



**TEREX** | COMEDIL

# **CTT 181/A**

## **Slewing Upper Part**

### **Spare Parts and Maintenance**

- 1 SPARE PARTS**
- 2 MAINTENANCE**
  - 2.1 GENERAL
  - 2.2 GROUPS SUBJECT TO MAINTENANCE
  - 2.3 ROUTINE MAINTENANCE AND PERIODICAL INSPECTIONS
    - 2.3.1 Daily inspections
    - 2.3.2 Weekly inspections
    - 2.3.3 Monthly inspections
    - 2.3.4 Quarterly inspections
    - 2.3.5 Six-monthly inspections
    - 2.3.6 Annual inspections
  - 2.4 SPECIAL MAINTENANCE
  - 2.5 LUBRICATION AND OILS
  - 2.6 ROPES
    - 2.6.1 Instructions for the installation of the ropes
      - 2.6.1.1 *Spooling off new ropes*
      - 2.6.1.2 *Rope loading break-in-period*
      - 2.6.1.3 *Rope replacement*
      - 2.6.1.4 *Common rope defects*
  - 2.7 SHEAVES

## **Chapter 5**

**D**





1

## SPARE PARTS

### Indice - Index - Sommaire - Inhaltsangabe

PARTI DI RICAMBIO - SPARE PARTS - PIECES DE RECHANGE - ERSATZTEILE				
CODICE DI GRUPPO	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
313541020	Portaralla inferiore (TS21)	Lower slewing ring support		
313523090	Portaralla inferiore (H20)	Lower slewing ring support		
313540012	Portaralla inferiore (TS212)	Lower slewing ring support		
313702041	Portaralla superiore	Upper slewing ring support		
	Complessivo collettore	Slip ring unit		
314002060	Traliccio cabina	Cab tower section		
333100040	Cabina standard	Standard cab		
333100070	Cabina "LX"	"LX" cab		
114316040	Controbraccio STD	Standard counterjib		
114316041	Controbraccio puleggia scorrevole	Smooth pulley counterjib		
390107011	Contrappeso "A"	"A" Counterweight		
390107012	Contrappeso "B"	"B" Counterweight		
214516220	Tronco braccio-22 STD	Jib section-22 STD		
214516002	Tronco braccio-22 F11	Jib section-22 F11		
314616230	Tronco braccio-23	Jib section-23		
314616240	Tronco braccio-24	Jib section-24		
314616250	Tronco braccio-25	Jib section-25		
314616050	Tronco braccio-5	Jib section-5		
314616060-1	Tronco braccio-6	Jib section-6		
314616070	Tronco braccio-7	Jib section-7		
314616080	Tronco braccio-8	Jib section-8		
314616090	Tronco braccio-9	Jib section-9		
314616100	Tronco braccio-10	Jib section-10		
214916020	Puntale braccio	Jib point section		
217701020	Carrello 6-8 t	6-8 t Trolley		
320301311	Ballatoio carrello	Jib inspection platform		
217808050	Bozzello doppio 8t	Double Hoist block		
217804030	Bozzello tiro in II (3-4 t)	Hoist block		
217808060	Semibozzello tiro in IV (6-8 t)	Auxiliary hoist block		
226400035-1	Supporto "A" fune carrello	"A" support for trolley rope		
226400036	Supporto "B" fune carrello	"B" support for trolley rope		
126400100	Supporto "C" fune carrello	"C" support for trolley rope		
225100080	Golfare montaggio braccio	Eye bolt for jib assembly		
326400045	Supporto tabella di portata	Load rating chart support		

**RICAMBI  
SPARE PARTS  
PIECES DE RECHANGE  
ERSATZTEILE**

**Istruzioni per l'uso  
Instructions for use  
Mode d'emploi  
Gebrauchsanleitung**

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
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<b>POS.</b>	<b>CODICE</b>	<b>Q.TA'</b>	<b>DESCRIZIONE</b>	<b>DESCRIPTION</b>	<b>DESIGNATION</b>	<b>BEZEICHNUNG</b>
<b>243501010</b>			<b>TRASLAZIONE MOTRICE TAD 1RP 2M3</b>	<b>DRIVE TRAVELLING BOX</b>		
1	346202001	1	Chiusura per scatola motrice	Cover		
2	840206005	2	Cusc. 22219 E TVPB (95 x 170 x 43)	Bearing		
3	346903040	1	Perno mot. 110 x 293	Motor pin		
4	347201010	1	Flangia attacco riduttore	Reduction gear		
5	845257001	1	Riduttore 1/51,7	Reduction gear		

**Colonna A:** posizione di riferimento su disegno d'insieme

**Colonna B:** codice particolare

**Colonna C:** quantità particolare

**Colonna D:** descrizione in lingua italiana

**Colonna E - F - G:** descrizione nelle varie lingue

**Column A:** part reference number on the assembly drawing

**Column B:** part code

**Column C:** part quantity

**Column D:** Italian designation

**Column E - F - G:** designations for the various languages

**Colonne A:** repère sur dessin d'ensemble

**Colonne B:** référence particulière

**Colonne C:** quantité particulière

**Colonne D:** description en italien

**Colonne E - F - G:** description dans les autres langues

**Kolonne A:** Referenznummer auf der Gesamtzeichnung

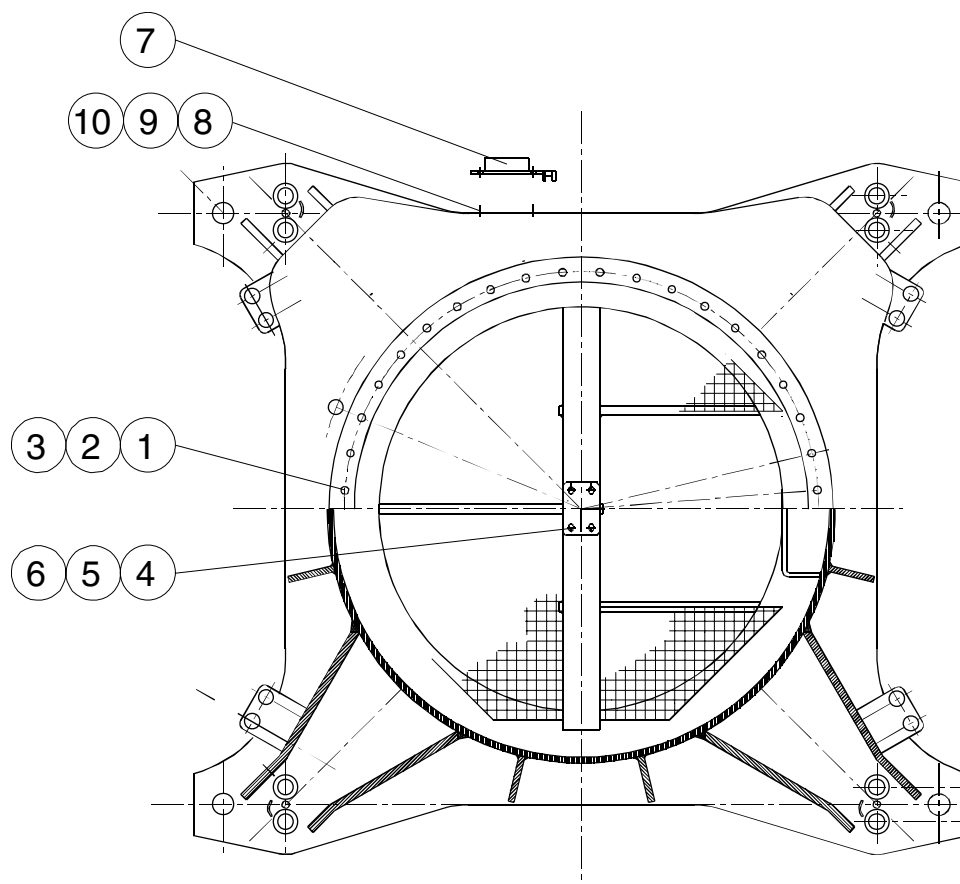
**Kolonne B:** Einzelheiten - Code

**Kolonne C:** Anzahl Einzelheiten

**Kolonne D:** Beschreibung in italienisch

**Kolonne E - F - G:** Beschreibung in verschiedenen Sprachen

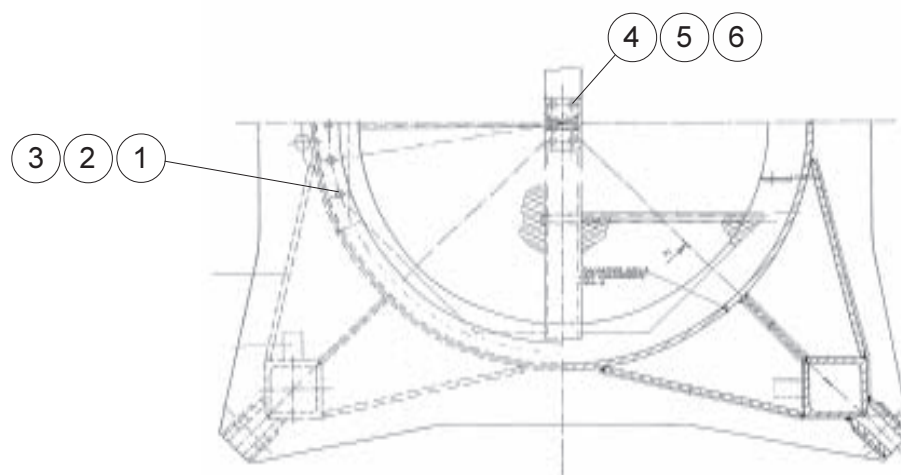
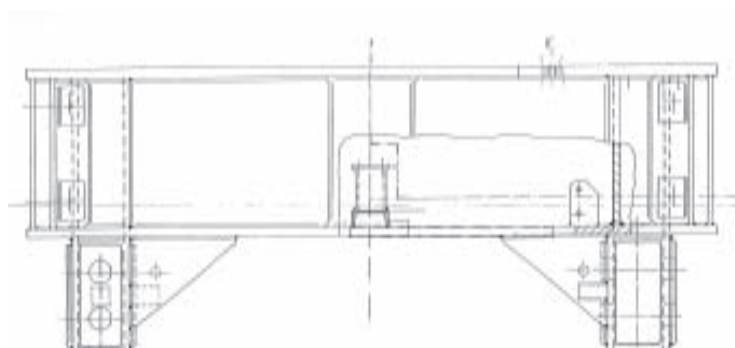
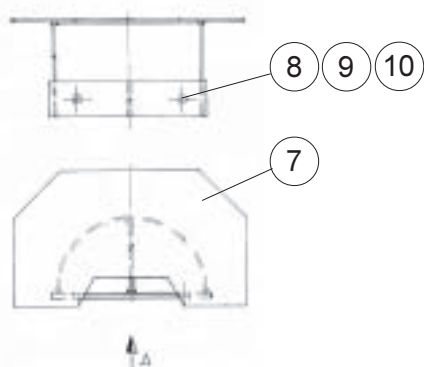
**PORTARALLA INFERIORE (TS21)**  
**LOWER SLEWING RING SUPPORT**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>313541020</b>			<b>PORTARALLA INFERIORE (TS21)</b>	<b>LOWER SLEWING RING SUPPORT</b>		
1	880234010	48	VITE TCEI M24 x 160 N - CL.10.9	SCREW		
2	881736004	48	RONDELLA M24 N - C50	WASHER		
3	881224006	48	DADO ALTO M24 N - CL.10	TALL NUT		
4	880133115	4	VITE TEIF M14 x 50 Z - 8.8	SCREW		
5	881732006	4	RONDELLA M14 Z - 6.8	WASHER		
6	881224014	4	DADO ALTO M14 Z - CL. 10	TALL NUT		
7	326701006	1	SUPPORTO CAVI ALIMENTAZIONE	CABLES SUPPORT		
8	880133126	2	VITE TEIF M16 x 50 Z - 8.8	SCREW		
9	881732007	2	RONDELLA M16 Z - 6.8	WASHER		
10	881224015	2	DADO ALTO M16 Z - CL. 10	TALL NUT		

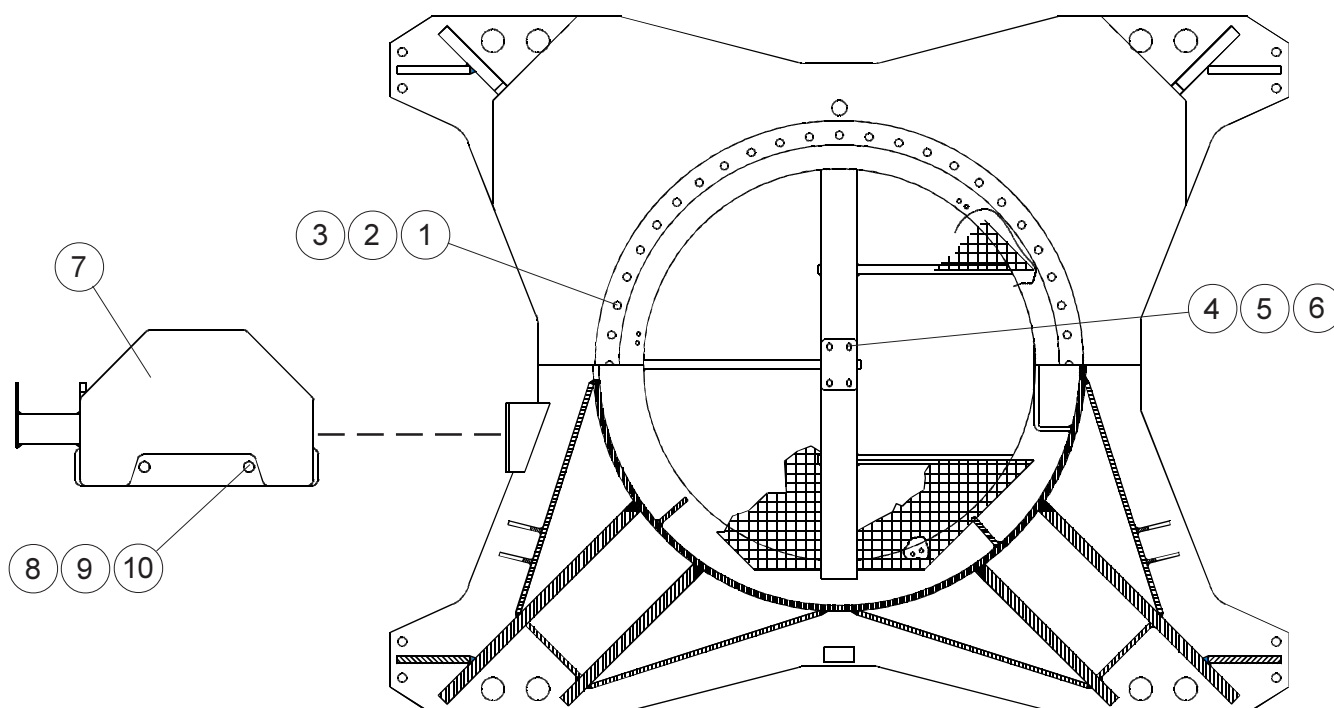
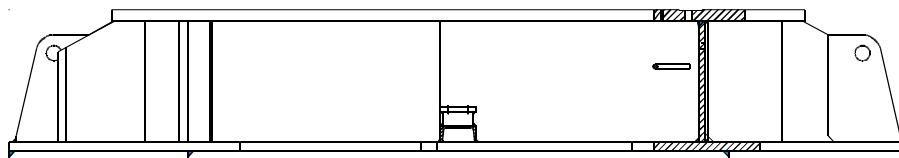
# PORTARALLA INFERIORE (H20) LOWER SLEWING RING SUPPORT

VISTAA  
VIEW A



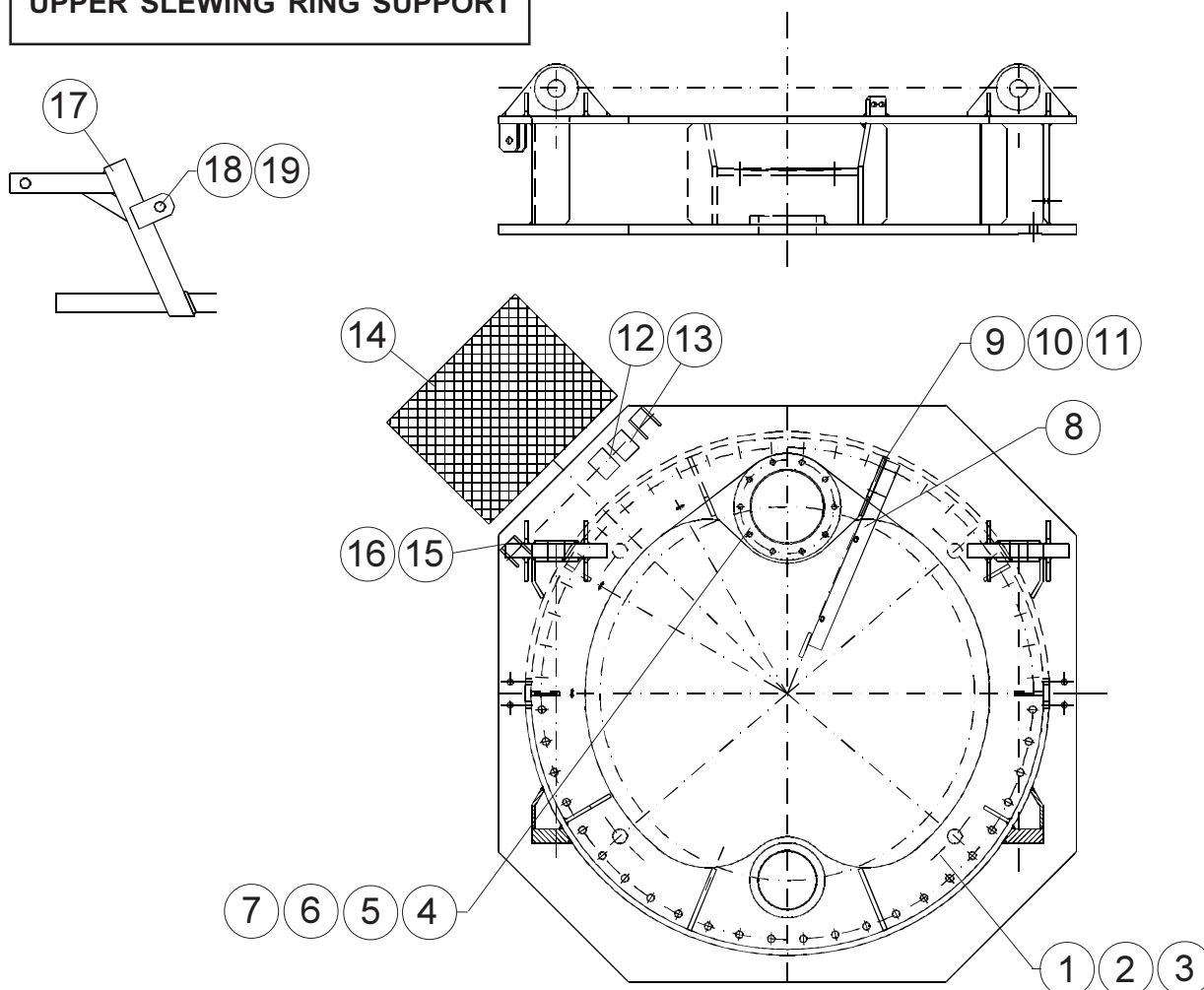
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
313523090			PORTARALLA INFERIORE (H20)	LOWER SLEWING RING SUPPORT		
1	880234010	48	VITE TCEI M24 x 160 N - CL.10.9	SCREW		
2	881736004	48	RONDELLA M24 N - C50	WASHER		
3	881224006	48	DADO ALTO M24 N - CL.10	TALL NUT		
4	880133115	4	VITE TEIF M14 x 50 Z - 8.8	SCREW		
5	881732006	4	RONDELLA M14 Z - 6.8	WASHER		
6	881224014	4	DADO ALTO M14 Z - CL. 10	TALL NUT		
7	326701005	1	SUPPORTO CAVI ALIMENTAZIONE	CABLES SUPPORT		
8	880133142	2	VITE TE M20 x 70 Z - 8.8	SCREW		
9	881732009	2	RONDELLA M20 Z - 6.8	WASHER		
10	881224018	2	DADO ALTO M20 Z - CL. 10	TALL NUT		

**PORTARALLA INFERIORE (TS212)**  
**LOWER SLEWING RING SUPPORT**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	<b>313540012</b>		<b>PORTARALLA INFERIORE (TS212)</b>	<b>LOWER SLEWING RING SUPPORT</b>		
1	880234010	48	VITE TCEI M24 x 160 N - CL.10.9	SCREW		
2	881736004	48	RONDELLA M24 N - C50	WASHER		
3	881224006	48	DADO ALTO M24 N - CL.10	TALL NUT		
4	880133115	4	VITE TEIF M14 x 50 Z - 8.8	SCREW		
5	881732006	4	RONDELLA M14 Z - 6.8	WASHER		
6	881224014	4	DADO ALTO M14 Z - CL. 10	TALL NUT		
7	326701006	1	SUPPORTO CAVI ALIMENTAZIONE	CABLES SUPPORT		
8	880133126	2	VITE TE M16 x 50 Z - 8.8	SCREW		
9	881732007	2	RONDELLA M16 Z - 6.8	WASHER		
10	881224015	2	DADO ALTO M16 Z - CL. 10	TALL NUT		

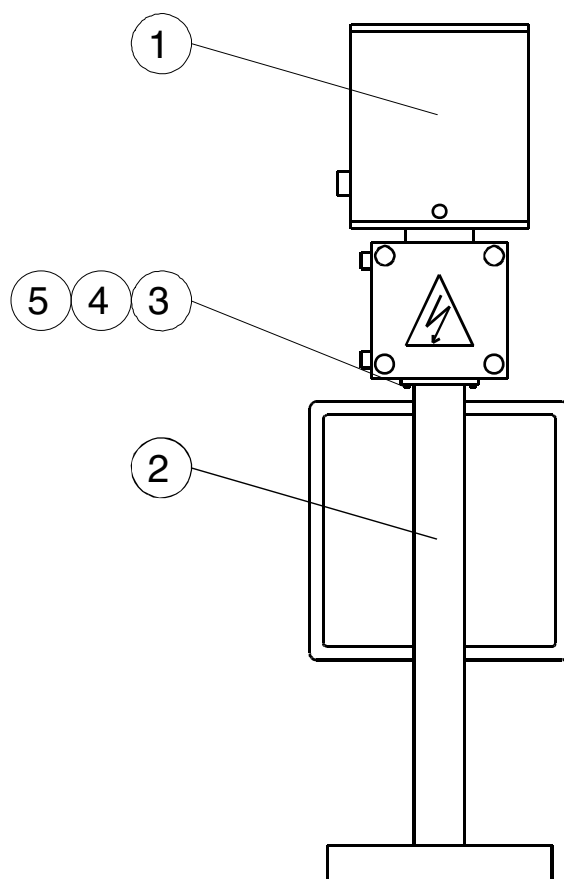
# PORTARALLA SUPERIORE UPPER SLEWING RING SUPPORT



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
313702041 PORTARALLA SUPERIORE UPPER SLEWING RING SUPPORT						
1	880234010	48	VITE TCEIM24 x 160 - 10.9 N	SCREW		
2	881736004	48	RONDELLA M24 C50 N	WASHER		
3	881224006	48	DADO ALTO M24 CL.10 N	TALL NUT		
4	880233045	20	VITE TCEIM16 x 80 Z - 8.8	SCREW		
5	881732007	20	RONDELLA M16 Z - 6.8	WASHER		
6	881224015	20	DADO ALTO M16 N - 10	TALL NUT		
7	880233044	6	VITE TCEIM16 x 60 Z - 8.8	SCREW		
8	326600050	1	BRACCIO ROTAZIONE COLLETTORE	SLIP RING SLEWING SUPPORT		
9	880133024	2	VITE TEPF M14 x 90 Z - 8.8	SCREW		
10	881732006	2	RONDELLA M14 Z - 6.8	WASHER		
11	881224014	2	DADO ALTO M14 Z - 10	TALL NUT		
12	850100037	1	TAB. 150 x 200 "PERICOLO CADUTA"	"FALLING HAZARD" PLATE		
13	850100038	1	TAB. 150 x 200 "OBBLIGO CINTURA"	"ATTACH SAFETY BELT" PLATE		
14	320301330	1	BALLATOIO 500 x 680 TS21	PLATFORM		
15	380141119	2	SPINA 25 x 90	PIN		
16	883130002	4	COPIGLIA 6 x 60 Z - 4.8	SPLIT PIN		
17	326400047	1	SUPPORTO BALLATOIO TS21	PLATFORM SUPPORT		
18	380141119	2	SPINA 25x90	PIN		
19	883130002	4	COPIGLIA 6x60 Z -4.8	SPLIT PIN		

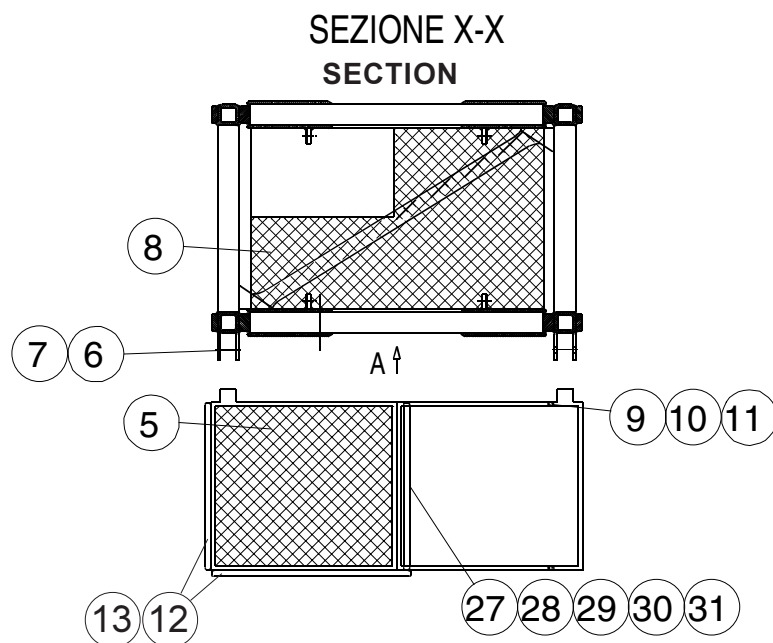
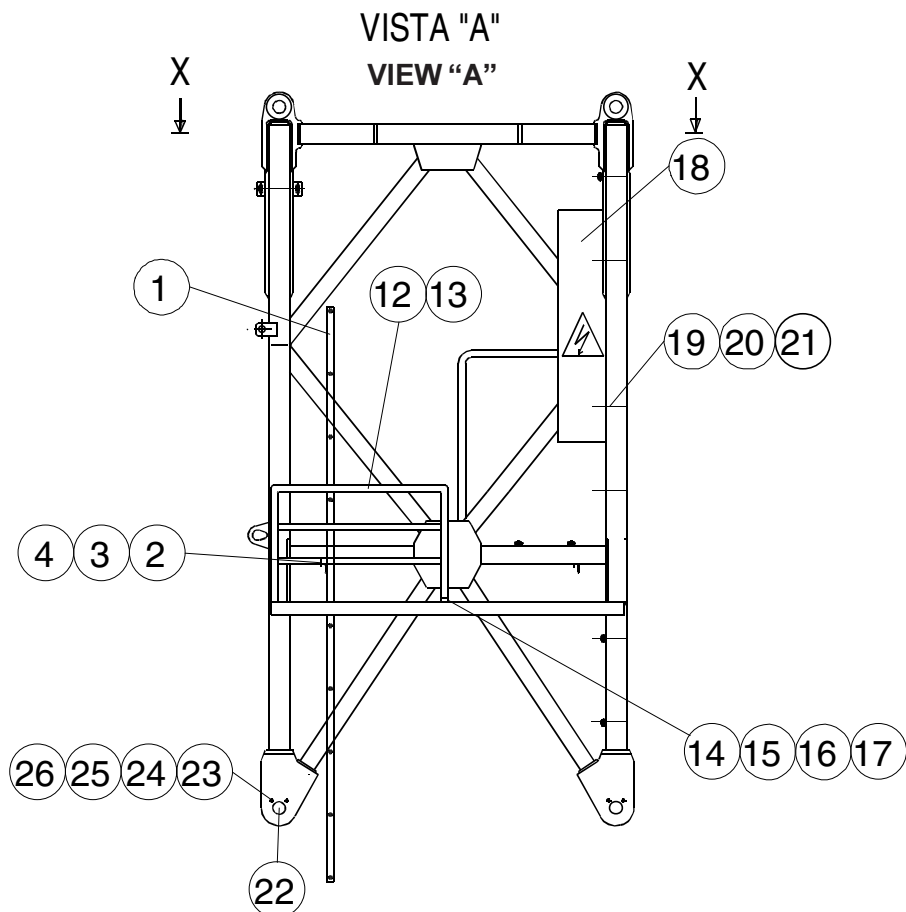


**COMPLESSIVO COLLETTORE  
SLIP RING UNIT**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
			<b>COMPLESSIVO COLLETTORE</b>	<b>SLIP RING UNIT</b>		
1	833499001	1	COLLETTORE CON CASSETTA ELETTRICA	SLIP RING WITH ELECTRICAL BOX		
2	326600060	1	SUPPORTO COLLETTORE	SLIP RING SUPPORT		
3	880133086	4	VITE TEIF M8 x 30 Z - 8.8	SCREW		
4	881732003	8	RONDELLA M8 Z - 6.8	WASHER		
5	881323001	4	DADO AUTOBLOCCANTE M8 Z - 8	SELF-LOCKING NUT		

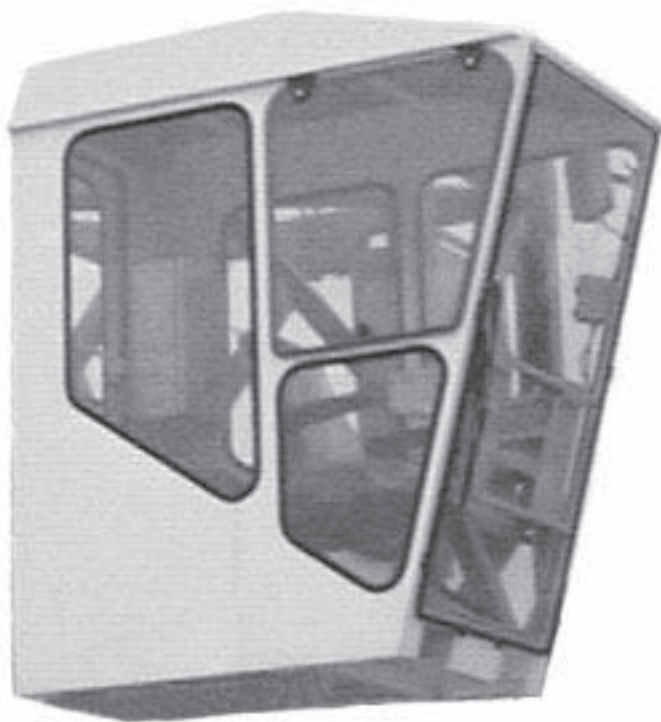
**TRALICCIO CABINA  
CAB TOWER SECTION**





POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314002060</b>			<b>TRALICCIO CABINA</b>	<b>CAB TOWER SECTION</b>		
1	321100450	1	SCALA INTERNA TRALICCIO CABINA	INTERNAL LADDER		
2	880133113	4	VITE TEIF M14 x 40 Z - 8.8	SCREW		
3	881732006	4	RONDELLA M14 Z - 6.8	WASHER		
4	881224014	4	DADO ALTO M14 Z - CL.10	TALL NUT		
5	320204060	1	BALLATOIO CABINA STANDARD	STANDARD CAB PLATFORM		
	320204080	1	BALLATOIO CABINA "LX"	"LX" CAB PLATFORM		
6	380141067	2	SPINA CS 30 x 125	PIN		
7	883130004	4	COPIGLIA 8 x 70 Z - 4.8	SPLIT PIN		
8	320104040	1	BALLATOIO TRALICCIO CABINA + BOTOLA	PLATFORM + MANHOLE COVER		
9	880133043	8	VITE TEPF M18 x 60 Z - 8.8	SCREW		
10	881837008	8	ROND. GROW M18 Z - C70	WASHER		
11	881224017	8	DADO ALTO M18 Z - CL.10	TALL NUT		
12	320602210	2	PARAPETTO 1534 x 1020	SAFETY RAIL		
13	883130002	4	COPIGLIA 6 x 60 - 4.8	SPLIT PIN		
14	325700001	4	SEMISTAFFA BLOCC. PARAPETTI	SAFETY RAIL LOCK BRACKET		
15	880133008	2	VITE TEPF M10 x 65 Z - 8.8	SCREW		
16	881323002	2	DADO AUTOBLOC. ALTO M10 Z - CL.8	SELF-LOCKING NUT		
17	881732004	2	RONDELLA M10 Z - 6.8	WASHER		
18	330108009-3	1	QUADRO EL. (Q.E.G.)	(Q.E.G.) ELECTRICAL BOX		
19	880133086	4	VITE TEIF M8 x 30 Z - 8.8	SCREW		
20	881732003	4	RONDELLA M8 Z - 6.8	WASHER		
21	881323001	4	DADO AUTOBLOC. M8 Z - CL.8	SELF-LOCKING NUT		
22	380343034	4	SPINA PS 70 x 180	PIN		
23	383401003	8	PIASTRA FERMO SPINA 40x10	PIN LOCK PLATE		
24	880133121	16	VITE TEIF M16 x 40 Z - 8.8	SCREW		
25	881732007	16	RONDELLA M16 Z - 6.8	WASHER		
26						
27*	320500050	1	PARAP. CHIUSURA BALL. CAB. (GRU SENZA CABINA)	SAFETY RAIL		
28*	325700001	8	STAFFA BLOCCAGGIO PARAPETTI	SAFETY RAIL LOCK BRACKET		
29*	880133008	4	VITE TEPF M10 x 65 Z - 8.8	SCREW		
30*	881323002	4	DADO AUTOBL. ALTO M10 Z	SELF-LOCKING NUT		
31*	881732004	4	RONDELLA M10 Z	WASHER		
* PARTICOLARI DA MONTARE SOLAMENTE NEL CASO IN CUI LA GRU VENGA FORNITA SENZA CABINA						
* PARTS TO BE ASSEMBLED ONLY ON CRANE SUPPLIED WITHOUT CAB						

**CABINA STANDARD  
STANDARD CAB**



PER INFORMAZIONI SULLA CABINA STANDARD, CONSULTARE UFFICIO TECNICO COMEDIL.

FOR INFORMATION ABOUT **STANDARD** CAB, CONSULT COMEDIL'S TECHNICAL DEPARTMENT.

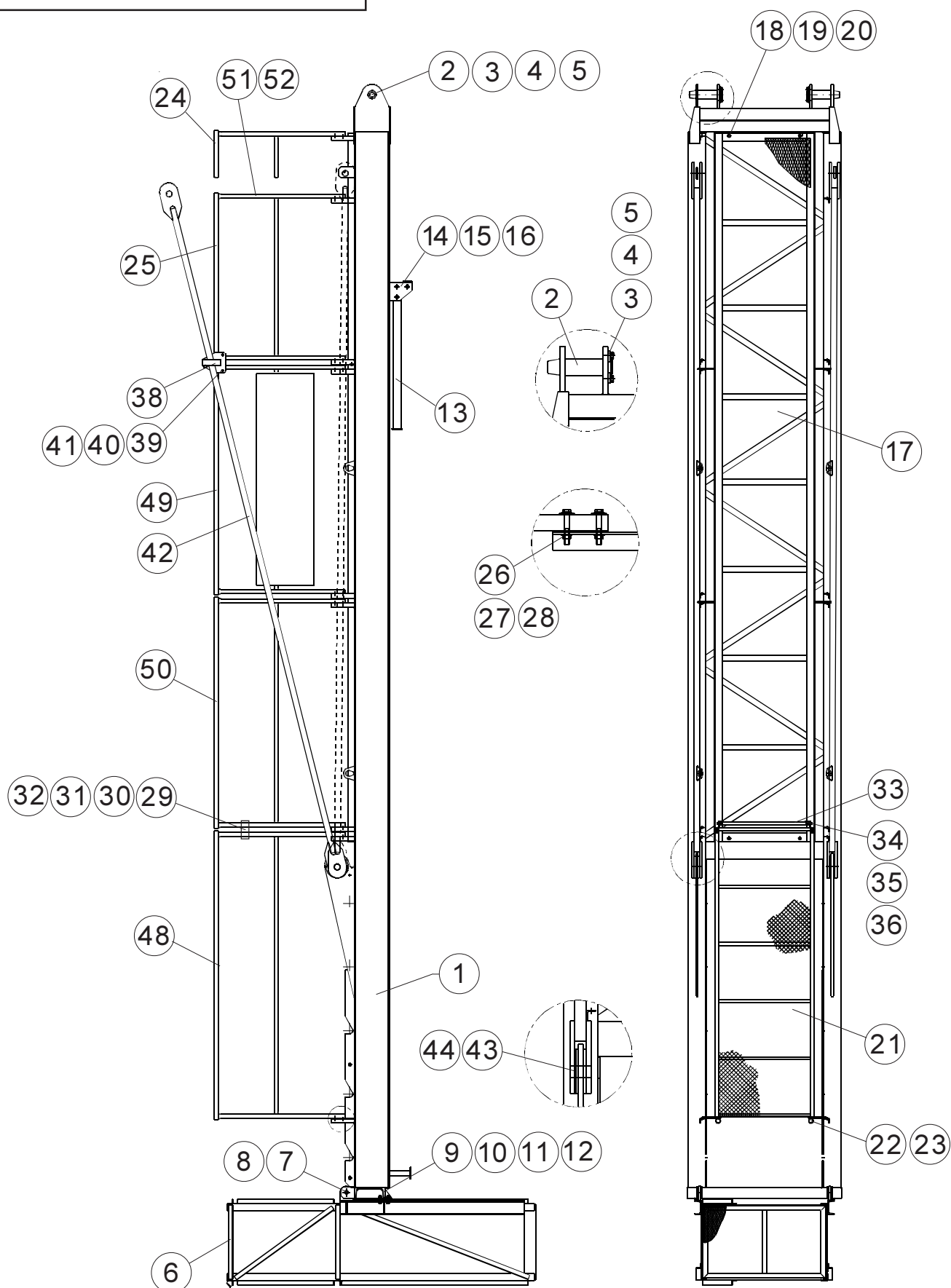
CABINA "LX"

"LX" CAB



PER INFORMAZIONI SULLA CABINA "LX", CONSULTARE UFFICIO TECNICO COMEDIL.  
FOR INFORMATION ABOUT "LX" CAB, CONSULT COMEDIL'S TECHNICAL  
DEPARTMENT.

**CONTROBRACCIO STD  
STD COUNTERJIB**





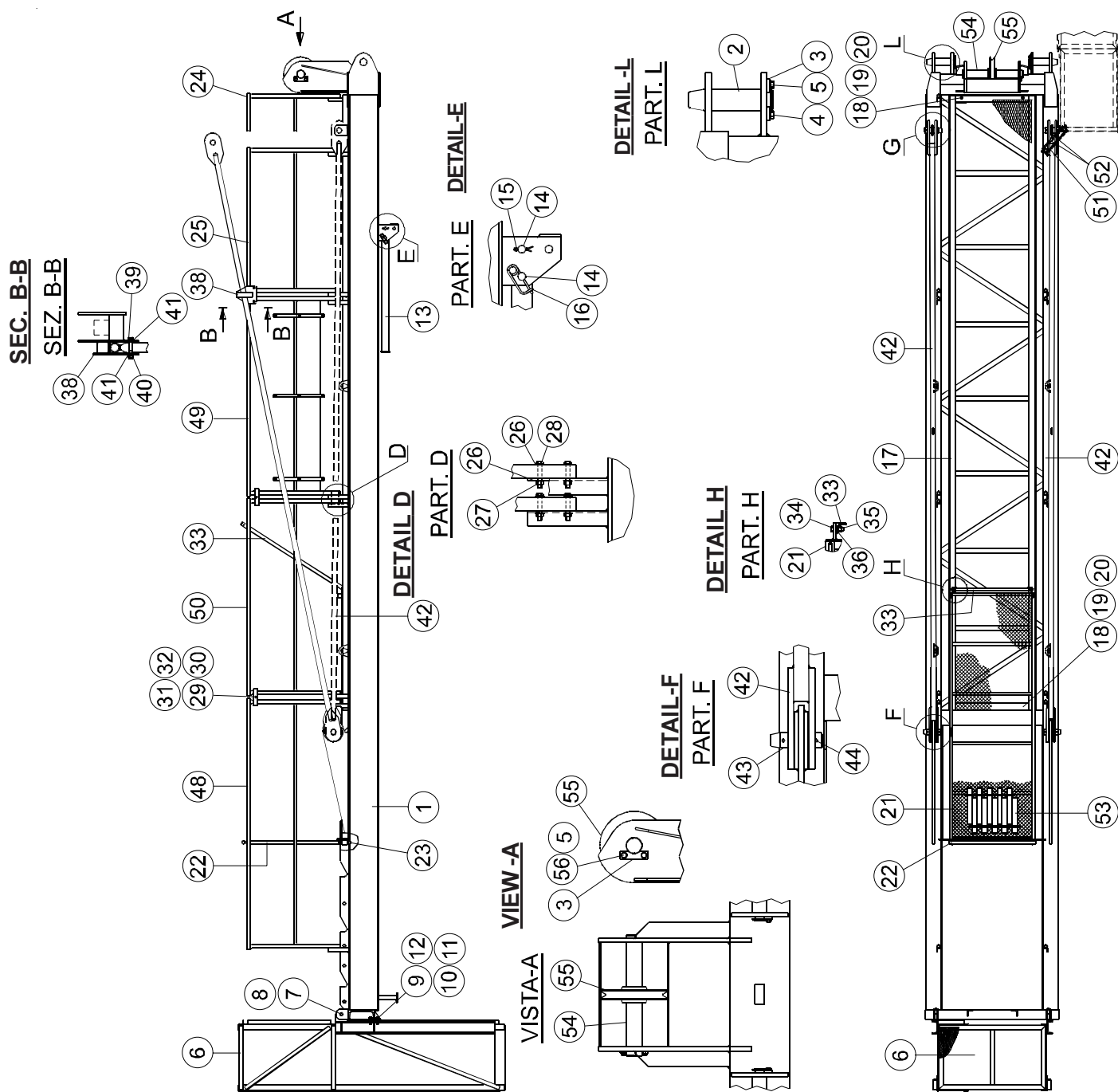
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>214316040</b>			<b>CONTROBRACCIO STD</b>	<b>COUNTERJIB STD</b>		
1	314316040	1	CONTROBRACCIO	COUNTERJIB		
2	380358001	2	SPINA PS 70 x 210	PIN		
3	383401003	2	FERMO SPINA 40x10	PIN LOCK PLATE		
4	880133175	4	VITE TE 16x35 -8.8	SCREW		
5	881732007	4	RONDELLA PIANA M16 -6.8	PLANE WASHER		
6	314316002	1	CESTO PORTA ZAVORRA CONTROBRACCIO	BALLAST BASKET		
7	380241032	2	SPINA T 30 x 55	PIN		
8	883130004	2	COPIGLIA 8 x 70 Z - 4.8	SPLIT PIN		
9	880133126	4	VITE TE M16 x 50 Z - 8.8	SCREW		
10	382406003	4	PIASTRINA A CUNEO	WEDGE PLATE		
11	881224015	4	DADO ALTO M16 Z - CL.10	TALL NUT		
12	881732007	4	RONDELLA PIANA M16 Z - 6.8	PLANE WASHER		
13	414316001	2	SUPPORTO CONTROBRACCIO	COUNTERJIB SUPPORT		
14	380141035	4	SPINA C 25 x 110	PIN		
15	883130002	10	COPIGLIA 6 x 60	SPLIT PIN		
16	883100002	2	COPIGLIA A MOLLA D6	SPRING SPLIT PIN		
17	320101410	1	BALLATOIO CONTROBRACCIO	PLATFORM		
18	880133102	10	VITE TEIF M12 x 35 - 8.8	SCREW		
19	881224013	10	DADO ALTO M12 - CL.10	TALL NUT		
20	881732005	10	RONDELLA PIANA M12 - 6.8	PLANE WASHER		
21	320201510	1	BALLATOIO SCORREVOLE CONTROBRACCIO	SLIDING PLATFORM		
22	320602170	1	PARAPETTO 1084 x 860	SAFETY RAIL		
23	883130002	2	COPIGLIA 6 x 60	SPLIT PIN		
24	320602160	1	PARAPETTO 2000 x 934	SAFETY RAIL		
25	320602150	1	PARAPETTO 1460 x 934	SAFETY RAIL		
26	881732004	64	RONDELLA PIANA M10 - 6.8	PLANE WASHER		
27	881023002	32	DADO MEDIO M10 - 8	MEAN NUT		
28	880133212	32	VITE TEIF M10 x 60 Z - 8.8	SCREW		
29	325700001	12	STAFFA BLOCCAGGIO PARAPETTI	SAFETY RAIL LOCK BRACKET		
30	880133008	6	VITE TEPF M10 x 65 Z - 8.8	SCREW		
31	881323002	6	DADO AUTOBLOCCANTE ALTO M10 - 8	SELF-LOCKING NUT		
32	881732004	6	RONDELLA M10 Z	WASHER		
33	329000010	1	MANIGLIA PER BALLATOIO SCORREVOLE	HANDLE		
34	880133102	2	VITE TEIF M12 x 35 - 8.8	SCREW		
35	881323003	2	DADO AUTOBLOCCANTE ALTO M12 - CL.10	SELF-LOCKING NUT		
36	881732005	2	RONDELLA PIANA M12 - 6.8	PLANE WASHER		
38	326400072	2	SUPPORTO TIRANTI CONTROBRACCIO	TIE-BAR SUPPORT		
39	880133008	4	VITE TEPF M10 x 65 Z - 8.8	SCREW		
40	881323002	4	DADO AUTOBLOCCANTE M10 Z - 8	SELF-LOCKING NUT		



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
214316040			CONTROBRACCIO STD	COUNTERJIB STD		
41	881732004	4	RONDELLA M10 Z - 6.8	WASHER		
42	315116050	2	TIRANTE CONTROBRACCIO "E"	"E" TIE-BAR		
43	380158002	4	SPINA CS 50 x 110	PIN		
44	883130005	8	COPIGLIA 8 x 100 Z - 4.8	SPLIT PIN		
45	880133102	2	VITE TEIF M12 x 35 Z - 8.8	SCREW		
46	881732005	2	RONDELLA PIANA M12 Z - 6.8	PLANE WASHER		
47	881323003	2	DADO ALTO M12 Z - CL.8	TALL NUT		
48	320602470	2	PARAPETTO 2500x934	SAFETY RAIL		
49	320602580	2	PARAPETTO 2000x934 (LOGO)	SAFETY RAIL (LOGO)		
50	320602590	2	PARAPETTO 1970x934	SAFETY RAIL		
51	850902001	1	CATENA G 22 5,5x35x20	CHAIN		
52	859900015	2	MOSCHETTONE MM80	SPRING CATCH		



**CONTROBRACCIO PULEGGIA SCORREVOLE**  
**SMOOTH PULLEY COUNTERJIB**

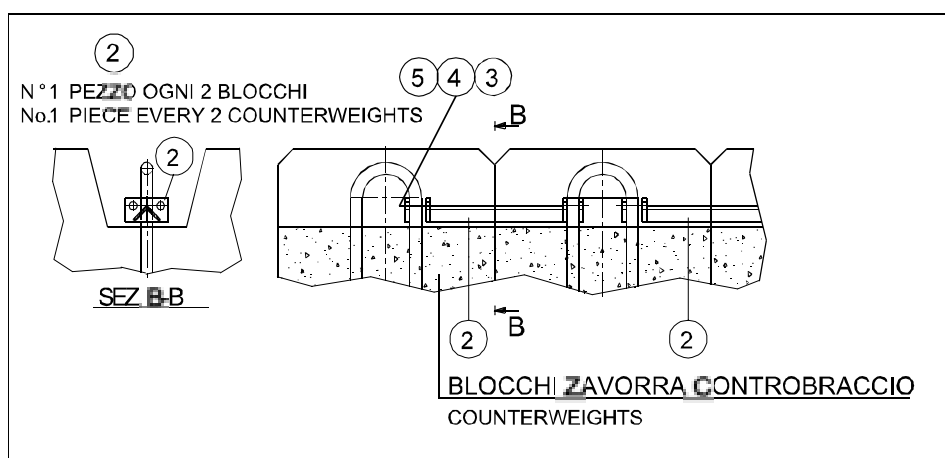
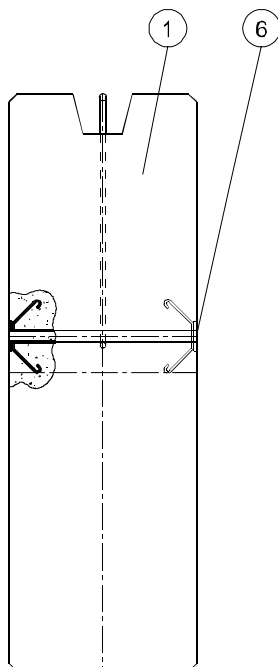


POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>214316041</b>			<b>CONTROBRACCIO PULEGGIA SCORREVOLE</b>	<b>SMOOTH PULLEY COUNTERJIB</b>		
1	314316041	1	CONTROBRACCIO	COUNTERJIB		
2	380358001	2	SPINA PS 70 x 210	PIN		
3	383401003	3	FERMO SPINA 40x10	PIN LOCK PLATE		
4	880133175	4	VITE TE 16x35 -8.8	SCREW		
5	881732007	6	RONDELLA PIANA M16 -6.8	PLANE WASHER		
6	314316002	1	CESTO PORTA ZAVORRA CONTROBRACCIO	BALLAST BASKET		
7	380241032	2	SPINA T 30 x 55	PIN		
8	883130004	2	COPIGLIA 8 x 70 Z - 4.8	SPLIT PIN		
9	880133126	4	VITE TE M16 x 50 Z - 8.8	SCREW		
10	382406003	4	PIASTRINA A CUNEO	WEDGE PLATE		
11	881224015	4	DADO ALTO M16 Z - CL.10	TALL NUT		
12	881732007	4	RONDELLA PIANA M16 Z - 6.8	PLANE WASHER		
13	414316001	2	SUPPORTO CONTROBRACCIO	COUNTERJIB SUPPORT		
14	380141035	4	SPINA C 25 x 110	PIN		
15	883130002	10	COPIGLIA 6 x 60	SPLIT PIN		
16	883100002	2	COPIGLIA A MOLLA D6	SPRING SPLIT PIN		
17	320101410	1	BALLATOIO CONTROBRACCIO	PLATFORM		
18	880133102	10	VITE TEIF M12 x 35 - 8.8	SCREW		
19	881224013	10	DADO ALTO M12 - CL.10	TALL NUT		
20	881732005	10	RONDELLA PIANA M12 - 6.8	PLANE WASHER		
21	320201510	1	BALLATOIO SCORREVOLE CONTROBRACCIO	SLIDING PLATFORM		
22	320602170	1	PARAPETTO 1084 x 860	SAFETY RAIL		
23	883130002	2	COPIGLIA 6 x 60	SPLIT PIN		
24	320602160	1	PARAPETTO 2000 x 934	SAFETY RAIL		
25	320602150	1	PARAPETTO 1460 x 934	SAFETY RAIL		
26	881732004	64	RONDELLA PIANA M10 - 6.8	PLANE WASHER		
27	881023002	32	DADO MEDIO M10 - 8	MEAN NUT		
28	880133212	32	VITE TEIF M10 x 60 Z - 8.8	SCREW		
29	325700001	8	SEMISTAFFA BLOCCAGGIO PARAPETTI	SAFETY RAIL LOCK BRACKET		
30	880133008	8	VITE TEPF M10 x 65 Z - 8.8	SCREW		
31	881323002	8	DADO AUTOBLOCCANTE ALTO M10 - 8	SELF-LOCKING NUT		
32	881732004	8	RONDELLA M10 Z	WASHER		
33	329000010	1	MANIGLIA PER BALLATOIO SCORREVOLE	HANDLE		
34	880133102	2	VITE TEIF M12 x 35 - 8.8	SCREW		
35	881323003	2	DADO AUTOBLOCCANTE ALTO M12 - CL.10	SELF-LOCKING NUT		
36	881732005	2	RONDELLA PIANA M12 - 6.8	PLANE WASHER		
38	326400072	2	SUPPORTO TIRANTI CONTROBRACCIO	TIE-BAR SUPPORT		
39	880133008	4	VITE TEPF M10 x 65 Z - 8.8	SCREW		
40	881323002	4	DADO AUTOBLOCCANTE M10 Z -8	SELF-LOCKING NUT		



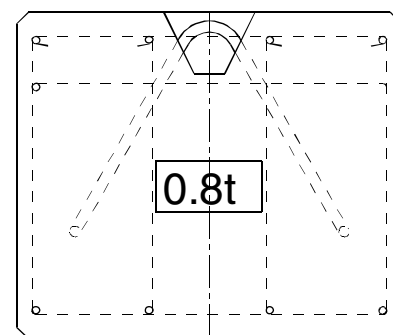
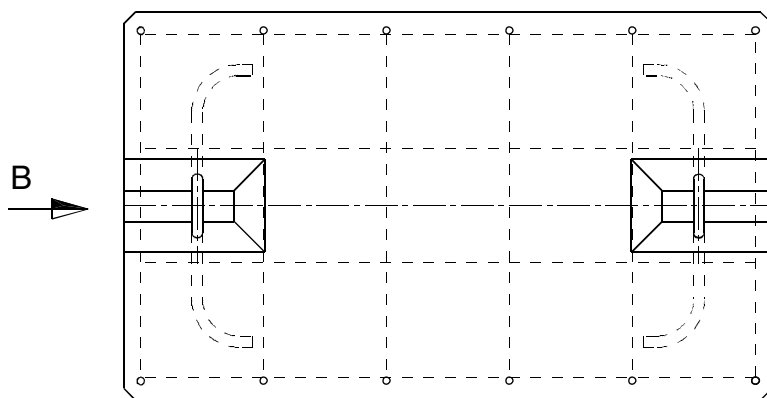
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>214316041</b>			<b>CONTROBRACCIO PULEGGIA SCORREVOLE</b>	<b>SMOOTH PULLEY COUNTERJIB</b>		
41	881732004	4	RONDELLA M10 Z - 6.8	WASHER		
42	315116050	2	TIRANTE CONTROBRACCIO "E"	"E" TIE-BAR		
43	380158002	4	SPINA CS 50 x 110	PIN		
44	883130005	8	COPIGLIA 8 x 100 Z - 4.8	SPLIT PIN		
45	880133102	2	VITE TEIF M12 x 35 Z - 8.8	SCREW		
46	881732005	2	RONDELLA PIANA M12 Z - 6.8	PLANE WASHER		
47	881323003	2	DADO ALTO M12 Z - CL.8	TALL NUT		
48	320602470	2	PARAPETTO 2500x934	SAFETY RAIL		
49	320602580	2	PARAPETTO 2000x934 (LOGO)	SAFETY RAIL (LOGO)		
50	320602590	2	PARAPETTO 1970x934	SAFETY RAIL		
51	850902001	1	CATENA G 22 5,5x35x20	CHAIN		
52	859900015	2	MOSCHETTONE MM80	SPRING CATCH		
53	380817009	10	SPINA S 50x360	PIN		
54	380034217	1	SPINA PS 80x580	PIN		
55	350238001	1	PULEGGIA BR 340-80-48 R6	PULLEY		
56	880133119	2	VITE TE 16x30 cl.8.8	SCREW		

**CONTRAPPESO "A"**  
**COUNTERWEIGHT "A"**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>390107011</b>			<b>CONTRAPPESO "A"</b>	<b>COUNTERWEIGHT</b>		
1	390107011	4	CONTRAPPESO "A"	"A" COUNTERWEIGHT		
2	391001050	1 *	STAFFA BLOCC. CONTRAPPESO "A"	LOCK BRACKET		
3	880133130	4 *	VITE TEIF M16 x 110 Z - 8.8	SCREW		
4	881732007	4 *	RONDELLA M16 Z - 6.8	WASHER		
5	881224015	4 *	DADO ALTO M16 Z - CL.10	TALL NUT		
6	380817009	8	SPINA S 50 x 360	PIN		
*QUANTITA' VALIDE PER NR. 1 STAFFA / QUANTITY REQUIRED FOR NO. 1 BRACKET						

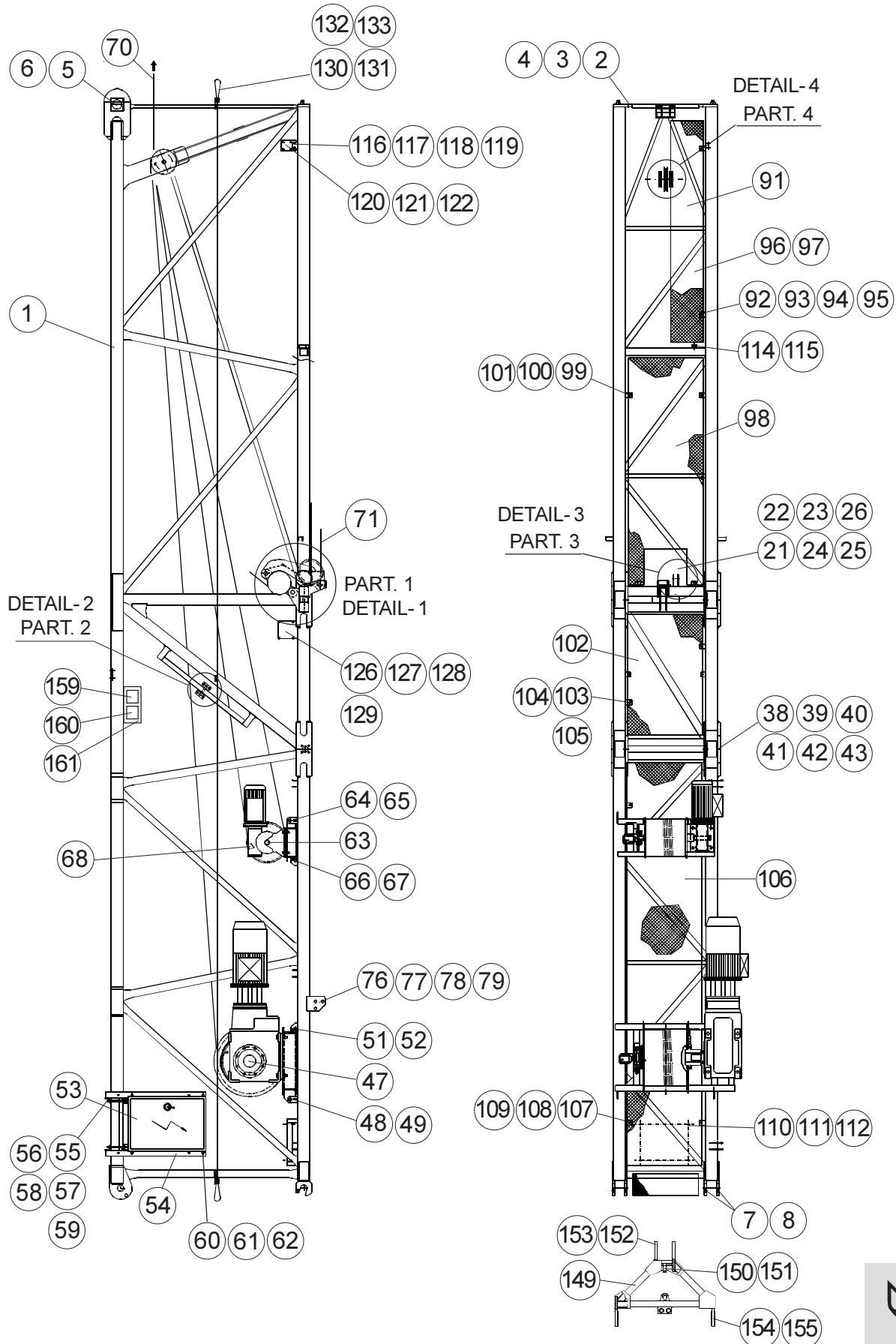
**CONTRAPPESO "B"**  
**COUNTERWEIGHT "B"**



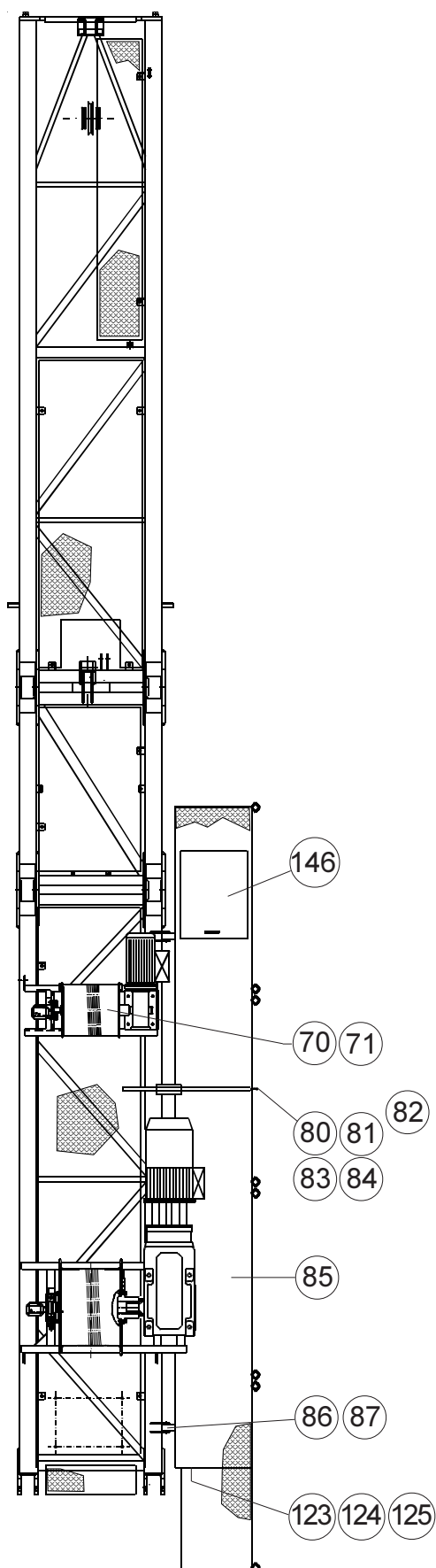
**VISTA B**  
**VIEW B**

POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	<b>390107012</b>		<b>CONTRAPPESO "B"</b>	<b>COUNTERWEIGHT</b>		
1	390107012	5	CONTRAPPESO "B"	"B" COUNTERWEIGHT		

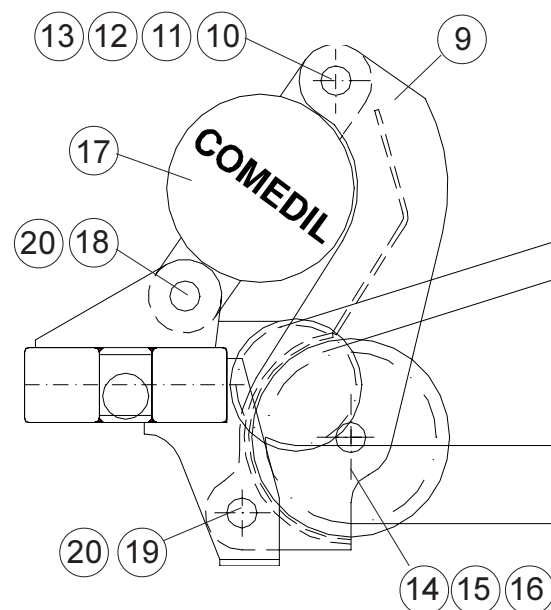
**TRONCO BRACCIO-22 STD / F11**  
**JIB SECTION-22 STD / F11**



**TRONCO BRACCIO-22 STD / F11**  
**JIB SECTION-22 STD / F11**

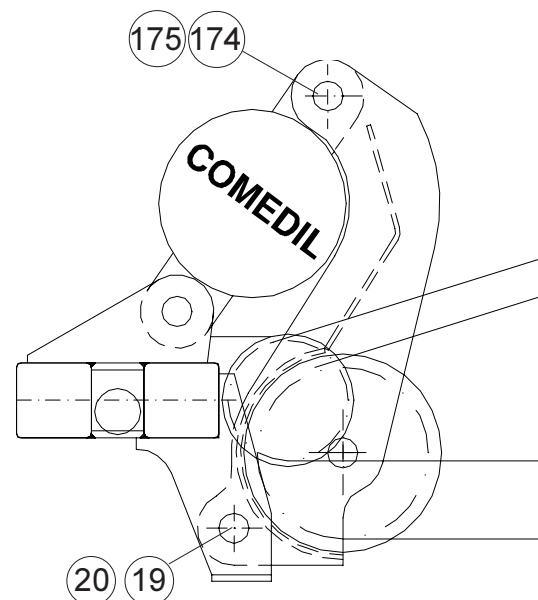


DETAIL- 1  
 PART. 1



GRU CON "ICS" (Integrated Control System)  
 CRANE WITH "ICS" (Integrated Control System)

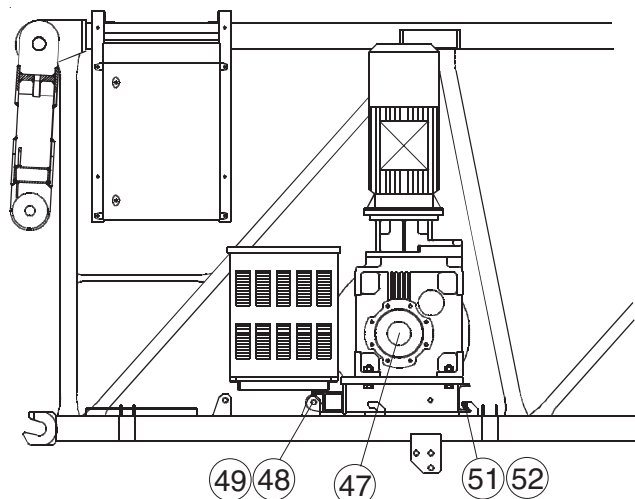
PART. 1  
 DETAIL- 1



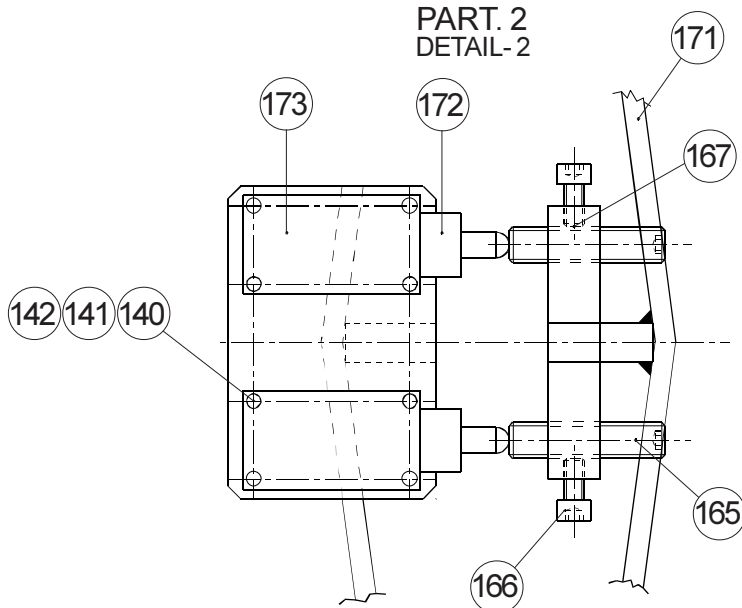
GRU SENZA "ICS" (Integrated Control System)  
 CRANE WITHOUT "ICS" (Integrated Control System)

**TRONCO BRACCIO-22 STD / F11**  
**JIB SECTION-22 STD / F11**

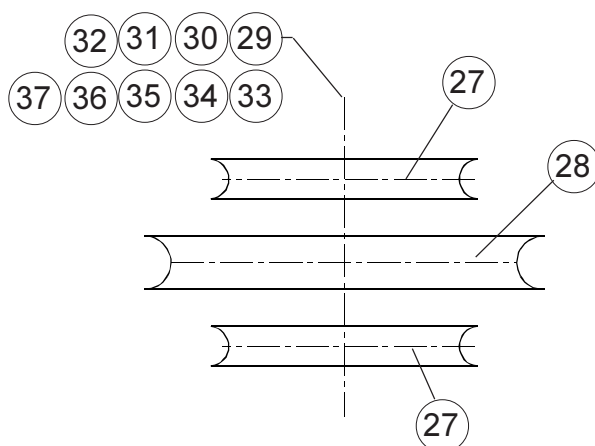
**TRONCO BRACCIO-22 CON ARGANO SOLLEVAMENTO 30 AFC 40 F11**  
**JIB SECTION-22 WITH 30 AFC 40 F11 HOIST WINCH**



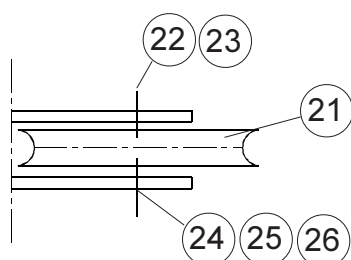
**PART. 2**  
**DETAIL-2**



**DETAIL-4**  
**PART. 4**



**DETAIL-3**  
**PART. 3**







POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	214516220 214516002		TRONCO BRACCIO-22 STD TRONCO BRACCIO-22 F11	JIB SECTION-22 STD JIB SECTION-22 F11		
1	314516220-1	1	TRONCO BRACCIO-22	JIB SECTION-22		
2	880133143	2	VITE TEIF M20x80 -8.8	SCREW		
3	881732009	2	RONDELLA M20 -6.8	WASHER		
4	881323006	2	DADO AUTOBLOC. M20 -8	SELF-LOCKING NUT		
5	380158001	1	SPINA CS 100x305	PIN		
6	883130008	2	COPIGLIA 13x120	SPLIT PIN		
7	384233005	4	VITE TEIF SPEC. M16x100 -8.8	SCREW		
8	881024003	4	DADO MEDIO M16	MEAN NUT		
9	226404001	1	SUPPORTO LIMITATORE DI CARICO	RATED CAPACITY LIMITER SUPPORT		
10	832609001	1	CELLA DI CARICO	LOAD CELL		
11	383400002	1	FERMO SPINA 25x6	PIN LOCK PLATE		
12	881732003	2	RONDELLA M8 -6.8	WASHER		
13	880133084	2	VITE TEIF M8x20 -8.8	SCREW		
14	346200045	3	CARTER	COVER		
15	881732003	6	RONDELLA M8 -6.8	WASHER		
16	880133082	6	VITE TEIF M8x16	SCREW		
17	217001011	1	ANELLO DINAMOMETRICO	LOAD LIMITER		
18	380141051	1	SPINA C 40x90	PIN		
19	380141047	1	SPINA C 40x130	PIN		
20	883130004	4	COPIGLIA 8x70	SPLIT PIN		
21	350225002	1	PULEGGIA 176 34 26 R 4.2	PULLEY		
22	382517007	2	DISTANZIALE Ø40x30,3 SP. 2,5	SPACER		
23	380341014	1	SPINA PS 30x66	PIN		
24	880133092	2	VITE TEIF M10x16 -8.8	SCREW		
25	881732004	2	RONDELLA M20 -6.8	WASHER		
26	383401001	1	FERMO SPINA 25x6	PIN LOCK PLATE		
27	350225001	2	PULEGGIA 176 34 26 R 4,2	PULLEY		
28	350224001	1	PULEGGIA 264 49 35 R 6,5	PULLEY		
29	382606110	2	DISTANZIALE Ø50x40,3 SP. 4	SPACER		
30	382517007	1	DISTANZIALE Ø40x30,3 SP. 2,5	SPACER		
31	381743020	1	PERNO FILETT. M24x40x83	THREADED PIN		
32	880133092	2	VITE TEIF M10x16	SCREW		
33	881732004	2	RONDELLA M10	WASHER		
34	383401001	1	FERMO SPINA 25x6	PIN LOCK PLATE		
35	881732010	1	RONDELLA M24	WASHER		
36	881124005	2	DADO BASSO M24	NUT		
37	883130001	1	COPIGLIA 4x40 1336 Z	SPLIT PIN		
38	380343035	4	SPINA PS Ø70x270	PIN		
39	383401003	8	FERMO SPINA 40x10	PIN LOCK PLATE		
40	881732005	8	RONDELLA M12	WASHER		
41	880133100	8	VITE TEIF M12x25	SCREW		
42	880133106	8	VITE TEIF M12x60	SCREW		
43	881224013	8	DADO ALTO M12	TALL NUT		
44						
45						
46						
47	240471010	1	ARGANO SOLL. 30AFC40 F12	HOIST WINCH		
	240471030	1	ARGANO SOLL. 30AFC40 F11	HOIST WINCH		
48	380141121	2	SPINA C 25x50 (30AFC40 F12)	PIN		
	380141102	2	SPINA C 25x60 (30AFC40 F11)	PIN		
49	883130002	4	COPIGLIA 6x60 1336 Z	SPLIT PIN		
50						
51	880133123	2	VITE TEIF M16x65	SCREW		

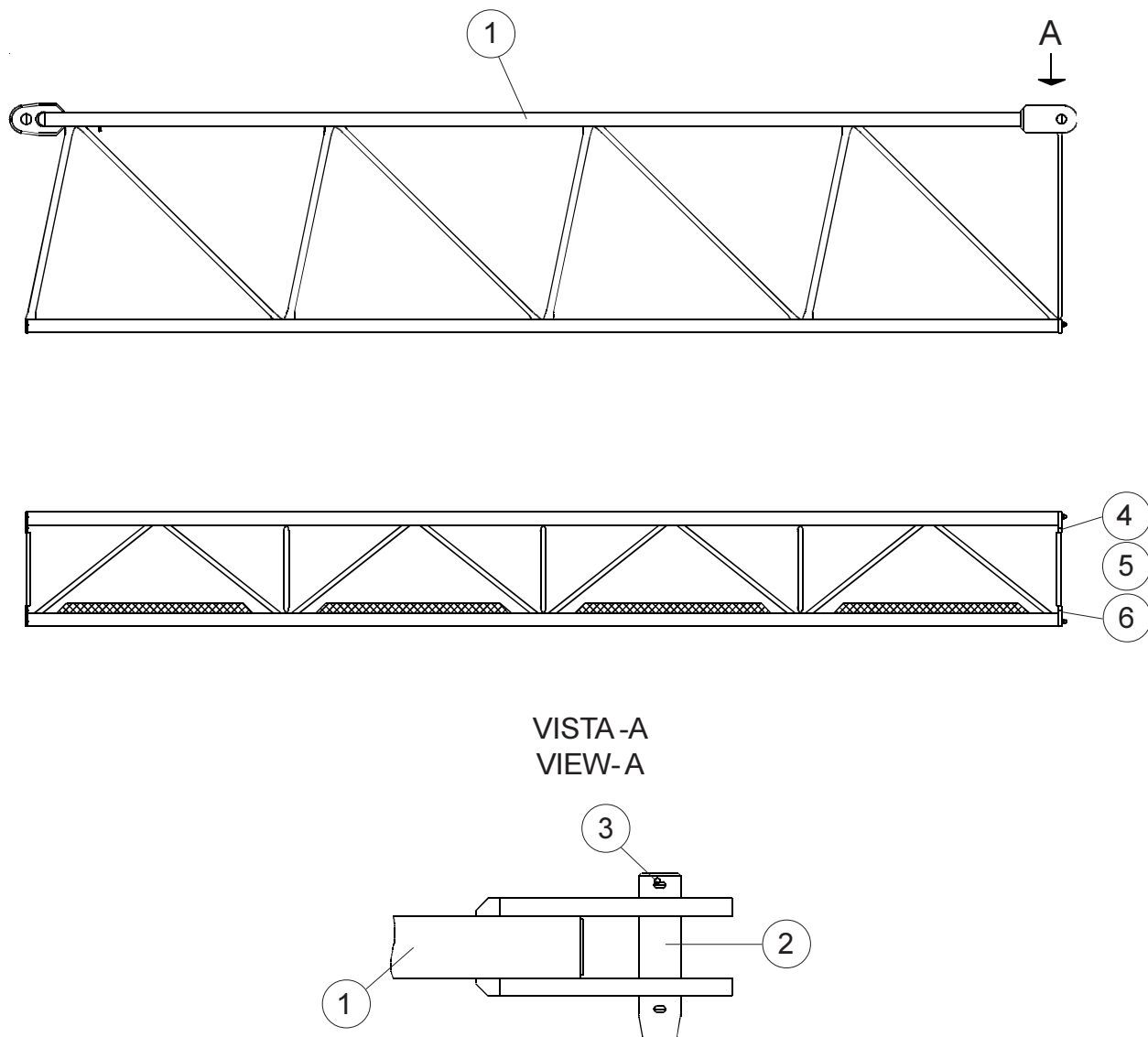
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	<b>214516220</b> <b>214516002</b>		<b>TRONCO BRACCIO-22 STD</b> <b>TRONCO BRACCIO-22 F 11</b>	<b>JIB SECTION-22 STD</b> <b>JIB SECTION-22 F 11</b>		
52	881023005	2	DADO MEDIO M16	MEAN NUT		
53	330704001-1	1	QUA.EL (QES) B 30AF E1 UU	(QES )ELECTRICAL BOX		
54	326500016-1	1	TELAIO PER Q.E.S.	Q.E.S FRAME		
55	880133121	2	VITE TEIF M16x40	SCREW		
56	881732007	2	RONDELLA M16	WASHER		
57	881023005	10	DADO MEDIO M16	MEAN NUT		
58	881124002	8	DADO BASSO M16	FLAT NUT		
59	880900044	4	BARRA FIL. M16 Z	THREADED BAR		
60	880133086	4	VITE TEIF M8x30	SCREW		
61	881732003	4	RONDELLA M8	WASHER		
62	881323001	4	DADO AUTOBLOC. M8	SELF LOCKING NUT		
63	242466030	1	ARGANO CARRELLO DVF 3 5	TROLLEY WINCH		
64	380141122	2	SPINA C 20x45	PIN		
65	883130002	4	COPIGLIA 6x60	SPLIT PIN		
66	880133123	2	VITE TEIF M16x65	SCREW		
67	881023005	2	DADO MEDIO M16	MEAN NUT		
68	883346007	4	MORSETTO 5/16 F7-8	ROPE CLAMP		
69						
70	860107015		FUNE CARRELLO Ø7 DSC-8 C.R.	TROLLEY ROPE		
71	860107021		FUNECARRELLO Ø7 DSC-8 C.R.	TROLLEY ROPE		
72	225001030	2	DISPOSITIVO BLOCCAGGIO FUNE CARRELLO	TROLLEY ROPE LOCK DEVICE		
73	880133103	4	VITE TEIF M12x40	SCREW		
74	881732005	4	RONDELLA M12	WASHER		
75	881224013	4	DADO ALTO M12	TALL NUT		
76	326400032	2	SUPPORTO TRONCO BRACCIO-20	JIB SECTION-20 SUPPORT		
77	380141120	4	SPINA C 25x165	PIN		
78	883200003	2	COPIGLIA R D 6 Z	SPLIT PIN		
79	883130002	6	COPIGLIA 6x60	SPLIT PIN		
80	326400033	1	SUPPORTO BALLATOIO	PLATFORM SUPPORT		
81	883600003	1	TENDITORE 0-0 M12 Z	EQUALIZER		
82	880133126	5	VITE TEIF M16x50	SCREW		
83	881323005	5	DADO AUTOBLOCCANTE M16	SELF-LOCKING NUT		
84	881732007	2	RONDELLA M16	WASHER		
85	320201190	1	BALLATOIO 600x6050	PLATFORM		
86	380241012	3	SPINA T 20x90	PIN		
87	883130002	3	COPIGLIA 6x60 1336 Z	SPLIT PIN		
88	880133143	2	VITE TE 8.8 5739 20X80 Z	SCREW		
89	881732009	2	RONDELLA M20	WASHER		
90	881323006	2	DADO AUTOBLOC. M20	SELF-LOCKING NUT		
91	320101510	1	BALLATOIO 350x2380	PLATFORM		
92	880900045	1	BARRA FIL. M12	THREADED BAR		



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	<b>214516220</b> <b>214516002</b>		<b>TRONCO BRACCIO-22 STD</b> <b>TRONCO BRACCIO-22 F11</b>	<b>JIB SECTION-22 STD</b> <b>JIB SECTION-22 F11</b>		
93	880133103	2	VITE TEIF M12x40	SCREW		
94	881732005	6	RONDELLA M12	WASHER		
95	881323003	4	DADO AUTOBLOC. M12	SELF-LOCKING NUT		
96	318100050	1	CHIAVE PER TENDITORE FUNE CARRELLO	WRENCH FOR EQUALIZER		
97	883130001	1	COPIGLIA 4x40	SPLIT PIN		
98	320101500	1	BALLATOIO 800x2430	PLATFORM		
99	880133103	4	VITE TEIF M12x40	SCREW		
100	881732005	8	RONDELLA M12	WASHER		
101	881323003	4	DADO AUTOBLOC. M12	SELF-LOCKING NUT		
102	320101490	1	BALLATOIO 800x1300	PLATFORM		
103	880133103	2	VITE TEIF M12x40	SCREW		
104	881732005	4	RONDELLA M12	WASHER		
105	881323003	2	DADO AUTOBLOC. M12	SELF-LOCKING NUT		
106	320101480-1	1	BALLATOIO 800x4320	PLATFORM		
107	880133103	4	VITE TEIF M12x40	SCREW		
108	881732005	8	RONDELLA M12	WASHER		
109	881323003	4	DADO AUTOBLOC. M12	SELF-LOCKING NUT		
110	880133103	4	VITE TEIF M12x40	SCREW		
111	881732005	4	RONDELLA M12	WASHER		
112	881323003	4	DADO AUTOBLOC. M12	SELF-LOCKING NUT		
113	881023006	2	DADO MED CL8 M20 Z	NUT		
114	380841010	1	SPINA S 30x185	PIN		
115	883200003	1	COPIGLIA R D 6 Z	SPLIT PIN		
116	326400031	1	SUPP.DISP.POS.HOME CARRELLO CTT161-141	SUPPORT		
117	880133103	2	VITE TE 8.8 5739 12X40 Z	SCREW		
118	881732005	2	ROND PIANA 6.8 6592 M12 Z	WASHER		
119	881224013	2	DADO ALT CL10 5587 M12 Z	TALL NUT		
120	880130004	4	VITE TC 4.8 7687 5X50 TESTA A CROCE	SCREW		
121	881732001	4	ROND PIANA 6.8 6592 M5 Z	PLANE WASHER		
122	881023001	4	DADO MED CL8 5588 M5 Z	MEAN NUT		
123	880133139	2	VITE TE 8.8 5739 20X50 Z	SCREW		
124	881023006	2	DADO CL8 5588 M20 Z	NUT		
125	881732009	2	RONDELLE 6.8 M20	WASHER		
126	334401002	1	SI.VIS B IMPSEN003	VISUALIZATION SYSTEM		
127	880133170	4	VITE TE 8.8 5739 5X25 Z	SCREW		
128	881732001	4	ROND PIANA 6.8 6592 M5 Z	PLANE WASHER		
129	881023001	4	DADO MED CL8 5588 M5 Z	MEAN NUT		
130	860406001	2	FUNE V R23,3KN D.6 Z	ROPE		
131	859900034	2	MOSCHETTONE mm100	SPRING CATCH		
132	883600002	2	TENDITORE 0-0 M10 Z	EQUALIZER		

POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	214516220 214516002		TRONCO BRACCIO-22 STD TRONCO BRACCIO-22 F11	JIB SECTION-22 STD JIB SECTION-22 F11		
133	883346002	8	MORSETTO 1/4 F. 6 Z	ROPE CLAMP		
134	831499014	1	RESISTOR FV OHM140 19kW INVERTER	RESISTOR		
135						
136						
137						
138						
139						
140	880130004	16	VITE TC 4.8 7687 5X50 TESTA A CROCE	SCREW		
141	881023001	16	DADO MEDIO CL8 M5 Z	MEAN NUT		
142	881732001	16	RONDELLA PIANA 6.8 6592 M5 Z	PLANE WASHER		
143	880133080	4	VITE TE 8.8 6X20 Z	SCREW		
144	881023011	4	DADO MEDIO CL8 M6 Z	MEAN NUT		
145	882201008	4	RONDELLA GREMB.M6 D.18	WASHER		
146	323000020	1	BOTOLA 475x680 BALL. T.B.	MANHOLE COVER		
147						
148						
149	315116020-1	1	TIRANTE "B" C.B.	TIE-BAR "B"		
150	380841012	1	SPINA S 30X205 C40B	PIN		
151	883200003	1	CHIAVISTELLO R D6 Z	SPRING SPLIT PIN		
152	380143040	1	SPINA CS 65X280	PIN		
153	883130007	2	COPIGLIA 4.8 13X110 Z	SPLIT PIN		
154	380143041	2	SPINA CS 50X110 38NCM4	PIN		
155	883130005	4	COPIGLIA 4.8 1336 8X100 Z	SPLIT PIN		
156						
157						
158	852100002	1	CAPOCORDA C/C 11-13 1/2"	SOCKET		
159	850100037	1	TAB.150X200 "PERICOLO CADUTA"	"FALLING HAZARD" PLATE		
160	850100038	1	TAB.150X200 "OBBLIGO CINTURA"	"ATTACH SAFETY BELT" PLATE		
161	892600001	1	MOUSSE ADESIVA 20X10	ADHESIVE PROTECTION		
162	883346001	1	MORSETTO 1/2 F12 Z	ROPE CLAMP		
163	225100080	2	GOLFARE SOLL.BRACCI CTT	EYEBOLT		
164	883346007	1	MORSETTO 5/16 F7-8 Z	ROPE CLAMP		
165	880435005	4	VITE ST M14x60 -12.9	SCREW		
166	880233009	4	VITE TC M8x16 Z -8.8	SCREW		
167	892000001	4	PIOMBINI	LEAD SEALS		
171	317116010	1	LIMITATORE DI MOMENTO	LOAD MOMENT LIMITER		
172	833001001	3	TESTA FINECORSO	LIMIT SWITCH HEAD		
173	832101001	3	CORPO FINECORSO	LIMIT SWITCH BODY		
174	380141046	1	SPINA C 40x100	PIN		
175	883130004	2	COPIGLIA 8x70	SPLIT PIN		

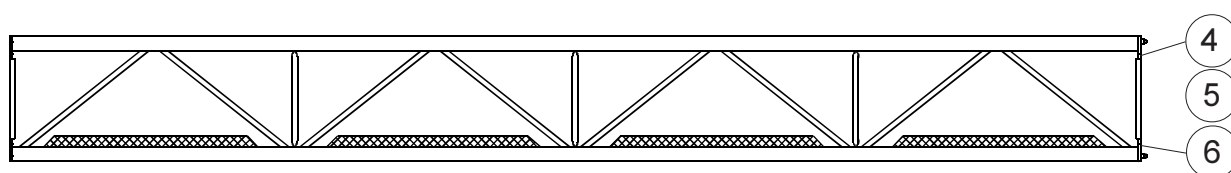
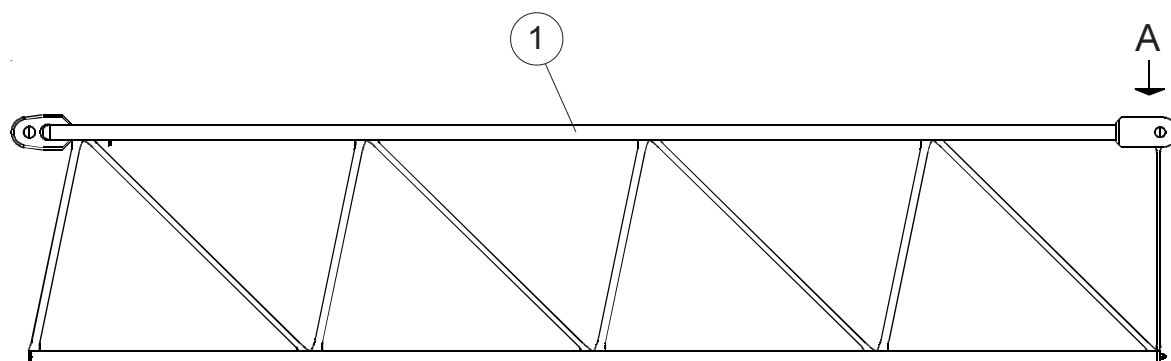
**TRONCO BRACCIO-23**  
**JIB SECTION-23**



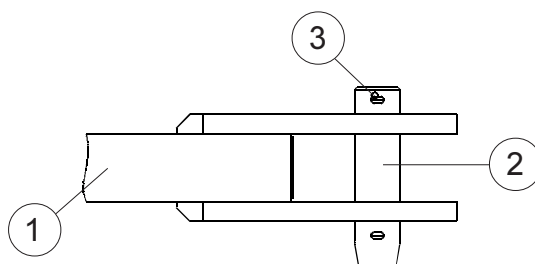
VISTA-A  
VIEW-A

POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
314616230			TRONCO BRACCIO-23	JIB SECTION-23		
1	314616230	1	TRONCO BRACCIO-23	JIB SECTION-23		
2	380141108	1	SPINA CS 90×245	PIN		
3	883130008	2	COPIGLIA 13×120	SPLIT PIN		
4	880133143	2	VITE TEIF M20×80	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20	SELF-LOCKING NUT		
6	881732009	2	RONDELLA M20	WASHER		

**TRONCO BRACCIO-24**  
**JIB SECTION-24**

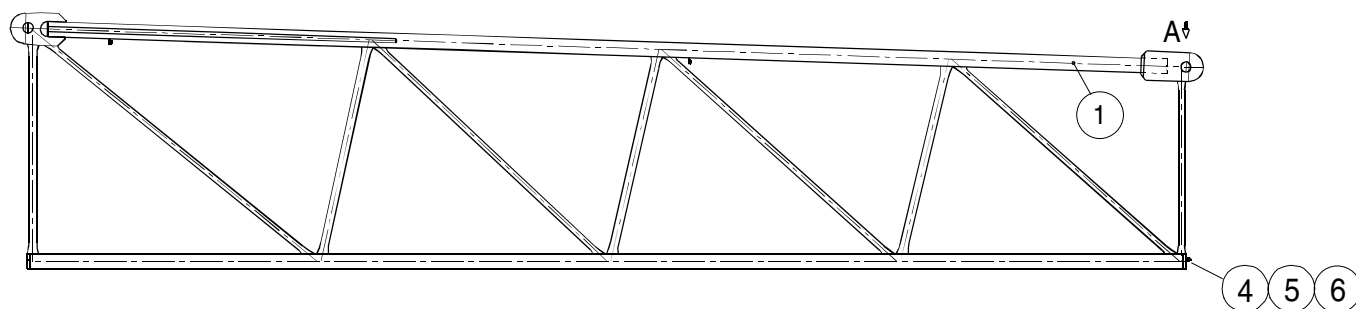


VISTA-A  
VIEW-A

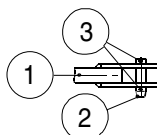


POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616240</b> <b>TRONCO BRACCIO-24</b> <b>JIB SECTION-24</b>						
1	314616240	1	TRONCO BRACCIO-24	JIB SECTION-24		
2	380141109	1	SPINA CS85x230	PIN		
3	883130007	2	COPIGLIA 13x110	SPLIT PIN		
4	880133143	2	VITE TEIF M20x80	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20	SELF-LOCKING NUT		
6	881732009	2	RONDELLA M20	WASHER		

**TRONCO BRACCIO-25**  
**JIB SECTION-25**

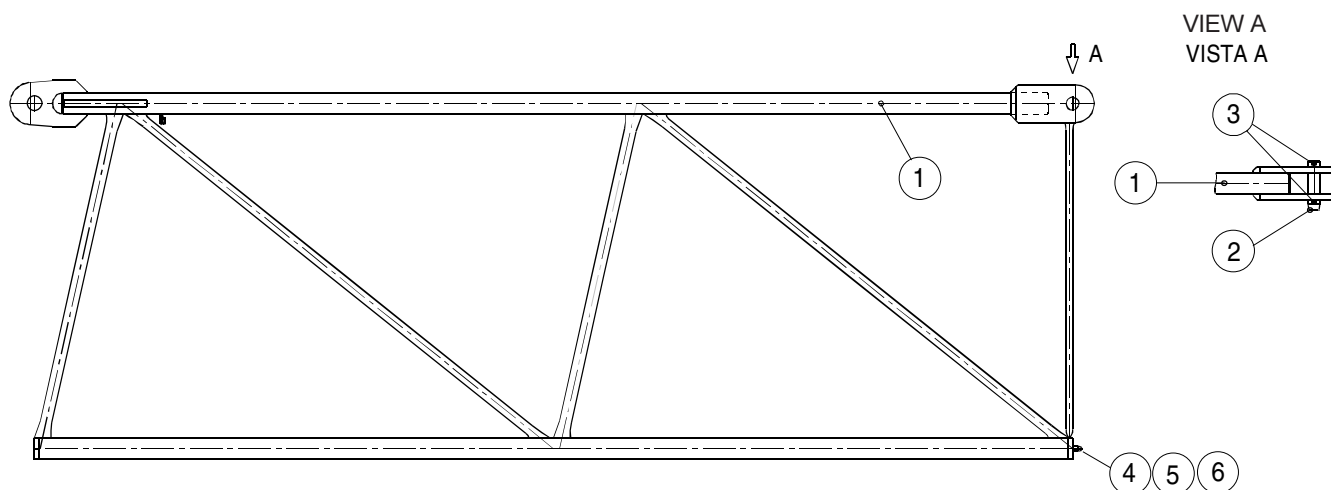


VISTA A - VIEW A



POS.	CODICE	Q. TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616250</b>			<b>TRONCO BRACCIO-25</b>	<b>JIB SECTION-25</b>		
1	314616250	1	TRONCO BRACCIO-25	JIB SECTION-25		
2	380141110	1	SPINA CS 70x185	PIN		
3	883130007	2	COPIGLIA 13 x 110 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

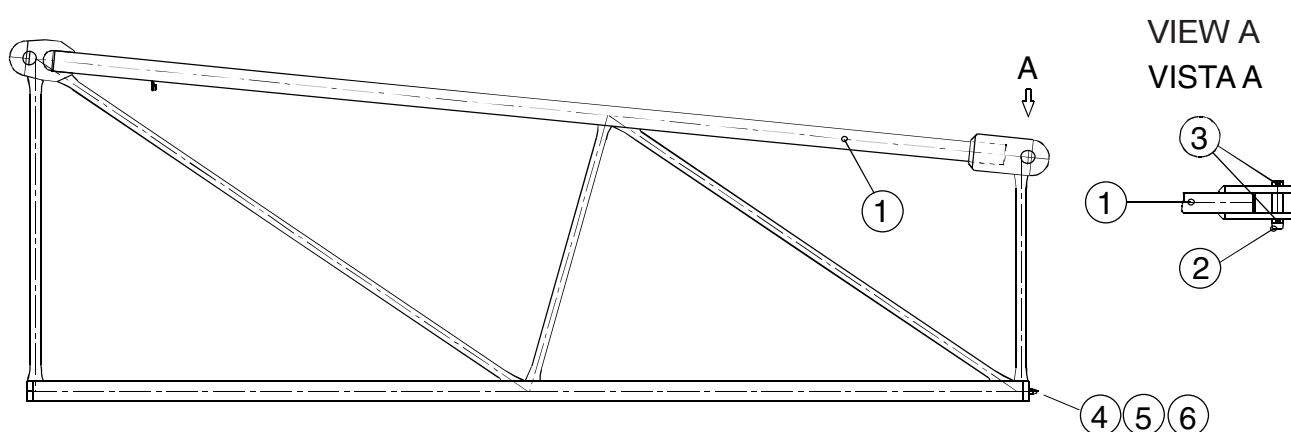
**TRONCO BRACCIO-5**  
**JIB SECTION-5**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616050</b> <b>TRONCO BRACCIO-5</b> <b>JIB SECTION-5</b>						
1	314616050	1	TRONCO BRACCIO 5	JIB SECTION-5		
2	380141111	1	SPINA CS 60 x 180	PIN		
3	883130012	2	COPIGLIA 10 x 90 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

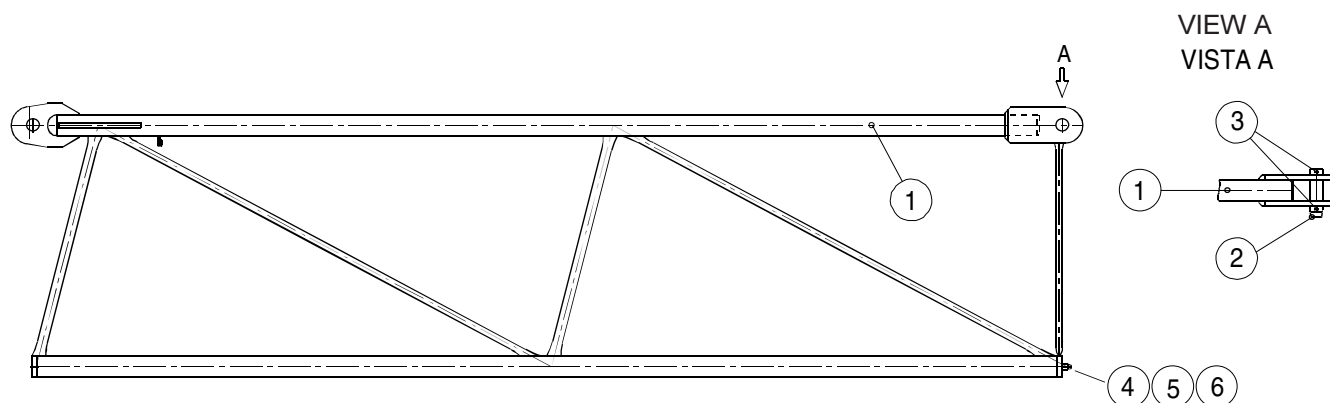


**TRONCO BRACCIO-6**  
**JIB SECTION-6**



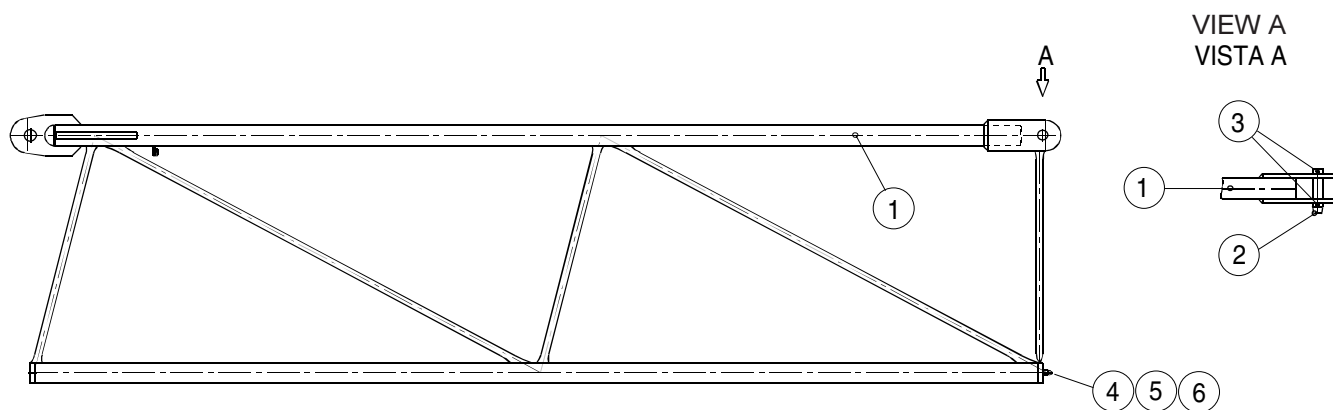
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616060-1</b>			<b>TRONCO BRACCIO-6</b>	<b>JIB SECTION-6</b>		
1	314616060-1	1	TRONCO BRACCIO 6	JIB SECTION-6		
2	380141111	1	SPINA CS 60 x 180	PIN		
3	883130012	2	COPIGLIA 10 x 90 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

**TRONCO BRACCIO-7**  
**JIB SECTION-7**



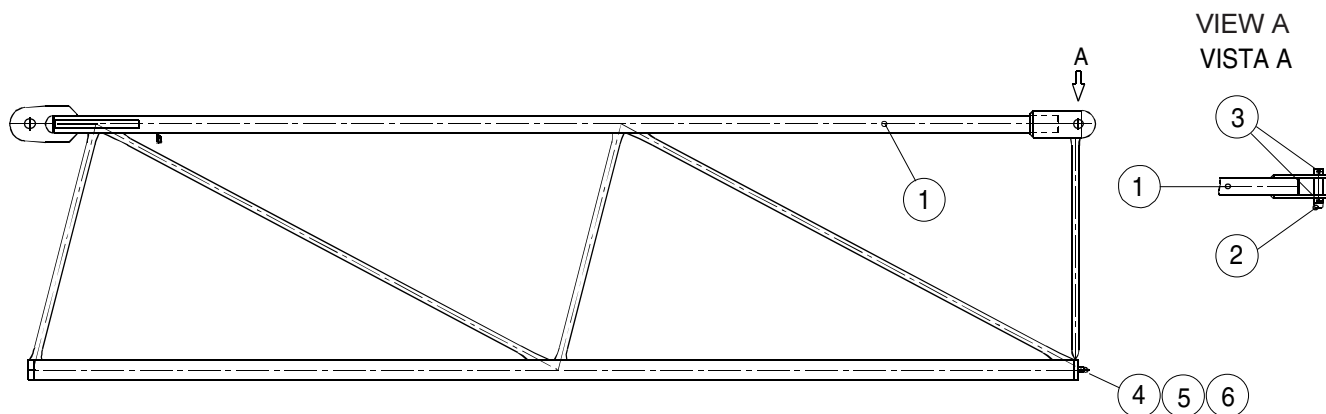
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616070</b>			<b>TRONCO BRACCIO-7</b>	<b>JIB SECTION-7</b>		
1	314616070	1	TRONCO BRACCIO 7	JIB SECTION-7		
2	380141111	1	SPINA CS 60 x 180	PIN		
3	883130012	2	COPIGLIA 10 x 90 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

**TRONCO BRACCIO-8**  
**JIB SECTION-8**



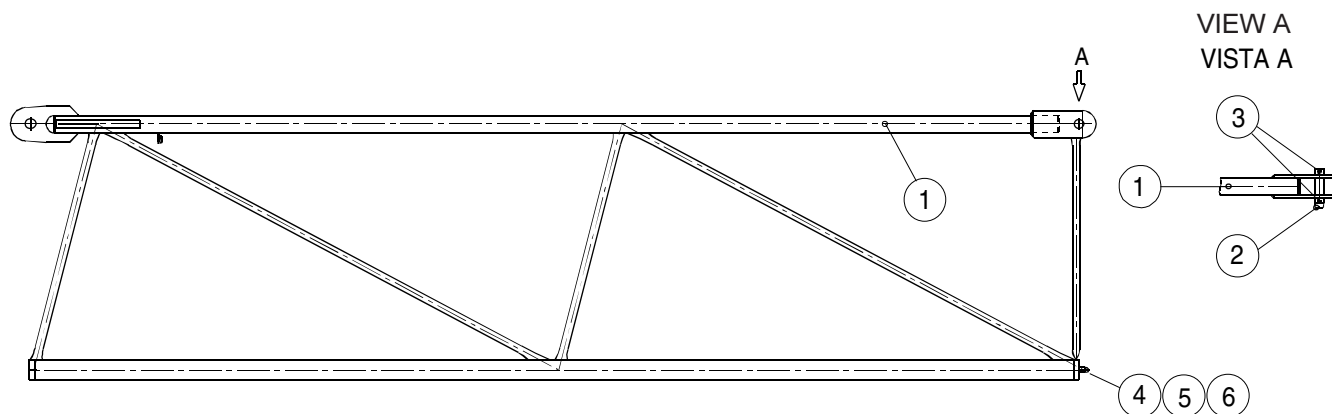
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616080</b>			<b>TRONCO BRACCIO-8</b>	<b>JIB SECTION-8</b>		
1	314616080	1	TRONCO BRACCIO-8	JIB SECTION-8		
2	380141112	1	SPINA CS 50 x 165	PIN		
3	883130013	2	COPIGLIA 10 x 70 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

**TRONCO BRACCIO-9**  
**JIB SECTION-9**



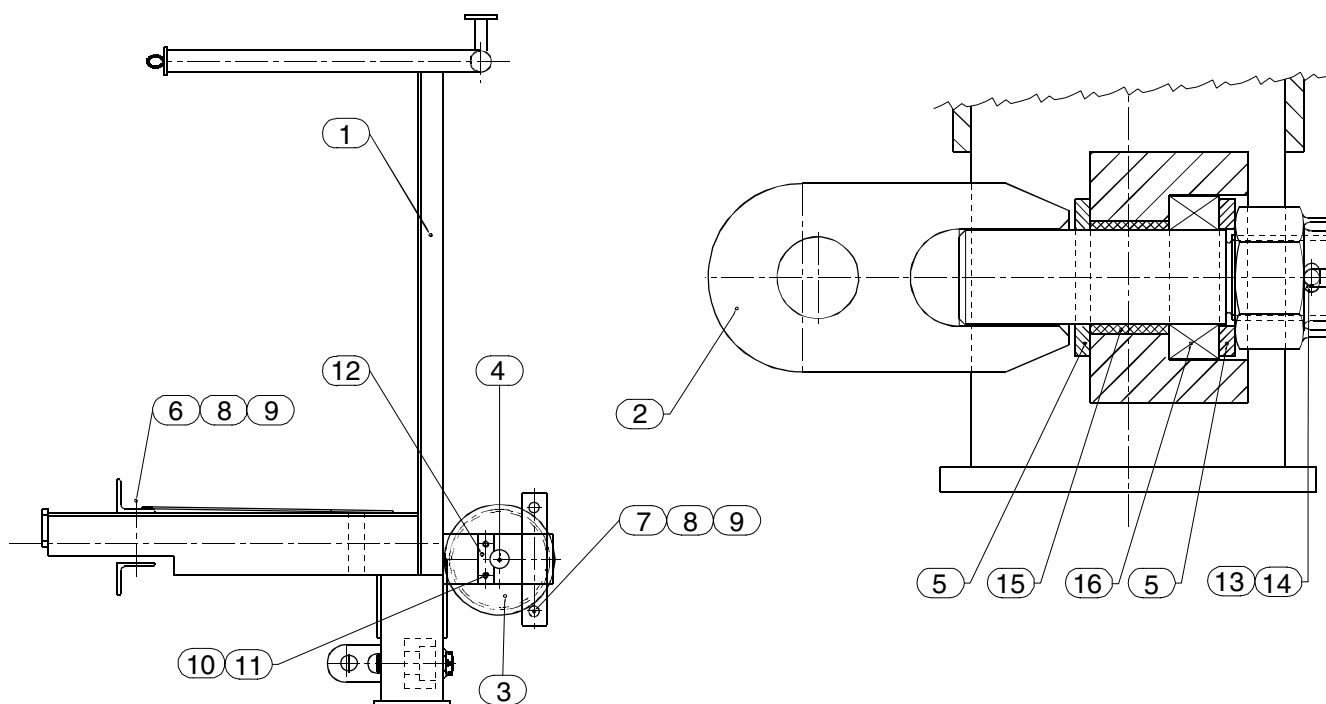
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616090</b>			<b>TRONCO BRACCIO-9</b>	<b>JIB SECTION-9</b>		
1	314616090	1	TRONCO BRACCIO 9	JIB SECTION-9		
2	380141113	1	SPINA CS 45 x 140	PIN		
3	883130013	2	COPIGLIA 10 x 70 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

**TRONCO BRACCIO-10**  
**JIB SECTION-10**



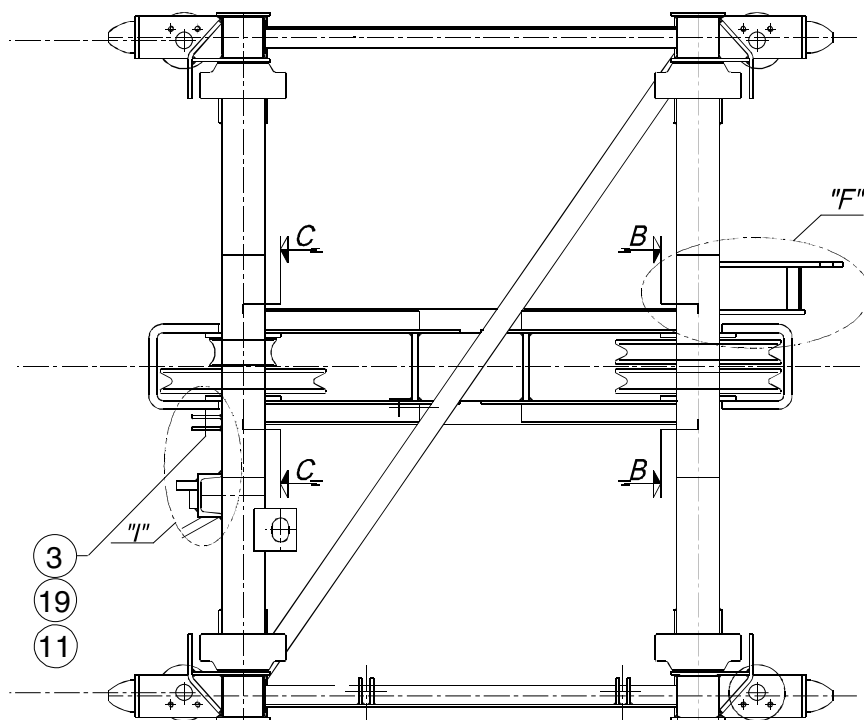
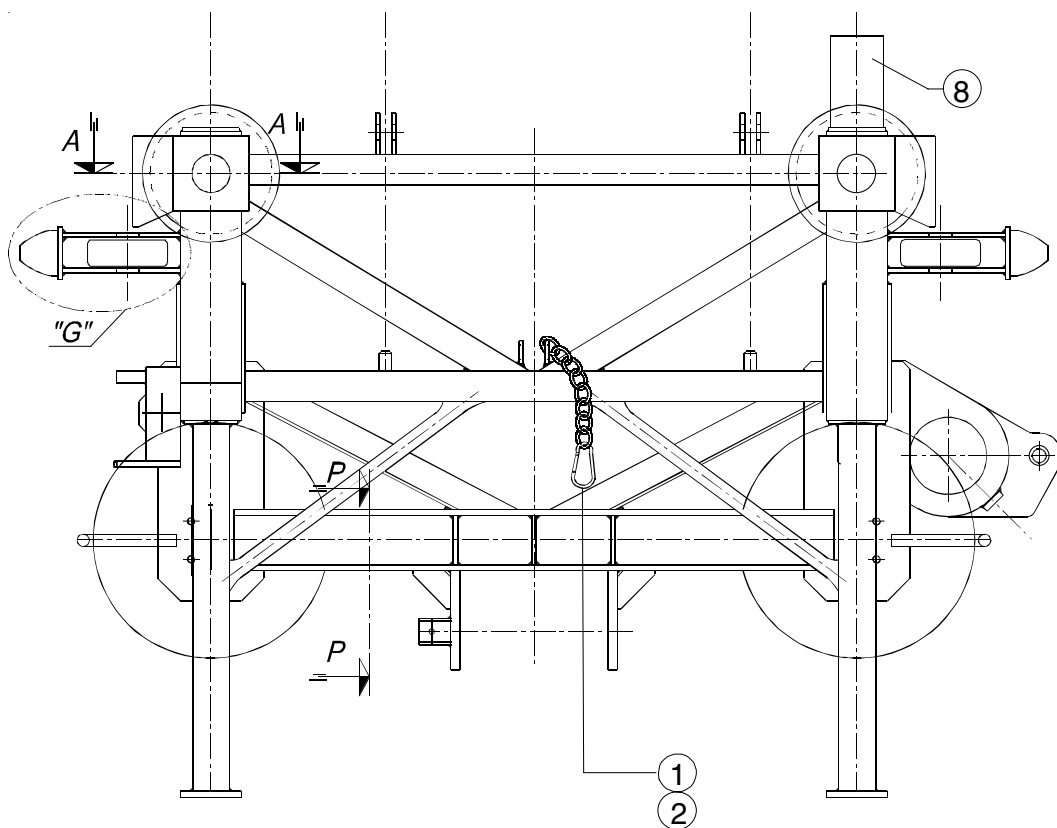
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>314616100</b>			<b>TRONCO BRACCIO-10</b>	<b>JIB SECTION-10</b>		
1	314616100	1	TRONCO BRACCIO-10	JIB SECTION-10		
2	380141114	1	SPINA CS 35 x 115	PIN		
3	883130014	2	COPIGLIA 8 x 50 Z - 4.8	SPLIT PIN		
4	880133143	2	VITE TE 20 x 80 Z - 8.8	SCREW		
5	881323006	2	DADO AUTOBLOCCANTE M20 N - CL.8	SELF LOCKING NUT		
6	881732009	2	ROND. PIANA M20 Z - 6.8	PLANE WASHER		

# PUNTALE BRACCIO JIB POINT SECTION



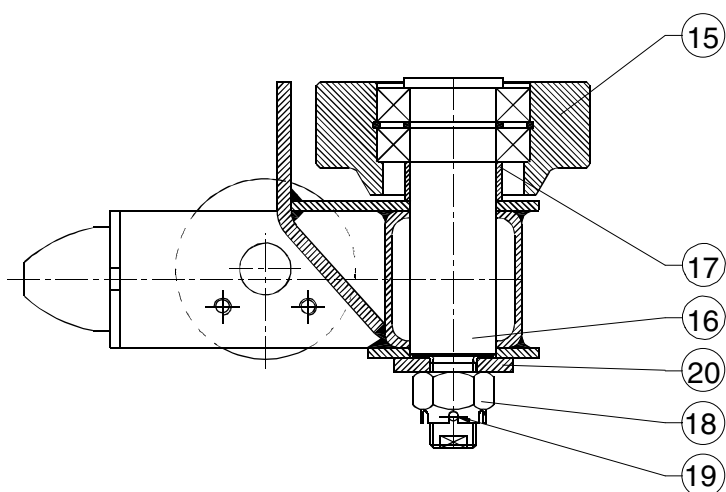
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>214916020</b>			<b>PUNTALE BRACCIO</b>	<b>JIB POINT SECTION</b>		
1	214916020	1	PUNTALE BRACCIO	JIB POINT SECTION		
2	352100008	1	CAPOCORDA GIREVOLE	ROTATING CABLE TERMINAL		
3	350225001	1	PULEGGIA 7/8 F C176 34 26 R4,2	PULLEY		
4	380341014	1	SPINA PS 30 x 66	PIN		
5	382517004	2	DISTANZIALE Ø50 x 30,3 SP. 5	SPACER		
6	880133202	4	VITE TEIF M16 x 150 - 8.8	SCREW		
7	880133024	2	VITE TEPF M14 x 90 - 8.8	SCREW		
8	881023005	6	DADO M16	NUT		
9	881732007	4	RONDELLA M16	WASHER		
10	880133092	2	VITE TEIF M10 x 16 - 8.8	SCREW		
11	881732004	2	RONDELLA M10	WASHER		
12	383401001	1	PIASTRA FERMO SPINA 25 x 6	PIN LOCK PLATE		
13	881231002	1	DADO AD INTAGLI M27 - 8	NUT		
14	883130015	1	COPIGLIA 5 x 45	SPLIT PIN		
15	842401016	1	BOCCOLA Ø 30 x 36	BUSH		
16	840209003	1	CUSCINETTO	BEARING		

**CARRELLO 6-8 t**  
**6-8 t TROLLEY**

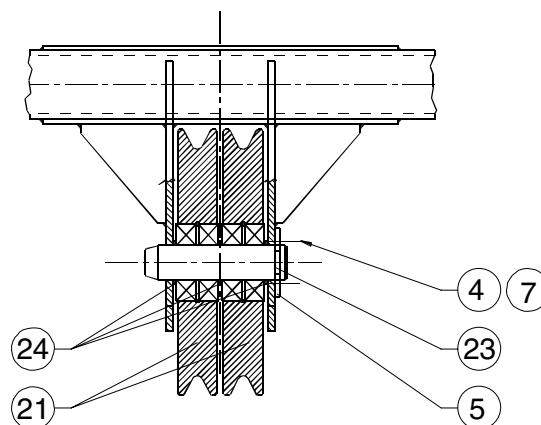


**CARRELLO 6-8 t**  
**6-8 t TROLLEY**

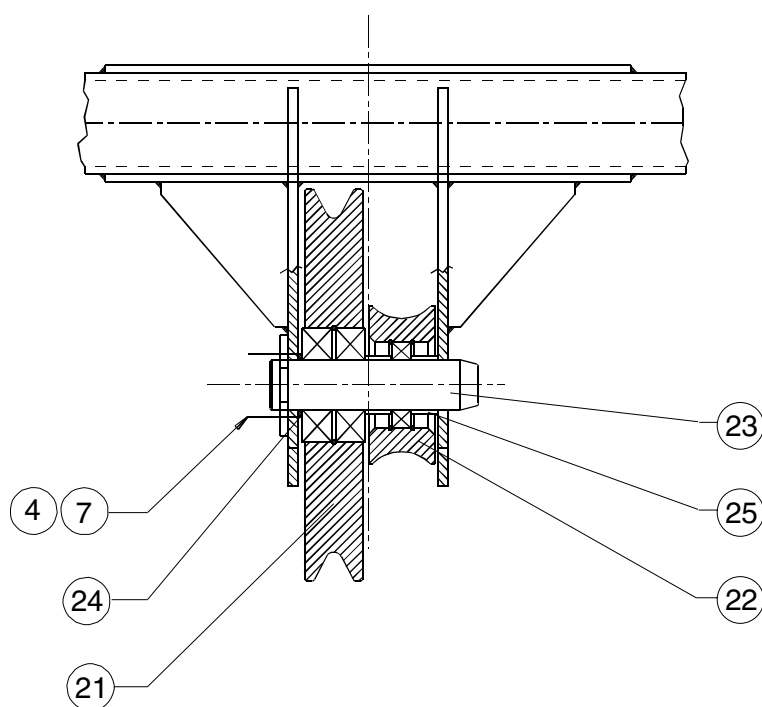
**SECTION A-A**  
**SEZIONE A-A**  
Scala 1:2.5



**SECTION B-B**  
**SEZIONE B-B**  
Scala 1:5



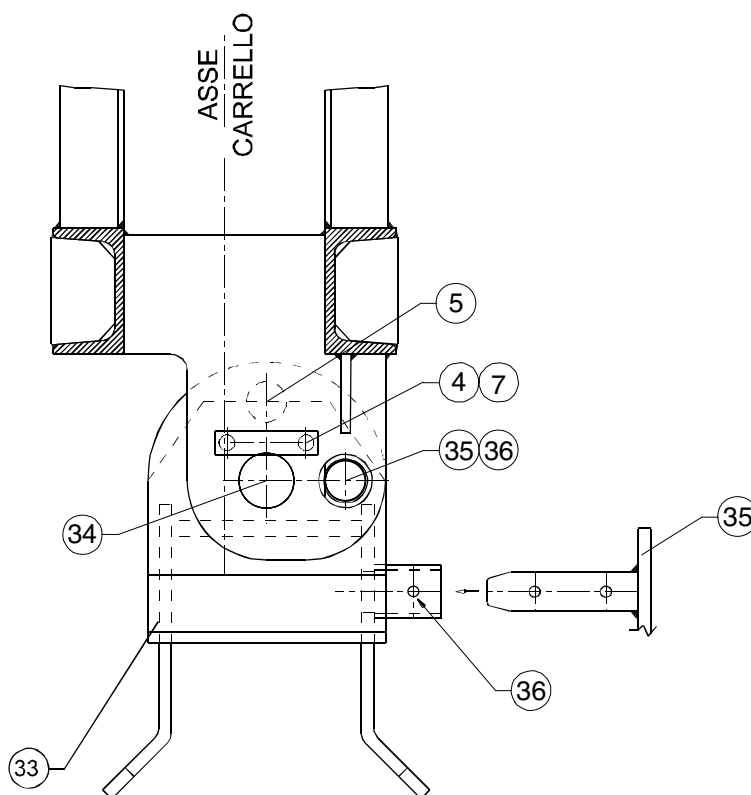
**SECTION C-C**  
**SEZIONE C-C**  
Scala 1:5



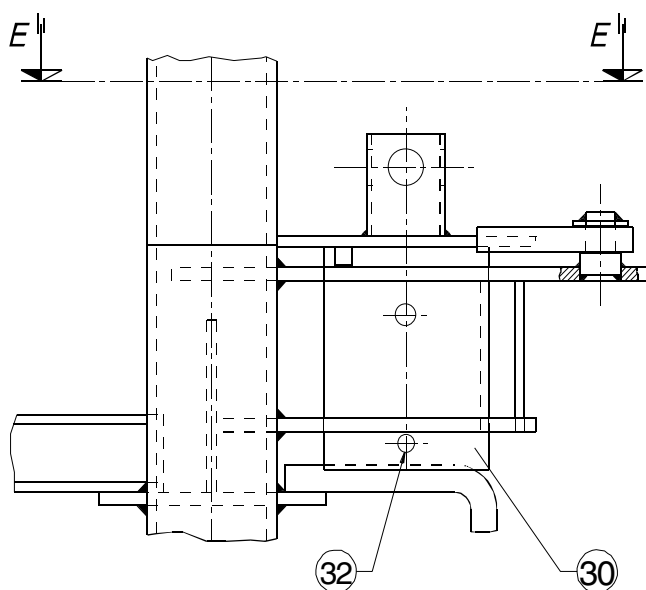


**CARRELLO 6-8 t**  
**6-8 t TROLLEY**

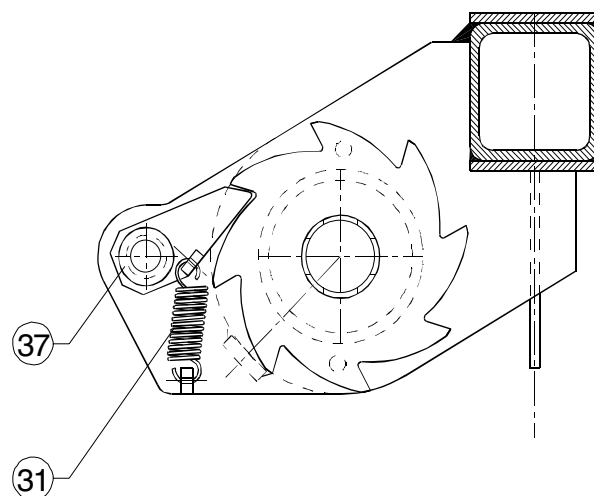
SEC. P-P  
SEZIONE P-P  
Scala 1:2.5



**PARTICOLARE "F"**  
Scala 1:2.5  
DETAIL "F"



**SEZIONE E-E**  
Scala 1:2.5  
SECTION E-E

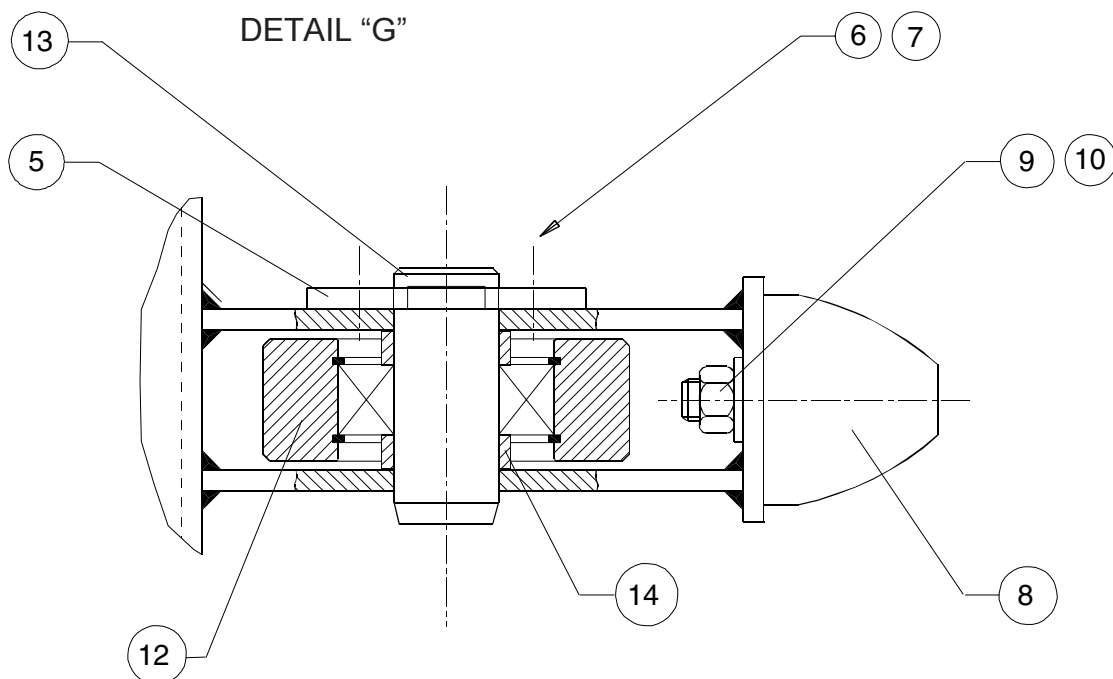


**CARRELLO 6-8 t**  
**6-8 t TROLLEY**

**PARTICOLARE "G"**

Scala 1:2.5

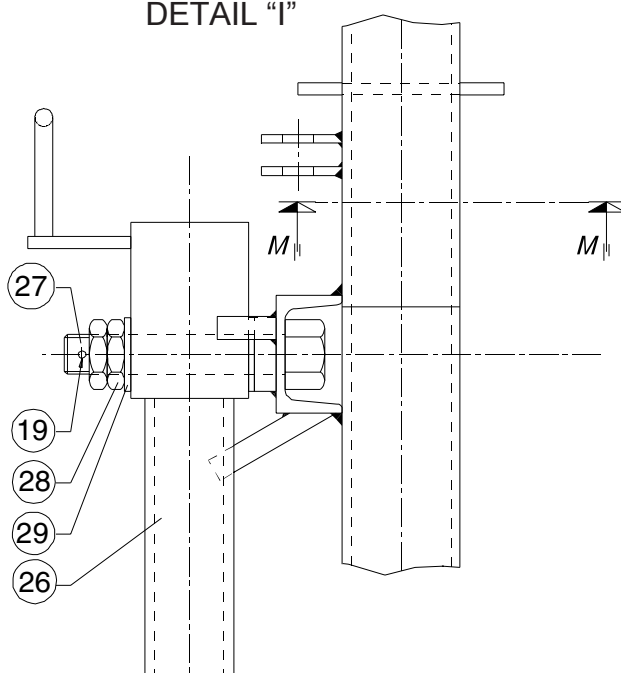
**DETAIL "G"**



**PARTICOLARE "I"**

Scala 1:2.5

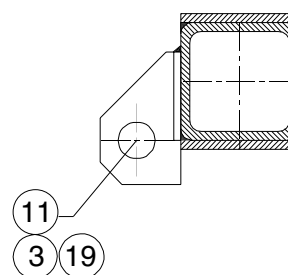
**DETAIL "I"**



**SEZIONE M-M**

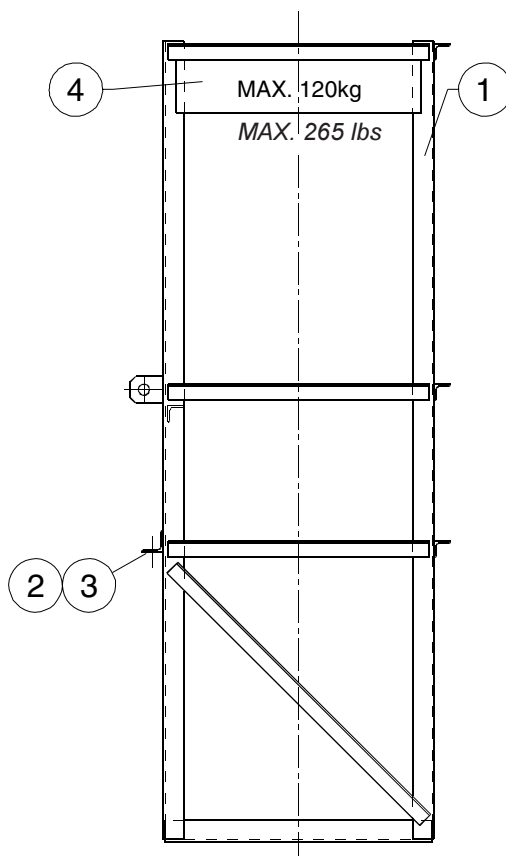
Scala 1:2.5

**SECTION M-M**



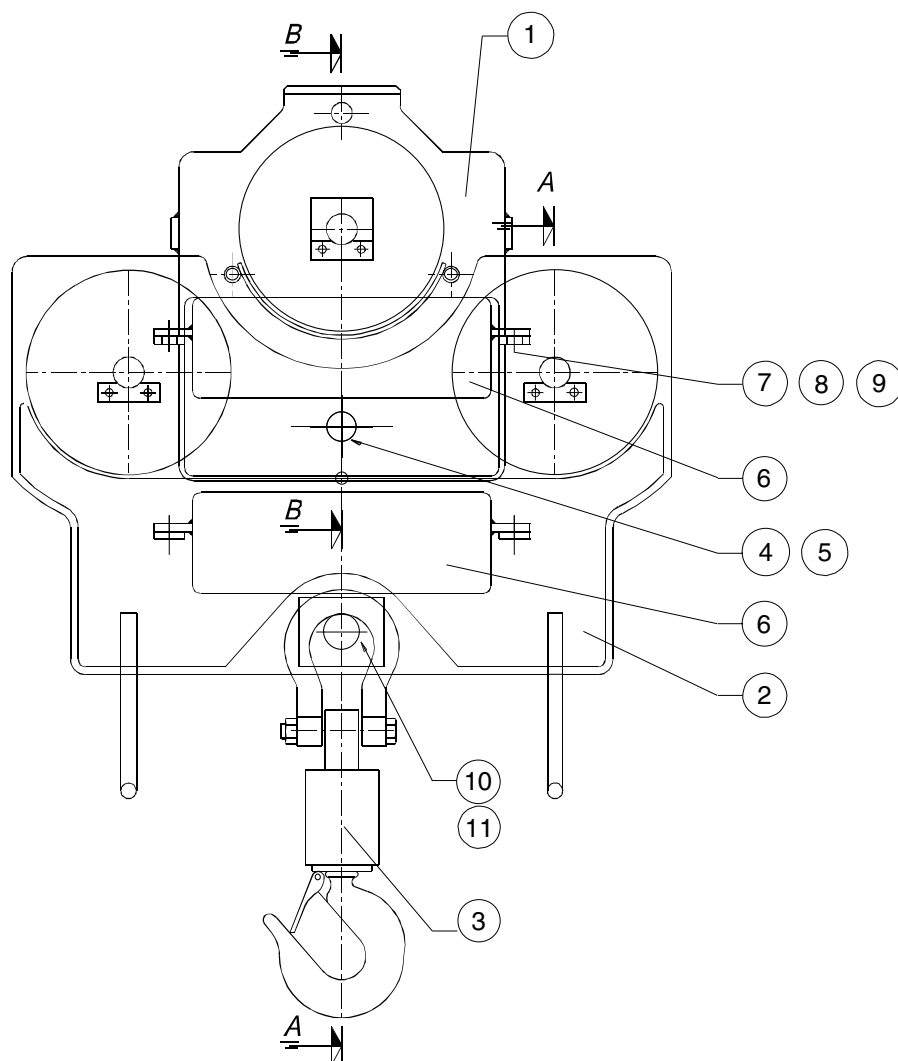
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>217701020</b>			<b>CARRELLO 6-8 t</b>	<b>6-8 t TROLLEY</b>		
1	850902002	1	CATENA CON 9 ANELLI	CHAIN		
2	859900034	1	MOSCHETTONE 100 mm	SPRING CATCH		
3	380141115	1	SPINA CS 20 x 40	PIN		
4	880133093	6	VITE TEIF M10 x 20 Z - 8.8	SCREW		
5	383401001	7	FERMO SPINA 25 x 6	PIN LOCK		
6	880133092	8	VITE TEIF M10 x 16 Z - 8.8	SCREW		
7	881732004	14	RONDELLA PIANA M10 Z - 6.8	PLANE WASHER		
8	852502010	4	RESPINGENTE CARRELLO Ø 60 L=60 M12	TROLLEY BUFFER		
9	881023003	4	DADO MEDIO M12 - CL.8	MEAN NUT		
10	881732005	4	RONDELLA PIANA M12 - 6.8	PLANE WASHER		
11	883045002	1	REDANCIA FUNE Ø 8	THIMBLE		
12	852001021	4	RUZZOLA CONTRASTO CARRELLO Ø 105 x 35	ROLLER		
13	380341008	4	SPINA PS 30 x 61	PIN		
14	382606108	8	DISTANZIALE Øe 37 Øi 30,3 L=9,75	SPACER		
15	852001020	4	RUZZOLA CARRELLO Ø 160 x 66 COMPLETA	ROLLER		
16	380741013	4	SPINA FILETTATA M27 x 50 x 156	THREADED PIN		
17	382606109	4	DISTANZIALE Øe 58 Øi 50,3 L=22,5	SPACER		
18	881231002	4	DADO CON INTAGLI M27 x 2	NUT		
19	883130011	7	COPIGLIA 5 x 40	SPRING SPLIT PIN		
20	382506033	4	RONDELLA Øe 65 Øi 28 SP. 8	WASHER		
21	350200030	3	PULEGGIA Ø 310 x 46	PULLEY		
22	852001019	1	RUZZOLA GUIDA FUNE Ø 125 x 52	ROPE GUIDE ROLLER		
23	380341009	2	SPINA PS 40 x 151	PIN		
24	382606110	4	DISTANZIALE Øe 50 Øi 40,3 L= 4	SPACER		
25	382606111	2	DISTANZIALE Øe 46 Øi 40,3 L= 21	SPACER		
26	325001020	1	LEVA BLOCCAGGIO CARRELLO	TROLLEY STOP LEVER		
27	384233002	1	VITE TEPF M27 x 150 CON FORO Ø 5,5 Z - 8.8	SCREW		
28	881124007	2	DADO BASSO M27 Z - CL.10	FLAT NUT		
29	881732011	2	RONDELLA PIANA M27 Z - 6.8	PLANE WASHER		
30	318100030	1	TENDITORE FUNE CARRELLO	TROLLEY ROPE TENSIONING DEVICE		
31	885000018	1	MOLLA TRAZIONE A DUE OCCHI	SPRING		
32	883130006	1	COPIGLIA 10 x 120	SPRING SPLIT PIN		
33	318002010	1	SUPPORTO BOZZELLO	HOIST BLOCK SUPPORT		
34	380141103	1	SPINA CS 35 x 236	PIN		
35	380841009	2	SPINA S 25 x 95	PIN		
36	883200003	2	CHIAVISTELLO R D.6	SPRING SPLIT PIN		
37	881732008	1	RONDELLA PIANA M18 Z	PLANE WASHER		
38	880133096	1	VITE TEIF M10 x 35 Z PER TEND. FUNDE CARRELLO	SCREW		

**BALLATOIO CARRELLO  
JIB INSPECTION PLATFORM**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>320301311</b>			<b>BALLATOIO CARRELLO</b>	<b>JIB INSPECTION PLATFORM</b>		
1	320301311	1	BALLATOIO CARRELLO	JIB INSPECTION PLATFORM		
2	380141101	2	SPINA C 20 x 40	PIN		
3	883130002	4	COPIGLIA 6 x 60	SPRING SPLIT PIN		
4	850100033	1	TABELLA PORTATA MASSIMA	MAX. LOADING CAPACITY TABLE		

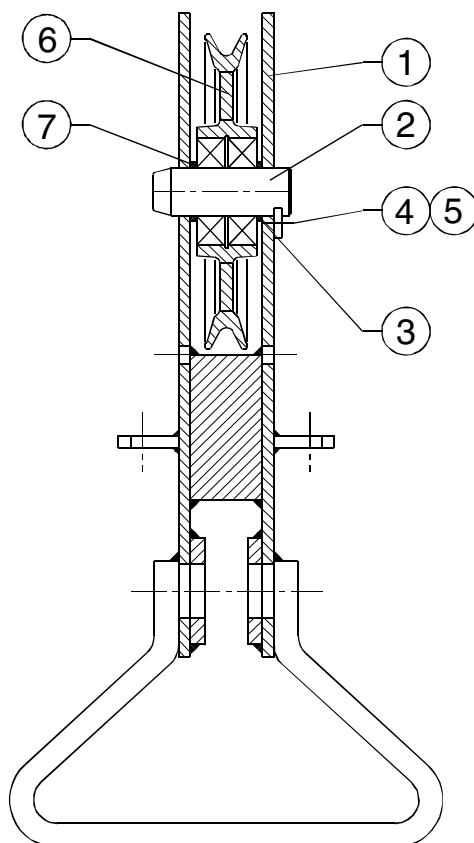
**BOZZELLO DOPPIO 8t**  
**DOUBLE HOIST BLOCK**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>217808050</b>			<b>BOZZELLO DOPPIO 8t</b>	<b>DOUBLE HOIST BLOCK</b>		
1	217808060	1	SEMIBOZZELLO TIRO IN IV	4-PART LINE AUX. HOIST BLOCK		
2	217804030	1	BOZZELLO TIRO IN II	2-PART LINE HOIST BLOCK		
3	362008020	1	PORTAGANCIO 8 t (TL)	HOOK HOLDING BLOCK		
4	380641004	1	SPINA M 35 x 245	PIN		
5	883200003	1	COPIGLIA R6	SPRING SPLIT PIN		
6	390901050	4	ZAVORRA 20 kg TIPO "A"	BALLAST PLATE		
7	384233001	8	VITE TEIF M14 x 45 (CON FORO Ø 4) Z - 8.8	SCREW		
8	881023004	8	DADO MEDIO M14 - 8	MEAN NUT		
9	883130001	8	COPIGLIA 4 x 40	SPRING SPLIT PIN		
10	380243039	1	SPINA T 45 x 90	PIN		
11	883130004	1	COPIGLIA 8 x 70	SPRING SPLIT PIN		

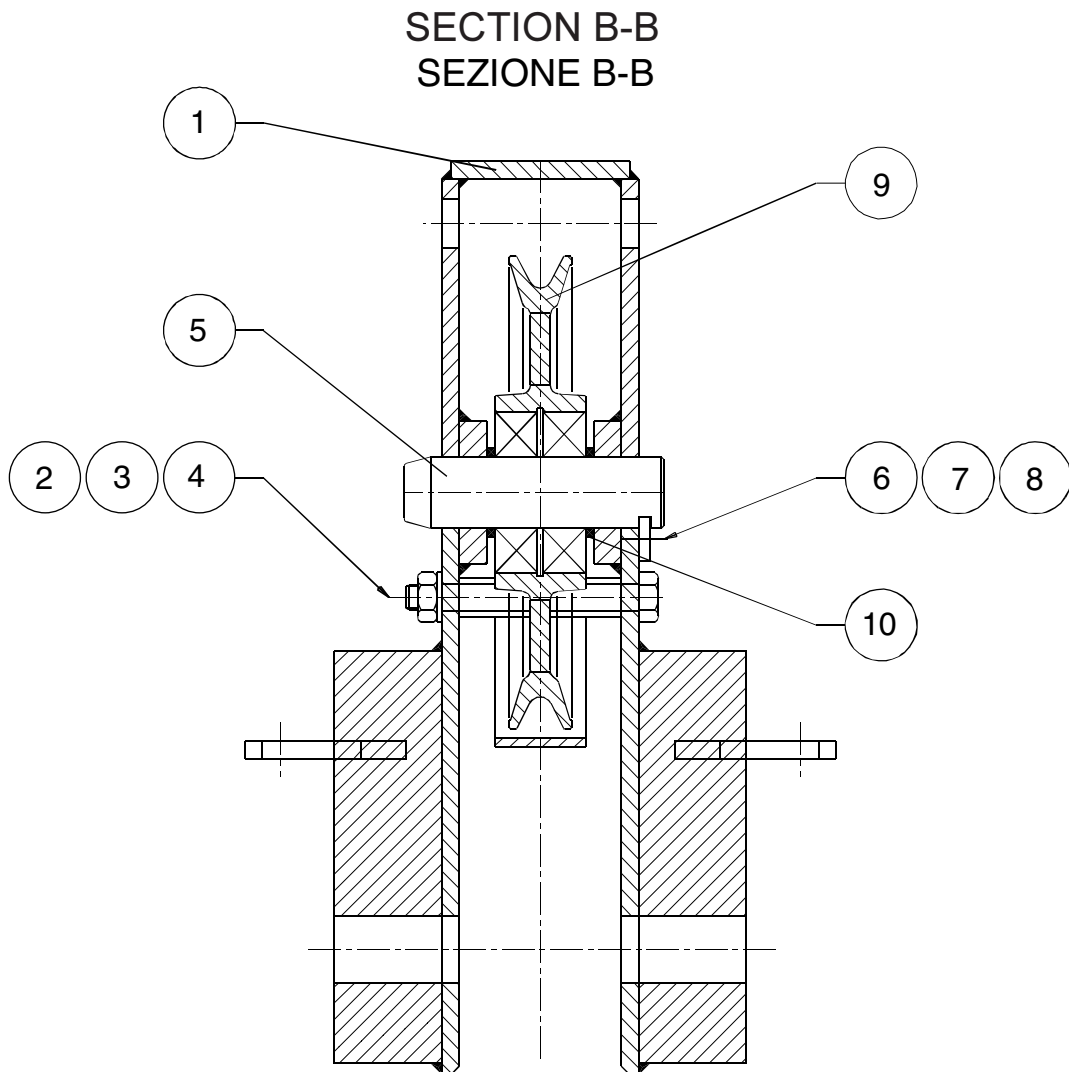
**BOZZELLO TIRO IN II (3-4 t)  
HOIST BLOCK**

**SECTION A-A  
SEZIONE A-A**



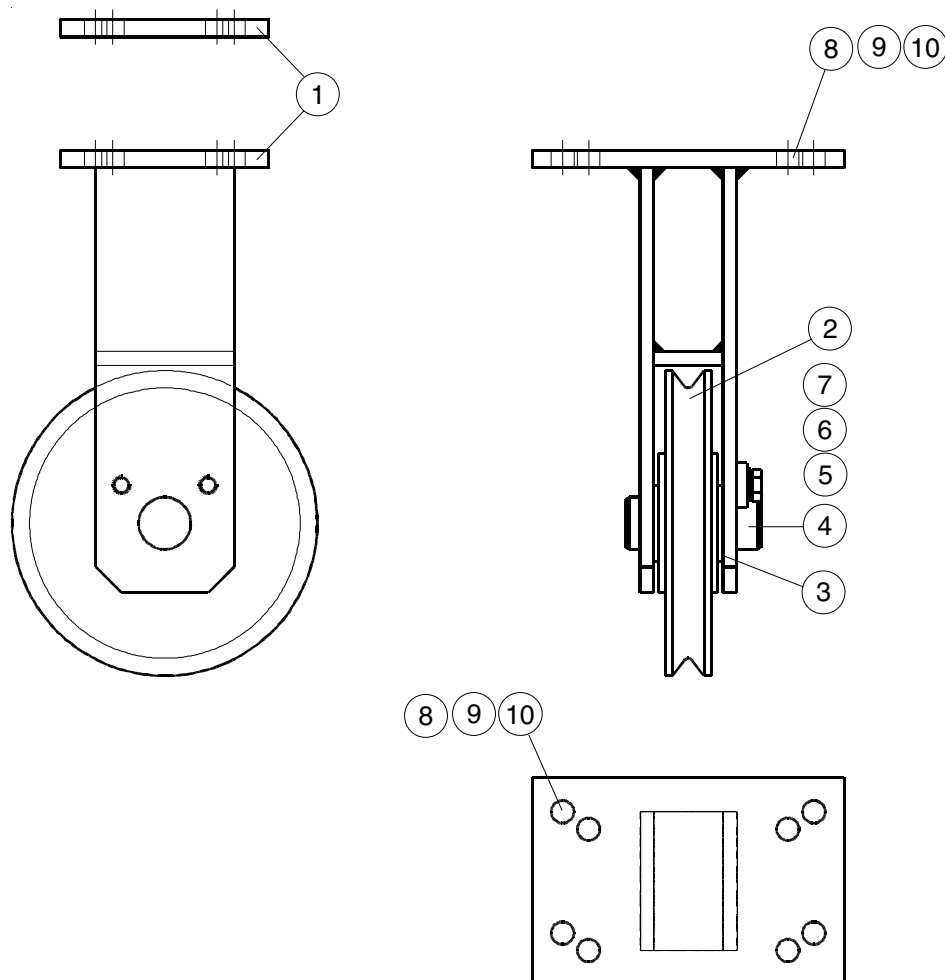
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>217804030</b>			<b>BOZZELLO TIRO IN II (3-4t)</b>	<b>HOIST BLOCK</b>		
1	217804030	1	BOZZELLO TIRO IN II (3 - 4 t)	2-PART LINE HOIST BLOCK		
2	380341011	2	SPINA PS 40 x 101	PIN		
3	383401001	2	FERMO SPINA 25 x 6	PIN LOCK		
4	880133093	4	VITE TEIF M10 x 20 Z - 8.8	SCREW		
5	881732004	4	RONDELLA M10 - 6.8	WASHER		
6	350224001	2	PULEGGIA 264 49 35 R 6,5	PULLEY		
7	382606113	4	DISTANZIALE Øe 50 Øi 40,3 SP. 5	SPACER		

**SEMIBOZZELLO TIRO IN IV (6-8 t)**  
**AUXILIARY HOIST BLOCK**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>217808060</b>			<b>SEMIBOZZELLO TIRO IN IV (6-8t)</b>	<b>4-PART LINE AUX. HOIST BLOCK</b>		
1	217808060	1	SEMIBOZZELLO TIRO IN IV (6 - 8 t)	4-PART LINE AUX. HOIST BLOCK		
2	880133027	2	VITE TEPF M14 x 130 - 8.8	SCREW		
3	881023004	2	DADO MEDIO M14 - 8	MEAN NUT		
4	881732006	2	RONDELLA M14 - 6.8	WASHER		
5	380341010	1	SPINA PS 40 x 131	PIN		
6	383401001	1	FERMO SPINA 25 x 6	PIN LOCK		
7	880133093	2	VITE TEIF M10 x 20 - 8.8	SCREW		
8	881732004	2	RONDELLA M10 - 6.8	WASHER		
9	350224001	1	PULEGGIA 264 49 35 R 6,5	PULLEY		
10	382606113	2	DISTANZIALE Øe 50 Øi 40,3 SP. 5	SPACER		

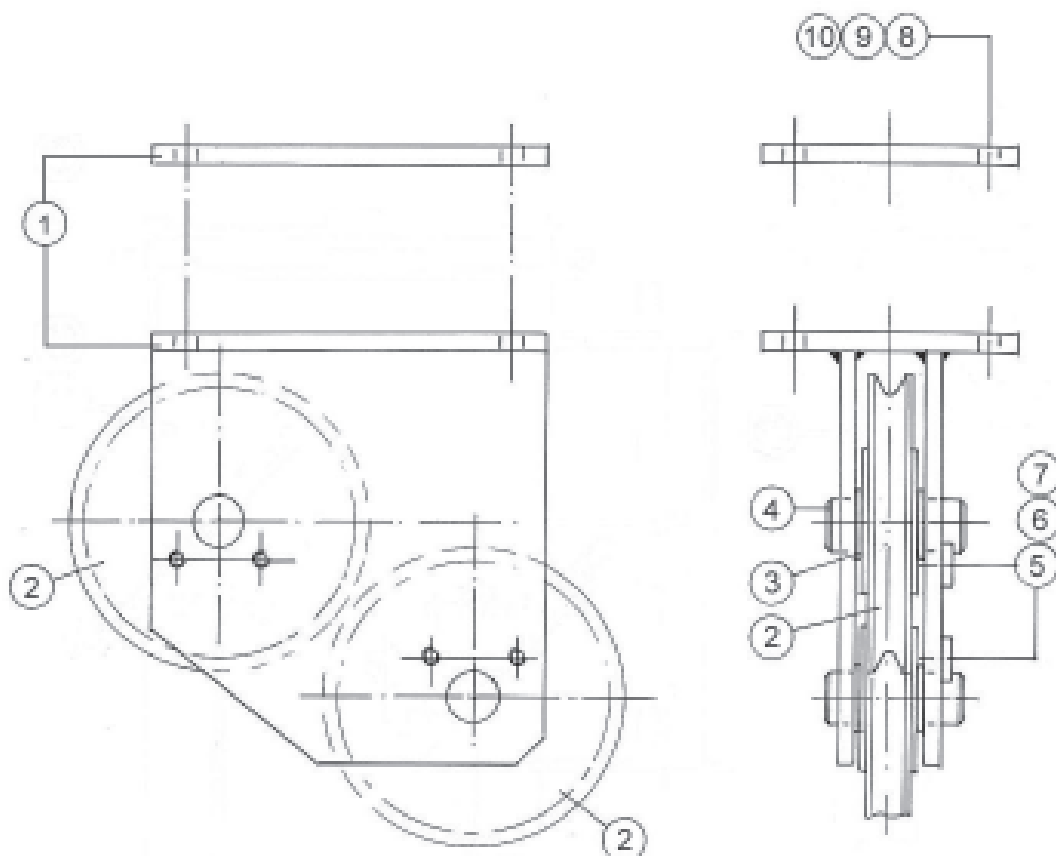
**SUPPORTO "A" FUNE CARRELLO**  
**SUPPORT "A" FOR TROLLEY ROPE**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
226400035-1			SUPPORTO "A" FUNE CARRELLO	SUPPORT "A" FOR TROLLEY ROPE		
1	226400035	1	SUPPORTO "A" FUNE CARRELLO	SUPPORT "A FOR TROLLEY ROPE"		
2	350225001	1	PULEGGIA C176 34 26 R 4,2	PULLEY		
3	382517007	2	DISTANZIALE Ø 40 x 30,3 SP. 2,5	SPACER		
4	380341014	1	SPINA PS 30 x 66	PIN		
5	880133092	2	VITE TEIF M10 x 16 Z - 8.8	SCREW		
6	881732004	2	RONDELLA M10 Z - 6.8	WASHER		
7	383401001	1	FERMO SPINA 25 x 6	PIN LOCK		
8	880133109	4	VITE TEIF M12 x 150 Z - 8.8	SCREW		
9	881732005	4	RONDELLA M12 Z - 6.8	WASHER		
10	881323003	4	DADO AUTOBLOCCANTE M12 Z - 8	SELF LOCKING NUT		

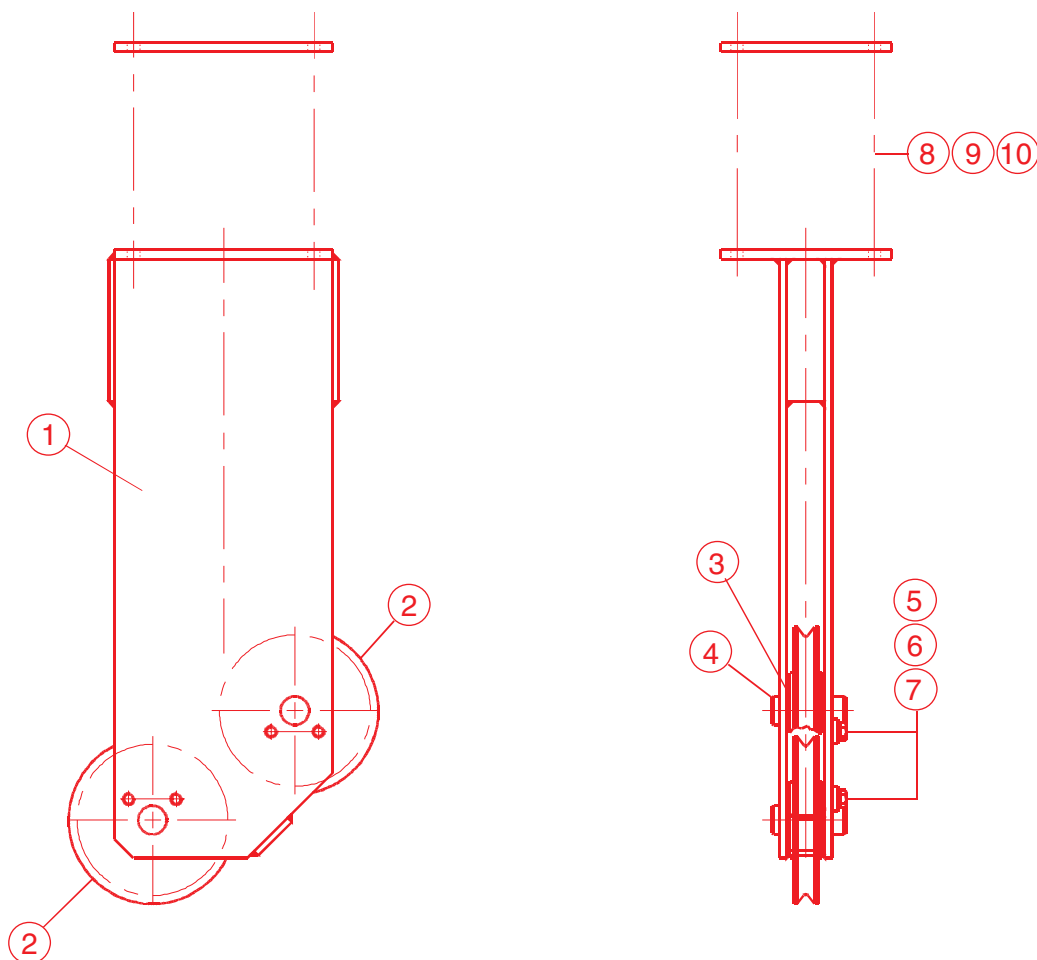


**SUPPORTO "B" FUNE CARRELLO**  
**SUPPORT "B" FOR TROLLEY ROPE**



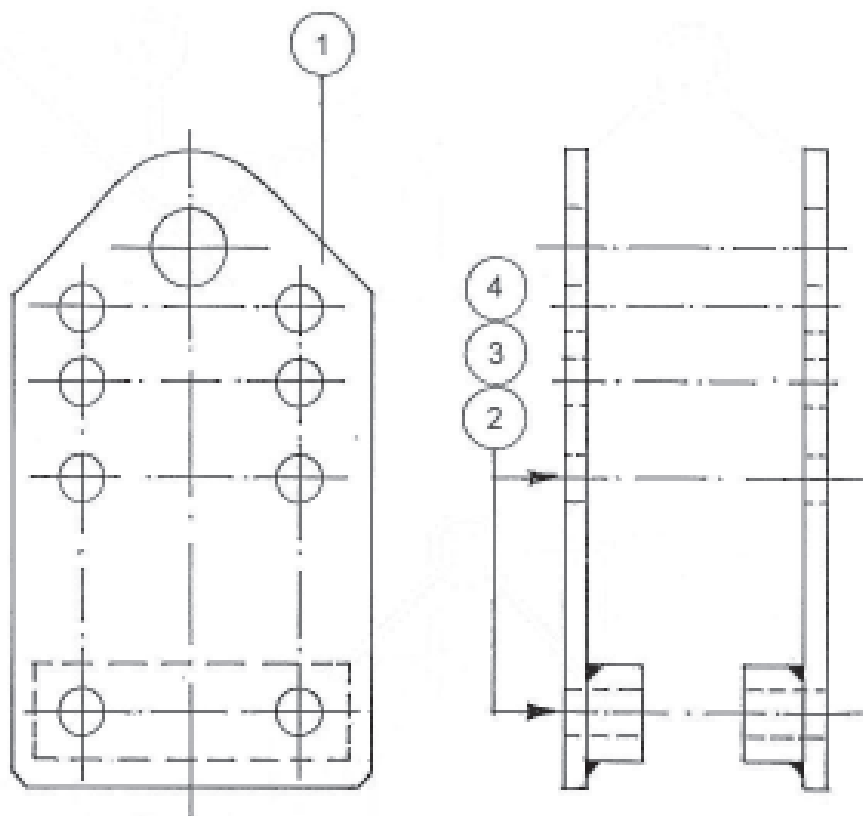
POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>226400036</b>			<b>SUPPORTO "B" FUNE CARRELLO</b>	<b>SUPPORT "B" FOR TROLLEY ROPE</b>		
1	226400036	1	SUPPORTO "B" FUNE CARRELLO	SUPPORT "B" FOR TROLLEY ROPE		
2	350225001	2	PULEGGIA C176 34 26 R 4,2	PULLEY		
3	382517007	4	DISTANZIALE Ø 40 x 30,3 SP. 2,5	SPACER		
4	380341014	2	SPINA PS 30 x 66	PIN		
5	880133092	4	VITE TEIF M10 x 16 Z - 8.8	SCREW		
6	881732004	4	RONDELLA M10 Z - 6.8	WASHER		
7	383401001	2	FERMO SPINA 25 x 6	PIN LOCK		
8	880133109	4	VITE TEIF M12 x 150 Z - 8.8	SCREW		
9	881732005	4	RONDELLA M12 Z - 6.8	WASHER		
10	881323003	4	DADO AUTOBLOCCANTE M12 Z - 8	SELF LOCKING NUT		

**SUPPORTO "C" FUNE CARRELLO**  
**SUPPORT "C" FOR TROLLEY ROPE**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>126400100</b>			<b>SUPPORTO "C" FUNE CARRELLO</b>	<b>SUPPORT "C" FOR TROLLEY ROPE</b>		
1	326400100	1	SUPPORTO "C" FUNE CARRELLO	SUPPORT "C" FOR TROLLEY ROPE		
2	350225001	2	PULEGGIA C176 34 26 R 4,2	PULLEY		
3	382517007	4	DISTANZIALE Ø 40 x 30,3 SP. 2,5	SPACER		
4	380341014	2	SPINA PS 30 x 66	PIN		
5	880133092	4	VITE TEIF M10 x 16 Z - 8.8	SCREW		
6	881732004	4	RONDELLA PIANA M10 Z - 6.8	WASHER		
7	383401001	2	FERMO SPINA 25 x 6	PIN LOCK		
8	880900053	4	BARRA FILETTATA M12x200	THREADED BAR		
9	881732005	8	RONDELLA PIANA M12 Z - 6.8	WASHER		
10	881323003	8	DADO AUTOBLOCCANTE M12 Z - 8	SELF LOCKING NUT		

**GOLFARE MONTAGGIO BRACCIO  
EYEBOLT FOR JIB ASSEMBLY**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
<b>225100080</b>			<b>GOLFARE MONTAGGIO BRACCIO</b>	<b>EYEBOLT FOR JIB ASSEMBLY</b>		
1	225100080	1	GOLFARE MONTAGGIO BRACCIO	EYEBOLT FOR JIB ASSEMBLY		
2	880900050	4	BARRA FILETTATA M16 Z	THREADED BAR		
3	881732007	8	RONDELLA M16 Z	WASHER		
4	881224015	8	DADO ALTO M16	TALL NUT		

**SUPPORTO TABELLA DI PORTATA  
LOAD RATING CHART SUPPORT**



POS.	CODICE	Q.TA'	DESCRIZIONE	DESCRIPTION	DESIGNATION	BEZEICHNUNG
	<b>326400045</b>		<b>SUPPORTO TABELLA DI PORTATA</b>	<b>LOAD RATING CHART SUPPORT</b>		
1	326400045	1	SUPPORTO TABELLA DI PORTATA	LOAD RATING CHART SUPPORT		

## 2

**MAINTENANCE**2.1 **GENERAL**

Maintenance of the slewing upper part is an on going process divided in two main phases: inspection and repair.

Inspection consists of all the appropriate operations required to locate, identify and assess problems which might weaken the safety and functionality of the unit.

Repair is directly related to the inspection carried out and, resolving each detected deficiency, restores the unit to its original configuration and state of operation.



For detailed information on the maintenance programme recommended by the manufacturer, refer to **Chapter 8 “ General Maintenance”** of the crane operation manual.

2.2 **GROUPS SUBJECT TO MAINTENANCE**

To facilitate the routine maintenance operations, the systems/components have been shared into main groups of intervention.



For detailed information, refer to **Chapter 8 “ General Maintenance”** of the crane operation manual.

Details of the slewing upper part subject to maintenance:

- 1) *Structures (slewing ring support, cab section, counterjib, jib and ties).*
- 2) *Ropes, hoist blocks, hooks and sheaves.*
- 3) *Electrical components.*

2.3 **ROUTINE MAINTENANCE AND PERIODICAL INSPECTIONS**

Maintenance procedures consist of two phases:

**INSPECTION**  
**REPAIR**

This system guarantees that all potential deficiencies of the unit are identified and repaired.

Defects which cannot be solved during this phase will become part of the ‘SPECIAL MAINTENANCE’.



For detailed information on the criterion to be used when carrying out routine maintenance, refer to **Chapter 8 “ General Maintenance”** of the crane operation manual.

### 2.3.1 Daily inspections

- A) The operator, a qualified and trained person, is responsible for monitoring the crane. The daily inspection of the slewing unit gives an assessment of the general conditions of the crane and the possibility to find possible problems regarding structural, mechanical, electrical or accessory parts (such as ropes and hooks).

Anyhow, a general inspection of the slewing unit prior to placing the crane in service is recommended. This also applies for cranes with ground control (radio control or remote control).

- B) Check for proper connections of ladders, platforms, safety rails, general protections (protective covers) and special devices provided for the operator's safety.

### 2.3.2 Weekly inspections

- A) Make sure that all structural pin-connections are placed in the special housings and secured with the relative split pins.

- B) Make sure that all structural pin-connections are placed in the special housings and secured with the relative nuts and properly tensioned, for the torque wrench setting, refer to the following table:

JIB SECTION CONNECTION	CLASS 8.8 SCREW	CLASS 8 SELF-LOCKING NUT	CLASS 6.8 WASHER	TORQUE WRENCH SETTING	
				[Nm]	[ft.lbs]
22-23	M20 × 80	M20	M20	440	325
23-24	M20 × 80	M20	M20	440	325
24-25	M20 × 80	M20	M20	440	325
25-5	M20 × 80	M20	M20	440	325
5-6	M20 × 80	M20	M20	440	325
6-7	M20 × 80	M20	M20	440	325
7-8	M20 × 80	M20	M20	440	325
8-9	M20 × 80	M20	M20	440	325
9-10	M20 × 80	M20	M20	440	325
10 - Jib point	M20 × 80	M20	M20	440	325

- C) Inspect the control cab for any evidence of water leakage; if so, ventilate until it is completely dry.
- D) Inspect all safety and protection devices.
- E) Grease the snub pulley as specified in the lubrication chart (para. 2.5).
- F) Visually inspect the integrity of the electrical and electronical components.



### 2.3.3 Monthly inspections

- A) With great accuracy visually examine all the weldings of the cab section and of the slewing ring support checking for visible cracks.  
Examine closely welds that are rusted: rust is often a sign of crack in a structural weld.
- B) Grease all pin-connections as specified in the lubrication chart (para. 2.5).
- C) Inspect the sheaves and their respective bearings, replacing any damaged components.
- D) Inspect the ropes for stretching and deformation as indicated in para. 2.6.1.4. Replace any defective rope.  
Grease the hoisting and trolley traversing ropes as specified in the lubrication chart (para. 2.5).  
Check for the trolley traversing rope proper tension. Adjust it, as necessary, by the rope tensioner placed on the trolley.  
Make sure that the swivel socket on jib tip for the hoist rope is properly greased. If needed, add some lubricant through the lubricator placed on the support block (if provided), which is welded to the structure.
- E) Open the electrical boxes on the control cab and on the counterjib and visually inspect the relays, fuses, connections and other electric devices for signs of water leakage, short circuit, burning or other damages. Check that the components are properly installed. Then close the electrical panel.

### 2.3.4 Quarterly inspections

- A) With great accuracy visually examine all the welding of the jib, the counterjib, the trolleys and hoist blocks checking for visible cracks.  
Examine closely welds that are rusted: rust is often a sign of crack in a structural weld.
- B) Using low pressure compressed air remove the dust from inside the electrical boxes and panels.

### 2.3.5 Six-monthly inspections

- A) With great accuracy visually examine all the welding of the ladders, the platforms and safety rails.
- B) Check the conditions of all the crane connecting systems: any corroded, worn out or damaged pins, split pins, screws and nuts shall be replaced by Comedil technicians.
- C) Inspect all sheaves and bearings for evident signs of wear.
- D) Inspect the brushes of the windshield wipers in the cab for evident signs of wear and replace them as necessary.

### 2.3.6 Annual inspections

- A) Visually inspect the jib pins for evident signs of wear generated by the stresses they are subjected to.  
Defective pins shall be replaced by Comedil technicians.
- B) Perform non-destructive tests on structural welds located on the cab sections on the jib, on the slewing ring support and on the counterjib.
- C) Treat corrosion on and repaint all oxidized parts of the crane.
- D) Perform non-destructive test on the hoist block and tie-bar welds.
- E) Calibration of the electronic system shall be carried out by Comedil technicians (special maintenance).

#### Important advice:

*Should extraordinary events happen, such as long periods of driving rain with lightening striking near the crane, protracted work in a corroding ambient or in particularly foul areas, etc. **MORE FREQUENTLY AND CAREFULLY INSPECT** the electrical equipment for evident signs of wear. In particular, check for any possible leakages of water into the electrical boxes.*

### 2.4 SPECIAL MAINTENANCE

Special maintenance tasks shall be carried out by skilled technicians who have been properly trained and have the experience to accomplish these tasks.

Specialists only shall be appointed to carry out the following operations:

- A) Crane erection or dismantling;
- B) Replacement of hoist and trolley traversing ropes;
- C) Calibration of rated capacity limiters and limit switches;
- D) Repair of electronic components and calibration of electronic systems which operate the crane movements and mechanisms;
- E) Repair of the electrical equipment;
- F) Non-destructive testing for structural damage; repairs and replacement of the crane structural parts.

### 2.5 LUBRICATION AND OILS

PARTS TO BE SERVICED	LUBRICANT
SHEAVES	SHIELD FLUID 3K
ROPES	BRILUBE 50
PINS	SHIELD FLUID 3K



## 2.6 ROPES

All ropes installed on the crane must be in good condition and the individual wires must not be broken, corroded or show signs of wear in order to ensure the maximum degree of safety during operations.

Inspect the ropes carefully and daily.

Particular attention shall be given to the condition of wire ropes near the sockets placed on the structure and on the trolley.

A complete rope inspection shall be performed any time a crane accident occurs or when taking the crane back into operation after a long time of inactivity.

The ropes shall be kept clean from sand and cement deposits and shall be lubricated at regular intervals.

Besides the ropes, inspect all the components they pass through and the structural surfaces they are in contact with, such as:

- Sheaves (see para. 2.7);
- Winch drums: check the proper spooling of the rope on them.
- Rope protections and guides.
- Pins and structural parts that make contact with ropes.



### Important advice

**When the crane is supplied with 4-Part Line but mainly works with 2-Part Line, at least once a week use it with the 4-Part Line engaged. Uncoil the rope from the drum completely, thus relieving any internal tension arisen. Then coil it again with a light weight hanging from the hook (this keeps the rope taut). Always check for proper and uniform coiling of the rope on the drum.**

**If the final height of the crane is quite considerable, you should provide for two rope coils with different length: one to be used for heights less than or equal to the maximum freestanding height of the crane, the other for heights exceeding it.**

## 2.6.1 Instructions for the installation of the ropes

### 2.6.1.1 Spooling off new ropes

Ropes are packaged by the manufacturer by spooling them on a coil or wooden spool or by simply rolling them up, depending on their own length and diameter.

Should a new rope be rolled up, spool it off by placing it first on a spinning reel and then pulling the rope end in a straight line, thus allowing it to spin around the axis of the reel (picture 2.6.1).

Should a new rope be spooled on a coil, insert a metal bar of proper length and diameter through its holes and lay its ends onto two "Y" support stands.

Pull the rope end in a straight line and do not allow it to slacken as it is spooled off (picture 2.6.2).

Picture 2.6.1



Picture 2.6.2



### 2.6.1.2 Rope loading break-in-period



**A break in period must be allowed for new ropes installed on the crane. This means that the maximum allowable loads cannot be placed upon the new rope for a short period of time.**

**This break in period allows the rope to slowly adapt to normal working conditions**

Failing to observe this break in period could lead to excessive work of the rope, thus causing possible premature breakages and reducing the work life of the rope itself.

### 2.6.1.3 *Rope replacement*

No precise rules can be given for determining the exact time when the rope has to be replaced, since many variable factors are involved. Once a rope reaches any one of the specified removal criteria, it may be allowed to operate to the end of the work shift, based on the judgement of a qualified person.

The rope shall be replaced after that work shift, at the end of the day, or at the latest prior to the equipment being used by the next work shift.

Removal criteria for rope replacement shall be as follows:

- A) evidence of any of the defects outlined in pictures 2.6.3, 2.6.4, 2.6.5, 2.6.6;
- B) wear of 6% the original diameter, even in a single point;
- C) one or more wires are broken. Count the outer wires broken on the rope section worn most seriously. Maximum 5 or 10 broken wires are acceptable in a rope section 6 and 30 times its diameter respectively. Count the outer wires broken on both rope sections and replace the rope in case the number of broken wires exceeds the safety limit even in only one of them. Broken wires are wires showing a wear of 50% the original diameter upon visual inspection.
- D) 1 strand broken or reduction from nominal diameter greater than 40%;
- E) the rope is buckled, chinked or permanently twisted due to hitting or rubbing on sharp edges;
- F) the core of the rope protrudes through the rope itself even in a single point;
- G) one or more strands are not taut or project out of the rope, when this is under tension.

Broken wire removal criteria cited hereon apply to wire rope operating on steel sheaves and drums.

The user shall contact Comedil Engineering Department for broken wire removal criteria for wire ropes operating on sheaves and drums made of material other than steel.

Individual wire breakings are difficult to detect because the broken wire end usually remains in its original position and does not protrude from the strand.

To check for broken wires in a suspected area, remove the lubricant from the rope section and rub the strands with a piece of soft wood. Also bend the rope by hand, thus allowing broken wires to protrude from the strand and become visible to the eye.

Replacement rope and sockets shall have a strength rating at least as great as the original rope and sockets furnished by the Manufacturer.

Any deviation from the original size, grade or construction shall be specified by Comedil.

Prior to any rope replacement, visually inspect the sheave and drum rope guides for evident signs of wear or deformation due to reeving of the old rope. Make sure that sheaves can rotate freely without considerable slacks; otherwise replace bearings or bushes.

With wire rope operating on drum through several layers, attention to the ways of the first layer and to their proper fitting without crossings, resulting in a correct tension of the rope during the spooling process and in a correct operation of the crane.

#### 2.6.1.4 Common rope defects

Rope common defects requiring immediate rope replacement and their causes are depicted in the following pictures:



Picture 2.6.3

##### Loop formations

Wires or groups of wires form a line of loops parallel to the axis of the rope.

This deformation is often caused by shock loading.



Picture 2.6.4

##### Nodes

A node is a local increase in rope diameter with the core easily visible among several covering strands. It can be caused by shock loading.

Corrosion and signs of wear are often noted on the outer wires.



Picture 2.6.5

##### Flat areas

A flattening can be caused by bending the rope severely over the rim of a sheave or any sharp object with the wires on the inside of the bend being forced out of position.



Picture 2.6.6

##### Birdcage (Basket Deformation)

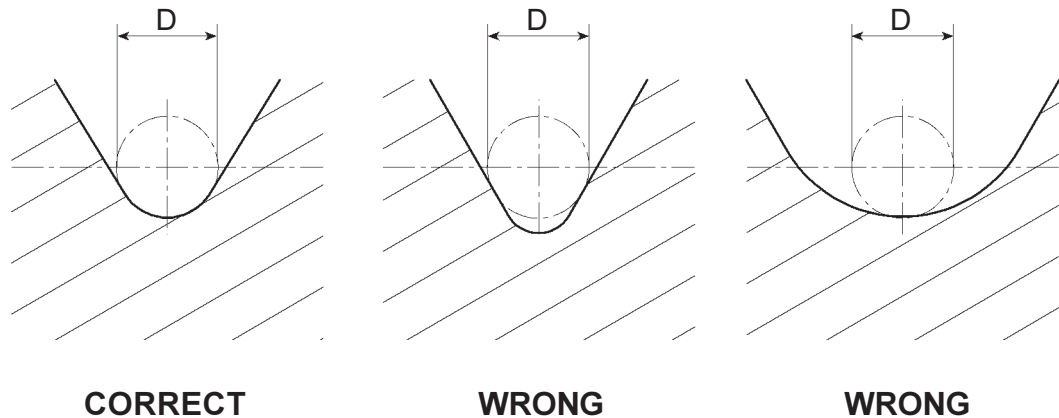
A birdcage develops when the outer layer of strands becomes longer than the inner layer of strands. The condition may occur as a result of incorrect fitting, tight sheaves, shock loading, incorrect use of a swivel or the application of a heavy load to a new rope before the strands have settled into position.

## 2.7 SHEAVES



Before installing a new rope inspect all sheave and drum races for evident signs of wear and deformation due to reeving of the old rope.

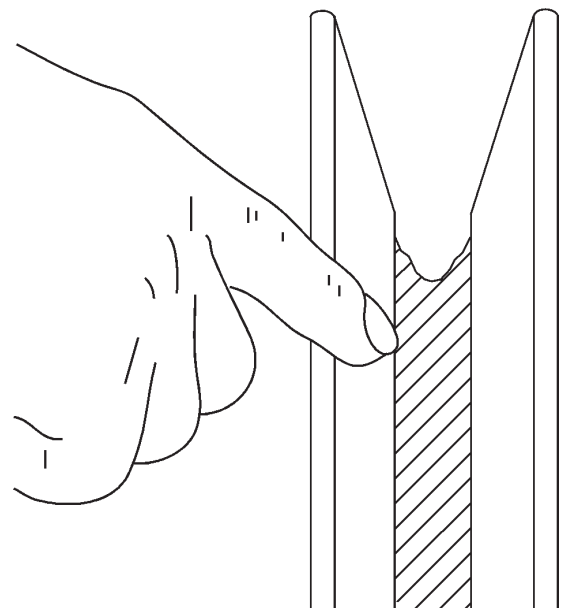
Picture 2.7.1



If defective races are discovered, take corrective action to restore the original condition by grinding their profiles.

It is very important that the sheave wheels turn freely without excessive clearances. Replace any defective bearings and bushes as necessary.

Lastly, check that there are no rope wear marks or grooves on the sheave.



Picture 2.7.2