IOM manual

tapflo®

PTX 150

Peristaltic pump

edition 2015 rev 1

STOP

Read this instruction manual carefully,
before you install and operate the pump

CE

PT	PTS
PTX 150	PTSX 150

All about your flow

www.tapflo.com

SAFETY AND CONTROL MEASURES TO RESPECT IMPERATIVELY

1 - Mechanical risk

Ensure that all protections (cover, sight glass, ventilator hood, coupling protection) are in place before operating the pump.Disconnect the electricity supply before any mechanical intervention, except during a hose replacement. Hose replacement must be done with the pump cover closed. While replacing a hose, wear protective gloves and clothes and keep hands away from the brackets, suction and discharge flanges.
During the pump maintenance, check that the lifting points are correctly used. The frame of the pump must be firmly fastened to the ground.

2 - Electrical risk

Ensure that the electrical installation is conforming to the standards required in the country of use especially regarding earth and thermal protection.

3 - Operational risk

Check the compatibility of the products to be pumped with :

> The peristaltic pump principle.
> The hose material.
> The inserts material.
> The rollar material.

TAPFLO cannot guaranty the hose lifetime or the product loss due to a hose burst. It is the operator's responsibility to prevent pumped liquid loss with additional hose rupture detectors and or automatic shut down valves. Check §2.4 conditions of guarantee for further information.

Ensure that the pump is compatible with the required process.
Ensure that the pressure applied on the suction side is compatible with the pump.

The rupture of the hose and its consequences must be taken in account :

> The pump casing can be filled with the pumped product.
> If the suction line is on load, this one can empty into the pump casing and leak out of the pump.
> If the discharge line is under pressure, the pumped product may be forced back into the pump casing and leak out of the pump.

A leakage detector as well as automatic shut down valves are recommended in order to prevent such consequences. While draining the pump following a hose rupture, take note of the risk of pollution caused by the pumped product.

The pump, being volumetric, may suffer dangerously high pressure by even partial blockage of the discharge line. Ensure that all protections have been made regarding this aspect.
Before each use, check the direction of rotation of the pump.

CONTENTS

1/ HOW TO USE THIS MAINTENANCE MANUAL

This manual is specific to TAPFLO PTX series hose pumps. It allows the users to install, to start and to carry out maintenance on these pumps. All persons, fitters and users must read this maintenance manual in its entirety. Documents concerning the gearbox, the electrical motors as well as all other options (hose rupture detector etc) are provided in annex. Refer to in these documents to know the specific details of every apparatus.

Your local TAPFLO distributor is at your disposal for the information that you would not find in this manual. For short reply, please indicate the following informations :

- Type of pump
- Pump serial number
- Reference of order

You can also visit our website tapflo.com for further information.

2/ USE OF THE PUMP

2.1 - USE OF THE PUMP

The pump was defined for a specific application. Any other use which does not comply with envisaged use is not guaranteed.

TAPFLO cannot be held responsible for damage or possible wounds produced during the use of the pump. The pump was designed in accordance with EU norms and applicable directives. Use the pump only for applications represented above. If you want to change your application, first contact your TAPFLO distributor.

2.2 - RESPONSABILITY

TAPFLO will be under no circumstances responsible for damage or wounds caused by non respect of security directives and maintenance instructions contained in this manual, or by negligence during the installation, use, service or repair of Tapflo hose pumps. Moreover, additional directives of security can be necessary according to working conditions or according process. Contact your TAPFLO distributor if you notice a potential danger during the use of the pump.

2.3 - TRAINING OF THE USER AND INSTRUCTIONS

Every person who installs, uses or performs any operations of maintenance on the pump must be qualified and must have previously read this technical manual. Any temporary personnel must be supervised by skilled users.
The order of execution of operations defined in this manual must be absolutely respected. Store this manual next to the pump so that it can be consulted at any time.

2.4 - CONDITIONS OF GUARANTEE

Tapflo offers a guarantee of 2 years on the pump's parts. Tapflo promises to repair or to replace for free all damaged parts except if their deterioration came from a poor use of the pump. This concerns all parts except for the hose, the clamps, the sleeves, seals, bushings and bearings as well as the pump shoes.

Tapflo will not be able to accept a request of guarantee under no circumstances if the used parts are not of Tapflo origin.
Any damaged parts covered by guarantee must be returned to the Tapflo factory or to the local Tapflo distributor. The returned parts must be accompanied with the duly filled and signed security form. A copy of this form is at the end of this manual. It must be appended in a visible way outside the packing. The potentially dangerous parts for health must be cleaned before returning them to the producer. It must be pointed out on the security form how parts were leaned and those that have been decontaminated.

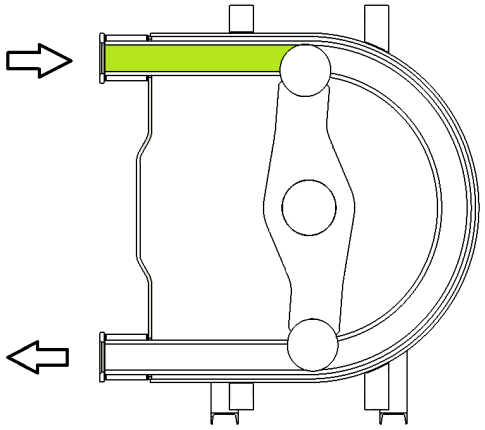
Tapflo is under no circumstances urged to respect guarantees given in its name by a third, whatever it is, representatives of Tapflo, subsidiaries and representatives including unless a specific agreement is written by a manager of Tapflo.

3/ PUMP DESCRIPTION

3.1 - IDENTIFICATION OF THE PUMP

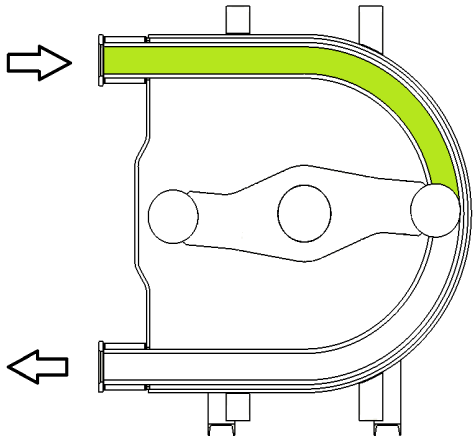
TAPFLO hosepumps are identifiable by the pump plate located on the frame. This one includes the type and serial number of the pump. This serial number leads to all information concerning building materials, nature of the hose, characteristics of the gearbox and characteristics of the motor. The gearbox as well as the motor in-clude their own descriptive plate on which you can read the reduction ratio, power and electrical voltage etc.

3.2 - OPERATION PRINCIPLE



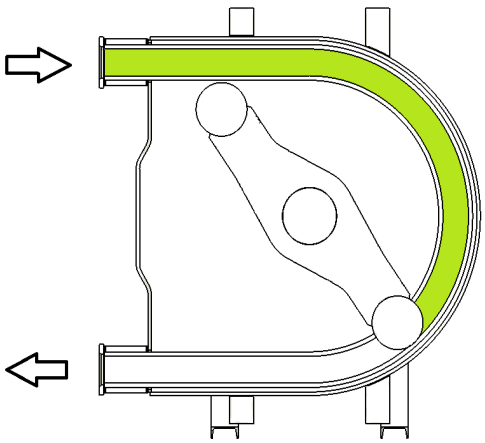
PHASE 1

The pump hose is compressed successively by two rollars assembled on a rotating wheel. The first rollar, by pressing the walls of the hose, will create a vacuum and attract the pumped liquid into the hose.



PHASE 2

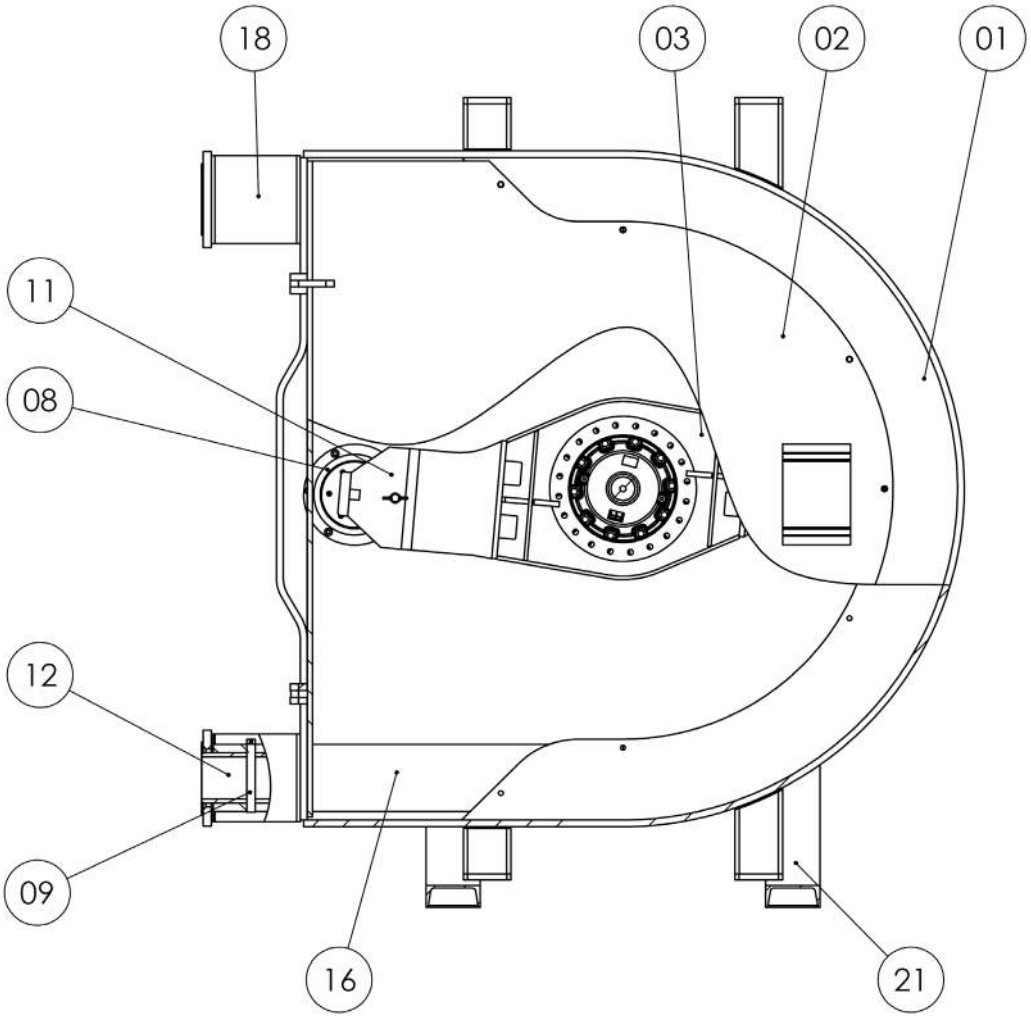
The pumped liquid has now entered the hose. The second rollar will compress the hose and push the liquid towards the pump outlet.



PHASE 3

As soon as, at the discharge side, the rollar is detached from the hose, the other rollar diametrically opposite is already in compression thus avoiding an internal product leakage. The product is then successively sucked and pushed due to the wheel rotation.

3.3 - PUMP CONSTRUCTION



PART NO	DESIGNATION	MATERIAL PTX150
1	CASING	STEEL
2	COVER	STEEL
3	WHEEL	STEEL
8	ROLLAR	POLYAMIDE
9	CLAMP ON HOSE	STAINLESS STEEL
11	ROLLAR BRACKET	STEEL
12	INSERT	STAINLESS STEEL
16	HOSE	see §3.4
18	FLANGE BRACKET	STEEL
21	FRAME	STEEL

3.4 - HOSE

The TAPFLO hoses are manufactured according to very strict specifications to acquire the best performances of the pump and to assure an optimum hose life.

They are available in different materials : Natural Rubber (NR), perbunan (NBR), EPDM, Neoprene, Norprene, Pharmed, Silicone and Hypalon.

The material of the hose must be compatible with the pumped liquid.

DIMENSIONS OF THE HOSE (mm)

PUMP	INSIDE Ø	THICKNESS	LENGTH
	MM		
PTX150	150	25	5100

3.5 - GEARBOX

Our standard gearboxes are planetary drives for pumps PTX150. They have been sized according to the important radial loads of the pump. Consult the gearbox maintenance manual provided with the pump to know the quantity of lubricant requested as well as the periodicity of oil change.

3.6 - ELECTRICAL MOTORS

The standard motors provided on our pumps are squirrel-cage motors and have a 400/660V 50Hz three-phase voltage. If the pump has to work in a potentially explosive environment, please refer to the complementary information on ATEX compliances and contact your TAPFLO distributor.

3.7 - AVAILABLE OPTIONS

TAPFLO offers several options for their pumps :

> Hose rupture detector.
> Revolution-counter.

Please contact your TAPFLO distributor for any information about these different options.

4/ INSTALLATION

4.1 - UNPACKING AND CONTROL

During the reception of the pump, please follow the indications pointed out on the packing. Undertake a visual control to be sure that no damage happened during the transport. If this is the case, please contact your TAPFLO distributor as soon as possible.

4.2 - CONDITIONS OF USE

PTX pumps can work in atmospheres where the temperature is situated between - 20°C and +50°C. Pumps are delivered painted with a 150µ polyurethane paint which allows them to resist to certain aggressive ambiences. They are designed for indoor and outdoor setups.

4.3 - SET UP

Before installing the pump, check the following points :

- The pump is delivered with a frame provided with four anchoring holes. It must be fixed on a solid base with a slope which does not exceed 5mm for 1m and must be firmly fastened to this one.
- Require enough space around the pump to carry out maintenance. If such was not possible, consider the moving of the pump to a space provided for this purpose.
- Make sure that the room is adequately ventilated to releive the heat generated by the pump. Leave a space behind the motor ventilatior hood so as not to obstruct air intake.

4.4 - PIPING

Suction line piping :

- The internal diameter of the piping must be superior to that of the pump hose (see §3.4.).
- It must be the shortest and most direct possible to avoid suction loss.
- Install a valve on the suction line especially if the pump is on load.
- Limit the presence of bends and make sure that they are as large as possible.
- Make sure that piping can support the service pressure of the pump.

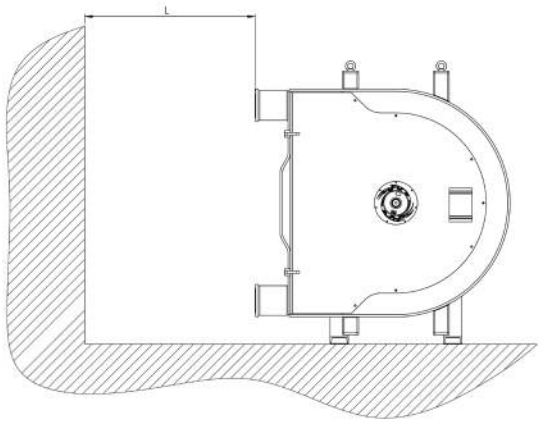
Discharge line piping :

- The internal diameter of piping must be superior to that of the pump hose (see §3.4.).
- It must be the shortest and most direct possible to avoid discharge pressure loss.
- Limit the presence of bends and make sure that they are as large as possible.
- Provide a space for a pulsation dampener (see picture below).
- If there is a valve on the discharge line, install a pressure valve or a over pressure protection gauge to avoid any possible damage to the pump and to the installation.
- It is recommended to install a Dillatoflex® pipe to absorb vibrations created by the pump pulsations.

During the pump ground study, provide enough space for the hose change.

Distance (L) is the required length for hose removal.

POMPE	DISTANCE (L) CM
PTX150	250



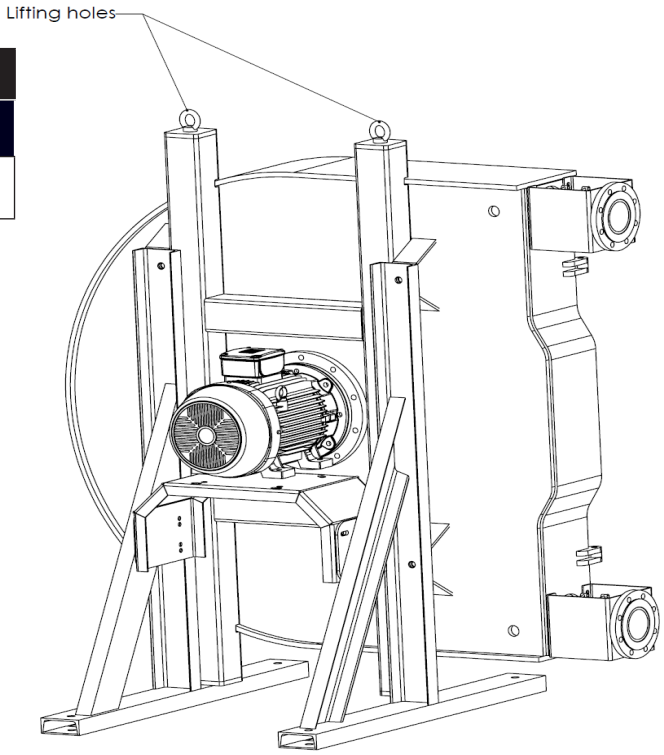
4.5 - LIFTING THE PUMP

Pumps are provided with two lift holes placed on the upper part of the frame.

While lifting the pump, respect the following points :

- Lift the complete hose pump using the lifting holes plus additional support on the gearbox and the motor using suitably rated straps or slings.
- Never exceed the upper limits of lift and control the motorized pump weights in the table below.
- The motorized pump, given its centre of gravity, will tend to overbalance on the pump head side. Make sure that the persons are at a security distance of the pump to avoid any risk of wound.
- Never raise the pump otherwise than by the pump's lifting rings.
- Never raise the pump by it's orifices.

ALL WEIGHTS IN KILOGRAMS	
PART	PTX150
FIXED SPEED	2000



5/ PUMP START UP

5.1 - PREPARATIONS

a. Connect the electrical motor in accordance with the local rules and regulations. Perform this work by qualified personnel.
b. Undertake rollar ajustment of the pump according to the pump process
see §6.3 ROLLAR AJUSTMENT).The pumps are always delivered with non-ajusted rollars.
c. Check the direction of rotation of the pump. It is recommended to install a rotation inverter on the motor for the hose change.

5.2 - START UP

a. Install piping at the inlet and outlet of the pump.
b. Make sure that valves at the inlet and outlet are opened.
c. Start the pump by checking its direction of rotation by the sight glass.
d.Check the flow and discharge pressure and ajust rollars if these figures don't match the pump specifications.

6/ MAINTENANCE

6.1 - HOSE CLEANING

The hose cleaning can be done without removing the hose. It can be done with water or with a cleaning liquid (check compatibility with hose material). With numerous products, it is necessary to clean the hose after every pumping in order to avoid the hardening of the product inside this one.

CAUTION ! Make sure that the cleaning liquid temperature is adapted to the hose material.

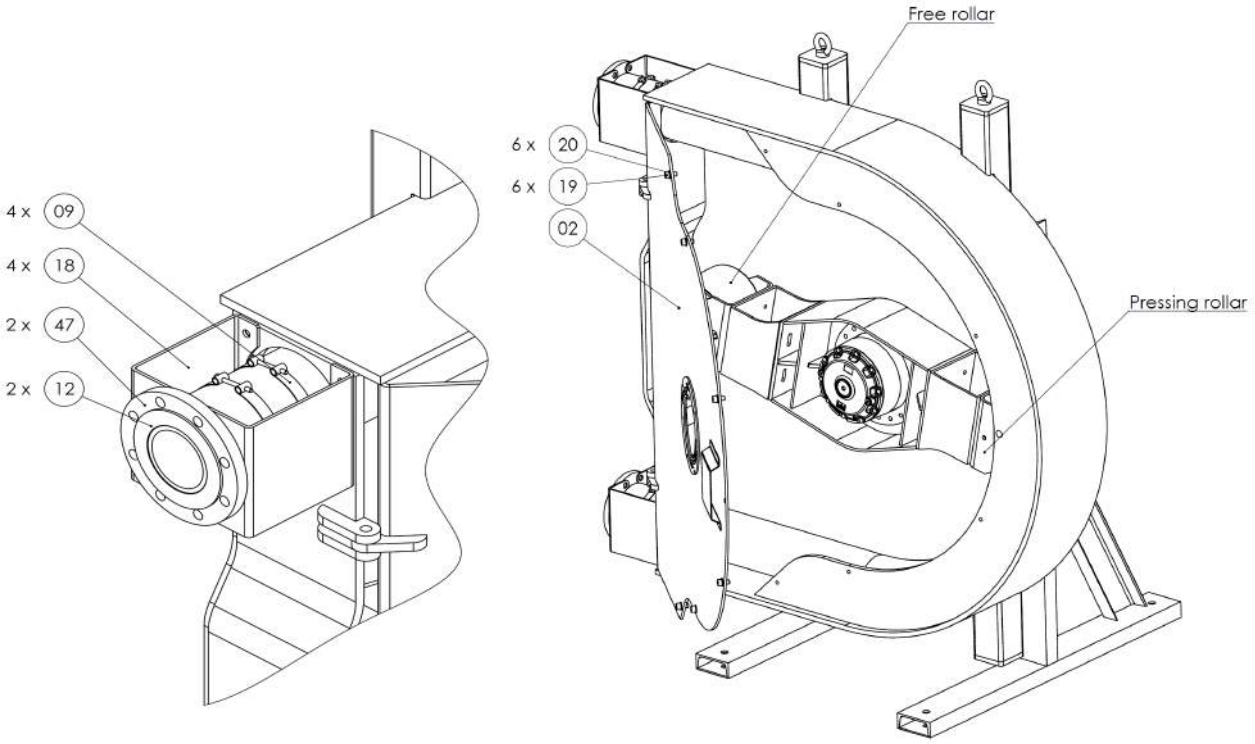
6.2 - HOSE REPLACEMENT

CAUTION ! Before any hose change, check the following points :

a. This service has to be performed by skilled personnel that is acquainted with this manual.
b. Inlet and outlet valves have to be closed to minimize product loss.
c. Always carry clothes and necessary protection according to the pumped product.
d. Respect all security and enviromental rules necessary for the manipulation of the pumped product.

6.2.1 - HOSE REMOVAL FOR PTX150

1 - Disconnect and remove the suction and discharge piping.
2 - At the suction end, loosen clamps REF9.
Extract the insert REF12 and remove the flange REF47.
3 - At the discharge end, loosen clamps REF9. Extract the insert REF12 and remove the flange REF47 as well as the brackets REF18 (photograph 4). Remove clamps REF9 .
4 - Jog run the motor to deliver the hose from the pump casing at the outlet side.



WARNING ! The hose can come out of the pump casing very fast and cause harm. Check that nobody is in front of the pump´s orifices while removing the hose.

CAUTION ! Never run the pump without the cover and sight glass !

6.3 - ROLLAR ADJUSTMENT

CAUTION ! The rollar ajustment is an operation which consists in ajusting the rollar brackets to prevent any internal leakage. An internal leakage considerably reduces the lifetime of the hose as well as the flow. As a result, it is essential to adjust the rollars according to the rotation speed of the pump, the desired discharge pressure and the liquid viscosity.

WARNING ! Never run the pump without the sight glass.

6.3.1 - ROLLAR ADJUSTMENT PTX150

Note : The pressure setting must be checked when a new hose is installed because of variations in the hose thickness.

1 - Remove screws #19+20 and open the cover #2

2 - Slightly loosen the screws of the bracket that is compressing the hose.

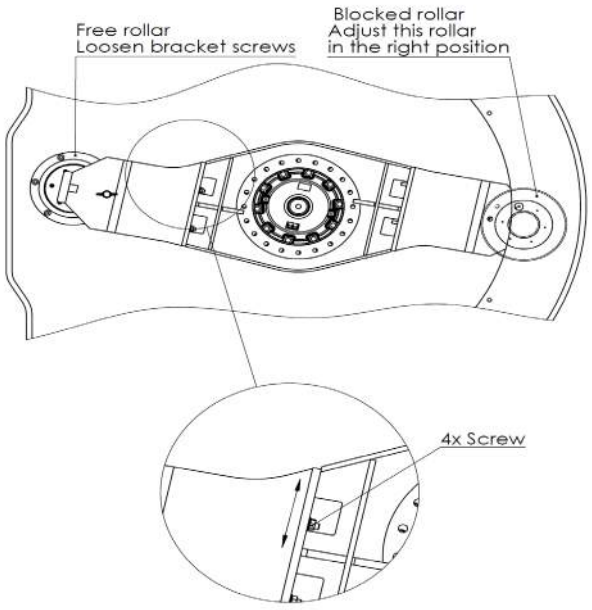
3 - Ajust the fixed rollar bracket so that the back meets the rotor side as shown in the figure. Tighten the bracket screws.

4 - Close the pump cover

5 - Run the pump and place the palm of your hand over the inlet port (suction side) and check if the fixed rollar is ajusted enough to create a suction. If not, remove the cover again and move the fixed rollar untill it meets the graduation mark.

4 - Repeat steps 4 and 5 moving the bracket sideways to marks 2,3 or 4 untill you obtain the correct suction (-0.6bar).

5 - Ajust the free rollar to the same distance, replace the cover and test-run the pump.
Re-ajust if necessary.



DÉTAIL F
ECHELLE 2 : 15

WARNING ! The two rollars must be equally ajusted.

6.4 - MAINTENANCE AND PERIODIC INSPECTIONS PTX SERIES

1	Pump hose replacement.	In prevention, change the pump hose after 90 % of the life time of the first hose.	see §6.2
2	Gearbox oil replacement.	Refer to the gearbox maintenance manual provided with the pump.	
3	Replacement of the rollars.	If these are worn on the contact surface.	
4	Check for wear on the rollar pressing surface.	At every hose change.	
5	Check the presence of a gearbox oil leakage.	Before starting the pump and periodically during the pump service.	
6	Check for strange noises coming from the pump, gearbox and bearing case or abnormal pump casing temperature.	Periodically during the pump service.	
7	Check for leakages at inlet and outlet ports.	Periodically during the pump service.	Re-tighten collars.

7 / STORAGE

7.1 - STORAGE OF THE PUMP

Store the pump in a sheltered and dry place and ensure that the storage room temperature is between - 20°C and +55°C.

Protect the pump if necessary and block the inlet and outlet orifices :

If the pump stays without working more than 1 month, withdraw the hose from the pump or withdraw one of the rollars from the hose.

If you can neither withdraw the hose or one of the rollars, run the pump 5min a week.

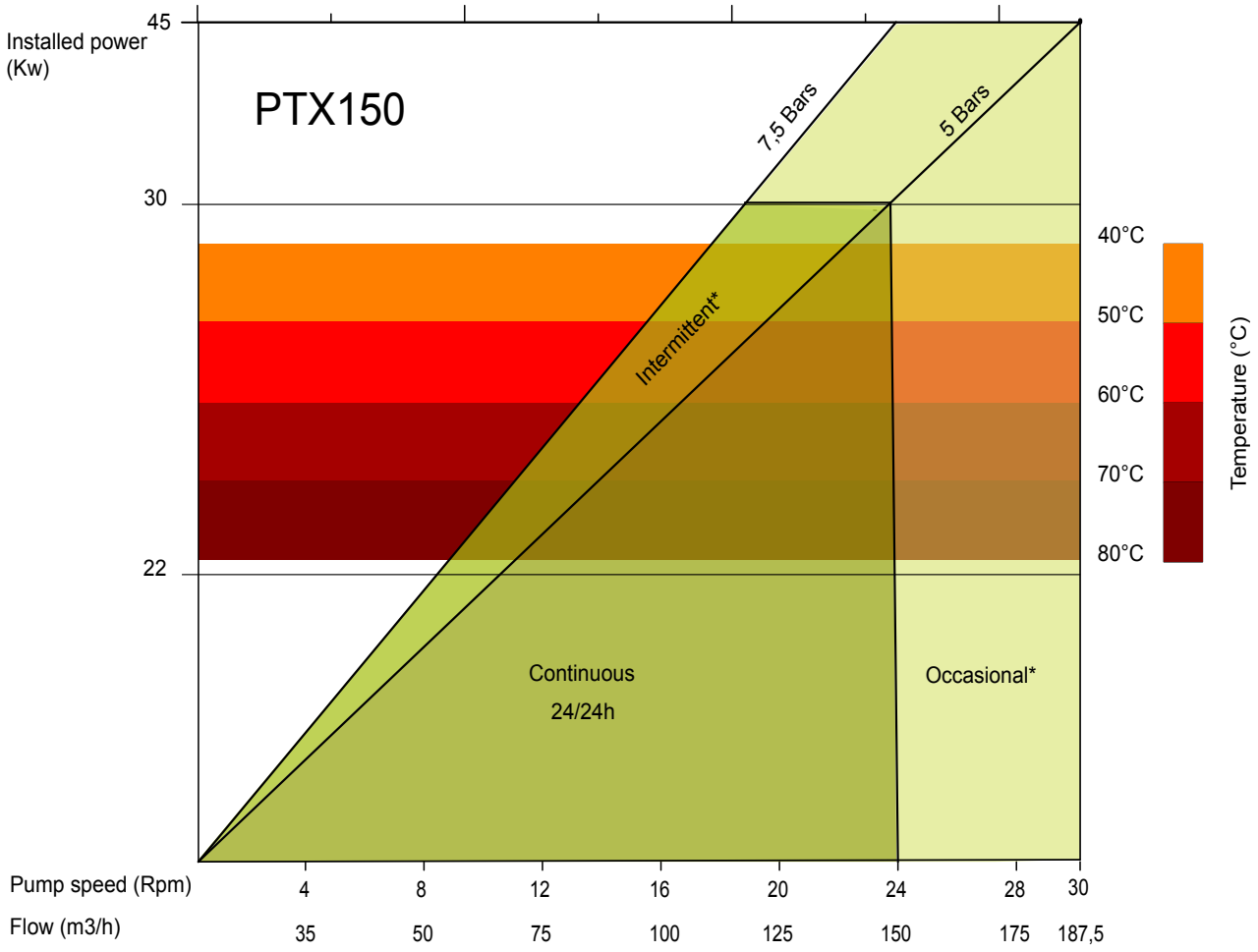
7.2 - STORAGE OF THE HOSE PUMP

Hoses must be stored sheltered from light in a cool place. Their life is reduced after two years.
The performance of hoses is reduced at the end of this expiry date due to the ageing of rubber.

8 / TROUBLESHOOTING

PROBLEM	POSSIBLE REASON	RESOLUTION
The pump does not work	No power supply.	Check that the pump power switch is on position “ON”.
		Check the connection of the motor.
	The wheel of the pump stalls.	Check the fixing of the hose.
		Check that the discharge pressure is not too high.
		Check that the product hasn´t sedimentated in the hose.
Low capacity or pressure	Bad rollar ajustment.	Reajust the rollars.
	Air leak at the inlet of the pump.	Check the tightening of the clamps of the pump and the sealing of the inlet piping.
	Valve closed or partly closed at inlet.	Fully open the valve.
	Wear of the hose.	Replace the hose.
	Product too viscous or too high pump speed in comparison with the product viscosity.	Ask for advice from your Tapflo distributor.
	Piping blocked or partly blocked at inlet.	Unblock piping at inlet and make sure of the good flow of the product.
Hose life time is too short.	Incompatibility of the hose with the pumped product.	Make sure the compatibility of the hose with your product and contact your Albin distributor.
	Discharge pressure too high.	Check that the discharge pressure of the pump does not exceed the max. pressure of the pump (see curves). Check that the outlet piping is not blocked up and that all valves are opened. Make sure that the security valve works correctly. Make sure that the piping friction losses do not exceed the value requested for an appropriate functioning of the pump.
	Pump speed too high.	Reduce the pump speed.
	Bad rollar ajustment.	Check the ajustment.
	Too high temperature of the product.	Contact your Tapflo distributor.
Pulsations in piping.	Deficient fastening of the piping.	Fix piping correctly.
	Process creating important pulsations due to the product, the speed of the pump, discharge pressure or the sizing of piping.	Contact your Tapflo distributor.
Abnormal noise coming from the bearing case	Worn bearings.	Replace bearings.

9.1 - PUMP CURVES PTX150



9.1.2 - GENERATED NOISE AND TEMPERATURE

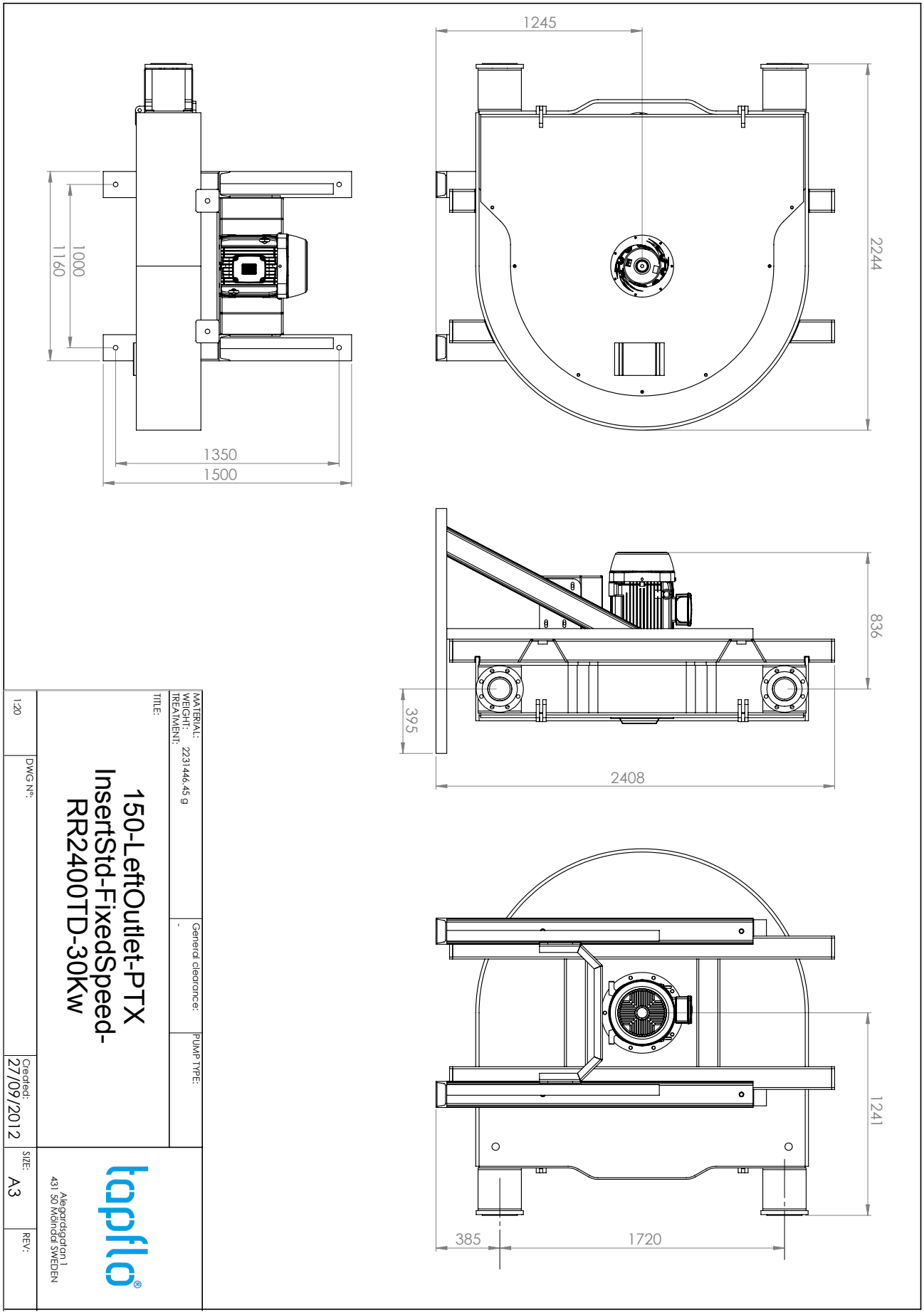
NOISE

The TAPFLO pump do not generate more than 60dB during their operation.

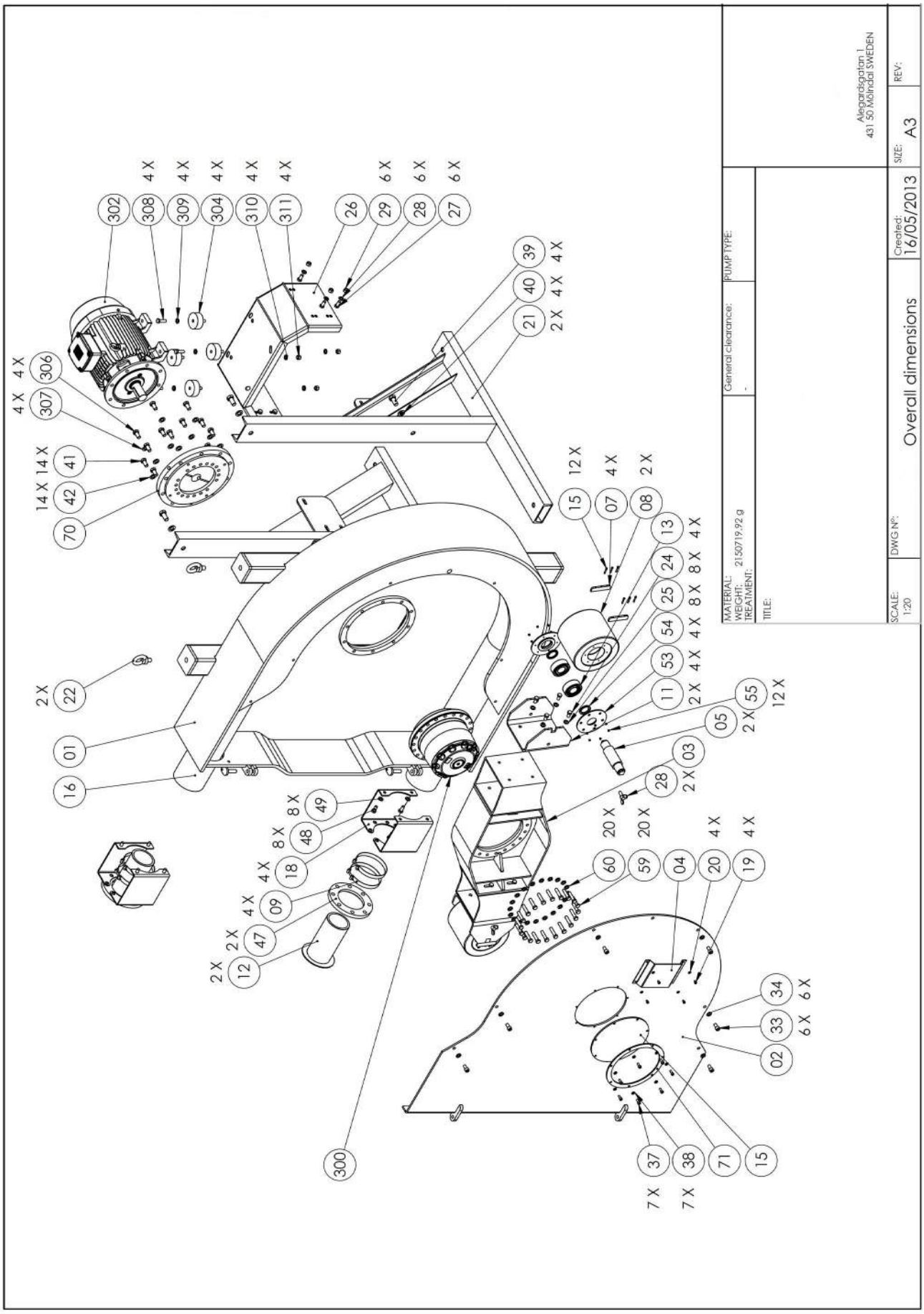
TEMPERATURE

The cover and the pump casing can become very hot due to the friction on the hose and liquid temperature. If you need to limit the pump temperature, please contact your TAPFLO distributor.

9.2 - DIMENSIONS PTX150



9.3 - EXPLODED VIEW PTX150



9.4 - PTX PUMP PARTS LIST (see specific exploded view)

Drawing ref.	Designation	Drawing ref.	Designation
01	body	34	Washer screw cover
02	cover	37	screw window
03	wheel	38	window washer
04	Doorknob	39	frame screws
05	roller shaft	40	washer frame
06	sleeve	41	gear screw
07	Block bracket	42	reducing washer
08	roller	47	flange
09	hose clamp / insert	48	Screw clamp insert
10	circlips roller	49	washer bracket insert
11	roller bracket	52	Seal flange roller
12	insert	53	Seal roller
13	Roller bearing roller	54	Screw flange seal roller
15	window	59	Wheel bolts
16	hose	60	washer wheel bolts
18	bracket insert	70	Centering flange reducer
19	Door handle screws	71	flange window
20	washer door handle	72	Gougeon gear washer
21	frame	300	reducer
22	Eyebolt	302	engine
24	Screw clamp roller	304	silentblock engine
25	bracket washer roller	306	Screw engine / gearbox
26	engine Support	307	washer motor / gearbox
27	engine support screws	308	Engine / silent screw block
28	washer engine support	309	washer motor / silentblock
29	Nut engine support	310	washer sup word / silent
33	cover screws	311	Nut sup word / silent

10 / STATEMENT OF COMPLIANCE CE

SECTION 1.0

Description of the pump :

Produced in France for:
Tapflo AB

Filaregatan 4
S-44234 Kungälv, Sweden

TEL : +46 303 633 90

Type :
PTX 150

Serial N° :
Description : Volumetric pump, hose pump

SECTION 2.0

Applicable directives :

Machinery directives :
89 / 392 / EEC
89 / 655 / EEC
91 / 368 / EEC
93 / 44 / EEC

SECTION 3.0

SECTION 4.0

Statement :
We declare under our responsibility that the equipment defined in section 1.0 satisfies in all the directives of the European Community specified in section 2.0 and in the French work legislation.

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Tapflo products and services are avaliable in 56 countries on 6 continents.

Tapflo is represented worldwide by own Tapflo Group Companies and carefully selected distributor's assuring highest Tapflo service quality for our customers' convenience.

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