

Part number:

HYDROMA

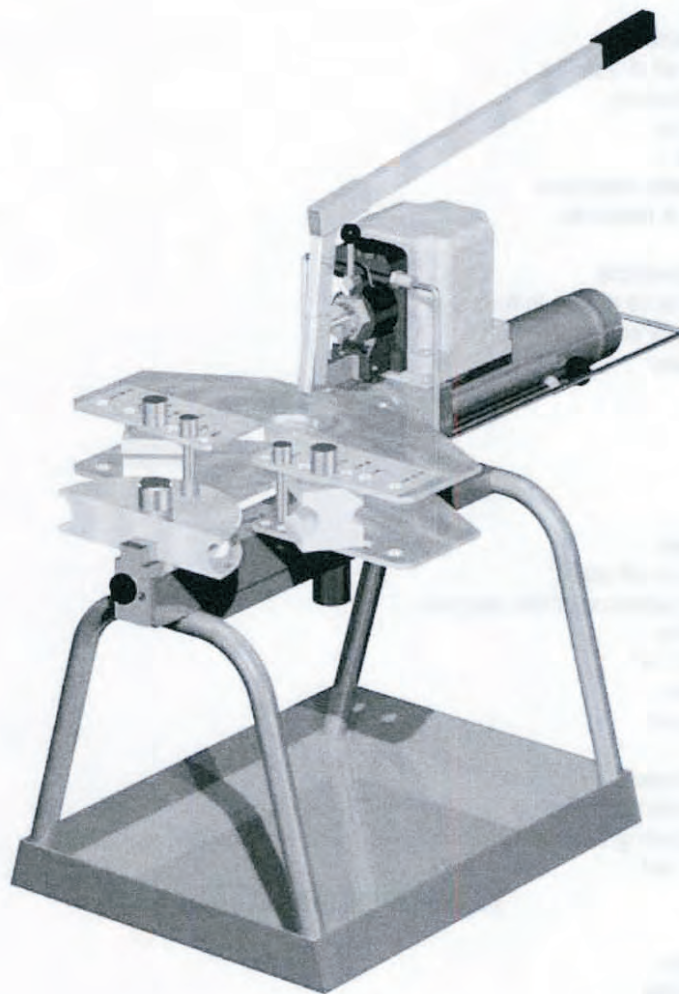
HYDRAULICKÉ SYSTÉMY

**HIDROMA
SYSTEMS**

UKŁADY HYDRAULICZNE

HYDROMA

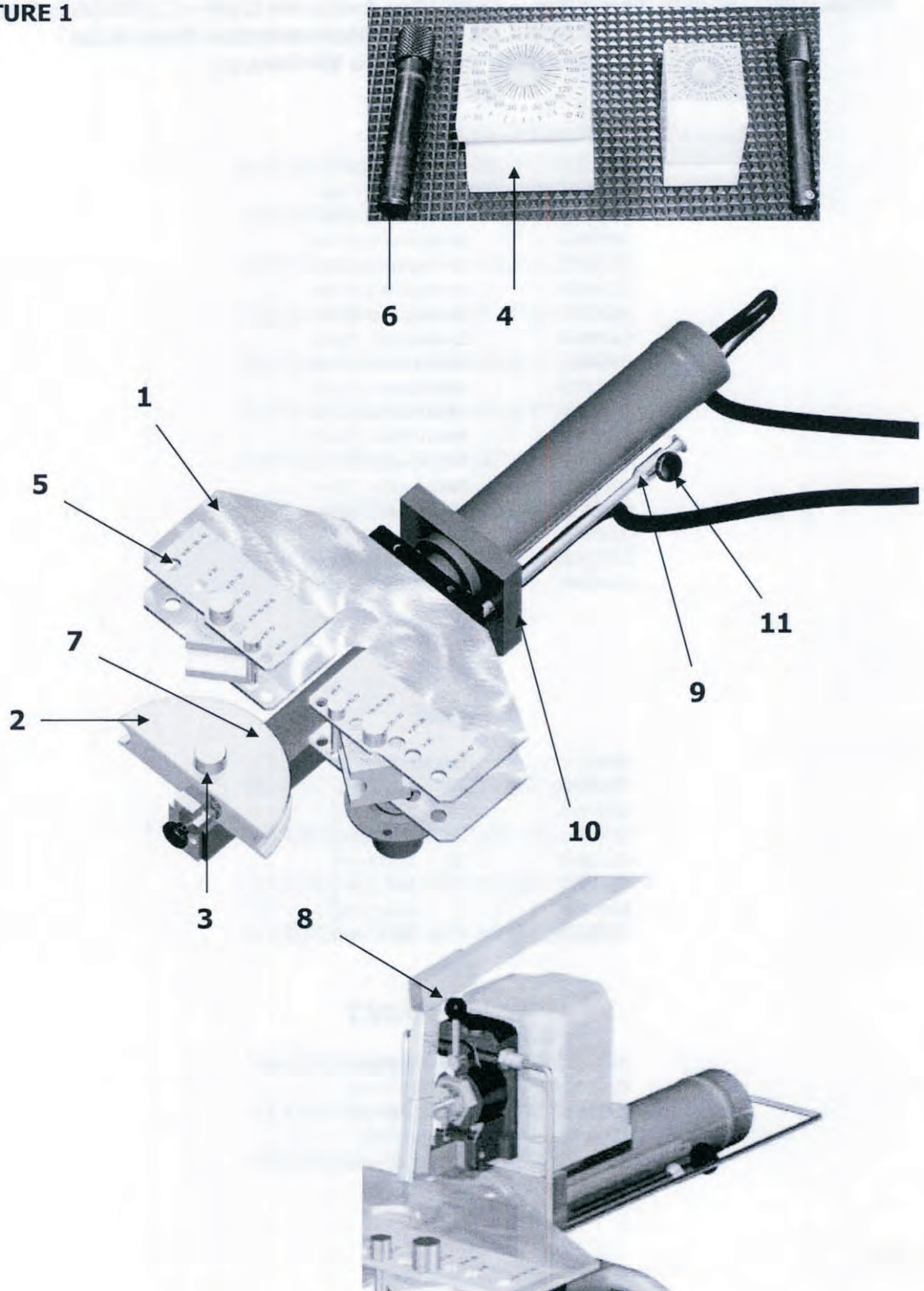
ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ



MANUALE D'USO E MANUTENZIONE-USE AND MAINTENANCE MANUAL- MANUAL DE USO
Y MANTENIMIENTO -MANUAL DE USO Y MANTENIMIENTO- UND WARTUNGSANWEISUNG

CURVATUBI CM 42 CMS 42

PICTURE 1



PIEGATUBI; Utensili disponibili – BENDING; Available tools – CINTRAGE; Outils disponibles – CURVADORA DE TUBOS; Herramientas disponibles - ROHRBIEGEN; Verfügbare Werkzeuge
METRICAL

Code	Bending tools
CUC42M06	Bending tool d. 6 mm
CUC42M08	Bending tool d. 8 mm
CUC42M10	Bending tool d. 10 mm
CUC42M12	Bending tool d. 12 mm
CUC42M14	Bending tool d. 14 mm
CUC42M15	Bending tool d. 15 mm
CUC42M16	Bending tool d. 16 mm
CUC42M18	Bending tool d. 18 mm
CUC42M20	Bending tool d. 20 mm
CUC42M22	Bending tool d. 22 mm
CUC42M25	Bending tool d. 25 mm
CUC42M28	Bending tool d. 28 mm
CUC42M30	Bending tool d. 30 mm
CUC42M32	Bending tool d. 32 mm
CUC42M35	Bending tool d. 35 mm
CUC42M38	Bending tool d. 38 mm
CUC42M42	Bending tool d. 42 mm

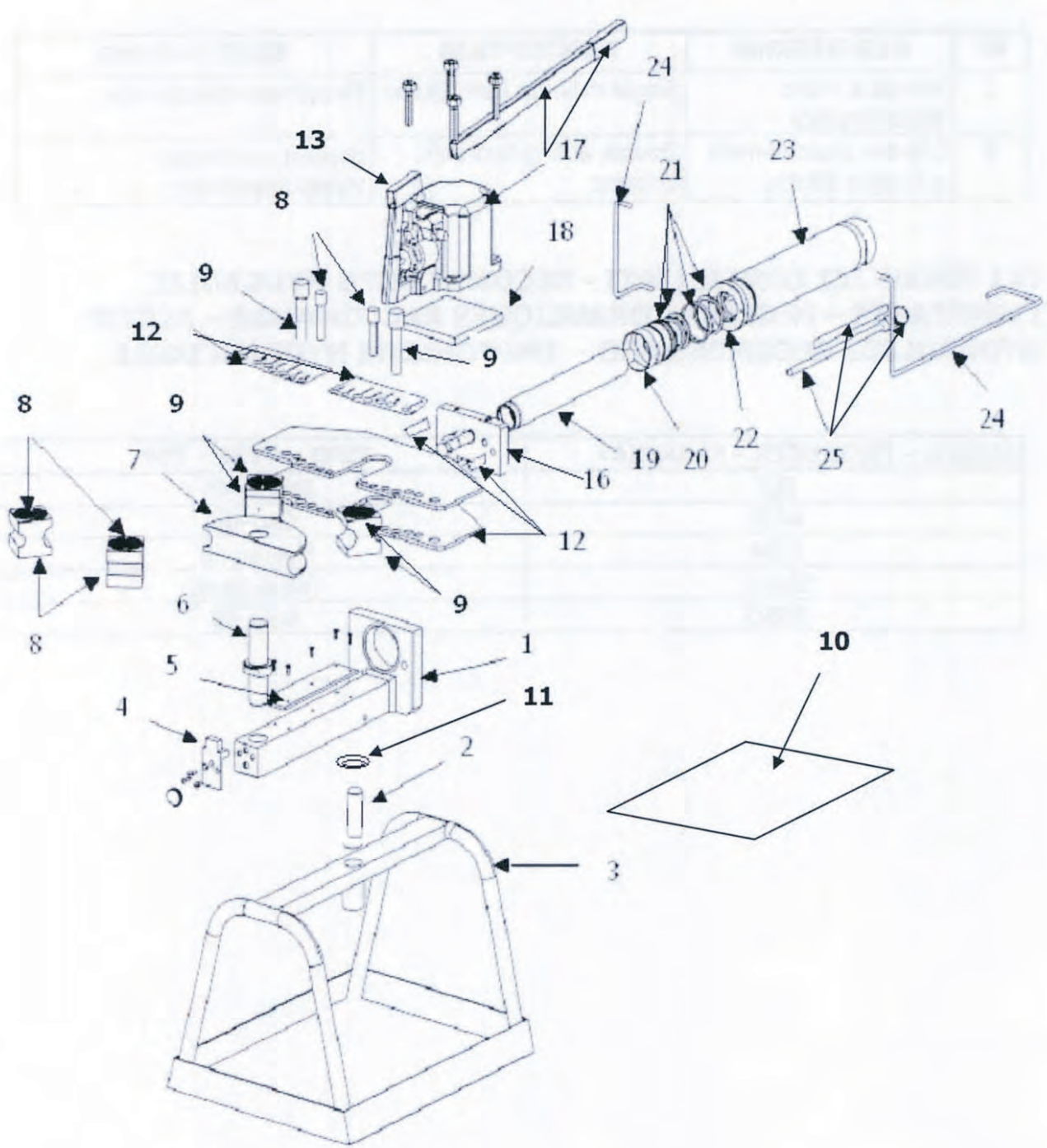
GAS

Code	Bending tools
CUC42P01	1/8" (Ø10.2 mm)
CUC42P02	1/4" (Ø13.2 mm)
CUC42P06	3/8" (Ø16.7 mm)
CUC42P08	1/2" (Ø21.2 mm)
CUC42P12	3/4" (Ø26.7 mm)
CUC42P16	1" (Ø33.5 mm)
CUC42P20	1" 1/4 (Ø42.2 mm)

WHITHWORT

Code	Bending tools
CUC42W08	1/2" (Ø12.7 mm)
CUC42W10	5/8" (Ø15.8 mm)
CUC42W12	3/4" (Ø19 mm)
CUC42W16	1" (Ø25.4 mm)

Parti di ricambio-Spare parts- Pièces de rechange - Repuestos -Ersatzteile



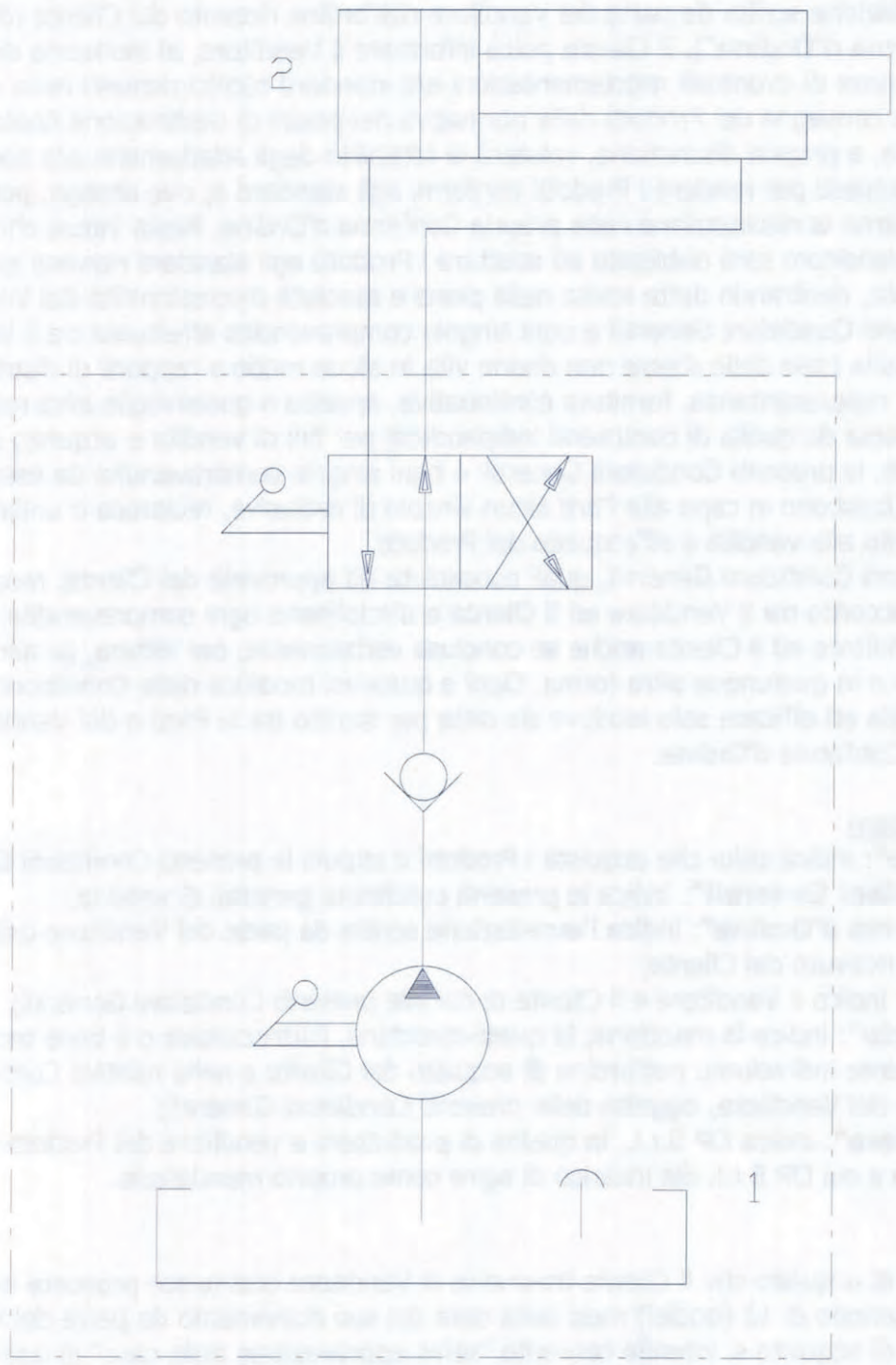
**SCHEMA OLEODINAMICO - HYDRAULIC SYSTEM DIAGRAM -
SCHÉMA OLÉODYNAMIQUE - ESQUEMA OLEODINÁMICO -
HYDRAULIKPLAN**

N°	DESCRIZIONE	DESCRIPTION	BEZEICHNUNG
1	Pompa a mano Monocilindrica	Single cylinder hand pump	Einzylinder-Handpumpe
2	Cilindro oleodinamico a Doppio Effetto	Double acting hydraulic cylinder	doppelt wirkender Hydraulikzylinder

**OLI IDRAULICI CONSIGLIATI - RECOMMENDED HYDRAULIC
LUBRICANTS – HUILES HYDRAULIQUES RACCOMANDE – ACEITE
HYDRAULICO RECOMENDADO - EMPFOHLENE HYDRAULIKÖLE**

MARCA – PRODUCER - FABRIKAT	TIPO – TYPE - TYP
ELF	Elfolna 46
AGIP	Oso 46
FINA	Hydran 46
SHELL	Tellus oil 46
ESSO	Nuto 46

SCHEMA OLEODINAMICO - HYDRAULIC DIAGRAM - SCHEMA HYDRAULIQUE - ESQUEMA HIDRÁULICO - HYDRAULIKPLAN



GENERAL CONDITIONS OF SALE

1. Contract

These general conditions of sale (hereinafter indicated as the "**General Conditions**") shall govern the sale contract between **OP S.r.l.** (hereinafter "**Seller**") and the **client** (hereinafter "**Client**") relating to the products manufactured by or on behalf of the Seller (hereinafter "**Products**").

Each individual sale of Products shall be valid only after Seller's acceptance, in written form, of the order received by the Client (hereinafter "**Order Confirmation**"). Client will inform the Seller, upon the placement of any order, on the existence of any regulations and/or technical standards required in manufacturing and/or delivering the Products, imposed by the legislation of the country of final destination. The Seller shall evaluate, at its sole discretion, the feasibility of the adaptations and/or modifications required to make the Products compliant with the standards required. Should the Seller decide to implement such adaptations/modification, it shall confirm them in the Order Confirmation. In no circumstance the Seller shall be bound to adapt the Products to the standards required and/or indicated by Client, as this choice remains at the Seller's complete and sole discretion.

These General Conditions and each individual sale between Seller and Client made pursuant these General Conditions shall, in no circumstance, imply the creation of any agency, representation, continuous supply, tender or any other agreements between the Parties which shall remain, at any material time, independent contractual parties in a sale and purchase agreement. Moreover, these General Conditions and each individual sale regulated by them, will not establish any relationship of exclusivity between the Parties, mutual or unilateral, related to the sale and purchase of Products.

These General Conditions, acknowledged and approved by Client, represent the whole agreement between Seller and Client and shall regulate each sale of Products between Seller and Client even if concluded orally, by letter, on other printed forms or in any other form whatsoever. Each and any change on the General Conditions shall be valid and effective only if made in writing between Parties or by the Seller in its Order Confirmation.

2. Definitions

"**Client**": means everyone that purchases the Products and accepts these General Conditions;

"**General Conditions**": means these General Conditions of sale;

"**Order Confirmation**": means the written acceptance by the Seller of the order of Products received by Client;

"**Parties**": means the Seller and the Client under these General Conditions;

"**Product**": means the machinery, the partly completed machinery, the technical equipment, precisely identified in the Client's purchase order and in the Seller's Order Confirmation, object of these General Conditions;

"**Seller**": means OP S.r.l., as a manufacturer and Seller of the Products or any other subject instructed by OP S.r.l. to act on its behalf.

3. Orders

The purchase order that the Client transmits to Seller constitutes a binding offer for a period of 12 (twelve) months from the date of its receipt by the Seller.

The purchase order shall be approved by the Seller. The Seller reserves the right, to be

Acceptance record

The undersigned, acknowledges and declares that:

4. The Products have been delivered functioning and complete in each part.
5. The Products are delivered with instruction and maintenance manual to be provided to the operator before the use of each Product. This manual contains, among other things, the indication of risks related to the use of the Products.
6. The Products will be installed and/or used after the performance of any necessary or useful check related to mode and place of use as indicated in the instruction and maintenance manual.

Place and date

The Client

SAFETY REGULATIONS

1. Always make sure that the machine is placed on a stable, safe surface and that it is not causing vibrations which alongside being bothersome and of no advantage, may cause malfunctions.
2. *Leave enough room in the work area.*
3. The shall not be held liable for any damage due to negligence.



4. NEVER USE the equipment before reading the user manual and UNDERSTANDING ITS CONTENTS



5. CAUTION ! If improperly used, the equipment may be dangerous and may cause injury to parts of the body, which must never come within the range of moving parts.

6. ***Bending operations are safe provided the regulations given below are complied with.***
7. CAUTION ! It is absolutely essential that all working operations are carried out by one operator only
8. Never attempt to use the machine above the permitted working pressures; this might lead to serious danger to the operator.
9. This manual must be given to the operator and kept under the owner of the equipment's responsibility. Ensure that the operator is aware of his responsibilities.



10. Guards must never be removed or tampered with.

11. Make sure that hoses are always crimped under safe conditions.



12. Use gloves and adequate personal protection (gloves, appropriate garment, etc.).

13. Only skilled adult staff (a training course is recommended for those who have never used the equipment) shall be allowed to use the pipe-bending machine.
14. During work, always follow all instructions indicated on the labels fixed on the machine
15. Our equipment is designed in compliance with the required technical safety standards; customers are advised to comply strictly with the instructions indicated in this manual.
16. Moving parts must always be kept well greased.

-
17. Genuine spare parts must be used in order to maintain the original characteristics and the validity of the certification.
 18. Once through with the operations always re-mount the eventually removed protections before turning on the machine on.
 19. Always keep your hands away from the bending area while the motor is on. When inserting the hose for bending, make sure that there is at least a minimum distance of 120mm between the operator's hand and the bending area.
 20. Use limit:
 - The machine cannot be used in bursting setting.
 - The machine cannot be used in natural setting.
 - Do not leave the machinery exposed to atmospherical agents which do not fit into protection degree of the installed components.
 21. The machine presents residual risks entailed from a non correct use; strictly follow the directions outlined in the use and maintenance manual.
 22. Do not allow animals into the operating area or in moving parts.
 23. Do not introduce plastic, glass or other kind of objects into the operating area or in moving parts.
 24. Do not carry out repairs on your own, please contact the manufacturing company.

DISPOSAL OF USED OIL

Do not dispose of used oil in the environment. Operate in compliance with the national and/or EC legislative provisions in force.

MACHINE FEATURES

The CM 42 and CMS 42 pipe-bending machines are designed to bend pipes having diameters between 6 and 42 mm and maximum thicknesses of 4÷5 mm; these machines are extremely adaptable and easy to transport.

Replacement of the bending templates and adjustments are quick and easy; the machine is hydraulically operated by means of a hand pump. The drive cylinder is complete with a millimetric scale plate and adjustable locator cam, to simplify any series of identical bending procedures. The difference between CM 42 and CMS 42 lies solely in the type of support supplied; CM 42 is designed to be clamped in a vice, while the CMS 42 is complete with its own tubular steel cabinet, and can be used in widely varying conditions.

Briefly, the machine is made up of:

Supporting cabinet (for CMS 42) or block for vice clamping (CM 42).

Bending unit, comprising a double-acting cylinder driving the mobile die, equipped with adjustable skids, which apply the bending force, and the fixed template, to be selected to suit the pipe diameter. A nameplate on the die clearly indicates the positions in which the skids must be set in relation to the diameter of the pipe for bending.

Hand pump (single cylinder, double-acting) complete with flow reverser.

Safety systems providing protection against the risks involved in the process.

TECHNICAL/DIMENSIONAL DATA	CMS 42 - CM 42 PIPE-BENDING MACHINES
Bending force	7790 daN (7.79 t)
Bending range	between 6 and 42 mm
Maximum thickness of pipe to be bent	4 mm
Overall dimensions (WxDxH)	870 x 420 x 710 mm (CMS 42) 870 x 420 x 360 (CM 42)
Weight (excluding replacement templates)	48 Kg (CMS 42) 40 Kg (CM 42)
Drive	Hydraulic
Controls	Manual
Cylinder bore	63 mm
Rod diameter	45 mm
Piston stroke	207 mm
Maximum operating pressure	250 bar
Oil tank capacity	1 lt
Maximum force on the pump lever	53 Kg at 250 bars

HANDLING/TRANSPORT



CAUTION

The personnel in charge with the handling and transport must be very careful ensuring that the pipe-bending machine is not subject to impacts or stress which could jeopardise the efficiency of the machine and also ensure that the personnel is not exposed to risks.

The machine is easy to transport, however, the following precautions must be followed:

- The machine is fitted with carrying handles; do not move it by other parts.
- During transport, take care not to damage the hydraulic drive components.
- If the machine has to be shipped, make sure that it is securely fixed to the means of transport and protected against knocks, vibrations or shifting.

LIGHTING

The equipment does not have its own lighting and so it must be used in suitably illuminated environments. Use of the equipment shall not be authorized unless perfect visibility in the operation environment is guaranteed.

ROUTINE MAINTENANCE

- It is paramount that any operation on the machine be carried out by qualified and authorized personnel who is informed of its working process.
- Never perform any cleaning, lubrication or maintenance operation while the machine is running.
- Anytime the pipe – bending machine is to be used, check in advance the efficiency of the safety devices.
- Carry out preliminary operations to check the state of the connections, the integrity of the pipes, ensure that there are no oil leakages or other anomalies, performing some idle movements.
- **Ensure that moving parts are always clean and lightly greased (type of grease recommended: Kluber Staburags NBV 30).**
- Check the oil level regularly and top up if necessary through the cap on the power unit tank using "SHELL TELLUS 46" oil.
- Check once in a while to make sure that the pump is in good working order and that there are no oil leaks.
- Check daily the wear and tear and the readability of the warning signs daily.

PRELIMINARY CHECKS AND START-UP

- Fix the machine to a vice, or make sure that the CMS 42 is stable.
- Check that the oil level in the tank is up to the required level.
- Make sure that all parts subject to friction are clean and lightly lubricated (recommended type of grease KLUBER STABURAGS NBV 30).
- Start pumping by hand and check that the rod extends and returns normally when the flow reverser lever is turned to right and left. If everything works properly, the machine is ready to operate; if problems occur, there is probably air in the pipelines - vent and try again.

Verify daily the wear and tear and the readability of the warning signs.

CHOOSING THE BENDING TEMPLATES

23 templates suitable for bending the pipes in normal use are available; contact the manufacturer to order the templates you require. The skids to be fitted on the die are supplied with the pipe-bending machine; the skids are marked with the size of the pipe on which they are to be used (fig. 2).

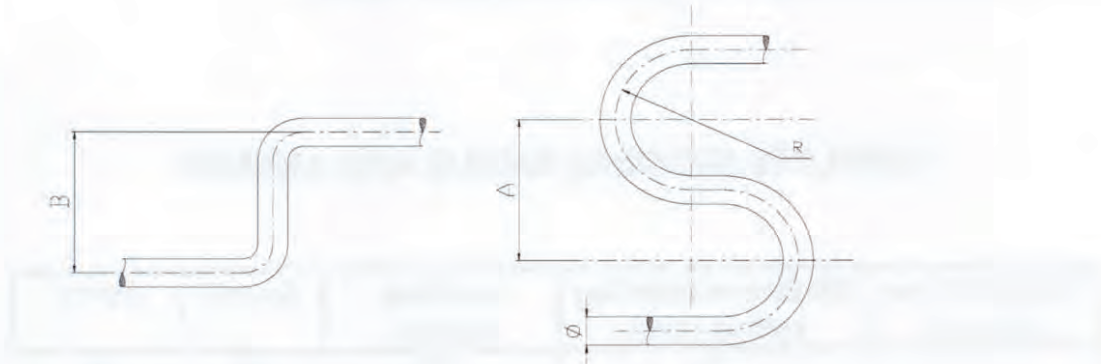
***O+P** manufactures templates for special needs upon request*

TEMPLATE BENDING RADIUS AND ANGLES

Template for pipes of:	Minimum bending radius (mm):	Bending angles:	A(mm)	B(mm)
6	15	170°	60	70
8	16.5	170°	60	70
10	27.5	170°	70	115
12	32.7	170°	80	120
14	46	170°	110	180
15	46	170°	110	180
16	48	170°	110	180
18	48	170°	110	190
20	66	160°	140	230
22	66	160°	140	240
25	81.5	160°	170	270
28	81	160°	180	300
30	98.5	150°	220	300
35	125.5	120°	250	440
38	116	120°	250	440
42	126	120°	250	440
1/8"	27.5	170°	70	115
1/4"	46	170°	110	180
3/8"	48	170°	110	180
1/2"	66	160°	140	240
3/4"	81	160°	180	300
1"	125.5	120°	250	440
1 1/4"	126	120°	250	440

R= BENDING RADIUS

Ø= PIPE DIAMETER



INSTRUCTIONS FOR USE

Before starting bending operations, read the following sections very carefully:

MACHINE CHARACTERISTICS

SAFETY REGULATIONS

LIGHTING.

PRELIMINARY CHECKS AND START-UP.

SELECTING BENDING TEMPLATES.

To machine pipes, proceed as follows:

1. Choose the template suitable for the pipe to be bent.(pos.2 fig. 1) and fit it onto the pin provided (pos.3 fig.1).
2. Choose the skids (pos.4 fig.1) for use with the template selected and use the pin (pos.6 fig.1) provided to fit them onto the die (pos.1 fig.1) where the holes (pos.5 fig.1) suitable for the pipe to be bent are located.
3. Position the centre line of the bend to be obtained against the locator mark (pos.7 fig.1) on the top of the template and start pumping, checking that the "flow reverser" (pos.8 fig.1) is in the correct position. The skids carry a plate indicating the bending angle reached.
4. If a set of pipes are to be bent in the same way, once the first pipe has been bent, move the "Locator cam"(pos.9 fig. 1) against the support plate (pos.10 fig.1) and lock it in this position using the hand wheel (pos.11 fig.1). This provides a fixed reference position for subsequent bending procedures, showing when pumping should be stopped.
5. Turn the lever of the "flow reverser"(pos.8 fig.1) and operate the pump to remove the pipe.