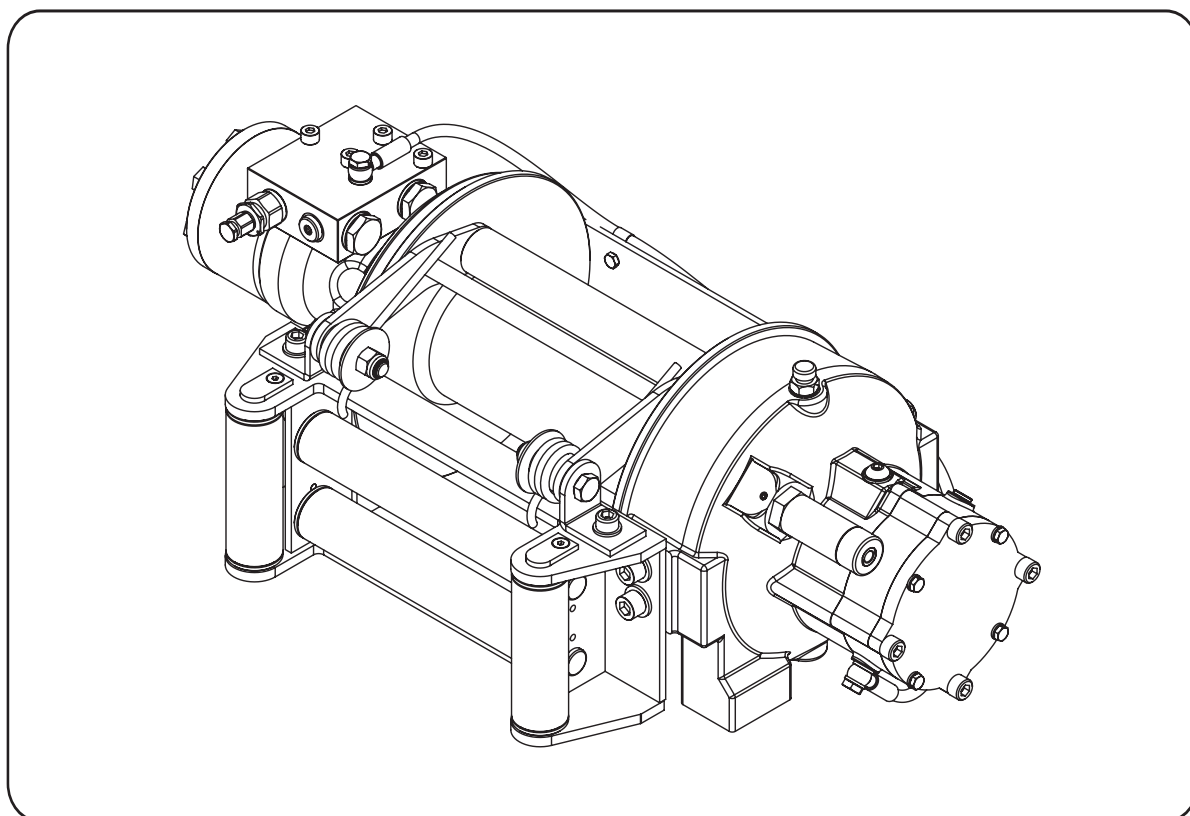


ENGLISH

OPERATING SERVICE AND MAINTENANCE MANUAL

11/2010 - UK- REVA - 11 - EN 14492-1



PLANETARY HYDRAULIC WINCH



Because of continued product improvement, we reserve the right to make changes without notice.

CE
EN 14492-1



WARNING

Read and understand this manual before installation and operation of winch.
Keep this manual with the winch at all times.

VIME has no responsibility for physical injury to persons, animals or property damages. That can result from failure to read and apply the instructions contained in the manual supplied with the winch and especially for: Failure with global safety aspects - Not correct linking to the source of energy - Deficiency in the annual and monthly maintenance - Improper uses - Any alteration, repair or modification from unauthorized personnel.



WARNING

Do not operate this winch until you have fully read this manual.

Many accidents are due for non observance safety procedures. A good reason, most of it can be avoided by knowing causes and taking in advance the opportunity safety.



WARNING

Read and understand this manual before installation and operation of winch.

Model	<ul style="list-style-type: none"> • EPH 3600 FN • EPH/L 3600 FN • EPH 4500 FN 	<ul style="list-style-type: none"> • EPH 5200 FN • EPH 6200 FN • EPH 6700 FN
Serial number		
Manufacture year		
Max. rated line pull	<ul style="list-style-type: none"> • EPH 3600 FN - EPH/L 3600 FN • EPH 4500 FN • EPH 5200 FN • EPH 6200 FN • EPH 6700 FN 	<ul style="list-style-type: none"> 3.600 kg 4.500 kg 5.200 kg 6.200 kg 6.700 kg
Wire rope diameter	<ul style="list-style-type: none"> • EPH 3600 FN - EPH/L 3600 FN • EPH 4500 FN - EPH 5200 FN • EPH 6200 FN - EPH 6700 FN 	<ul style="list-style-type: none"> Dia. 10 mm Dia. 11 mm Dia. 12 mm
Max. pressure	<ul style="list-style-type: none"> • EPH 3600 FN - EPH/L 3600 FN • EPH 4500 FN • EPH 5200 FN • EPH 6200 FN ◆ EPH 6700 FN 	<ul style="list-style-type: none"> 160 bar 150 bar 135 bar 155 bar 165 bar
Weight (without cable and accessories)	<ul style="list-style-type: none"> • EPH 3600 FN • EPH/L 3600 FN • EPH 4500 FN • EPH 5200 FN • EPH 6200 FN - EPH 6700 FN 	<ul style="list-style-type: none"> 46 kg 47,8 kg 47,9 kg 52,3 kg 57,9 kg

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SECTION 1

SAFETY PROCEDURES



1.1. INTRODUCTION

Manual identified by code No. 11/2010 UK-REV A - 11 - EN 14492-1 has 76 pages.


 **IMPORTANT**
At the delivery of this manual checks all data and for possible incongruities.

VIME reserves the right to improve its products through changes in designed or materials as it may seem desirable without being obligated to incorporate such changes in this manual.

This manual contains useful ideas in obtaining the most efficient operation and maintenance from the winch and safety procedures one need to know before operating a winch.

For safety procedures, read carefully safety procedures in chapter 1.7.

Manual has to be kept intact and near to the winch for a prompt reading and consultation.

 **WARNING**
In case of misunderstanding of this manual or parts of it, please contact VIME. For repair service contact VIME.

For a rapid consultations, manual is being shared in 7 sections:
Section 1 Safety procedures
Section 2 Mounting
Section 3 Operation
Section 4 Accessories

Section 5 Maintenance
Section 6 Trouble shooting guide
Section 7 Parts list

Section 1 contains all data for winch operations, for **SAFETY PROCEDURES** and full winch description. Section 2 contains note about road traffic, hydraulic system, winch and cable drum installations. Section 3 contains all information for safety procedures. Section 4 accessories description. Section 5 is referred to the operator in charge of the winch maintenance. In this section are indicated all procedures as well as the maintenance must be executed in winch life. Section 6 is a guide for a trouble shooting should verify in winching operation. Section 7 contains parts list codes and parts drawing. All sections are shared in chapters progressive numbered. Chapters are shared in subsections progressive numbered.

 **IMPORTANT**
For a rapid reading see table of contents.

1.2 SYMBOLS

In this manual there are three different symbols to prevent serious injuries.

- “DANGEROUS “ symbol



DANGEROUS

Used to indicate dangerous situation and prevent injury.

- “WARNING” symbol



WARNING

Used to indicate dangerous situation for winch efficiency and for operator safety.

- “IMPORTANT” symbol



IMPORTANT

Used to call attention on important informations which user must knowing.

In addition to all warning symbols has been used a symbol to underline the notes.

- “NOTE” symbol



NOTE

Used to call attention on informations or advices that could help on winching operation.

The various symbols are completed by messages that describe in detail such warnings and dangerous situation, not neglecting to point out the recommended procedures and the useful informations.

1.3 SYMBOLS

According to EEC Directive Machinery 2006/42/CE, on VIME’s winches there are, in a visibile position for the utiliser, the following symbols:



CABLE INJURES KEEP CLEAR
(roller fairlead)



READ CAREFULLY THE OPERATING SERVICE AND MAINTENANCE MANUAL (winch identification decal)



KEEP SAFETY DISTANCE
(winch identification decal)



WEAR WORKING GLOVES
(winch identification decal)



IMPORTANT

We recommend to respect the symbols above.

It is necessary to recognize the meaning of symbols and keeping visibile and readable.

If decals are damaged or unreadable replace it.

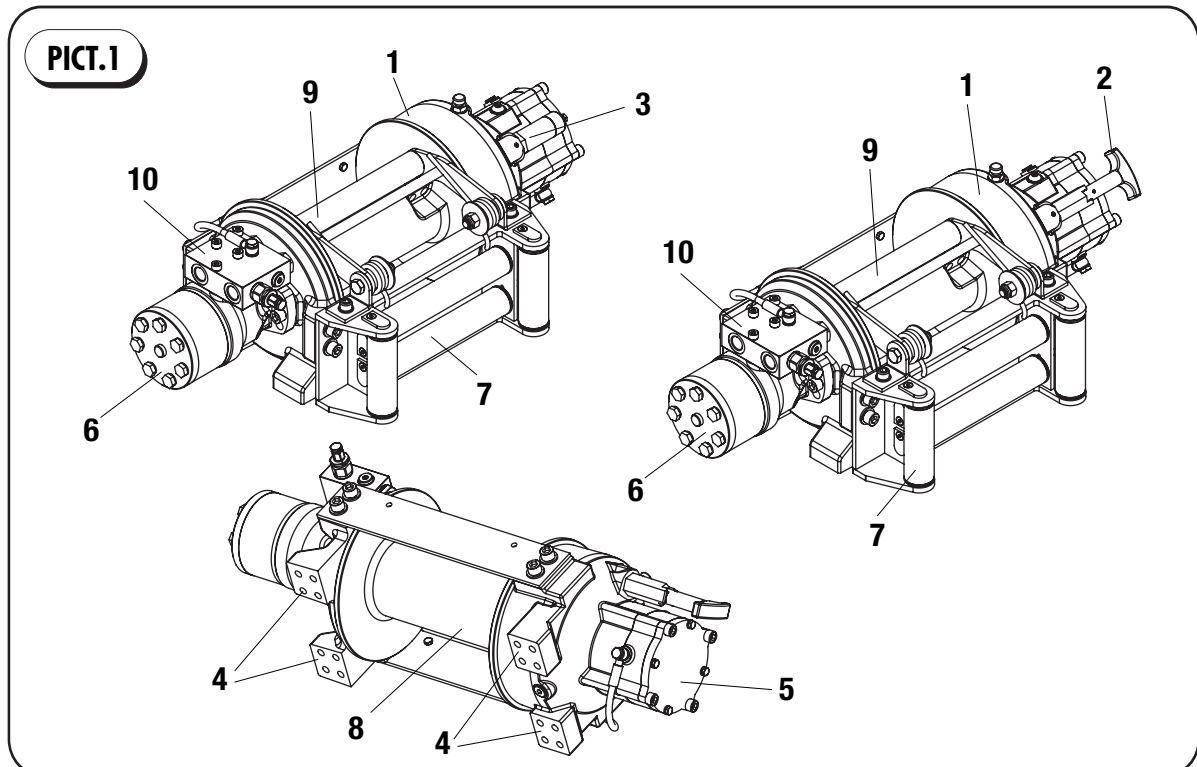
1.4 DESCRIPTION

Model EPH FN is an hydraulic planetary winch. Designed for extend life and gives best safe duty. This winch is built according with higher safety standards to complaint with Directive Machinery 2006/24/CE EN 14492-1. The high efficiency planetary gear train assure fast payout and rewind winching operational and the innovative brake system, make this winch reliable and great for industrial applications

WARNING

The winch is built for working on range temperature between -20°C and $+50^{\circ}\text{C}$. Do not exceed the range temperature it may be cause damage.

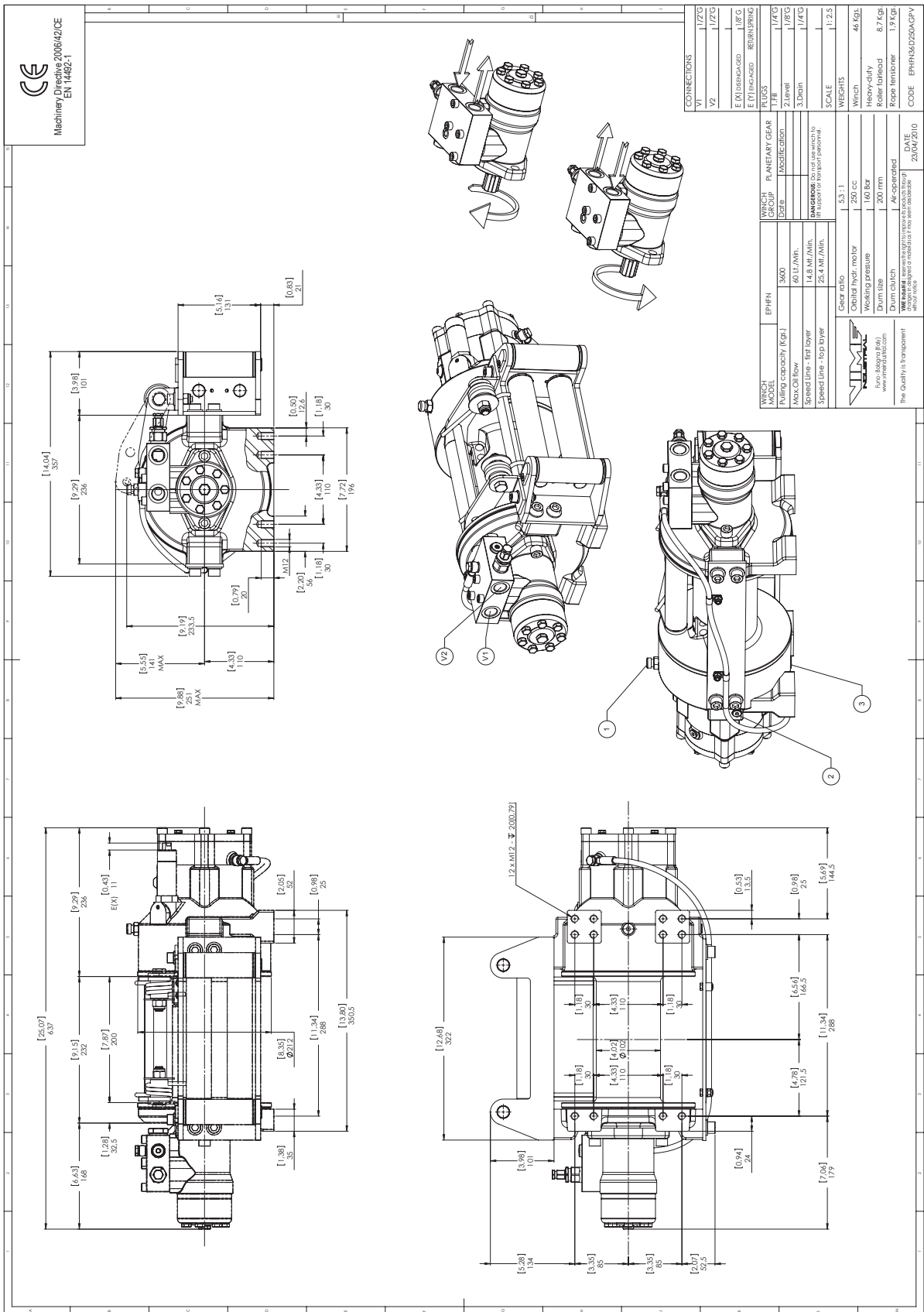
1.4.1 WINCH DESCRIPTION



Components:

- | | |
|---|--|
| <ul style="list-style-type: none"> 1. Planetary gear housing 2. Manual clutch for drum free spooling 3. Air-cylinder clutch for drum free spooling (on request) 4. Base mounting feet, n.° 16/12 holes, M12 capscrews 5. Hydraulic brake | <ul style="list-style-type: none"> 6. Orbital hydraulic motor: 250cc-315cc-400cc 7. Zinc plated Heavy-duty roller fairlead 8. Drum - lateral flanges diameter: dia.212 mm / 8,3 inch
dia.235 mm / 9,2 inch 9. Cable tensioner (Copolymer acetate roller) 10. Overcenter valve |
|---|--|

1.4.2 EPH 3600 FN WINCH DIMENSIONAL DATA



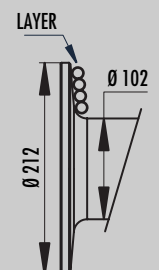
1.4.3 EPH 3600 FN WINCH TECHNICAL DATA

RATIO	WIRE ROPE SIZE [MM]	LAYER	LINE PULL [KG]
5,3:1	10*	1	3.600
		2	3.055
		3	2.653
		4	2.344
		5	2.100

OIL SUPPLY [LT/MIN]	DRUM REVOLUTION [RPM]	LINE SPEED [MT/MIN]				
		1	2	3	4	5
40	28,1	9,9	2,2	2,6	2,9	3,3
50	35,1	12,3	14,5	16,8	19,0	21,2
60	42,1	14,8	17,5	20,1	22,7	25,4

WIRE ROPE MINIMUM BREAKING LOAD EN 14492-1 [KG]	7.200
---	-------

DRUM EPH 3600 FN = 200 MM



LAYER	DRUM DIAMETER		WIRE ROPE ON LAYER		WIRE ROPE QUANTITY	
	Ø MM		[MT]		[MT]	
	10 MM	00 MM	10 MM	00 MM	10 MM	00 MM
6	212	-	12,7	-	58,1	-
5	192	-	11,5	-	45,4	-
4	172	-	10,3	-	33,9	-
3	152	-	9,1	-	23,6	-
2	132	-	7,9	-	14,6	-
1	112	-	6,7	-	6,7	-
0	102	-	-	-	-	-

WIRE ROPE CAPACITY [MT]		MAX. WIRE ROPE CAPACITY EN 14492-1 [MT]		MAX. WIRE ROPE CAPACITY [MT]	
10 MM	00 MM	10 MM	00 MM	10 MM	00 MM
25	00	33**	00	58	00

DESCRIPTION	WEIGHTS
	KGS.
WINCH (WITHOUT CABLE)	46
ACCESSORY : ROLLERFAILREAD	8,7
ACCESSORY : CABLE TENSIONER	1,9

NOTES

Specifications are subject to change without notification and without incurring obligation. Specifications in this publication are theoretical and may vary depending on hydraulic system, environment, etc.

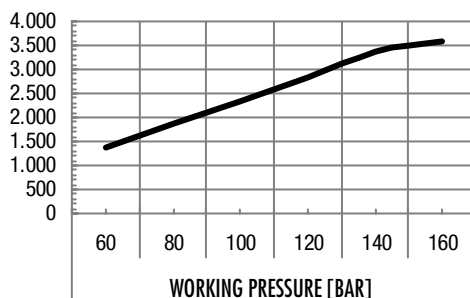
NOTES

*Wire rope size must be respected. Recommended wire rope min. tensile strength 2160 N/mm².
Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

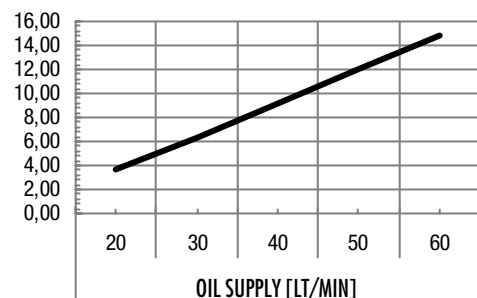
** Max. wire rope capacity according with EN 14492-1.

1.4.4 EPH 3600 FN WINCH PERFORMANCE CHARTS AT THE 1ST LAYER

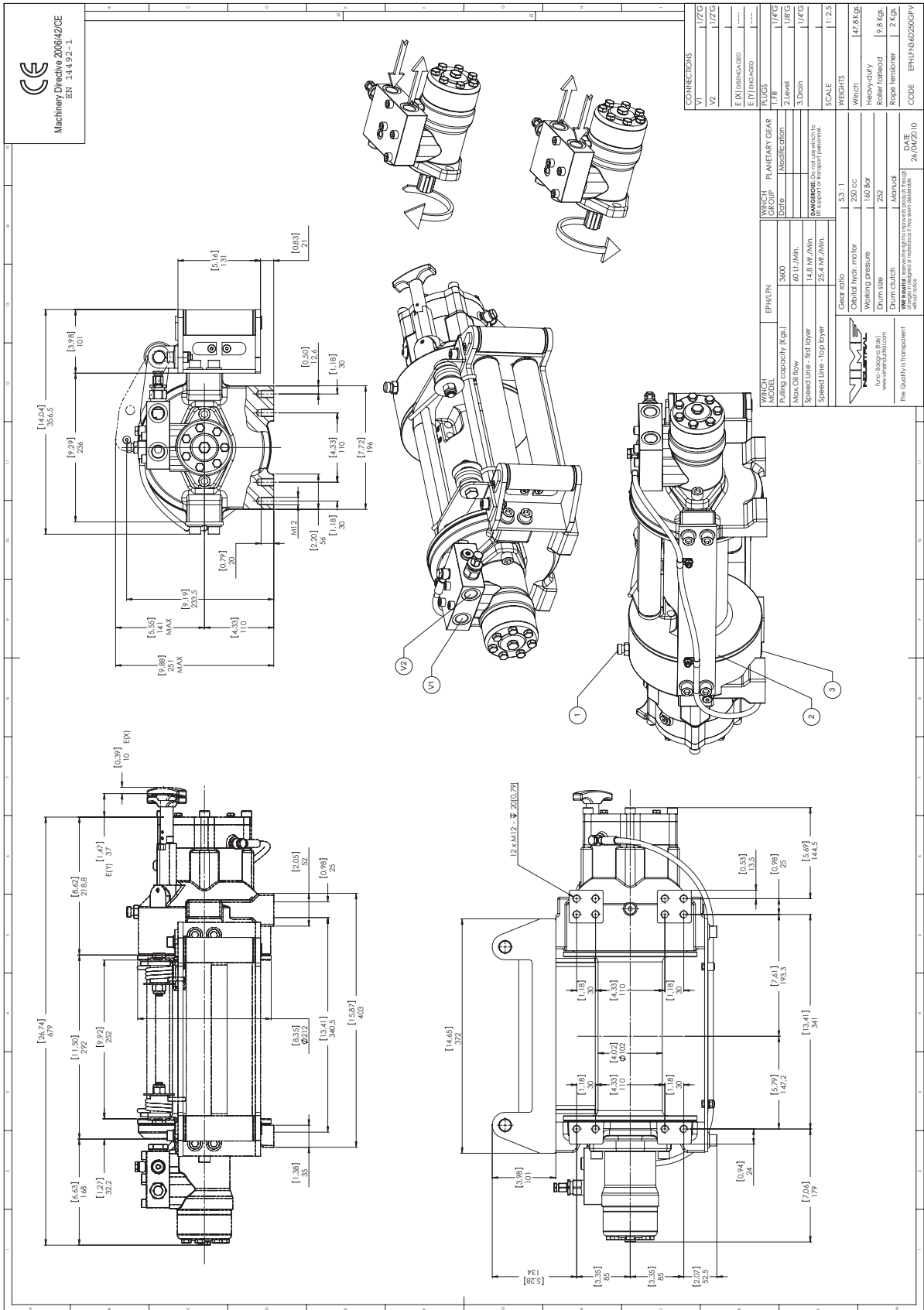
LINE PULL-FIRST LAYER [KG]



LINE SPEED [M/MIN]



1.4.5 EPH/L 3600 FN WINCH DIMENSIONAL DATA



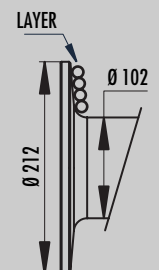
1.4.6 EPH/L 3600 FN WINCH TECHNICAL DATA

RATIO	WIRE ROPE SIZE [MM]	LAYER	LINE PULL [KG]
5,3:1	10*	1	3.600
		2	3.055
		3	2.653
		4	2.344
		5	2.100

OIL SUPPLY [LT/MIN]	DRUM REVOLUTION [RPM]	LINE SPEED [MT/MIN]				
		1	2	3	4	5
40	28,1	9,9	2,2	2,6	2,9	3,3
50	35,1	12,3	14,5	16,8	19,0	21,2
60	42,1	14,8	17,5	20,1	22,7	25,4

WIRE ROPE MINIMUM BREAKING LOAD EN 14492-1 [KG]	7.200
---	-------

DRUM EPH/L - 3600 FN = 252 MM



LAYER	DRUM DIAMETER		WIRE ROPE ON LAYER		WIRE ROPE QUANTITY	
	Ø MM		[MT]		[MT]	
	10 MM	00 MM	10 MM	00 MM	10 MM	00 MM
6	212	-	16,1	-	73,9	-
5	192	-	14,6	-	57,8	-
4	172	-	13,1	-	43,2	-
3	152	-	11,6	-	30,1	-
2	132	-	10,0	-	18,6	-
1	112	-	8,5	-	8,5	-
0	102	-	-	-	-	-

WIRE ROPE CAPACITY [MT]		MAX. WIRE ROPE CAPACITY EN 14492-1 [MT]		MAX. WIRE ROPE CAPACITY [MT]	
10 MM	00 MM	10 MM	00 MM	10 MM	00 MM
30	00	43**	00	73	00

DESCRIPTION	WEIGHTS
	KGS.
WINCH (WITHOUT CABLE)	47,8
ACCESSORY : ROLLERFAILREAD	9,8
ACCESSORY : CABLE TENSIONER	2,0

NOTES

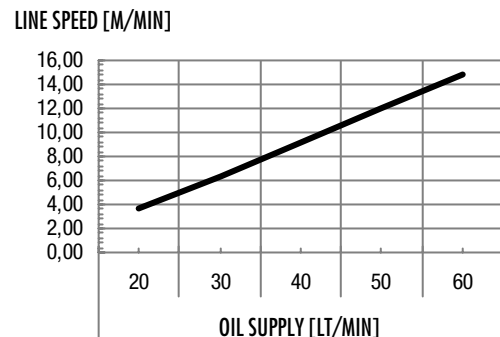
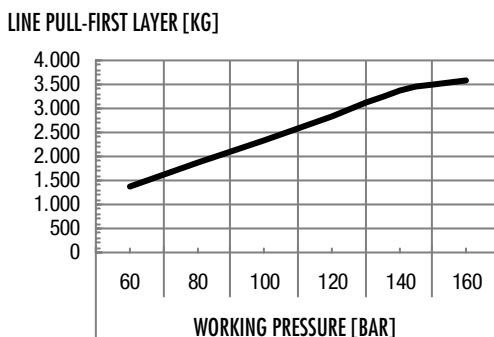
Specifications are subject to change without notification and without incurring obligation. Specifications in this publication are theoretical and may vary depending on hydraulic system, environment, etc.

NOTES

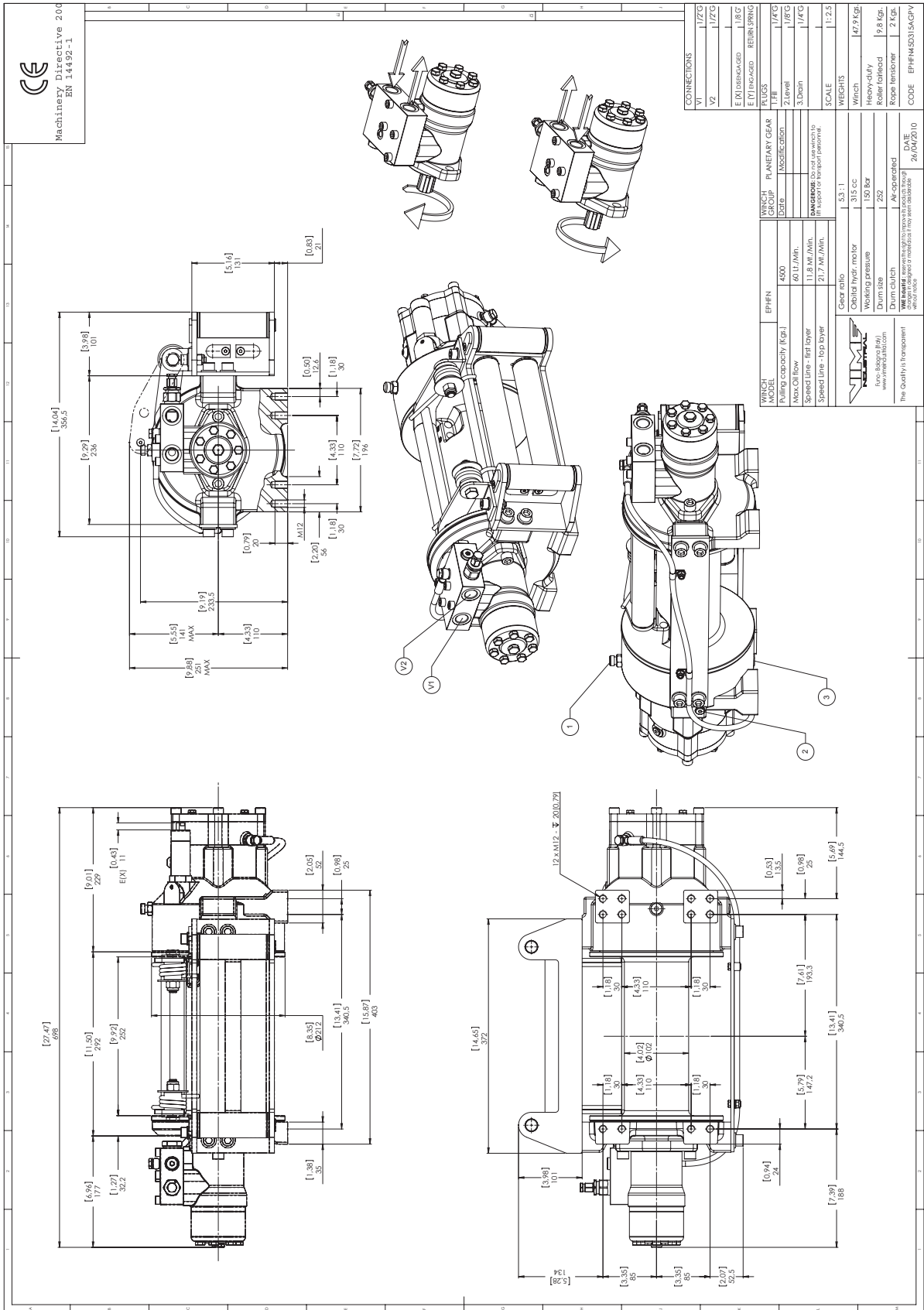
*Wire rope size must be respected. Recommended wire rope min. tensile strength 2160 N/mm².
Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

** Max. wire rope capacity according with EN 14492-1.

1.4.7 EPH/L 3600 FN WINCH PERFORMANCE CHARTS AT THE 1ST LAYER



1.4.8 EPH 4500 FN WINCH DIMENSIONAL DATA

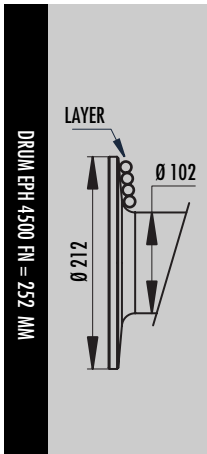


1.4.9 EPH 4500 FN WINCH TECHNICAL DATA

RATIO	WIRE ROPE SIZE [MM]	LAYER	LINE PULL [KG]
5,3:1	11*	1	4.500
		2	3.767
		3	3.239
		4	2.841
		5	2.530

OIL SUPPLY [LT/MIN]	DRUM REVOLUTION [RPM]	LINE SPEED [MT/MIN]				
		1	2	3	4	5
40	19,9	7,1	8,4	9,8	11,2	12,5
50	27,4	9,7	11,6	13,5	15,4	17,3
60	32,9	11,7	14,0	16,2	18,5	20,8

WIRE ROPE MINIMUM BREAKING LOAD EN 14492-1 [KG]	9.000
---	-------



LAYER	DRUM DIAMETER		WIRE ROPE ON LAYER		WIRE ROPE QUANTITY	
	Ø MM		[MT]		[MT]	
	Ø MM		11 MM	00 MM	11 MM	00 MM
5	201	-	13,8	-	54,0	-
4	179	-	12,3	-	40,2	-
3	157	-	10,8	-	27,9	-
2	135	-	9,3	-	17,1	-
1	113	-	7,8	-	7,8	-
0	102	-	-	-	-	-

WIRE ROPE CAPACITY [MT]		MAX. WIRE ROPE CAPACITY EN 14492-1 [MT]		MAX. WIRE ROPE CAPACITY [MT]	
11 MM	00 MM	11 MM	00 MM	11 MM	00 MM
28	00	40**	00	54	00

DESCRIPTION	WEIGHTS
	KGS.
WINCH (WITHOUT CABLE)	47,9
ACCESSORY : ROLLERFAILREAD	9,8
ACCESSORY : CABLE TENSIONER	2,0

NOTES

Specifications are subject to change without notification and without incurring obligation. Specifications in this publication are theoretical and may vary depending on hydraulic system, environment, etc.

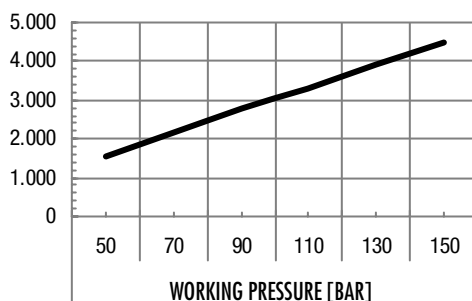
NOTES

*Wire rope size must be respected. Recommended wire rope min. tensile strength 2160 N/mm².
Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

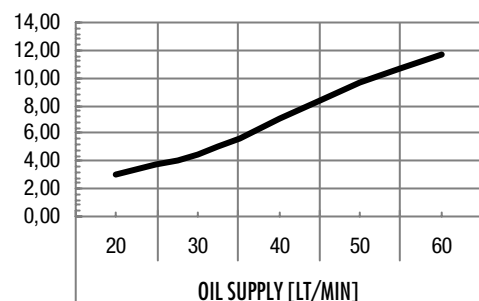
** Max. wire rope capacity according with EN 14492-1.

1.4.10 EPH 4500 FN WINCH PERFORMANCE CHARTS AT THE 1ST LAYER

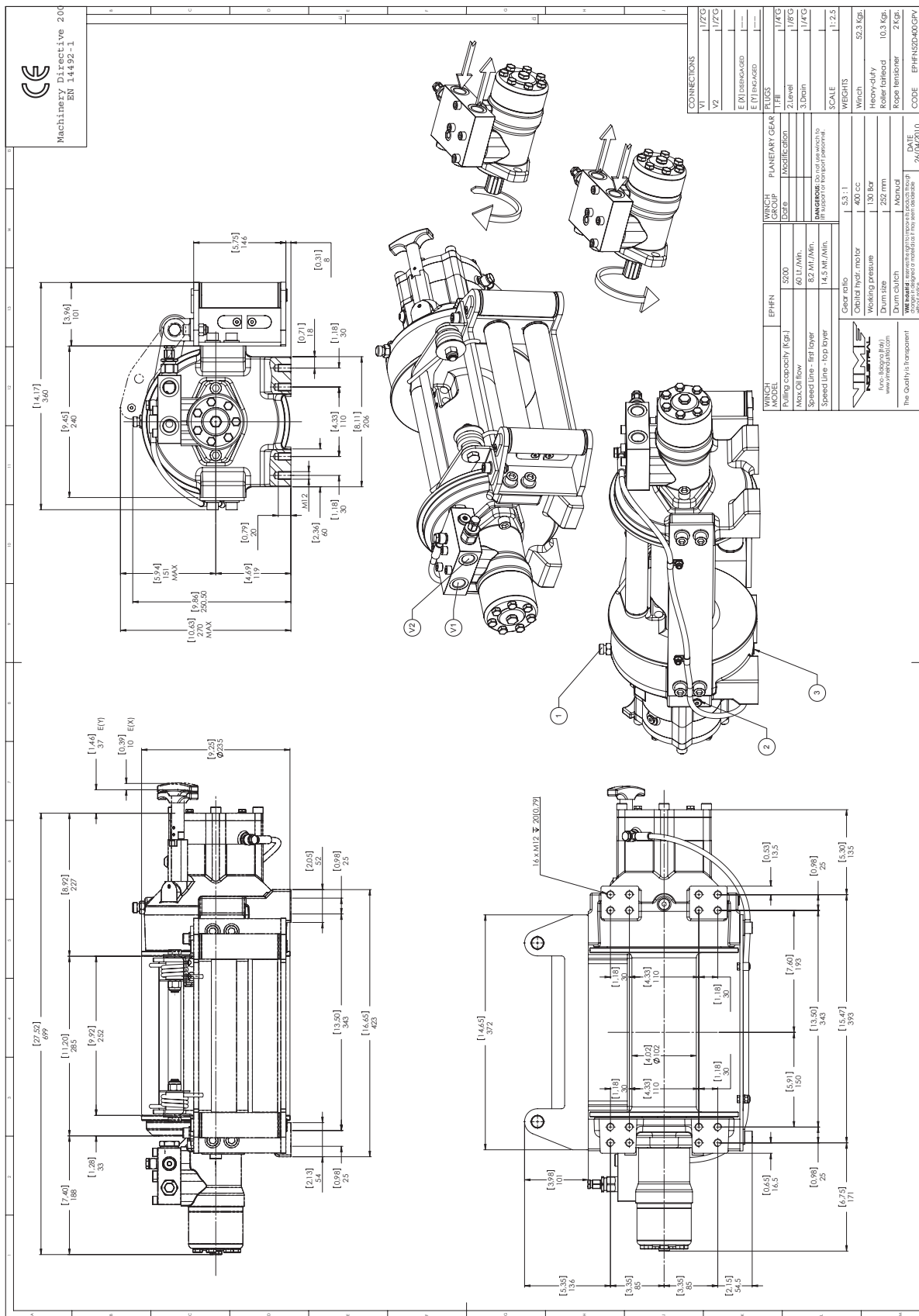
LINE PULL-FIRST LAYER [KG]



LINE SPEED [M/MIN]



1.4.1.1 EPH 5200 FN WINCH DIMENSIONAL DATA



CE
Machinery Directive 2006
EN 14492-1

CONNECTIONS		PLANETARY GEAR	
V1	1/2" G	Date	
V2	1/2" G	Modification	
E (X) Unenclosed		EPHFN	
E (Y) Enclosed		5200	
E (Z) Enclosed		60 LI/Min.	
		8,2 MI./Min.	
		14,5 MI./Min.	
		53 : 1	
		400 cc	
		130 Bar	
		252 mm	
		Manual	
		21 Kg.	
		26/04/2010	

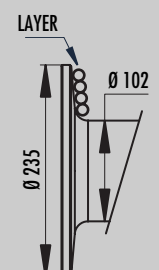
1.4.12 EPH 5200 FN WINCH TECHNICAL DATA

RATIO	WIRE ROPE SIZE [MM]	LAYER	LINE PULL [KG]
5,3:1	11*	1	5.200
		2	4.355
		3	3.745
		4	3.290
		5	2.925

OIL SUPPLY [LT/MIN]	DRUM REVOLUTION [RPM]	LINE SPEED [MT/MIN]				
		1	2	3	4	5
40	14,4	5,1	6,1	7,1	8,1	9,1
50	20,3	7,2	8,6	10,0	11,4	12,8
60	24,4	8,6	10,3	12,0	13,7	15,4

WIRE ROPE MINIMUM BREAKING LOAD EN 14492-1 [KG]	10.400
---	--------

DRUM EPH 5200 FN = 252 MM



LAYER	DRUM DIAMETER		WIRE ROPE ON LAYER		WIRE ROPE QUANTITY	
	Ø MM		[MT]		[MT]	
	11 MM	00 MM	11 MM	00 MM	11 MM	00 MM
6	223	-	15,3	-	69,4	.
5	201	-	13,8	-	54,0	-
4	179	-	12,3	-	40,2	-
3	157	-	10,8	-	27,9	-
2	135	-	9,3	-	17,1	-
1	113	-	7,8	-	7,8	-
0	102	-	-	-	-	-

WIRE ROPE CAPACITY [MT]		MAX. WIRE ROPE CAPACITY EN 14492-1 [MT]		MAX. WIRE ROPE CAPACITY [MT]	
11 MM	00 MM	11 MM	00 MM	11 MM	00 MM
30	00	54**	00	69	00

DESCRIPTION	WEIGHTS
	KG.
WINCH (WITHOUT CABLE)	52,3
ACCESSORY : ROLLERFAILREAD	9,8
ACCESSORY : CABLE TENSIONER	2,0

NOTES

Specifications are subject to change without notification and without incurring obligation. Specifications in this publication are theoretical and may vary depending on hydraulic system, environment, etc.

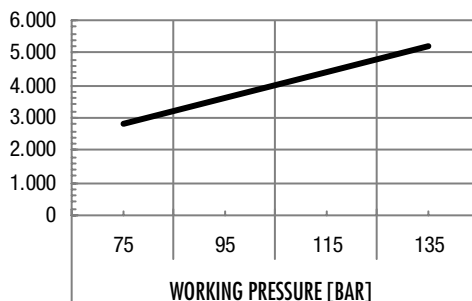
NOTES

*Wire rope size must be respected. Recommended wire rope min. tensile strength 2160 N/mm².
Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

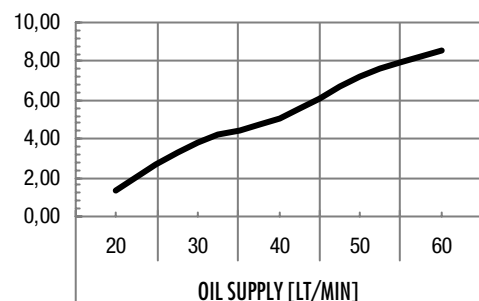
** Max. wire rope capacity according with EN 14492-1.

1.4.13 EPH 5200 FN WINCH PERFORMANCE CHARTS AT THE 1ST LAYER

LINE PULL-FIRST LAYER [KG]



LINE SPEED [M/MIN]



1.4.14 EPH 6200 FN WINCH DIMENSIONAL DATA

Machinery Directive 2006
EN 14492 - 1

CONNECTIONS	
V1	1/2" G
V2	1/2" G
E (R) Unpowered 18" G	
E (T) Enclosed maintenance	

PLANETARY GEAR	
Ratio	5.3:1
Oil	Oil
Max. Oil flow	40 L/min.
Speed line - 1st layer	8.7 M/Min.
Speed line - top layer	15.6 M/Min.

WINCH MODEL		EPHFN	
Pulling capacity (kg)	6200	Working pressure	155 Bar
Max. Oil flow	40 L/min.	Drum size	252 mm
Speed line - 1st layer	8.7 M/Min.	Drum clutch	AK-operated
Speed line - top layer	15.6 M/Min.		

WINCH GROUP		PLANETARY GEAR	
Date	2010	Ratio	5.3:1
Model	EPHFN	Oil	Oil
Manufacturer	VIME	Max. Oil flow	40 L/min.
Version	1.0	Speed line - 1st layer	8.7 M/Min.
Approved by		Speed line - top layer	15.6 M/Min.

WEIGHTS	
Winch	57.9 kg.
Heavy-duty Roller (allied)	10.3 kg.
Rope tensioner	2 kg.

SCALE	
Winch	1:2.5
Heavy-duty Roller (allied)	1:2.5
Rope tensioner	1:2.5

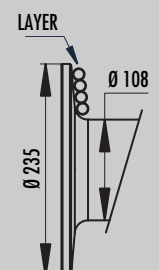
CODE	
Model	EPHFN6200M04GPV
Date	26/01/2010

1.4.15 EPH 6200 FN WINCH TECHNICAL DATA

RATIO	WIRE ROPE SIZE [MM]	LAYER	LINE PULL [KG]
5,3:1	12*	1	6.200
		2	5.167
		3	4.429
		4	3.875
		5	3.444

OIL SUPPLY [LT/MIN]	DRUM REVOLUTION [RPM]	LINE SPEED [MT/MIN]				
		1	2	3	4	5
40	16,2	6,1	7,3	8,6	9,8	11,0
50	20,3	7,6	9,2	10,7	12,2	13,7
60	24,4	9,2	11,0	12,8	14,7	16,5

WIRE ROPE MINIMUM BREAKING LOAD EN 14492-1 [KG] 12.400



LAYER	DRUM DIAMETER		WIRE ROPE ON LAYER		WIRE ROPE QUANTITY	
	Ø MM		[MT]		[MT]	
	12 MM	Ø0 MM	12 MM	Ø0 MM	12 MM	Ø0 MM
5	216	-	13,6	-	52,8	-
4	192	-	12,1	-	39,2	-
3	168	-	10,6	-	27,1	-
2	144	-	9,0	-	16,6	-
1	120	-	7,5	-	7,5	-
0	108	-	-	-	-	-

WIRE ROPE CAPACITY [MT]		MAX. WIRE ROPE CAPACITY EN 14492-1 [MT]		MAX. WIRE ROPE CAPACITY [MT]	
12 MM	Ø0 MM	12 MM	Ø0 MM	12 MM	Ø0 MM
30	Ø0	39**	Ø0	52	Ø0

DESCRIPTION	WEIGHTS
	KGS.
WINCH (WITHOUT CABLE)	57,9
ACCESSORY : ROLLERFAILREAD	10,3
ACCESSORY : CABLE TENSIONER	2,0

NOTES

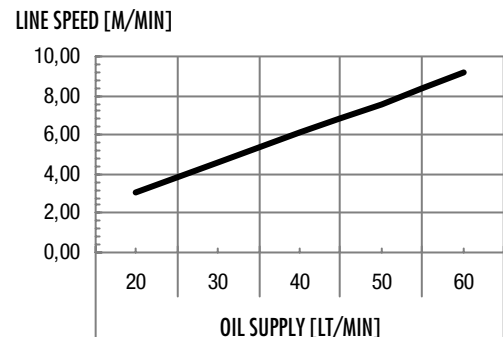
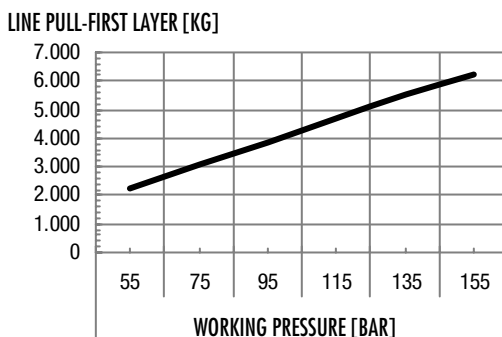
Specifications are subject to change without notification and without incurring obligation. Specifications in this publication are theoretical and may vary depending on hydraulic system, environment, etc.

NOTES


*Wire rope size must be respected. Recommended wire rope min. tensile strength 2160 N/mm².
Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

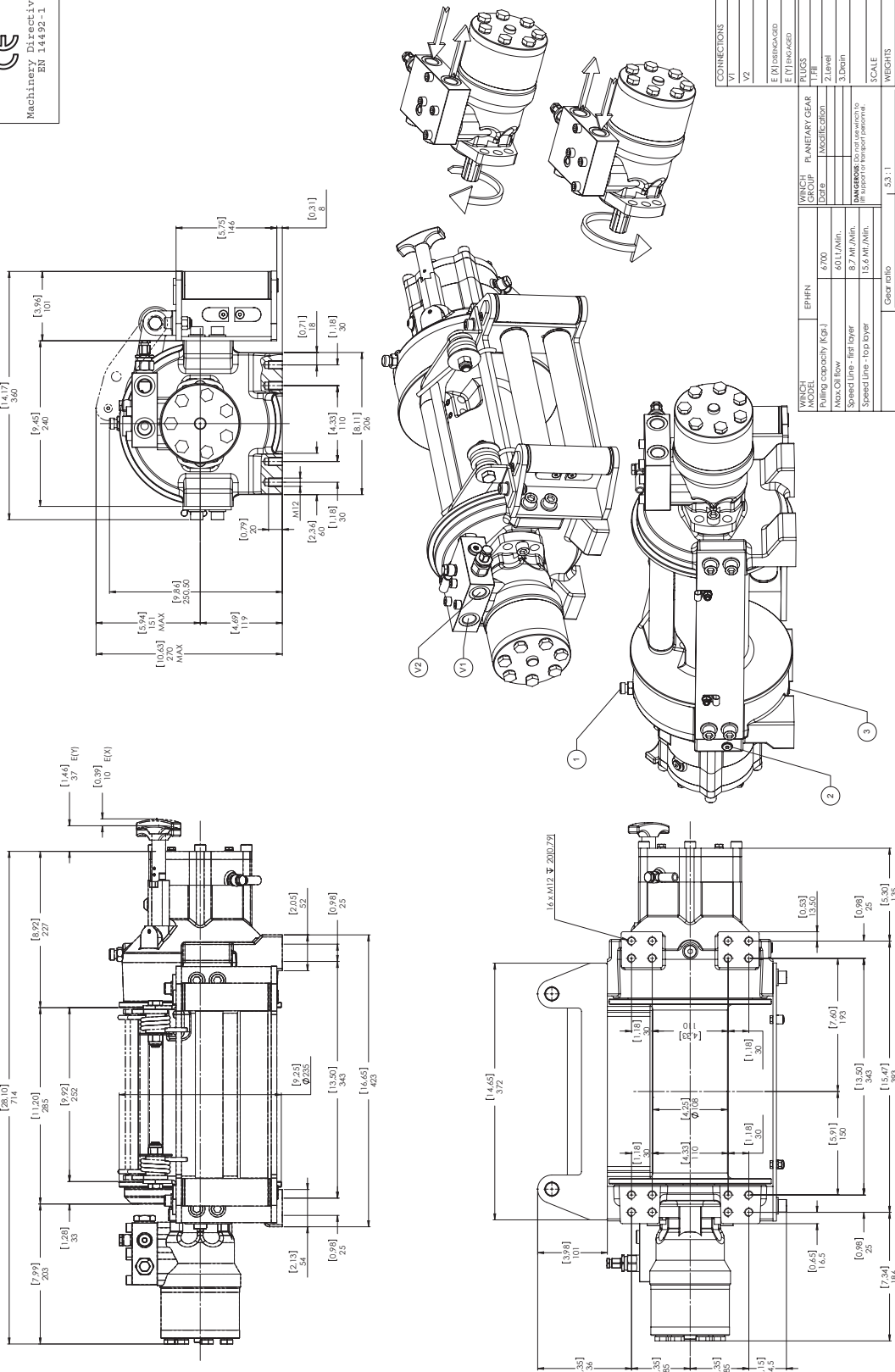
** Max. wire rope capacity according with EN 14492-1.

1.4.16 EPH 6200 FN WINCH PERFORMANCE CHARTS AT THE 1ST LAYER



1.4.17 EPH 6700 FN WINCH DIMENSIONAL DATA





CONNECTIONS	
V1	1/2" G
V2	1/2" G
E (X) Unpowered	
E (Y) Enclosed	
E (Z) Enclosed	

WINCH GROUP		PLANETARY GEAR	
Model	EPHFN	Date	Modification
Pulling capacity (kg)	6700		
Max. Oil flow	40 L/Min.		
Speed line - first layer	8.7 M/Min.		
Speed line - top layer	15.6 M/Min.		

WEIGHTS	
Winch	57.9 kg.
Heavy-duty Roller (allied)	10.3 kg.
Rope tensioner	2 kg.
SCALE	1:2.5

GEAR RATIO	
Gear ratio	53:1
Oil bath hydr. motor	400 cc.
Working pressure	145 Bar
Drum size	252 mm
Drum clutch	Manual

DATE	
DATE	26/07/2010

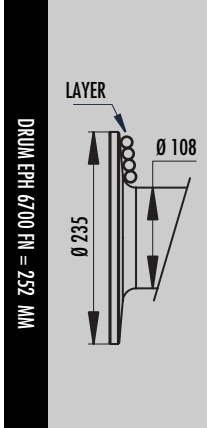
We intend to respect the following conditions in our products:
 - Low leakage (Hyd.)
 - Low noise (Hyd.)
 - The Quality is transparent

1.4.18 EPH 6700 FN WINCH TECHNICAL DATA

RATIO	WIRE ROPE SIZE [MM]	LAYER	LINE PULL [KG]
5,3:1	12*	1	6.700
		2	5.583
		3	4.786
		4	4.188
		5	3.722

OIL SUPPLY [LT/MIN]	DRUM REVOLUTION [RPM]	LINE SPEED [MT/MIN]				
		1	2	3	4	5
40	16,2	6,1	7,3	8,6	9,8	11,0
50	20,3	7,6	9,2	10,7	12,2	13,7
60	24,4	9,2	11,0	12,8	14,7	16,5

WIRE ROPE MINIMUM BREAKING LOAD EN 14492-1 [KG] 13.400



LAYER	DRUM DIAMETER		WIRE ROPE ON LAYER		WIRE ROPE QUANTITY	
	Ø MM		[MT]		[MT]	
	Ø MM		12 MM	Ø0 MM	12 MM	Ø0 MM
5	216	-	13,6	-	52,8	-
4	192	-	12,1	-	39,2	-
3	168	-	10,6	-	27,1	-
2	144	-	9,0	-	16,6	-
1	120	-	7,5	-	7,5	-
0	108	-	-	-	-	-

WIRE ROPE CAPACITY [MT]		MAX. WIRE ROPE CAPACITY EN 14492-1 [MT]		MAX. WIRE ROPE CAPACITY [MT]	
12 MM	Ø0 MM	12 MM	Ø0 MM	12 MM	Ø0 MM
30	Ø0	39**	Ø0	52	Ø0

DESCRIPTION	WEIGHTS
	KGS.
WINCH (WITHOUT CABLE)	57,9
ACCESSORY : ROLLERFAILREAD	10,3
ACCESSORY : CABLE TENSIONER	2,0

NOTES

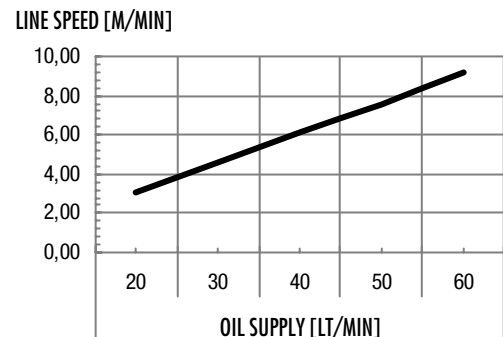
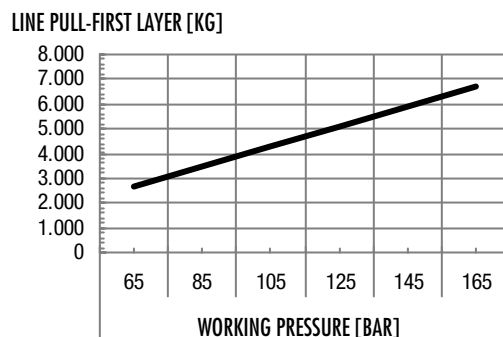
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NOTES

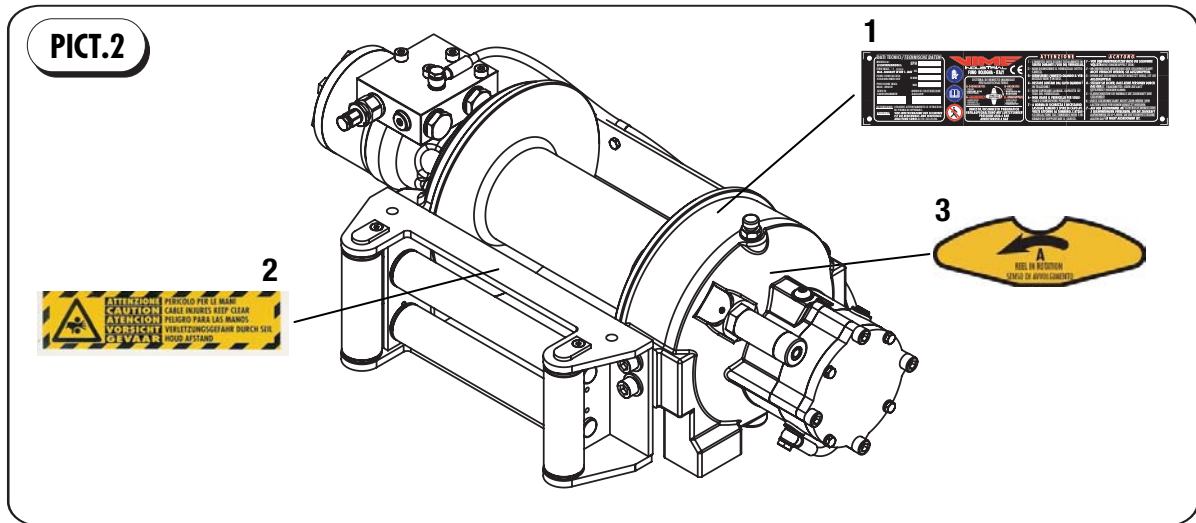
*Wire rope size must be respected. Recommended wire rope min. tensile strength 2160 N/mm².
Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

** Max. wire rope capacity according with EN 14492-1.

1.4.19 EPH 6700 FN WINCH PERFORMANCE CHARTS AT THE 1ST LAYER



1.5 WINCH DECALS. SAFETY ADVICES



A decal (1), onto the top of the planetary gear housing end gives: winch model, max pulling capacity at 1st layer, wire rope diameter according to the rule, working pressure, serial number and year of built. A yellow sticker (2) onto the roller fairlead, warns about rotating parts.

spooling direction of the cable. If not specified in the order, winch is supplied with clockwise cable rotation on the drum “A Rotation”.

Cable rotation determined from the planetary gear housing end side. Winch is supplied complete with oil in the planetary gear housing and in the brake housing.

■ IMPORTANT

When ordering replacement parts or contact VIME’s customers service, please give winch model and serial number.

■ IMPORTANT

If decals are damaged or unreadable, replace it.

A yellow sticker (3) onto the top of the planetary gear housing end indicates the

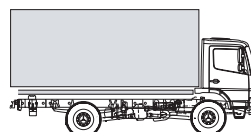
1.6 CONDITIONS OF SALES

The winch , except special customer requirements is delivered assembled and tested. Accessories such as: roller fairlead, cable tensioner, air-cylinder clutch shifter, only if required are included in the commitment. Wire rope and hook are not included in the standard winch version, only if required are included in the commitment. At the delivery, open carefully the packing. Inspect the winch

and see if it is free from defects.

■ IMPORTANT

At the delivery, open carefully the packing. Inspect the winch and see if it is free from defects.



1.6.1 PACKAGING

The standard packaging, if supplied, and unless otherwise agreed, is not rainproof and is intended for shipping by ground and not sea, and for areas which are under cover and not humid.



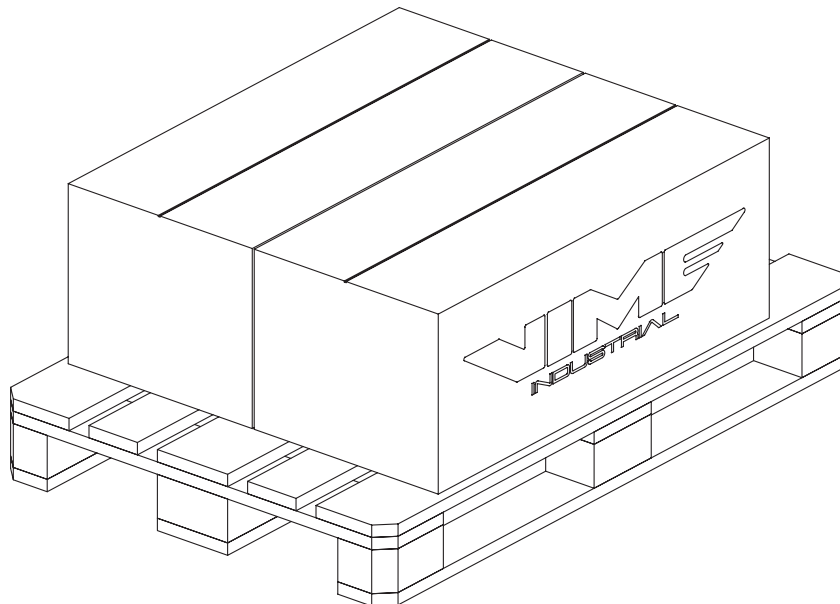
IMPORTANT

Dispose of packaging materials as stipulated by the applicable legislation.



1.6.2 PACKAGING ILLUSTRATION

PICT.3



NOTE

Winches in carton box on pallet are wrapped with plastic film. About its rainproof capacity, refer what indicated above.


1.7 SAFETY PROCEDURES

Do not operate this winch until you have carefully read and understand the warnings operation sections of this manual.

 **WARNING**

Winch use allowed by trained personnel only.

 **DANGEROUS**


 **When winching is obligatory wear working gloves.**

1. Manual or air-clutch must be fully engaged before starting the winch.
2. Do not disengage manual or air clutch under load.
3. Leave the clutch disengaged when the winch is not in use (for manual clutch version only).
4. Do not exceed maximum line pull ratings.
5. In car carrier applications after pulling vehicle on carrier, be sure to secure vehicle to carrier bed. Do not maintain load on winch cable while transporting vehicle. Do not use winch as a tie down.
6. Fast drum revolution must be used for rapid winding with no load.


 **WARNING**

 **Do not use winch to lift, support or otherwise transport personnel.**

 **DANGEROUS**

 **A minimum of 5 wraps of cable around drum barrel are recommended.**

 **DANGEROUS**

 **When pulling a load, the suddenly cable failure or either the hook failure gives a dangerous snap back of broken cable. Operators must stay clear of cable when pulling.**

 **DANGEROUS**

Accessories such as roller fairlead and cable tensioner are a natural drum protection. A yellow sticker (ref.2 pict.2 chapter1.5) on roller fairlead warns about rotating parts. In case of winch purchasing without accessories, winch drum must be protected by a cover. Protection will be fitted by the installer according to the winch mounting.

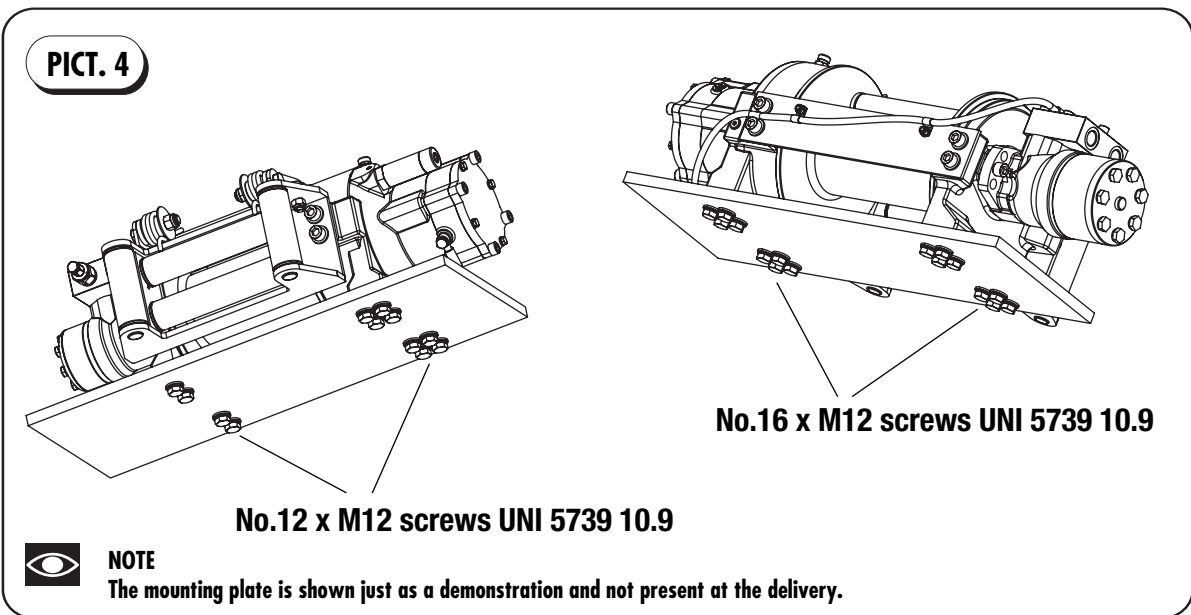
SECTION 2 MOUNTING

2.1 ROAD TRAFFIC

Winch must be mounted on vehicles in compliance with regulation. Many countries require to keep up to date with traffic card.

Do not drive vehicle not in compliance with regulation or not up dated traffic card.

2.2 WINCH MOUNTING



EPH FN winches have been designed to be fitted onto the vehicle frame through a base mounting plate who should be securely mounted to the vehicle frame in a manner acceptable to the vehicle manufacturer. It is responsibility of the person(s) installing the winch to make certain that the mounting plate is secured to the vehicle. The winch must be fitted horizontally to give best lubrication and securely mounted on a surface who can resist to the winch pulling, without having any flex within the base and the winch while in use.

EPH FN winches have 4 base mounting feet with capscrews:

- no. 12 capscrews M12 UNI 5739 class 10.9, mod. EPH 3600 FN, EPH/L 3600 FN, EPH 4500 FN.

- no. 16 capscrews M12 UNI 5739 class 10.9, mod. EPH 5200 FN, EPH 6200 FN, EPH 6700 FN.

For a proper and safe capscrews tightening it is recommended to use washers and lock washers.

IMPORTANT

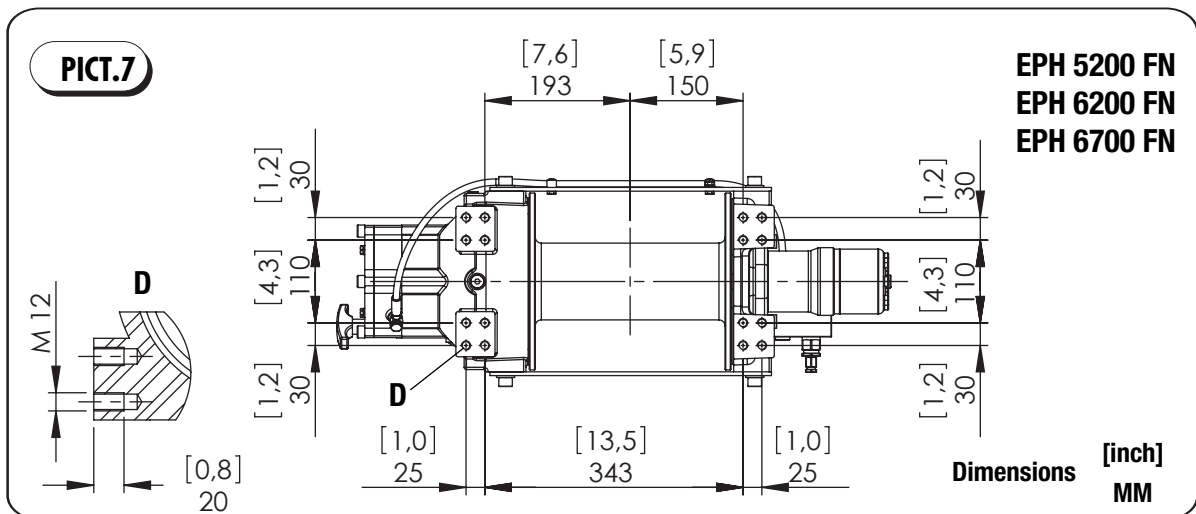
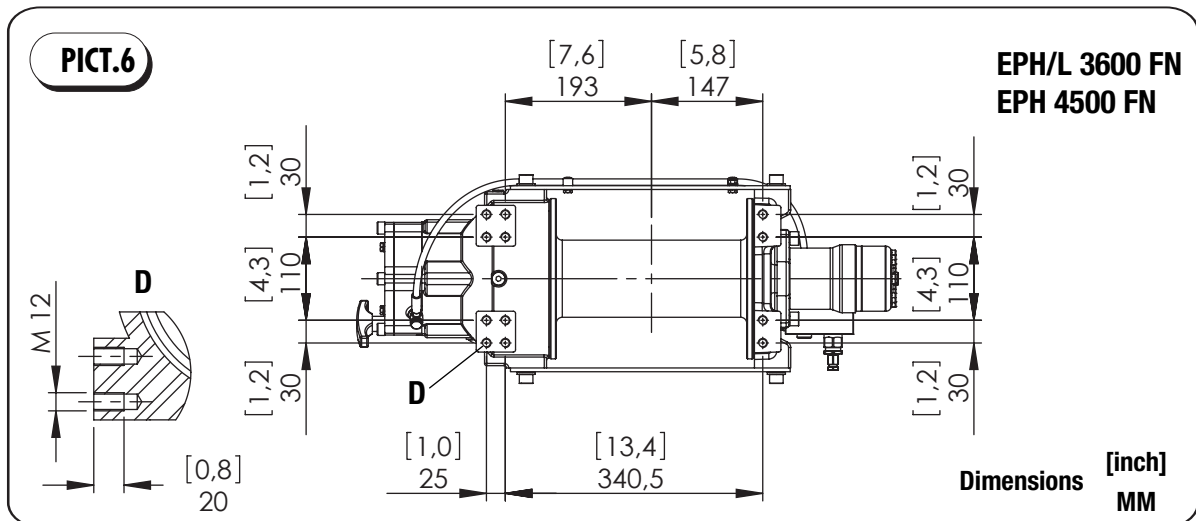
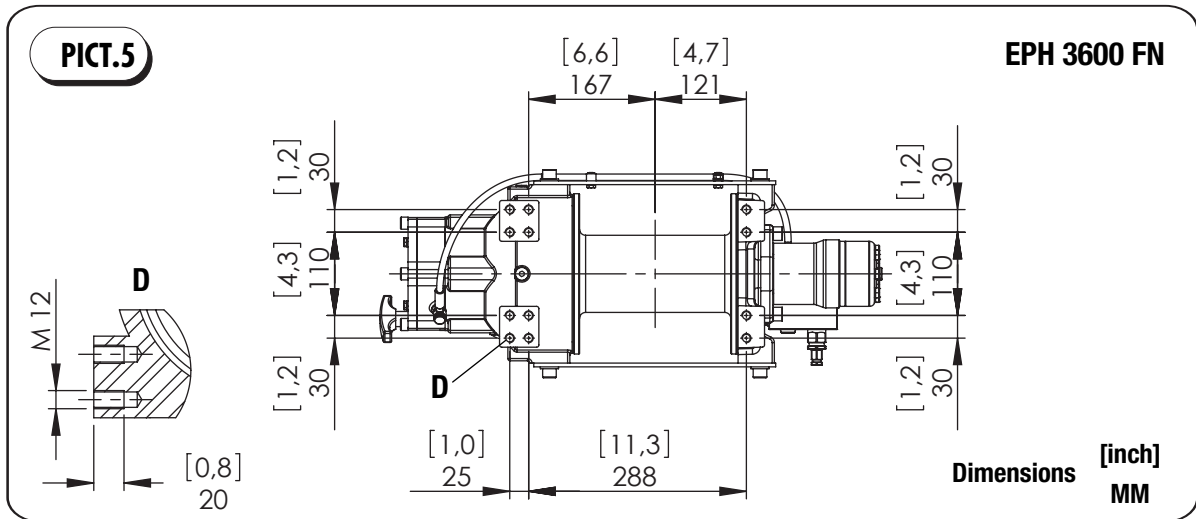
All mounting holes patterns should be used to bolt the winch onto the base mounting plate.



WARNING

Winch must no be mounted directly onto the vehicle chassis.

2.3 MOUNTING BOLT PATTERNS



2.4 WINCH MOUNTING

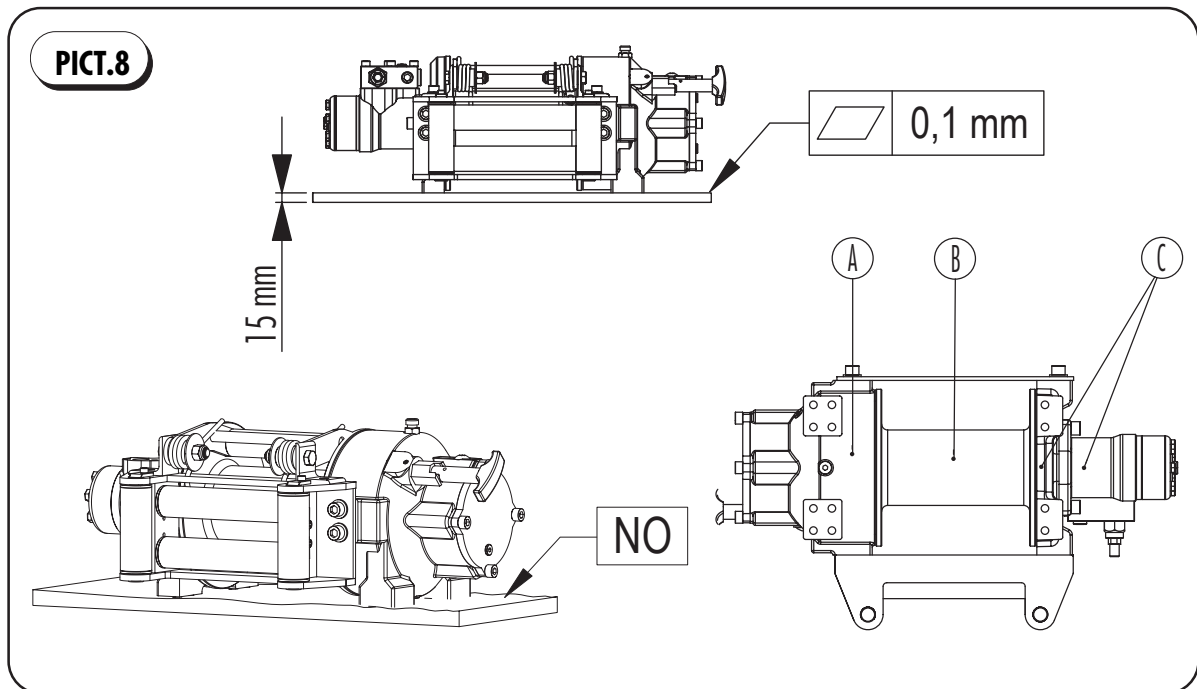
Winch base mounting plate must be rigid enough to withstand full rated line pull without distortion. A thickness not under 15 mm is recommended. The winch mounting plate must be flat with a flat surface not superior to 0,1 mm, (pict.8).

 **WARNING**

Mounting surfaces should be co-planar.

 **WARNING**

Winch base mounting plate must no flex when winch is in use.



2.4.1 UNEVEN MOUNTING SURFACE

The planetary winches are manufactured in three main components : gear housing (A), drum (B) and end motor bearing (C), (pict.8). When winch is bolted on uneven surface, components (A,B,C) will be misaligned. A bushing wear and oil seal damage will occur (chapter 2.4.3-2.4.4).

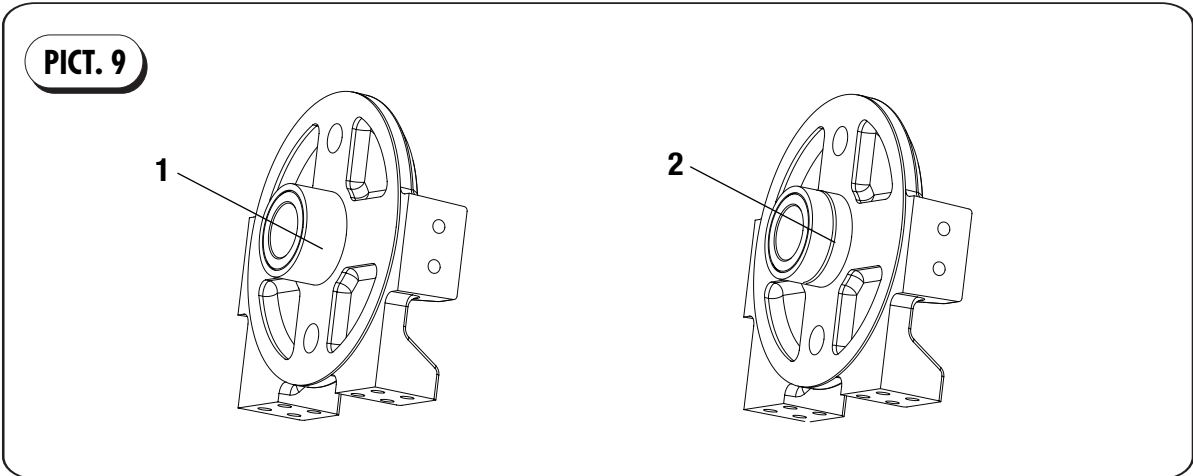
2.4.2 FLEX MOUNTING SURFACE

If winch base mounting surface thickness is not respected as recommended (pict.8), in case of heavy-duty pulling the mounting surface will flex and this would bind working parts (A,B,C), causing winch misalignment who gives as consequence a bushing wear and oil seal damage (chapter 2.4.3-2.4.4).

2.4.3 BUSHING WEAR

A wrong winch mounting, uneven or flex surface can cause a winch misalignment, who gives as a consequence a bushing wear, especially in the End motor bearing bushing (ref.1 pict.9). Deep stripes (ref.2 pict.9) on bushing

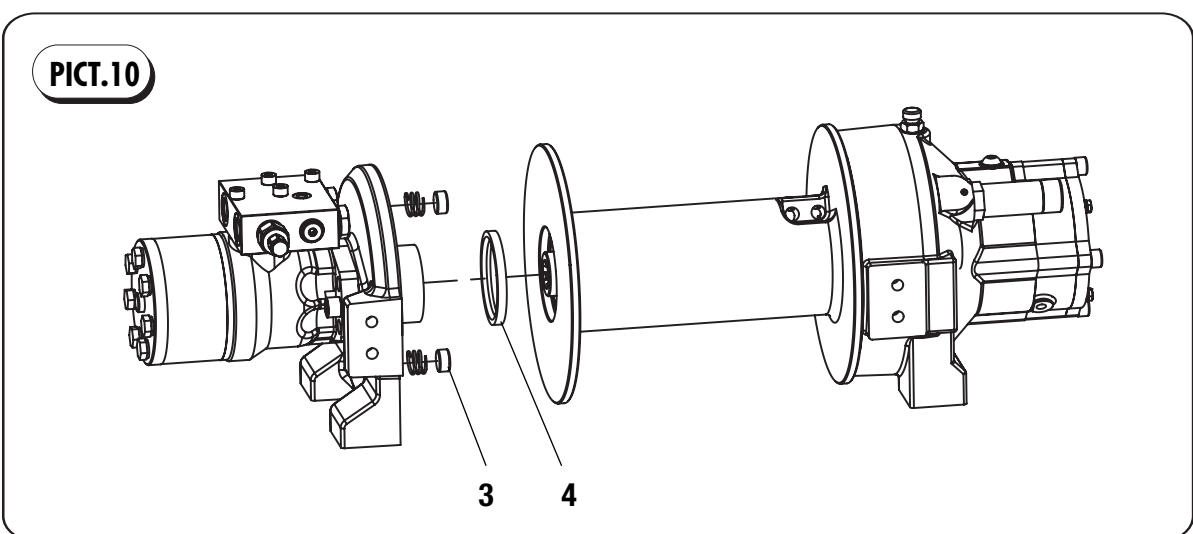
shows a bind working parts given by a misalignment. Bushing must be replaced. After having replaced the bushing, be sure winch will be fitted in the right way (chapter. 2.4.5).



2.4.4 OIL SEAL DAMAGED

A wrong winch mounting can cause, drum oil seal damage (ref.4 pict.10), who gives oil leakage. If oil seal is damaged, must be replaced. After having replaced the oil seal, be

sure winch will be fitted in the right way. (chapter 2.4.5.).



2.4.5 ALIGNMENT CHECK

After having mounted the winch and tighten the mounting feet capscrews (pict.4), run a simple test, to inspect if the winch is aligned.

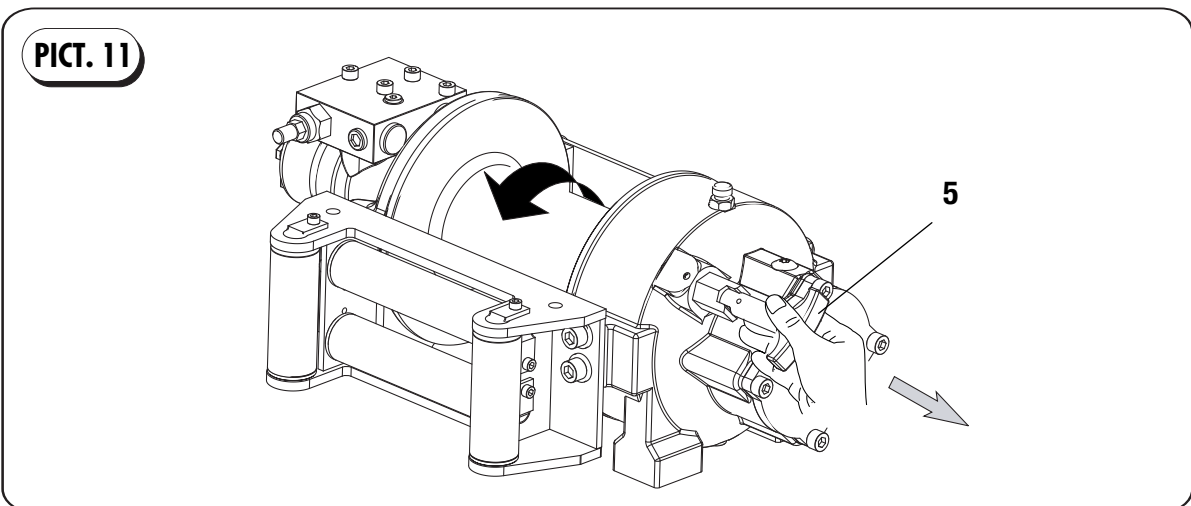
Disengage drum by pulling out and rotating the manual clutch handle (ref.5 pict.11) (for manual clutch version) or by acting the air-cylinder disengaged position (for air-clutch version). Turns by hands the drum: a certain resistance will be given by teflon discs (ref.3 pict.10) who breaking onto the drum lateral flange, to avoid in the freespooling a cable birdnests. In case of an excessive resistance this is always a symptom of winch misalignment.

If the winch is misaligned, loosen all base mounting capscrews (capscrews M12 UNI 5739 class 10.9, q.ty 12/16 according winch model, chapter 2.2) capscrews must not be

fully disassembled to maintain winch bolted at the base mounting plate. Repeat the test again by keeping capscrews loosen. If the winch is aligned, it is necessary replace or modify the base mounting plate, by following specifications indicated in chapter 2.2-2.3-2.4. If the winch is still misaligned, even with loosen capscrews, it is necessary make the right alignment (chapter 2.4.6).

IMPORTANT

Check with great care winch alignment for not compromising winch operation.



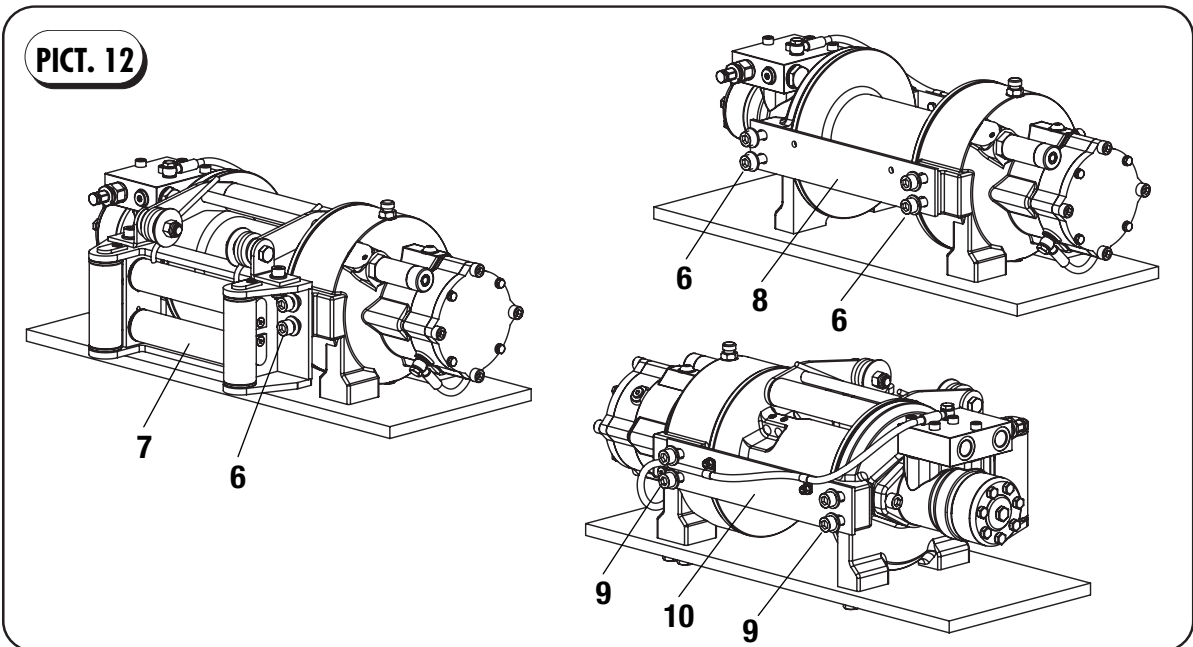
2.4.6 HOW TO GET RIGHT ALIGNMENT

If the winch is misaligned, it is necessary get alignment once again, as follow. Loosen all winch mounting capscrews (pict.4) (capscrews M12 UNI 5739 class 10.9, no.

12/16 according to the model, chapter 2.2) without fully unscrewing to keep winch on mounting plate. Loosen without unscrewing roller fairlead (ref.7 pict.12) mounting capscrews (ref.6 pict.12)

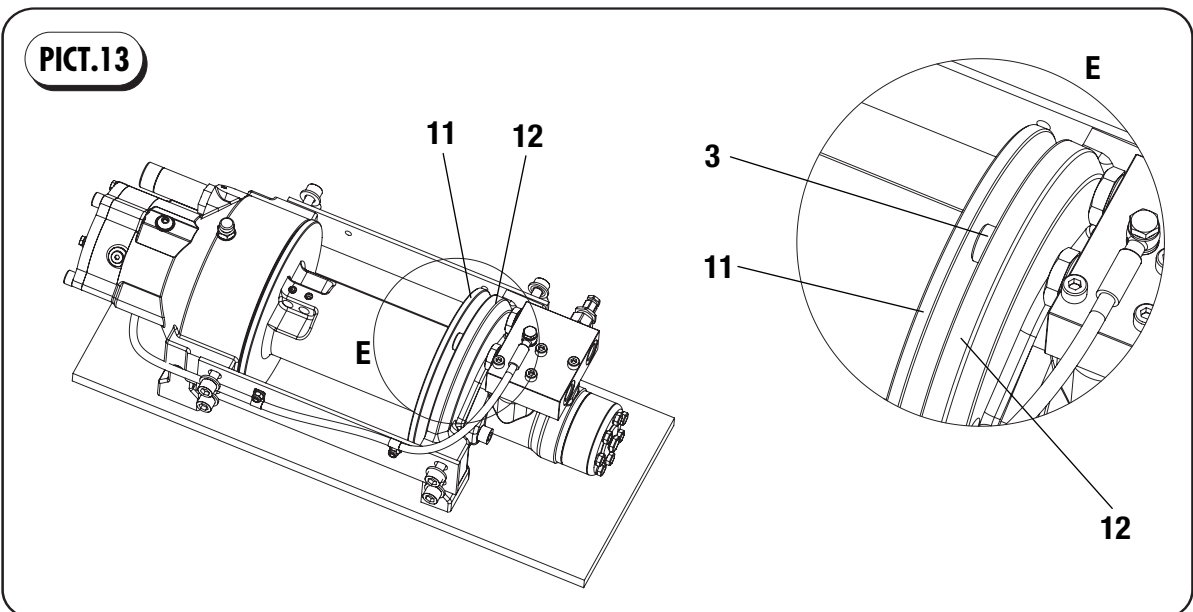
(no. 4 capscrews M12x20/30 UNI 5931) if mounted, or lateral tie-plate capscrews (ref.8 pict12). Onto the opposite side, loosen cap-

screws (ref.9 pict.12), (no.4 capscrews M12x20 UNI 5931) of the second tie-plate (ref.10 pict 12).



With all capscrews loosen (ref.6,9 pict.12) end motor bearing (ref.12 pict.13) will move away from the drum (ref.11 pict.13), pushed away by springs and teflon discs (ref.3 pict.13), as shown in detailed view (E).

Using two Lock-grip pliers (ref.13 pict.14), tighten End motor bearing (ref.12) to the drum (ref.11) to get them closer, as shown in detailed view (F). By keeping the lock-grip pliers locked, tighten all capscrews (ref.6,9).



Check once again the right winch alignment (chapter 2.4.5), maintaining all mounting plate capscrews loosen. If winch will be not aligned, repeat procedure again.

Tighten all winch capscrews (pict.4) and check once again winch alignment (chapter 2.4.5). If winch will be not aligned, repeat procedure (chapter 2.4.6).

IMPORTANT

Procedure for winch alignment must done on a base mounting plate who meet with specifications indicated on chapter 2.2.

IMPORTANT

A good planetary winch alignment is necessary for good winch operation.

WARNING

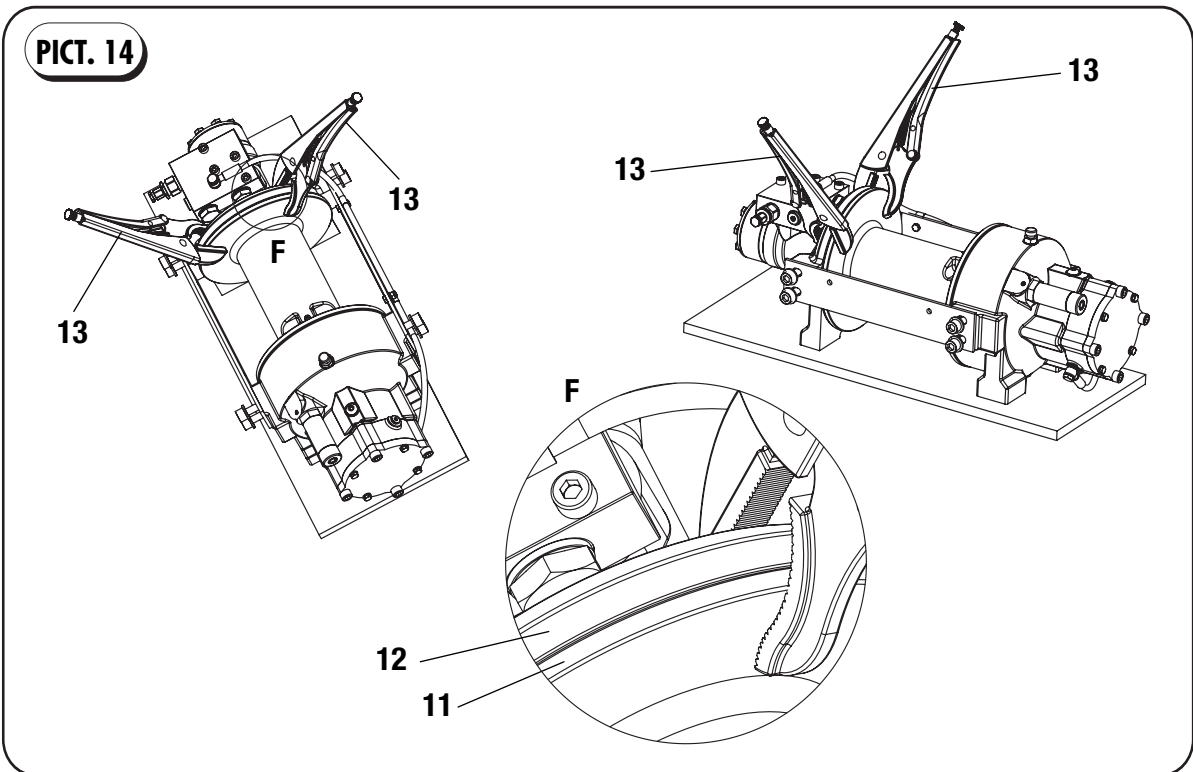
Excessive bushing wear, difficulty in freespooling and lowest winch performance are usually symptoms of misalignment.

WARNING

Run winch not right aligned could damage the winch.

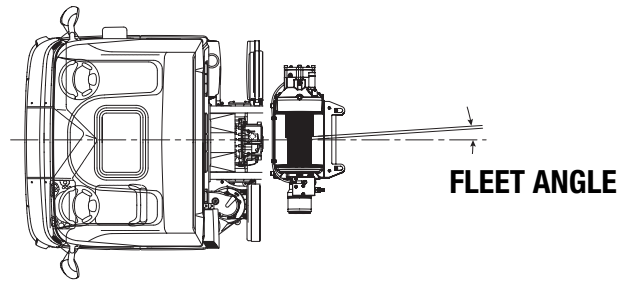
WARNING

VIME has no responsibility in case of winch damages due to a wrong or inadequate mounting.



2.5 FLEET ANGLE

PICT.15



Winch should be mounted as close to centre and as perpendicular as possible to the direction of the line pull. This will keep the wire rope fleet angle centred onto the drum as small as possible.

⚠ DANGEROUS

If the proper fleet angle is not main-



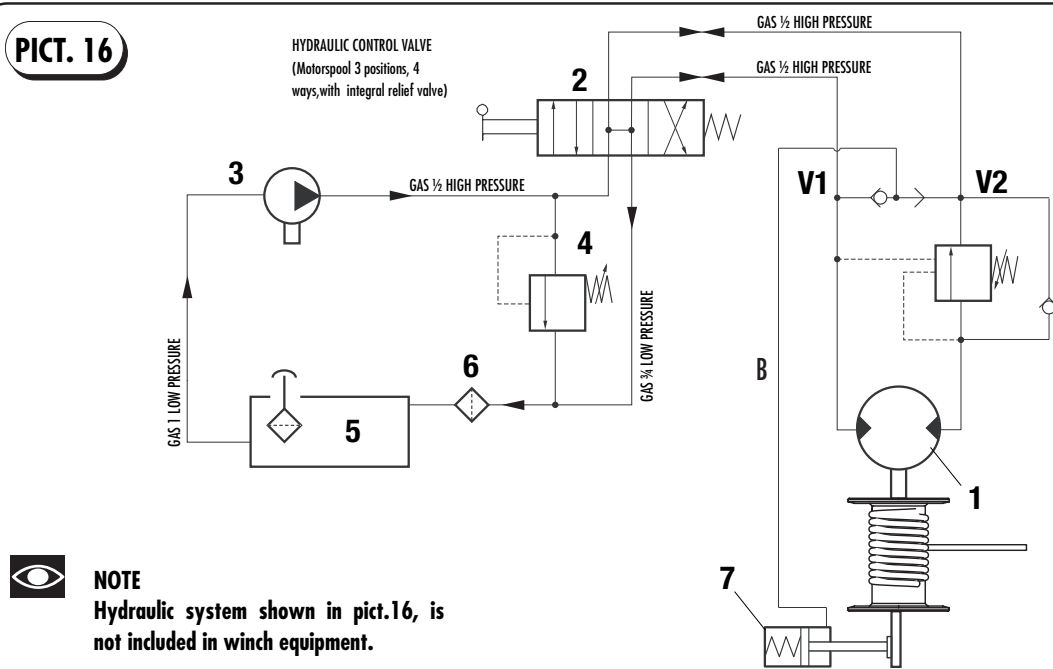
WARNING

A wrong or inadequate winch mounting could damage the winch.

tained, the wire rope could wind onto one side of the drum. This could cause failure of the winch or wire rope, resulting in damage, injury or death.

2.6 HYDRAULIC SYSTEM

PICT. 16



NOTE
Hydraulic system shown in pict.16, is not included in winch equipment.

- | | |
|----------------------------|--|
| 1. ORBITAL HYDRAULIC MOTOR | 6. FILTER: 40 µm / 25 µm - 20 µm / 10 µm |
| 2. HYDRAULIC CONTROL VALVE | 7. MULTI-DISC HYDRAULIC BRAKE |
| 3. HYDRAULIC PUMP | B. HYDRAULIC BRAKE PIPE |
| 4. RELIEF VALVE | V1 OVERCENTER VALVE PORT |
| 5. FLUID RESERVOIR | V2 OVERCENTER VALVE PORT |

Once the winch has been mounted onto the vehicle chassis (chapter 2.2) should be connected to the hydraulic circuit according to the typical lay-out shown below pict.5.

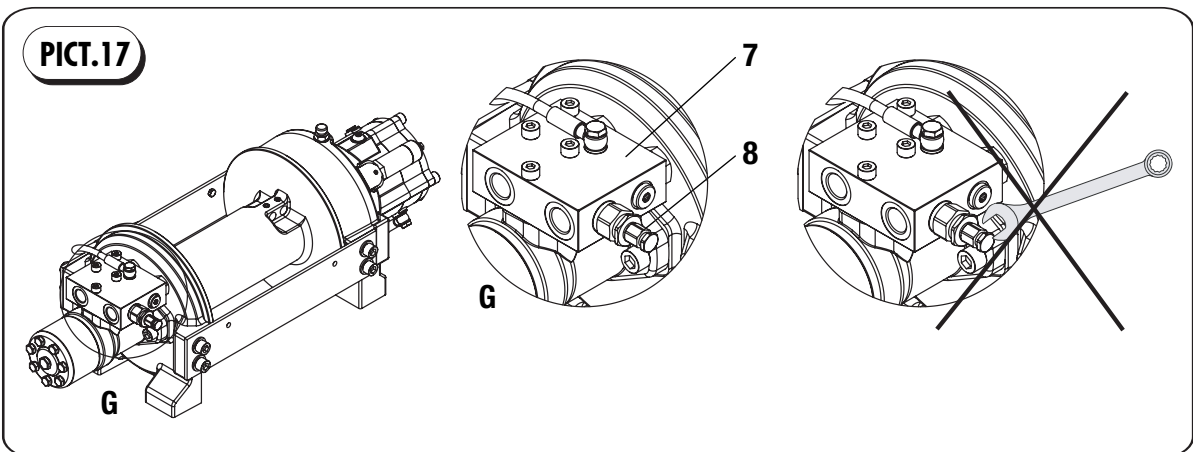
⚠ WARNING

The hydraulic system shown at page must contains an open center or motor spool valve (4) in order of the winch to operate correctly. Failure to use the

⚠ WARNING

correct control valve (4) will result in loss of load control, possibly resulting in damage to property, personal injury or death.

VIME has no responsibility for winch damages given by not proper hydraulic components of the hydraulic circuit.



■ IMPORTANT

Overcenter valve (ref.7 pict.17) is equipped with a cartridge (ref.8 pict.17) used to prevent the load from moving faster that desired. Cartridge is supplied already adjusted for a correct winch operations.

⚠ WARNING

Never attempt to adjust the Overcenter valve cartridge. If adjusted in wrong way may cause failure of the brake and the winch.

If conditions where the hydraulic system has only a winch which is used intermittently, where ambient temperature are moderate,

and where excessive back pressure or internal leakage are not present, a reservoir equal in size to the flow of the system can be used. Hose lengths should be kept as short as possible. Sharp bends in hoses and tubing and 90 degree fittings, should be avoided since they increase back pressure.

⚠ WARNING

Do not exceed 60 Lt/min. If exceeded hydraulic motor may be damaged.

Minimum pressure required to release the brake 30 bar.

Max. admissible back pressure in return line 5 bar.



WARNING

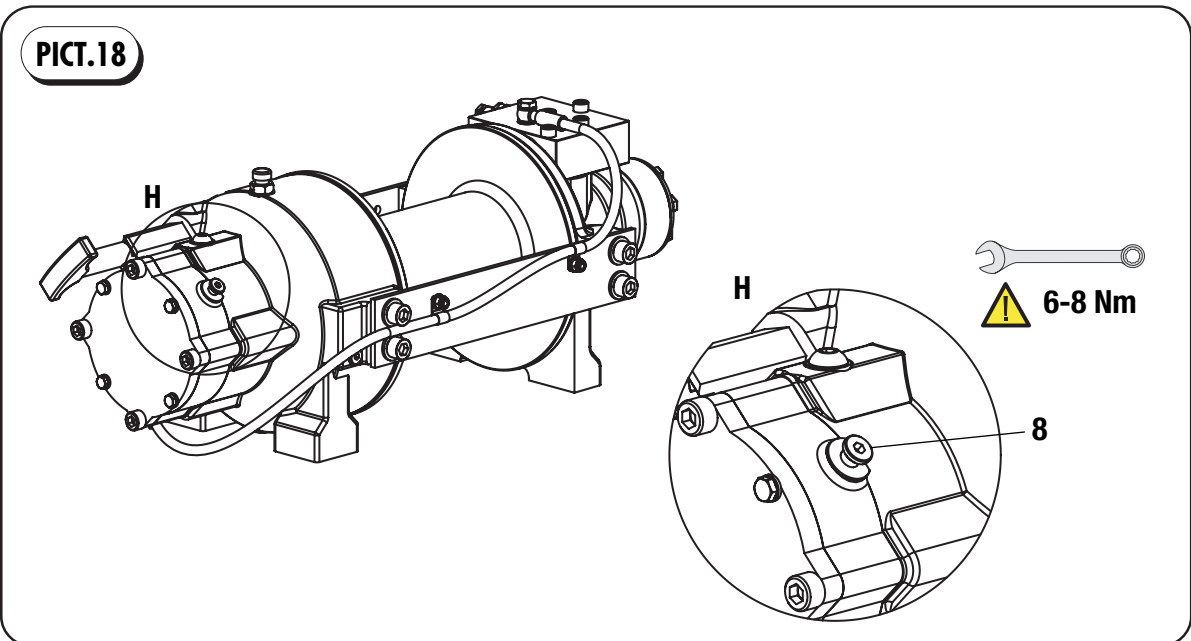
The relief valve (ref.4 pict.16) must be set so the pressure supplied to the winch doesn't exceed the pressure rating of the winch. If the pressure or flows exceeds those rated for the winch, it could cause damage to the winch, to the wire rope or

damage to property, personal injury or death.



IMPORTANT

Hydraulic pressure or flows lowest than those rated for the winch will result in lower line pull or lower line speed.



At the winch first start it is recommended to make a brake draining as described below:

1. Fully loosen the plug without unscrewing (ref.8 pict.18) as shown in detail (H).
2. Start at **the minimum** the oil control valve, by chocking inlet pressure (rot.A or rot.B chapter 2.7), enough to help air in excess to comes out.
3. When oil starts coming out from the plug, tightening plug at the torque (6-8 Nm).



DANGEROUS

In drain air operation, start at the **minimum** the oil control valve, by chocking oil inlet pressure. Excessive oil pressure could cause an uncontrolled oil pour out.



IMPORTANT

The air in the hydraulic system and in the multi-disc hydraulic brake circuit could compromise the brake works.

2.7 BRAKE SYSTEM

EPH FN winch is equipped with spring applied multi-disc hydraulic released brake : spring applied steel and bronze discs on winch main shaft are pressure released by hydraulic oil of the hydraulic circuit who release the brake piston through port (F), brake release phase.

DRUM REEL IN (pict.19)

IN LET oil in pressure at the port (V2) of the Overcenter valve, is channelled:

- at the port (F) causing the brake piston to release the multi-disc brake through shuttle valve (E).
- at the same time at the check valve (C) who opening itself, pressure oil at the port (C2) to go along port (B) of the hydraulic motor

making drum rotation (rot."A") *winch cable reel in.*

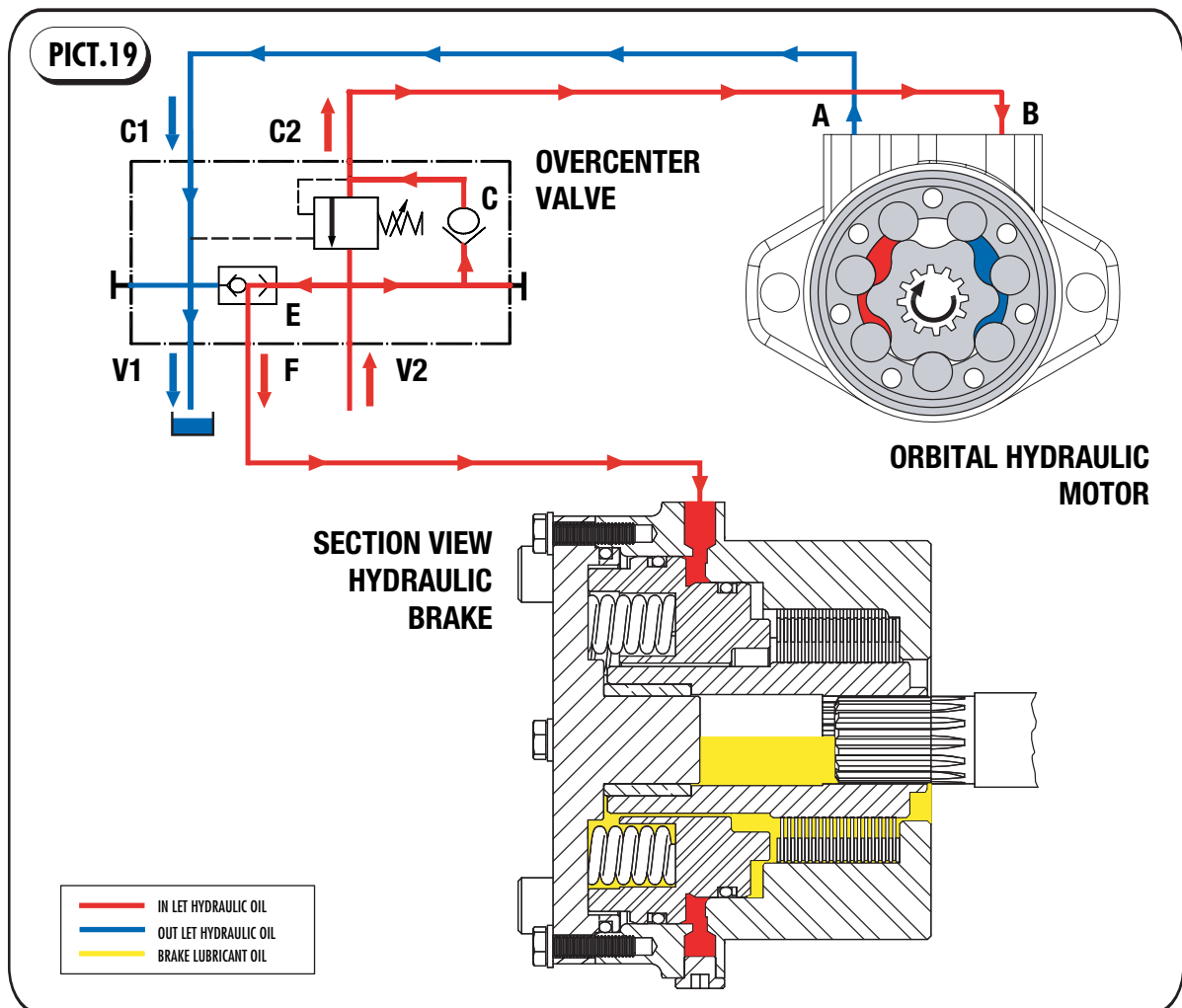
- out from port (A) of the hydraulic motor to go along port (C1) and **OUT LET** from port (V1) flow to the exhaust manifold.

PAYOUT (pict.20)

IN LET oil in pressure at the port (V1) of the Overcenter valve, is channelled:

- at the port (F) causing the brake piston to release the multi-disc brake through shuttle valve (E).

- at the port (C1) to go along port (A) of the hydraulic motor making drum rotation (rot."A") *winch cable payout.*



- comes out from port (B) of the hydraulic motor to go along port (C2).
- will go through the cartridge (D), where a **completely smooth pay out speed** will be effected.
- **OUT LET** from port (V2) flow to the exhaust manifold.

SMOOTH PAY OUT

Intended as dynamic brake, even if the brake is fully released, there is no lost of load in winch pay out, because braking is smooth controlled by Overcenter valve cartridge (C),

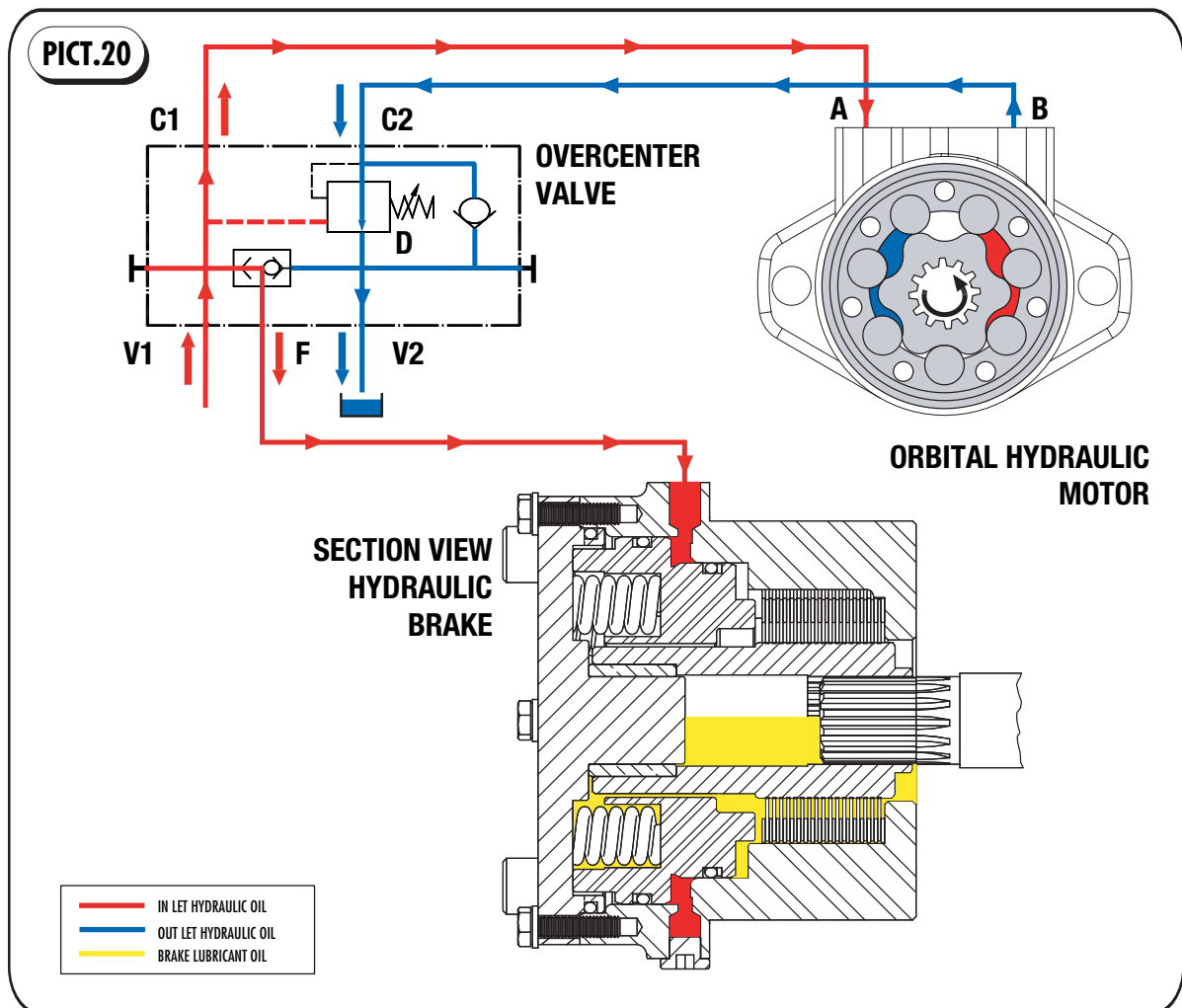
avoiding sudden braking, swinging and shock to the winch.

SAFETY

In case of pressure drop due to :

- hydraulic control valve oil flow breakdown
- damages to the hydraulic components involved: (Overcenter valve, hydraulic pipe gaskets and hydraulic pipe)

for safety the disc brake applies automatically.





WARNING

The hydraulic orbital motor mounted on model EPH FN no need any drainage line, even if there is a back pressure in return line, because equipped with high pressure shaft seal.

But in case of excessive back pressure in return line, higher than oil seal tolerable, or rapid drum inversion with load : a drain line directly to oil reservoir is recommended.



WARNING

Rapid drum inversion with load, could damaged the hydraulic orbital motor.



WARNING

Winch control devices should be positioned for safe operation of the winch without hesitation or lost of time.



IMPORTANT

Winch control devices are at exclusive charge of the installer, who will also take care to place all decals, to indicate the different winch function to avoid any misunderstanding to the winch operator while winching.

OIL TYPES: Mineral hydraulic oils are recommended with anti-wear additives, type HLP [DIN 51524 (part.2)] or HM [ISO 6743/4]. The use of different oils, hydraulic motor company must be contacted.

TEMPERATURE: When selecting hydraulic oils , it is very important consider the operating temperature of the hydraulic system. Oil temperature should lie between +30°C [+85°F] ed i +60°C [+140°F]. As a general rule, oil life is halved for each +8°C [+15°F] its temperature exceeds 60°C [+140°].

VISCOSITY: The viscosity of the oil should lie between 20 mm²/S and 75 mm²/S [100 e 370 SUS] when the operating temperature of the system has become stabilized. We recommend the use of an oil type having a viscosity of 35 mm²/S [165 SUS].

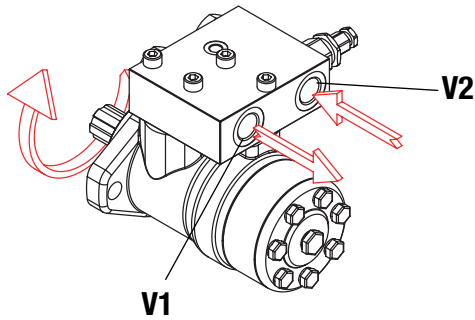
FILTERING: It is necessary to keep the level of oil contamination at an acceptable level to ensure problem-free operation. To maintain a correct level of **di pulizia corretto** is necessary a return filter of 40 µm absolute or 25 µm nominal. In very dirty environments, in complex systems, the recommended filtration is 20 µm absolute or 10 µm nominal. In any case should refer to the vehicle hydraulic system designer recommendation where the winch will be mounted, also about maintenance.

2.8 HYDRAULIC MOTOR LINKAGE

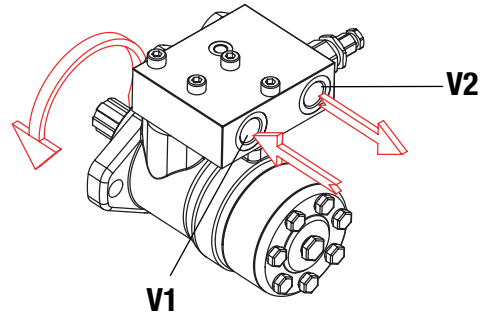
PICT. 21

ROTATION "A"

**CABLE
REEL-IN**



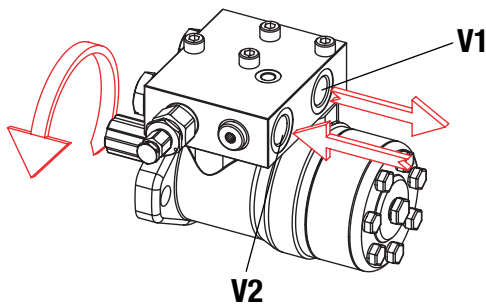
**CABLE
PAYOUT**



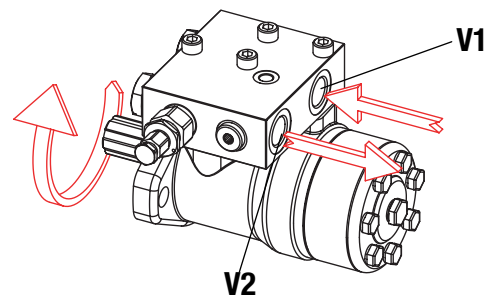
PICT. 22

ROTATION "B"

**CABLE
REEL-IN**



**CABLE
PAYOUT**



In all possible winch configurations (rotation "A" or rotation "B", chapter 2.10.1-2), in cable reel in pressure at the Overcenter valve inlet port V2, outlet at the Overcenter valve port V1 (pic.21-22). By operating hydraulic

control valve, the winch hydraulic motor and drum can be reversed in rotation (pict.21-22) spooling out the cable.

2.9 AIR-OPERATED FREESPOOL LINKAGE

The winches mod. EPH FN can be equipped (on request) with air clutch shifter for drum freespooling SINGLE ACTION. **The pneumatic system works if air system is available on vehicle only.**

Connect the air cylinder port size G 1/8 as shown (pict.21) to the lever valve (see lay out pict.23a).

HOW IT WORKS:

Air flow through port disengages the drum.

When air flow ceases, spring returns shaft within the air-cylinder **engages** the drum.

IMPORTANT

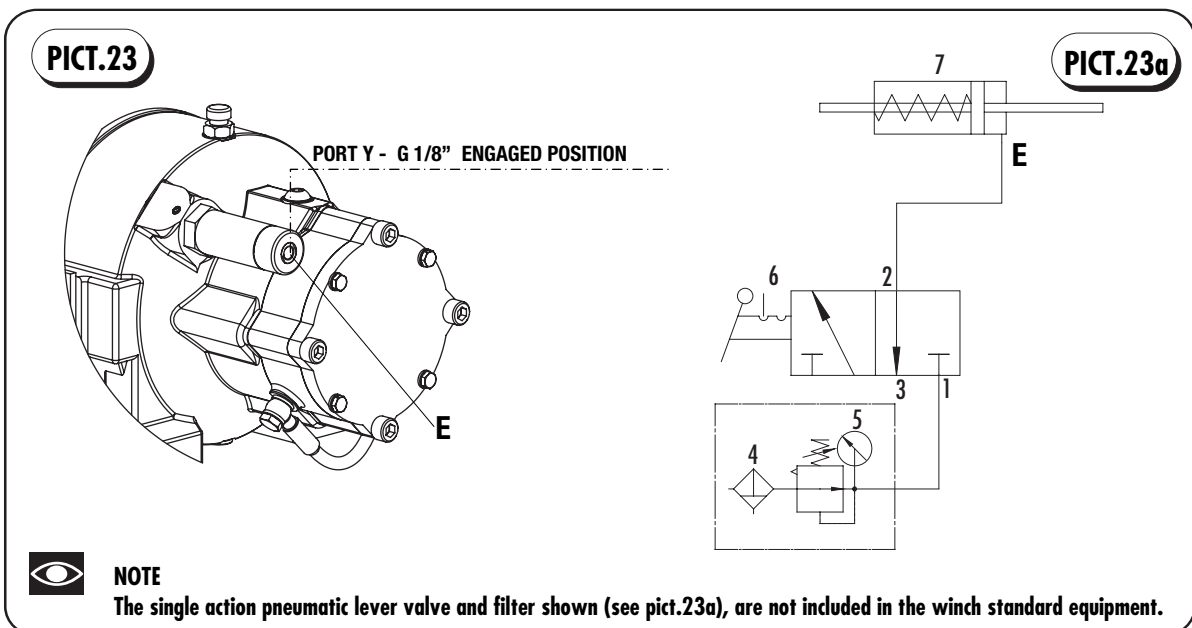
For efficient operation of air-cylinder clutch shifter, utilize air pressure filtered

and dried. It is important to keep moisture from entering the winch. Moisture could cause corrosion. If temperature fall down below 0°, moisture could freeze and render the component inoperable. System works at the minimum pressure 6 bar. Pressure must not exceed 10 bar. The pneumatic system can works with temperature between -20°C and + 80°C .



WARNING

Not utilize the proper air filters, could damage the pneumatic clutch, and compromise its function.



Single action pneumatic lever valve:

1. In let air pressure G 1/8"
2. Out let G 1/8"
3. Exhaust G 1/8"
4. Filter (50 µm)
5. Pressure regulator (min.6 bar-max.10 bar)
6. Air lever valve
7. Air cylinder for drum free spooling

2.10 WINCH DRUM ROTATION

Planetary winches EPH FN are available with two different drum rotations to indicate the different spooling direction of the rope, "A" (pict.24-25) or "B" (pict.26-27). If not indicated in the purchase order it is always intended as "A" rotation. It is possible change from "A" rotation to "B" rotation (and vice versa) by contacting VIME; drum rotation can be changed by authorized personnel only .

drum (A rot.) as shown in (pict.24). Cable mounting must be executed as shown in detailed view (C) and by following instructions in chapter 2.11.

 **WARNING**

Run winch with cable winded in the reverse direction could damage the winch internal mechanical components.

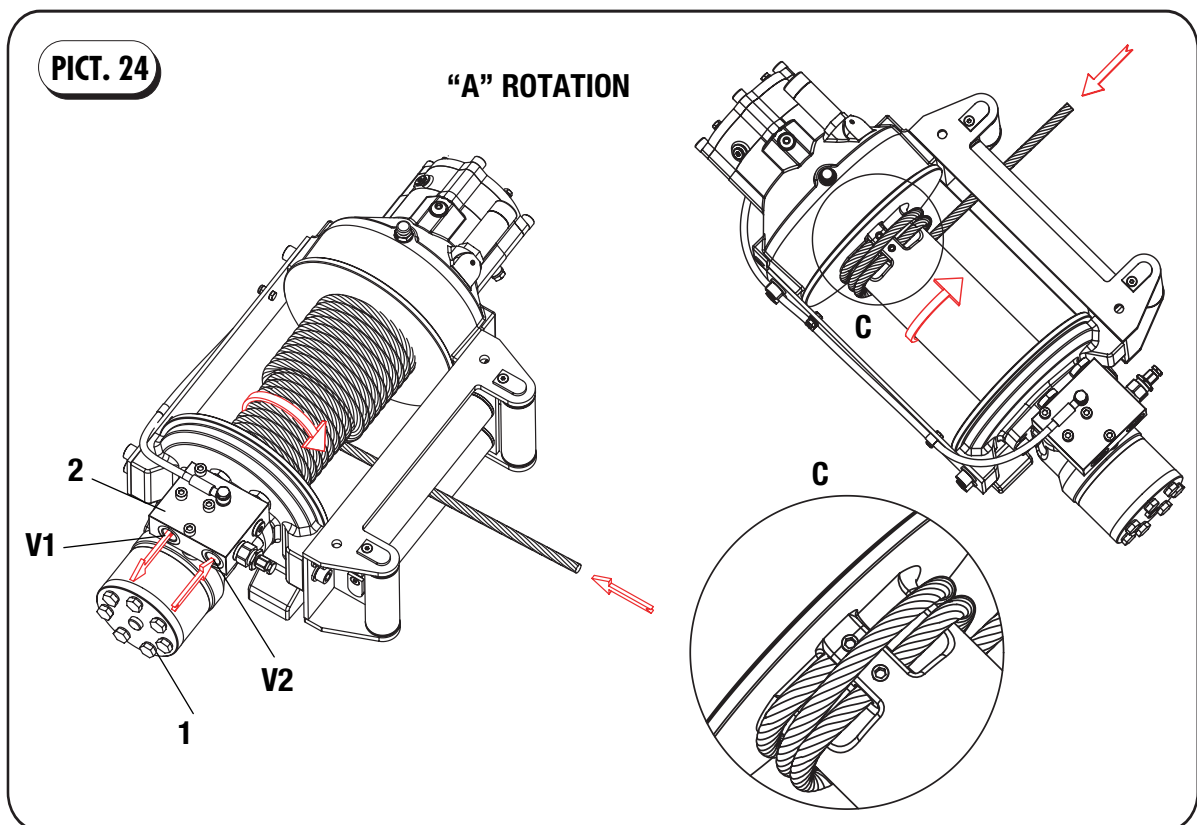
 **WARNING**

VIME has no responsibility in case of damages due to a wrong cable mounting.

2.10.1 "A" ROTATION

 **WARNING**

Cable must be winded onto the winch

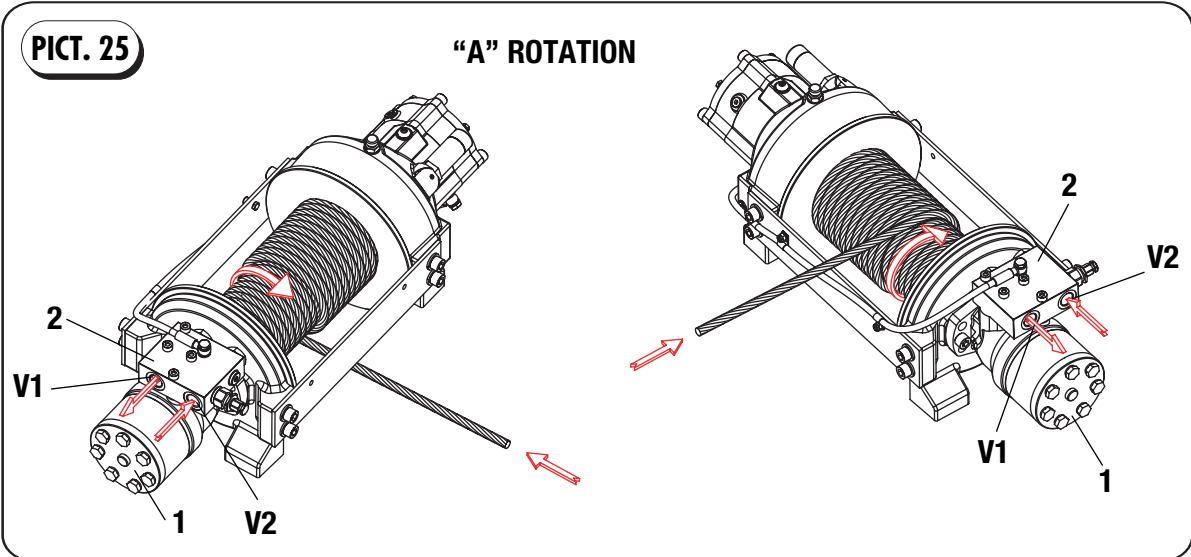


- 1. ORBITAL HYDRAULIC MOTOR
- 2. OVERCENTER VALVE

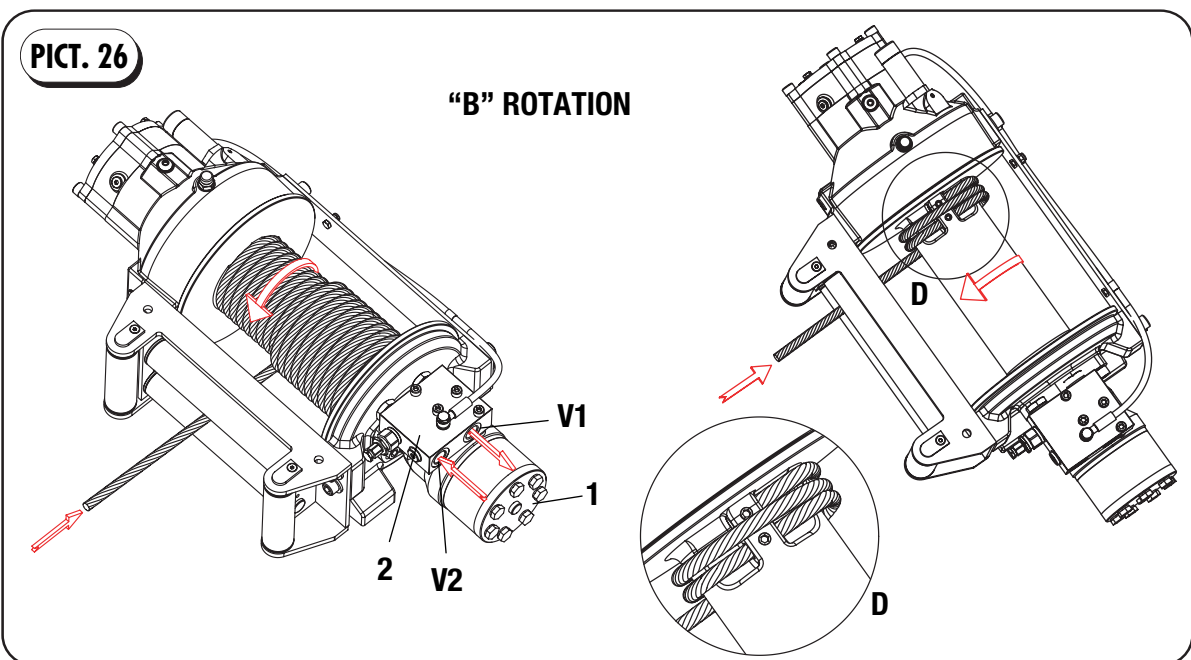
- V1. OUT LET 1/2" G
- V2. IN LET 1/2" G

If the winch (A rot.) is not equipped with roller fairlead, you may have the following

configurations as shown in (pict.25).



2.10.2 "B" ROTATION



- 1. ORBITAL HYDRAULIC MOTOR
- 2. OVERCENTER VALVE

- V1. OUT LET 1/2"G
- V2. IN LET 1/2"G



WARNING

Cable must be winded onto the winch drum (B rot.) as shown in (pict.26). Cable mounting must be executed as shown in detailed view (C) (pict.26). and by following instructions in chapter 2.11.



WARNING

Utilize the winch with the cable winded

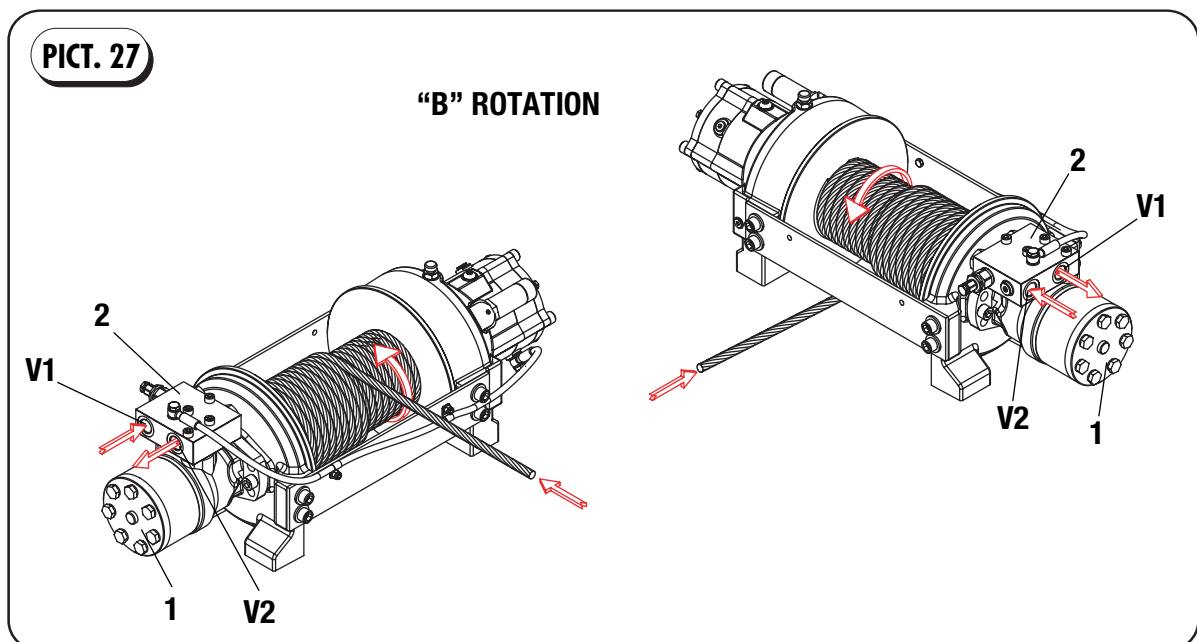
in the wrong way could damage winch internal mechanical components.



WARNING

VIME has no responsibility in case of damages due to a wrong cable mounting.

If the winch (B rot.) is not equipped with roller fairlead, you may have the following configurations as shown in (pict.27).



2.11 CABLE INSTALLATION EN 14492-1

In the choice of cable to be fitted on drum for first time or to replace the old one, follow what is recommended by EN 14492-1:

- Cable breaking load double to winch max. rated capacity.
- Cable diameter equal to VIME recommended and according to EN 14492-1.

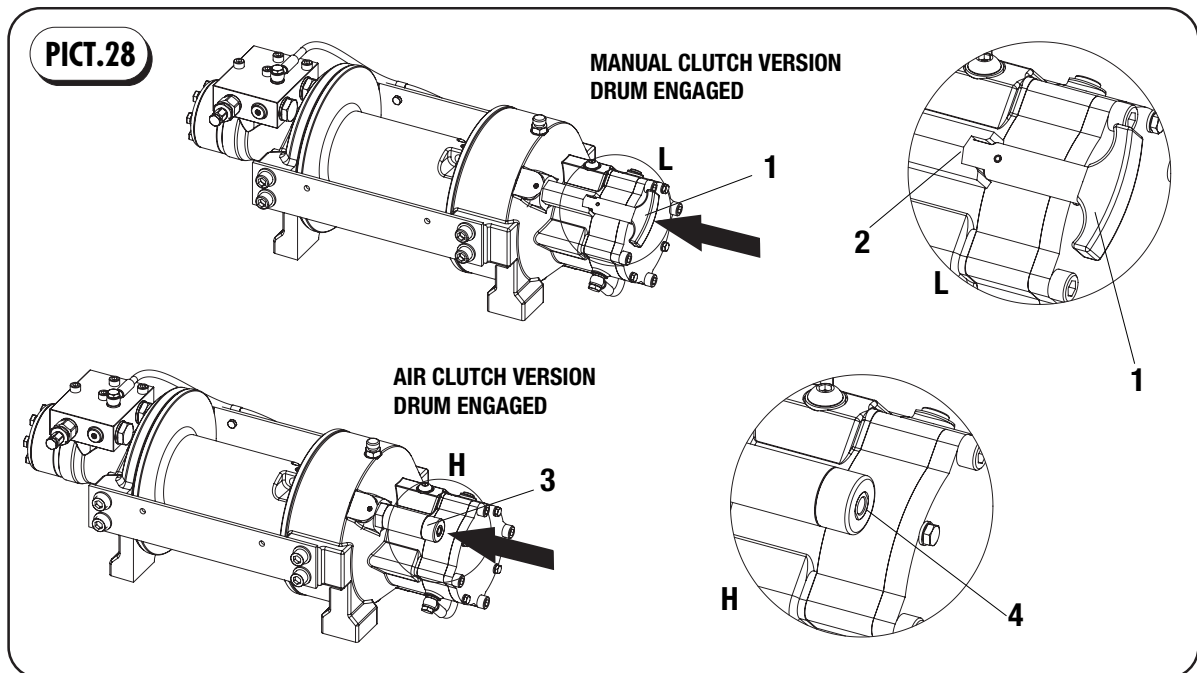
Cable anchor on drum has been designed EN 14492-1 compliant.

⚠ WARNING

Recommended wire rope min. tensile strength 2160 N/mm². Wire rope minimum breaking load must be at least double of winch max. pulling capacity.

⚠ WARNING

VIME has no responsibility for damages to the winch, to the rope or for physical injury to persons, animals or property damages given by unqualified cable use.



1. Check wire rope mounting has been respected as shown (chapter 2.7).
2. Check clutch be fully engaged, by inspecting:

MANUAL CLUTCH VERSION

The handle (ref.1 pict.28) must be in, by checking it is fully into the seat (ref.2 pict.28), detailed view (L). Differently operate the handle to engage clutch (chapter.3.1).

AIR CLUTCH VERSION

Air-cylinder (rif.4 pict.28) shaft (3) must be fully in, detailed view (H). Differently operate

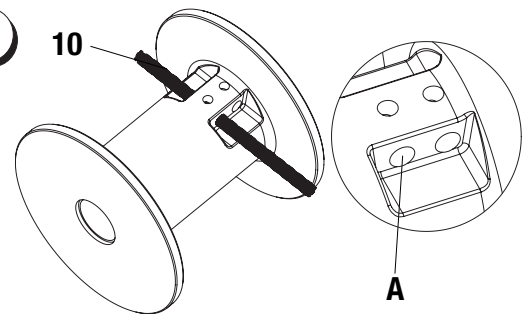
- the air-cylinder to engage clutch (chapter.3.1).
3. Unwind cable by rolling it out along the ground to prevent kinking.
4. If the end of cable opposite hook has not been machined, wrap end of cable opposite hook with plastic or similar tape to prevent fraying. Follow steps indicated.



STEP 1

Insert the end of the rope (10) opposite the hook, into proper slot (A) as shown in pict.29.

PICT.29



WARNING

Wire rope winding direction onto the drum must be respected as indicated in chapter 2.10.

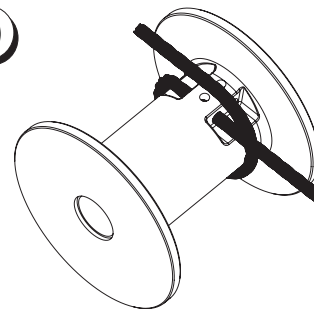


DANGEROUS



When winching is obligatory wear working gloves.

PICT.30



STEP 2

By bringing the end of rope (10) opposite to hook, wrap wire rope around drum barrel as shown in pict.30.

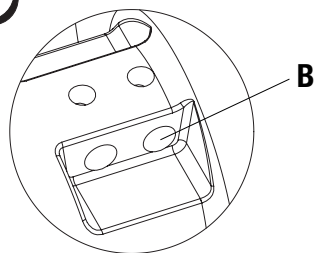


DANGEROUS



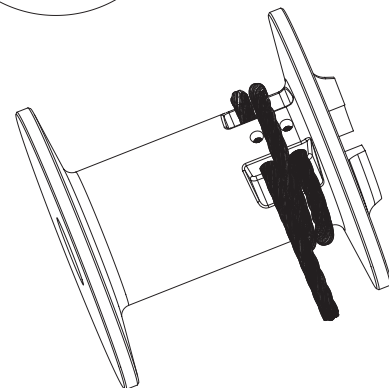
In rope winding be careful especially when hands are closed to drum and roller fairlead.

PICT.31



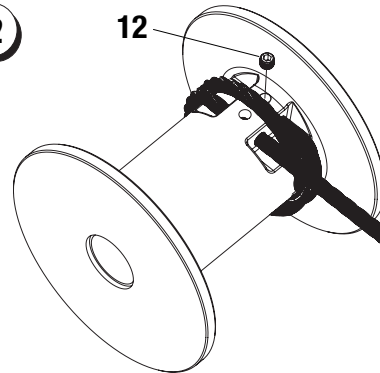
STEP 3

The end of rope (10) opposite to hook, must be insert in the second slot (B) as shown in pict.31.



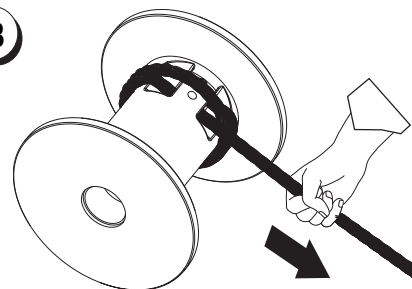
- **STEP 4**
Thread set screw (12) into threaded hole to secure the end rope (10) opposite to hook as shown in pict.32.

PICT.32



- **STEP 5**
Manually pull the rope out as shown in pict.33 till rope will wrap onto the drum barrel.

PICT.33



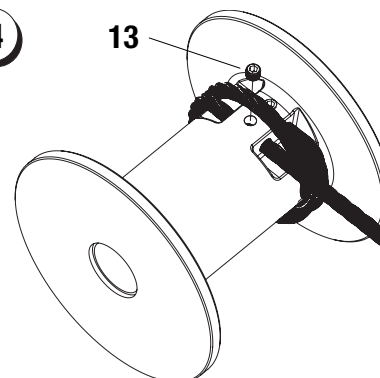
DANGEROUS



When winching is obligatory wear working gloves.

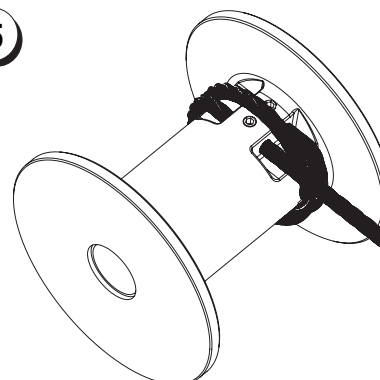
- **STEP 6**
By keeping rope tensioned as shown in pict.33 tighten safety set screw (13) as shown in pict.34.

PICT.34



- **STEP 7**
After having tightened safety set screw, start winding the wire rope.

PICT.35



ROPE NOT PROPERLY MOUNTED

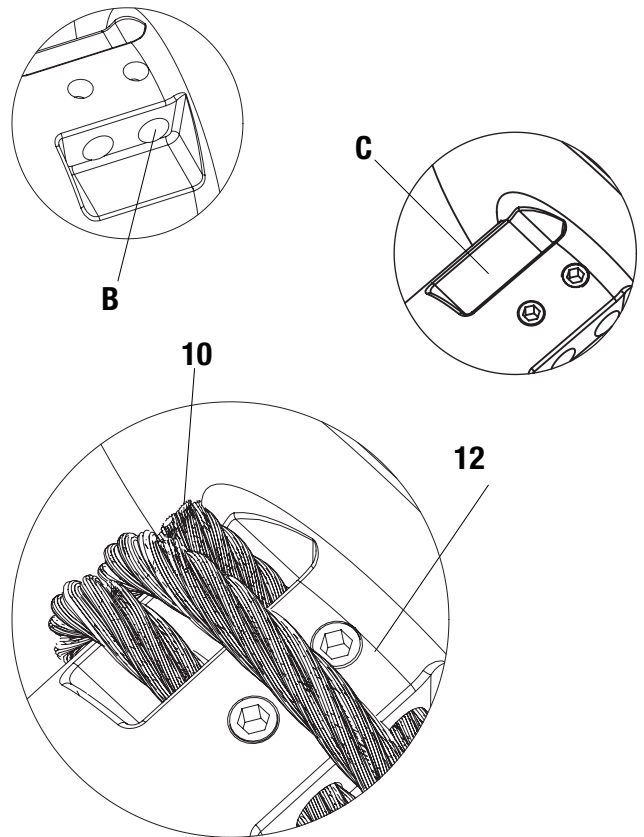
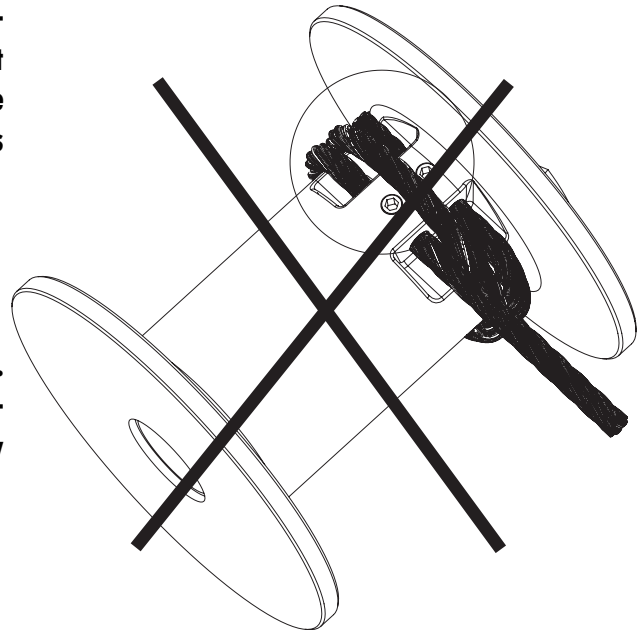
PICT.36

While mounting the end rope (10) opposite to hook, throughout (B) by using set screw (12), take care do not allow wire rope to extend past seat (C) of drum as shown in pict.36.



DANGEROUS

Never try to enlarge drum rope slots. VIME cannot be held responsible of failure to the drum, wire rope caused by this unauthorized intervention.



CORRECT WIRE ROPE MOUNTING

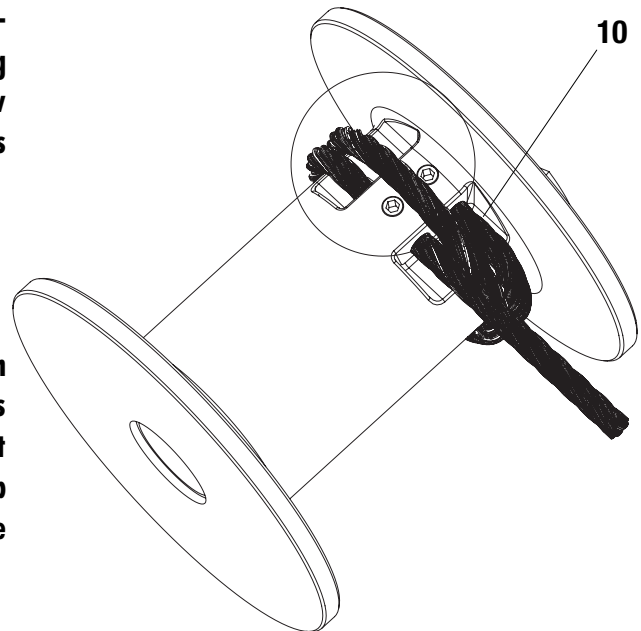
PICT.37

While mounting the end rope (10) opposite to hook , through hole (B) by using set screw (12), take care do not allow cable to extend past seat (C) of drum, as shown in pict.37.

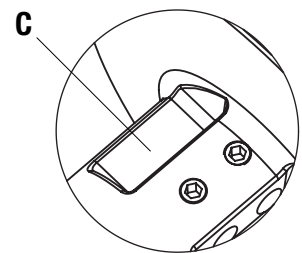


DANGEROUS

In case of installing of a wire rope with end opposite to hook cone tapered, is necessary to use the whole drum seat depth to allow set screw (12) clamp onto the wire rope and not onto the cone tapered.



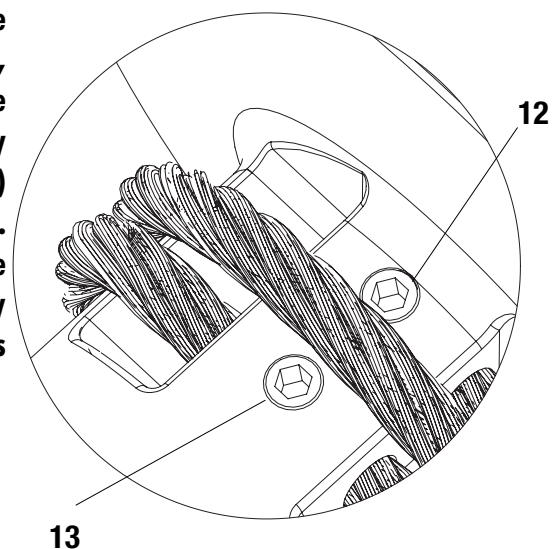
- Runs winch in the reel in direction (par.2.10). Keeping tension end of cable, spool the cable onto the cable drum taking care to form neatly wrapped layers.



DANGEROUS



When winding all cable onto the cable drum keeping tension on it by hand, when the end of cable is near to the drum, stop winch, disengage drum : by pulling out the handle (ref.1 pict.28) rotating 90° and releasing the handle. When the drum is disengaged, turn the drum by hands till the cable is completely wound. Take great care, when hands approach to the drum and roller fairlead.



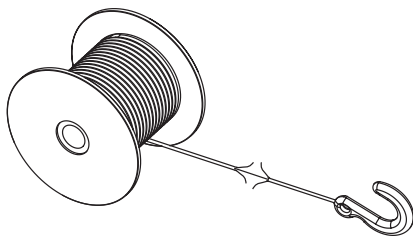
- Winch is ready.

SECTION 3 OPERATION

3.1 OPERATION

⚠ DANGEROUS

Before starting winch check cable conditions, if cable becomes frayed with broken strands, replace immediately as described on chapter 2.11.



⚠ DANGEROUS

🧤 When winching is obligatory wear working gloves.

⚠ WARNING

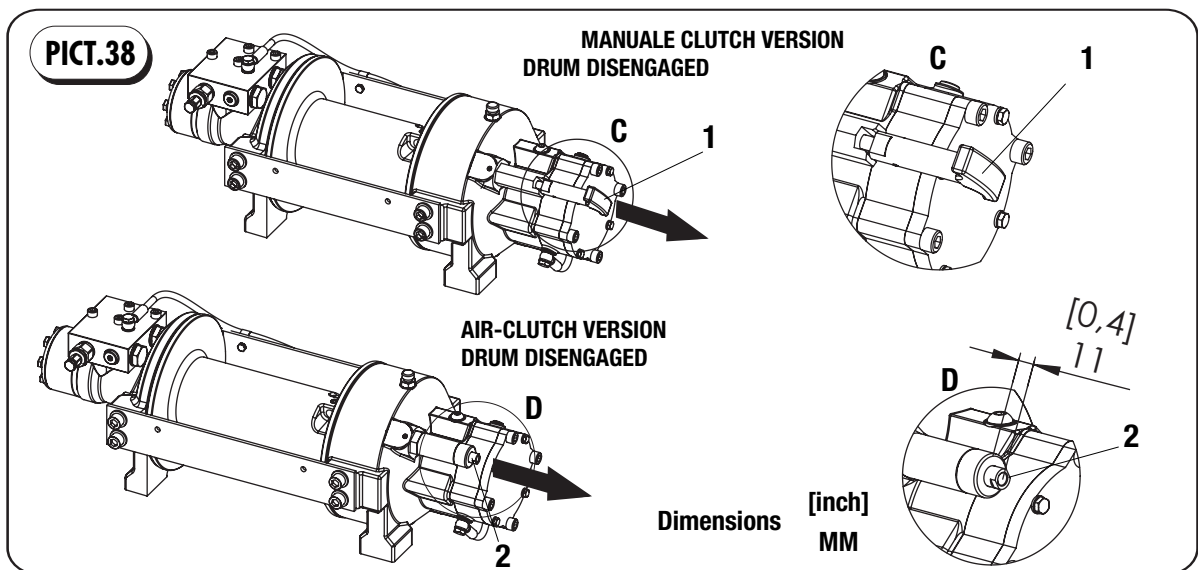
🛢 Before operating check oil level and add oil, if necessary as shown in chapter 5.1.1.

⚠ WARNING

Before start winching, check conditions of manual or air clutch system for drum freespooling.

👁 NOTE

A warm up procedure is recommended at each start up and is essential at ambient temperatures below +40°F (4°C). The prime mover should be run at its lowest recommended RPM with the hydraulic winch control valve in neutral allowing sufficient time to warm up the system. The winch should be operated at low speeds, forward and reverse, several times to prime all lines with warm hydraulic oil, and to circulate gear lubricant through the gear sets.



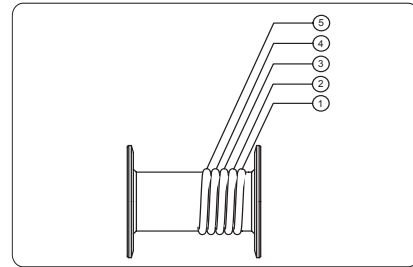
A) For hooking onto the load rapidly:

1. Check drum clutch be fully disengaged. **VERSION WITH MANUAL CLUTCH SHIFTER** : checking the handle (ref.1 pict.38) being fully out, (C) (pict.38); if not, pull the handle fully out, rotating 90° clockwise or counter clockwise and lock in place as shown (C) (pict.38). **VERSION WITH AIR-CYLINDER CLUTCH SHIFTER**: act air lever valve, air flow through port 1/8”G (pict.23 par.2.9) disengages drum. Checking the air-cylinder shaft (ref.2 pict.38) being fully out, as shown (D) (pict.38).
2. Now freespool by manually pulling out enough wire rope for the winching operation, hook the load in a point who can resist to the traction.



DANGEROUS

A minimum of 5 wraps of cable around drum barrel is recommended.



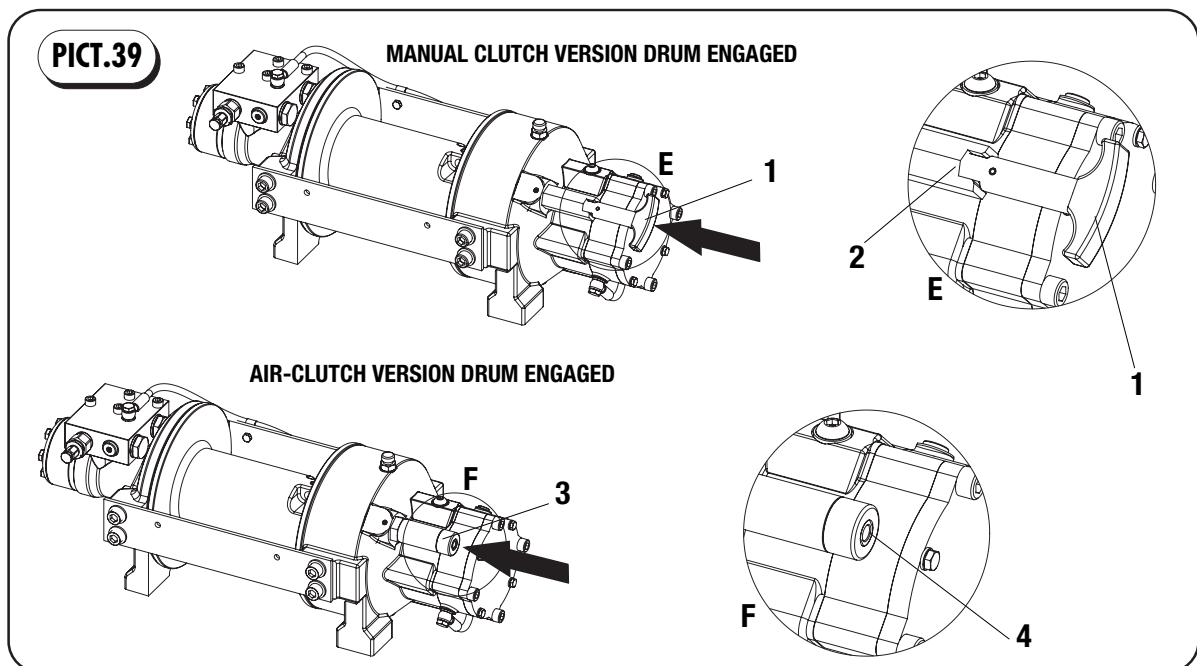
B) To pull the load:



WARNING

Do not exceed maximum line pull ratings.

1. Engage the drum. **VERSION WITH MANUAL CLUTCH SHIFTER**: by pulling out the handle, rotate it of 90° and release it, by checking it is fully into the seat (ref.2 pict.39), as shown (E). **VERSION WITH AIR-CYLINDER CLUTCH SHIFTER**: when air flow ceases, spring return shaft within and the air-cylinder engages the drum. Checking the air-cylinder shaft (ref.4 pict.39) being fully in, as shown (F).





DANGEROUS

If clutch has not been fully engaged, in winching operation while is pulling a load, can cause the suddenly drum disengagement and as a consequence the load drifts.



WARNING

Check clutch must be fully engaged as shown (pict.39).



IMPORTANT

To insure an efficient drum clutch operation (air-clutch version) a proper connection to the vehicle air circuit must be provided (chapter.2.6 pict.16) by planning filters and pressure regulator as well as their own maintenance.



IMPORTANT

Maintenance exigency increase according to the winch working conditions and in case of its occasional use as well.

2. Operate hydraulic control valve manually or by radio control for winding rope onto the winch drum.



WARNING

Winch operator start pulling slowly and only after having keep tensioned cable and verified cable/hook has been securely fastened to the vehicle/load.



DANGEROUS



The suddenly under load wire rope breaking or any yielding who involve an hook release, causing a dangerous rope stroke. Winch operator or other persons have to keep a safe distance from the working length of the wire rope.



WARNING

In car carrier applications after pulling vehicle on carrier, be sure to secure vehicle to carrier bed. Do not maintain load on winch cable while transporting vehicle, do not use winch as a tie down (pict.40).



DANGEROUS

Do not move your vehicle to assist the winch in pulling a load. Winch failure, may cause serious injuries



DANGEROUS

Do not disengage clutch under load.



DANGEROUS

Never try to attempt lateral pullings, in reference to the centreline of the vehicle where the winch is installed (pict. 41). Winch and vehicle where the winch is installed could be damaged, and result in serious injury.



DANGEROUS

Never try to guide cable when winching.



WARNING



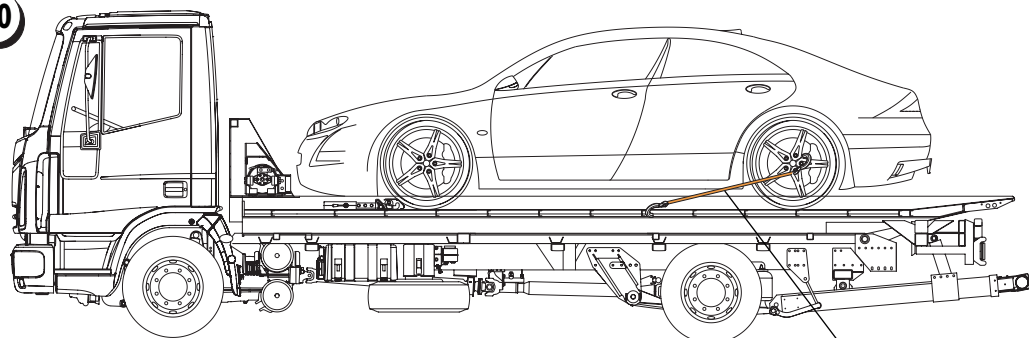
DANGEROUS

Never attempt to pull more than the winch is rated for.

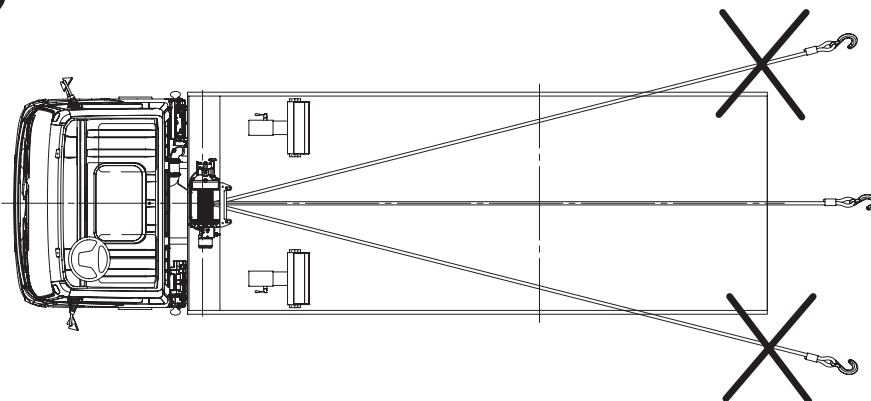


Do not use winch to lift, support or otherwise transport personnel.

PICT.40



PICT.41

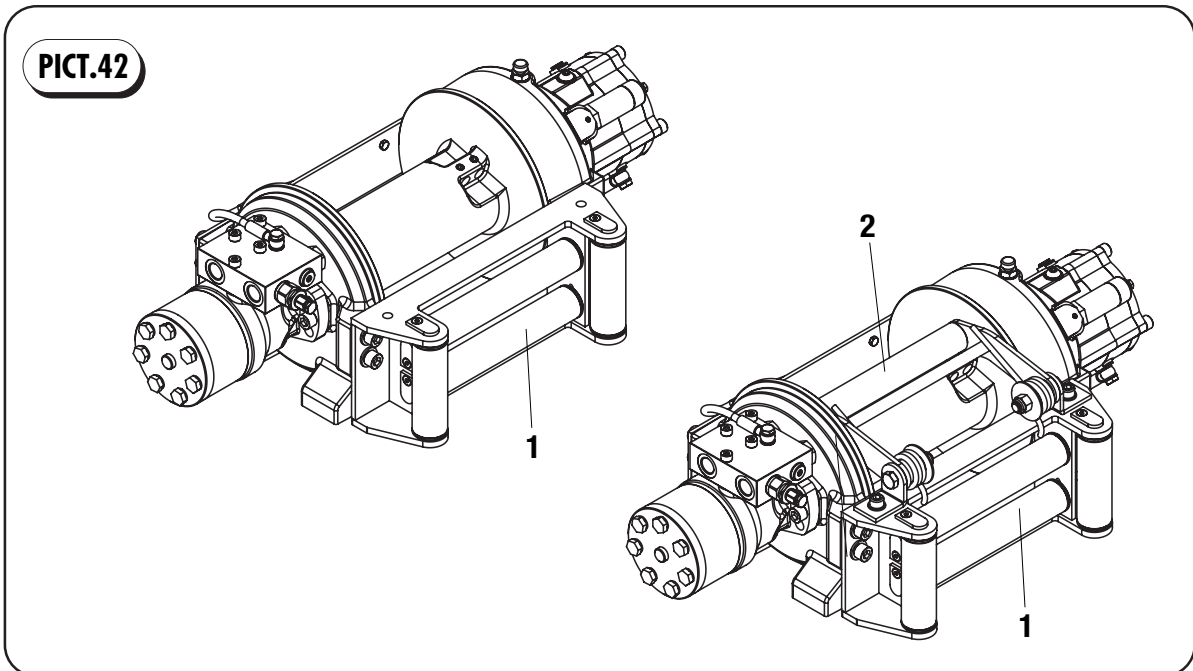


SECTION 4 ACCESSORIES

4.1 ACCESSORIES

EPH FN winches have been designed to be equipped with several accessories such as :

- ◆ Heavy-duty roller fairlead (ref.1 pict.42)
- ◆ Cable tensioner (ref.2 pict.42)



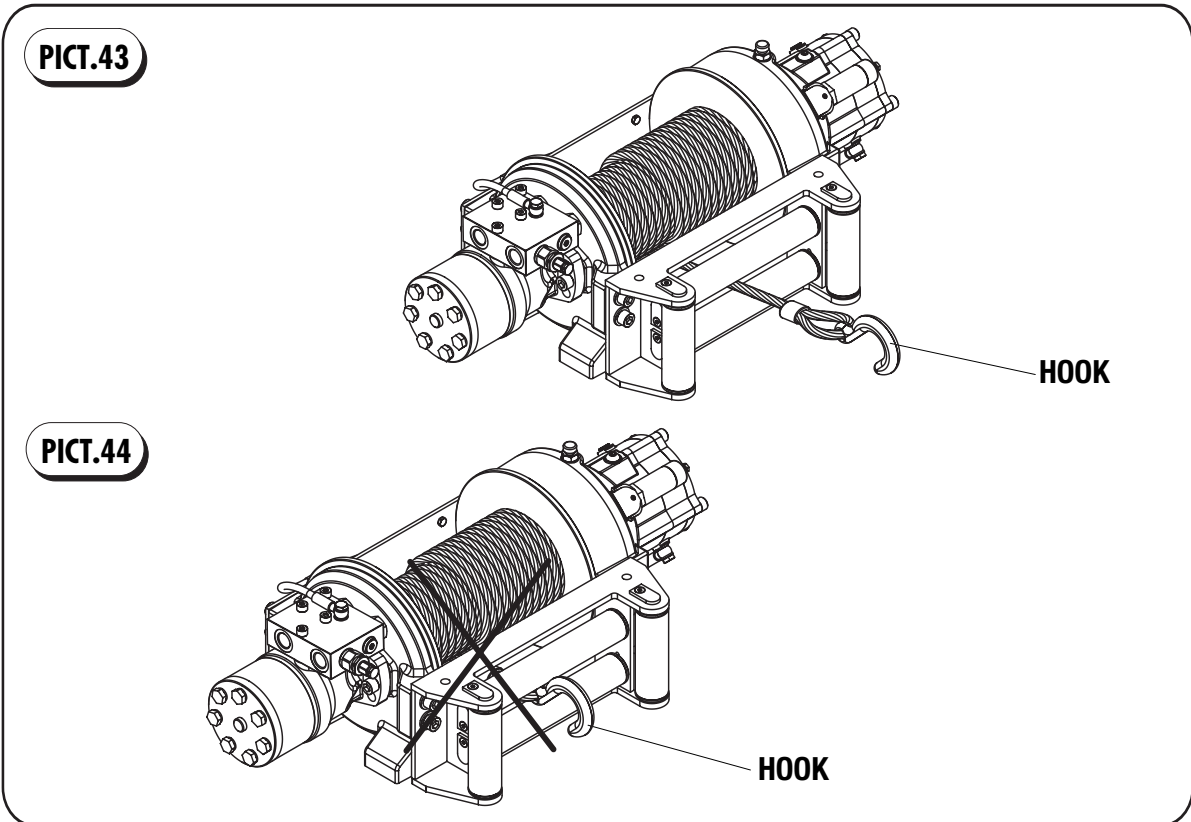
4.1.1 ROLLER FAIRLEAD

Roller fairlead is made up by 2 horizontal rollers and 2 vertical rollers, used for lateral pullings to avoid cable damages to the vehicle where the winch is installed.




4.1.2 CABLE TENSIONER

Cable tensioner is used to keep cable tightened on the drum, while the winch is in freespool mode. Cable tensioner does not insure that the cable will wind onto the drum in orderly manner.

4.2 RECOMMENDATIONS FOR USE



4.2.1 ROLLER FAIRLEAD

-  **IMPORTANT**
The use of roller fairlead does not insure that the cable will wind onto the drum in an orderly manner.
-  **IMPORTANT**
The proper fleet angle must be maintained for the cable to wind onto the drum in an orderly manner as shown in chapter 2.5.
-  **DANGEROUS**
Stop reel-in of cable before hook enters fairlead rollers, as shown in pict.43. Failure to do so, may cause damage or breakage to the rope, winch, vehicle and

serious injuries.



DANGEROUS



Do not put hands or feet near rotating parts or moving wire rope. Wire rope under tension can cause serious personal injury. Before operator power a winch, he is required to check that the area around the winch and load being hauled is clear.



DANGEROUS



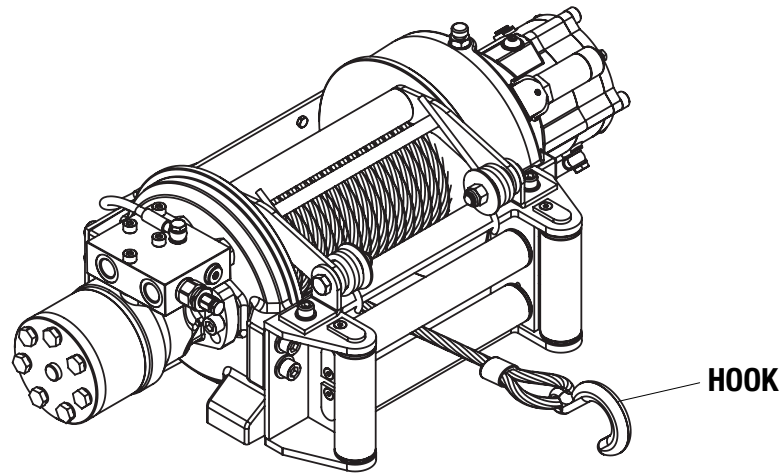
Do not try to guide cable.



IMPORTANT

In order that accessories such as roller fairlead and cable tensioner, can work properly a maintenance is recommended, as shown in chapter 5.1.1.

PICT.45



4.2.2 CABLE TENSIONER

IMPORTANT

The use of cable tensioner does not insure that the cable will wind onto the drum in an orderly manner.

IMPORTANT

The proper fleet angle must be maintained for the cable to wind onto the drum in an orderly manner as shown in chapter 2.5.

IMPORTANT

In order that accessories such as roller fairlead and cable tensioner, can work properly a maintenance is recommended, as shown in chapter 5.1.1.

! DANGEROUS

! Do not put hands or feet near rotating parts or moving wire rope. Wire rope

under tension can cause serious personal injury. Before operator power a winch, he is required to check that the area around the winch and load being hauled is clear.

! DANGEROUS

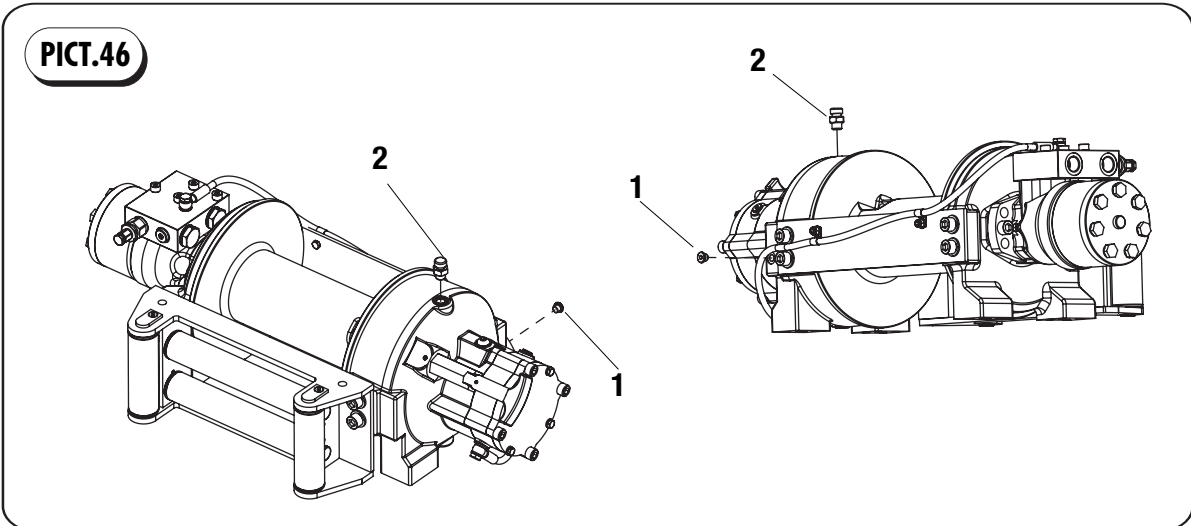
! Do not try to guide cable.

SECTION 5 MAINTENANCE

5.1 MAINTENANCE

Winches mod. EPH FN are designed to reduce maintenance to wire rope and gear housing oil

level only.



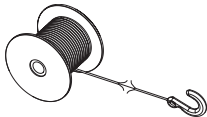
5.1.1 MONTHLY MAINTENANCE



Technical staff required :
Technician or user

Procedure:

1. Inspect the cable for damage and lubricate frequently with viscous oils or light grease with additives adhesive with graphite or bisulfure molybdenum. **If cable becomes frayed with broken strands, replace immediately by following procedure indicated on chapter 2.11.**



2. Planetary gears are bathed in oil. Keep oil to level hole.



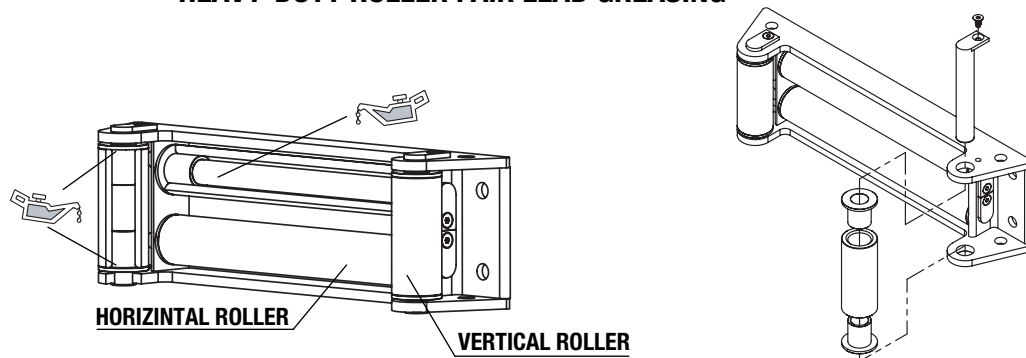
3. To check oil level : remove oil level plug (1) and check oil level. Oil level should be kept up to oil level hole. If oil level is below level hole, remove breather plug (2) and add oil **15/W40 MULTIGRADE** Tightening plugs.

⚠ WARNING
Periodically inspect rope mounting setscrews and tighten if necessary.

EPH FN winches can be equipped with zinc plated Heavy-duty roller fairlead and zinc plated Cable tensioner.

PICT.47

HEAVY-DUTY ROLLER FAIR LEAD GREASING



4. The Roller fairlead rollers must roll free to let wire rope slide perfectly. Elements such as: salt, water, oxidation and a bad maintenance can cause the rollers locking, and excessive wire rope wear. The Roller fairlead rollers bad operation, can cause their own rapid wear. We recommend to keep rollers lubricated, with medium dense oil, between axe and roller as shown on pict.47.

■ IMPORTANT

Fairlead rollers sliding on wire rope, when show an excessive wear must be replaced.

⚠ WARNING

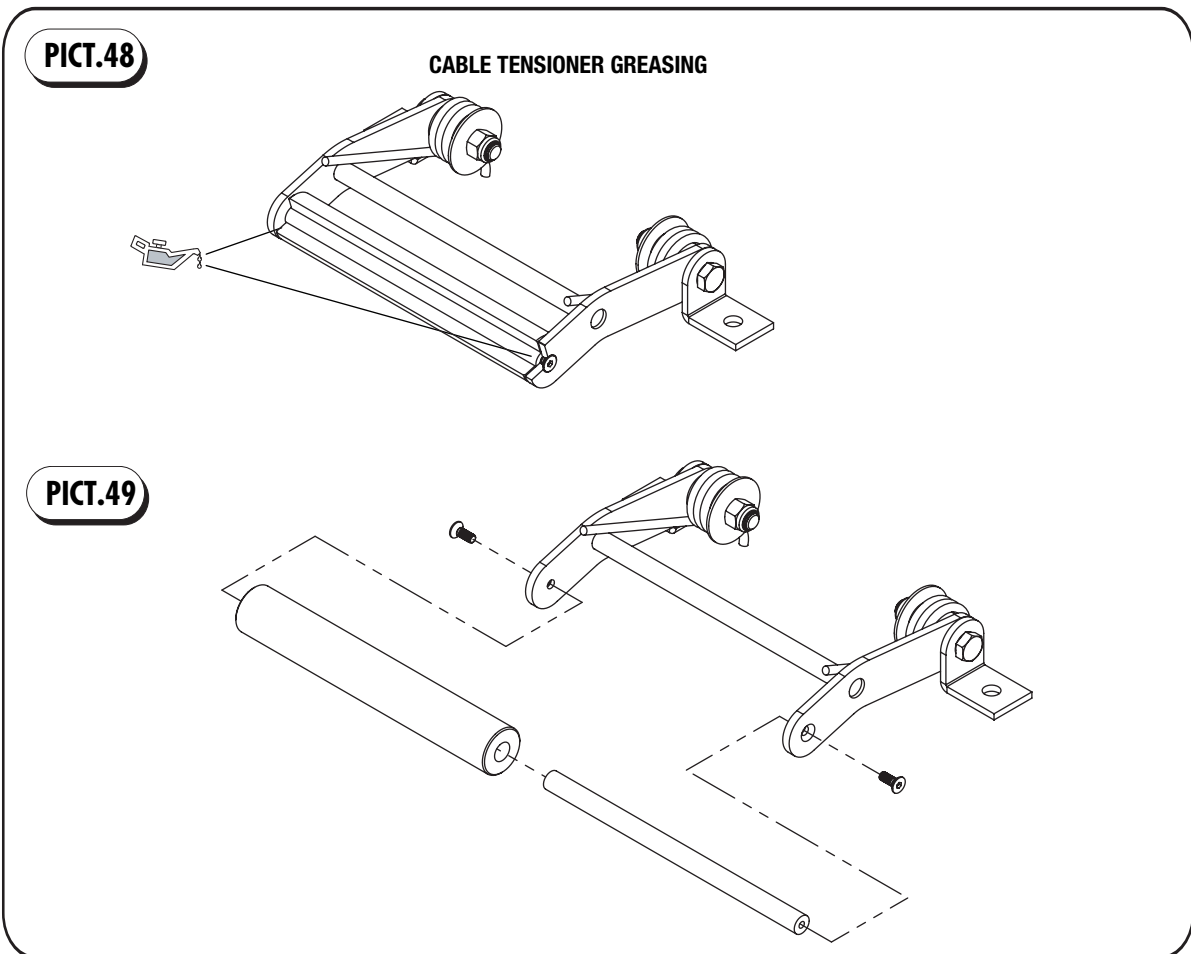
A roller excessively worn , particularly if it has deep stripes, could damage the wire rope.

■ IMPORTANT

Fairlead rollers are zinc plated. Treatment with time will be removed by rope sliding.

5. Cable tensioner roller is made in copolymer acetate. This material reduces maintenance. In very dirty environments, we recommend to keep maintenance and roller lubricated, with medium dense oil as shown in (pict.48).

In case of excessive locking, cable tensioner roller (2) can be disassembled as shown on pict.41.

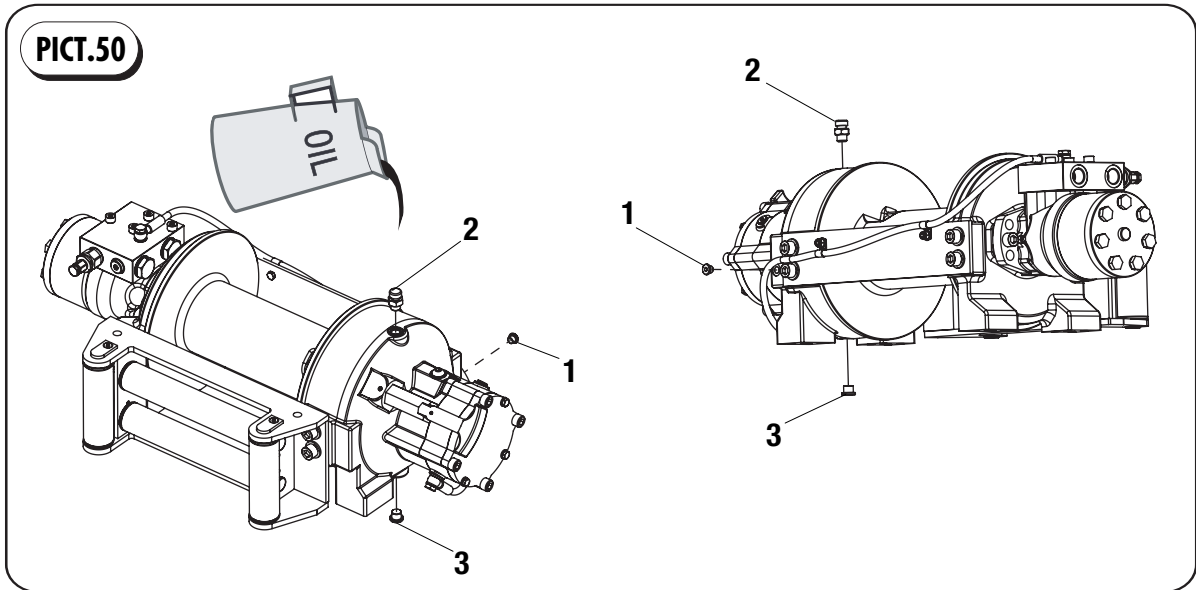


IMPORTANT

Cable tensioner roller sliding on wire rope, when shows an excessive wear must be replaced.

WARNING

A roller excessively worn, particularly if it has deep stripes, could damage the wire rope.



5.1.2 ANNUAL MAINTENANCE



Technical staff required :
Technician or user

Procedure:

At least once a year, it is necessary inspect oil level. To inspect oil level follow instruction as indicated in chapter 5.1.1 step 3. To fully replace the oil do as follow :

1. Remove breather plug (2) and oil level plug (1).
2. Drain oil from winch by removing drain plug (3) taking care to put the oil drained in a container (approx. 1,5 Lt. capacity).
3. Tighten drain plug (3) and fill up planetary gear housing with new oil through oil hole (2) till reach oil level hole (1) (see table below for oil quantity).

Model	Q.ty
EPH 3600 FN	800 Gr.
EPH/L 3600 FN	900 Gr.
EPH 4500 FN	900 Gr.
EPH 5200 FN	900 Gr.
EPH 6200 FN	900 Gr.
EPH 6700 FN	900 Gr.

4. Tighten oil level plug (1) and breather plug (2)

IMPORTANT

To avoid pollution, the oil drained from the winch, must be carried off in compliance with regulation.



WARNING

Inspect mounting capscrews and tighten if necessary.

SECTION 6 TROUBLE SHOOTING GUIDE



6.1 TROUBLE SHOOTING GUIDE

CONDITIONS	POSSIBLE CAUSE	CORRECTION
Drum will not rotate at no load in the free spooling position.	- The winch is misaligned.	- Check winch mounting, chapter 2.2-2.3-2.4 on pages 23-24-25.
	- Load greater than rated capacity of winch.	- Check technical data on pages 9-11-13-15-17-19.
	- Low hydraulic system pressure.	- Check hydraulic system pressure and winch performance charts on pages 9-11-13-15-17-19.
Drum will not rotate under load.	- The brake is not releasing	- Check the pressure at the (F) port (pict.19 pag.33) of the brake valve. With the hydraulic system running, the pressure at the (F) port will be approximately equal to the system pressure. The brake is fully opened at 30 bar. If the pressure at (F) is not correct, replace the Overcenter valve. - If the pressure at (F) port (pict.19 pag.33) reads 30 bar and the brake doesn't release, the brake maybe mechanically bound. Repair the brake.
	- Low hydraulic system flow rate.	- Check hydraulic system diagram on pages 9-11-13-15-17-19.
Winch runs too slow.	- Motor worn out.	- Replace the motor rif.1 spare parts drawing chapter 7.2-7.4-7.6-7.8, pages 60-62-64-66.
	- The winch is misaligned.	- Check winch mounting, chapter 2.2-2.3-2.4 on pages 23-24-25.
Drum will not free spool.	- Clutch doesn't disengage.	- Check chapter 2.9 page 37, chapter 3.1 on pages 46/49. - Check clutch ref.55-55A spare parts drawing chapter 7.2-7.4-7.6-7.8 on pages 60-62-64-66.
	- The winch is misaligned.	- Check winch mounting, chapter 2.2-2.3-2.4 on pages 23-24-25.

6.1 TROUBLE SHOOTING GUIDE

CONDITIONS	POSSIBLE CAUSE	CORRECTION
Oil leakage.	<ul style="list-style-type: none"> - Damaged oil seals, O-rings. - Oil plugs loosens. - Excessive oil quantity in gear housing. 	<ul style="list-style-type: none"> - Replace oil seals ref.11-18, O-ring ref.37-41 spare parts drawing chapter 7.2-7.4-7.6-7.8, pages 60-62-64-66. - Tighten oil plugs, Section 5 chapter 5.1.1. - Section 5 par. 5.1.1-5.1.2.
Oil leakage from gear housing or Fill/breather plug.	<ul style="list-style-type: none"> - Hydraulic orbital motor shaft oil seal damaged. 	<ul style="list-style-type: none"> - Replace hydraulic orbital motor shaft oil seal or hydraulic orbital motor.
Load drifts.	<ul style="list-style-type: none"> - Brake discs worn out. - Load greater than hold winch capacity. - Not proper winch control valve. - Excessive back pressure in return line. 	<ul style="list-style-type: none"> - Replace brake discs ref. 31-32, spare parts drawing chapter 7.2-7.4-7.6-7.8, pages 60-62-64-66. - Refer to winch technical data pages 9-11-13-15-17-19 for line pull rating. - Check control valve features on chapter 2.6 page 30. - Max. pressure in return line with stopped winch measured at the control valve exhaust manifold 5 bar.
Excessive noise.	<ul style="list-style-type: none"> - Hydraulic system flow too high - Oil level too low. 	<ul style="list-style-type: none"> - Check hydraulic system diagram, Section 1 on pages 9-11-13-15-17-19. - Check oil level chapter 5.1.1 on page 53.
Cable birdnests when clutch is disengaged.	<ul style="list-style-type: none"> - Teflon discs worn out. - Wire rope too hard. 	<ul style="list-style-type: none"> - Replace teflon discs and springs, ref.8-9, spare parts drawing chapter 7.2-7.4-7.6-7.8, pages 60-62-64-66. - Replace wire rope. Mount a cable tensioner.

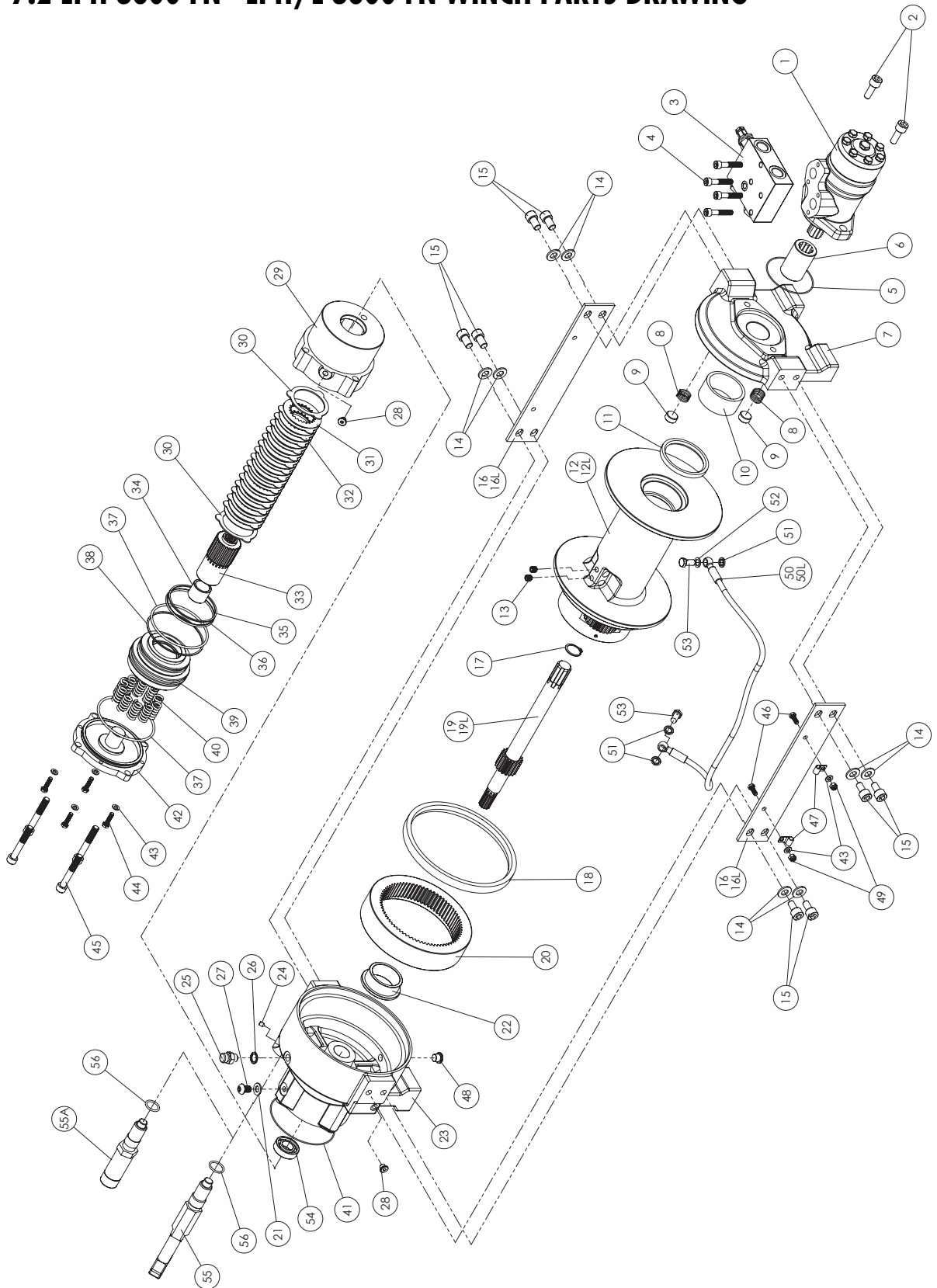
SECTION 7 PARTS LIST



7.1 EPH 3600 FN EPH/L 3600 FN WINCH SPARE PARTS LIST

COD.	REF.	DESCRIPTION	Q.TY	COD.	REF.	DESCRIPTION	Q.TY
	1	HYDRAULIC MOTOR 250 CC	1		31	BRONZE DISC	16
	2	CAPSCREW UNI 5931 M12x30	2		32	STEEL DISC TH=1	15
	3	OVERCENTER VALVE	1		33	BRAKE COUPLING	1
	4	CAPSCREW UNI 5931 M8x45	4		34	BUSHING	1
	5	O-RING MOTOR 82,28x1,78	1		35	RING-BACKUP PISTON 82,14x3,53	1
	6	MOTOUR COUPLING	1		36	O-RING 82,14x3,53	1
	7	SUPPORT	1		37	O-RING 98,02x3,53	2
	8	SPRING	2		38	RING-BACKUP PISTON 98,02x3,53	1
	9	TEFLON DISC	2		39	BRAKE RELEASE PISTON	1
	10	END MOTOR BUSHING	1		40	BRAKE SPRING	10
	11	OIL SEAL 70x85x8	1		41	O-RING 114x1,78	1
	12	DRUM WITH GEARS SET	1		42	COVER-BRAKE HOUSING	1
	12L	LONG DRUM WITH GEARS SETS	1		43	WASHER UNI 6592 D6	6
	13	CAPSCREW UNI 5927 M10x12	2		44	CAPSCREW UNI 5739 M6x25	4
	14	WASHER UNI 6592 D12	8		45	CAPSCREW UNI 5931 M10x70	4
	15	CAPSCREW UNI 5931 M12x20	8		46	CAPSCREW UNI 5739 M6x16	2
	16	TIE PLATE	2		47	PIPE CLAMP	2
	16L	LONG TIE PLATE	2		48	DRAIN PLUG 1/4" G	1
	17	SNAP RING 25	1		49	LOCK NUT UNI 7473 M6	2
	18	OIL SEAL 180x200x15	1		50	TUBE-BRAKE	1
	19	SHAFT	1		50L	LONG TUBE-BRAKE	1
	19L	LONG SHAFT	1		51	BOUNDED WASHER	3
	20	GEAR RING Z=73	1		52	COPPER WASHER	1
	21	WASHER UNI 6292 10x18x2	1		53	TUBE-BRAKE CAPSREW 1/8" G	2
	22	BUSHING	1		54	BEARING 6004	1
	23	GEAR HOUSING	1		55	MANUAL CLUTCH	1
	24	CAPSCREW UNI 5927 M6x10	1		56	O-RING 20,64x2,62	1
	25	FILL/BREATHING PLUG 1/4" G	1				
	26	FILL/BREATHING WASHER	1				
	27	CAPSCREW UNI-ISO7380 M10x16	1				
	28	PLUG 1/8" G	2				
	29	BRAKE HOUSING	1		55A	PNEUMATIC CLUTCH	1
	30	STELL DISC TH=2	2		56	O-RING 20,64x2,62	1

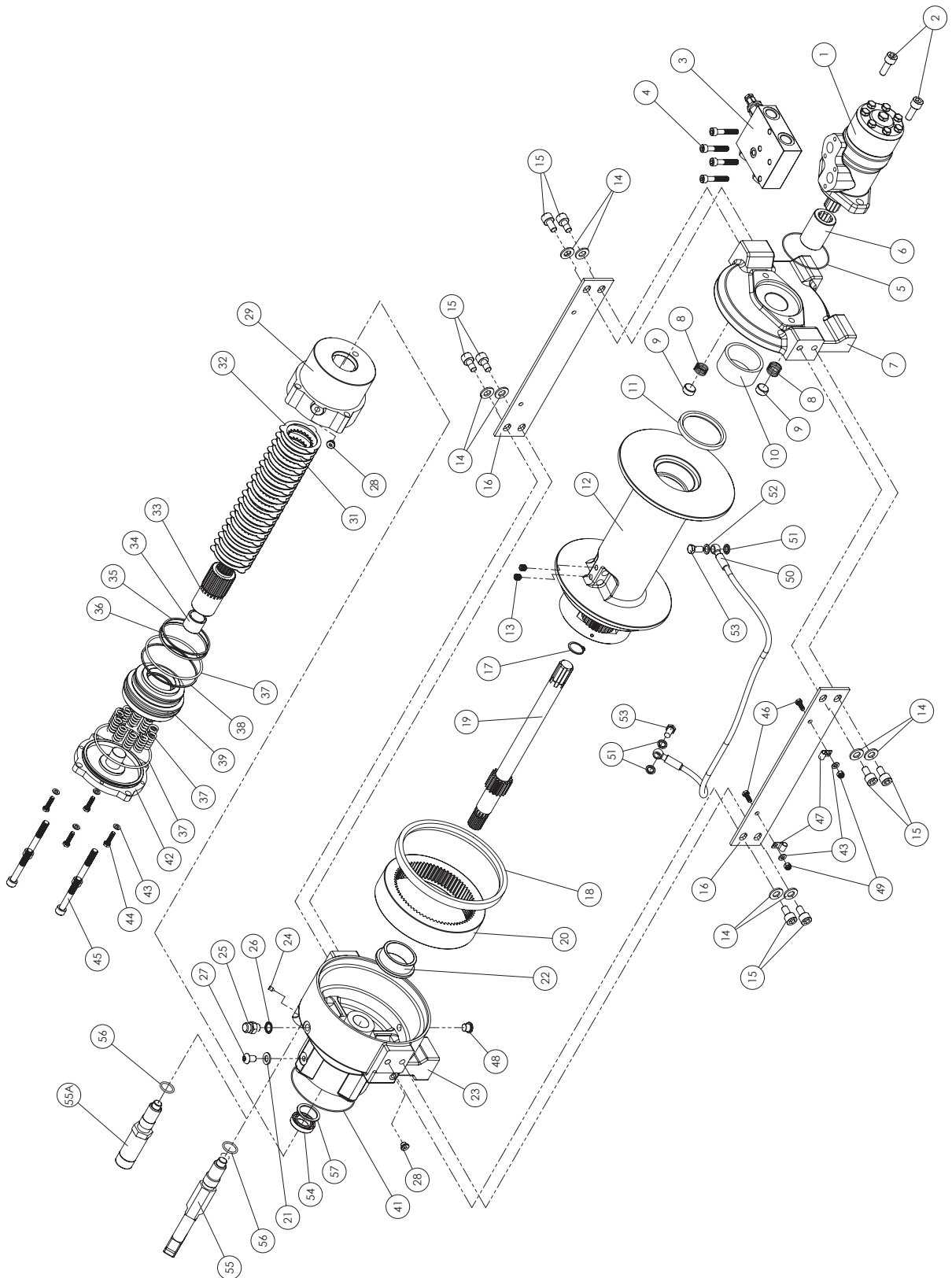
7.2 EPH 3600 FN EPH/L 3600 FN WINCH PARTS DRAWING



7.3 EPH 4500 FN WINCH SPARE PARTS LIST

COD.	REF.	DESCRIPTION	Q.TY	COD.	REF.	DESCRIPTION	Q.TY
	1	HYDRAULIC MOTOR 315 CC	1		35	RING-BACKUP PISTON 82,14x3,53	1
	2	CAPSCREW UNI 5931 M12x30	2		36	O-RING 82,14x3,53	1
	3	OVERCENTER VALVE	1		37	O-RING 98,02x3,53	2
	4	CAPSCREW UNI 5931 M8x45	4		38	RING-BACKUP PISTON 98,02x3,53	1
	5	O-RING MOTOR 82,28x1,78	1		39	BRAKE RELEASE PISTON	1
	6	MOTOUR COUPLING	1		40	BRAKE SPRING	10
	7	SUPPORT	1		41	O-RING 114x1,78	1
	8	SPRING	2		42	COVER-BRAKE HOUSING	1
	9	TEFLON DISC	2		43	WASHER UNI 6592 D6	6
	10	END MOTOR BUSHING	1		44	CAPSCREW UNI 5739 M6x25	4
	11	OIL SEAL 70x85x8	1		45	CAPSCREW UNI 5931 M10x70	4
	12	DRUM WITH GEARS SET	1		46	CAPSCREW UNI 5739 M6x16	2
	13	CAPSREW UNI 5927 M10x12	2		47	PIPE CLAMP	2
	14	WASHER UNI 6592 D12	8		48	DRAIN PLUG 1/4" G	1
	15	CAPSCREW UNI 5931 M12x20	8		49	LOCK NUT UNI 7473 M6	2
	16	TIE PLATE	2		50	TUBE-BRAKE	1
	17	SNAP RING 25	1		51	BOUNDED WASHER	3
	18	OIL SEAL 180x200x15	1		52	COPPER WASHER	1
	19	SHAFT	1		53	TUBE-BRAKE CAPSREW 1/8" G	2
	20	GEAR RING Z=73	1		54	BEARING 6905	1
	21	WASHER UNI 6292 10x18x2	1		55	MANUAL CLUTCH	1
	22	BUSHING	1		56	O-RING 20,64x2,62	1
	23	GEAR HOUSING	1		57	THRUST WASHER 32,5x41x2	1
	24	CAPSCREW UNI 5927 M6x10	1				
	25	FILL/BREATHER PLUG 1/4" G	1				
	26	FILL/BREATHER WASHER	1				
	27	CAPSCREW UNI-ISO7380 M10x16	1				
	28	PLUG 1/8" G	2				
	29	BRAKE HOUSING	1				
	31	BRONZE DISC	17				
	32	STELL DISC TH=1	17				
	33	BRAKE COUPLING	1		55A	PNEUMATIC CLUTCH	1
	34	BUSHING	1		56	O-RING 20,64x2,62	1

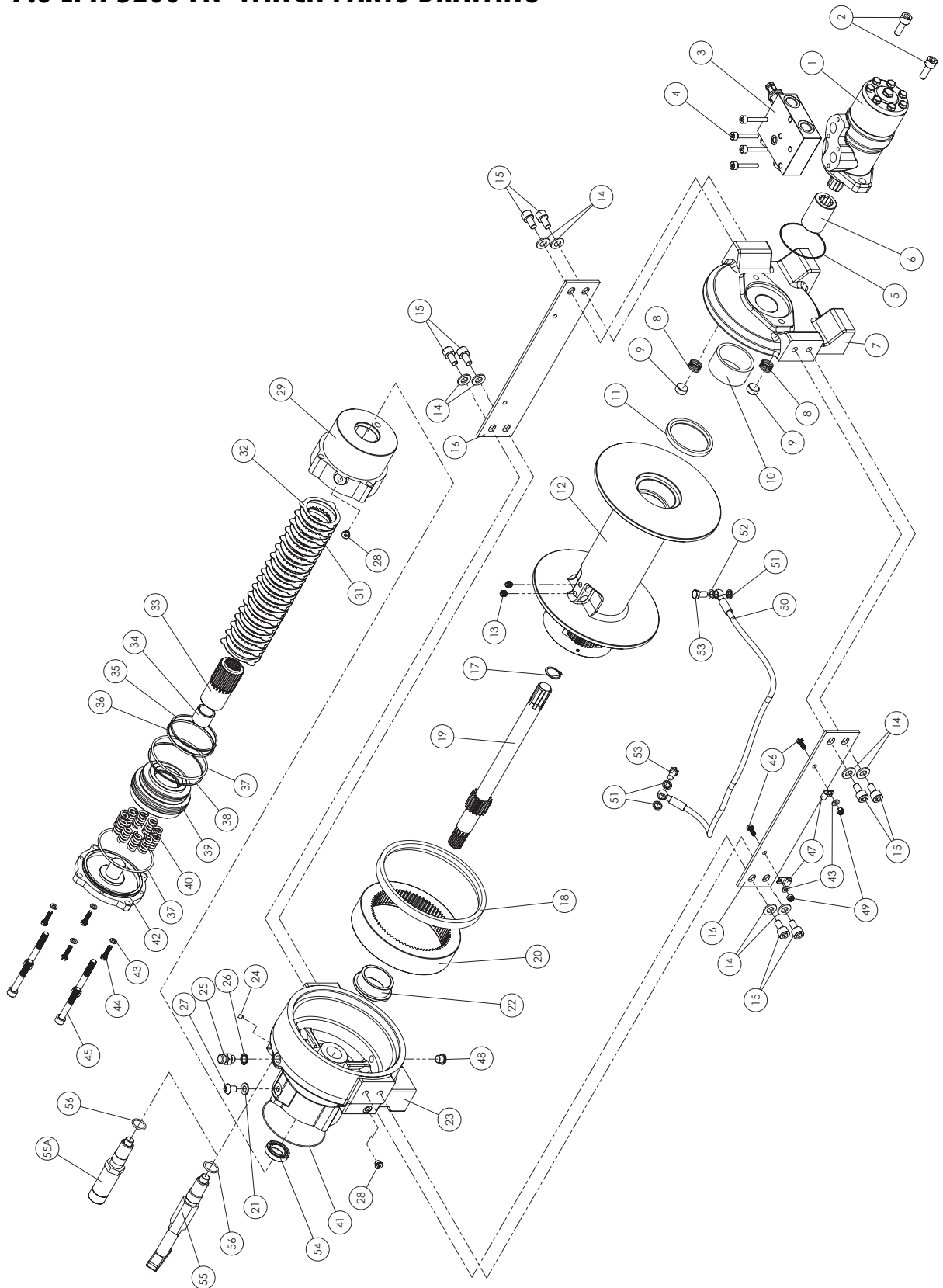
7.4 EPH 4500 FN WINCH PARTS DRAWING



7.5 EPH 5200 FN WINCH SPARE PARTS LIST

COD.	REF.	DESCRIPTION	Q.TY	COD.	REF.	DESCRIPTION	Q.TY
	1	HYDRAULIC MOTOR 400 CC	1		35	RING-BACKUP PISTON 82,14x3,53	1
	2	CAPSCREW UNI 5931 M12x30	2		36	O-RING 82,14x3,53	1
	3	OVERCENTER VALVE	1		37	O-RING 98,02x3,53	2
	4	CAPSCREW UNI 5931 M8x45	4		38	RING-BACKUP PISTON 98,02x3,53	1
	5	O-RING MOTOR 82,28x1,78	1		39	BRAKE RELEASE PISTON	1
	6	MOTOUR COUPLING	1		40	BRAKE SPRING	10
	7	SUPPORT	1		41	O-RING 114x1,78	1
	8	SPRING	2		42	COVER-BRAKE HOUSING	1
	9	TEFLON DISC	2		43	WASHER UNI 6592 D6	6
	10	END MOTOR BUSHING	1		44	CAPSCREW UNI 5739 M6x25	4
	11	OIL SEAL 70x85x8	1		45	CAPSCREW UNI 5931 M10x70	4
	12	DRUM WITH GEARS SET	1		46	CAPSCREW UNI 5739 M6x16	2
	13	CAPSREW UNI 5927 M10x12	2		47	PIPE CLAMP	2
	14	WASHER UNI 6592 D12	8		48	DRAIN PLUG 1/4" G	1
	15	CAPSCREW UNI 5931 M12x20	8		49	LOCK NUT UNI 7473 M6	2
	16	TIE PLATE	2		50	TUBE-BRAKE	1
	17	SNAP RING 25	1		51	BOUNDED WASHER	3
	18	OIL SEAL 180x200x15	1		52	COPPER WASHER	1
	19	SHAFT	1		53	TUBE-BRAKE CAPSREW 1/8" G	2
	20	GEAR RING Z=73	1		54	BEARING 6905	1
	21	WASHER UNI 6292 10x18x2	1		55	MANUAL CLUTCH	1
	22	BUSHING	1		56	O-RING 20,64x2,62	1
	23	GEAR HOUSING	1				
	24	CAPSCREW UNI 5927 M6x10	1				
	25	FILL/BREATHER PLUG 1/4" G	1				
	26	FILL/BREATHER WASHER	1				
	27	CAPSCREW UNI-ISO7380 M10x16	1				
	28	PLUG 1/8" G	2				
	29	BRAKE HOUSING	1				
	31	BRONZE DISC	17				
	32	STELL DISC TH=1	17				
	33	BRAKE COUPLING	1		55A	PNEUMATIC CLUTCH	1
	34	BUSHING	1		56	O-RING 20,64x2,62	1

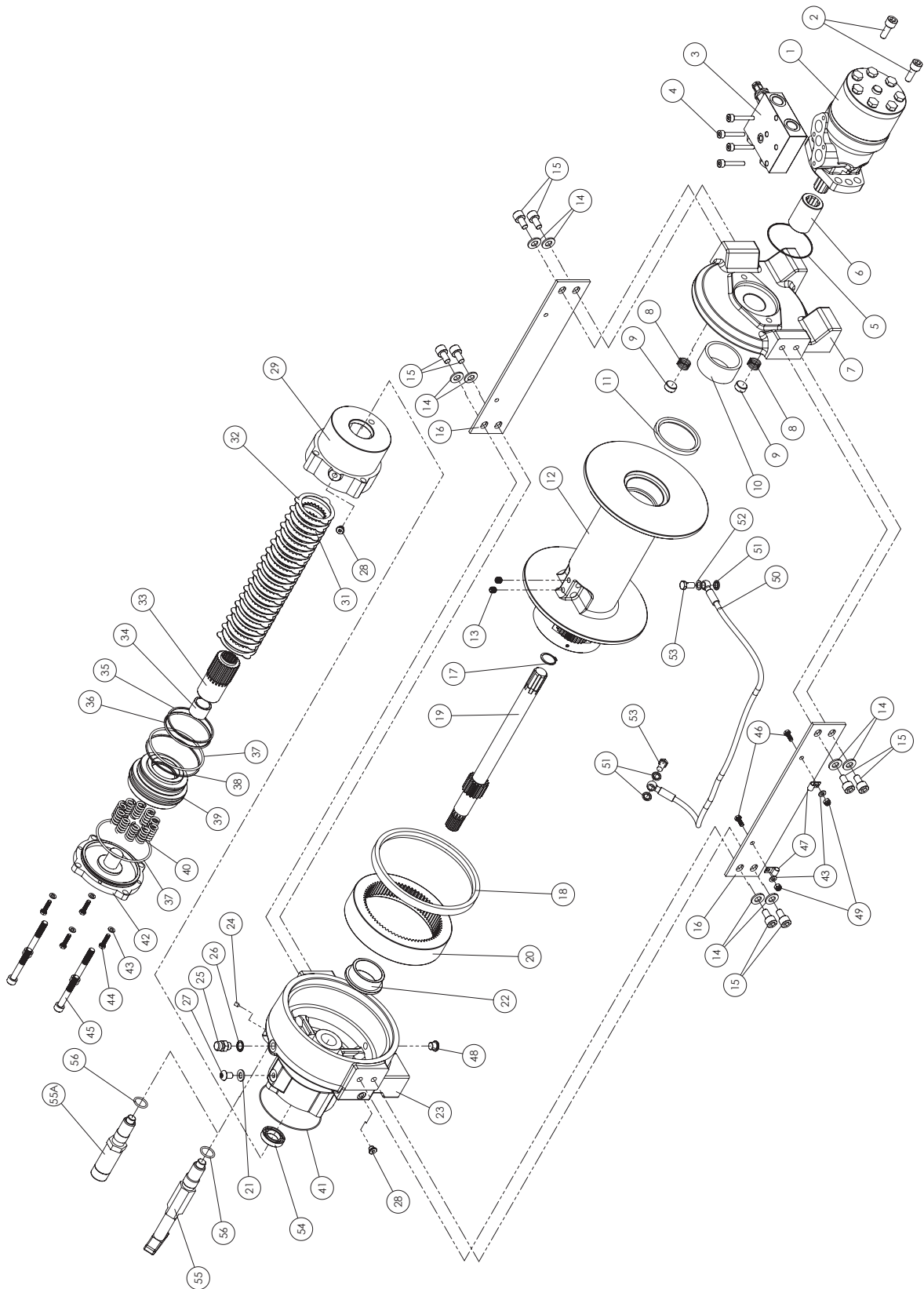
7.6 EPH 5200 FN WINCH PARTS DRAWING



7.7 EPH 6200 FN EPH 6700 FN WINCH SPARE PARTS LIST

COD.	REF.	DESCRIPTION	Q.TY	COD.	REF.	DESCRIPTION	Q.TY
	1	HYDRAULIC MOTOR 400 CC	1		35	RING-BACKUP PISTON 82,14x3,53	1
	2	CAPSCREW UNI 5931 M12x30	2		36	O-RING 82,14x3,53	1
	3	OVERCENTER VALVE	1		37	O-RING 98,02x3,53	2
	4	CAPSCREW UNI 5931 M8x45	4		38	RING-BACKUP PISTON 98,02x3,53	1
	5	O-RING MOTOR 82,28x1,78	1		39	BRAKE RELEASE PISTON	1
	6	MOTOUR COUPLING	1		40	BRAKE SPRING	10
	7	SUPPORT	1		41	O-RING 114x1,78	1
	8	SPRING	2		42	COVER-BRAKE HOUSING	1
	9	TEFLON DISC	2		43	WASHER UNI 6592 D6	6
	10	END MOTOR BUSHING	1		44	CAPSCREW UNI 5739 M6x25	4
	11	OIL SEAL 70x85x8	1		45	CAPSCREW UNI 5931 M10x70	4
	12	DRUM WITH GEARS SET	1		46	CAPSCREW UNI 5739 M6x16	2
	13	CAPSREW UNI 5927 M10x12	2		47	PIPE CLAMP	2
	14	WASHER UNI 6592 D12	8		48	DRAIN PLUG 1/4" G	1
	15	CAPSCREW UNI 5931 M12x20	8		49	LOCK NUT UNI 7473 M6	2
	16	TIE PLATE	2		50	TUBE-BRAKE	1
	17	SNAP RING 25	1		51	BOUNDED WASHER	3
	18	OIL SEAL 180x200x15	1		52	COPPER WASHER	1
	19	SHAFT	1		53	TUBE-BRAKE CAPSREW 1/8" G	2
	20	GEAR RING Z=73	1		54	BEARING 6905	1
	21	WASHER UNI 6292 10x18x2	1		55	MANUAL CLUTCH	1
	22	BUSHING	1		56	O-RING 20,64x2,62	1
	23	GEAR HOUSING	1				
	24	CAPSCREW UNI 5927 M6x10	1				
	25	FILL/BREATHER PLUG 1/4" G	1				
	26	FILL/BREATHER WASHER	1				
	27	CAPSCREW UNI-ISO7380 M10x16	1				
	28	PLUG 1/8" G	2				
	29	BRAKE HOUSING	1				
	31	BRONZE DISC	17				
	32	STELL DISC TH=1	17				
	33	BRAKE COUPLING	1		55A	PNEUMATIC CLUTCH	1
	34	BUSHING	1		56	O-RING 20,64x2,62	1

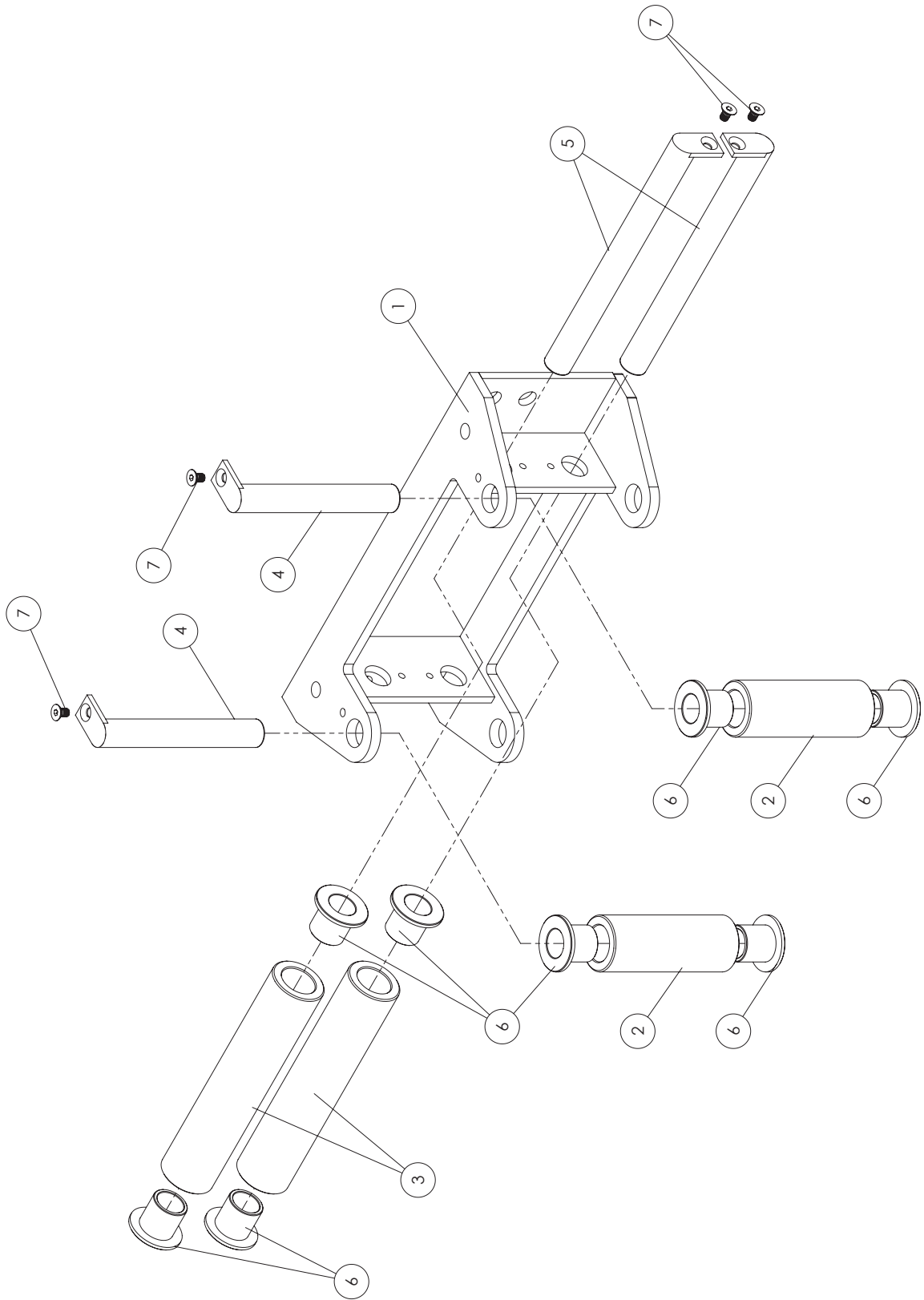
7.8 EPH 6200 FN EPH 6700 FN WINCH PARTS DRAWING



7.9 EPH 3600 FN ROLLER FAIRLEAD SPARE PARTS LIST

COD.	REF.	DESCRIPTION	Q.TY	COD.	REF.	DESCRIPTION	Q.TY
	1	FRAME	1				
	2	VERTICAL ROLLER WITH BUSHINGS	2				
	3	HORIZONTAL ROLLER WITH BUSHINGS	2				
	4	VERTICAL SHAFT ROLLER	2				
	5	HORIZONTAL SHAFT ROLLER	2				
	6	BUSHING	8				
	7	CAPSCREW UNI 5933 M6x10	4				
BOLTS AND NUTS MOUNTING							
		CAPSCREW UNI 5931 M12x30	4				
		WASHER UNI 6592 D12	4				

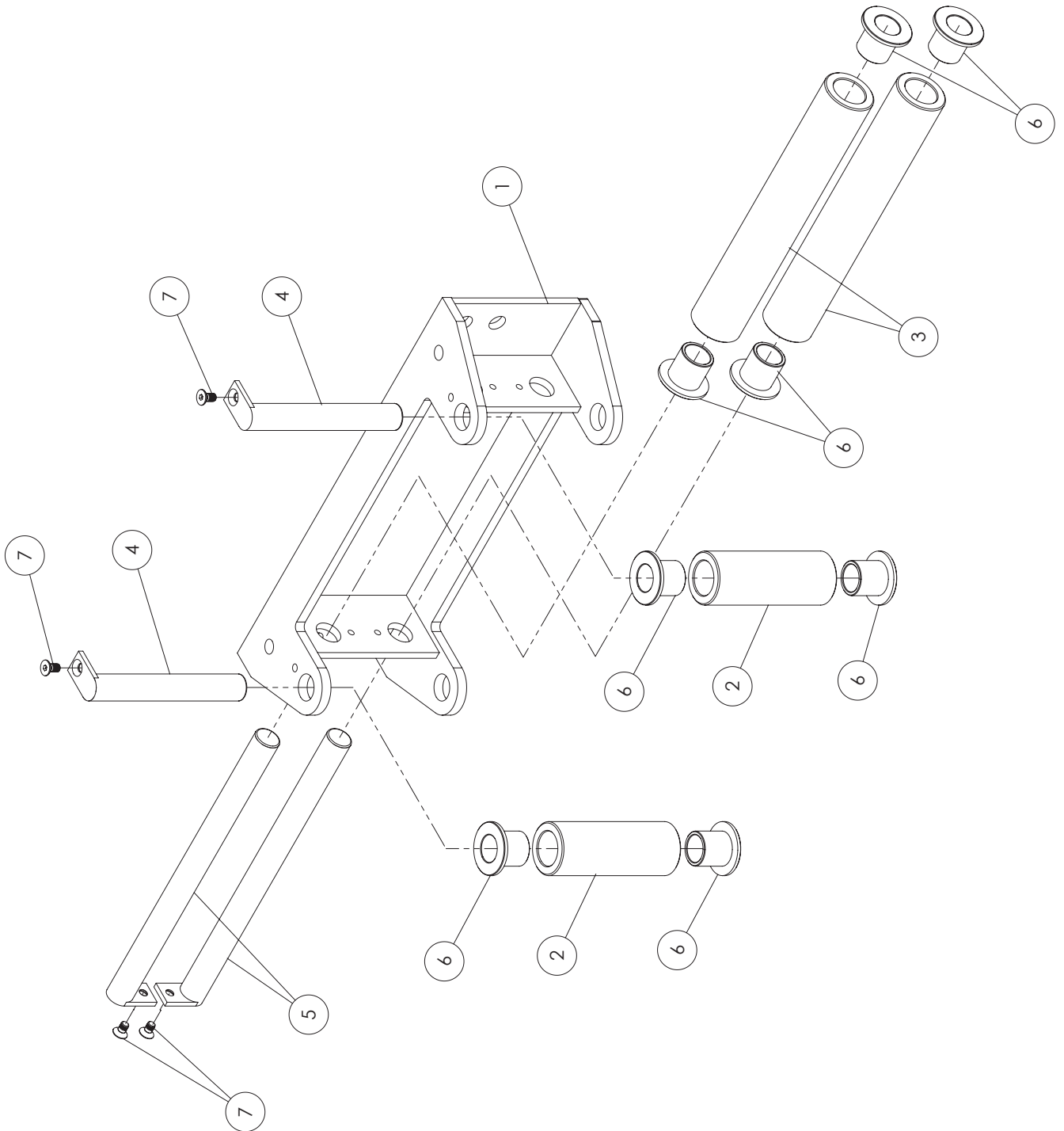
7.10 EPH 3600 FN ROLLER FAIRLEAD PARTS DRAWING



7.11 EPH/L 3600 FN EPH 4500 FN ROLLER FAIRLEAD SPARE PARTS LIST

COD.	REF. DESCRIPTION	Q.TY	COD.	REF. DESCRIPTION	Q.TY
	1 FRAME	1			
	2 VERTICAL ROLLER WITH BUSHINGS	2			
	3 HORIZONTAL ROLLER WITH BUSHINGS	2			
	4 VERTICAL SHAFT ROLLER	2			
	5 HORIZONTAL SHAFT ROLLER	2			
	6 BUSHING	8			
	7 CAPSCREW UNI 5933 M6x10	4			
	BOLTS AND NUTS MOUNTING				
	CAPSCREW UNI 5931 M12x30	4			
	WASHER UNI 6592 D12	4			

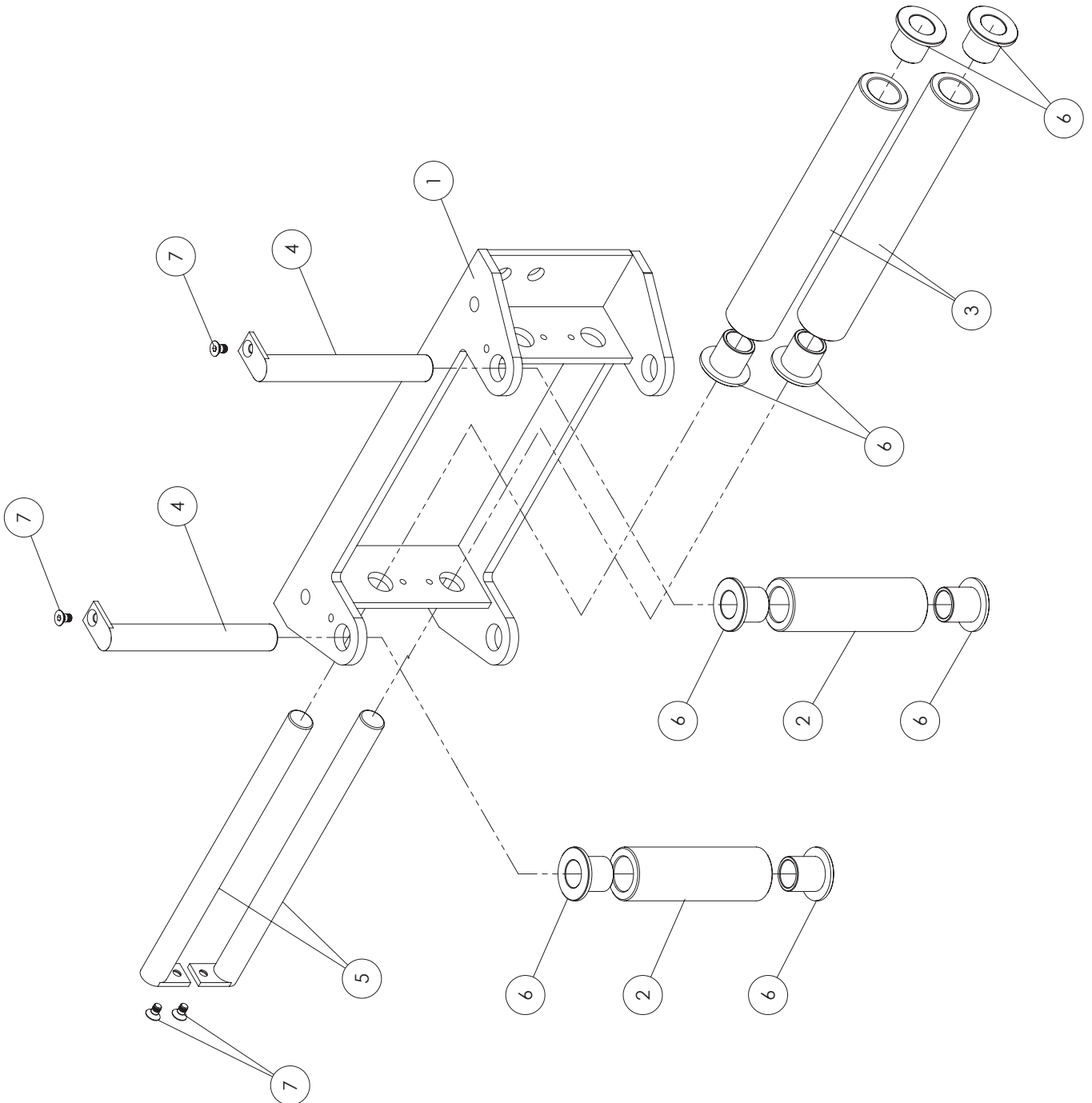
7.12 EPH/L 3600 FN EPH 4500 FN ROLLER FAIRLEAD PARTS DRAWING



7.13 EPH 5200 FN EPH 6200 FN EPH 6700 FN ROLLER FAIRLEAD SPARE PARTS LIST

COD.	REF. DESCRIPTION	Q.TY	COD.	REF. DESCRIPTION	Q.TY
	1 FRAME	1			
	2 VERTICAL ROLLER WITH BUSHINGS	2			
	3 HORIZONTAL ROLLER WITH BUSHINGS	2			
	4 VERTICAL SHAFT ROLLER	2			
	5 HORIZONTAL SHAFT ROLLER	2			
	6 BUSHING	8			
	7 CAPSCREW UNI 5933 M6x10	4			
	BULLONERIA DI FISSAGGIO				
	VITE TCEIE UNI 5931 M12x30	4			
	RONDELLA UNI 6592 D12	4			

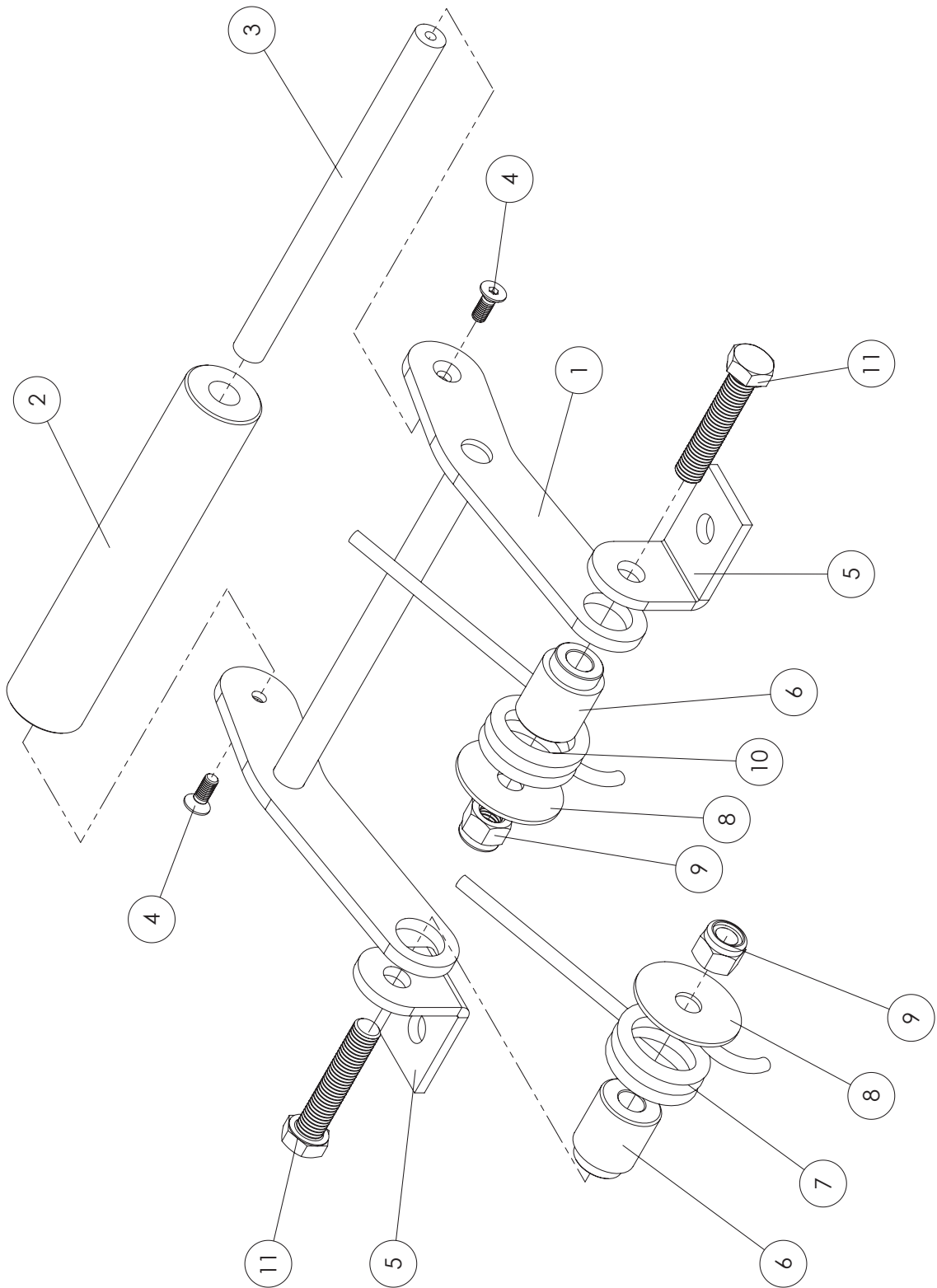
7.14 EPH 5200 FN EPH 6200 FN EPH 6700 FN ROLLER FAIRLEAD PARTS DRAWING



7.15 EPH 3600 FN ROPE TENSIONER SPARE PARTS LIST

COD.	REF.	DESCRIPTION	Q.TY	COD.	REF.	DESCRIPTION	Q.TY
	1	FRAME	1				
	2	ROLLER	1				
	3	ROLLER SHAFT	1				
	4	CAPSCREW UNI 5933 M6x16	2				
	5	SUPPORT	2				
	6	BUSHING	1				
	7	SPRING DX	1				
	8	WASHER 12,5x48x2,5	2				
	9	LOCK NUT UNI 7473 M12	2				
	10	SPRING SX	1				
	11	CAPSCREW UNI 5737 M12x60	2				
		BOLTS AND NUTS MOUNTING					
		CAPSCREW UNI 5931 M10x30	2				
		WASHER UNI 6592 D10	2				
		LOCK NUT UNI 7473 M10	2				

7.16 EPH 3600 FN ROPE TENSIONER PARTS DRAWING





**7.17 EPH/L 3600 FN EPH 4500 FN EPH 5200 FN EPH 6200 FN
EPH 6700 FN ROPE TENSIONER SPARE PARTS LIST**

COD.	REF. DESCRIPTION	Q.TY	COD.	REF. DESCRIPTION	Q.TY
	1 FRAME	1			
	2 ROLLER	1			
	3 ROLLER SHAFT	1			
	4 CAPSCREW UNI 5933 M6x16	2			
	5 SUPPORT	2			
	6 BUSHING	1			
	7 SPRING DX	1			
	8 WASHER 12,5x48x2,5	2			
	9 LOCK NUT UNI 7473 M12	2			
	10 SPRING SX	1			
	11 CAPSCREW UNI 5737 M12x60	2			
BOLTS AND NUTS MOUNTING					
	CAPSCREW UNI 5931 M10x30	2			
	WASHER UNI 6592 D10	2			
	LOCK NUT UNI 7473 M10	2			

**7.18 EPH/L 3600 FN EPH 4500 FN EPH 5200 FN EPH 6200 FN
EPH 6700 FN ROPE TENSIONER PARTS DRAWING**

