



# PANDROL

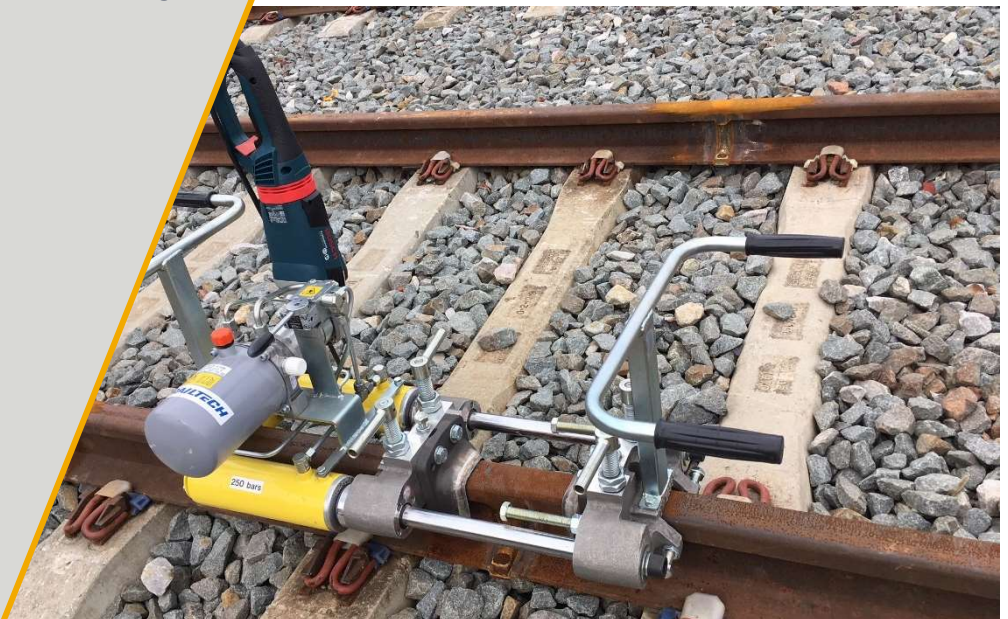
## INTEGRAL UNIT HYDRAULIC RAIL WELD SHEARING MACHINE

### EME1 TYPE

### REF. 11334010

OPERATING AND MAINTENANCE MANUAL

REF. 42111006



PANDROL

Siège Social et Usine : Z.I. du Bas Pré – B.P. 9 – 59590 RAISMES – FRANCE- Tél. : 33 (0) 3.27.22.26.26 - Fax : 33 (0) 3.27.22.26.00

Direction Générale et Commerciale Immeuble West Plaza – 9 rue du Débarcadère- CS90029 – 92707 COLOMBES Cedex

Tel 33.1.46.88.17.00 – Infos.pandrol@pandrol.com – Fax 33.1.46.88.17.00 et 17 66

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En cas de litige, la version française fait référence – The French version will be decisive in cases of litigation

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## I – SAFETY LABELS EXPLANATION



**WARNING !** The machine can be dangerous.



Careless and incorrect use results in injury to the operator



Read carefully the instructions of the operating manual before using the machine.

## II – GENERAL SAFETY INSTRUCTIONS

- Never use the shearing machine until you have read and understood the directions for use.
- Ensure compatibility of the power supply for battery charging
- Ensure that the batteries are transported separately from the engine
- The operator must ensure that no one can affect his work area (people, animals, flammable material).
- The shearing machine is specially designed to cut the metal excess after an aluminothermic weld, **don't divert of its primary function.**
- The operator must respect the regulations, procedures and particular orders of the Railway operating Network
- Never use the shearing machine when you are tired or under influence of medicines, alcohol or substances which can alter your sight, dexterity or appreciation capacity.
- All maintenance operations must be achieved by qualified staff.
- Hydraulic pipes and couplings must be correctly inspected before every use. Any defective component must be rejected.
- Shearing machine weight is rather high, so three persons are necessary to handle and place it on track under no circumstances the original design and configuration of the shearing machine should be modify.
- Make sure that the power supply is compatible for charging the batterie
- In case of rain it is possible to use the machine under the PANDROL welding protection tent. Be careful, however, not to expose the machine to water before and after being put under cover in the tent.
- Ensure that the batteries must be transported separately from the engine
- Protect the batteries from moisture!
- Do not use defective or deformed batteries!
- Do not expose the battery packs to fire!
- A defective Li-Ion battery pack can cause leakage of slightly acidic and flammable liquid!
- The engine can be dismantling from the shearing unit, **never use it for any other operation.**



## II – DESCRIPTION

- The shearing machine as been designed to cut the metal excess resulting after an aluminothermic weld, this operation is carried out after mould release. The shearing machine is intended for Vignole and double head rails.
- The engine is fed with 220v monophas – 560 Hz current
- For safety instructions, environmental protection and the use of batteries, refer to the manufacturer's manual
- The machine is fitted with two hydraulic jacks, supplied at the same time and able to produce a force of 21 metric Tons under a pressure of 250 bars.
- Two hydraulically operated blades (see chapter V), on either side of the weld, move and cut off the metal excess.
- A hydraulic distributor with manual control lever allows the blades moving. Loosen the action on the distributor control lever stops the translator movement.
- With adjusting screws the blades cutting edge is exactly adjusted laterally and vertically.
- Retractable locking systems, fixed under the rail head, prevent the shearing machine from rising up and so adjust the cutting operation to the thickness of the deadhead.
- 

## III – USE INSTRUCTIONS

### 1 – Storing

The shearing machine does not require any particular conditions of storing  
However attend to

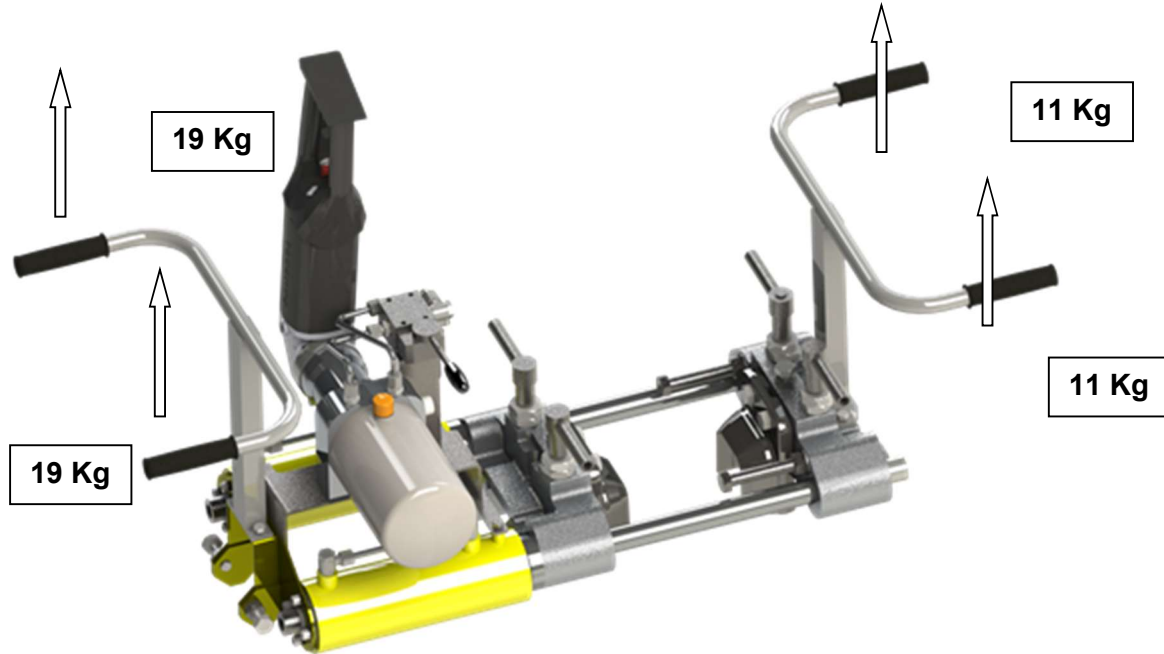
- protect the jack's columns from shocks
- avoid inclining the shearing unit, this can result in an oil leakage from the tank plug
- Store the shearing machine and its motor in a dry place

#### ***OIL RECOMMENDATION:***

**HVC 32 hydraulic fluid category ISO-L-HV  
ISO 11158 category HV**

## 2 – Handling

- 60 Kg is the weight of a shearing machine with blades in order to work
- Three persons are necessary for its handling : two on jacks' side, the third on the opposite side.



## 3 – Pre-operating check

- Verify the good position of the electricity supply cable so as to avoid any risk of contact with the weld or risk of cutting
- To obtain high performances and get most satisfaction with the shearing machine, realise the different recommended adjustments with a particular attention before starting the cutting operation

## 4 – Positioning the engine

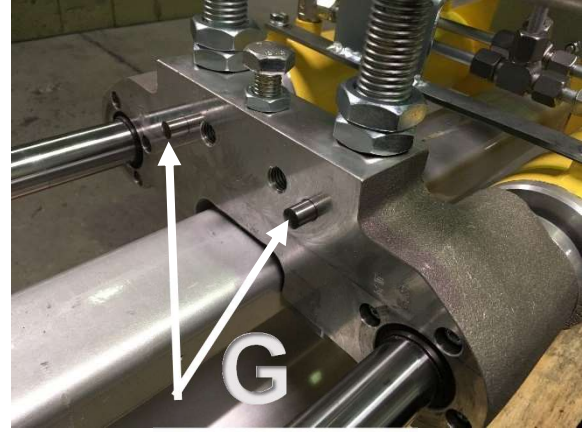
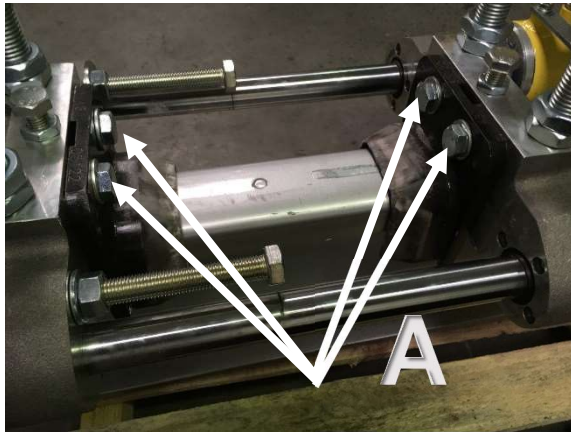
The shearing machine and the engine are delivered in a “compact position” and this necessitate to position the engine in “use” position

### **Operating mode:**

- Loosen the hose clamp with a n°13 flat spanner
- Turn back the motor by about 1 cm
- Orient the motor according to the desired position

## 5 - Blades positioning

- 1 - Take off the four screws (item **A**) maintaining the blades on the crosspieces
- 2 - Position the blades on the pins (item **G**)
- 3 - Put on and tighten the bolts with two wrenches of 22



**NOTE :** To select the appropriated blades, see the profile blades list page 21

## 6 - Pre-operating adjustments

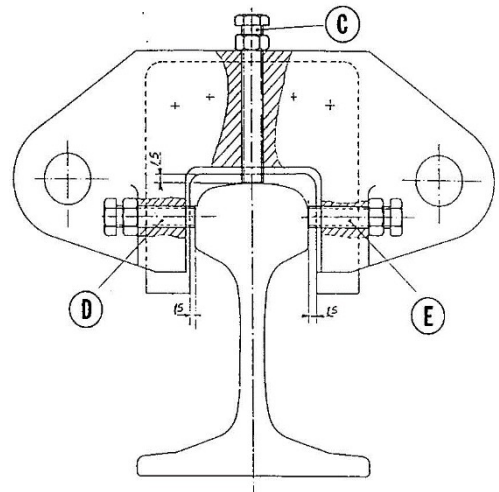
### 6.1 Blades adjustments

#### A. longitudinal guiding

The cutting unit is guided longitudinally along the rail by 4 guiding screws (items **D** and **E**), 2 on the front crosspiece and two on the back one, which create a space between the blade cutting edge and the rail head profile.

#### Operating instructions

Unlock the locking nuts and unscrew the screws items **D** and **E**.  
 On the left side, adjust the screw item **D** so as to obtain a space of 1,5 mm between the blade vertical cutting edge and the rail.  
 On the right side, tighten the screw (item **E**) until you obtain a space of 0,5 to 1 mm between his screw end and the rail.  
 Lock up the locking nuts



## b. Vertical adjustment

The front and back crosspieces are each fitted with a screw item **C**

These screws must be adjusted so as to create a space of 1,5 to 2 mm between the blades cutting edge and the rail running surface.

### Operating instructions

- Loosen the lock nuts and unscrew the 2 screws item **C**
- Place the 1,5 mm wedge **reference 31910308** on the rail running surface
- Place the cutting unit on the wedge
- Tighten the screws item **C** until the contact with the rail
- Lock up the lock nuts

To optimise the cutting, this adjustment should be realised systematically every time the blades have been sharpened or replaced.

## 6.2 Stop pieces adjustment

To prevent the blades cutting edges from damaging, it's absolutely necessary to leave a space of 1 mm during the two screws item **F** adjustment, these screws act like stop pieces on the travelling crosspiece.

## 6.3 Locking system adjustment

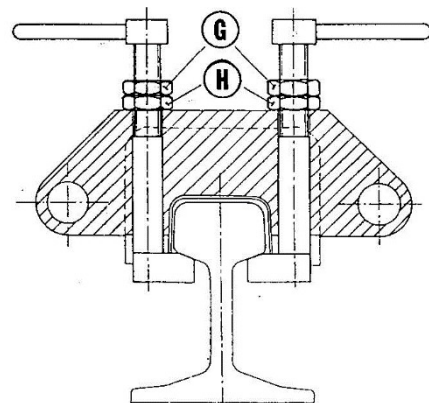
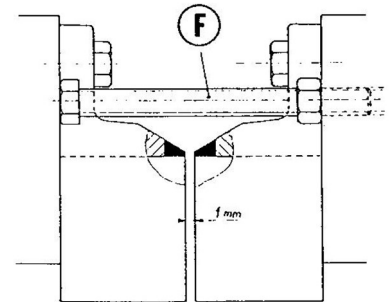
The locking system improves the cutting action, providing safe and quality in cutting operation.

Cutting unit placed on the rail, blades adjusted. So as to engage the locking system under the rail head, rotate its lever through 90°, then :

### Operating instructions

- 1 -Turn the 2 nuts (item **G** and **H**) until the hook make contact under the rail head
- 2 - Loosen 1/8 of a turn the nut (item **H**) to create a little space
- 3 – Lock in that position by tightening the nut (item **G**)

Proceed in the same way for the 3 other locking systems



## 7 – Operating

Before operating the shearing machine, verify that all the adjustments described in preceding paragraph have been made. No Load Test will be performed.

### 7.1 Mould release

When welding operation is finished, proceed as follows :

Break the mould respecting the time required between casting and mould release according to the welding process

Push back the risers

Remove the sand from each side of the deadhead

Using a wire brush remove, on both sides of the deadhead, sand and mould debris

These operations must be done **quickly**, otherwise the deadhead may cool down too much and become impossible to cut.

### 7.2 Cutting

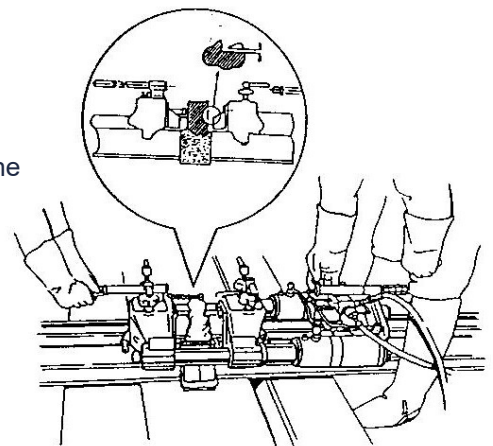
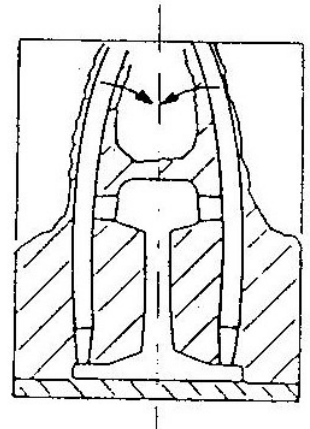
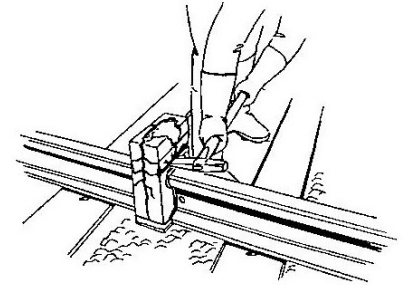
- The welder and his assistant place the shearing machine on the rail with deadhead centred in relation to the blades.
- Pivot the 4 hooks of the locking systems under the rail head.

The operator, on the hydraulic distributor side, operate the METABO motor and then maneuver the lever of the distributor, towards the weld to cut (towards himself for the return). Once the stop screws make contact with the travelling crosspiece, **immediately** reverse the lever on the distributor in order to prevent the blades from a prolonged heating

- Release the locking system hooks.

Remove the shearing machine from the rail.

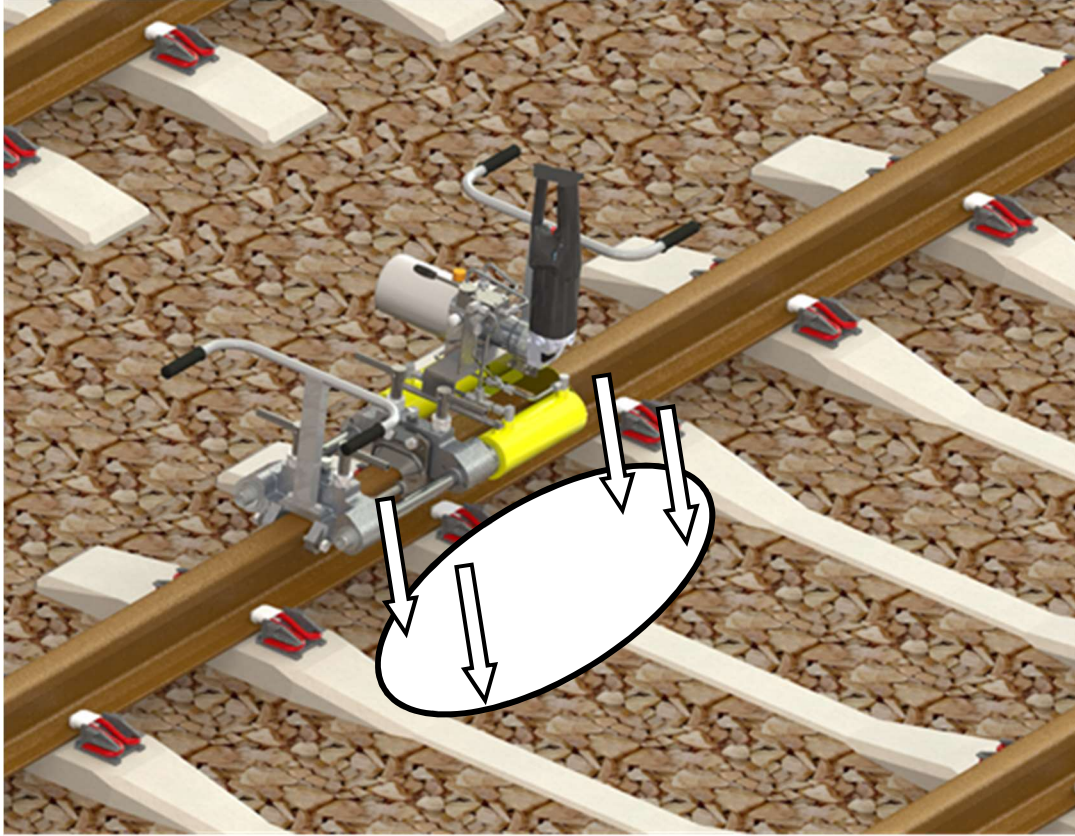
- Using a hammer, break the layer that still links up the deadhead to the rail.



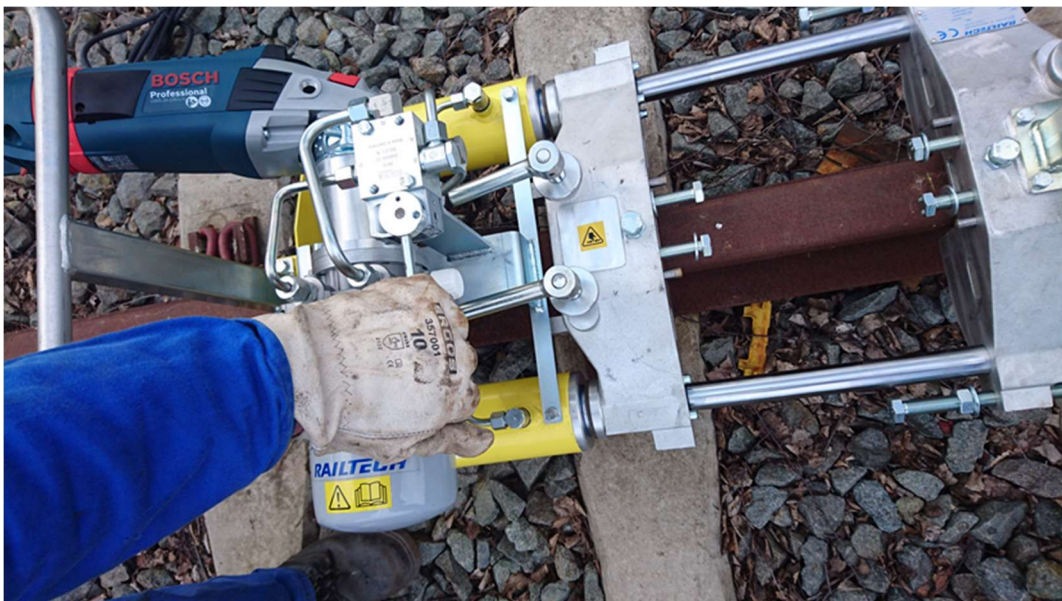


## 8 – WORK PLACE

The user's area at his workstation is represented by a white perimeter and 4 arrows



The shearing machine must always be positioned so that the user can easily handle the Internal distributor



## 9 - MAINTENANCE

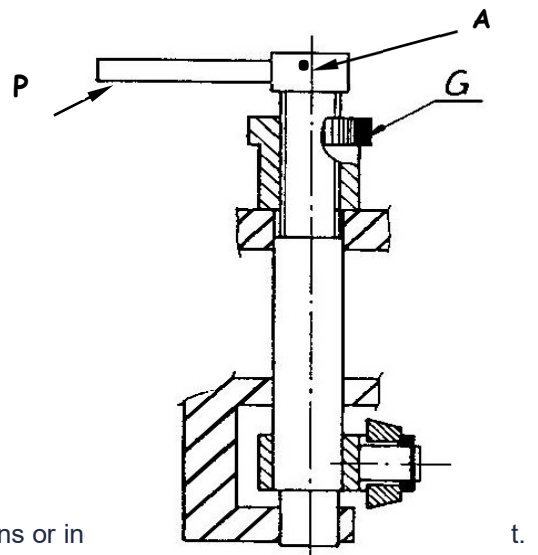
- Take care of the cleanliness of the shearing unit so as to make a good visual inspection
- Keep a watch on columns and scraper seals aspect, immediately replace grooved columns or faulty scraper seals. This operation must be realised by qualified staff
- Keep a watch on locking systems wear, due to the friction under le rail head hooks wear out : remove and replace them when the points dimension is inferior to 8 mm

### **Operating instructions**

- 1 – Push out the pin **A** and take off the handle **P**
- 2 – Take off the nut **G**
- 3 – The hook falls

To assemble new hooks, reverse order of removal

If the mechanical coupling motor – hydraulic pump present of wear signs or in



**Réf produit : 31230028**



OBJECT	Operation's nature	PERIODICITY		
		Before using	After using	Presence of wear signs or incorrect functioning
Complete machine	Inspection of the machine	X		
Complete machine	Clear the engine using a towel or compressed air gun to remove the dirtiness		X	
Wiper seal	Replacement			X
Cylinder rod	Replacement			X
Locking hook	Replacement			X
Carbon Brush	Replacement			X

These recommendations are not restrictive. Continuous shearing machine and well-organized preventive maintenance will extend the life of the machine.

Responsibility for maintenance is the responsibility of the owner of the equipment.  
Maintenance must be carried out at least once a year by a competent and qualified person

## V-SIGNALISATION

The hydraulic shearing machine benefits of traçability on the ID plate.

### ID PLATE

	Norme:	
	Type :	
	Agrément SNCF :	
Réf :	N° de série :	Année :
Trs/min Outil $\phi$ :		mm Masse : Kg

### ETIQUETTE EN 13977

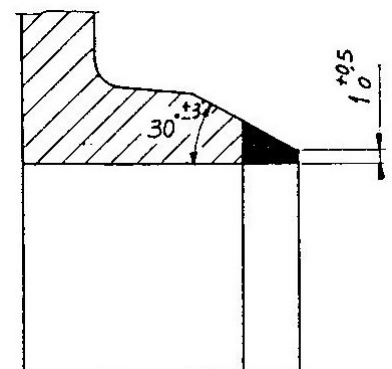


## VI - BLADES

### SHARPENING :

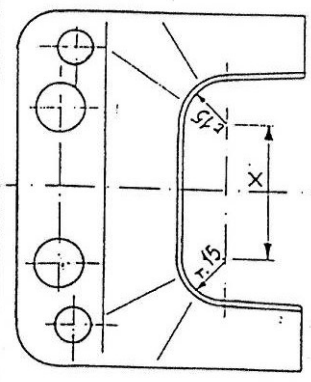
The shape of the cutting edge along all the blade profile is very important to obtain an optimum cutting quality

The blades must systematically be inspected and sharpened (**about every 50 cuts**)



**PROFILE BLADES LIST FOR THE VARIOUS TYPES OF VIGNOLE RAILS**

Lenghtened Blades 32 type		Lenghtened Blades 36 type		Lenghtened Blades 40 type		Lenghtened Blades 45 type		Lenghtened Blades 48 type	
Standard	H.T.	Standard	H.T.	Standard	H.T.	Standard	H.T.	Standard	H.T.
20 Kg Std.		34 Kg PLMA		31 Kg Australie		41 Kg R41		41,2 Kg Type 16	
25 Kg		65 Lb ASCE		70 Lb U.P		SJ 41		45 Kg AL 16A	
50 Lb NSFB	Ouganda	70 Lb ASCE Thaïlande		36 Kg Anglais	48 Kg LP	42,1 Kg R14	CFF4	50 Kg EB	
50 Lb OBS	Ouganda	36 Kg UST		37,2 Kg Anglais	100 Lb HF	ou R42	CFF4 TJD	105 Lb NYC	
26 Kg Std.		36 Kg UST Suisse		75 Lb ASCE	50 Kg N	SJ 43	S54	CFF6	
26 Kg renforcé		36 Kg CFF5		80 Lb ASCE	50 Kg NELLE Zélande	R 43	UIC 54 - U78	R 65	
29 Kg		UNI 36		UNI 50	50 Kg U 50	91 Lb RR	UIC 54 HM	UIC 60	
BS 60 AFB Anglais		37,8 Kg AL 11A		100 Lb PS	100 Lb PS	45 Kg ED	UIC 54 A (A65)	UIC 60 HH	
30 Kg Std.		75 Lb RBS Ouganda		100 Lb RB	100 Lb RB	45 Kg Danemark	110 Lb CF & I	60 Kg EB	
30 Kg Nord		39 Kg ARAB		52 Kg Metro	52 Kg Metro	90 RBS	110 Lb RE	UIC 61	
30 Kg Suisse		39 Kg PMA		U 60	U 60	90 Lb ASCE	112 Lb RE	122 BC & O	
31,6 Kg		40 Kg Nord		U 60 CA	U 60 CA	Mozambique	113 A	122 Lb	
33,4 Kg Prussien		40 Kg type Am.		60 Kg N	60 Kg N	90 Lb BSA	113 Lb HF	63 Kg EB	
36 Kg Portugal		85 CF & I		U 59	U 59	47 Kg Australie	115 Lb RE	127 Lb	
36 Kg S13		85 ARAA				S 49	119 Lb CF & I	127 Lb NYC	
36 Kg S40 Std.		45 Kg Nord				50 Kg Chine	60 Kg Australie HH	130 Lb PS	
24 a		45 Kg Est				50 Kg Australie	60 Kg Australie	131 Lb RE	
		45,5 EV45				SJ 50	119 Lb	130 Lb RE	
		46 Kg S12				UIC 50	62 Kg S52	66 Kg Australie	
		U 33 Ame épaisse				100 Lb AREA	130 Lb HF	132 LB HH	
		U 33 ou S33				100 Lb ASCE		132 Lb RE	
		U 55				100 Lb ARAB		133 Lb RE	
		10 a				100 Lb RA		68 Kg Australie	
						100 Lb RE		136 Lb CF & I	
						100 Lb CF & I		136 Lb HH	
						53 Kg Australie		136 Lb RE	
						ou 107 Lb Australie		140 Lb RE	
						CFF3 (UIC 54E)		A 74	
								UIC 71	
								155 Lb PS	
								155 Lb Penna	



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# PANDROL

BLADES FOR SHEARING MACHINE

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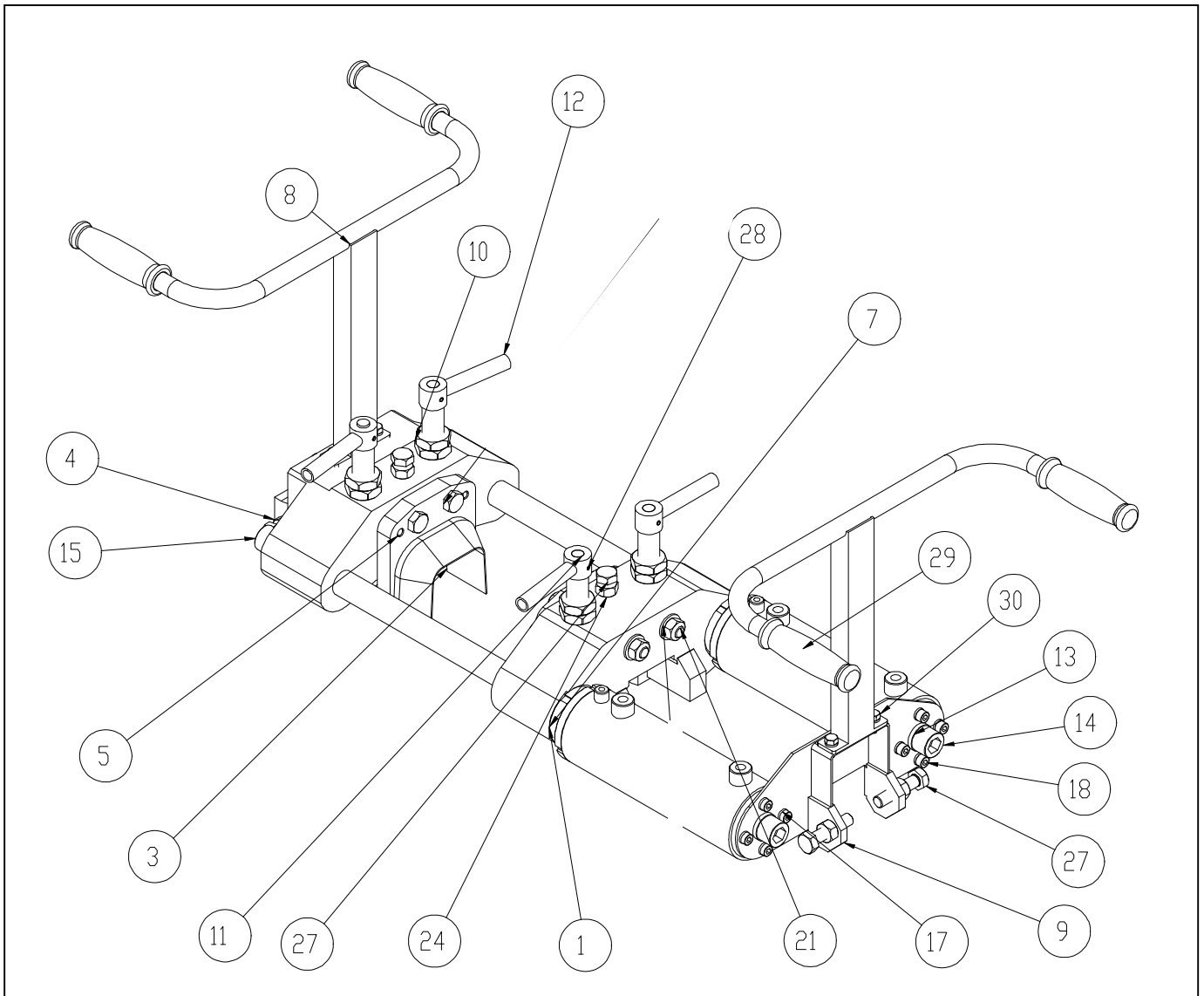
## VII - TECHNICAL

Designation	Electric integral version
total mass with motorization and without Blades	55 Kg
total mass without motorization and without Blades	58 Kg
<b>Dimensions L x l x h</b>	1200 x 470 x 480 mm
<b>Engine</b>	<b>Electric BOSCH – 230V monophase engine</b>
Power	2600 W
Rotating speed	6500 tr/min.
Insulation class	(II) <input type="checkbox"/> le insulated)
Protection rating	IP20
<b>Acoustic pressure level Lpa</b>	<b>92 dB (A)</b>
<b>Acoustic power level LWA</b>	<b>105 dB (A)</b>
<b>Vibrational acceleration level :</b>	<b>&lt; 2,5 m/s<sup>2</sup></b>
<b>Force</b>	212 KN (21,5 T)
<b>Output</b>	6.5 l/min. at 6500 tr/min.
<b>Hydraulic pressure</b>	250 bars (3560 Psi)
<b>Mineral hydraulic oil</b>	Following DIN 51524 part 3 norm Category HVLP ISO VG32
<b>DO NOT MIX DIFFERENT TYPES OF OIL</b>	

## VIII - LISTE DES PIÈCES DÉTACHÉES

### *SPARE PARTS LIST*

- Version monobloc  
*Integral unit*
- Tête de tranchage  
*Shearing unit*
- Ensemble traverse arrière et partie hydraulique  
*Back crosspiece suit with hydraulic part*
- Circuit hydraulique  
*Hydraulic fitting*

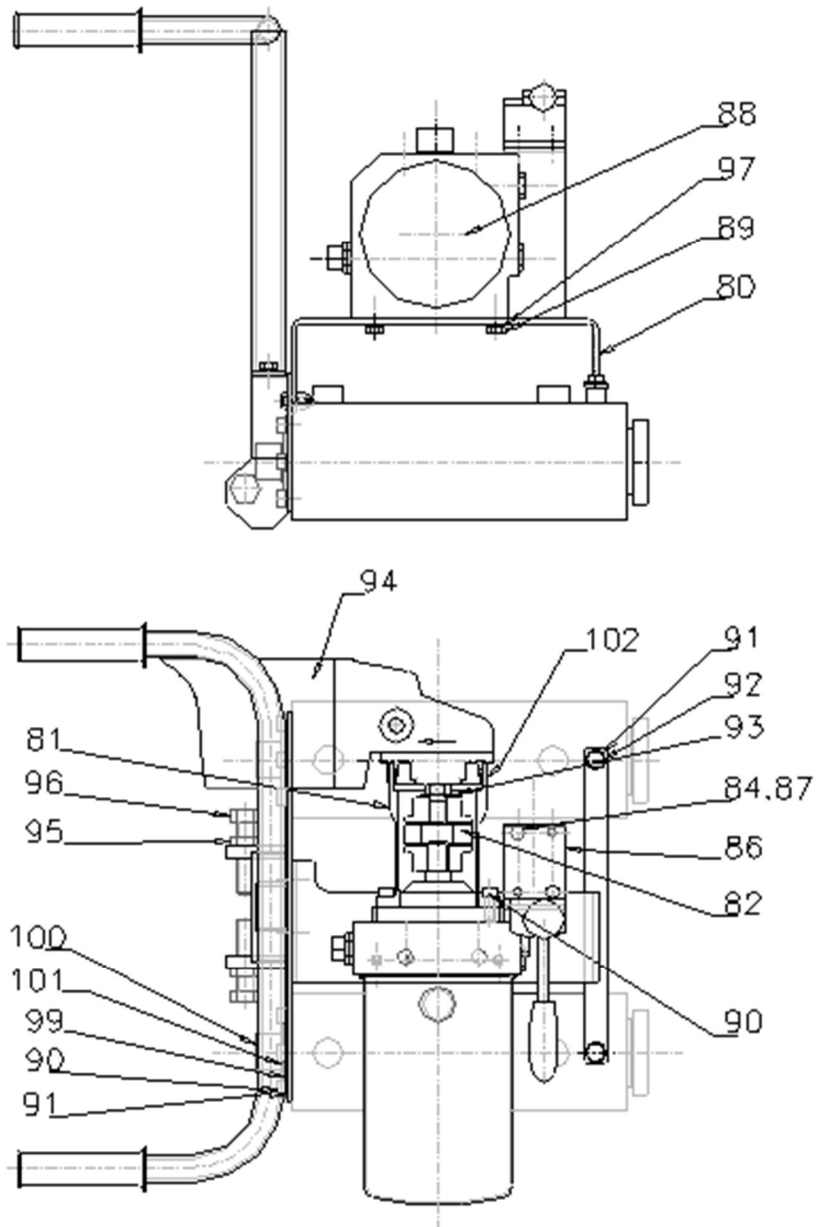




Rep.	Reference	Qté	Désignation	Description
01	32930051	1	Traverse mobile étroite	Narrow moving crosspiece
02			Jeu de couteau (voir liste en annexe)	Blades (refer to the annexed list)
03	32930052	1	Traverse fixe étroite	Narrow fixed crosspiece
04	41304001	4	Pion de centrage Ø 10x30	Centering piece Ø 10x30
05	35910409	2	Poignée de transport	Handle
06	35910408	1	Traverse arrière	Back crosspiece
07	40924001	8	Ecrou Hm M24	Hm M24 nut
08	35910128	4	Crochet à bossage	Hook
09	35910052	4	Poignée de crochet	Hook handle
10	41120002	4	Rondelle W20	Washer W20
11	41020002	2	Vis CHc M20x50	Screw CHc M20x50
12	41020001	2	Vis CHC M20 x 80	CHc M20 x 80 screw
13	41120005	2	Rondelle plate L20 N	L20 N flat washer
14	41108004	12	Rondelle W8	Washer W8
15	41008020	8	Vis HM8 x 20	Screw HM8 x 20
16	41106001	8	Rondelle W6	Washer W6
17	41006012	8	Vis CHC M6 x 90/30	CHc M6 x 90/30 screw
18	40914004	6	Ecrou bas H M14	Nut H M14
19	44201004	2	Joint racleur	Scraper seal
20a	41014002	2	Vis HM14 x 90	HM14 x 90 screw
20b	41014001	4	Vis HM14 x 60	HM14 x 60 screw
21	41301012	4	Goupille élastique 5x30	elastic pin 5x30
22	47401002	4	Poignée caoutchouc	Rubber handle
23	41008033	4	Vis CHc M8 x 20	Screw CHc M8 x 20
24	41016007	2	Vis de butée HM16 x 160	Stop piece screw HM16 x 160
	45301005	4	Bague autolubrifiante	Self lubricating ring
26	47501011	2	Vérin hydraulique allégé	Light hydraulic jack
27	47501003	2	Colonne de vérin	Jack column
	<b>47501016</b>		<b>Pochette de joints de vérin allégé</b>	<b>Gasket kit for light hydraulic jack</b>

ENSEMBLE TRAVERSE ARRIERE ET PARTIE HYDRAULIQUE

BACK CROSSPIECE AND HYDRAULIQUE PART



**ENSEMBLE TRAVERSE ARRIERE ET PARTIE HYDRAULIQUE**
**BACK CROSSPIECE AND HYDRAULIQUE PART**

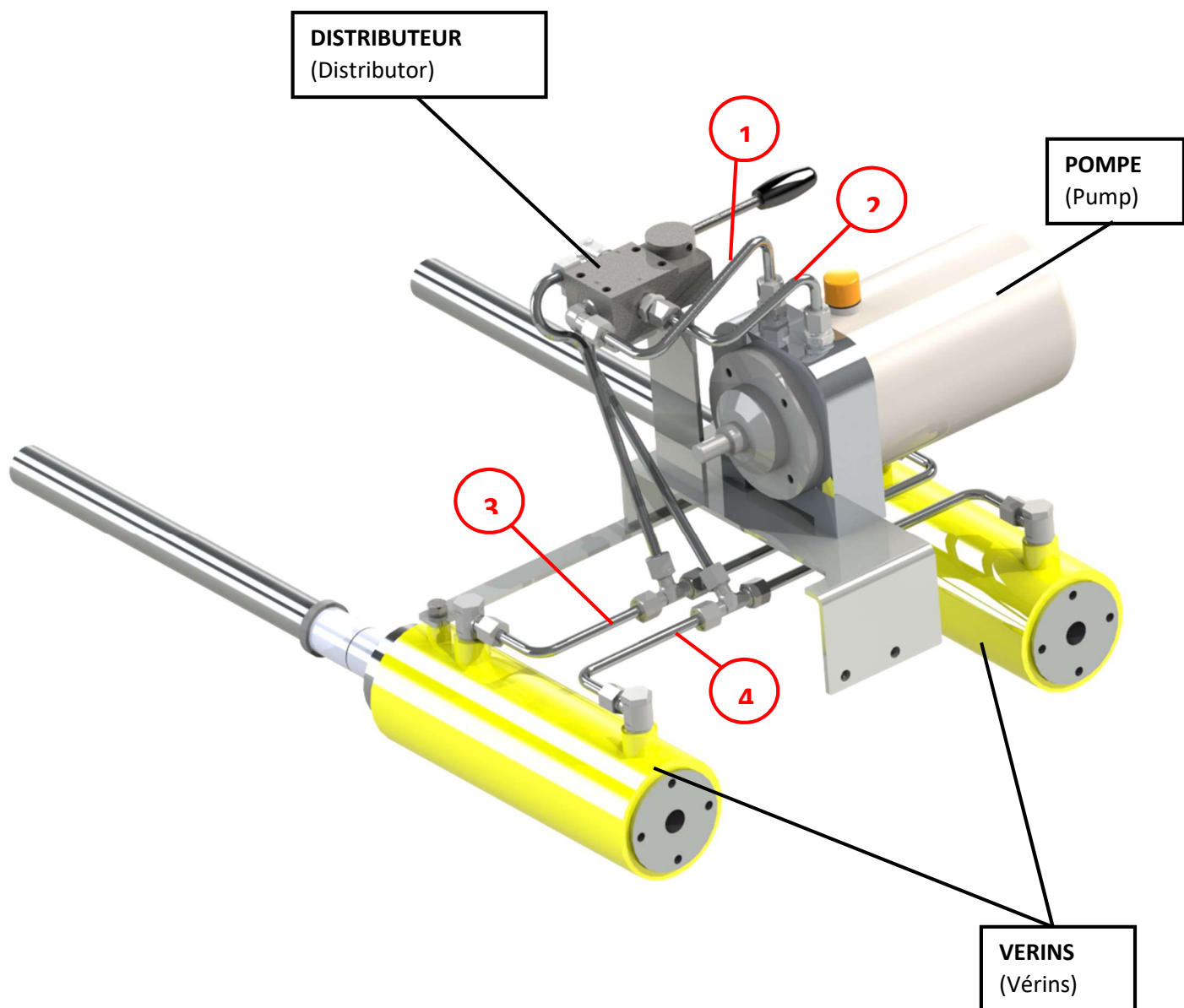
Rep./item	Qté.	Référence	Désignation	Description
80	1	34910124	Support de pompe	Pump support
		21334010	Partie hydraulique	Hydraulic part
81	1	31230054	Lanterne	Pinion
82	1	31230028	Accouplement complet	Complete coupling
84	2	40906002	Ecrou HM6	HM6 nut
86	1	47702004	Distributeur	Distributor
87	2	41006024	Vis HM 6x50	HM 6x50 screw
88	1	47103001	Pompe avec réservoir 2l	Pump with tank 2l
89	2	41010002	Vis H M10x20	H M10x20 screw
90	8	41008033	Vis CHc M8 x 20	CHc M8 x 20 screw
91	10	41108004	Rondelle W8	W8 washer
92	2	41006003	Vis HM 8x16	HM 8x16
93	2	41114001	Rondelle M14N	M14N Washer
95	2	40914004	Ecrou Hm M14	Hm M14 nut
96	2	41014003	Vis H M14x 60	H M14x60 screw
97	2	41110002	Rondelle W10	W10 washer
99	2	41120001	Rondelle M20	M20 washer
100	2	41020002	Vis CHc M20 x 50	CHc M20 x 50 screw
101	2	41120002	Rondelle W20	W20 washer
102	1	41601010	Collier de serrage	Hose clamp
103	1	48402025	Moteur Electrique Pandrol	Pandrol electric engine
104	2	48402027	Batterie 18V	Battery 18V
105	1	31210503	Bague d'adapation	Adapter ring
106	3	41005027	Vis STHC Ø5 x 12	Screw STHC Ø5 x 12

**CIRCUIT0 HYDRAULIQUE  
VERSION MONOBLOC  
MOTEUR ELECTRIQUE**

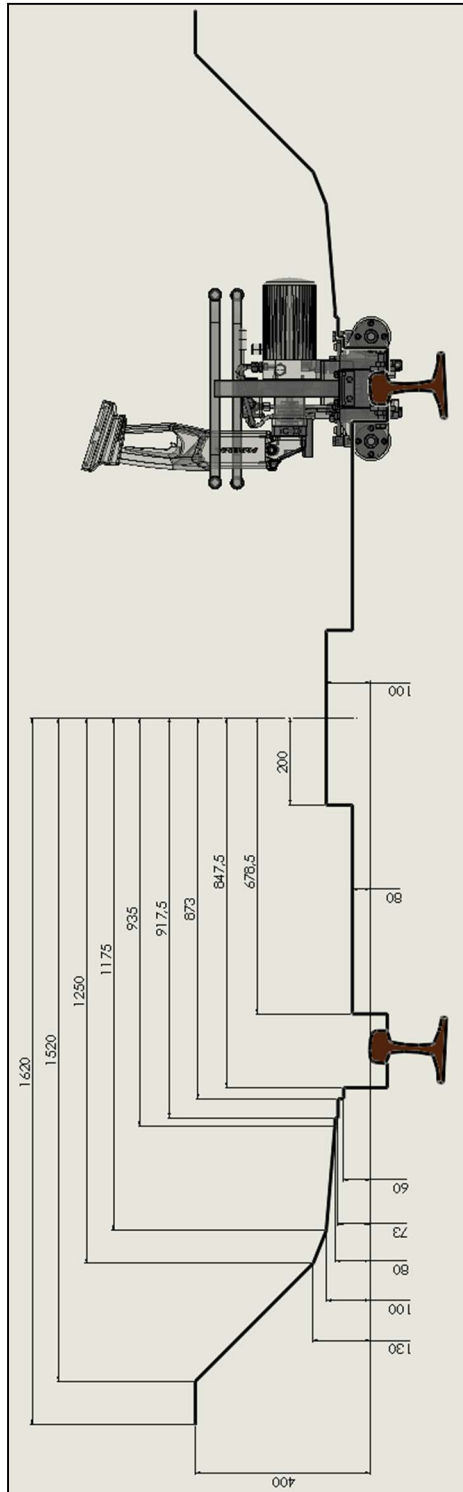
**HYDRAULIC FITTING  
INTEGRAL TYPE  
ELECTRIC ENGINE**

Le circuit hydraulique de l'ébavureuse est composé de  
*The hydraulic fitting of the shearing machine includes*

- Une pompe (a pump)
- Un distributeur (a distributor)
- 1 jeu tubes et composants flexibles et rigides (*1 set of components, flexibles and steel pipes*)
- REP.      REP 1-2 : Ref. 47701047
- REP 3-4 : Ref. 21334011



# IX- PLAN DE CONTRÔLE SUIVANT EN13977





**FICHE DE CONTROLE  
CLIENT**

**CONTROL CARD  
CUSTOMER'S COPY**

EBAVUREUSE HYDRAULIQUE étroite      INTEGRAL UNIT HYDRAULIC RAIL WELD

11334010

N°	Désignation des contrôles <i>Description of controls</i>	Contrôle <i>Checked by</i>
1	Réglage des vis de positionnement en hauteur : <i>Height positioning screws adjustment :</i>	
2	Réglage des vis de guidage <i>Guide screws adjustment</i>	
3	Système de verrouillage : <i>Locking system</i> - Erou de réglage en hauteur <i>Height adjustment nut</i> - Débattement des verrous <i>Clearance of locks</i>	
4	Etanchéité des constituants hydrauliques sous mise en pression : <i>Inspection of hydraulic components under pressure :</i> - Raccords <i>- Couplings</i> - Tuyauteries <i>- Piping</i> - Vérins <i>- hydraulic jacks</i>	
5	Essai de fonctionnement à pression maximum de 250 bars <i>Operating test at maximum pressure of 250 bar</i>	
6	Aspect général <i>General aspect</i>	
7	Outillage et cale <b>31910308</b> <i>Tools and wedge 31910308</i>	
8	Notice d'utilisation 42111006 <i>User's manual 42111006</i>	

Date de fabrication      *Date of manufacturing* .....

Fait à Raismes le      *Drawn up in Raismes, the* .....

Nom      *Name :* .....

Signature      *Signature*

**Références à rappeler en cas de réclamation**  
*In case of complaint, please quote these references*

N° de machine	<i>Machine nbr</i> .....
Moteur Type, N°	<i>Engine Type:</i> ..... <i>N°</i> .....
Pompe Type, N°	<i>Pump Type</i> ..... <i>N°</i> .....



**FICHE DE CONTROLE  
CLIENT**

**CONTROL CARD  
CUSTOMER'S COPY**

EBAVUREUSE HYDRAULIQUE étroite

INTEGRAL UNIT HYDRAULIC RAIL WELD

11334010

N°	Désignation des contrôles <i>Description of controls</i>	Contrôle <i>Checked by</i>
1	Réglage des vis de positionnement en hauteur : <i>Height positioning screws adjustment :</i>	
2	Réglage des vis de guidage <i>Guide screws adjustment</i>	
3	Système de verrouillage : - Ecrou de réglage en hauteur - Débattement des verrous <i>Locking system Height adjustment nut Clearance of locks</i>	
4	Etanchéité des constituants hydrauliques sous mise en pression : <i>Inspection of hydraulic components under pressure :</i> - Raccords - Tuyauteries - Vérins <i>- Couplings - Piping - hydraulic jacks</i>	
5	Essai de fonctionnement à pression maximum de 250 bars <i>Operating test at maximum pressure of 250 bar</i>	
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8	Notice d'utilisation 42111006 <i>User's manual 42111006</i>	
Date de fabrication <i>Date of manufacturing</i> ..... Fait à Raismes le <i>Drawn up in Raismes, the</i> ..... Nom <i>Name :</i> ..... Signature <i>Signature</i>		

**Références à rappeler en cas de réclamation**  
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N° de machine	<i>Machine nbr</i> .....
Moteur Type, N°	<i>Engine Type:</i> ..... N°.....
Pompe Type, N°	<i>Pump Type</i> ..... N°.....



**SAV / Commercial**

**Contacter votre représentant commercial / Contact your local representative**

**Ou / Or +33 (0) 1 46 88 17 00**

**Ou / Or [Infos.pandrol-fr@pandrol.com](mailto:Infos.pandrol-fr@pandrol.com)**

# XI - ATTESTATION DE CONFORMITE

## CERTIFICATE OF CONFORMITY

Le constructeur soussigné ( the undersigned manufacturer)

**PANDROL (DIVISION MATERIEL)**

**Z.I DU BAS PRE**

**59590 RAISMES**



Certifie que le matériel neuf désigné ci-après

(certify that the under described products)

**Tête étroite – Type EME1**

**MACHINE EME1 Type**

**Avec moteur électrique BOSCH**

**With BOSCH electric engine**

**Référence 11334010**

**Référence 11334010**

**N° de machine (machine number) :**

Est conforme (comply with)

- **A LA CONFORME EUROPEENE NF EN 13977**  
*(THE EUROPEENE NORM NF EN 13977)*
- **AUX DISPOSITIONS REGLEMENTAIRES DEFINIES PAR LA DIRECTIVE 2006/42/CE**  
*(THE INFORMATIONS STATED IN THE LEGAL DOCUMENTATION OF THE DIRECTIVE 2006/42/CE)*
- **Aux prescriptions de l'article R4313-20 (procedure d'auto certification)**  
*(the regulations of R4313-20 article – self certification procedure)*
- **M. LISINSKI Aurélien est le détenteur du dossier technique**

Raismes, 05/2019  
Bruno JOIRIS  
Directeur Industriel

Aurélien LISINSKI  
Responsable division matériel et équipement

# PANDROL

Find out more at

[pandrol.com](https://pandrol.com)

Partners in excellence