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# ***Operating instructions***

**Piston Air Compressors**

**Motor Drived Package**

**V60218-V8060**

**Pump Model: LPV8060**

**Motor: 4 HP / 1 PH / 56Fr**

**Air Tank: 60 Gal ASME**

7502 Mesa Road Houston, TX77028

Telephone: (713) 635-6291

E-mail: [service@lapante.com](mailto:service@lapante.com)

Web Site: [www.lapantecompressor.com](http://www.lapantecompressor.com)



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## Introduction

These operating instructions form part of the machine and must be made available to the compressor operating personnel at all times. In order to receive maximum performance and long life from your compressor, the following instructions should carefully read and all points regarding installation and operation of the unit should be noted and observed .careful reading of this manual, prior to connecting anything to the motor or compressor, will pay dividends in long term trouble-free operation.



## Unpacking and Handling



Occasionally damage will occur during shipping. Be sure to carefully inspect the unit before unpacking and after unpacking **BEFORE** you sign the receiver. If any has occurred, document it with the trucking firm immediately. Contact your LAPLANTE representative for assistance.

To move your compressor to its installation site we recommend that you leave the unit on its shipping skid as long as possible. The forks should be extended the width of the compressor and padding should be placed between the compressor and the fork truck boom.

If it is necessary to lift the compressor with a crane, we recommend the use of spreader bar and chains. The spreader bar should be greater than the width of the compressor and padding placed on the edges to prevent chain damage.



### **DO NOT UTILIZE THE PUMP OR DRIVE AS A LIFT POINT**

#### **Procedure for Handling Damaged Shipments**

1. The customer, at the receiving point, **MUST** inspect each shipment for damage.
2. If the shipment is damaged, the customer should so note it on the freight bill.
3. The customer should request an inspector from the freight company to inspect the equipment immediately. It is best to send a confirming letter with the following information:
  - a. Freight bill number.
  - b. Date delivered - shipper's name & address.
  - c. Description of item(s) damaged.
  - d. Description of damage (a Polaroid picture if possible).
  - e. A copy of your invoice for the equipment.
4. After inspection, (before the inspector leaves):
  - a. Get a copy of the inspection report.
  - b. Request the unit be shipped back "free astray".
  - c. Request a credit for the original freight bill.
5. Call the factory and:
  - a. Get a Return Material Authorization (RMA number).
  - b. Give a purchase order for repair. The purchase order should refer to the item and trucker claim.



6. We will accept the shipment back, repair (under normal conditions) and return it within (7) seven working days.
7. We will invoice the customer for the repair, which will then become part of your claim. The Invoice must be presented to the trucking claim department along with their claim form.
8. We suggest if the trucker does not pay within 30 days that you call and / or write the ICC making a formal complaint of poor service. Also advise **LAPLANTE** in writing for follow-up.  
If damage can be repaired at the receiving point, follow Procedure 1, steps 1 through 4a. Repair the unit and make out a detailed invoice to the trucker showing labor hours, labor rate, materials used, and cost of materials.

### **Storage**

In some cases it may necessary to store the compressor for extended periods of several months before placing the unit in operation. When this is required do the following:

- Cover and seal all machine openings to prevent the entrance of water and dirt.
- Cover all openings in open drip proof motors to prevent the entrance of rodents.
- If the storage conditions are below freezing, drain off the tank, traps, and attendant piping.
- We do not recommend outside storage.
- Cover with a waterproof tarpaulin that can easily be removed for in storage maintenance.
- While in storage, every two to three months rotate the compressor and motor by hand to prevent flat spots on the bearings that will lead to premature failure.
- At the end of the storage period, follow the uncrating and start-up procedures. If the unit has been stored for more than eighteen months you should contact **LAPLANTE** before restarting the compressor.



## Appropriate use

As standard, **LAPLANTE** piston compressors are intended for the compression of ambient air. The air may not contain any aggressive or combustible mixtures.

The pressure chambers of the compressor are oil-lubricated. Therefore, the compressed air produced may only be used as breathing air or come into contact with food if it has been treated beforehand.



**As standard this LAPLANTE piston compressor is not of an explosion-protected design and it may not be operated in areas subject to explosion hazards!**



## Symbols used

We have used the following symbols in this text to mark particularly important points:



The general warning sign indicates information concerning possible danger to operator and machine.

The lightning symbol indicates work which must exclusively be performed by skilled electricians.

The pointing hand indicates particularly important statements.

The spanner indicates maintenance work.



**Danger** is used to indicate the presence of a hazard, which will cause severe personal injury, death or substantial equipment and property damage if the warning is ignored.



**Warning** is used to indicate the presence of a hazard that can cause severe personal injury, death or substantial equipment and property damage if the warning is ignored.



**Caution** is used to indicate the presence of a hazard that will or can cause personal injury or equipment and property damage if the warning is ignored.



**Notice** is used to notify people of installation, operation, or maintenance of information that is important but not hazard related.



## Symbols on the compressor

**Warning:**

Hot surfaces: Do not touch!

**Warning:**

The unit is operated by remote control, and might start without warning.

**Note:**

Instructions for the operating personnel must be read.

**Prohibited:**

Never open the valve before the air hose (connection to the compressed air network) is connected.

**Forbidden**

TO remove protective covering and safety devices

**Danger:**

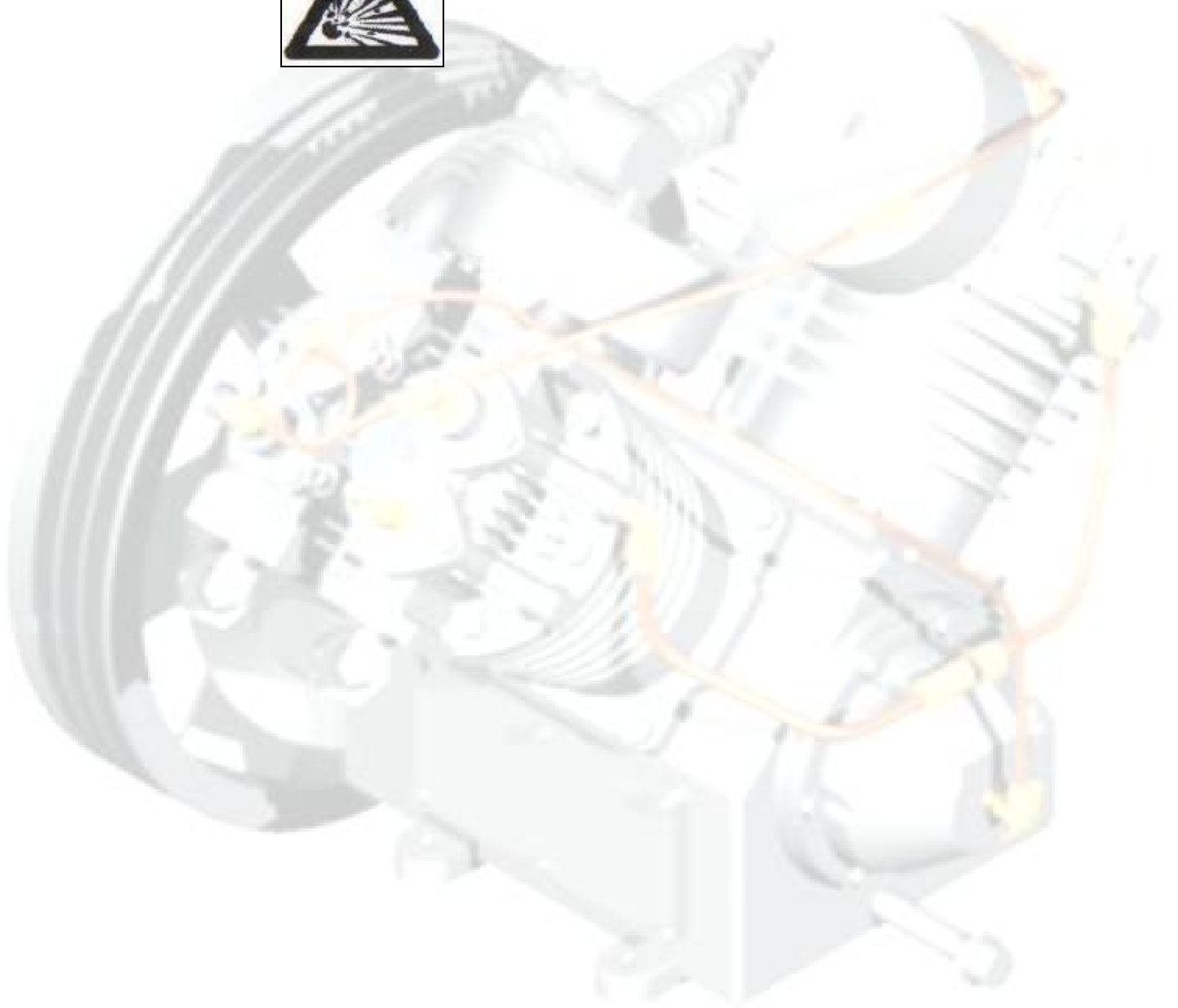
Hot or noxious gases outlet: unbreathable

**Danger:**

High voltage disconnect power source before servicing



**Danger:**  
**Spray injury!**



## Safety Guide

### Compressor Safety Precautions



An air compressor is a dynamic piece of machinery needing the same common sense safety precautions that should be observed with any operating machinery. Careless operation or maintenance is hazardous to personnel.



In addition to the obvious safety rules that should be followed with machinery, we recommend the following additional safety precautions.

1. Read and understand all instructions completely before operating this compressor.
2. Disengage power mains and disconnect power lines to the machine, if used, prior to attempting to work or perform maintenance on this unit.
3. Open tank discharge valve and relieve all pressure from tank and compressor lines. Do not attempt to remove any pressurized system parts without first relieving the pressure within the unit.
4. Do not attempt to service any part while the machine is in operation.
5. Do not operate the compressor at pressures in excess of its indicated rating on the compressor nameplate.
6. Do not operate the compressor at speeds in excess of its indicated rating on the compressor nameplate.
7. Do not remove guards, shields, or screens while the compressor is operating. If removed for maintenance replace before resuming operation.
8. Observe the delivery pressure gauge daily to be sure the automatic control system is operating within proper limits.
9. Periodically check all safety and relief devices for proper operation.
10. Do not play with compressed air. Pressurized air can cause serious injury or death to personnel.
11. Be sure that no tools, rags, or loose parts are left on the compressor or drive parts.

12. Do not use flammable solvents for cleaning parts.
13. Exercise cleanliness during maintenance and when making repairs.  
Keep dirt away from parts and exposed openings by covering with a clean cloth or Kraft paper.
14. Install pressure relief valves in any isolatable piping in the plant system.
15. Do not operate the compressor in areas where there is the possibility of ingesting flammable or toxic gases.
16. Check pipe for any signs of wear or deterioration before each use and make certain that all connections are secure.
17. Observe the prescribed maintenance intervals.
18. Only use genuine **LAPLANTE** parts.
19. Only use **LAPLANTE** compressor oils and operating material recommended by **LAPLANTE**.
20. Strictly observe the effluent disposal laws of your local authority when disposing of condensate!



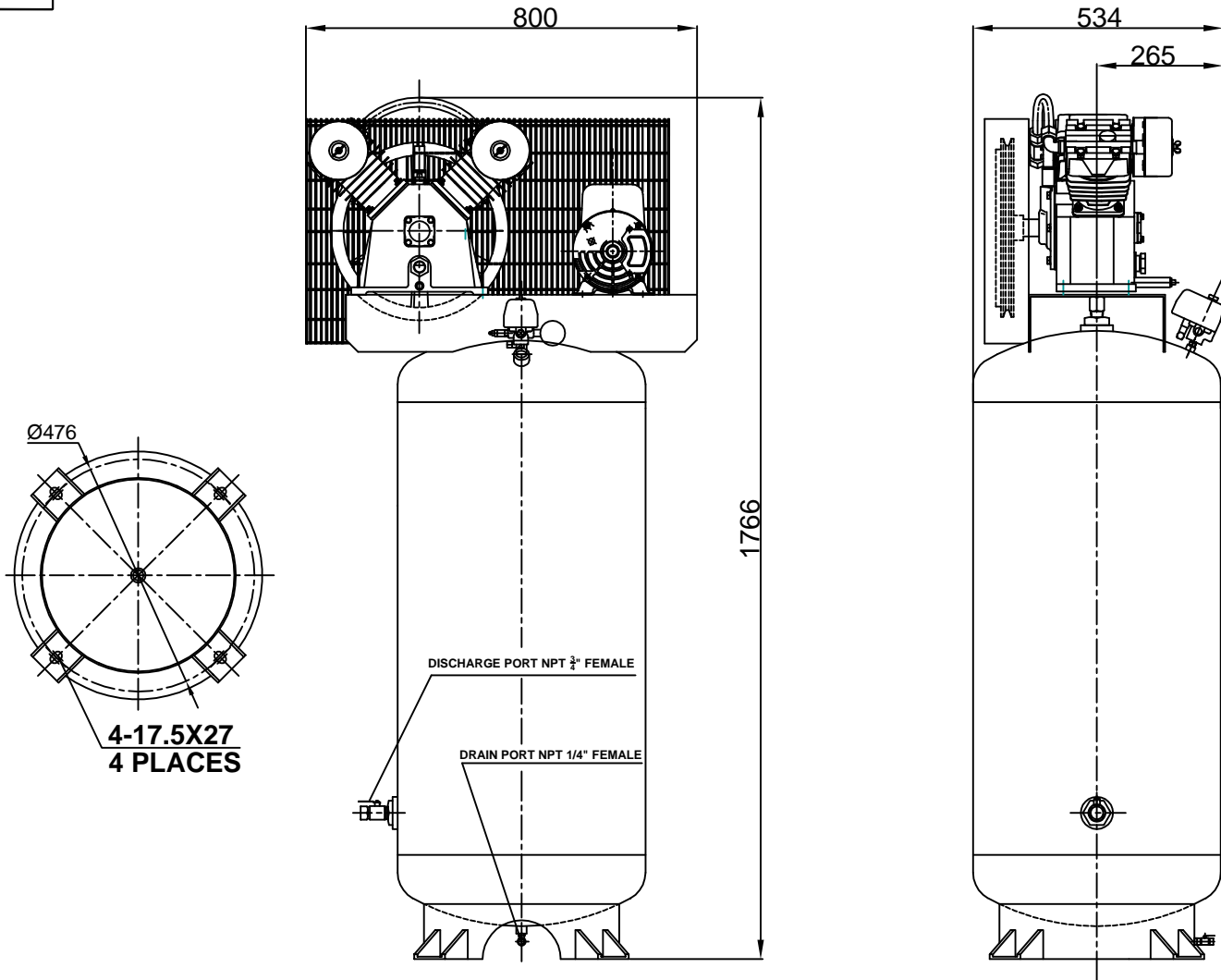
Make sure to investigate the code requirements to ensure compliance prior to operating the compressor.



The owner, lessor, or operator of this compressor is hereby notified and forewarned that any failure to observe these safety precautions may result in injury, death and/or property damage.



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 CIVIL AND CRIMINAL FINES AND PENALTIES.



**SPECIFICATIONS:**

**PUMP:**

1. Type: LPV8060:
2. Cylinders: 2
3. Bore: 3.15" / 80mm
4. Stroke: 2.36" / 60mm
5. RPM: 500 Min / 1200 Max
6. Pump Flywheel: 14.37" / 365 mm
7. Groove of Flywheel: 1AB

**MOTOR:**

1. Power: 5HP / 3.7KW
2. Voltages: 208 - 230V
3. Phase: 1 PH
4. Frequency: 60 HZ
5. AMPS: 23 ~ 22 A
6. RPM: 3450
7. Pump Speed: 880 RPM

**Tank:**

1. Tank: 60G / 227.1 Ltr
2. Max. Pressure: 175 PSI
3. Certification: ASME "U" Stamp

**CONTROL:**

1. Pressure Switch:

CFM Piston Displacement	ACFM At 40 psi	ACFM At 125 psi	ACFM At 130 psi
18.7	11.96	10.6	10.5

**STANDARD PACKAGE:**

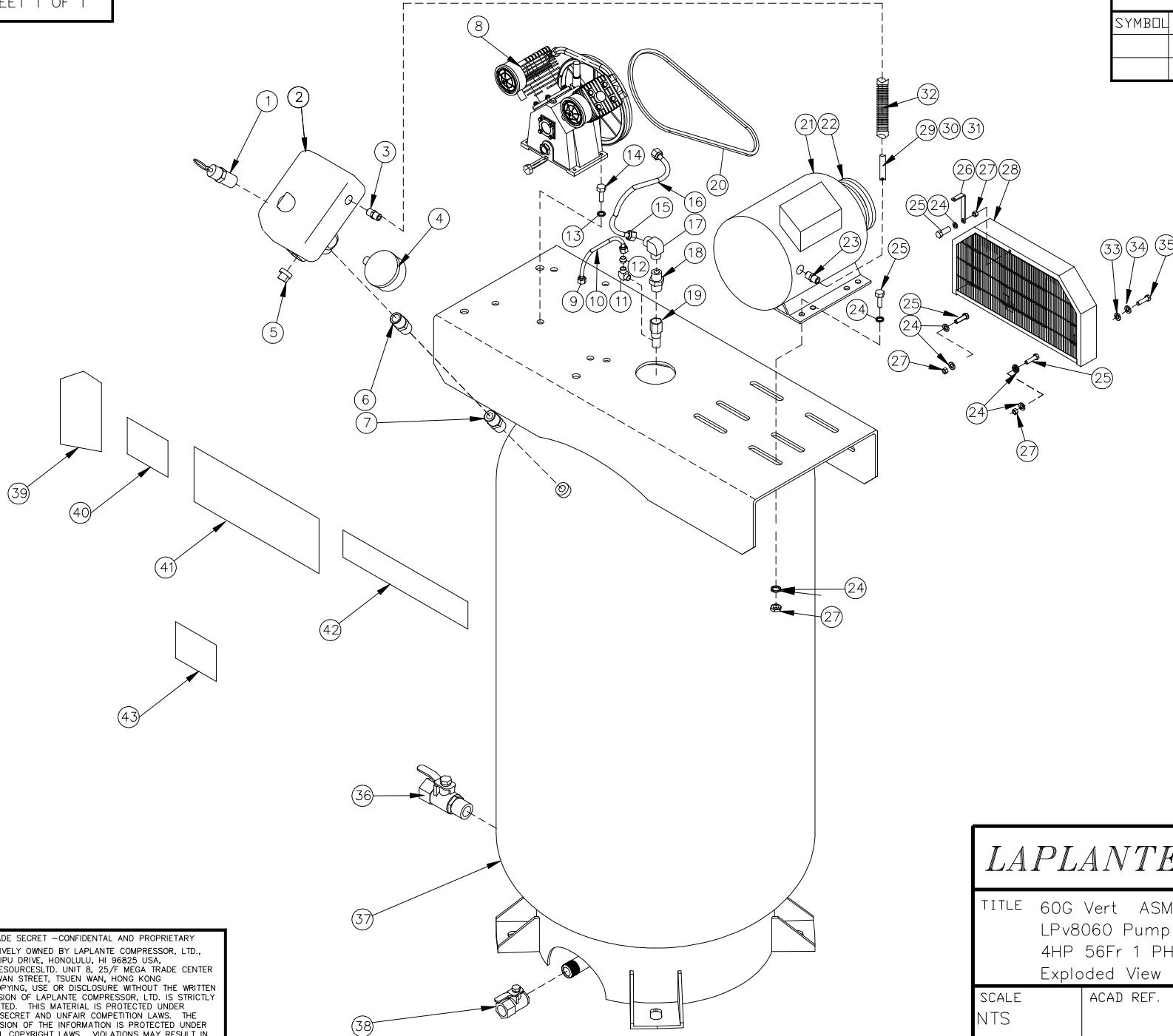
1. Single: 1 PC, Net Weight: 156 Kg / 344 LB
2. Packing: 1 PC, Gross Weight: 212 Kg / 467 LB
3. 20' Container: 24 PCS, 1 PC / 1 Crate
4. 40' Container: 54 PCS, 1 PC / 1 Crate

	Address: 7502 Mesa Road Houston, TX 77028
	Telephone: (713) 635-6331
	E-mail: <a href="mailto:sales@laplante.com">sales@laplante.com</a>
	Web Site: <a href="http://www.laplantecompressor.com">www.laplantecompressor.com</a>

TITLE  
**V60218-V8060 Specifications**

REVISIONS

SYMBOL	DESCRIPTION	DATE & APPROVAL



TRADE SECRET - CONFIDENTIAL AND PROPRIETARY EXCLUSIVELY OWNED BY LAPLANTE COMPRESSOR, LTD., 248 POIPIU DRIVE, HONOLULU, HI 96825 USA, OMNI RESOURCES LTD, UNIT 8, 25/F MEGA TRADE CENTER 1 MEI WAN STREET, TSUEN WAN, HONG KONG ANY COPYING, USE OR DISCLOSURE WITHOUT THE WRITTEN PERMISSION OF LAPLANTE COMPRESSOR, LTD. IS STRICTLY PROHIBITED. THIS MATERIAL IS PROTECTED UNDER TRADE SECRET AND UNFAIR COMPETITION LAWS. THE EXPRESSION OF THE INFORMATION IS PROTECTED UNDER FEDERAL COPYRIGHT LAWS. VIOLATIONS MAY RESULT IN CIVIL AND CRIMINAL FINES AND PENALTIES.

**LAPLANTE COMPRESSOR<sup>®</sup>**

TITLE 60G Vert ASME 175 PSI LPv8060 Pump 110-140 PSI 4HP 56Fr 1 PH 208-230V ODP 2P Exploded View Drawing		DRAWN BY JESSY	
		APPROVED BY	
		DATE 20 Jan 2011	
SCALE NTS	ACAD REF. NUMBER	LC DWG. NUMBER L001115	REV 00

**001115 Parts List**

<b>Item</b>	<b>LAP#</b>	<b>Description</b>	<b>QTY</b>
1	690006	Valve, Safety; ASME 175PSI 1/4M	1
2	340122	Pressure Switch; 110-140 PSI( 11MC2GAJQ)	1
3	290043	Quick Connector, M20X1.5	1
4	350015	Gauge, Air; 300 PSI 2" 1/4M Left w/ oil	1
5	140100	Plug, Hex; 1/4M	1
6	640000	Nipple; Brass; 1/4M 1/4M	1
7	640058	Fitting 1/4 F, 1/4M	1
8	800067	Pump; LPV8060	1
9	120106	Nut, Compression; M12X1.25	1
10	320020	Tube, Copper; $\Phi$ 6mm O.D.x1x500	1
11	640019	Elbow, brass; 90Deg 1/8M M12x1.25M	1
12	320000	Ferrel, Brass; $\Phi$ 6mm I.D.	1
13	130104	Washer, Flat; 10mm Large	7
14	110288	Bolt, Hexhead; M10x35	4
15	320054	Tube, Copper; $\Phi$ 19mm O.D.x1	1
16	120114	Nut, Compression; 1 1/16"-12 UN	1
17	640022	Elbow, 90Deg 3/4M 1-1/16"-12UN M	1
18	640069	Bushing 3/4M, 3/4F	1
19	690024	Check Valve, Brass; 3/4F 3/4M 1/8F	1
20	420057	V-Belt B1499Li 59"	1
21	240021	Motor, 4HP 56Fr 1PH 208-230V ODP 2P	1
22	713298	Pulley; BK40-7/8"	1
23	290104	WQW-N1/2B/AD21.2	1
24	130103	Washer, Flat; 8mm Large	14
25	110281	Bolt, Hexhead; M8x25	7
26	524021	Bracket, Belt Guard Top	1
27	120108	Nut, Nyloc; M8	7
28	520041	Belt Guard Assy	1
29	290106	Wire Set from Motor to P.S	1
30	290103	Wire Terminal VF5.5-7A	2
31	290094	Terminal R5.5-4	4
32	290039	Nylon Conduit WY-PA6 AD 21.2G, Length 400	1
33	130118	Washer, Flat; 6mm Large	8
34	130105	Wahser, Lock 6 mm	8
35	110275	Bolt, Hexhead; M6x20	8
36	690014	Ball Valve, Brass; 3/4M 3/4F	1
37	330043	Tank, 60G VERT ASME 175 PSI	1
38	690009	Ball Valve, Brass; 1/4F 1/4F	1
39	190221	Tag for change the oil	1
40	191022	Nameplate	1
41	191025	Decal	1
42	191024	LOGO	1
43	191032	Label. QR Code 2, Commercial Series	1

---

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**Model: LPV8060**

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Issue: 06/2010



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## Introduction

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Cover and seal all machine openings to prevent the entrance of water and dirt.

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**Warning:**

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**Note:**

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**Prohibited:**

Never open the valve before the air hose (connection to the compressed air network) is connected.

**Forbidden**

TO remove protective covering and safety devices

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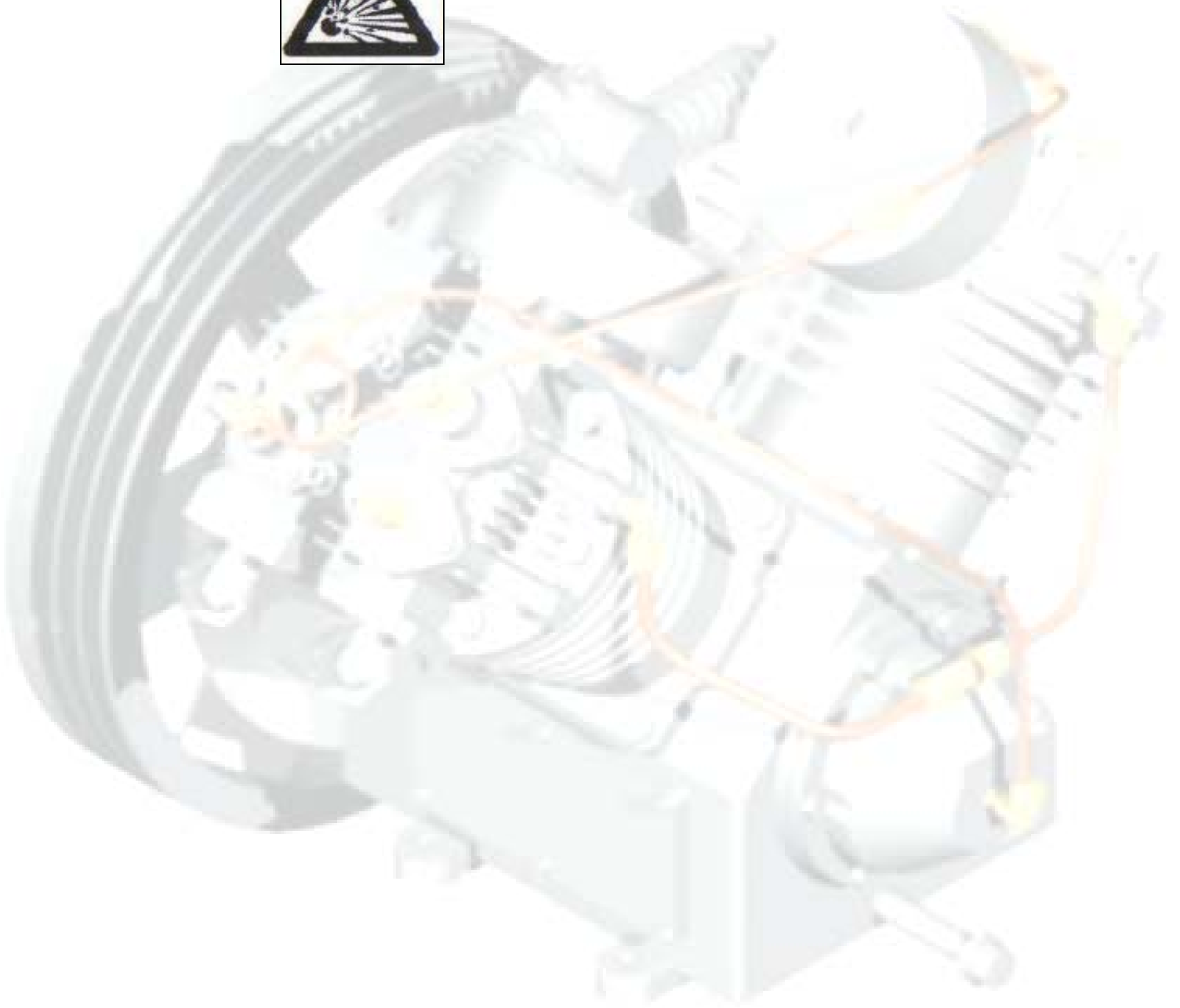
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High voltage disconnect power source before servicing



**Danger:  
Spray injury!**





## Safety Guide

### Compressor Safety Precautions



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19. Only use **LAPLANTE** compressor oils and operating material recommended by **LAPLANTE**.
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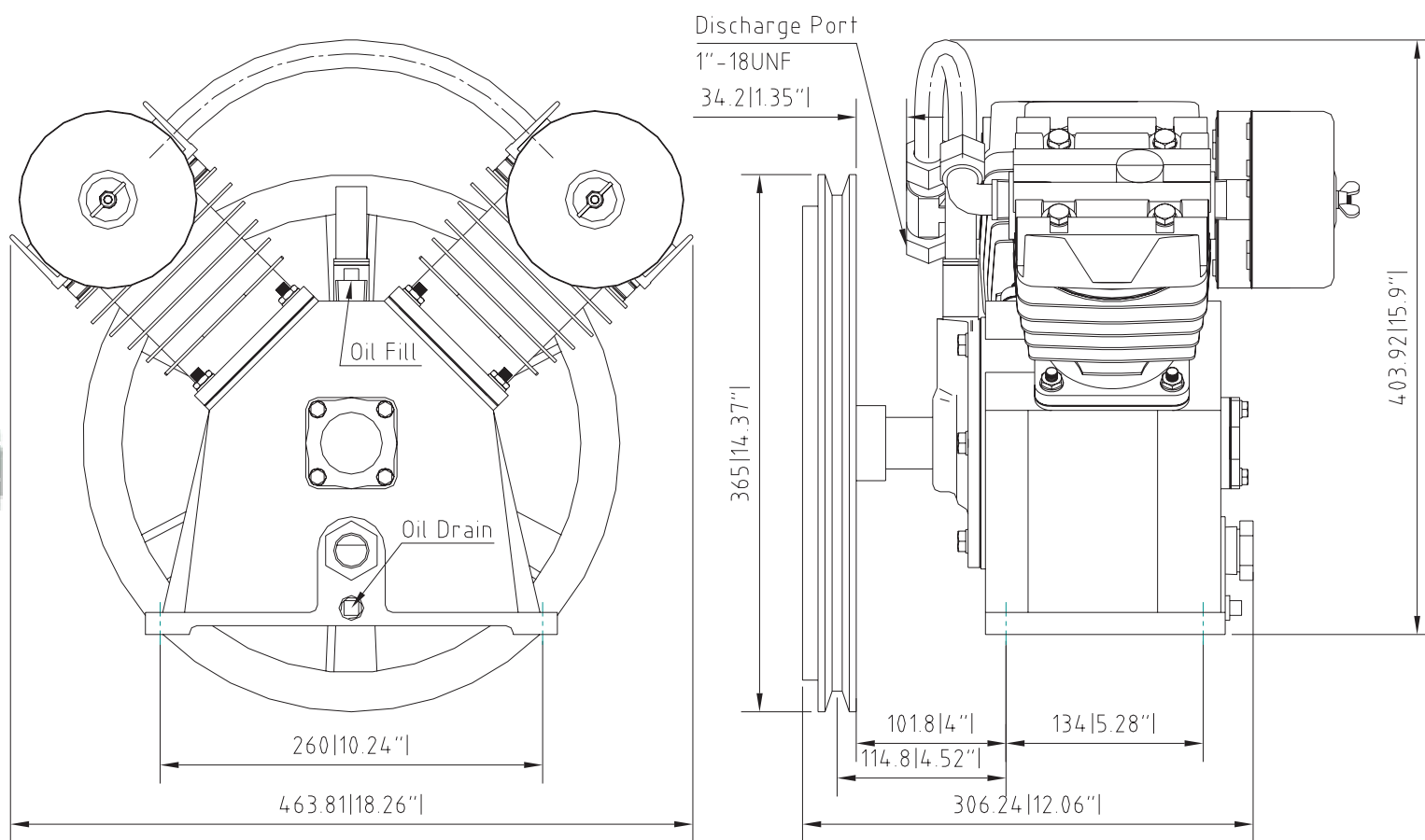
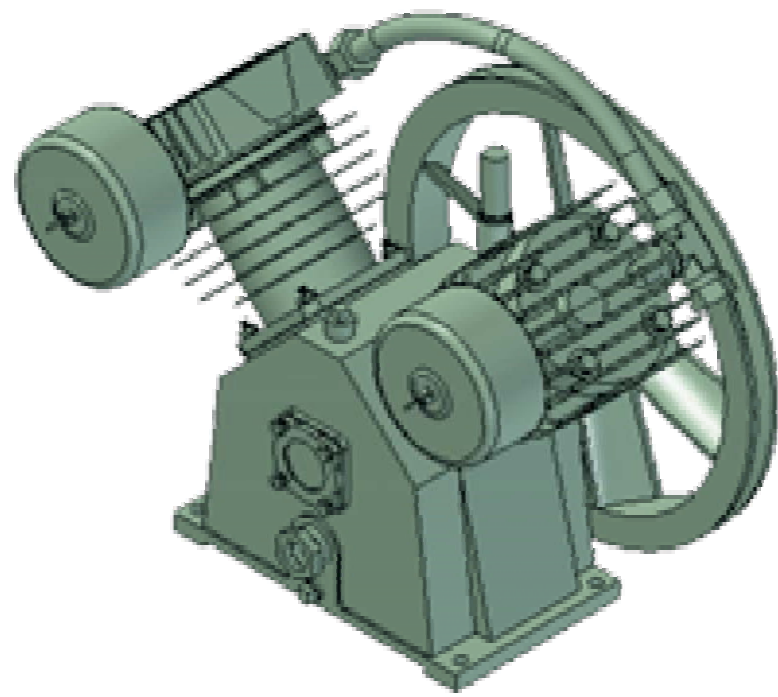
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**Specification:**

- Power Range: 1.5~5HP/1~3.75Kw
- Maximum Pressure: 145Psi/10Bar
- Cylinders: 2
- Bore : 3.15"/80mm
- Stroke: 2.36"/60mm
- RPM: 500~1200
- Flywheel Dia./Groove: 14.37"/365mm /1AB

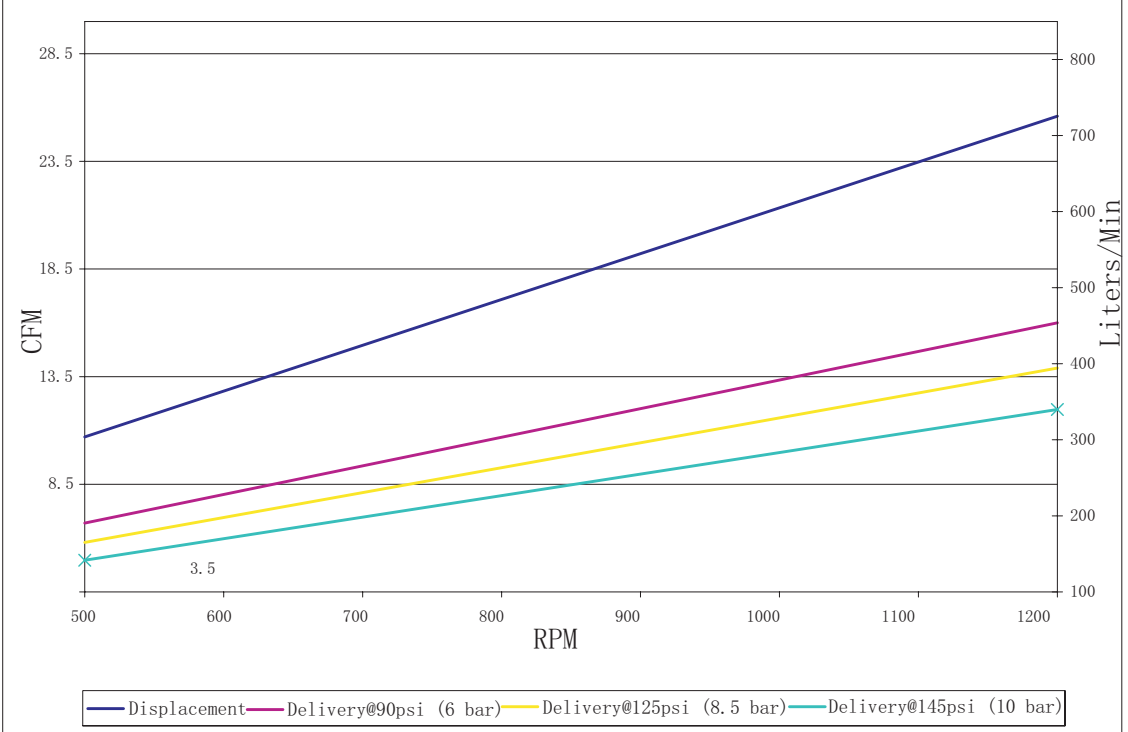
**Features:**

- Cast Iron Crankcase
- Cast Iron Cylinder
- Aluminium Cylinder Head
- Ductile Iron Crankshaft
- Aluminum Conn. Rod
- Bronze Bushings Wrist Pin
- Babbitt Bearings Crankshaft
- Ball Main Bearings
- Steel Breather and Brass Sight Glass
- Power Coated Steel Filter Silencer
- Filled with DAB150 Lubricant
- Synthetic Lubricant as Optional

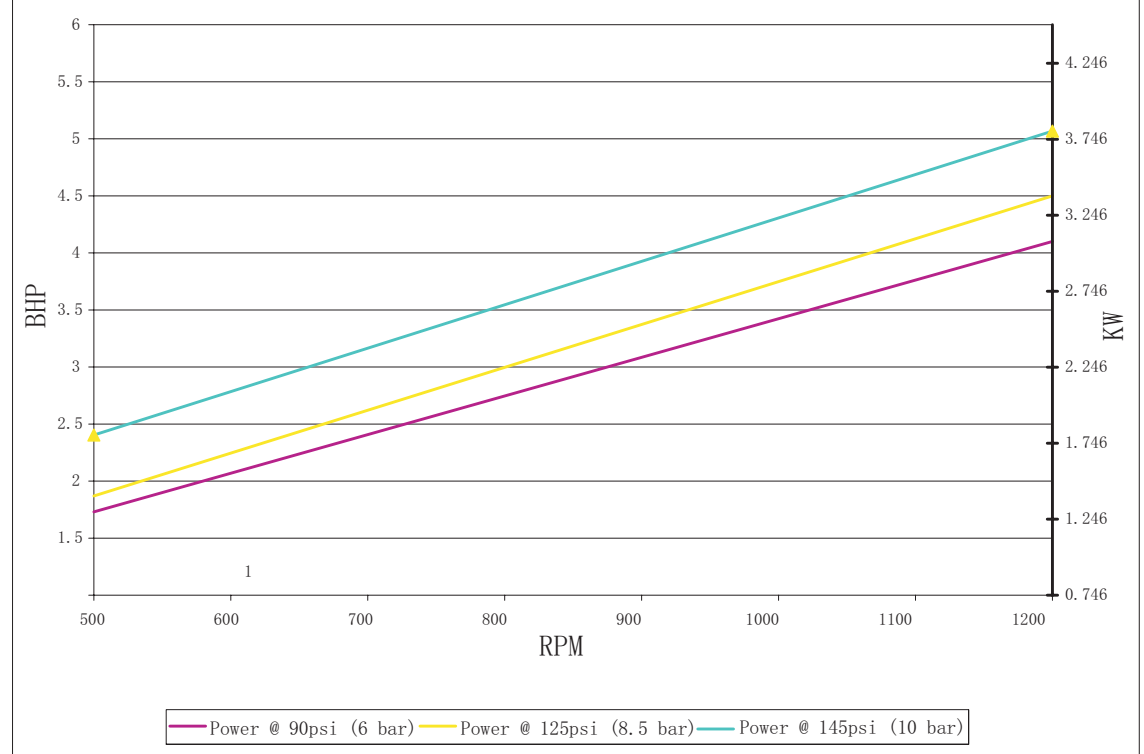
**Standard Package:**

- Single : 1 Pcs,Weight:83LB/38Kg
- Crate : 24 Pcs,Weight:2050LB/940Kg
- 20' Container : 240 Pcs

LPV8060 Performance (Delivery)



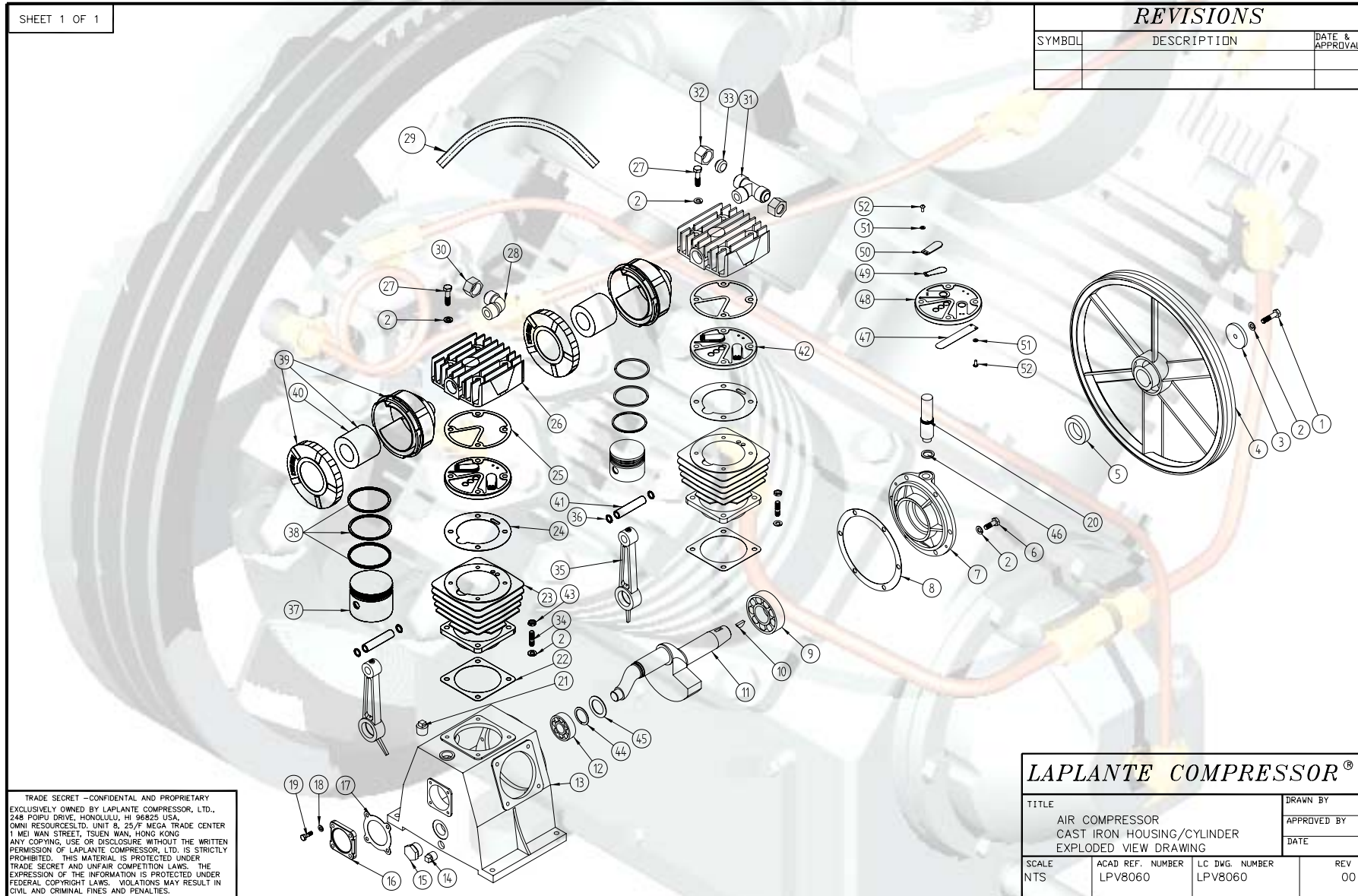
LPV8060 Performance (Power)



Address:7502 Mesa Road Houston, TX77028  
 Telephone: (713) 635-6291  
 E-mail: sales@Lapante.com  
 Web Site: www.Laplantecompressor.com

TITLE  
**LPV8060 Specifications**

Explode drawing



SHEET 1 OF 1

REVISIONS		
SYMBOL	DESCRIPTION	DATE & APPROVAL

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 OMNI RESOURCE LTD, UNIT 8, 25/F MEGA TRADE CENTER  
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<b>LAPLANTE COMPRESSOR®</b>		
TITLE		DRAWN BY
AIR COMPRESSOR CAST IRON HOUSING/CYLINDER EXPLODED VIEW DRAWING		APPROVED BY
		DATE
SCALE	ACAD REF. NUMBER	LC DWG. NUMBER
NTS	LPV8060	LPV8060
		REV
		00

## Bill of material list

<b>LPV8060 Parts List</b>			
<b>Item</b>	<b>LAP #</b>	<b>Description</b>	<b>Qty</b>
1	110222	Hex Head Cap Screw- M8 X 35	1
2	130058	Lockwasher M8	23
3	130084	Flat Washer Flywheel	1
4	713171	Flywheel 14.37" Single "AB" Groove	1
5	060184	Oil Seal	1
6	110117	Hex Head Cap Screw-M8 X20	6
7	701143	Cap Drive end	1
8	070375	Gasket Drive End	1
9	050140	Ball Bearing -307	1
10	080041	Key 5 X 19	1
11	709226	Crankshaft	1
12	050166	Ball Bearing-304	1
13	708056	Crankcase	1
14	140037	Plug Drain 3/8" NPT	1
15	731005	Oil Sight Glass 1" NPT	1
16	701007	Cap - Rear End	1
17	070376	Gasket Rear End	1
18	130082	Lockwasher M6	4
19	110146	Hex Head Cap Screw - M6 X 20	4
20	703004	Breather	1
21	140043	Oil Filler Plug - Cast Iron	1
22	070377	Gasket -Cylinder/Crankcase	2
23	711071	Cylinder	2
24	070378	Gasket - Cylinder/ Valve Deck	2
25	070379	Gasket - Valve Deck/ Cylinder Head	2
26	710106	Cylinder Head Iron	2
27	110159	Hex Head Cap Screw - M8 X 70	8
28	718081	Elbow Connector G 3/4"	1
29	725000	Finned Tube	1
30	120083	Airflow Nut G 3/4"	2
31	718079	T - Fitting - G 3/4" & 1-18 UNS	1
32	120071	Locknut - 1 - 18 UNS	1
33	718078	Ring - 1 - 18 UNS Connecting Size	1
34	110227	M8 X 22 Stud Threaded Both Ends	8
35	705210	Connecting Rod	2
36	200062	Snap Ring	4
37	720004	Piston	2
38	719058	Piston Ring Set	2
39	712139	Filter	2
40	712141	Filter Element	2
41	729002	Wrist pin	2
42	180018	Valve Deck Assembly	2
43	110228	Hex Head Nut-M8	8
44	130071	Conn Rod Washer	1
45	130073	Stop Ring 30mm. Diam	1
46	130072	Breather Washer	1
47	727266	Inlet Valve	2
48	727265	Valve Deck	2
49	727264	Discharge Valve	4
50	727263	Valve Stem	4
51	130055	Lockwasher 4	12
52	110110	Phillip Head Screw M4x10	12

**Installation Instruction**

**1. Inspection**

Check for possible damage in transit and see that the pulley turns freely by hand Report any damage to delivering carrier at once.

**2. Location**

Select a clean, dry and light location. In cold climates the compressor should be installed in a heated building Insulate cold water or other low temperature pipes that pass overhead to avoid the possible collection and dripping of condensate onto the compressor and motor which could cause rusting and or motor shorting Do not install the compressor in a boiler room, paint spray room or area where sandblasting is carried on. If air in the area where the compressor is to be installed is acid-laden, or dust laden the compressor intake should be piped to the outside This intake pipe should be increased one pipe size for every twenty (20) feet of run and the intake filters should be installed at the end of the pipes with a hood to protect them from the elements.

If the compressor has to be located where the motor will be exposed to appreciable quantities of water, oil dirt, acid or alkaline fumes the motor must be of special construction to avoid rapid deterioration.

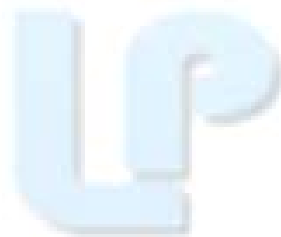
Bolt the unit securely and evenly to a level base. Unless base is exactly level, shims will probably be required. Any space between base and foot should be shimmed rather than drawing foot down thus placing strain on unit. When the unit is properly shimmed vibration will be nominal.

Allow sufficient space around compressor so that it is accessible from all sides for maintenance. Mount unit with pulley side toward the wall. but at least six (6) inches from it.

**3. Starting**

**A.** If compressors are shipped without oil in the crankcase. Before starting. fill crankcase to the high level mark on the sight glass with LaPlante compressor oil meeting the following specifications.

AMBIENT OR ROOM TEMP. °F	VISCOSITY AT 100° F S.S.U.	FLASH POINT °F (Min.)	POUR POINT °F (Min.)	CARBON RESIDUE % (Max.)	PREFERRED BASE
55 to 120	490 to 600	430	• 20	15	Naphthenic
32 to 55	290 to 350	390	* 5	10	Naphthenic
0 to 32	160 to 230	350	-10	.05	Naphthenic
Above 120 or below 0	CONSULT FACTORY				





For operation in damp or humid locations, addition of rust inhibitor is recommended.

- B.** Turn compressor over a few revolutions by hand to make sure that everything is free and in running condition.
- C.** Check tension of the belts (See Paragraph 6).
- D.** Remove tools, rags and any other objects from the vicinity of the compressor.
- E.** Never put hands on the belts of idle units, unless main power is secured.
- F.** Note direction of arrow on flywheel and be sure direction of rotation is correct when machine is started. Correct direction is counter-clockwise when standing facing the flywheel. Air should be drawn through inter-cooler onto the cylinders for maximum cooling



## Operation

Every compressor undergoes a trial run in the factory and is carefully tested and set. However, damage occurring afterwards, e.g. during transport, cannot be excluded. Therefore, the compressor should always be subjected to a trial run during commissioning and carefully monitored.



**Before starting pump, the following must be done:**

**Check power supply;**

**Check oil level; top up if necessary;**

**Check fastener and piping connection.**

**For 3-phase power:**

**To insure there are no problems; start-up pump to check direction of rotation, counter-clockwise is correct.**

**If not, please change 2 of 3-phase power wiring.**

**If all items are ok, start the pump.**



## Parts Kits

Parts kits include 5 sets:

1. Service Kit
2. Valve Kit;
3. Overhaul Kit;
4. Piston Ring Set;
5. Gasket Set



For each pump you can find the relevant parts kits number and describe in the explode drawings and bom list section.

The parts kits list as follow:

<b>L010279</b>		
<b>Service Kit</b>		
L712139	Filter	2
L712141	Filter Element	2

<b>L010100</b>		
<b>Valve Kit</b>		
L180018	Valve Deck Assembly	2
L070378	Gasket - Cylinder / Valve Deck	2
L070379	Gasket - Cylinder Head / Valve Deck	2

<b>L010062</b>		
<b>Ring Set</b>		
L180021	Piston Ring Set	2

<b>L010101</b>		
<b>Gasket Set</b>		
L060184	Oil Seal	1
L070375	Gasket Drive End	1
L070376	Gasket Rear End	1
L070378	Gasket - Cylinder / Valve Deck	2
L070379	Gasket - Cylinder Head / Valve Deck	2

<b>L010103</b>		
<b>Overhaul Kit</b>		
L180018	Valve Deck Assembly	2
L180021	Piston Ring Set	2
L060184	Oil Seal	1
L070375	Gasket Drive End	1
L070376	Gasket Rear End	1
L070378	Gasket - Cylinder / Valve Deck	2
L070379	Gasket - Cylinder Head / Valve Deck	2
L712141	Filter Element	2

### Safety information



Please observe the following instructions when performing any maintenance, cleaning, repair work; when relocating the compressor plant; prior to installing and dismantling component parts, receivers, fittings and screw connections.

- Always isolate the compressor at the main switch prior to performing any maintenance work.

Secure the main switch against accidental switching on! Remove the electrical fuses in order to avoid accidents!

- Depressurize the compressor!

Disconnect from the compressed air network by closing the ball valve on the compressed air outlet.

Perform maintenance or servicing work.

Only allow skilled and qualified welders to perform welding work on compressed air receivers!

After welding work on compressed air receivers, new constructional and hydrostatic pressure tests are to be carried out.

- Prior to switching on again, check whether anyone else is working on the compressor!

For your own safety, never omit a safety step!

Otherwise you will risk injury from restarting, electric shock or parts which may fly off!

### Bolt torque chart

Bolts Size	Grade	Torque(Ft.-Lb.)	Position
M6X20	8.8	7.98	End Cover Bolt
M6X25	8.8	7.98	End Cover Bolt
M6X35	8.8	7.98	Head to Cylinder Bolt
M8X20	8.8	14-16	LP & HP Hold Down Bolt
			End Cover Bolt
M8X25	8.8	14-16	Cylinder to Base Bolt
M8X35	10.9	17	Connecting Rod Bolt
M8X60	8.8	14-16	Head to Cylinder Bolt
M8X65	8.8	14-16	Head to Cylinder Bolt
M10X25	8.8	27	Cylinder to Base Bolt
M10X45	10.9	34-37	Connecting Rod Bolt
M12X35	8.8	35	Cylinder to Base Bolt
M12X70	8.8	32-37	Head to Cylinder Bolt
M12X110	8.8	32-37	Cylinder to Base Bolt
M16X80	8.8	55-65	Flywheel Bolt

### Disassembling Pump



Before dismantling a pump for overhauling it is advisable to obtain a set of valve parts, piston rings, and gaskets in addition to other required parts.

- A. Loosen motor, slide toward pump and remove belts. Drain oil from crankcase and if desired, remove complete pump from plat form.
- B. Remove flywheel bolt and remove pulley using a wedge or wheel puller if required. Remove key File edges of key way smooth to remove sharp edges which could cut oil seal during removal.
- C. Remove air inlet filter from head.
- D. Remove cylinder head from cylinder by removing cap screws.
- E. Before removing cylinder mark top of pistons nearest flywheel, so that they can be reinstalled in same position. Remove cylinder by removing bolts Cylinder can be removed easily by twisting slightly back and forth while pulling upward. Care should be taken that connecting rod and piston does not become damaged from striking metal when cylinder is removed The condition of cylinder, pistons, rings and bearing fits can then be checked.
- F. Remove end cover and slide crankshaft with connecting rods, pistons, etc. out of base being careful not to damage the oil feeder ring. Place pulley end of crankshaft in a vice using a soft jaws to prevent damage.

- G. To remove pistons. Remove roll pins, by driving them into the wrist pins, and push out wrist pins. Remove roll pins from wrist pins.
- H. When removing connecting rods see that rods and caps are kept in matched sets, noting the position with reference to the crankshaft of the identification marks on one side of each so that the connecting rod can be replaced in the same position it originally occupied.
- I. Drive oil seal out of base (only if replacement is necessary) with evenly spaced blows from inside.
- J. To dismantle head, remove low pressure hold-down covers and high pressure hold-down covers by removing cap screws. Lift out low pressure cages and high pressure cages. Low pressure valves and high pressure valves can be lifted out as well as the low pressure seat gasket (15. fig. 4) and high pressure seat gasket.
- K. To dismantle valves, place valve in a soft jaw vise and remove center screw. Valves are now free to take apart. Clean all parts thoroughly. Valve plates and seats- (must be smooth and flat and can sometimes be resurfaced by rubbing on fine emery cloth held on a smooth surface. Badly worn parts including springs, which lose tension after considerable use should be replaced.

### Fitting and Reassembling



Clean all parts thoroughly before assembling.

A. Crankshaft — Base

Be sure base is cleaned to remove all metal chips and dirt. Insert crankshaft and oil feeder ring only into base assemble end cover and tighten end cover bolts evenly. End cover gaskets or shims are furnished in three thicknesses and the proper combination must be selected so that crankshaft can be "spun" in the bearings without "end play". Also see that oil feeder ring turns freely within the guide lugs in the base. Then remove crankshaft.

B. Piston — Cylinder

Check fit before assembling pistons to connecting rods. Pistons without rings should slide through the cylinder of their own weight and holding the skirt of the piston with the two thumbs there should be no appreciable side motion at any point of piston travel. Scored cylinders or pistons should be replaced. C. Wrist Pins should be "tap" fit by hammer. See that roll pin holes are in line.

D. Wrist Pin — Needle Bearing

Fit so that piston can be "rocked" with three fingers — the thumb on one side and index and middle fingers on the other. The piston should not rock of its own weight. Drive roll pin into wrist pin when piston and wrist pin holes are in line and piston is assembled to connecting rod. If replacement of a needle bearing ever becomes necessary, be sure to press in the new bearing so that the small hole through casting lines up with oil hole in rod. Wrist pin should also be replaced.

E. Connecting Rod — Crankshaft Tap cap, when insert bearings are assembled to rod and cap to make sure bearing is making contact and tighten rod bolts with lock washers in place to

- prevent loosening (torque — 25 foot pounds). The combined piston and connecting rod should turn slowly on the crankshaft of their own weight if bearing adjustment incorrect. It will be noted that ends of the inserts extend slightly above the parting line of the rod and cap and under no circumstance should these ends of the inserts be filed.
- F. Reinstall crankshaft with pistons and connecting rods attached being careful not to damage oil feeder ring when fitting within base lugs and being sure there are no burrs or dirt on the pulley end of the crankshaft that might cut the oil seal.
  - G. If oil seal is to be replaced slide over the crankshaft and press into place in the base, the lip or seal side toward the crankcase. Do not hammer directly on the seal.
  - H. Replace valve parts in sequence indicated in explode drawing being careful not to force any parts together when tightening this center screw and locknut (Torque — 28 foot — pounds). After assembly depress valve plate to insure that the valve works freely.
  - I. Install key and pulley after cylinder head, intercooler and after-cooler are connected.
  - J. Turn pulley over by hand several times to insure that no interference of any kind exists.
  - K. "Running in" for a few hours without the head assembly is recommended if a pump has been completely overhauled — especially if new pistons and/or cylinders have been installed.

### Valves

Valves are generally considered to be maintenance items and require care by the user. They are the most important part of the compressor and the importance of proper care and maintenance cannot be over-emphasized.

All valves should be removed from the cylinder head at the end of the first two or three months of operation and examined for cleanliness and carbon formation. Clean with safety solvent and blow off with compressed air. Depending on what is found at this inspection, the next inspection should not be more than 4 to 6 months later. These 2 inspections will guide you in scheduling periodic cleaning times which will pay off many times over in providing trouble free service and reduced down time.

## Troubleshooting

### 1. Slow Pumping Or Insufficient Pressure Can Be Caused By

- A Clogged inlet filter — (Disassemble and clean thoroughly.)
- B Leaks in air lines, valves, fittings, etc. (Locate using soapy water if necessary: replace or tighten threaded parts.)
- C Compressor too small for equipment being operated — (Check air requirements and add to compressor capacity — consult dealer.)
- D Leaking head valves - (Remove hold-down covers and remove valves for examination. Repair or replace faulty valves.) Valves can be removed from head by tapping valve screw with hammer handle or piece of wood, to loosen valve from head, before lifting valve.  
Clean all parts thoroughly. Valves and seats must be flat and smooth and sometimes can be resurfaced by rubbing on fine emery cloth held on a smooth flat surface. Badly worn parts, including springs which lose tension after considerable use should be replaced Reassemble

valve parts in sequence indicated in explode drawing. Examine valve gaskets carefully and replace if doubtful of condition. Be careful that nothing falls into the cylinder that could get caught between top of piston and cylinder head. Before reassembling valve look into cylinder through valve opening while turning flywheel by hand.

## 2. Excessive Oil Consumption

"Oil Pumping" usually results from using the wrong type or an inferior grade of oil. Replacing worn or stuck piston rings will help correct this condition but contrary to popular belief, worn rings do not affect pumping efficiency appreciably.

Piston rings can be replaced by removing cylinder while the heads are off. Remove rings and clean grooves in piston.

The low pressure oil ring provided is of the latest design and is the same as furnished on the new automobile engines. It is of three-piece construction with two chrome-plated rails and an expander ring. Some new units may pump a slight amount of oil for a period of time but as the chrome-plated rails seat to the cylinder walls this will gradually diminish. Should excessive oil consumption continue, the cylinders should be checked for scoring and the oil ring checked for proper assembly. The two ends of the expander rings are colored with paint for identification and when properly assembled should be butted, not overlapped. The high pressure oil ring is of the one piece construction.

A coating of clean oil should be placed on the rings and the inside of the cylinders for ease of assembly and to minimize possibility of scoring cylinder. See Paragraph 16 for reassembly procedure.

## 3. Noisy Operation Can Be Caused By

- A. Loose parts — external — (Tighten loose bolts, particularly the flywheel pulley to the crankshaft.)
- B. Foreign matter such as carbon, metal chips, etc. on pistons striking head at top of stroke (Remove head and clean).
- C. Piston extending above cylinder at top of stroke and hitting head. (Remove cylinder and add base gasket, not upper cylinder gasket.)
- D. End play in crankshaft — (Remove end cover, take out one end cover gasket or shim and replace). Do not remove too many shims or binding may result, see Paragraph under fitting and reassembling.
- E. Loose valves — Hex head cap screws are not tight enough. (Tighten screws )



Screws should be tightened snugly but not too tight as hold-down cover corners could be broken. Screws should be tightened evenly keeping covers parallel with cylinder head. Screws have nylon insert in threads and are of self-locking construction. They will not loosen from vibration and can be removed and retightened several times without losing their holding ability.

F. Loose or worn parts — Internal, e.g. pistons, connecting rods, wrist pins, valves — (Pump should be overhauled — preferably in distributors service department or factory. Loose rod bolts

can be tightened after removing crankshaft, but if bearings are worn or scored, new insert bearings must be installed.)

#### **4. Oil Leak**

At base or end cover gasket — (Disassemble at point of leak, shellac or perma-gasket on both sides and reassemble. Maintain correct oil level).

#### **5. Vibration**

Characteristic of all reciprocating machines can be held to a minimum by keeping the compressor securely fastened to a solid level foundation, maintaining proper belt alignment and keeping nuts and bolts tight.

#### **6. Overheating**

Compression of air generates heat, much of which is dissipated as air passes over the cylinder. Overheating can be caused by:

- A. Pump running backwards — (Reverse direction.) Proper rotation is counterclockwise facing flywheel.
- B. One or more head valves failing to seat properly — (Remove hold-down cover, valve cage, and valve. Clean, reseal or replace valves.)
- C. Blown cylinder head gasket — (Replace after cleaning all traces of old gasket from head and cylinder.)
- D. Restriction in head, intercooler or check valve if used. — (Remove and clean.)
- E. Lack of oil — (Check oil level, if necessary, remove side plate to see that oil feeder ring is free to turn.)
- F. Dirt in cylinder fins - (Blow out with air.)
- G. Poor ventilation and high room temperature  
(If compressor cannot be moved, check possibility of piping intake to cooler location.)

#### **7. Compressor Has No Or Insufficient Output**

- A. Suction filter soiled-( Clean suction filter)
- B. Suction and pressure valves worn or defective-( Replace valves)
- C. Vent (unloading) valve does not close-( Check whether the vent (unloading) valve closes when the compressor is running; overhaul or replace valve, if necessary)

#### **8. Safety Valve Of The First Stage Blows Off**

- A. Suction and pressure valves of the second stage defective or worn-( Replace valves)
- B. Seal between valve and cylinder head defective-( Replace seal)

#### **9. Oil Foam in The Crankcase**

- A. Last stage piston worn-( Operate compressor with final stage valve head removed. If oil collects at rim of cylinder, piston clearance ok. If oil flows continuously out of cylinder, replace piston and liner)
- B. Last stage outlet valve defective-( Replace)

#### **10. Oil out of from the breather**

Compressor piston jammed-(Replace pistons and cylinders)

## Maintenance



To obtain reliable and satisfactory service, this unit requires a consistent preventive maintenance program. Maintenance schedule pages are included in the back of this manual to aid in keeping the proper records.

### General

1. Check your compressor regularly!
2. Check entire system for air leakage around fittings, connections, and gaskets, using soap solution.
3. Remove dust or oil soiling.
4. Check fastener tightness by using torque wrench to the corresponding values within this guide.

### Safety information



Please observe the following instructions when performing any maintenance, cleaning, repair work; when relocating the compressor plant; prior to installing and dismounting component parts, receivers, fittings and screw connections.

- Always isolate the compressor at the main switch prior to performing any maintenance work.

Secure the main switch against accidental switching on! Remove the electrical fuses in order to avoid accidents!

- Depressurize the compressor!

Disconnect from the compressed air network by closing the ball valve on the compressed air outlet.

Perform maintenance or servicing work.

Only allow skilled and qualified welders to perform welding work on compressed air receivers!

After welding work on compressed air receivers, new constructional and hydrostatic pressure tests are to be carried out.

- Prior to switching on again, check whether anyone else is working on the compressor!

For your own safety, never omit a safety step!

Otherwise you will risk injury from restarting, electric shock or parts which may fly off!

### Check oil level



Check oil level every week and top up, if necessary: fill the oil tank with oil until the sight glass is 1/4 to 3/4 full.



Oil sight glass



**WARNING**

**Use the same brand oil**

#### **Check and clean compressor valves**

if compressor fails to pump air or seems slow in filling up tank, disconnect unit from power source and remove valves and clean thoroughly, using compressed air and a soft wire brush. After cleaning exceptional care must be taken that all parts are replaced in exactly the same position and all joints must be tight or the compressor will not function properly. When all valves are replaced and connections tight, close hand valve at tank outlet for final test. Valve gaskets should be replaced each time valves are removed from pump. Replace springs, discs and seats when worn or damage.



**CAUTION**

Valves must be reinstalled in original position. Incorrect valve replacement may result in overpressure of the cylinder head resulting in catastrophic failure, injury or death. Valve gaskets should be replaced each time valve are serviced.

#### **Checking the safety valve**



**DANGER**

The safety valve must respond when the compressor pressure increases too high.

The inter stage pressure relief valve is provided to protect against inter stage over pressure and is factory set for maximum pressure of 75 PSIG. If the pressure relief valve pops open, it indicates

trouble. Shut down the unit immediately and determine and correct the malfunction. Inspect the head valves. Serious damage can result if not corrected and can lead to complete destruction of the unit. Tampering with the inter stage pressure relief valve, or plugging the opening destroys the protection provided and voids all warranty.

The valve must be able to blow off the entire delivery quantity of the compressor. As it is rarely or never operated, it is of utmost importance for the safety of the compressor that the valve is regularly checked. Check the valve once a year or after 2000 operating hours.

This is the only maintenance work which has to be performed while the compressor is running. Make sure that all safety devices are correctly installed! Never perform this work with the safety device removed! Danger of injury or death!



#### **Do not readjust!!**

Test safety valve on compressor:

A ring is located at the free end of the safety valve. Pull the ring by hand. Never remove the lead seal at the head of the valve!

If you now pull the ring further, the safety valve should blow off increasingly more air.

If the valve blows off correctly, drop hand tight in its seating and complete the check.

- If the valve does not blow off although you have pull the ring up to the end of the stud, it is defective. Please have a new safety valve fitted by **LAPLANTE** Service.

Test the valve as described in section "Testing safety valve on compressor".

### **Compressor Oil**

#### **General**

Compressors are factory filled with **LAPLANTE** hydrocarbon based recip lubricant. This is an ISO non-detergent industrial lubricant with rust and oxidation inhibitors specially formulated for reciprocating compressors. It is recommended this compressor be maintained using this oil for ambient temperature above 32 F degreed.

LAPLANTE synthetic is a premium grade diester based synthetic lubricant providing excellent performance in high temperature applications.



**Do not mix oil types, weights or brands.**



Normal break-in period of **LAPLANTE** air compressors is 25 hours.

for the first 500 hours of compressor operation, a careful and regular check of the oil level should be made. Maintain oil level at the full time.

**Change To Synthetic Lubricant**

If changing to synthetic lubricant, the following steps must be completed.

Compressor must run for a 25 hour break-in period using LAPLANTE ISO 100 oil.

Thoroughly drain existing oil from crankcase.

Fill crankcase with a full charge of synthetic lubricant.

Run compressor for 200 hours.

Stop compressor and thoroughly drain the synthetic lubricant.

Add a full charge of synthetic lubricant.

Compressor now ready to run for extended period before next lubricant change made. Maintain oil level at the full line.

**Lubricant**

**Frequency Of Oil Change**

Change oil every 3000 operating hours whichever comes first. For constant run applications in daily use or units subjected to extremely heavy use change oil monthly.

#### **Oil Recommendation**



**Any Approved Oil Which Is Equal To Those Specified May Be Used**

**Ambient Or Room Temperature 55° F To 120° F**

AMOCO	SHELL	MOBIL	TEXACO	CHEVRON	GULF	EXXON
#51	Tellus Oil 41 Rotella Oil 30	Del vac 1230 DTE Heavy	Regal ER&O	EP68X	Paramount 58	Teresstic 100

**Ambient Or Room Temperature 32° F TO 55° F**

AMOCO	SHELL	MOBIL	TEXACO	CHEVRON	GULF	EXXON
#31	Tellus Oil 33 Rotella Oil 20-20W	Delvac 1220 DTE Heavy Med.	Regal CR & O	EP55X	Paramount 49	Teresstic 68

**Ambient Or Room Temperature 0° F TO 32° F**

AMOCO	SHELL	MOBIL	TEXACO	CHEVRON	GULF	EXXON
#21	Tellus Oil 25 Rotella Oil 10W	Delvac 1210 DTE Medium	Cetus Oil	EP45X	Paramount 65	Teresstic 32

**Suction Filter**

Regularly and carefully maintain the suction filter approx. every 500 operating hours, depending on the degree of soiling of the air taken in. Soiled suction filters can cause high oil consumption and reduced delivery quantity! If the installation site is heavily contaminated with dust, provide a dry air filter with paper cartridge. If the ambient air is heavily contaminated, we recommend using dry air filters.

All compressors are available with a common air filter with under pressure display for all cylinders.

**Clean air filter**

Nearly 1500 operating hours or 1 year

Check air filter and clean, if necessary

After undoing the snap fasteners, lift the cover off and take out the filter cartridge. If the filter is soiled, clean as follows:

Clean the cartridge on the outside by an inclined air blast at max. 3-5 bar.

The cartridges can be cleaned up to three times before being replaced with new ones.

Nearly 1500 operating hours or 1 year to change the filter element

**Clean the filter casing.**

Carefully inspect the cartridge for damage. Only use completely intact filters cartridges!

Examine cover seal and replace with a new one if damaged.

Insert filter cartridge, replace casing cover and close with fastening clamps.



Cleaning the air filter

### Maintenance intervals

We recommend servicing and maintaining your compressor at the following intervals. The hours of operation refer to average working conditions. Other intervals may apply depending on these conditions. Please contact LAPLANTE in this event.



Please record each maintenance task in the table on the last pages of these instructions! This may help **LAPLANTE-Service** to locate faults if any occur.

Maintenance work	Maintenance intervals dependent on usage		
	either after	or	
	Operating hours	weekly / monthly	yearly
Check oil level and top up, if necessary		weekly	
Check suction filter and clean, if necessary	500	monthly	
Replace suction filter cartridge	2000		X
Check safety valve	2000		X
Check cooler for soiling and clean, if necessary	500	monthly	
Change oil *	1.000		every 1 years
Check V-belt for damage and replace, if necessary	2.000		X

### List of Maintenance and service work

Date	Operating hours	Check / top up oil level	Clean / check air filter	Replace air filter element	Check/replace V-belt	Check safety valve	Oil change	Check/clean fin cooler







Date	Operating hours	Check / top up oil level	Clean / check air filter	Replace air filter element	Check/replace V-belt	Check safety valve	Oil change	Check/clean fin cooler



## Motor

Carefully read and fully understand the Owner's Manual Prior to installation, operation and maintenance of your motor.

### 1. RECEIVING AND INSPECTION

Check packing list and inspect the motor to make sure no damage has occurred during shipment. Turn the motor shaft by hand to be certain that it rotates freely without any mechanical rubbing or other audible noise. Check the nameplate for conformance with power supply and control equipment requirements.

### 2. STORAGE



#### **FALLING EQUIPMENT can injure or death**

Lift only using equipment of adequate lifting capacity.

If so equipped, use lift ring(s) on the motor to lift **ONLY** the motor and mounted accessories

Motor stock areas should be clean, dry, vibration free and have a relatively constant ambient temperature. For added bearing protection while the motor is in storage, turn the motor shaft every 2~3 months.

Windings should storage, the resistance reading must not have dropped more than 50% from the initial reading. All external motor parts subject to corrosion, such as shaft and other machined surfaces, must be protected by applying a corrosion-resistant coating.

### 3. INSTALLATION

For maximum motor life, place the motor in a clean, dry, well-ventilated location easily accessible for inspecting, cleaning and lubricating.

#### 3.1 INSTALLATION- MECHANICAL



#### **MOVING PARTS can injure.**

Before starting the motor, be sure the shaft key is captive.

Consider the application and provide guarding to protect personnel.

Base

Mount the motor on a firm foundation or base sufficiently rigid to prevent excessive vibration. If necessary, properly shim the motor to prevent undue stress on the motor frame and for better alignment of the unit.

## Drive

The pulley, sprocket, or gear used in the drive should be located on the shaft as close to the shaft shoulder as possible. Belt Drive: Align the pulleys so that the belt(s) will run through. Properly tension the belt; excessive tension will cause premature bearing failure.

Chain Drive: Align the sprockets so that the chain will run through. Avoid excessive chain tension. Gear Drive and Direct Connection: Accurate alignment is essential. Secure the motor

and driven unit rigidly to the base. Shims may be needed to achieve proper alignment.

## 3.2 INSTALLATION-ELECTRICAL



### **ELECTRIC SHOCK can kill.**

Disconnect input power supply before installing or servicing motor. Motor lead connections can short and cause damage or injury if not well secured and insulated. Use washers, lock washers and the largest bolt size which will pass through the motor lead terminals in making connections. Insulate the connection, equal to or better than the insulation on the supply conductors. Properly ground the motor-See Grounding. Check power supply to make certain that voltage, frequency and current carrying capacity are in accordance with the motor nameplate. Proper branch circuit supply to a motor should include a disconnect switch, short circuit current fuse or breaker protection, motor starter (controller) and correctly sized thermal elements or overload relay protection. Each of these should be properly sized and installed per the National Electrical Code and local codes.

### **Terminal Box**

Remove the appropriate knockout. For terminal boxes without a knockout, either a threaded power-conduit entry hole is provided or the installer is responsible for supplying a correctly sized hole.

### **Motor Connection**

See the nameplate.

## GROUNDING



### **ELECTRIC SHOCK can kill.**

**Connect the motor frame to a good earth ground per the National Electrical code and local codes.**



Motors may be electrically connected to earth ground using a terminal box mounting screw or a separate grounding screw when provided. In making the ground connection, the installer should make certain that there is a good electrical connection between the grounding lead and the motor

## 4. OPERATION

Power supply ratings conform to the requirements on nameplate, after checking that the shaft key is secure, operate the motor free of load and check the direction of rotation. If the motor rotates in the wrong direction, interchange any two supply leads.

Couple the motor to its load and operate it for a minimum of one hour. During this period, check for any unusual noise or thermal conditions check the actual operating current to be sure that the nameplate current times service factor is not exceeded for steady continuous loads.

## 5. MAINTENANCE



### **ELECTRIC SHOCK can kill.**

Internal parts of the motor may be at line potential even when it is not rotating.

Disconnect all input power to the drive and motor before performing any maintenance.

Do not touch by hand the frame of working motor to prevent from being scalded.

Periodically inspect the motor for excessive dirt, friction or vibration. Dust may be blown from an inaccessible location using compressed air. Keep the ventilation openings clear to allow free passage of air.

## **BEARING SYSTEM**

Motors have a high quality, premium design bearing system. Bearing sizes and enclosures are identified on most motor nameplates. The majority are double-shielded, deep-groove ball bearings. Double-sealed ball bearings are also used.

## Check valve

### General

The check valve closes when the compressor stops operating, preventing air from flowing out of the tank through the pressure release valve. After the compressor stop operating, if air continues to escape through the release valve, it is an indication that the check valve is leaking. This can be corrected by removing check valve and cleaning disc and seat. If check valve is worn badly, replace same.

### Safety information



Before removing check valve be sure all air is drained out of tank and power is disconnected. Failure to do so may result in injury or equipment damage.



## Air Receiver

### General

Install the compressed air receiver such that nobody is endangered. Protect it from mechanical influences in as much that damage entailing dangerous consequences for persons is not be expected. Ensure that it is possible to operate the compressed air receiver and its equipment from a safe workplace.



**Maintain the protection areas and protection space!**

### Safety information

Ensure that the compressed air receiver is securely mounted and cannot be displaced and tilted by external forces. This also includes the additional weight of the test medium during pressure testing! Where possible, ensure that the receiver is accessible from all sides for repetitive tests. Ensure that the company plate is easily visible.

It is forbidden to undertake repair and modification work which may influence the safety of the compressed air receiver. This applies in particular to work which may change the material properties. Do not undertake welding work on a receiver once the water pressure tests have been passed! Reinforcing plates for mounting plates and brackets are not considered as pressure bearing elements.



**Suitable protect compressed air receiver against corrosion.**

**Adhere to the generally accepted rules of technology when maintaining and installing the receiver.**

### Checking the safety valve



The safety valve must respond when the compressor pressure increases too high.

The inter stage pressure relief valve is provided to protect against inter stage over pressure and is factory set for maximum pressure of 175 PSIG. If the pressure relief valve pops open, it indicates trouble. Shut down the unit immediately and determine and correct the malfunction. Inspect the head valves. Serious damage can result if not corrected and can lead to complete destruction of the unit. Tampering with the inter stage pressure relief valve, or plugging the opening destroys the protection provided and voids all warranty.

The valve must be able to blow off the entire delivery quantity of the compressor. As it is rarely or never operated, it is of utmost importance for the safety of the compressor that the valve is regularly checked. Check the valve once a year or after 2000 operating hours.



This is the only maintenance work which has to be performed while the compressor is running. Make sure that all safety devices are correctly installed! Never perform this work with the safety device removed!



**Danger of injury or death!**



**Do not readjust!!**

Test safety valve on tank:

A ring is located at the free end of the safety valve. Pull the ring by hand. Never remove the lead seal at the head of the valve!

If you now pull the ring further, the safety valve should blow off increasingly more air.

If the valve blows off correctly, drop hand tight in its seating and complete the check.

- If the valve does not blow off although you have pull the ring up to the end of the stud, it is defective. Please have a new safety valve fitted by **LAPLANTE** Service.

## Condensate

### Manually draining off condensate from the compressed air receiver

If no automatic condensate separator is fitted, drain off the condensate by hand at least once a week.



Depressurize the receiver.

Place a suitable collecting basin underneath the ball valve under the receiver.

Open the ball valve and allow the condensate to drain off into the collecting basin.

Once the condensate has completely drained off, close the ball valve again and correctly dispose of the condensate.



## Safety information



**Please observe the following instructions when performing any maintenance, cleaning, repair work; when relocating the compressor plant; prior to installing and dismantling component parts, receivers, fittings and screw connections.**

- Always isolate the compressor at the main switch prior to performing any maintenance work.  
Secure the main switch against accidental switching on! Remove the electrical fuses in order to avoid accidents!
- Depressurize the compressor!  
Disconnect from the compressed air network by closing the ball valve on the compressed air outlet.
- Perform maintenance or servicing work.
- Only allow skilled and qualified welders to perform welding work on compressed air receivers!  
After welding work on compressed air receivers, new constructional and hydrostatic pressure tests are to be carried out.
- Prior to switching on again, check whether anyone else is working on the compressor!

**For your own safety, never omit a safety step!**

**Otherwise you will risk injury from restarting, electric shock or parts which may fly off!**



# Pressure switch

## General

### Pressure switches

Pressure switches are mainly used to switch pump and compressor motors on and off depending on the pressure so that the pressure of a given media within a tank does not exceed an upper or fall below a lower value. The upper pressure value by which e.g. a pressure switch breaks an electric circuit (NC function) is called the cut-out pressure. The lower pressure value by which the pressure switch makes an electric circuit is called the cut-in pressure. Both cut-out and cut-in pressures within a given range can be set on the pressure switch. The reversed switching function by which the upper setting point makes an electric circuit and the of a lower setting point breaks the electric circuit is called NO function. The pressure switch related difference between cut-in and cut-out pressures is called hysteresis. Every pressure switch allows the natural hysteresis to be increased by a differential adjustment. An easy two-point control with a pressure switch is thus feasible.

### Control pressure switches

Control pressure switches represent a special group within pressure switches. These devices are especially suitable for monitoring and controlling purposes.

### Unloader valves- (EV) and delayed unloader valves (AEV)

Within the range of compressor technology, unloader valves are very often used. Unloader valves allow air within the feed line of the pressure tank to be bled off enabling pressure less start of the motor when the pressure switch switches off the motor, extending the life cycle of the motor. The delayed unloader valve has the same function and additionally supports the motor when starting in that it remains open until a certain pressure (approx. 2 bars) is reached. In contrast to the unloader valve, the delayed unloader valve is always open and has delayed closing properties.

## Pressure switch settings



Before any changes are carried out on a pressure switch it must be ensured that it is completely voltage free. However, all settings are to be carried out under pressure. Switching points are always to be compared with pressure readings of a pressure gauge. Eventually existing pressure scales on some devices serve orientation purposes only.

When the main pressure spring is adjusted, the cut-in and cut-out value of all pressure switches change proportionally, i.e. the differential between these values always remain the same. If the range between cut-in and cut-out value is to be increased, the differential pressure screw must be used.

When carrying out a differential pressure adjustment on the pressure switch the cut-out pressure value changes, the cut-in pressure value remains constant. (Notice: As a standard, the MDR 11 are delivered without differential adjustments, however, they available as an accessory).

In contrast and regarding all other pressure switch types, the cut-in pressure value changes, the cut-out pressure value remains constant.

In the pressure diagram, each pair of cut-in and cut-values are represented by a point. If the point is within the shaded area of the diagram, then these pair of values can set on the pressure switch. If the point is outside the shaded area, then these pair of values cannot be set on the pressure switch

## Repeatability



The permissible tolerance of the switching values (repeatability) lies at under < 3% of the upper range value.

## Service

Our service offers you the possibility of carrying out pressure settings depending on your requirements. We, of course, can also mount any accessories you may need on demand, profiting at the same time from a complete warrantee.

## High performance pressure switches for AC currents

### Overview



Type designation*			MDR 11			
<b>Media</b> *1			air			
<b>No. of poles</b>			2 pole			
<b>Contact function</b>			2 N.C.			
<b>Voltage</b>			230 V			
<b>Motor switching capacity</b>			4.0 kW			
<b>Rated current</b>			20 A			
<b>Flange types</b>			G			
*2			1/4" F4			
			1/4" F4			
			3/8"			
<b>Pressure ranges (bar)</b>			1 2.5			
<b>Cut-out pressure from - to</b>			- 11			
<b>Degree of Protection</b>			IP 41/44			
<b>Permissible media temperature: Air</b>			-5...70 °C			
<b>Permissible media temperature: Water</b>						
<b>Max. cross-section (fine stranded)</b>			2.5 mm <sup>2</sup>			
<b>Standard Cable glands</b>			with PG 13.5 Z/ZK			
<b>Standard On / Off lever</b>			with EA			
<b>Standard Differential setting</b>			without differential setting (only as accessory)			
<b>Standard Delayed (AEV) – Unloader valve (EV)</b>			with AEV (Accessory EV)			

\* Table refers to catalogue product

\*1 Preferred / most used media, further media, see table on page 2.11 or on demand

\*2 e.g. four-way flange F4 3/8" (main connection G3/8", additionally 3 x G 1/4" ports)

\*3 0 = switch need not be turned, use swivel nut for mounting

\*4 WN = grommet

## Pressure switch MDR 11



### Pressure switch MDR 11 / 11, Compressor version

**Single phase**  
**Switching capacity 4.0 kW / 4 HP**  
**Max. cut-out pressure 11 bar / 160 psi**  
**Incl. cable glands PG13,5 Z/ZK**  
**With delayed unloader valve AEV 11 S**  
**2-pole (N.C.)**  
**Acc. to EN 60947**  
**UL / CSA-approval**  
**Optional differential adjustment**

### Type Overview MDR 11 / 11 bar

Order reference	ON/ OFF lever	Pressure range $P_{OFF}$ in bar	Flange	Weight in g	Part No.
MDR-11 GBA AAIA 060A080 QDE XXX	EA	2.5 – 11	G 1/4"	300	235736
MDR-11 GEA AAIA 060A080 QDE XXX	EA	2.5 – 11	F4 1/4"	320	235743

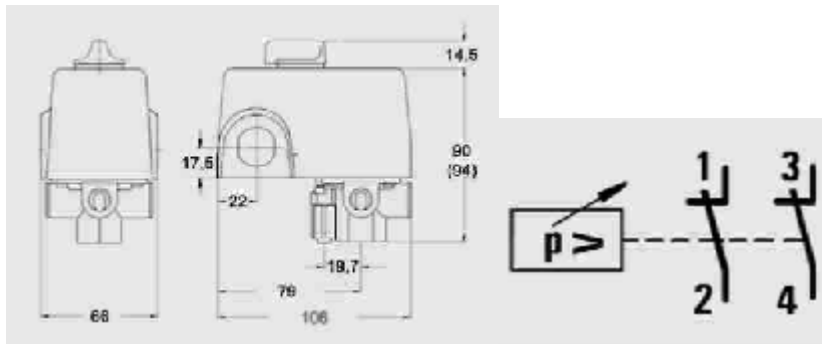
Unloader valves and cable glands for retrofitting see Accessories!

### Technical Data MDR 11

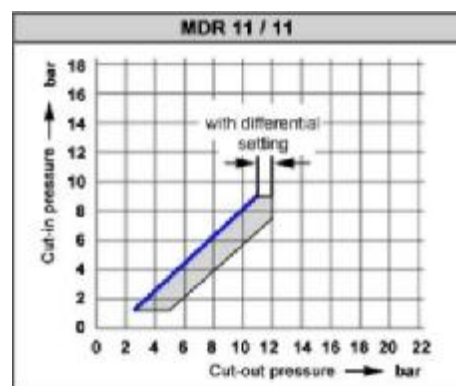
Technical Data MDR 11 acc. to 60947 UL/CSA	
Rated insulation voltage $U_i$	500 V
Motor switching capacity (AC 3) $U_e=240$ V (1~)	4.0 kW 4.0
Motor switching capacity (UL 508, CSA 22.2) $U_e=240$ V (1~)	HP
Electrical life (AC 3) Cycles	$> 1 \times 10^5$
Mechanical life Cycles	$> 5 \times 10^5$
Max. electrical cycles Cycles/h	120
Max. mechanical cycles Cycles/h	600
Rated operational current $I_c$ (EN 60947) bei 240 V AC	20 A 26
Rated operational current $I_c$ (UL/CSA) bei 240 V AC	A

Technical Data MDR 11 acc. to 60947 UL/CSA	
Bursting strength $P_z$	$> 35$ bar
Permissible medium temperature Air	- 5...+ 80 °C +
Permissible medium temperature Water	70 °C
Degree of Protection acc. to EN 60529	IP 44
Conductor cross-section 1 .. fine stranded cable 1 x / 2 x	2.5 / 2.5mm <sup>2</sup>
Conductor cross-section 1 rigid cable 1 x / 2 x	2.5 / 2.5mm <sup>2</sup>

## Dimensions / Circuit Diagrams MDR 11



## Pressure Diagrams MDR 11



1 bar = 14,5 psi; 10 psi approx. 0,7 bar

### Explanation

#### Devices without differential pressure adjustment

After selecting the cut-in pressure, the cut-out pressure can be read from the pressure diagram. If only the cut-out pressure is known, the cut-in pressure to be set can also be determined from the diagram.

#### Example: MDR 11/11 without differential pressure adjustment

For a pre-selected cut-in pressure of 4 bar, the cut-out pressure is 5 bar. If, for example, the cut-out pressure is to be 4 bar, a cut-in pressure of approx. 2.7 bar has to be set.

#### Devices with differential pressure adjustment

An intersecting point is determined in the diagram by selecting a pair of cut-in and cut-out pressure values. If this point lies within the shaded area, this pair of values can be set on the pressure switch. If this point lies outside the shaded area, these values cannot be set. Example: MDR 1/11 with differential pressure adjustment

With a pre-selected cut-in pressure of 4 bar, the cut-out pressure can be determined and set between 5.4 and 8 bar using the differential pressure adjustment

## Checking / adjusting the operating pressure switch

**Check:** – After approx. 2000 hours of operation, but no less than 1x yearly.

**Adjust:** – If the cut-out and cut-in pressure is not the same as the set values.

**Set values (factory settings):**

Maximum pressure [PSI]	145	175	200
Cut-in pressure [PSI]			
Cut-out pressure [PSI]			



Do not set the cut-out pressure of the operating pressure switch above the final compression pressure (see type plate).

### To check the operating pressure switch:

- The operating pressure switch is located on the pressure receiver.
- Check the cut-in and cut-out pressure at the pressure gauge during operation.
  - Cut-out pressure = the pressure at which the compressor switches off.
  - Cut-in pressure = the pressure at which the compressor automatically switches back on.

### To adjust the operating pressure switch:



### Electrical voltage!

The operating pressure switch may only be adjusted by trained electricians. There may be exposed live contacts on the switch. There may be a risk of electric shock.



The operating pressure switch may only be adjusted under pressure!

- Remove the cover of the switch after having unscrewed the two fastening screws.
- Adjust the pressure switch according to the operating instructions.
- Retighten the casing of the operating pressure switch.



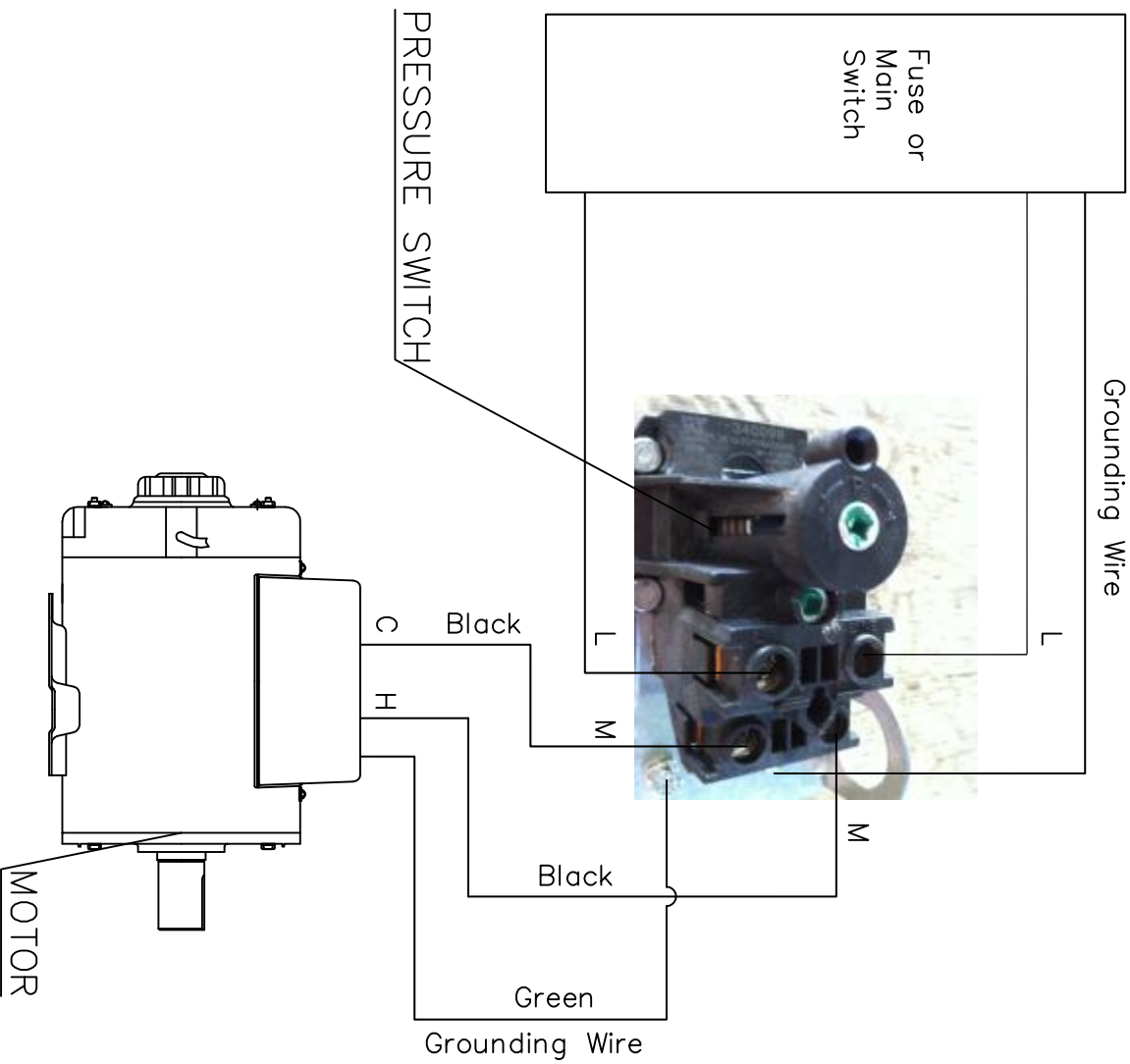


SINGLE PHASE 230 VOLT.

V60218-V8060 / V60223-W8060 / V60223-W8060T

**REVISIONS**

SYMBOL	DESCRIPTION	DATE & APPROVAL



**LAPLANTE COMPRESSOR®**

TITLE THREE PHASE WIRING DIAGRAM  
FOR 230 VOLTAGES  
FOR 4HP/5HP/56FR MOTOR

SCALE	ACAD REF. NUMBER	LC DWG. NUMBER	DRAWN BY JESSY
NTS			APPROVED BY
			DATE AUG. 18 12
			REV 01