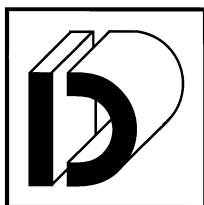
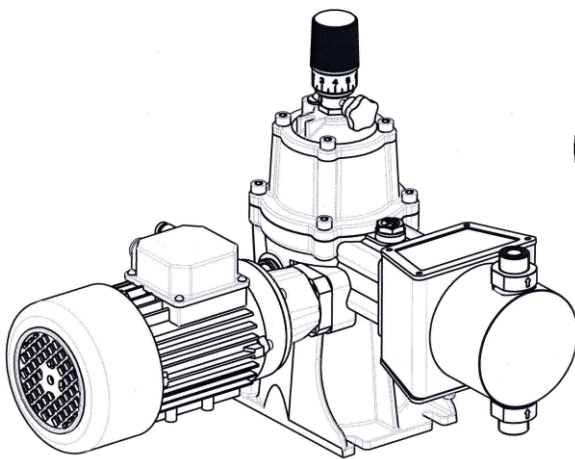
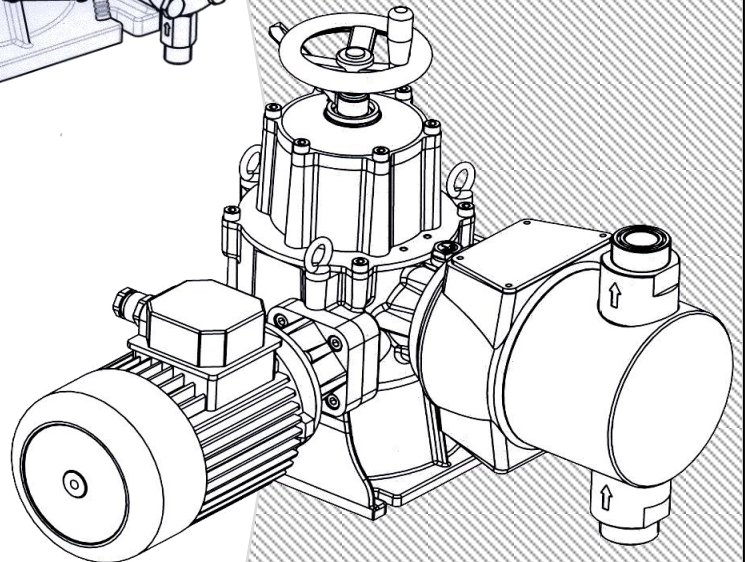
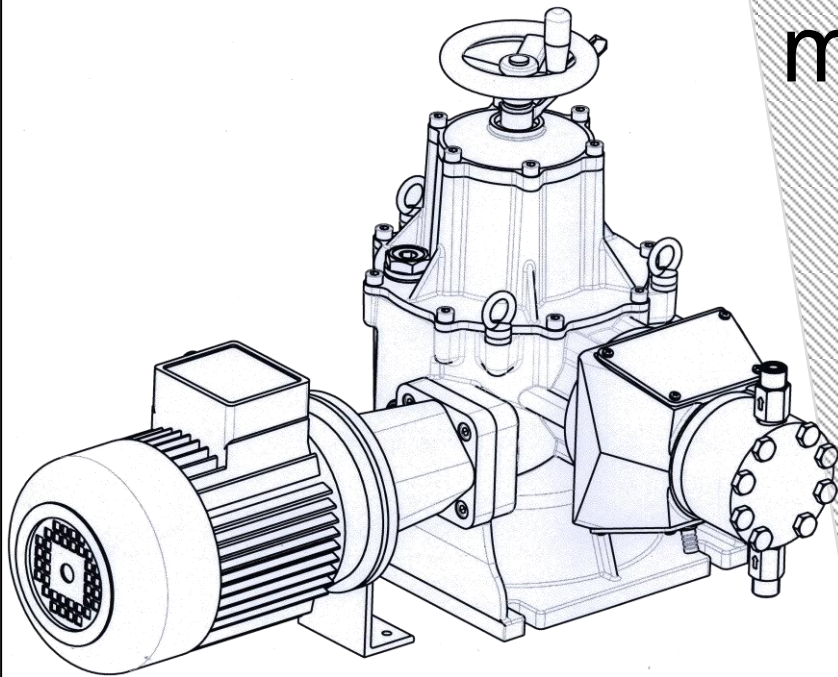


# Reduction gear use and maintenance manual



Positive displacement  
dosing pump

## **PDP Series**

Type	<b>I 350</b>
	<b>I 250</b>
	<b>I 175</b>

## *General instructions*

We thank you for choosing this product and recommend you read this manual carefully before starting installing the dosing pump. Please pay particular attention to the safety warnings marked with pictographs.

Complying with the rules and prescriptions herein ensures safe use and proper maintenance.

The Use and Maintenance Manual is an integral part of the machinery and must be easily accessible by the operators and maintenance staff, so it should be stored intact in a safe place.

## *Technical assistance*

Standard and extra maintenance must be carried out according to the instructions contained in this manual. For technical assistance and spare parts, please contact DOSEURO® main office, your dealer or installer, and report the data on the label attached to the pump:

- ✓ **Pump type**
- ✓ **ID number**
- ✓ **Year of construction**

If repairs to the pump are not carried out according to the instructions herein, or are done in a way which affects integrity or modifies its characteristics, the manufacturer shall be incur no liability for people's safety and faulty operation of the pump.

**DOSEURO® S.r.l. - Via G. Carducci, 141 - 20093 Cologno Monzese (Mi) Italy**

**Sales office: Ph. +39 0227301324 – Fax +39 0226700883**

**Web site: [www.doseuro.com](http://www.doseuro.com)**

**E-mail: [info@doseuro.com](mailto:info@doseuro.com)**

## *Electric motors*

As per standard, the pump is supplied with an electric motor conforming to the requirements contained in the customer order and compatible with the intended use.

The company doseuro® S.r.l., rejects any liability for damage caused by the motor and the pump when used in conditions that are different from those defined in the order.

If the motor is subcontracted from the customer, he must transmit related technical conformity documentation to doseuro® S.r.l. that declines any liability.

If the pump is supplied without the motor, doseuro® S.r.l. declines any liability resulting from an incorrect motor selection and installation, on the part of the customer.

## *Liability*

Not following the instructions contained in this Use and Maintenance Manual excuses the manufacturer from any liability.

For any information that is not included or cannot be inferred from the following pages, contacting doseuro® S.r.l. directly is recommended.

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I-20093 Cologno Monzese (Mi) Italy  
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**doseuro®** S.r.l.

*The Right Dosing Choice*



## DECLARATION OF COMPLIANCE

**DOSEURO®** S.r.l. With main office in:

Via G. Carducci, 141 - I-20093 Cologno Monzese (Mi) Italy

Declares under our sole responsibility that the products belonging to the indication commercial:

### POSITIVE DISPLACEMENT METERING PUMPS

**PDP Series Model: I 175 - I 250 - I 350**

2006/42 EEC	Machinery Directive (and any subsequent modifications).
2004/108 EEC	Directive Electromagnetic Compatibility.
2006/95 EEC	Electric material low voltage end.

As well as with the following harmonised rules for Safety:

UNI EN 12100-1:2009	Safety of machinery
UNI EN 12100-2:2009	Design principles part 2.
CEI EN 60204 -1 – 98	Electrical equipment of machinery.

The technical documentation is available in our office.

#### PLACE AND DATA:

UP TECHNICAL FILE

#### CDA President

MICCICHE' TULLIO  
Via G. Carducci, 141  
I-20093 Cologno Monzese (Mi)

**Cologno Monzese - January 2010**

EDITORIAL STANTEMENT OF COMPLIANCE

#### Technical Direction

MICCICHE' TULLIO



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## Chapter 1 SIGNS USED

It is important to draw attention to the symbols used in this document to highlight the residual risks associated with the suitable use of the pump.

The following pictographs use different shapes and colours to indicate general warnings and the behaviour required for the operator to carry out all of the activities in full safety according to specific symbol prescriptions.

Features of safety signs			
Colour	Shape	Meaning	Indications and details
Yellow, orange yellow		Warning	Warn you to be careful, pay attention to mechanical risks or potential dangers of various kinds in the working environment.
Light blue		Instruction	Inform workers about personal protection devices to be used and specific behaviour required.

### 1.1 Symbols

#### ATTENTION!

The non-compliance with safety rules can cause minor personal injury or damage to property.



#### DANGER!

The non-compliance with safety rules can cause personal injury or damage to property.



#### DANGER OF SERIOUS INJURY!

The non-compliance with safety rules can cause serious injury or serious damage to property.



These general instructions are valid only in combination with specific instructions of use of motor-driven dosing pumps and hydraulic accessories.

This section describes the use of the pump according to the main safety rules.

To use the dosing pump, installers and operators should read this section carefully, which ensures safety of nearby operators and materials.



**DANGER OF SERIOUS INJURY!**

**DOSEURO® shall decline any responsibility in case of personal injury or damage to property due to incorrect or improper use of the pump.**

**Should the pump be used in other processes, the customer must contact our technical office before use it again, to check compatibility of materials for proper functioning.**

The major risks associated with the use of the pump include:

➤ **MECHANICAL:**

- Impact, compression of body parts, in particular head and limbs.
- Falling objects.
- Dangerous vibrations, which may injure the operator or damage the machinery or environment where it is installed.
- Clothes may get caught in moving parts.
- Heat due to the operation or overheating of the pump.

➤ **ELECTRICAL:**

- Contact with power and distribution cables.
- Live mechanical elements due to electrical failure.
- Static electricity.

## 2.1

### *Protective clothing*



**DANGER!**

To carry out any maintenance activities on the pump or plant, the operator must wear personal protection devices according to the law in force (626/94) and any other protection that may be necessary to avoid skin contact with the pumped liquid, i.e.:

***Protective gloves and goggles, respiratory masks, protective headphones or earplugs, protective suit, safety shoes.***

#### COMPULSORY SIGNS





## Chapter 3 USING DOSING PUMPS

### 3.1 Destination of use

Dosing pumps are only used to dose liquids and allow to change capacity whenever required.



The manufacturer shall not permit any use other than that agreed with our sales office during the design stage.

### 3.2 Pump description

The pump is composed of:

<b>Movement:</b>	Reduces the number of revolutions as needed for dosing, turning the rotary motion into reciprocating rectilinear motion through the eccentric shaft or connecting rod.
<b>Movement transmission:</b>	Cast iron or aluminium flexible coupling with elastic inserts.
<b>Adjustment:</b>	The piston stroke from 0% to "100%" is obtained by changing the eccentricity of the shaft which generates a reciprocating rectilinear motion with adjustable stroke whether the pump is idle or in motion.
<b>Hydraulic pump head:</b>	Suck the liquid from the suction valve and push it through the delivery valve.
<b>Electric motor:</b>	Three-phase or single-phase.
<b>Manufactured shape:</b>	B14 or B34 – Insulation Class F – Protection IP 55 or higher.
<b>Voltage and frequency:</b>	To be determined when ordering, based on customer's needs.
<b>Body components:</b>	Die-cast aluminium.
<b>Hydraulic parts:</b>	Plastic or metal materials depending on product compatibility.

### 3.3 ID plate

Each pump is identified by its type, ID number and year of construction. These data are inscribed on the plate attached to the back of the pump.

Given its importance, the following warnings must be taken into account:

- ✓ Never remove the plate from its original position.
- ✓ Do not change or alter technical data.
- ✓ Do not clean the plate with abrasive products to avoid fading the data written on it.

Technical date for identification type pumps				API 675 plate for pumps S.S. 316	
1	Belonging series				
2	Piston stroke				
3	Piston diameter				
4	Reduction ratio				
5	Execution of materials				
6	Type of valve (not indicated if single)				
7	Additional accessories				
8	Environment temp.				



All of the items in the plate must remain readable. Use the identification data provided when requesting spare parts, technical information and assistance.

## Chapter 4 *TRANSPORTATION*



### **ATTENTION!**

**Always keep the package standing.**

This type of pump comes in a single package; custom packages can be provided on demand. Usually the customer chooses the carrier and customer and carrier shall be responsible for transportation.

### **4.1** *Pump delivery*

Before opening the package, check its condition; in case it is damaged, immediately report the incident to the carrier.

Then thoroughly check the contents to find and readily report any damage due to transportation or handling.

### **4.2** *Lifting and handling*

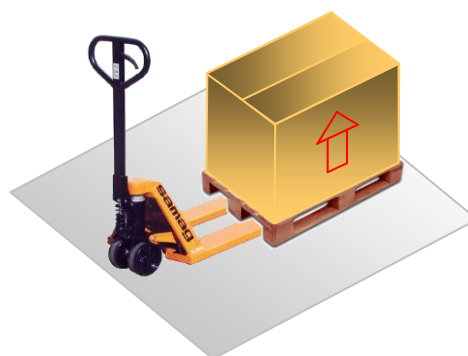
Handle the package using a transpallet or a lift truck.



### **DANGER OF SERIOUS INJURY!**

**To lift the package, use equipments with min. capacity higher than the declared weight of pump and package.**

**The staff involved in handling procedures should wear protective gloves and footwear.**



### **4.3** *Stocking of materials*

If the pump should remain out of service for long time, especially before first start-up, we recommend placing the shelter in its packing material and fill the gearbox oil SAE 85W-140 in order to prevent oxidation of the internal components.

The equipment should be stored in a dry, well-aired place away from heat sources and at a temperature between +5 ° C to +40 ° C.

### **4.4** *Acoustic vibration*

The pump is designed and built so as to reduce the sound emission level at the source.

Sound pressure levels in working environments are lower than 80 dB(A).

The data reported in the following tables take into account the general prescription set out in the European Directive 89/392/EEC.

<b>Model – I 175</b>
<b>Pressured pump condition</b>
<b>Sound power level</b>
<b>dB(A) 74.9</b>

<b>Model – I 250</b>
<b>Pressured pump condition</b>
<b>Sound power level</b>
<b>dB(A) 75.8</b>

<b>Model – I 350</b>
<b>Pressured pump condition</b>
<b>Sound power level</b>
<b>dB(A) 77.6</b>



This Manual contains all information necessary to install the dosing pump, considering all safety requirements.

### 5.1 Proper operation conditions



#### ATTENTION!

- If the pump is installed outdoor, a suitable shed is required to avoid exposure to sunlight or infiltration of rain. This mainly applies to pumps equipped with a plastic pumping head, servo controls or other delicate instruments.
- If the pump is used in closed environments, the average lighting level is to be considered as a key factor for the safety of people and quality of work, as well as for the right perception of symbols and signs.

#### Altitude:

The power of the motor installed on the pump is suitable for use at a max altitude of 1.000 m ASL. For higher altitudes, recalculate power as it could be insufficient.

#### Temperature:

The operating temperature range for standard closed motors is  $-15^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ .

### 5.2 Handling before installation



#### DANGER OF SERIOUS INJURY!



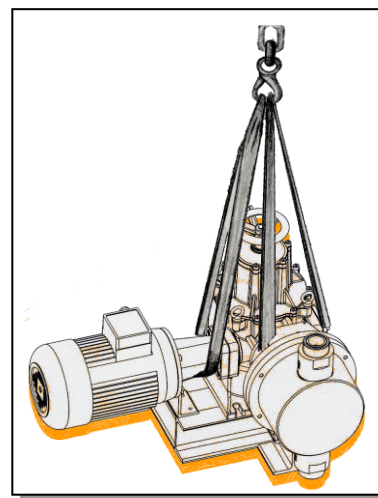
#### Before starting handling the pump, you need to check:

- Efficiency of lifting equipments and relevant capacity.
- During lifting and handling operations, handle the pump with care to avoid dangerous movements which may cause incidents, damage and injury.

The pump is usually delivered on a euro pallet.

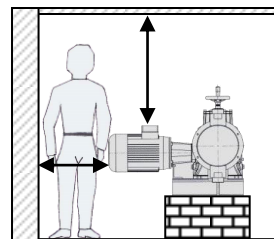
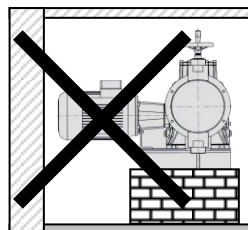
The best thing would be to deliver the pump directly to the place where it will be installed.

Given the heavy weight of the pump, you should use a hoist to handle it. To ensure the load is well balanced and distributed, we suggest you hook the sling to the base, or you slip the belts in as close to the motor lanterns as possible while handling the pump, to avoid using the eyebolts on the body of the pump, as they are only suitable for handling of the motion parts.



### 5.3 Location of the pump

- The pump must be installed on a strong base (made of metal, cement, etc.) which ensures stability and levelling of mount, preventing any strain on the axis.
- Allow enough room (operation areas) to inspect and adjust the pump easily, or facilitate dismantling of the hydraulic parts (valves and pumping head).
- Prevent pipelines from creating any bottlenecks or stagnant volumes, as well as any strain on the valve axis, caused by bad levelling accuracy.
- Remove burrs from the components and clean any residues out of the pipelines before assembly.



## 5.4

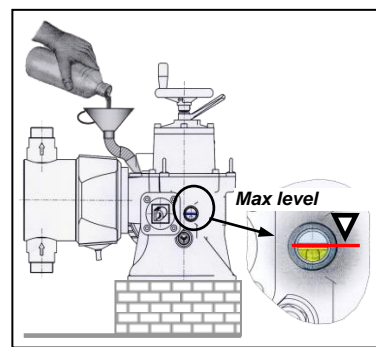
### Lubrication

The pump is supplied without lubricating oil for transportation reasons. Before starting the pump and when installation is complete, the operator must add oil into the pump up to the centre line on the oil level indicator.

The pump does not require lubrication of any additional parts, therefore the oil quantity indicated in the table is enough to guarantee good lubrication; the light on the side of the pump indicates that the dose is correct.



**ATTENTION!**









- Bear in mind that lubricants are toxic and harmful to your health.
- If they come in contact with skin, they can cause irritation.
- If they are inhaled, they can cause serious intoxication.

Be sure to handle them with care and to wear proper protective clothing, as described in the relevant chapter.

The type of oil used for the reducer should have the following requirements:  
high viscosity and cold flow rate defined as:

**SAE 140 with 23° E viscosity (about 160 mPa/s)**

Model	Q. of oil ml	1st oil change h	2nd oil change h
I 175	200	500	6.000
I 250	500	500	6.000
I 350	1500	500	6.000

EQUIVALENT OIL TYPES		
	<b>Esso</b>	Gear Oil GX 85W 140
	<b>Mobil</b>	Mobilube HD 85W 140
	<b>Shell</b>	Spirax HD 85W 140
	<b>BP</b>	Nypogear EP 85W 140
	<b>IP</b>	Pontiax HD 85W 140
	<b>Agip</b>	Rofra MP 85W 140

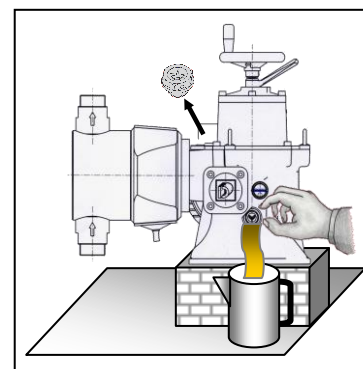
## 5.5

### Oil replacement

- Place a container of suitable capacity under the oil drain plug.
- Remove the oil filler cap and drain plug and drain oil.
- Allow few minutes for oil to drain completely, then screw the drain plug on.
- After adding new oil up to the centre line on the level indicator, screw the oil filler cap on.



**RESIDUAL RISK!**



To ease drain operations, use warm oil. Be sure to wear proper protective devices.  
Dispose of waste oil according to existing laws and regulations.

The installer is required to mount a suitable knife switch upstream of the pump and use cables with sections whose dimensions are able to support the maximum current absorbed by the motor. Suitable devices with delayed tripping should also be installed to protect the system against overheating in case the rotor is blocked, according to Directive EN 60079-14.

## 6.1 Connecting the motor

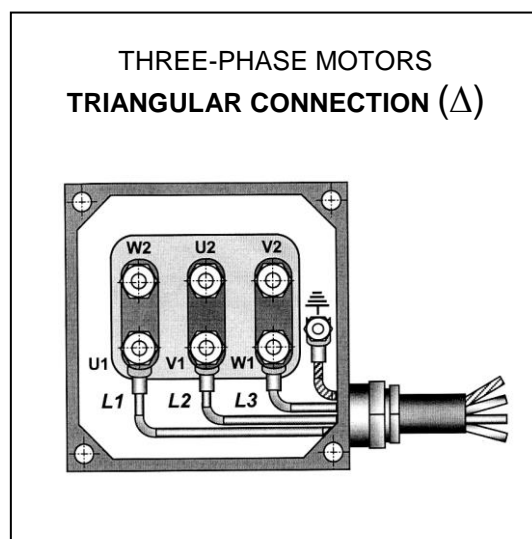
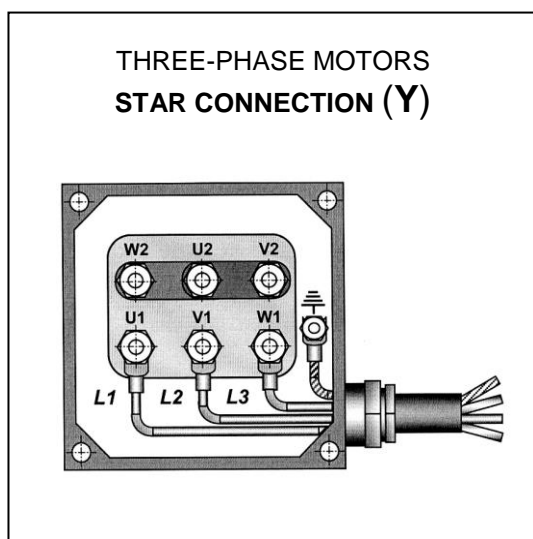
Before connecting the motor, see the indications in the terminal board and check that:

- Power network voltage and frequency are the same as those on the motor plate.
- The ground terminal is connected to the protective conductor.
- The motor rotation direction corresponds to the arrow on the fan cover.
- No nearby objects hinder ventilation of the motor or hamper maintenance and inspection activities.



**DANGER OF SERIOUS INJURY!**

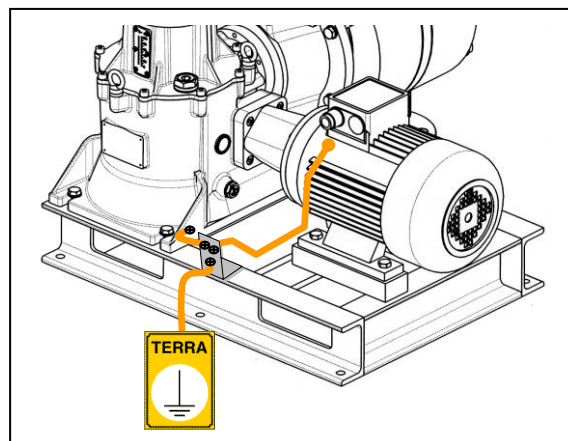
Electrical connections must be executed by skilled technicians with the greatest care, disconnecting voltage sources and in accordance with safety instructions. The pump must be connected with an efficient and controlled earthing line.



To invert the motor rotation direction, cross the electrical cables in **L1** position and **L2** position

## 6.2 Foundation earth

Under the legislation all electrical appliances in which there is the supply voltage and the insulation is in Class 1, the metal mass must be grounded through a conductor fixed.



## Chapter 7

# STROKE ADJUSTMENT

The pump stroke can be changed from 100% to 0% (zero) when the pump is in motion or idle, performing the following steps:

loosen the **lock handle (1)** of the adjusting screw, so the **hand wheel (2)** is free to rotate.

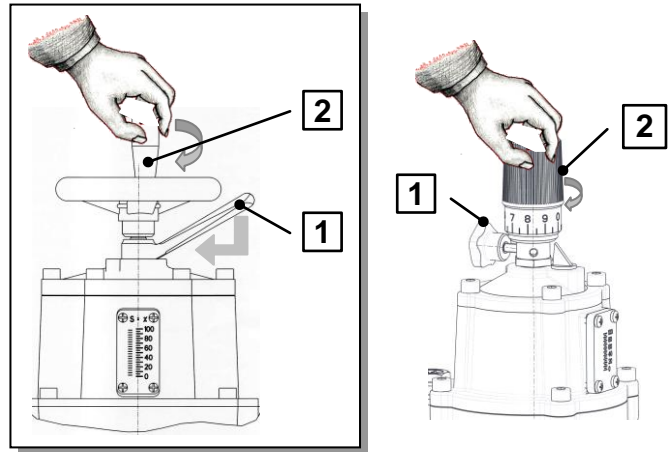
- Clockwise ( ↻ ) to increase the stroke.
- Counter clock wise ( ↺ ) to decrease the stroke.

❑ For pump type **I 175 – piston stroke 17.5 mm**. Adjustment from 0% to 100% is obtained rotating the hand wheel 25 turns.

❑ For pump type **I 250 – piston stroke 25 mm**. Adjustment from 0% to 100% is obtained rotating the hand wheel 36 turns.

❑ For pump type **I 350 – piston stroke 35 mm**. Adjustment from 0% to 100% is obtained rotating the hand wheel 28,5 turns.

**Note:** Once adjustment is complete, make sure to tighten the **lock handle (1)** again to avoid vibration that may shift the adjustment point.



## 7.1

### Stroke adjustment

The back and front dead points of the pump stroke are factory adjusted.

If maintenance is necessary due to breakdown or failure requiring extra repairs, contact the technical office for further information.

## 7.2

### Stroke variation with electric servo control

#### ❑ Electric servo control

If the pump is equipped with an electric servo control, the adjustment process described above is not applicable. Please read the manual supplied with the servo control.

#### ❑ Stroke adjustment

##### The pumps model I 175 – 17.5 mm piston stroke

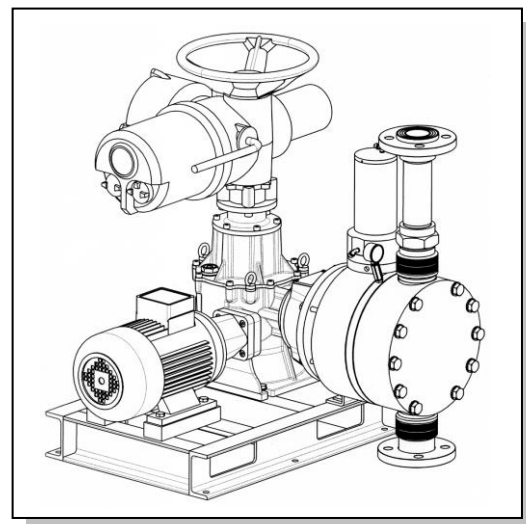
- JORDAN servo control makes 12,5 rotations and adjusts the stroke from 0% to 100%
- CONTROLLI MVH 56F servo control acts axially and adjusts the stroke from 0% to 100%

##### The pumps model I 250 – 25 mm piston stroke

- The stroke adjustment from 0% to 100% was obtained by calibrating the actuator so that it carries 18 rounds.

##### The pumps model I 350 – 35 mm piston stroke

- The stroke adjustment from 0% to 100% was obtained by calibrating the actuator so that it carries 25 rounds.



## Removing the electric servocontrol



**ATTENTION!**

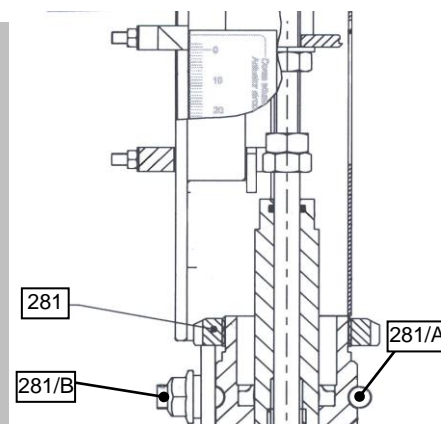
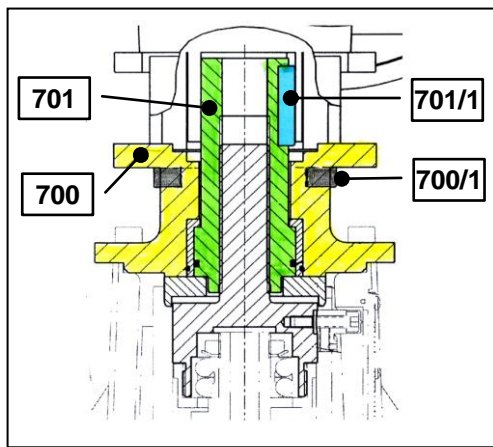
**Refer to the use and movement maintenance manual before starting maintenance on the pump in order to inspect its composing details.**

### ❑ Removal

To avoid loosing the set-up parameters, before removing the servo control from the pump body adjust to 0% of the piston stroke, after which it can be electrically disconnected for maintenance.

Once the pump has been stopped, proceed as follows:

- Electrically disconnect the actuator.
- Unscrew the upper flange screws (pos. 700).
- For CONTROLI MVH 56F servo control firstly unscrew the nut (281/B), the U-bolt (281/A) and finally the ring nut (281).
- Lift the actuator in the case of I350 position the sling as in the figure.
- Proceed with maintenance.



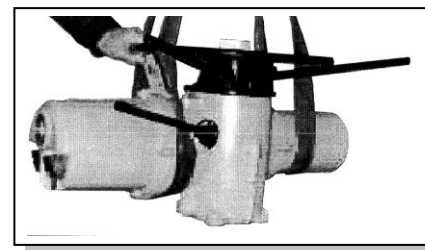
## 7.4

## Reassembling the electric servocontrol

### ❑ Re-assembly

Make sure the pump is adjusted at 0% of the stroke otherwise restore it by acting on the adjustment coupling (pos. 700).

- Lift the actuator positioning the sling as in the figure.
- Fit the actuator on the joint (pos. 701) after having directed the key in correspondence with the slot (pos. 701/1) in correspondence with the seat.
- Tighten the fixing screws (pos. 700/1).
- Electrically connect the actuator.
- For MVH 56F proceed in reverse order to removal.



## Chapter 8

## STEP BEFORE STARTING



**ATTENTION!**

**Personnel must know the product to be dosed and observe the due precautions when handling chemicals used in the process, whether (acids, basics, oxidation-reducing agents, etc.).**

### Check prior to start-up

- Check fixing of the pump on its support.
- All interception valves arranged on the suction or discharge circuits must be open. If the discharge circuit is equipped with an injection and back pressure valve, open the discharge purge valve for pump priming
- Position the adjustment of the pump flow rate at 0%.



### Checking motor electrical connection.

- Start the pump; verify the motor rotation direction is the same as the arrow on the fan cover. Should it be different, invert the rotation direction crossing the electric power cables - L1 and L2, as shown in the diagram.

## 8.1 *First start-up*

After completing all of the checking operations described in the previous chapter, start the pump.

- Verify that the adjusting hand wheel is free to rotate.
- Progressively adjust pump capacity from 0% to 100%, and check:
  - ✓ Leakage from the drain valve (if applicable).
  - ✓ Noise made by the liquid flowing through the delivery valve.
- In case of leakage, close the drain valve (if applicable).
- Run visually and auditorily if there is any dripping or strange noise.
- Check pipes are tight and do not cause any vibration and, most importantly, any strain on the pump head.
- Adjust the operating capacity of the pump; block the hand wheel through the lock handle.

## 8.2 *Problems at first start-up*

### The motor does not rotate smoothly and is overheated:

- The source of electric power connected to the motor does not meet requirements or the connection is unsuitable.
- Check delivery pressure is the same as the design.
- Flow pulsates too much: a plenum chamber should be installed or the plenum chamber installed is unsuitable, in size or pre-charge precision.
- The motor rotation direction is wrong. Invert the rotation according to the arrow.

### Capacity is lower than needed:

- Pump capacity is wrong adjusted: Adjust capacity as needed and block the hand wheel.
- Suction is insufficient as the pipe is too long or its section is too small. Replace pipes with larger sections or place the pump under head and as close to the suction source as possible.
- Suction pipes are not air-tight (possible penetration of air).
- Liquid viscosity is not compatible with the pump type or filter is clogged.

### Capacity is higher than needed.

- Siphoning occurs: check suction pressure is not higher than delivery pressure. Mount a counter-pressure valve on the delivery circuit.

### Capacity varies:

- The problem may be caused by solid particles from pipes or suspension sediments, which prevent pump valves from closing tightly. Clean the system thoroughly and install a filter on the suction pipe.

## Chapter 9 *PLANNED CONTROLS*



**ATTENTION!**

The control and maintenance plan depends on the operating conditions for the pump.

Good maintenance allows to improve performance, increase operating life and continuously maintain safety requirements.



## *Programming of maintenance*

To maintain security in the pump and a high performance, the same shall be subject to maintenance operations that consist of visual verification.

The following table lists standard maintenance on a yearly basis.

TIME PERIOD	TYPE OF CONTROL	TYPE OF SERVICE	SEE CHAPTER
After 500 hours		Oil replacement	Ch. 5.5
Every 3 months	Check for strange noise or vibration.	Find the source	Ch. 4.4
Every 6 months (or 1.500 hours)	Motor input, check and top up oil.	Replacement or repair	Ch. 6
Intervals to be defined based on process (about 2.000 hours)	Control and verify capacity.	Calibration	Ch. 7
Every year (or 6.000 hours)	Pump control and check-up.	Replacement or repair	See manual

To record maintenance or control activities more easily, we provide the following example of maintenance record sheet.

<b>DOSING PUMP MAINTENANCE SHEET</b>			
<b>PUMP TYPE:</b> ..... Pumped liquid: .....	<b>ID NUMBER:</b> ..... Install date: .....	<b>TEM:</b> ..... Start-up date: .....	
<b>Maintenance interval:</b> .....		<b>Date:</b> .....	
FREQUENCY	ITEM	TYPE OF SERVICE	ACTION

Not only do steady and thorough checks preserve the pump, but they also prevent faulty operation, which can require extra repairs.

The following chapters describe in detail the items requiring shorter maintenance intervals as they are more subject to stress and wear.

## 10.1 Noisy mechanical parts

If a strange noise is heard inside the pump body, readily stop the pump and check assembly drawings to resolve the problem.

- The crown wheel is worn out: in any case, replace together with the endless screw (position 7 and 49).
- Bearings are noisy: replace them.
- The connecting rod small end has clearance: replace connecting rod, bearing and eccentric shaft (position 11, 12 and 14).

## 10.2 Heavy mechanical

- Pump is operating under different conditions or with higher pressure than the design.
- Oil in the carter is not enough: check for leakage and top up oil.

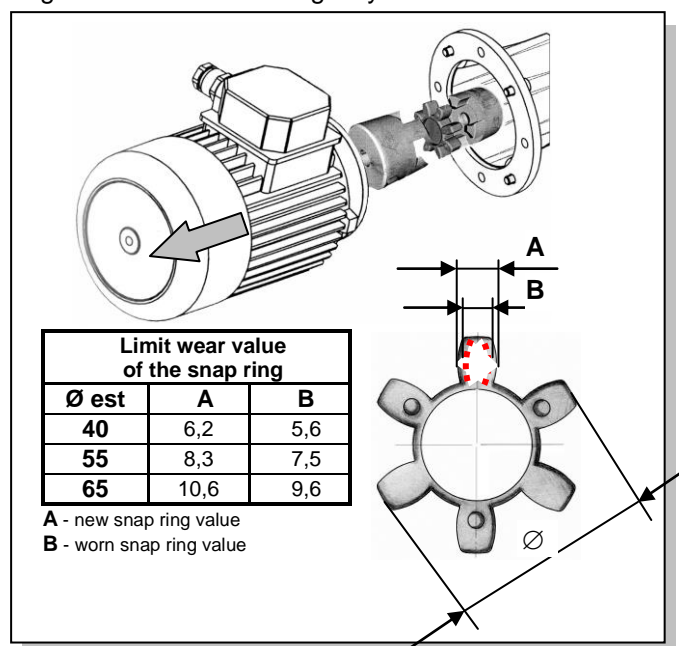
## 10.3 Checking the electric joint

Irregular workings of the machine vibration or torque loads affect these contingencies may affect the duration of the electric joint.

After the initial installation, you should check the coupling at shorter intervals during periods of downtime. Remove the motor, verify that the superphici elastic ring for signs of wear or crushing. If you exceed the limits shown in the table the ring must be replaced.

### Warning:

Use only replacement parts in polyurethane compound of the same color.



## 10.4 Checking pump capacity

Check the pump capacity curve based on the adjustment value.

Three measurements are required: 100%, 50% and 25% adjustment.

- Install a capacity gauge on the pump delivery system and measure the volume of pumped liquid within a specific time period under standard working conditions.
- To monitor the work process in a steady and accurate manner, a flow-meter preferably an electronic type - should be installed.

## ANNUAL MAINTENANCE



**DANGER OF SERIOUS INJURY!**

**Staff must wear all protective devices which are normally used for these types of operations. Follow the safety procedures according to the law in force Legislative Decree 81/08 and any other protection that may be necessary to avoid skin contact with the pumped liquid.**

The annual review (or after 6000 operating hours) is fundamental to a longer time in the equipment and ensure security product and functionality over time.

We must ensure that the pump parts, external and internal, were not affected by corrosion or degradation (cliques, crevices, broken), especially those made of plastic. Given these problems, it must be implemented with the replacement of damaged parts.

It is recommended to use for repairs, only original materials to ensure in any case, the reliability and safety of the pump.

Maintenance must be done by applying the security policy expressed in the document risk assessment in accordance with Legislative Decree 81/08

- The installer must know the product to be reviewed and will then consult the manual before use and maintenance in order to avoid the risks associated with careless handling.
- All maintenance, assembly and disassembly must be performed by qualified personnel with appropriate equipment.
- completed work to make a thorough cleaning of surfaces and walking surfaces in the area of intervention.

### 11.1 Maintenance procedure

Before doing any repairs on your dosing pump and pipes, the necessary precautions must be taken to ensure that the product, especially if harmful acid or alkali, will not cause danger to people or property surrounding.

**BEFORE DOING ANY REPAIRS, STAFF MUST VERIFY THAT:**

- Pump is idle and disconnected from the power line.
- Pump head and plant are depressurised and the liquid has been emptied from the pump.
- Pump temperature allows to handle the pump safely.
- Lifting equipment is suitable for handling heavy or big parts that needs dismounting.

**After verifying all of the above conditions, thoroughly clean pipes and pump components.**

### 11.2 Replacing the oil seals



**ATTENTION!**

*Before starting the pump maintenance, the operator must be provided with adequate protection to the type of Intervet to perform and should consult the manual for operation and maintenance of the movement and the pump head to look at details that compose.*

The seal should only be used for holding oil and not have the support function, before installation and must be thoroughly lubricate the seal with grease to avoid running dry during the first few laps.

To prevent impurities from damaging the lip seal and compromise the seal, cleaning the work must be thorough and carried out continuously.

It is important to remember that the sealing lip must always face the fluid to be retained or the side on which pressure is exerted.

➤ *Dismounting*

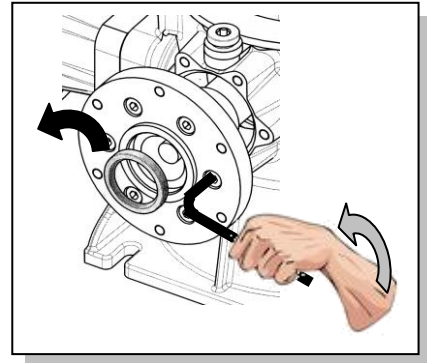
No particular measures are required to replace the oil seal, other than a few precautions when handling the parts in which case you are advised to refer to the component identification drawing to check their location and avoid damaging the seal with tools such as screwdrivers, levers, etc. It can be useful to dismount the components for analysis.

#### ❑ **SLIDE SUPPORT OIL SEAL**

After stopping the pump, follow these instructions:

- Disconnect the pipes from the pump head
- Dismount the head from the lantern
- Dismount the head carrier lantern from the gear motor
- Dismount the slide support

**The seal can now be removed from the support, applying light pressure.**



To seal replacement, proceed as follows:

#### ➤ **Remounting**

To get the best performance of the sealing rings must be taken of the following drawing:

- Check the push rod is free of burrs or scratches that could affect the sealing lip. If necessary, replace.
- Lubricate the sealing lip and the surface of the outer ring with clean grease.
- Remount the support on the push rod.
- Insert the seal on the push rod, making sure that the lip is facing inward.
- Fit the seal into the seat with uniform pressure by pushing pushers with special mechanical back up to the edge of the support
- Remount the lantern.
- Remount the pump head.
- Connect the pipes.

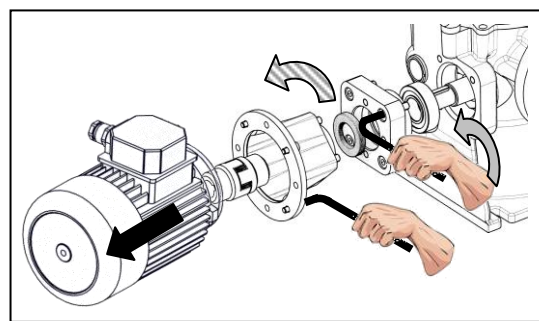
#### ❑ **WORM OIL SEAL ENDLESS SCREW**

#### ➤ **Dismounting**

After stopping the pump, follow these instructions:

- Drain the oil out of the body of the pump.
- Disconnect the motor.
- Dismount the elastic joint of the endless screw.
- Dismount the motor lantern.
- Dismount the motor lantern support.

The seal can now be removed from the support, applying light pressure.



#### ➤ **Remounting**

To seal replacement, proceed as follows:

Use suitable protection equipment.

- Remount the motor lantern support.
- Place the gasket on the motor support lantern support making sure that the seal lips are turned inwards.
- Tapping with a hammer by the pusher lead seal to the support reflected in the quarry.
- Remount the motor lantern.

- Remount the motor.
- Fill the body pump with the oil removed, if there was some sediment is preferable to replace.

### 11.3 Repairs at the factory



In the majority of cases, replacing damaged parts involves no difficulty. If failure cannot be resolved on site, send your pump to our factory.

Items are accepted for factory repair at the following conditions:

- ☐ ***The carter must be emptied of oil or any other liquid and any deposit must be removed from the pump, with particular regard to hydraulic parts (head and valves), so the equipment can be handle without danger to the operator.***
- ☐ ***Customer shall state that the parts have been cleaned to ensure safe handling.***
- ☐ If parts are sent to us without complying with these instructions, they will be returned un repaired and relevant expenses shall be charged to the sender.

## Chapter 12 DISABLING THE PUMP

If you need to disable the pump, make sure the following requirements are met to protect product and staff.



***Before disabling the pump, clean it thoroughly with detergents which are compatible with the liquid pumped in the hydraulic parts, as residual toxic, caustic or acid liquid and sediments can easily crystallise.***

- Before removing the pump from the plant, verify no liquid is under pressure and intercept the pipe next to the pump.
- Comply with the existing laws governing disposal or recycling of the materials replaced in the pump.

## Chapter 13 DISPOSAL OF COMPONENTS AND HARMFUL SUBSTANCES

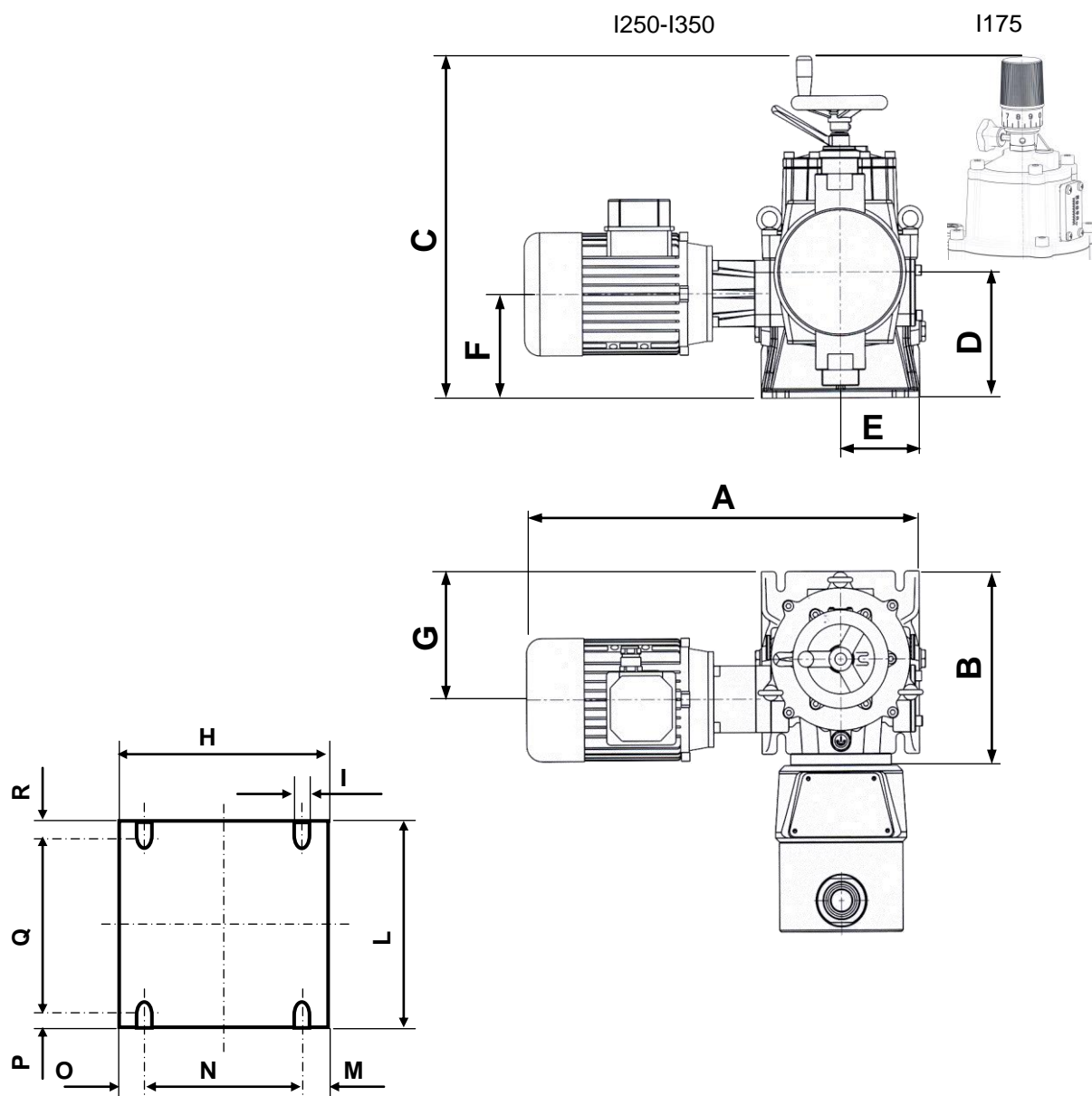
Please bear in mind that the user is responsible for waste separation and material recycling according to the national and regional laws governing waste disposal and for delivering all waste materials to authorised waste companies, prior to obtaining the authorisation for temporary stocking.



To avoid residual risks of environmental pollution, the materials used in the manufacturing process - lubricants in particular - must be stocked and disposed of according to national laws.

## OVERALL PUMP DIMENSIONS

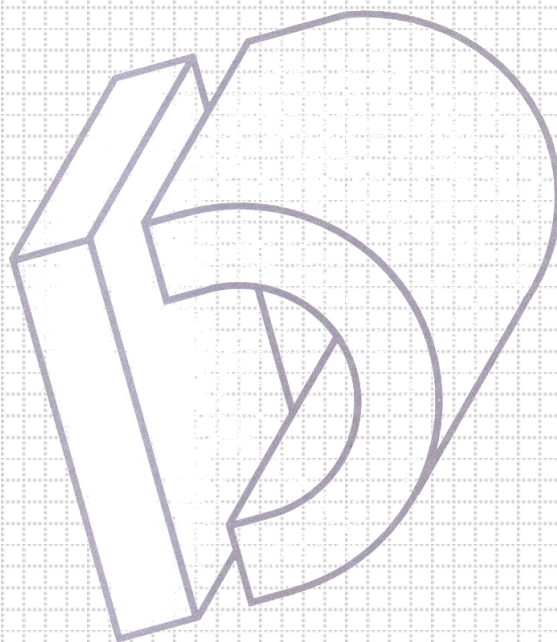
### PDP Series Model I 175 – I 250 – I 350



	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R
<b>I 175</b>	406	201	370	155	62,5	132	115	125	10	170	20	85	20	15	140	15
<b>I 250</b>	510	230	430	158	110	132	160	204	11	230	25	154	25	25	190	20
<b>I 350</b>	690	300	570	158,5	125	132	160	250	13	285	30	190	30	25	235	25



NOTES:



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