



# ANTRAC

## MOTOPUMP



### USE AND MAINTENANCE MANUAL

6LD400 LSY2

3LD510 LK4

3LD510 LY-3

4LD640 LY3

4LD820 LY3

4LD820 LS4

4LD820 LY3(PUMP 640)

12LD477-2 MEC A2 65A

9LD625-2 R822

9LD625-2 R526

9LD625-2 R626







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## 1.INTRODUCTION

### Introduction

Thank you for purchasing an ANTRAC motopump. This manual covers operation and maintenance of the ANTRAC motorpump. All information in this publication is based on the latest product information available at the time of approval for printing. ANADOLU MOTOR ÜRETİM VE PAZARLAMA A.Ş. has the right to make changes at any time without notice and without incurring any obligation.

No part of this publication may be reproduced without written permission.

This manual should be considered as a permanent part of the product and should be given with it if it is resold.

Antrac motopumps are designed to give safe and dependable service if operated according to instructions. Read and understand the Use and Maintenance Manual before starting the engine. Failure to do so could result in personal injury or equipment damage.

The motopump has been designed and produced for clear (un-muddy) fresh water. The producer can not be held responsible for damages resulting from uses that the motopump is not intended for.

Do not make any modification on the motopump and do not perform any operation except those indicated in this manual. Any alteration may cause malfunctioning and accidents, seriously injuring people and damaging the motopump or lowering its performance.

Troubles and damages resulting from un-authorized interventions will not be covered by our warranty.

Do not remove any protection, safety cover or label from the motopump. These are designed for your safety.

Always check that the safety devices are well in place and that they have not been crippled or modified to prevent them from functioning.

Proper maintenance of the motopump is operator's responsibility. Troubles and damages resulting from the lack of maintenance will not be covered by our warranty.

Maintenance operations, as explained in this manual must be carefully performed.

If a problem should arise, or if you have any questions about the product, consult an Anadolu Motor Authorized Service.

**The useful life of this product is 10 years.**

Throughout this manual, you will see safety messages preceded by the following words and symbols. Here's what they mean .:



**DANGER !** : Indicates, serious injury or death **will** result if instructions are not followed.



**WARNING !** : Indicates a strong possibility that serious personal injury or death may result if instructions are not followed.



**CAUTION !** : Indicates that equipment or property damage could result if instructions are not followed.

**NOTE** : Gives useful information

## 2. SAFETY RULES

### Safety rules

For your safety and the safety of others and to prevent your motorpump from being damaged, pay special attention to the below precautions.

#### Operator's responsibility



ANTRAC motopumps are designed to give safe and dependable service if operated according to instructions. Read and understand the Use and Maintenance Manual before starting the engine. Keep the User Manual throughout the life of the motopump. Failure to follow the instructions can result in serious injury and damage that can result in death.

#### To work safely ;

- Before starting ANTRAC motopump read the Use and Maintenance Manual and follow the instructions.
- Know how to control and stop the water pump quickly in case of emergency.
- Never permit anyone to operate the product if he or she does not properly know how to do it.
- Keep children and animals away from the motopump. They can be injured by touching the rotating or hot parts.
- Check the oil level and fuel level before starting the engine. Add oil as mentioned in the Use and Maintenance Manual if necessary.
- Fuel is harmful or fatal if swallowed. Keep the fuel tank out of reach of children.
- Keep the flame and spark making materials (match, fuel, etc.) away while the motopump is running..
- Refuel in a well-ventilated area with the engine stopped. Refuel carefully to avoid spilling fuel. Do not smoke while filling fuel. After refuelling, tighten the fuel tank cap securely.
- Avoid overfilling the fuel tank. Fuel will expand and overflow. Spilled fuel or fuel vapour may ignite.
- If any fuel is spilled, make sure that the area is dry before starting the engine.
- Do not put anything on the motopump and do not cover it with flammable material. This can cause fire.



- Wear appropriate clothes. Long sleeves or loose clothes can cause serious injuries.
- The working area must be well ventilated. Place the water pump at least 1 meter away from buildings and other materials.
- Place the water pump on a flat surface. Do not operate the water pump on slopes exceeding 20°. Excessive inclination can cause fuel loss or damage the engine because of insufficient lubrication.
- Keep the suction strainer clean. To eliminate debris collecting around the strainer, set the strainer in a submerged bucket. Check that the suction line is not clogged with leaves , debris , mud etc. If the water can not be sucked the pump will run dry , thus causing overheating and damaging bearings and seals.
- Never run the motopump dry (without water). Seals will be damaged in a very short time.
- The engine and exhaust system become very hot during running and remain hot for a while after stopping. Contact with hot engine components can cause burns and ignite flammable materials. Avoid touching a hot engine parts.

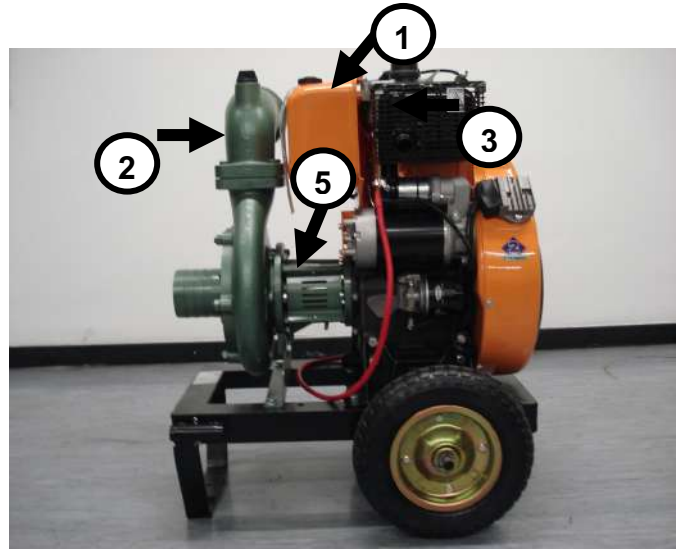
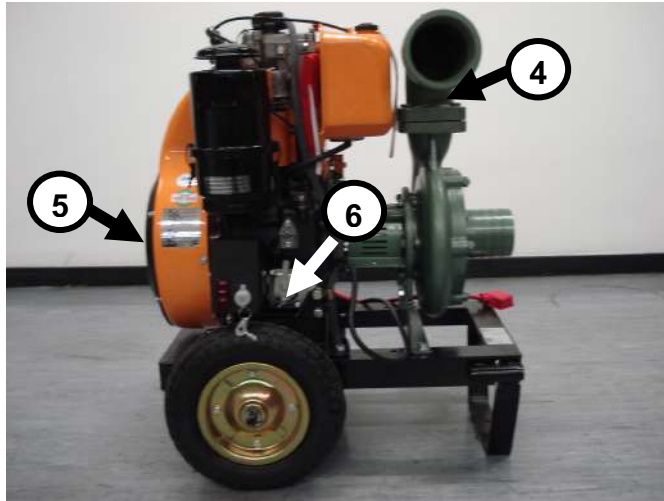
### **Carbon monoxide poisoning**

- Exhaust gas contains poisonous carbon monoxide, a colorless and odorless gas. If respiration, exhaust gas can cause loss of consciousness and lead to death.
- When you run the motopump in a confined area the air will dangerously filled with the carbon monoxide gas. Assure proper ventilation to prevent the accumulation of exhaust gases.

Manufacturer:

**ANADOLU MOTOR ÜRETİM VE PAZARLAMA A.Ş.**

### 3. SAFETY LABELS



Safety labels warn you of potential hazards that can cause serious injury. Read the labels and the safety notes and precautions described in this manual. If a safety label comes off or becomes difficult to read, contact your dealer for replacement.



**[1]** On the fuel tank :  
Exhaust gas, Keep at distance,  
Danger , Read User's Manual



**[2]** On the fuel tank :  
“Fuel is inflammable” ,” Fuel is  
poisonous”



**[3]** On the exhaust muffler :  
“Hot – Scalding hazard”



**[4]** On the pump :  
“Do not run dry”



**[5]** Do not put your fingers  
around moving parts !



**[6]** On the engine : “Read User's  
Manual before starting”

#### 4. TECHNICAL SPECIFICATIONS

##### MOTOPUMPS WITH ANTRAC ENGINES :

	<b>6LD400 LSY2</b>	<b>3LD510 LK4</b>	<b>3LD510 LY3</b>	<b>4LD640 LY3</b>	<b>4LD820 LY3</b>	<b>4LD820 LS4</b>	<b>4LD820 LY3(PUMP640)</b>
<b>Engine model</b>	6LD400	3LD510	3LD510	4LD640	4LD820	4LD820	4LD820
<b>Engine power – HP @ rpm</b>	8,5 @ 3600	12@ 3000	12@ 3000	13@ 3000	17@ 3000	17@ 3000	17@ 3000
<b>Pump model</b>	400 LSY2	510 LK4	510 LY3	640 LY3	820 LY3	820 LS4	640 LY3
<b>Pump type</b>	Convolute Centrifugal	Self priming Centrifugal	Convolute Centrifugal	Convolute Centrifugal	Convolute Centrifugal	Convolute Centrifugal	Convolute Centrifugal
<b>Seal type</b>	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical	Mechanical
<b>Suction dia. - Inches</b>	3"	4"	4"	4"	4"	5"	4"
<b>Delivery dia. - Inches</b>	2"	4"	3"	4"	4"	4"	4"
<b>Max. delivery - Ton/h</b>	70	85	60	65	80	175	60
<b>Max. head – meters water c.</b>	40	32	65	75	65	40	75
<b>Dimensions (LxWxH)- cm</b>	77x98x68	98x56x82	74x57x82	78x57x90	80x57x90	86x57x90	80x57x90
<b>Weight - Kg</b>	95	162	123	165	173	186	175

## MOTOPUMPS WITH LOMBARDINI ENGINES:

	<b>12LD477-2 MEC A2-65A</b>	<b>9LD625-2 R822</b>	<b>9LD625-2 R626</b>	<b>9LD625-2 R526</b>
<b>Engine model</b>	12LD477-2	9LD625-2	9LD625-2	9LD625-2
<b>Engine power – HP @ rpm</b>	21,5@ 3000	28,5@ 3000	28,5@ 3000	28,5@ 3000
<b>Pump model</b>	Caprari MEC A2-65A	Rovatti R822	Rovatti R626	Rovatti R526
<b>Pump type</b>	Convolute Centrifugal	Convolute Centrifugal	Convolute Centrifugal	Convolute Centrifugal
<b>Seal type</b>	Stuffing box	Stuffing box	Stuffing box	Stuffing box
<b>Suction dia. - Inches</b>	4"	4"	4"	4"
<b>Delivery dia. - Inches</b>	4"	4"	2,5"	2"
<b>Max. delivery -Ton/h</b>	75	145	100	60
<b>Max. head – meters water c.</b>	60	60	75	140
<b>Dimensions (LxWxH)- cm</b>	190x70x93	165X95X100	165X95X100	170X95X100
<b>Weight - Kg</b>	200	215	220	235

## 5. IDENTIFICATION OF THE MOTOPUMP

Write down the product serial number on the "Use and Maintenance Manual" for your future reference. Refer to the serial numbers when ordering parts or when making technical or warranty inquiries.

This will also be useful for the local authorities in case your product is stolen.

### Model and serial no. of engine and pump.



Fig.1

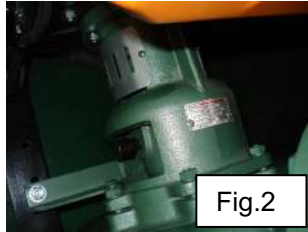


Fig.2



Model and serial no. of the engine are written on a plate on engine shroud (Fig.1). Engine serial no. is also stamped on the engine block.

Model and serial no. of the pump is written on a plate on pump support (Fig.2).



Fig.3

### Motopump identification label (Example) :

		<b>4LD820 LY-3(PUMP 640)</b>		
<b>ANTRAC</b>		Motopomp (TS EN 809+A1)		
ANADOLU MOTOR ÜRETİM VE PAZARLAMA A.Ş.				
Şekerpınar Mah. Albayrak Sok. No:4 Çayırova/Kocaeli/TÜRKİYE				
Giriş Çapı Suction Diameter	4 inch	Net Güç Net Power	12,7 kW/2600 d/dak	
Çıkış Çapı Discharge Diameter	4 inch	Ağırlık Weight	175 kg	
Maksimum Debi Maximum Flow Rate	60 m <sup>3</sup> /saat	Maks. Basma Yüks. Max. Head	75 m	
Seri no / İmal Yılı Serial No / Mnf Year	0403438 2018	Maks. Emiş Derinliği Max. Suction	6 m	

Is stucked on the chassis frame (Fig.3).

<b>Motopump model</b>	.....
<b>Motopump serial no.</b>	.....
<b>Pump model</b>	.....
<b>Pump serial no.</b>	.....
<b>Engine model</b>	.....
<b>Engine serial no.</b>	.....

## Preparations for starting

Check the following points before starting the motopump:

1. Do not damage the unit while un-packing .Check that the unit has not been damaged during the transport. Be careful not to hit any part with a hard object (hammer etc.).
2. Read the User's Manuals of the motopump and the engine carefully . Fill engine oil and fuel to the correct levels.
3. Connect appropriate hoses to the suction and discharge ports of the pump and secure with clamp.
4. Fix an appropriate suction valve/strainer to the other end of the suction pipe and secure with clamp.
5. To eliminate debris (leaves,mud,gravel etc.) collecting around the strainer, set the strainer in a submerged bucket if necessary.
6. The motopump has been designed and produced for clear (not muddy) fresh water. Pumping of salt water or water containing abrasives will cause the internal parts (seals, impeller, casing etc) to corrode or to wear quickly.
7. Take off the water filling plug and fill the suction pipe and pump casing with fresh water till it overflows. Tighten the plug and check for any leak in the suction line (Fig.4).

## NOTE :

In case of self-priming pumps, there is no need to put a suction valve to the end of the suction pipe. Filling water into the pump's casing will be sufficient to prime these pumps. The pump will deliver water in a short time period after the engine starts. If there is any clogging material (debris,gravel etc) in water, use a strainer at the end of the suction pipe.

## NOTE :

The suction head (level difference between water upper surface and pump) must not exceed 6 m. Otherwise the priming will be difficult , i.e. the pump will not be able to suck the water and will run dry.



## CAUTION !

**Never allow the pump to run dry. The pump will overheat and the sealings will be damaged.**



Fig.4

## 6. STARTING - OPERATION

### Operation:

Observe the following rules to assure the efficiency and long working life of your motopump:

1. Start, run and stop the engine as explained in the "Use and Maintenance Manual" of the engine. Do not exceed 70% of the full load during the run-in period (first 50 hours).
2. Check the oil level of engine and air filter every 8 hours. Fill oil if necessary. During these controls, the engine should be on a flat horizontal surface.
3. Do not use the motopump outside its recommended working range. The efficiency will drop and the engine will be overloaded.
4. The water pump's suction head depends on the pump's design as well as the tightness of the suction line. Check that there is no leak at the suction line.
5. The suction hose must be hard enough not to be squeezed with the suction vacuum.
6. Suction depth must not exceed 6 meters, otherwise it will be difficult to prime the pump.

7. There must be a strainer at the end of the suction pipe to prevent objects from being sucked into the pump. However this strainer must not restrict the flow of water into the suction pipe. Put the strainer in a submerged bucket if necessary.

8. Check whether there is a water leak at the seal while the water pump is working. A small quantity of leakage can be accepted. But if the leakage is excessive, consult an authorized service.



### CAUTION !

**If the leakage in the seal is excessive, this indicates that air can enter into the suction line and the pump will be difficult to prime.**

9. In case the motopump discharges the water to a high level, the water in the delivery line will flow down, back to the pump when the motopump is stopped. This will force the pump impeller to turn in the opposite direction, thus damaging the pump and the engine. To prevent this a check-valve (non return valve) must be installed in a suitable part of the delivery line.

10. In the case the pump has not been running for a while, the water in the pump and suction line may have leaked and the pump will be difficult to prime. It is necessary in this case to fill the pump case and suction line with water to assure easy priming.



11. Do not touch the rotating parts while the motopump is running. Do not run the motopump with the protection covers removed. During running and after stopping do not touch the hot surfaces (exhaust muffler, engine cylinder etc). If there is some work to do with the motopump, be sure that the engine is stopped and cold.

### Control and maintenance operations

It is very important that the control and maintenance operations are made regularly to assure good performance and long life for the motopump.

**Use only genuine ANTRAC parts for maintenance or repair. Fake / imitation parts which are not conform to producer's specifications may reduce the performance of your motopump and cause damages.**

Use of non original ANTRAC spare parts will make the warranty void.

1. Check the oil level of the engine before every starting and add oil if necessary.
2. Check the pump shaft coupling (some models only) and connection parts (bolts,nuts,clamps etc) . Loose connections can cause big damages.

3. Check the seal after long time storage.Turn the pump (and engine) shaft a few turns to prevent the seal from sticking.

4. In winter empty the water within the pump casing. Frozen water can damage the pump body (Fig.5).

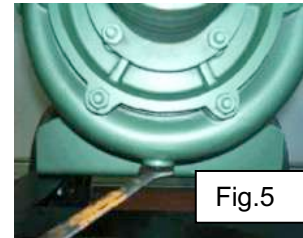


Fig.5

5. In some models provided with a bearing lubrication the grease cup must be screwed in to pump the grease to the roller bearings (Fig.6) .

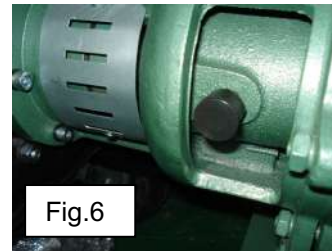


Fig.6

6. **If the motopump will not be used for a while :**
- a. Rinse the interior of the pump by running it with clean water, then empty water.
  - b. Clean the air filter of the engine or change it if necessary. Empty the fuel. Change the fuel filter.
  - c. Remove the air shroud. Clean fins with brush and kerosene. Reassemble the air shroud.
  - d. Remove the injector of the diesel engine and pour a spoonful of clean engine oil into each cylinder. Turn the engine crankshaft several times to spread the oil on the cylinder walls. Re-install the injector .
  - e. Turn the engine to the compression stroke so that both valves remain closed (single cylinder engines only).
  - f. Close the exhaust opening and the air intake opening with a sticky band.
  - g. Cover the motopump and store it in a dry dry place.

## 7.MAINTENANCE

**Maintenance schedule** (For the maintenance of the engine , see related user's manual)

Item	Operation	Frequency (operation hours)						
		Each use	10	50	100	300	500	1000
Engine oil	Check	○						
	Change				○ (1)			
Oil filter	Change					○ (1)		
Air filter element	Clean		○ (1)					
	Change							○
Air filter oil	Check		○ (1)					
	Change				○ (1)			
Fuel filter	Change					○		
Suction & discharge hoses	Check	○						
Pump impeller	Check						○ (2)	
	Clean						○ (2)	
Pump seal	Check						○	
	Change							
Bearings	Check			○ (1)				
	Lubricate (*)			○ (1)				
Coupling	Check			○ (1)				
Connection parts	Check	○						

- (1) Servicing must be done more frequently if the water pump is working in dusty area.  
 (2) These maintenance operations must be done by Anadolu Motor Authorized Services.  
 (\*) For pumps provided with greasing cups.

## 8.TROUBLESHOOTING

**Troubleshooting chart** (For a detailed troubleshooting , see user's manual of the related engine)

<b>Engine troubles</b>	<b>Possible cause</b>
Engine does not start	No fuel in tank
	Air in the fuel line
	Accelerator not in correct position
	Extra fuel device is not pulled out (some models)
	Fuel filter clogged
Engine runs erratically	Air filter clogged
	Fuel filter clogged / dirty
	Water in the fuel tank
Black smoke from the exhaust	Air filter clogged / dirty
	Engine is overloaded. Pump runs outside the specified working range.
	Engine fuel system is faulty.

Pump troubles	Possible cause
Low discharge capacity	Engine speed too low
	Air in the suction line
	Suction valve/strainer clogged or stuck
	Suction depth too much
	Discharge level too high
Pump does not run efficiently	In addition to the above ;
	Pump impeller worn or damaged
	Too much pressure lost in the system
	Air enters from leaking seal
Engine is overloaded	Pump works outside specified range
	Shaft coupling not properly aligned
	Seizure in the pump bearings
	Seal too tight
The water leak from the seal is excessive	Seal worn or damaged
	Pump shaft vibrates
	Wrong type of seal
Pump is vibrating and noisy	Obstruction in the suction or discharge line
	Pump works outside specified range
	Impeller out of balance (broken or clogged)
Water discharge is irregular	The pump is taking air in from the suction pipe or there is obstruction in the suction or discharge line
	Suction hose not suitable and squeezed under suction vacuum

## 9. ENVIROMENTAL PROTECTION

### **WASTE MANAGEMENT**

Packaging waste, old engine oil, transmission oil, dirty fuel, filter cartridges, gaskets, old accumulators, oily cloths, etc., which are removed from the product when it is first received and after maintenance, will no longer be used. Do not dispose of waste, dump it into sewers, or empty it into rivers and lakes.

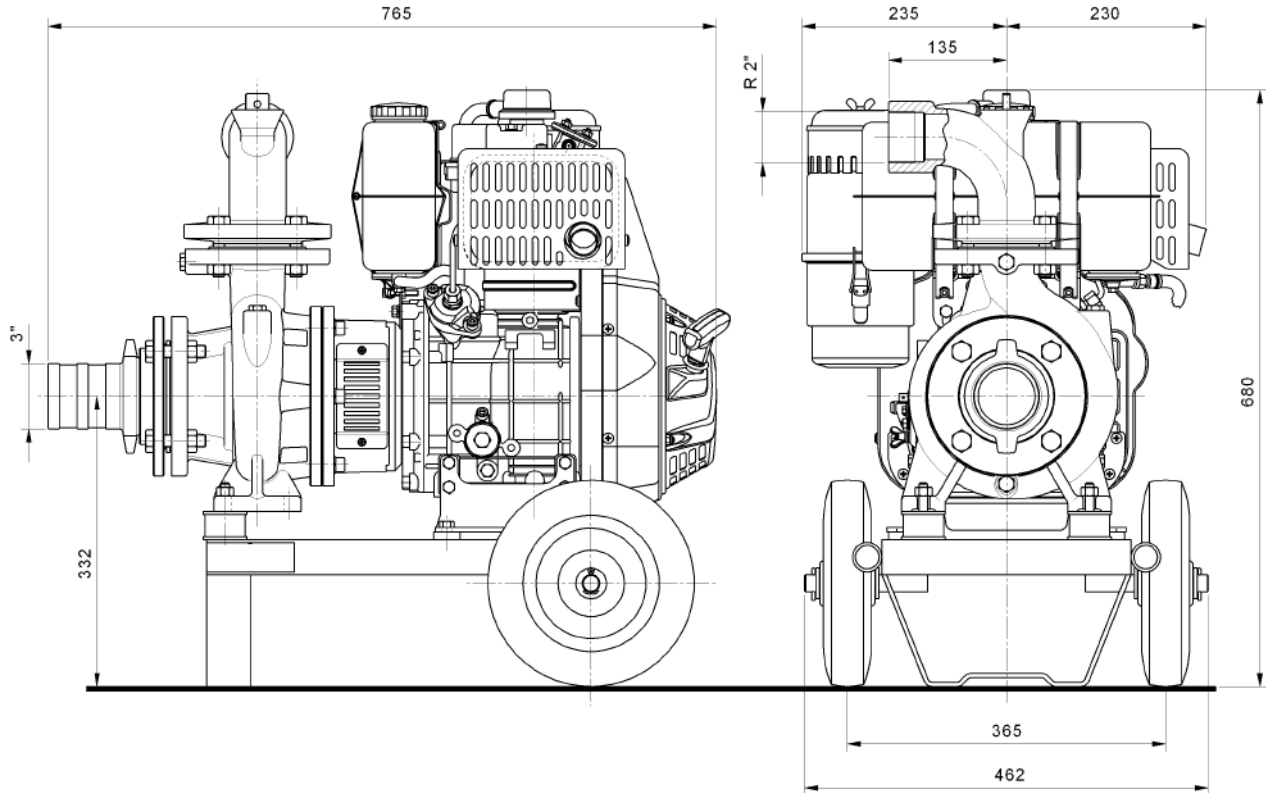
Do not leave the product to be scrapped in any square and do not throw it away.

# 10.DIMENSIONAL DRAWINGS

**ANADOLU  
MOTOR**

## 400 LSY2 MOTOPUMP

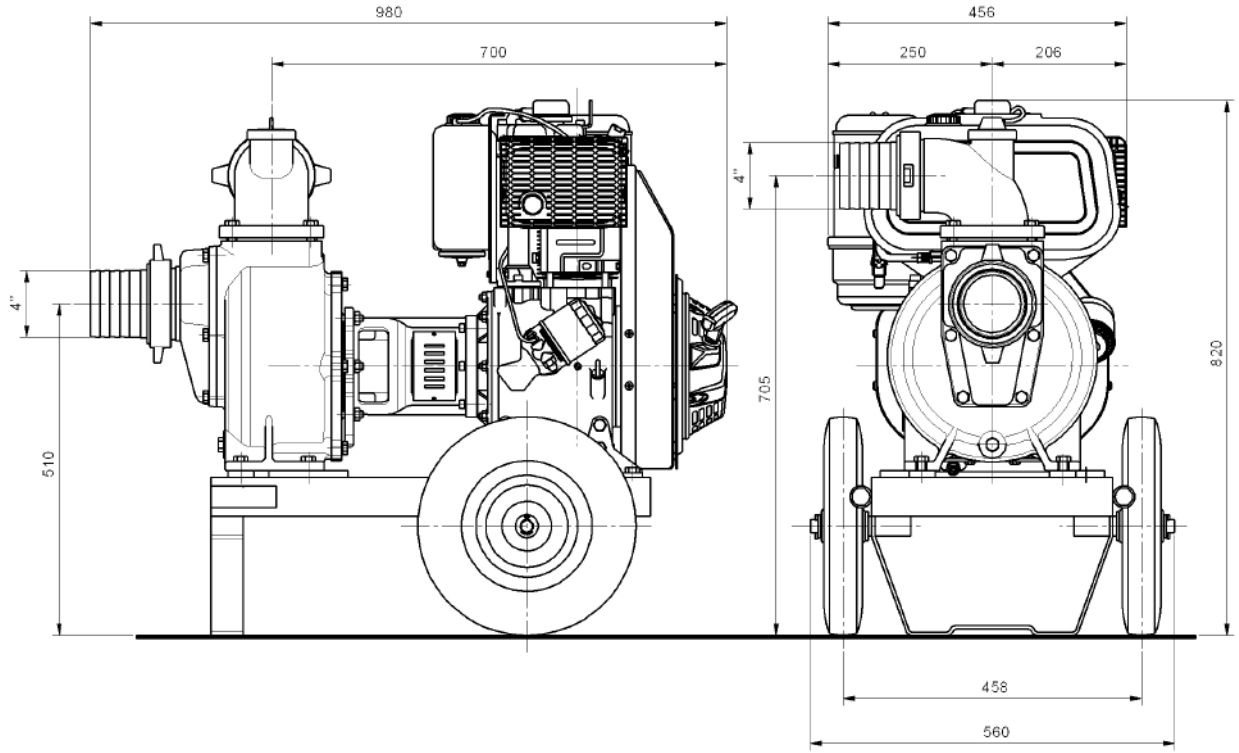
TARİH	10.03.2009			
Rev	00			
Tarih	10.03.09			





# 510 LK4 MOTOPUMP

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Rev.	00		
Tarih	23.09.09		



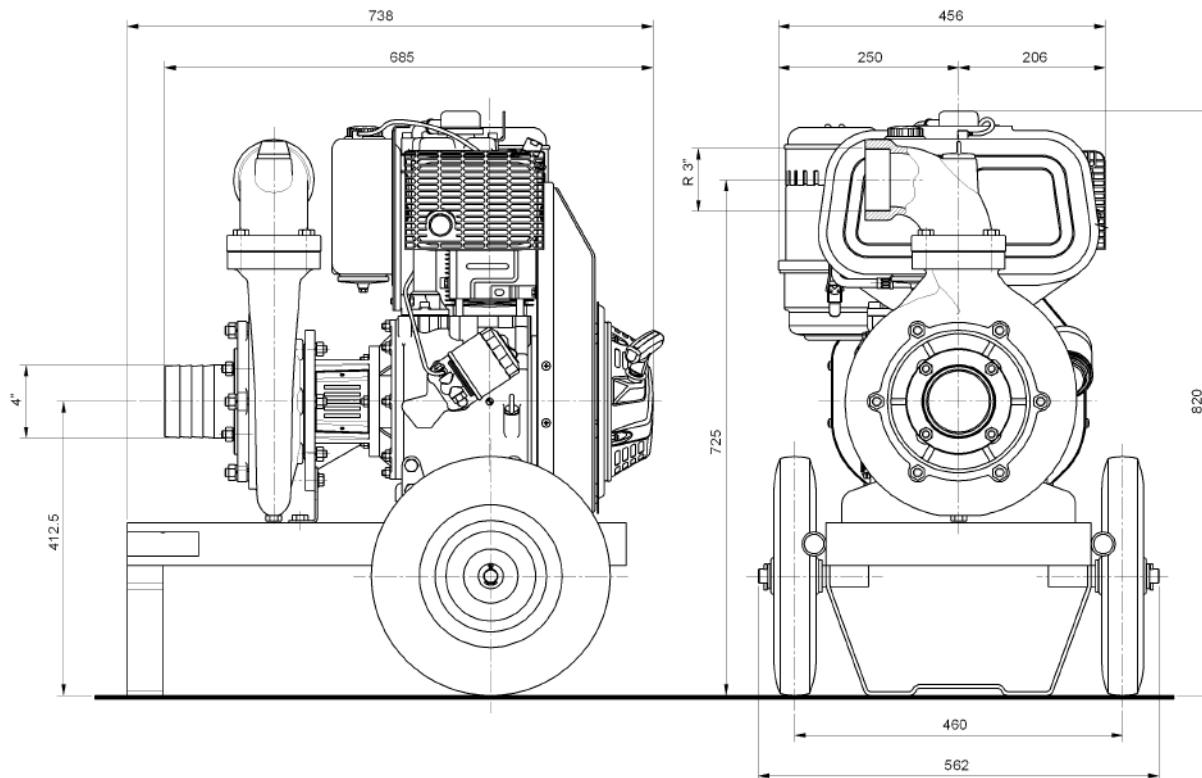


## 10. DIMENSIONAL DRAWINGS

**ANADOLU  
MOTOR**

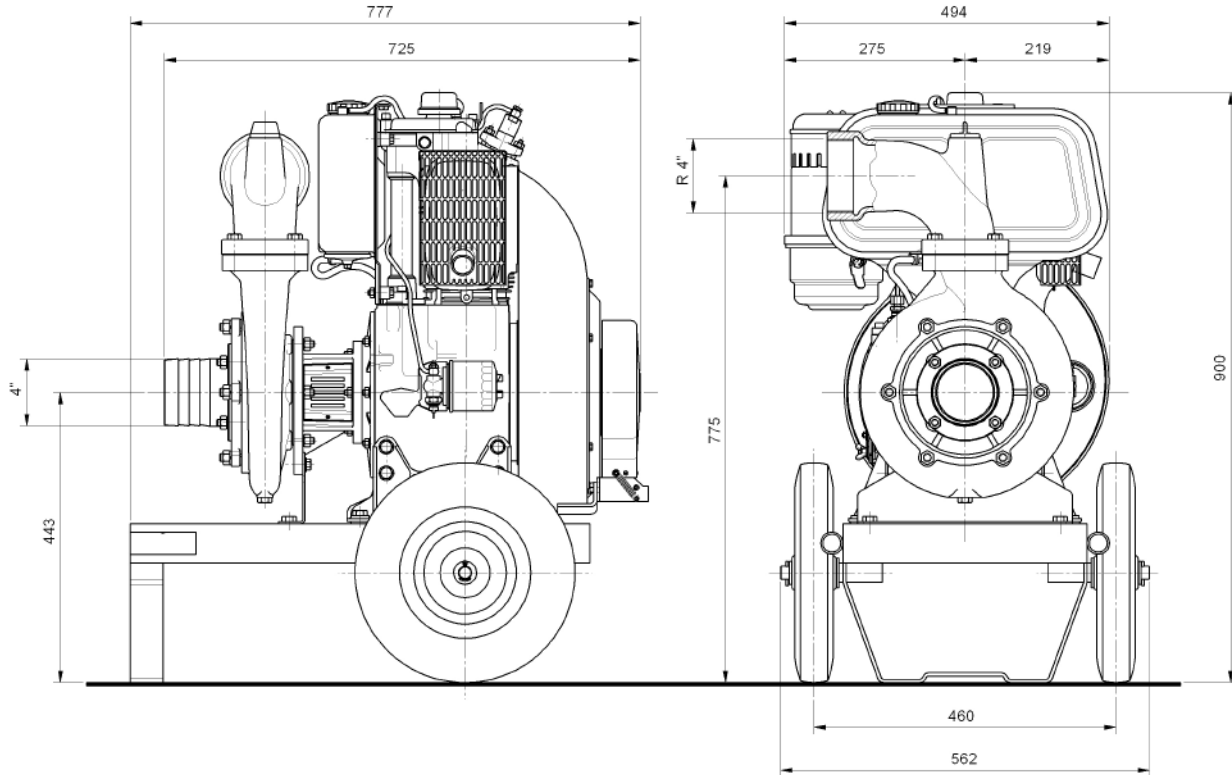
### 510 LY3 MOTOPUMP

TARİH	13.03.2009
Revizyon	00
Tarih	12.02.09



**ANADOLU  
MOTOR**
**640 LY3 MOTOPUMP**

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23.03.2009			
Rev.	00		
Tarih	23.03.09		

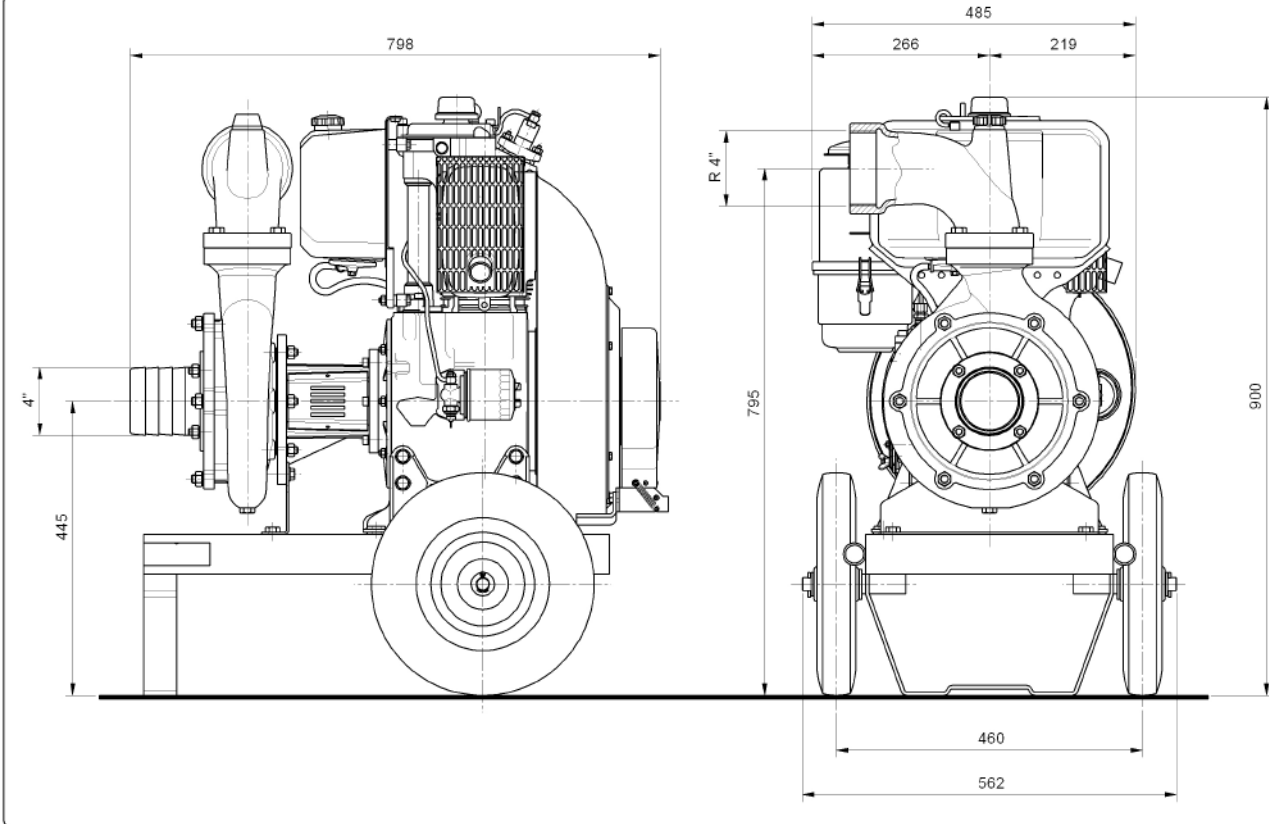


# 10. DIMENSIONAL DRAWINGS

**ANADOLU  
MOTOR**

## 820 LY3 MOTOPUMP

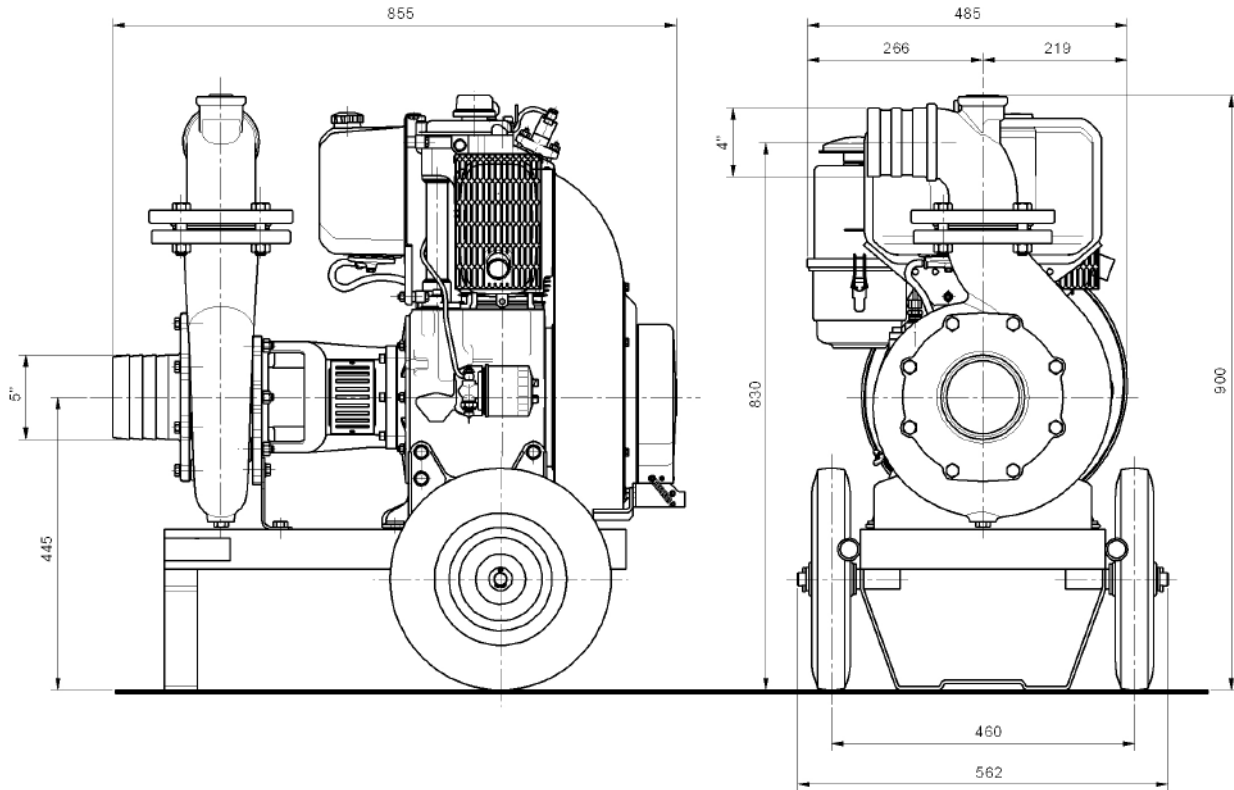
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**ANADOLU  
MOTOR**

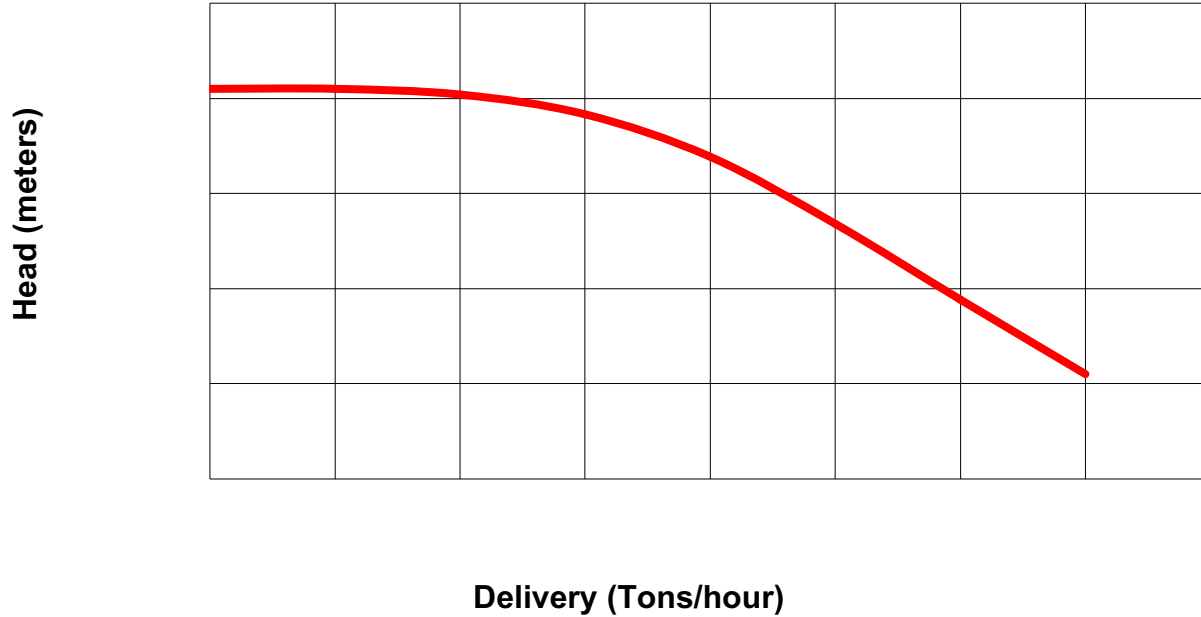
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Tarih	21.02.03		

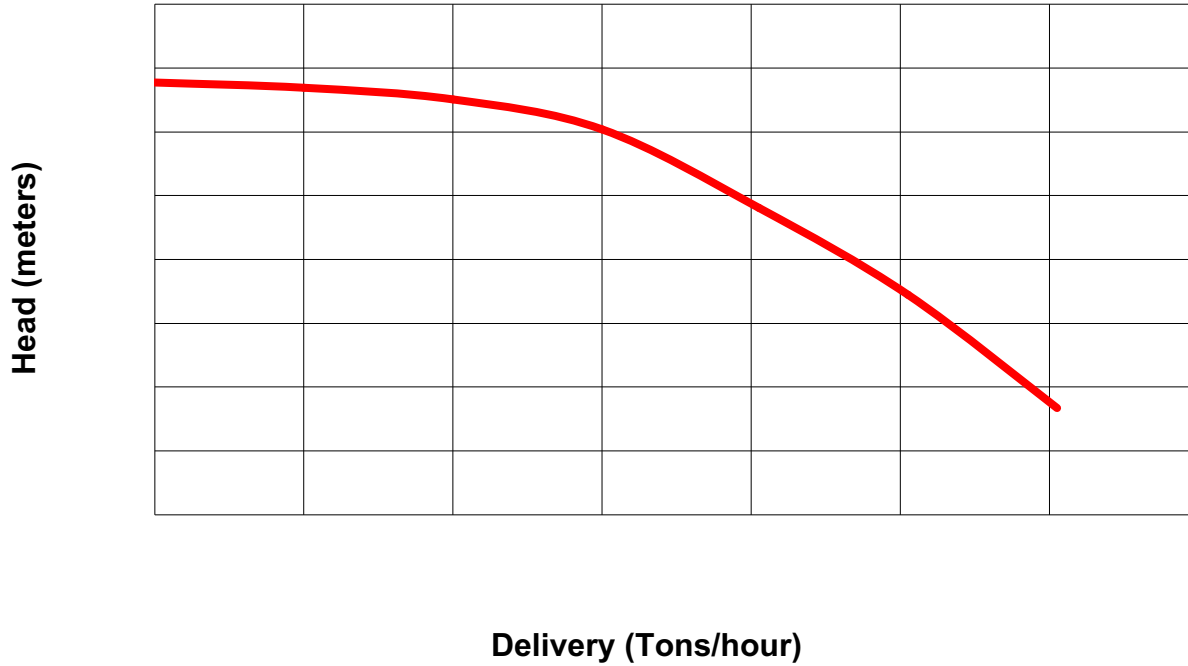


# 11.PERFORMANCE CURVES

## 6LD 400 LSY2

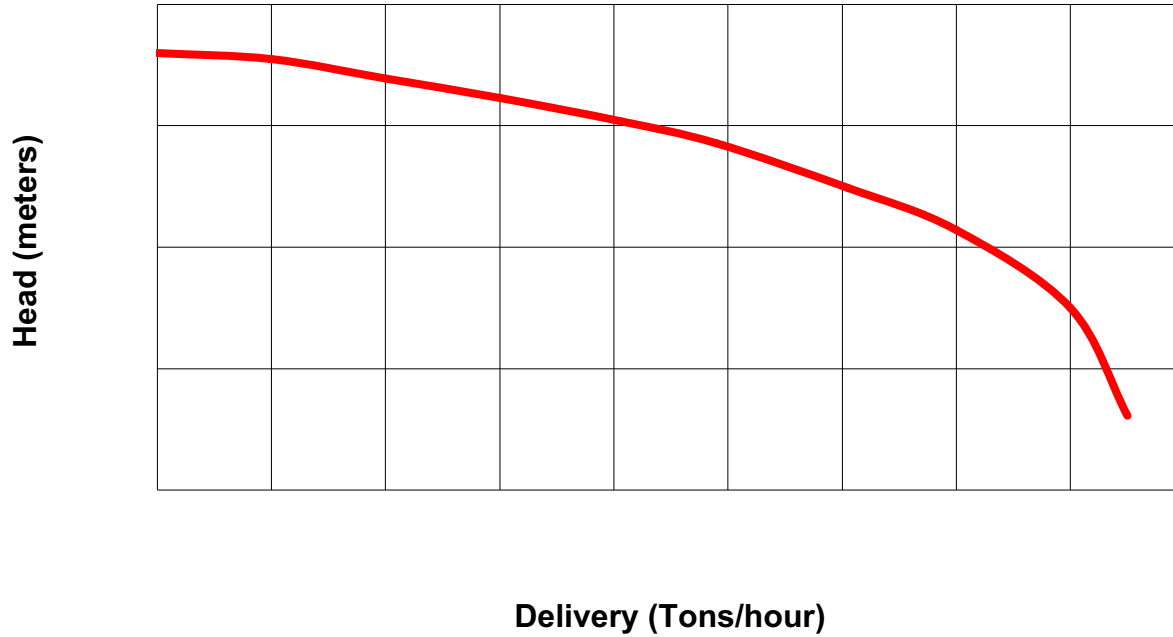


### 3LD510 LY3

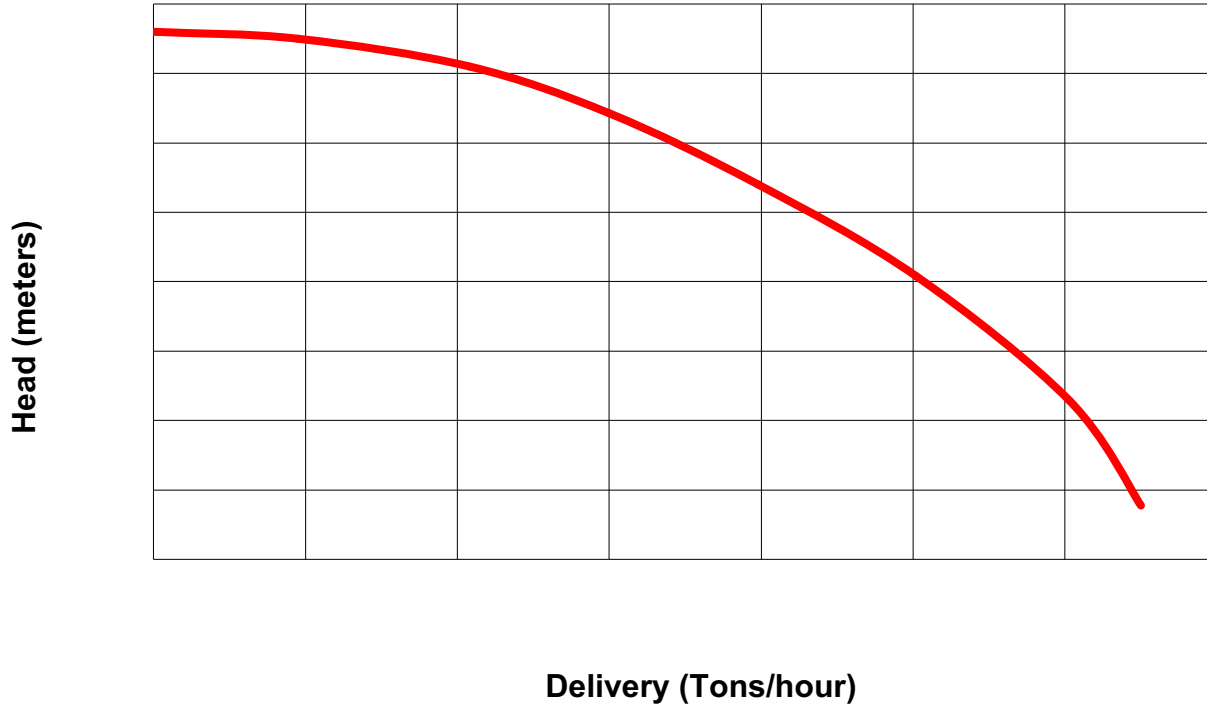


## 11. PERFORMANCE CURVES

3 LD510 LK4



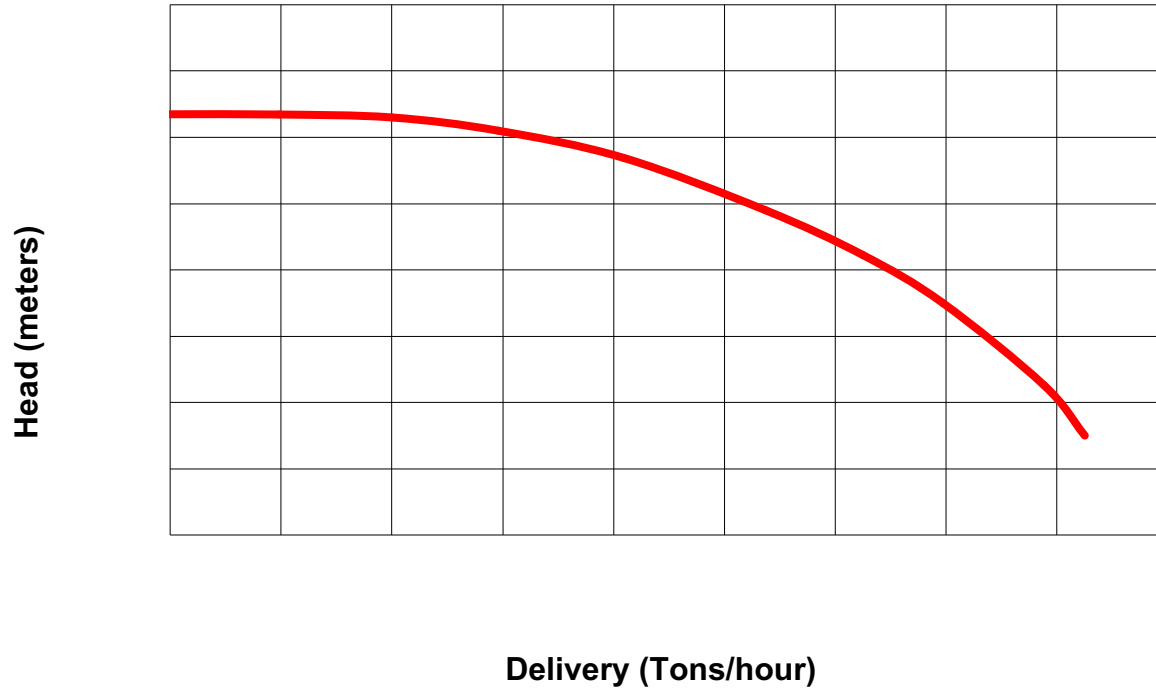
### 4LD640 LY3





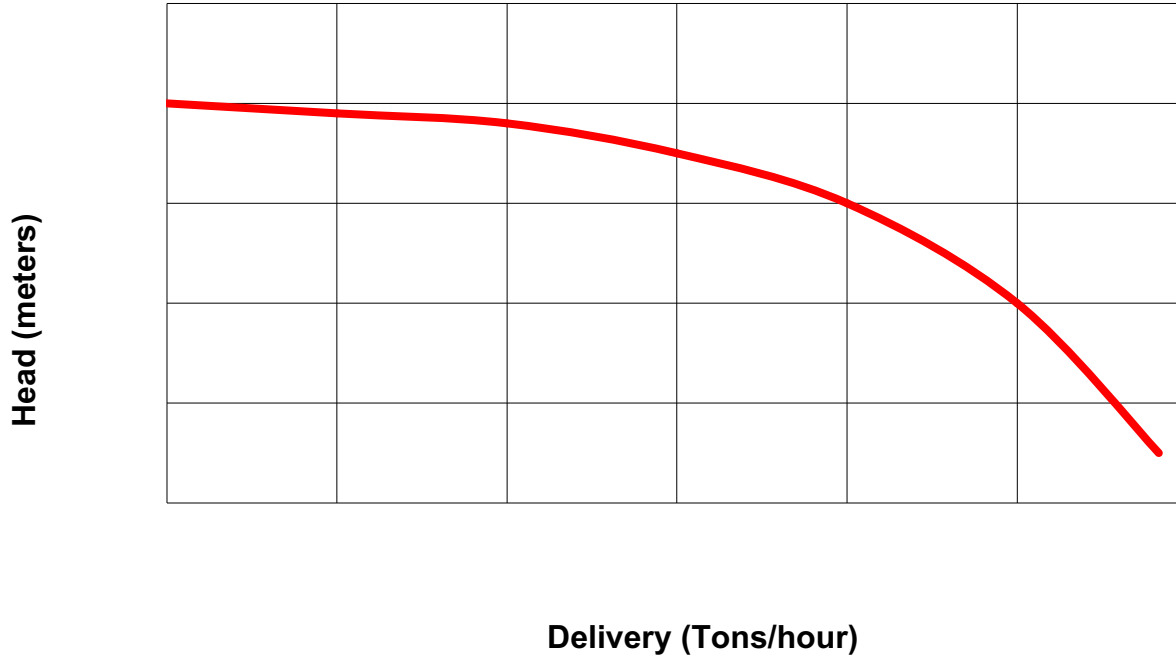
## 11. PERFORMANCE CURVES

4LD820 LY3



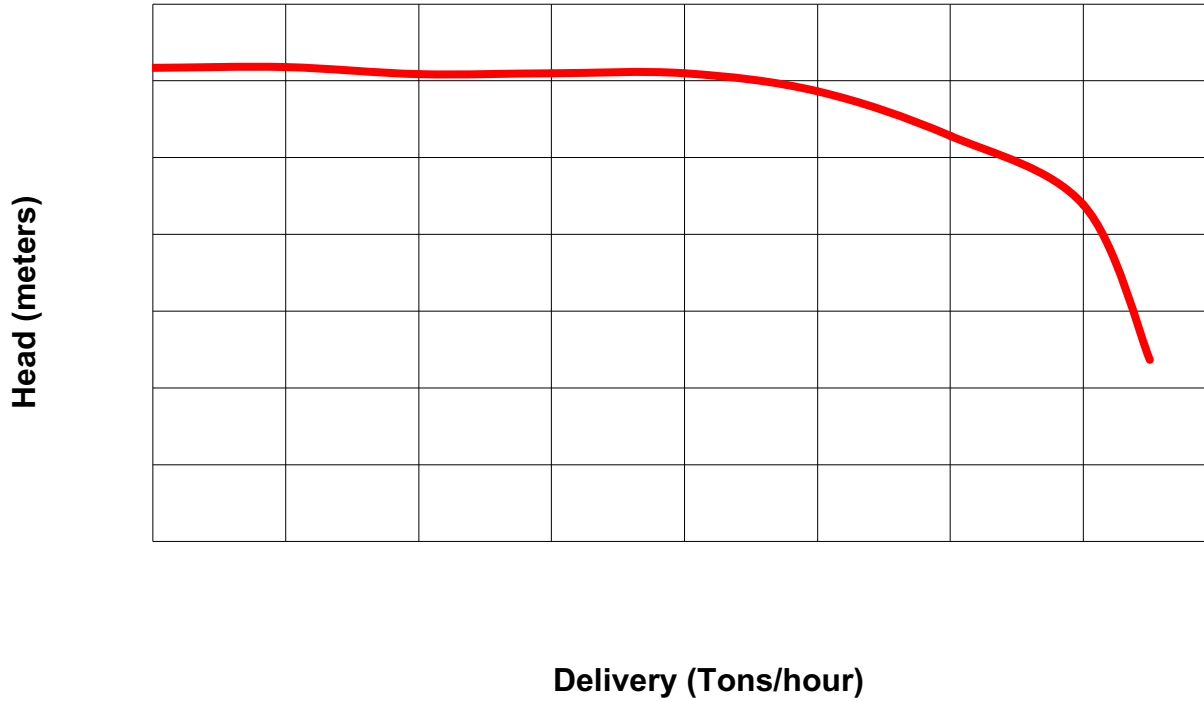
# 11. PERFORMANCE CURVES

## 4LD 820 LS4



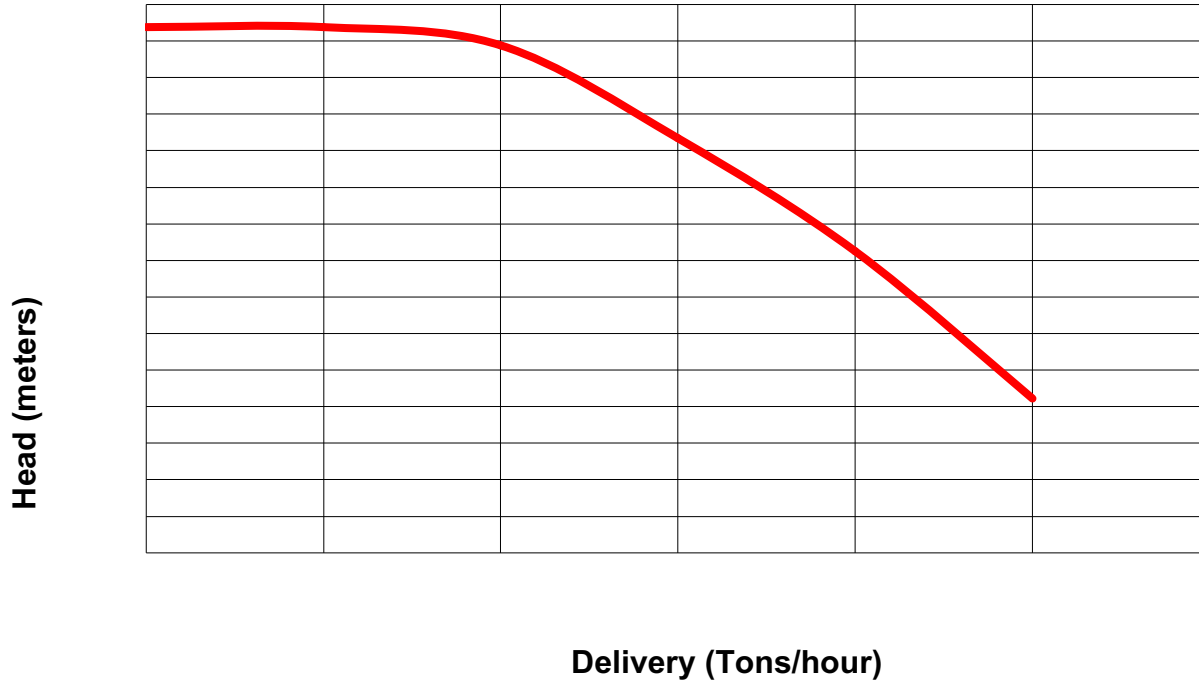
# 11. PERFORMANCE CURVES

## 12LD 477/2 MEC A2-65A



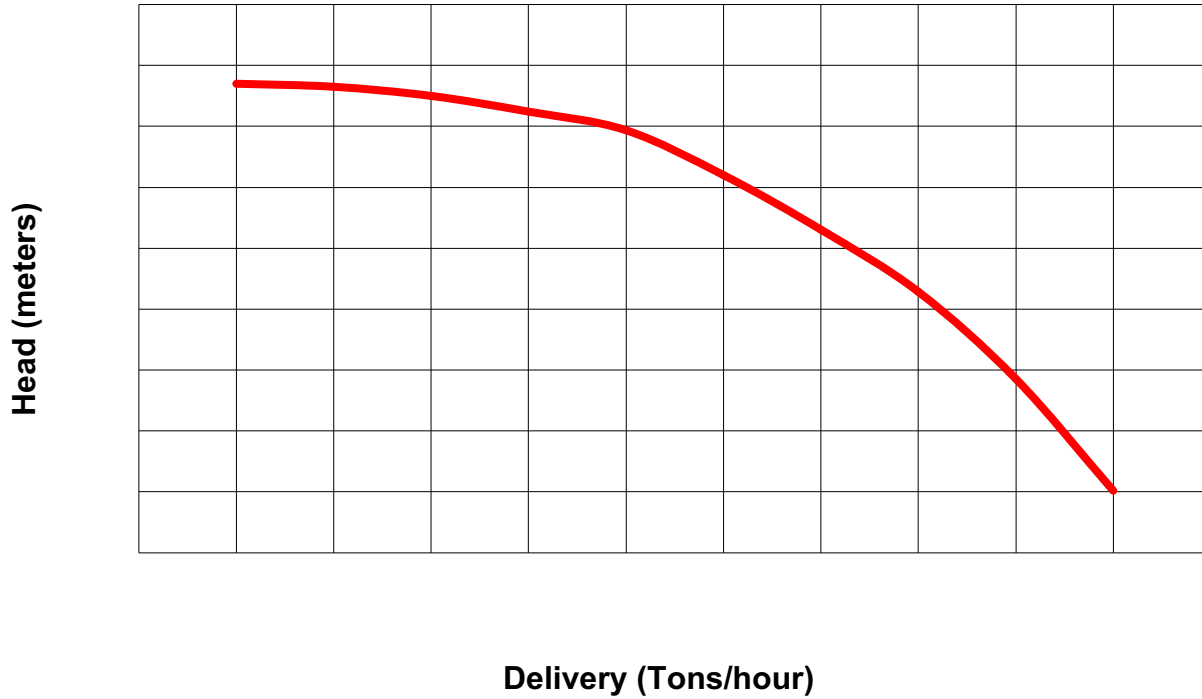
# 11. PERFORMANCE CURVES

## 9LD625/2 R 526

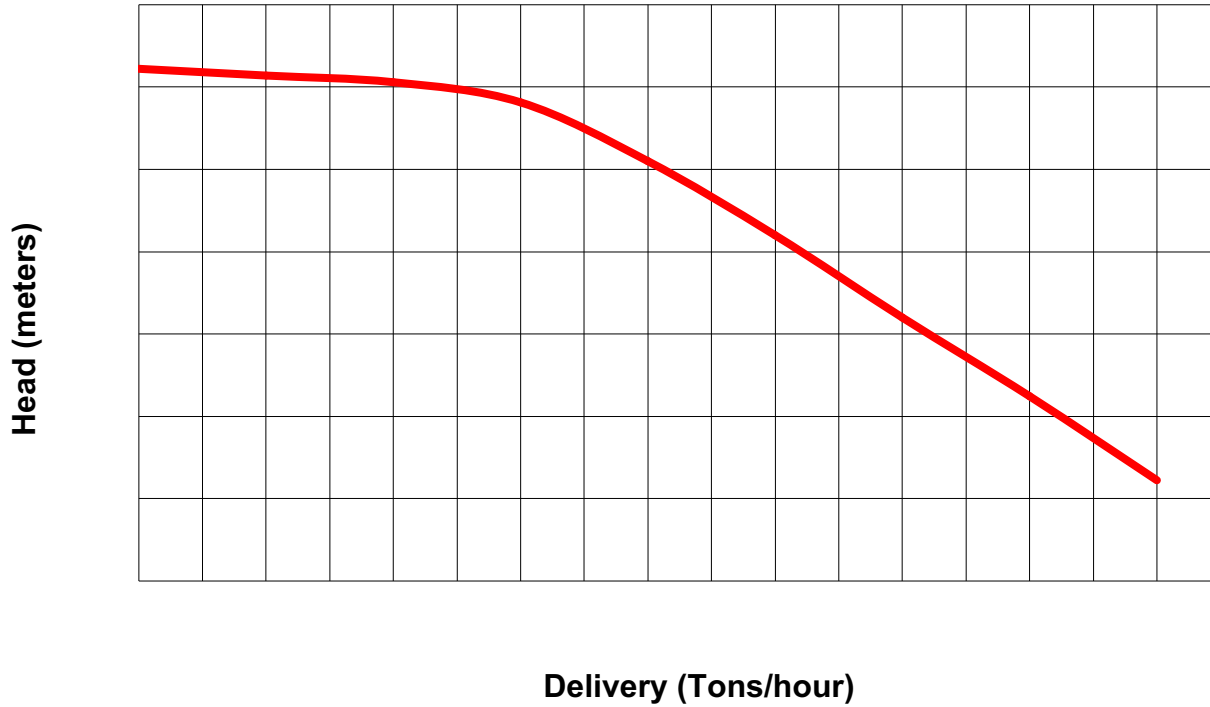


# 11. PERFORMANCE CURVES

## 9LD 625/2 R 626



9LD 625/2 R 822



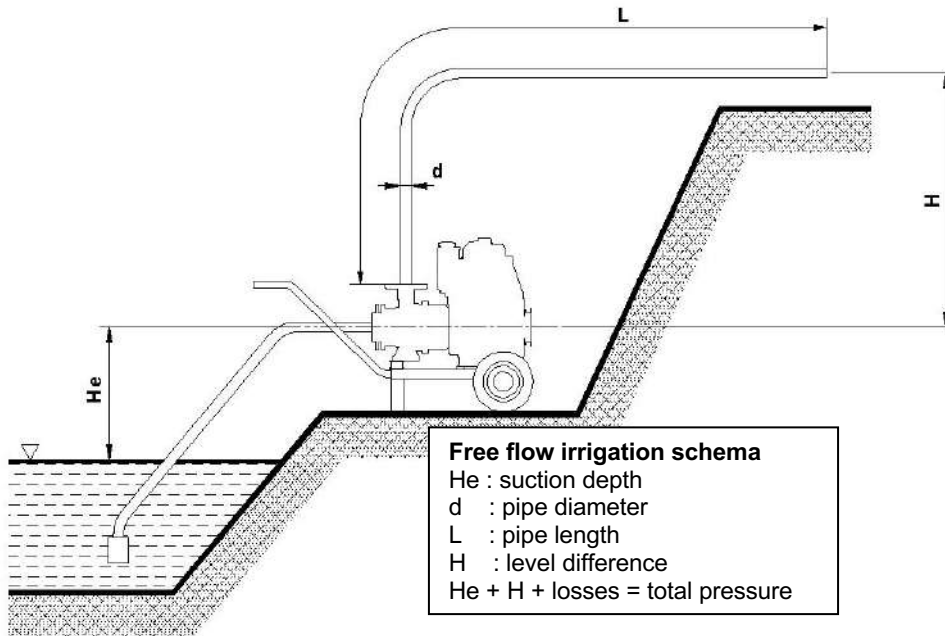
## 12.GENERAL INFORMATION

The two most important factors in selecting a motopump are : Delivery /Discharge capacity [Q] measured in “Tons/hour” and Pressure /Head [Hm] measured in “meters of water column”.

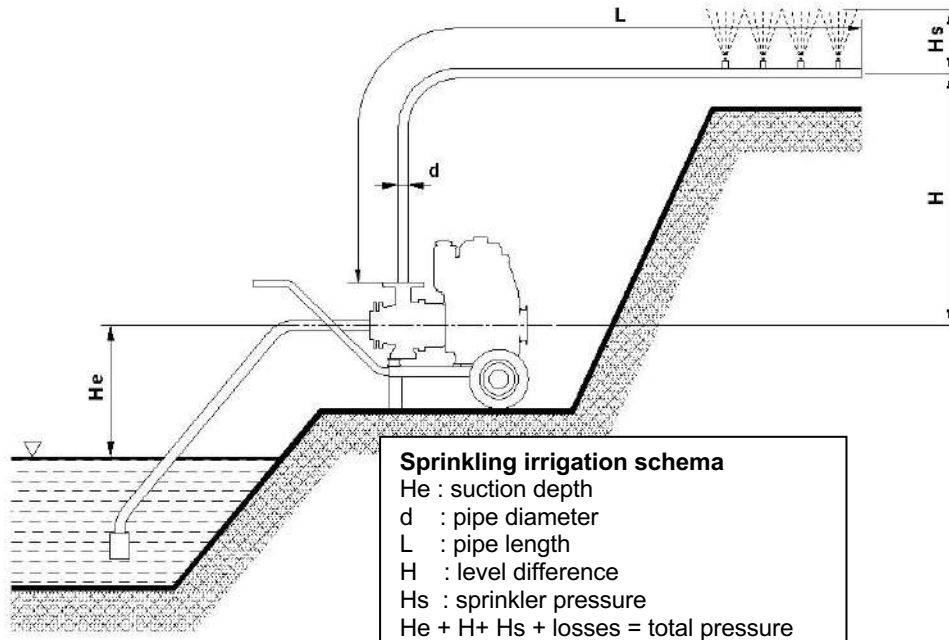
Performance curve of the motopump , showing the variation of these two factors in relation with each other , is used to determine the correct motopump.

In the case of agricultural irrigation , the correct selection of the type of the pump according to the irrigation type (free flow, sprinkling and dripping) is very important for the efficiency and the working life of the pumping unit.

### Free flow irrigation :



High delivery pumps are generally used for free flow irrigation. Here the purpose is to pump maximum quantity of water into the irrigation system in appropriate time. If the water is not discharged to a high level no high pressure is needed for the water to flow out .



### Sprinkling irrigation :

High pressure pumps are used for sprinkling irrigation.

The goal of sprinkling irrigation is to transport water to the plants and soil like rain via a pipes and sprinklers system.

Therefore the pump used in sprinkling irrigation has to provide the required pressure and delivery at the sprinkler.

The pressure provided by the pump must overcome the level difference between suction and delivery levels (i.e. suction depth plus level difference between pump and sprinkler level) as well as the pressure losses at the piping system.

A pressure (specified by the producer of the sprinklers) must also be assured at the sprinkler for efficient spraying. The calculation method is given in manufacturers' manual in more detail.



## 12. GENERAL INFORMATION

### Drip irrigation schema

$H_e$  : suction depth

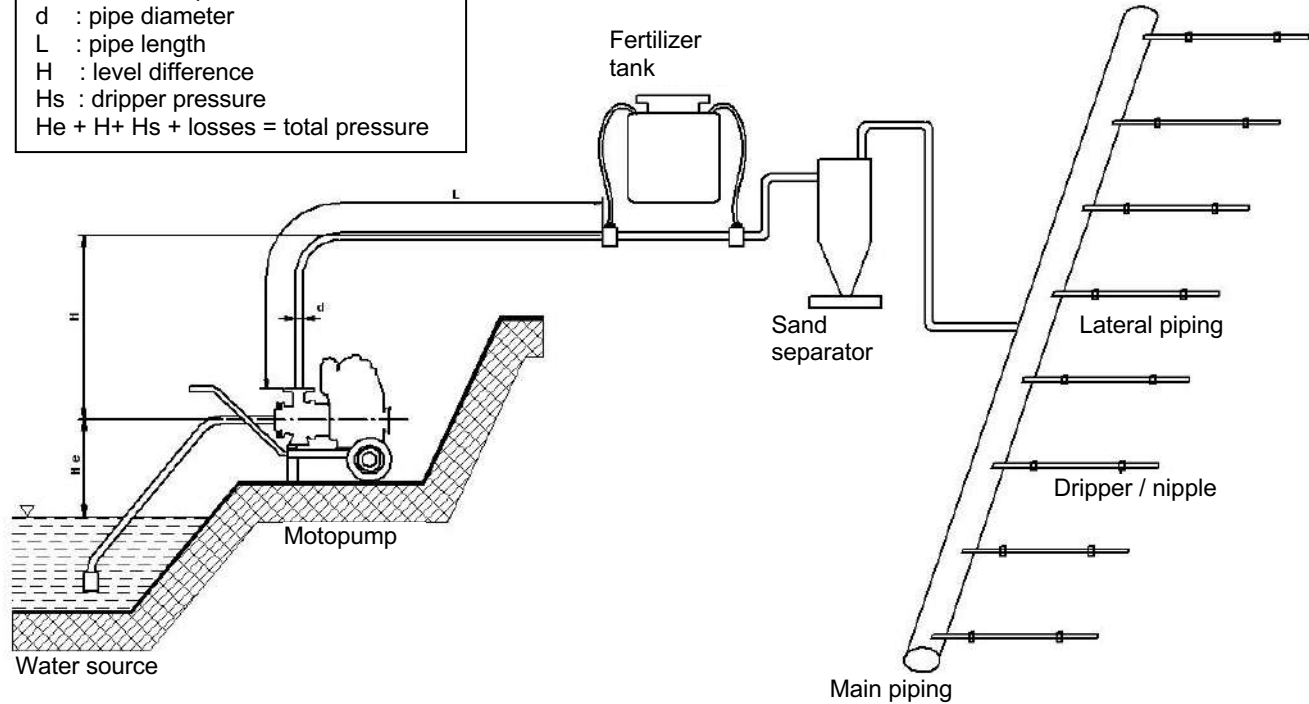
$d$  : pipe diameter

$L$  : pipe length

$H$  : level difference

$H_s$  : dripper pressure

$H_e + H + H_s + \text{losses} = \text{total pressure}$



### Drip irrigation

In case of drip irrigation, water is supplied directly to the root of the plant via a system of pipes and drippers. The plant is supplied with the exact amount of water it needs, without losing the precious water to the soil.

**Drip irrigation systems are made of the following parts:****1. Pumping unit:**

The pressure needed by the dripper (nipple) is  $H_s = 8-15 \text{ mSS}$ . To provide this pressure the pump pressure must be at least 20 – 25 meters of water in order to compensate for the head losses in the piping system, assuming that no level difference exists between the water source and irrigation point.

**2. Control unit :**

**Sand separator (hydrocyclone)** : Holds the small particles in the water that would otherwise clog the pipes and especially the drippers.

**Fertilizer tank** : Is used to provide the plants with nutrients and cleansing the irrigation system.

**Piping and drippers :**

PVC and PE pipes are used in the main piping lines.

Diameters and lengths of the main pipes may vary according to the land form and water quantity.

Main pipes diameters are between 32 - 160 mm .

Lateral pipes ( dripping pipes) are made of soft PE material.

Diameters and lengths of the lateral pipes may vary according to the land form and water quantity.

Lateral pipes diameters are between 12 - 20 mm . Their lengths depend on diameter , dripper capacity , operating pressure and land slope.

Drippers are placed on the pipe or inside the pipe with definite intervals.

Dripper (nipple) capacities may be between 1 - 10 Liters/hour depending on their type.

## 12. GENERAL INFORMATION

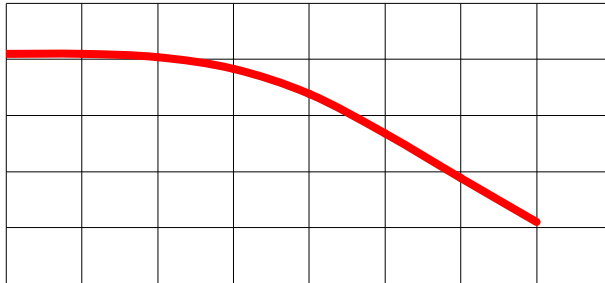
The difference of level between the suction and delivery points ( $H_e+H$ ) can be found by subtracting pressure losses in the pipe system from the manometric head ( $H_m = \text{total pressure}$ ) of the pump.

First of all the delivery ( $Q$  in Tons/h) must be determined. After this, the total manometric head ( $H_m$ ) can be found from the performance curve of the pump. The losses in pipe installation can be calculated by using the pressure (head) loss table. If a sprinkler/dripper is installed at the irrigation point the total head of the pump must be increased by an amount equal to the pressure (in meters water column) needed at the sprinkler/dripper.

Calculate as follows :

**$H_m$**  (total pressure) =  **$H_e$**  (suction depth) +  **$H$**  (level difference) +  **$H_t$**  (head/friction losses) +  **$H_s$**  (pressure required at the end point :for sprinkler or dripper)

### 6LD 400 LSY2



**Example :** Lets assume that we want to pump 60m<sup>3</sup>/h water with a 6LD400 LSY2 motopump. The diameter of the pipes used in the system is 80 mm. The total length of the pipes is 300 m. Three elbows and one check-valve are used in the system.

For calculating the max. level difference between the suction and delivery points, first the total manometric head ( $H_m$ ) - corresponding to the delivery ( $Q$  in Tons/h) - has to be found , using the performance curve of the pump . This is  $H_m= 18$  meters of water column.

For a 60 Tons/h delivery rate ,0,22 m head loss is calculated for every 100 m of pipe. The loss for 300 m of pipe will be :  $0,22 \times 3 = 0,66$  meters.

The head loss corresponding to 60 m<sup>3</sup>/h is 22 meters/100 meters pipe length as per the table below.

d (mm)	20	25	30	40	50	65	80	100	125	150	175	200
Q (Tons/hour)												
50			17.98	4.44	1.51	0.42	0.16	0.05	0.02	0.01		
60			25.28	6.23	2.11	0.59	0.22	0.07	0.03	0.01	0.01	
70			33.76	8.31	2.81	0.79	0.29	0.10	0.03	0.01	0.01	
80			43.41	10.66	3.60	1.01		0.13	0.04	0.02	0.01	

For every elbow, the loss for 100 m of pipe will be multiplied by 5. For 3 elbows the head loss will be:

$$0,22 \times 5 \times 3 = 3,3 \text{ meters of water column.}$$

For the check-valve, the loss for 100 m of pipe will be multiplied by 15. There is only one check-valve:

$$0,22 \times 15 \times 1 = 3,3 \text{ meters of water column.}$$

$$\text{Total head loss} = 0,66 + 3,3 + 3,3 = 7,26 \text{ meters of water column.}$$

The total pressure that the pump can deliver is 18 meters of water column. 7,26 meters are lost in the piping system . In case no pressure is needed at the delivery point , the maximum level difference between water source and delivery point will be

$$18,00 - 7,26 = 10,74 \text{ meters of water column.}$$

In case a pressure of H<sub>s</sub>= 3,00 meters is needed at the end point (for a sprinkler) , the maximum level difference between water source and delivery point will be

$$18,00 - 7,26 - 3,00 = 7,74 \text{ meters of water column.}$$

## 12. GENERAL INFORMATION

**Friction losses table** – Head loss for every 100 meters of pipe for a given pipe diameter and delivery. [**h** – expressed as meters of water column]

d (mm)	20	25	30	40	50	65	80	100	125	150	175	200
Q (Tons/h)												
1	0.13	0.09	0.02	0.01								
2	0.40	0.30	0.06	0.02	0.01							
3	0.80	0.60	0.12	0.03	0.01							
4	1.32	1.00	0.19	0.05	0.02	0.01						
5	1.95	1.48	0.28	0.07	0.03	0.01						
6	2.69	2.04	0.39	0.10	0.03	0.01						
7	3.53	2.69	0.51	0.13	0.05	0.01						
8	4.48	3.42	0.65	0.16	0.06	0.02	0.01					
9	5.53	4.23	0.80	0.20	0.07	0.02	0.01					
10	6.68	5.12	0.96	0.24	0.08	0.02	0.01					
15	13.92	10.71	1.98	0.50	0.17	0.05	0.02	0.01				
20	23.56	18.20	3.33	0.83	0.29	0.08	0.03	0.01				
25	35.56	27.54	5.00	1.25	0.43	0.12	0.05	0.02	0.01			
30	49.86	38.71	6.98	1.74	0.59	0.17	0.06	0.02	0.01			
35	66.45	51.67	9.27	2.31	0.79	0.22	0.08	0.03	0.01			
40	85.31	66.43	11.87	2.95	1.00	0.28	0.10	0.04	0.01	0.01		
50			17.98	4.44	1.51	0.42	0.16	0.05	0.02	0.01		
60			25.98	6.23	2.11	0.59	0.22	0.07	0.03	0.01	0.01	
70			33.76	8.31	2.81	0.79	0.29	0.10	0.03	0.01	0.01	
80			43.41	10.66	3.60	1.01	0.37	0.13	0.04	0.02	0.01	
90			54.23	13.30	4.48	1.25	0.46	0.16	0.05	0.02	0.01	0.01
100			66.21	16.22	5.46	1.52	0.56	0.19	0.06	0.03	0.01	0.01
150				34.93	11.71	3.25	1.18	0.40	0.14	0.06	0.03	0.01
200				60.45	20.22	5.59	2.03	0.68	0.23	0.09	0.04	0.02
250				92.70	30.92	8.54	3.09	1.04	0.35	0.14	0.07	0.04
300					43.89	12.09	4.37	1.46	0.49	0.20	0.10	0.05
350					59.01	16.23	5.86	1.96	0.66	0.27	0.13	0.07
400					76.31	20.97	7.56	2.53	0.85	0.35	0.16	0.09
450					95.78	26.29	9.47	3.16	1.06	0.43	0.20	0.11
500						32.21	11.59	3.87	1.29	0.53	0.25	0.13

d : pipe dia. (mm)  
Q : deliv. (Tons/h)

The head loss will be much more if the pipe interior is rough.

Valve head loss =  
 $h \times 5$

Elbow head loss =  
 $h \times 5$

Check-valve head loss =  
 $h \times 15$



## AT UYGUNLUK BEYANI

İMALATÇI ADI - ADRESİ

**ANADOLU MOTOR ÜRETİM VE PAZARLAMA A.Ş.**  
Şekerpınar Mah., Albayrak Sok., No:4, ÇayırovasıKOCAELİ/TÜRKİYE

Aşağıda tanımlanmış olan ekipmanlar için 2006/42/AT, 2000/14/AT, 97/68/AT ve 2014/30/AB yönetmeliklerinin içerdiği gerekliliklerin yerine getirildiğini ve sorumluluğun alınmış olduğunu beyan ederiz.  
Aşağıda tanımlanan ekipmanlar için üretim kontrollerine bağlı olarak ANADOLU MOTOR tarafından kontrol edilmiştir.

## ÜRÜN

TANIM: MOTOPOMPLAR

**MODEL:** 6 LD 400 LSY-2, 3 LD 510 LK-4, 3 LD 510 LY-3, 4 LD 640 LY-3, 4 LD 820 LY-3, 4 LD 820 LS-4, 9 LD 625-2 R 526, 9 LD 625-2 R 626, 9 LD 625-2 R 822, 12 LD 477-2 C 65 A, LDW 2204 SNT 80-200

**SERİ NUMARASI:** 403358-899999

**YÖNETMELİKLER:**

Makine Emniyet Yönetmeliği (2006/42/AT)

Açık Alanda Kullanılan Teçhizat Tarafından Oluşturulan Çevredeki Gürültü Emisyonunu İle İlgili Yönetmelik (2000/14/AT)

Elektromanyetik Uyumluluk Yönetmeliği (2014/30/AB)

Karayolu Dışında Kullanılan Hareketli Makinalara Takılan İçten Yantmalı Motorlardan Çıkan Gaz ve Parçacık Halindeki Kirletici Emisyonlara Karşı Alınacak Tedbirlerle İlgili Tip Onay Yönetmeliği (97/68/AT)

**UYGULANAN UYUMLAŞTIRILMIŞ STANDARTLAR:**

TS EN 809+A1:2010

**İMALATÇI ADINA - SIGNED ON BEHALF OF THE MANUFACTURER**

AD-SOYAD- NAME

: YUTKUN TOK

GÖREV - POSITION

: Genel Müdür – General Manager

YER /TARİH – PLACE /DATE

: KOCAELİ – 02.03.2021

İMZA – SIGNATURE

:



## EC DECLARATION OF CONFORMITY

MANUFACTURER NAME – ADDRESS

**ANADOLU MOTOR ÜRETİM VE PAZARLAMA A.Ş.**  
Şekerpınar Mah., Albayrak Sok., No:4, ÇayırovasıKOCAELİ/TÜRKİYE

The undersigned Company certifies under its sole responsibility that the item of equipment specified below satisfies the requirements of the Directives 2006/42/EC, 2000/14/EC, 97/68/EC and 2014/30/UE.

The item of equipment identified below has been subject to internal manufacturing checks with monitoring of the final assessment by ANADOLU MOTOR.

## EQUIPMENT

DESCRIPTION: MOTOPUMPS

**MODEL:** 6 LD 400 LSY-2, 3 LD 510 LK-4, 3 LD 510 LY-3, 4 LD 640 LY-3, 4 LD 820 LY-3, 4 LD 820 LS-4, 9 LD 625-2 R 526, 9 LD 625-2 R 626, 9 LD 625-2 R 822, 12 LD 477-2 C 65 A, LDW 2204 SNT 80-200

**SERIAL NUMBER:** 403358-899999

**DIRECTIVES:**

Machinery Directive (2006/42/EC)

Directive 2000/14/EC relating to the Noise Emission in the Environment by Equipment For Use Outdoors

Electromagnetic Compatibility Directive 2014/30/UE

Directive 97/68/EC relating to Measures Against the Emission of Gaseous and Particulate Pollutants From Internal Combustion Engines to be Installed in Non-Road Mobile Machinery

Regulations Applied acc. to HARMONIZE STANDARDS:



Daima yanında

**Anadolu Motor Üretim ve Pazarlama A.Ş.**

Şekerpınar Mah. Albayrak Sok. No:4

Çayırova 41420 KOCAELİ

Tel.: (0262) 999 23 00

Faks: (0262) 658 83 36

E-mail: [antor@anadolumotor.com](mailto:antor@anadolumotor.com)

[www.anadolumotor.com.tr](http://www.anadolumotor.com.tr)



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