not to cause undue strain on shafting, ball bearings and belt splice.

5) Check the electrical motor works correctly and within its specifications, with no abnormal noise, vibration or temperature rise.

2.2.6 OPERATION

The machine does not require a continuous survey, only regular control from responsible personnel, which should assure regular maintenance.

When the top cover or the bolted inspection doors are open be sure that the conveyor is stop and take actions to avoid that it is casually started.

The machine must be used in such a way that the operator (or any other person or animal) cannot enter throught the inlet and outlet holes; the belt must always be used with the protection on so to prevent any damage to the personnel. Before remove protection make sure that the belt does not rotate and that the motor is disconnected.

Never use the conveyor with bare inlet or outlet; these holes must always be fastened respectively to the feeding and receiving machine, to avoid any possibility of access to the inside rotating parts; any use with bare holes must be planned by the user in compliance with the safety rules (safety barriers and screens, test of the safety distances for the limbs etc).
Any improper use and any arbitrary modification to the machine will relieve the manufacturer from his liabilities for any damage and will cause the expiration of the guarantee.

To limit overloads we advice do not start the conveyor fully loaded, to avoid-it it is advisable to stop feeding the product before stopping the conveyor, and let it running until the belt is empty.

During first time of operation we advice to run the machine with reduced capacity.

3.1.1 PERIODICAL MAINTENANCE OPERATIONS

The machine must be submitted to inspection and maintenance to safeguard technical, productive and safety conditions provided by the manufacturer.

Maintenance operations must be performed by technical or maintenance personnel only. Tampering by non-skilled workers can compromise machine operation and relieves manufacturer from every liability.

WARNING: before carrying out maintenance, cut off the power supply to the machine by means of the key switch.

DAILY:

It is advisable to carry daily a careful visual inspection (before starting) of machinery to be sure the are not loss or irregularity.
Check oil loss, bolt loose, seals weared, product deposits etc.

WEEKLY:

- Check the belt tension.
- Lubricate bearings.
- Check brush efficiency.

ELECTRIC SYSTEM
Yearly inspect electric insulation of the electric system and protection conductor (earth) by an authorised electrician.
Tampering by non-authorised personnel can compromise machine operation and relieves manufacturer form every liability.

WEAR PARTS
Bearings, belt, brush and rollers are product subject to wear and their replacement need to be scheduled in advance.

MAINTENANCE

1) SAFETY

- Remember that use and maintenance of belt conveyors may be dangerous if safety principles are not followed.
  If safety distances cannot be observed (ex. for maintenance purpose), remember that all rotating parts can be dangerous, mainly drive pulley and tail pulley.
  All maintenance actions should be carried out after stopping the conveyor (including belt tensioning and belt training).
  Before starting the conveyor again, be sure that nobody is in danger.

2) MAINTENANCE INTERVALS

- The inspection and maintenance intervals depend on the actual operating conditions (loads, starting frequency, etc.) and ambient conditions (dust, humidity, etc.).
  It is advisable to check the conveyor carefully in the first working period, then eventually correct and adapt the following general guidelines.

3) TENSIONING

- Belt tensioning should be checked regularly, especially during the first running period or in case of excessive belt elongation.

- Belt tensioning should be at minimum to prevent slippage, an excessive pretensioning cause elongation.

- Keep greased the take-up sliding parts.

- When the take-up is at the end-run a belt substitution or shortening is necessary.

4) BELT

- Avoid build-up of material on both sides of the belt.
  Check efficiency of cleaning devices; replace the blades of belt scrapers.

- See that the belt is not in contact with oil, grease, solvents and corrosives liquids.

- See that material temperature is below 90℃.

- Periodically check the cover wear on both sides of the belt and on its whole length. Inspection intervals will depend on material characteristics and service severity.

- Minor cuts or gouges in covers, that penetrate to the belt plies, should be repaired immediately, trough the use of repair doughs, cold patches or spot vulcanised repairs, carried out by skilled personnel.

- For major damages, involving plies too, consult the manufacturer.

5) IDLERS

- Avoid build-up of material on idlers; check efficiency of cleaning devices.
  Material should not accumulate under the idlers: provide periodic removal if necessary.

- Ensure that all idlers turn freely.
  Provide replacement or servicing of idlers as soon as running is difficult or wear in ball bearings is excessive.

6) PULLEYS

- Avoid build-up of material on pulleys surface; check efficiency of cleaning devices.

- Periodically check and grease pillow blocks' bearings (see lubricant table).

7) SPEED REDUCER

- The speed reducer is factory-filled with synthetic oil providing life-lubrication: for maintenance or filling check required relate to manufacturer requirement.

8) ELECTRIC MOTOR

- Work on electric motor should be carried out with the motor stopped and disconnected.

- Periodically checks the security of all electrical connections (including earthling system).

- The motor should be kept as clean as possible and the flow of cooling air should not be restricted, even temporarily.
  Periodically check motor temperature rise.

- Every sixth month check the shaft turns freely.
  The bearings are life-lubricated; if necessary they must be changed, according to manufacturer's instructions.

9) FRAME AND AUXILIARY EQUIPMENT

- Periodically check adjustment of belt scrapers.
  If a higher pressure is required to clean the outside surface of the belt:

  -loosen 2 fixing bolts with 17mm spanner
  -apply torque to elastic arms on both sides with a 30mm spanner
  -tighten again the fixing bolts.

  When necessary replace worn blades of belt scrapers.

- When necessary replace skirts in conveyor skirt boards.

- Periodically check tightening of bolts that ensure structural stability and fastening of auxiliary equipment (scrapers, idlers, etc.).

10) BRUSH

Check the brush efficiency, when the nylon strip do not clear the belt lift the whole unit by loosen the bearing bolts, lifting the brush and tighting again.

Adjust the drive chain by the moving the pinion.

When the nylon strips are weared replace it with a new one.

3.1.6 REPLACEMENT

BELT REPLACEMENT

After the belt is stopped remove protections on pulleys and skirts, release the belt acting on bolt on take-up bearing.

Cut the old belt and extract from the conveyor and rolling it, the old belt must be sent to discharge according to law in use at location where the plant is settled.

Remove the covers, the head plates and drive basement, the brush, the return idlers, and low brockets.

Insert the belt on the drive head, checking the belt direction, lay the belt top side along the conveyor, and insert the return side of the belt under the frame removing and reassemble the feet supporting plates bolted to the frame only in the side of the operation.

Remove the take up plate and insert the belt over the pulley holding-it, then reassembling all the removed parts.

When the operation is over remove all the tools from the machine, reinstall all the safety equipment.

Restore the tensioning on belt acting as stated at chapter "starting" at point tensioning and run-off.

3.1.8 DEMOLITION AND WASTE DISPOSAL

To proced at machinery demolition it is necessary dismantle the machine in relation to type of material involved.

- Drain reduction unit oil

NOTE: The drained liquids must not be mixed together and must be kept in closed containers, avoiding contamination with foreign substances.
Oil should be disposed of by authorised disposal and recycling plants.

Disassemble and separate selectively:
- electric material
- plastic material
- water pipes
- steel and cast iron
- other materials

WARNING: The above-mentioned materials must be disposed of according to the regulations in force and the type of product.

3.1.9 SET THE MACHINE TEMPORANEOUSLY OUT OF SERVICE

In case of stop of this equipment provide the following operation:

- Clean inside frame and remove the deposit on pulleys and shafts.
- Grease with suitable product the shafts, inside and outside the heads.
- Reduce tension on belt or loosening the tension belts.
- Grease all the external moving parts.

MANUAL FOR ERECTION AND MAINTENANCE

SCREW CONVEYOR

Manufacturer: BARBIERI COSTRUZIONI MECCANICHE S.r.l.
via Morane 264 - 41100 Modena
tel. 059 - 300018 - 300023
fax 059 - 300095
e-mail info@barbieri-cm.it
web www.barbieri-cm.it

Client: DESMET BALLESTRA S.p.A.
Via P. Portaluppi, 17
20138 MILANO

Order n° 291500 dated 18-12-2009

Job n° 1E35Z

MACHINE SERIAL	DRAWING	ITEM	MANUF. YEAR
10103	041-720-000	62CL1	2010
10104	041-720-000	62CL2	2010
10105	041-720-000	62CL3	2010

INFORMATION

SAFETY

INSTALLATION

OPERATION

PERIODICAL MAINTENANCE

1.1.3 NOTICE TO INSTALLER OR USER

This machine cannot be used alone, but only connected and bolted to other machine.
Never use the conveyor with bare inlet or outlet openings to avoid any possibility of access to rotating or dangerous parts; a further planning should be carried by the user to make the whole arrangement be in compliance with the safety rules.
It will be care of client or user arrange for setting protection mechanical and electrical (safety barrier, screws, switches etc.) related to dangerous points after survey when the assembling will be at the end.

IMPORTANT

Upon the delivery of the machine, the consumer must make sure that all the devices indicated in the paragraph of the safety manual are present and working correctly.
Furthermore, he must mount in conformity with the instructions indicated those devices which are not mounted at the time of delivery to facilitate transport.

BE CAREFUL

It is forbidden to operate this equipment before the equipment or the machine where this will be built in be declared in compliance to machine directive 89/392 and subsequent modifications.

1.1.4 PURPOSE OF MACHINE

This equipment has been designed to be used in industries to carry product in quantity and quality as stated in technical data.
Using it with any other material should be considered improper and forbidden. See what stated in chapter 1.1.3.

IMPROPER USE

Improper uses, which may place operators in danger and for which the company declines all responsibility for injury or damage, are:

- use of the machine by operators who have not read and UNDERSTOOD this manual;
- use of the plant by unqualified operators;
- failure to maintain or inadequate maintenance and/or control of the plant;
- presence of the operator outside the walkway surfaces;
- walking on the belts, even if not in operation;
- filling up with materials of any kind with the plant in operation;
- operation of the plant without one or more safety devices (housings, limit switches, emergency buttons, parapets, etc.) installed.
- tampering with the safety devices.
- use of the plant for purposes other than those for which it was designed and constructed.
- see what stated in chapter 1.1.3.

SPECIFIC SAFETY PRECAUTIONS

ELECTRICAL RISKS

- If work has to be done on live electrical parts, first disconnect the power supply, then insulate yourself from the ground by means of insulating clothing. Never work with wet hands and/or feet. There are many risks involved.
- Never allow wires to block passage ways and/or to be placed close to heat sources or corrosive substances.
- Check the insulation frequently and report any faults.
- Never remove the safety guards until the power supply has been disconnected.

HYDRAULIC/PNEUMATIC CIRCUIT

Protect your body when carrying out checks for leaks on the hydraulic/pneumatic circuit.

RISKS

During the working time, the operator must NEVER put hands or use tools in the working area.

NOISE LEVEL

When designing this machine, the company has adopted technical solutions intended to keep the level of noise generated as low as possible. In spite of this, for reasons not directly linked to its construction but to the features of the plant in which it is included, high noise levels may be reached during normal conditions of use.

Normally, the operator's working position is separated from the machine, and the constant presence of an operative is not required.

CAUTION: Daily personal exposure in excess of 85 dB(A) may lead to loss of hearing, which must be prevented using soundproof ear plugs and muffs.

HEAT RISK

- In case during process it is conveyed hot material dangerous for contact are necessary signals or protective barrier a careful information to the workers about heat danger should be done.

1.1.5 GENERAL CHARACTERISTICS

The screw conveyor consists of a steel pipe or trough with inside a rotating shaft with a spiral to convey the loaded product. The shaft is supported at its ends by bearings and supports.

Long screw conveyor are supplied in more bolted frames, with inside one or more intermediate supports electrical equipment excluded.

The conveyor drive unit is located at one end.

1.1.7 OILS CHART

BEARINGS
Use lithium grease (it guarantee the a broad service conditions)
ESSO Beacon 2

SPEED REDUCER
Use oil ISO Viscosity 220
ESSO Spartan EP 220

TRANSMISSION CHAIN
Use oil viscosity ISO VG 150 (for normal use)
For special operating conditions consult the producer.

MECHANICAL VARIATOR
(Disc type in oil bath)
Use oil type "ESSO" A.T.F. Dexron
Oil with viscosity 160
Shell DONAX TA

BRONZE BUSHING OR SLIDING PARTS
Use lithium grease

Equivalent oils or grease of different brands can be used.

Require security card from oil producer to be informed about specific risk.

1.1.8 SUPPLIED WITH THE MACHINE

Instructions manual for erection operating and maintenance.

Test certificate (together with the instructions manual).

1.1.9 TECHNICAL ASSISTANCE AND MAINTENANCE

For any information or request for repair work contact:

BARBIERI COSTRUZIONI MECCANICHE S.R.L.
Via Morane n°264
41100 MODENA
TEL. 059 / 300018 - 300023
FAX 059 / 300095

We will provide all technical information or arrange for technical assistance on field.

1.1.10 WHERE TO KEEP MACHINE OPERATING MANUAL

Keep this manual in safe place since it must accompany the machine throughout its long operating life.

1.2.1 SAFETY NORMS

In preparing this chapter concerning safety, we have borne in mind the accident prevention laws in force and:

- ECC Directive n. 89/392 dated June 14,1989 and amendments
  To try to harmonise the member states' norms concerning machine-tools.

EN292 - Safety of machinery
Basic concepts - General principles for design.

EN294 - Safety distances to prevent danger zones being reached by upper limbs.

Warning !!!
Strictly follow the safety norms highlighted below to ensure the correct use of the machine as regards the electrical fixtures and to prevent electrocutions, wounds, explosions and the outbreak of fires.

1.2.2 SAFETY

INTRODUCTION

- Never start any repairs and/or maintenance unless the plant is switched off and the measures necessary to prevent it being started up accidentally during the maintenance work have been taken.
- Never start up the motors if staff are doing maintenance work on the machine.

There are two possible maintenance in progress situations:
extraordinary maintenance, during which the entire plant is shut down for reasons not directly linked to the plant's production process, but to allow operations such as cleaning, painting, etc.;
routine maintenance, during which the machines are activated in manual mode for operations such as adjustments, greasing, belt tensioning, etc.

To assure that hazardous situations do not arise, unless otherwise specified all maintenance operations should be carried out in the following conditions:

- warning that maintenance is in progress on the machine placed in a clearly visible position on the plant control panel;
- operating staff informed in advance;
- user control levers and/or switches turned to OFF/0;
- master switch on control panel turned off;
- plant operating in "local" mode, and control panel keys removed and consigned to the plant maintenance foreman, in order to prevent accidental start-up.

Depending on the work to be carried out, wear protective clothing such as:
safety helmet, sound-proof ear guards, safety goggles, dust mask, protective gloves, safety shoes, etc.

1.2.6 LIST OF SAFETY DEVICE ON SCREW CONVEYOR

1. Protection carter on transmission
2. Bolted inspection doors
3. Protection carter of speed sensors (if supplied)
4. Security switch on inspection doors with quick opening device (if supplied)
5. Bolted cover on trough
6. See chapter 1.1.3

DEVICE TO BE ASSEMBLED BY INSTALLER OR USER

- Protection panels depending from distance of dangerous point.
- Emergency push button and key switch for safety during maintenance.

1.2.7 NOTES

This chapter outlining the safety devices and norms was drawn up bearing in mind the normal use of the machine as stated in the chapter on the use of the machine and the adequate preparation of the operators as regards the specific risks linked to the operation of the machine.
If the machine is not used according to instruction given in the "PURPOSE OF MACHINE" chapter in this manual, the manufacturer is not responsible for any damage caused to people and things.
Furthermore, the manufacturer is not responsible for any damage to people and things resulting from the non-compliance with the following warnings:

a) adopt all the necessary precautions during the calibration, part replacement, cleaning, reparation or maintenance operations prevent someone else from turning the machine on.

b) do not tamper with the safety devices and guards on the machine.

c) do not remove any of the safety devices and guards on the machine.

d) always make sure that the safety devices and guards have been remounted after their temporary removal for technical reasons ordered by the boss.

1.3.1 LIFTING AND TRANSPORT

Attention: the machine must only be shifted by skilled personnel (sling, trolley or crane operators, etc.) with lifting equipment (cranes, lifttruck, etc.) of suitable size.

The lifting and transport shall take place through anchorage by means of hooks to the eyebolt on the machine sides.

The machine must be hoisted using four steel cables with hooks of suitable size.

Weight to be lifted see chapter 1.1.6 (TECHNICAL DATA).

See drawings for lifting points (if supplied).

STORAGE

During storage, the machine must be kept in a dry and covered place.
Electric equipment must be protected from dampness. Ambient temperature should be between - 10 and + 55°C and relative humidity is lo wer than 95% without condensation.

1.3.2 OVERALL DIMENSIONS AND FOUNDATIONS

See machine drawing for number, size, and position of anchor bolts, check the correct connection and tightening of machine to foundation.

CLEANING

Before starting the machine, wipe away all protective oil from painted surfaces using alkaloid detergents such as oil of turpentine or petroleum naphtha.

NOTE: These liquids must be used on a cloth and not sprayed.

PACKING DISPOSAL

Pull out nails from wooden boards forming packing tops.
Dispose of wood, cardboard, nylon bags and nails according to regulations in force.

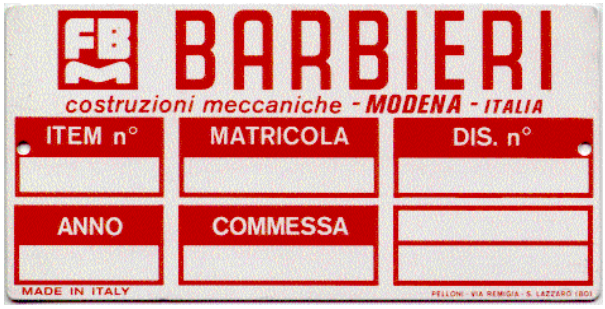
1.3.3 MACHINE INDICATOR PLATES

SAFETY, GUIDANCE AND NOTICE SIGNS

On the machine or plant are settled plates concerning "WARNING" or danger situations. It is compulsory by operators be informed where the plates are and that they are readable. Clean them with clean clothes, avoiding use of solvents.

Fig. 1)

SERIAL PLATE ("CE" IF SUPPLIED)
This sign is located on the right-hand side of the machine head, identifying the data provided by the regulations in force.



"ELECTRIC CURRENT" sign, black on yellow, located on the electric box (if supplied).

Fig. 2)

"CARTER" dangerous gear, located on transmission or revolving objects.

1.3.4 ERECTION MARKS ON MACHINE

See general drawing for erection.

2.2.1 INSTALLATION

While transporting the machine to the working place, make sure it is handled with care and particularly the geared motor and the idle support areas in order to avoid serious damages in starting the equipment. During transport and installation of the conveyor take care that it does not undergo very strong bending that may cause excessive deformation on frame and spiral with irreparable damages.

While lifting the conveyor, do not clutch at the spiral that may lose its balance and cause a faulty operation by increasing the noise level of the machine and by decreasing the life of the bearings.

To lift the machine it is necessary to grasp it at the two ends, near the flanges on which the spiral supports are secured and in correspondence of the different reinforcement cross members of the box.

While assembling the parts of the machines it is necessary to carefully follow the numbers written on the identification plate placed on the machine.

After having located the conveyor in correspondence of the charging and discharging ports and after having checked that such ports are perfectly in parallel to the ground, put a suitable gasket between the two flanges, in order to get a perfect seal between the two parts. When tightening the connecting bolts between the ports, it will be necessary to tighten the screws evenly, by starting alternately from one screw to the one sideways opposed. If required, provide additional brackets in order to avoid any kind of oscillation or bending of the machine.

If the conveyor is supplied in two or more sections when erect be careful that they are in line using screw registration on supports.

ASSEMBLING FRAMES SHIPPED SEPARATELY

Insert the spiral shaft outstanding one part of conveyor in the other conveyor frame. Approaching the frames insert the intermediate support shaft duly lubrified with grase inside the hub of the spiral shaft. (In tubular screw open the inspection door to facilitate the operation).
Bolt the flanges of the conveyor frames.
Keep attention that the spiral pitch be kept at best continuos although the 2 spirals are separate from intermediate support.

IMPORTANT:

Check the various frame alignment, the correct position is obtained when it is possible to rotate the shaft with spiral by hand.
This assembly allow the right operation of the external and intermediate bearings without overheating or premature wear.

CONVEYOR WITH BOLTED SHAFT

Operation as previously described, align the holes in the screw shaft and in the pin, then insert the bolts to connect them.

2.2.2 ELECTRIC CONNECTION

First of all, verify that the operation voltage of the electric installation of the machine corresponds to the voltage used in the factory.
Connect the machine power cable to electric panel provided with magnetothermal switch suitable the motor power.
Connect earth wire (yellow/green) after making sure that earth connections are executed in compliance with regulations in force.
To verify the correct connection of the machine to the mains, act as follows:

- Apply voltage to the panel through the main switch.
- Start the motor trough the push button.

The rotation of the motor must take place according to the direction indicated by the arrow and which is printed on the flywheels housing. Otherwise, change a polarity of the connection to the mains.

GENERAL CHECK TO BE CARRIED OUT BEFORE TURNING THE MACHINE ON

Make sure that the safety devices and damaged parts are working correctly.
Make sure that the moving parts are not hindered in their movements.
Make sure that there are no damaged parts and that all parts have been mounted and are working correctly.
Any damaged safety devices or parts must be repaired or replaced.

OIL SUPPLY IN THE MACHINE

The machine is supplied with oil in reducer.
If necessary to provide for the supply or add to level before starting.
Introduce through the plug the oil stated in table, in any case.
The level can be checked through the transparent pilot light.

2.2.3 PRELIMINARIES OPERATION AT STARTING

Carefully inspect the inside part of the screw, making sure that there are no foreign object that may damage the screw or the receiving machine. Inspect the charging and discharging point and check if there are obstacles to the free passage of the material.

2.2.4 STARTING

Start the empty machine in order to verify the perfect working of all components. Then check the direction of rotation of the spiral.
If the rotation is wrong, stop the conveyor, disconnect the power and reverse the polarity of the motor connection. Start again and verify the good running of the machine components.

2.2.5 STARTING WITH PRODUCT

If the machine run properly and no defects are shown, can be fed with the product, taking care that the receiving machine is working. When the screw is running with product, stop the conveyor and start fully loaded in order to verify the worse working conditions. In this way the motor at starting and in the normal working conditions can be checked.

2.2.6 OPERATION

When more conveyor fully loaded are working in line check that the receiving one is running faster than the feeding one.
When the top cover or the bolted inspection doors are open be sure that the conveyor is stop and take actions to avoid that it is casually started.

The machine must be used in such a way that the operator (or any other person or animal) cannot enter through the inlet and outlet holes.

Never use the conveyor with bare inlet or outlet holes; these holes must always be fastened respectively to the feeding and receiving machine, to avoid any possibility of access to the inside rotating parts; any use with bare holes must be planned by the user in compliance with the safety rules (safety barriers and screens, test of the safety distances for the limbs etc.).
Any improper use and any arbitrary modification to the machine will relieve the manufacturer from his liabilities for any damage and will cause the expiration of the guarantee.

3.1.1 PERIODICAL MAINTENANCE OPERATIONS

The machine must be submitted to inspection and maintenance to safeguard technical, productive and safety conditions provided by the manufacturer.

Maintenance operations must be performed by technical or maintenance personnel only. Tampering by non-skilled workers can compromise machine operation and relieves manufacturer from every liability.

WARNING: before carrying out maintenance, cut off the power supply to the machine by means of the key switch.

DAILY:

It is advisable to carry daily a careful visual inspection (before starting) of machinery to be sure the are not loss or irregularity.
Check oil loss, bolt loose, seals wearied, product deposits etc.

WEEKLY:

- Check the oil level in speed reducer.
- Lubricate intermediate and end supports.
- Check felt dust protection efficiency and tighten or replace if necessary.
- Check transmission.

ELECTRIC SYSTEM
Yearly inspect electric insulation of the electric system and protection conductor (earth) by an authorised electrician.
Tampering by non-authorised personnel can compromise machine operation and relieves manufacturer form every liability.

WEAR PARTS
Steel screw, intermediate supports, end bearings and seals are product subject to wear and their replacement need to be scheduled in advance.

MAINTENANCE

IMPORTANT
To avoid incidents during inspection of moving part it is required to stop the conveyor and avoid that it is restarted without authorisation.

SAFETY
Remember that use and maintenance of screw conveyors may be dangerous if safety principles are not followed.
If safety distances cannot be observed (ex. for maintenance purpose), remember that all rotating parts can be dangerous, mainly drive pulley and tail pulley.
All maintenance actions should be carried out after stopping the conveyor (including belt tensioning and belt training).
Before starting the conveyor again, be sure that nobody is in danger.

MAINTENANCE INTERVALS
The inspection and maintenance intervals depend on the actual operating conditions (loads, starting frequency, etc.) and ambient conditions (dust, humidity, etc.).
It is advisable to check the conveyor carefully in the first working period, then eventually correct and adapt the following general guidelines.

FRAME
The paint on the outside part of the worm screw may be damaged during transport and set up of the machine and the plate of the frame may get rusty. Re-paint the areas following the instructions suggested by the paint producer.
After the first 50 hours of operation, carefully check if the bolts are perfectly tight because they may unloose due to the normal settling. This operation has to be repeated from time to time in order to avoid any damage to the screw.
At the end of each week, check if the charging ports and particularly the discharging port are completely free.

END SUPPORTS
The re-lubrication is provided for the idle and drive supports in order to bring new lubricant to the bearings and remove the old one. The re-lubrication has to be made every 50 or 60 working hours and for this operation we recommend top quality grease for bearings (see table of recommended grease type). Replace the seals if the product flow from the supports.

INTERMEDIATE SUPPORT

The intermediate support is the support that has to be more frequently checked, as the bushing is subject to fast wear if not duly lubricated.

Check the wear of the external seal rings and replace them if wearied.

To check the wear of the bushing, it is necessary to remove the support from the frame in order to verify, in different positions, the radial clearance, by means of the angular oscillation between pin and bushing; light oscillations are allowed, but, these are excessive it is necessary to replace the support as soon as possible as the wear is extreme and may produce damages.

REDUCTION GEAR

The reduction gear is supplied with the right amount of recommended lubricant. Therefore it requires no maintenance excepted checking oil level and replacing oil when required.

The oil has to be replaced according to the working hours and operating temperature; if the reduction gears are working just for a few hours every day, it will be necessary to replace:

a) mineral lubricating oil after 3 years max.
b) synthetic lubricating oil after 5 years max.

It is recommended to reduce the lubrication time in case of particularly hard work conditions.

TRANSMISSION

The transmission (chain and pinions or chain coupling) must be greased every 40 working hours with special grease (see table).

Also check the right tensioning of the chain when it is greasing, in case of loosening, restore the correct tension by operating the special adjusters.

When the chain is lenghtned or wearied replace it, in the meantime, verify the pinions and if necessary replace them.

SPIRAL AND FRAME WEAR

To check the wear of the spiral, just measure the radial clearance between outside diameter of the spiral and bottom of the worm screw body. The spiral is the most wearable part, particularly in the outside part where the surface speed is higher and therefore the wear is bigger.

Check the thickness of the bottom of the frame and arrange for local or total replacement when wear or corrosion reduced excessively the thickness.

3.1.7 TROUBLE SHOOTING

Minor problems can be resolved without consulting a specialist.

FAULT:

MOTOR DOES NOT START
Possible reasons:
1) no main supply or lack of a single phase.
2) motor failure or failure in supply system.

Action:
1) check fuses and thermal relays, if faulty, replace, or reset.
2) repair or replace the part concerned. Verify tension in line.

MOTOR STARTS, BUT THEN STOPS
Possible reasons:
1) incorrect rotation.
2) screw obstruction.
3) output rate too high.
4) motor burnt out.
5) defective bearing or gear reducer.
6) outlet blocked.

Action:
1) change polarity.
2) change hanger bearings, if necessary, clean whole screw conveyor.
3) check ammeter reading, and output rate. If both rates are to high, reduce the material inlet flow or reduce the shaft speed, contact our technical department.
4) discover reason (see above) and only then replace motor.
5) discover reason (see 2) - could be normal wear - replace part concerned.
6) check outlet is free and that level controls etc. are functioning.

MOTOR STARTS, BUT SCREW DOES NOT CONVEY
Possible reasons:
1) gear pinion, gear drive shaft, transmission, broken.
2) incorrect rotation.
3) bad outflow of material from the inlet.

Action:
1) discover reason, replace part concerned.
2) change polarity.
3) improve outflow of material.

3.1.8 DEMOLITION AND WASTE DISPOSAL

To proceed at machinery demolition it is necessary dismantle the machine in relation to type of material involved.

- Drain reduction unit oil

NOTE: The drained liquids must not be mixed together and must be kept in closed containers, avoiding contamination with foreign substances.
Oil should be disposed of by authorised disposal and recycling plants.

Disassemble and separate selectively:
- electric material
- plastic material
- water pipes
- steel and cast iron
- other materials

WARNING: The above-mentioned materials must be disposed of according to the regulations in force and the type of product.

3.1.9 SET THE MACHINE TEMPORANEOUSLY OUT OF SERVICE

In case of stop of this equipment provide the following operation:

- Clean inside the case and remove the deposit on wheels and shafts.
- Grease with suitable product the shafts, inside and outside the heads and the transmission.
- Grease the felts and the felt cage.
- Reduce tension on belt or chains raising the tension unit.
- Grease all the external moving parts.