Standard Duty Industrial Compressor Pumps

DEV-20, DEV-30-1, DEV-40, DEV-55 & DEV-100

Please read this manual before installing or using your Air Compressor Pump. It contains valuable information including Pump breakdowns, specifications, lubrication instructions, start-up procedures, and maintenance of the Pumps.

Please keep this manual in a safe place for future reference.

All of the information, policies, and procedures in this reference manual apply exclusively to DV Systems.

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Safety Precautions

In order to operate the Compressor Unit safely and correctly, we have opted to use the following symbols to make you aware of important points. These points relate to user safety and preventing equipment problems. Please pay close attention to these sections.

WARNING

Important safety Information. A hazard that may cause serious injury or loss of life.

CAUTION

Important information that indicates how to prevent damage to equipment, or how to avoid a situation that may cause minor injury.

NOTE

Information that you should pay special attention to.

WARNING

The following hazards may occur during the normal use of the equipment. Please read the following chart.

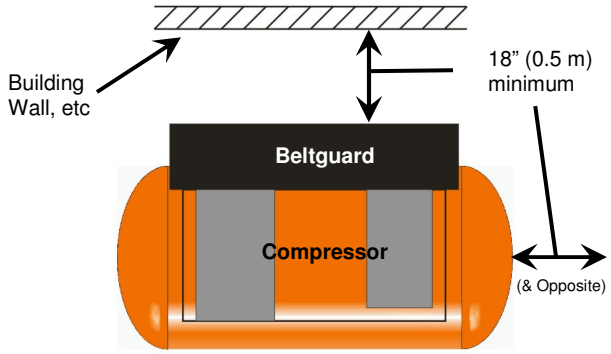
Area:	Hazard:	Safeguards:
What to look for:	What may occur if precautions are not observed.	How to avoid the hazard.
	Tampering with the Unit while under full or partial pressure may cause an explosion.	Relieve all pressure from the Unit before attempting any repair or maintenance work.
	As the Unit starts and stops automatically, serious injury may result from working on the Unit with the power still in the on position.	Shut off all power to the Unit before attempting any repair or maintenance work.
	As the Unit starts and stops automatically, do not come into contact with moving parts.	Shut off all power to the Unit before attempting any repair or maintenance work.
	Air compressed by the Unit is not suitable for inhaling. It may contain vapours harmful to your health.	Never directly inhale compressed air produced by the Compressor.
	The Compressor Pump, Motor, and Tubing become hot when running. Touching these areas may cause severe burns.	Never touch the Pump, Motor, or Tubing during or immediately after operation.
	As the electrical components on the Unit are General Purpose, there is a potential for explosion should vapours be present in the area.	The Compressor must be a minimum of 20 feet (6.1 meters) from any source of potentially explosive vapours.

Installation – Mechanical

Location of the Unit.

Items to consider when installing the Unit are as follows:

- The Unit should be located in a dry, clean, cool, dust free, and well ventilated area. If possible, the Compressor should be located in a separate room or area, away from the general operations of the shop.
- Allow a minimum of 18" around and 24" feet above the Unit, this being for both the proper ventilation of the Unit and ease of servicing.



NOTE

The Compressor must not be operated in a confined area where the heat from the Unit cannot readily escape.

- If installed in a compressor room, ensure that the room is adequately ventilated. (One Horsepower produces approximately 2500 BTU/HR.)
  Eg: 10 HP Unit x 2500 BTU/HP = 25,000 BTU/hour
- The ambient temperature should be between 50°F and 104°F (10°C to 40°C).

Many common Compressor problems can be attributed to the location or installation of the Unit. Make sure the Unit is in a suitable location, and installed correctly.

Pump Rotation.

The Compressor is to be wired in a manner that the rotation of the Pumps Flywheel causes the air to be blown from the Beltguard forward over the Pump. This, coupled with the unobstructed area behind the Beltguard of 18" (0.5 m) minimum, allows the Pump to cool properly.

When facing the Compressor (as shown at right), the Flywheel must rotate in a clockwise direction.

Lubrication

Initial Start-up.

Each Compressor Unit built is extensively tested at the factory before shipment. The Unit is shipped with the original oil in it as used for testing purposes.

Check the oil level and for any oil leaks on a daily basis. This must be done when the Unit is off. Top up the Oil level on a monthly basis.

Use only DV Systems Premium Compressor Oil. Also, do not mix the DV Systems oil with any other lubricant.

Oil Changes.

Drain the existing oil from the Unit by removing the Cap at the Oil Drain as shown below. Running the Unit prior to draining the oil will ensure that the oil will drain relatively quickly.

Fill the Oil Reservoir to the center of the Oil Sight Glass as indicated below. Do not under or overfill.

Oil Drain

The following oil is available from your DV Systems Distributor.

DV Systems Premium Mineral Oil	Room (Ambient) Temperature
30 Weight: 'PR-30-4'	Up to 90°F (32°C)

CAUTION

Do not attempt to operate the Unit without first checking whether there is oil in the Pump Crankcase. Add oil as required. Serious damage may result from use, however limited, without oil.

CAUTION

Use of improper oil may negatively affect Compressor performance or shorten Unit life. Resulting problems are not covered by the DV Systems Warranty.

CAUTION

With limited Compressor use or installing in a very humid environment, condensation (water) may form in the Crankcase with the oil. If this occurs, change the oil more often than indicated on the Maintenance Schedule.

The following Maintenance Kits are available from your DV Systems Distributor. The Kits include both the Oil and Filters.

Kits c/w 30 Weight Mineral Oil

DV Systems Pumps	Kit Part Number
DEV-20, 30-1, 40	MK-40
DEV-55	MK-55
DEV-100	MK-100

Start-up Procedures

CAUTION **Do not attempt to operate the Unit without first checking whether there is oil in the Pump. Add oil as required. Serious damage may result from use, however limited, without oil.**

Initial Start-up

1) Ensure there is the correct amount of oil in the Pump. Refer to the 'Lubrication' section (Page 4) in this manual for proper type and level of Oil.

2) Do a visual inspection of the Unit, and ensure that all Bolt heads are sufficiently tightened. This must be done, as some fasteners may become loose in transit.

3) Turn the Compressor 'On' momentarily by positioning the Fused Disconnect or Breaker in the 'On' position. Ensure that the Flywheel is turning in the correct direction. See 'Pump Rotation' (Page 3).

NOTE

On Compressors with 3 phase power, switch 'L1' and 'L3' at the input into the Magnetic Starter if the rotation is incorrect.

4) Open the Compressor's Ball Valve, and start the Unit. Ensure that air is escaping to atmosphere. Allow the Unit to operate in this fashion for 30 minutes. This lubricates the Pistons, Bearings, and all internal surfaces.

5) After having run the Unit unloaded for 30 minutes (as noted in '4' above), close the Ball Valve, and allow the Unit to reach maximum operating pressure.

CAUTION

Do not place any materials in close proximity to the Compressor. Placing materials against or close to the Unit will limit the cooling required, and could lead to premature failure.

6) Ensure that the Compressor shuts off at the factory preset maximum pressure, and the head pressure is released at the Pressure Switch.

7) Measure the amp draw as the Unit reaches maximum pressure.

8) Once off, check the Compressor and piping systems for any air leaks. Correct as required.

WARNING

Shut off all power to the Compressor Unit before attempting any repair or maintenance.

9) With the Unit shut off, check the oil level in the Pump. Add oil as necessary.

10) After the Unit has run for 40 hours (or 2 weeks), retorque the Pump Bolts. Refer to the appropriate Pump breakdown for torque values.

NOTE **During the first few days of operation, check the Unit periodically to ensure it is running smoothly. Should you have any concerns, contact your DV Systems Distributor.**

Preventative Maintenance Schedule

Noted below are general maintenance guidelines for your DV Systems Pump and Compressor Unit. It is based on an approximate Compressor usage of 40 hours per week. If your particular application varies from this, please adjust accordingly.

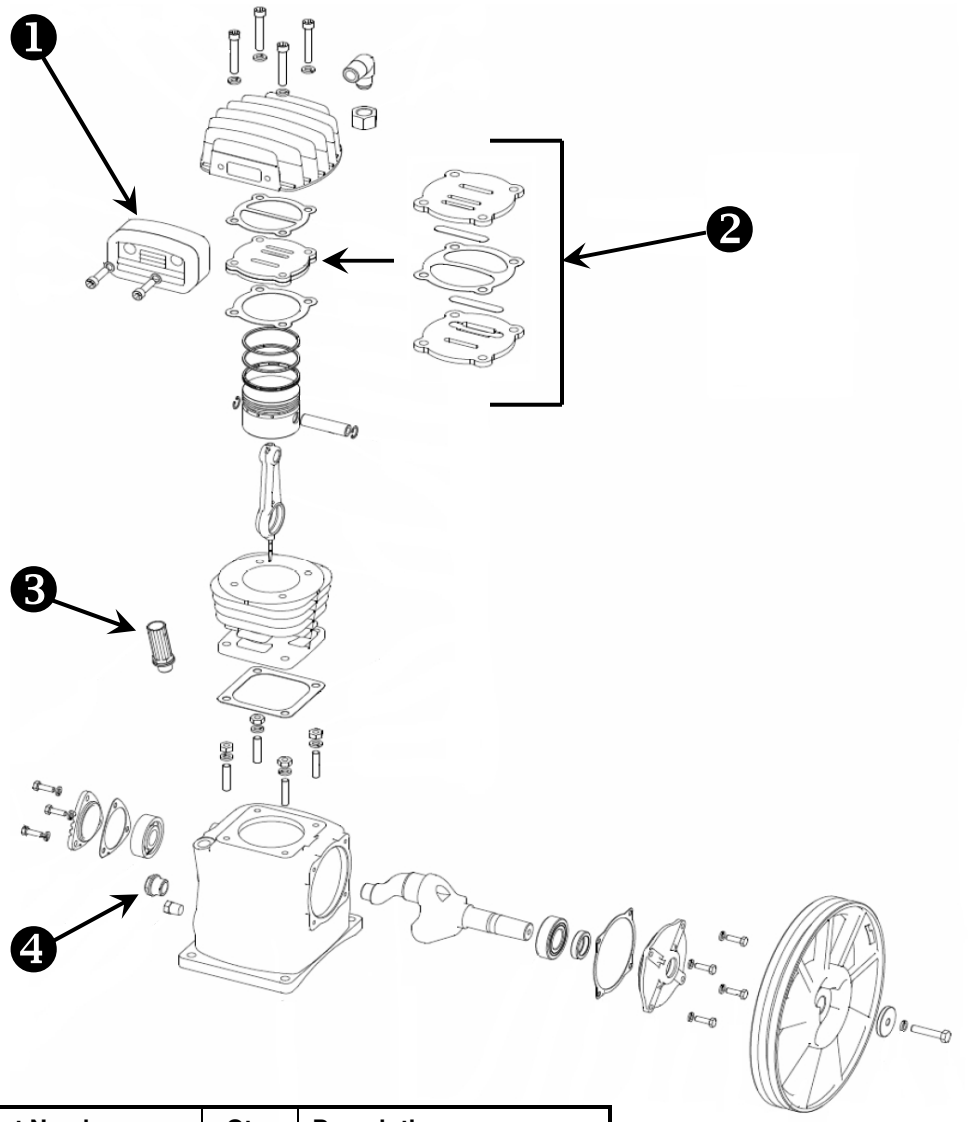
WARNING

When servicing the Air Compressor, shut off all power to the Unit, and drain the Tank of air pressure. Always replace the Beltguard after adjusting the Belts or Pulleys.

Insist on Genuine DV Systems parts and kits when maintaining your Compressor Unit and Pump.	Notes	Daily	Weekly	Monthly	Every 3 Months	Every 6 Months	Every Year
		Normal Maintenance					
Drain moisture from Air Receiver		✓					
Check oil level and top up as required			✓				
Replace Air Filter	1			✓			
Replace Oil (mineral)	2				✓		
Check condition/alignment of Belts/Pulley	3				✓		
Check Safety Valves					✓		
Check that Unit unloads when shutting down					✓		
Clean and/or blow dust/dirt off Unit					✓		
Replace Oil (synthetic)	4					✓	
Inspect Check Valve							✓
Inspect Pressure Gauge							✓

Notes:
1. Air Filters are available separately or in the Maintenance Kit. Consult the Pump breakdown.
2. Mineral Oil is available separately or in the Maintenance Kit. Consult the Pump breakdown.
3. Belts and Pulleys are available through your local DV Systems Distributor.
4. 'OJ2000-K1' Synthetic Oil is available in 1 US Gallon Jugs.

Compressor Pump – DEV-20



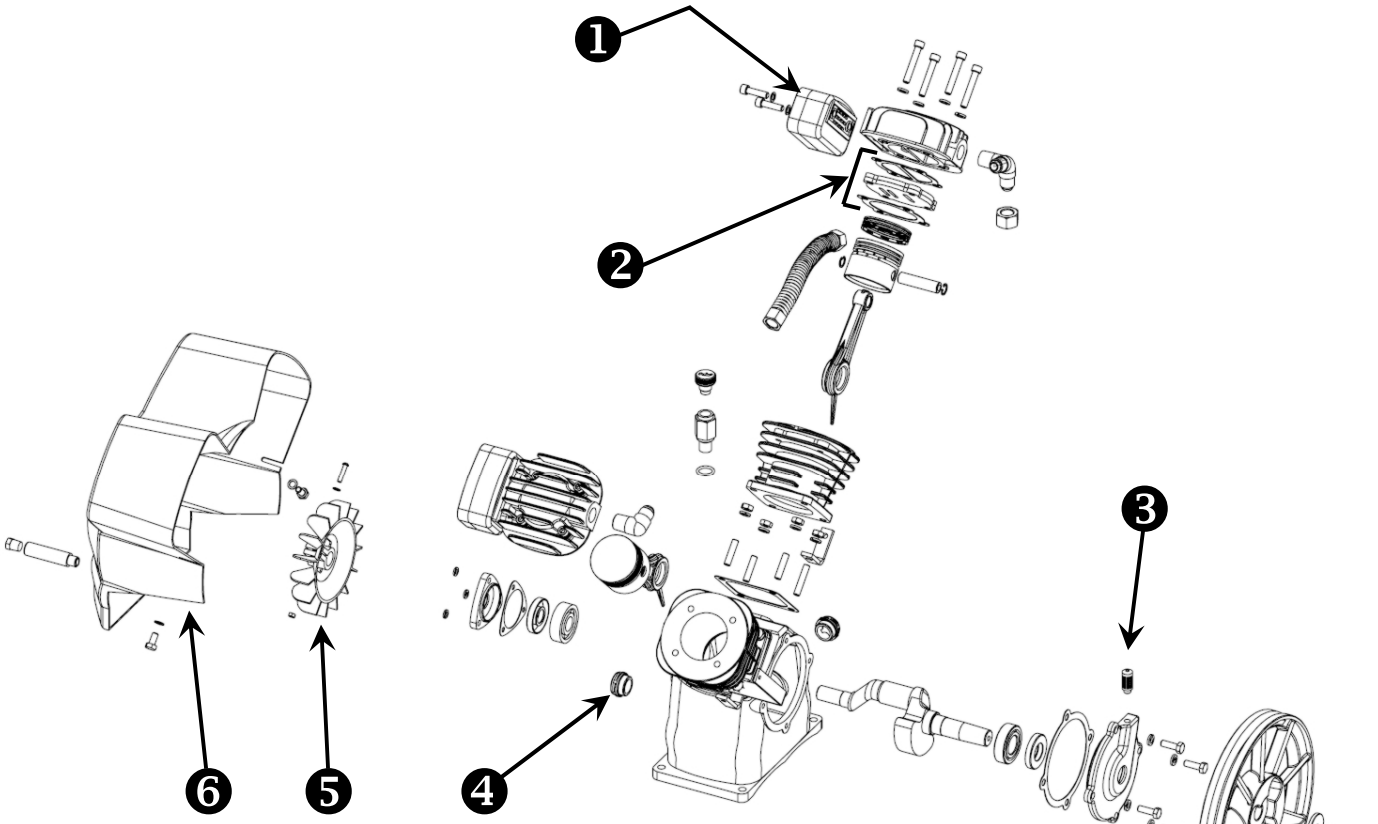
No.	Part Number:	Qty:	Description:
1	PB-21175002	1	Air Filter Assembly
	PB-21177012	1	Air Filter Element
2	VRK-40	1	Valve Repair Kit
3	PB-21166001	1	Crankcase Breather
4	PB-21164001	1	Oil Sight Glass

Note: The 'VRK-40' Valve Repair Kit includes the Valve Plates and the Gaskets necessary to install them.

Maintenance Kits:
The appropriate Maintenance Kit for the 'DEV-20' Pump is the part number 'MK-40' and includes the following:

(3) PB-21177012 Filter Elements
(1) PR-30-4 30 Weight Mineral Oil – 4 litre jug

Compressor Pump – DEV-30-1



No.	Part Number:	Qty:	Description:
1	PB-21175002	2	Air Filter Assembly
	PB-21177012	2	Air Filter Element
2	VRK-40	2	Valve Repair Kit
3	PB-21166003	1	Crankcase Breather
4	PB-21164004	1	Oil Sight Glass
5	PB-21177001	1	Fan Assembly
6	PB-21177025	1	Shroud Assembly
	GK-40	1	Gasket Kit

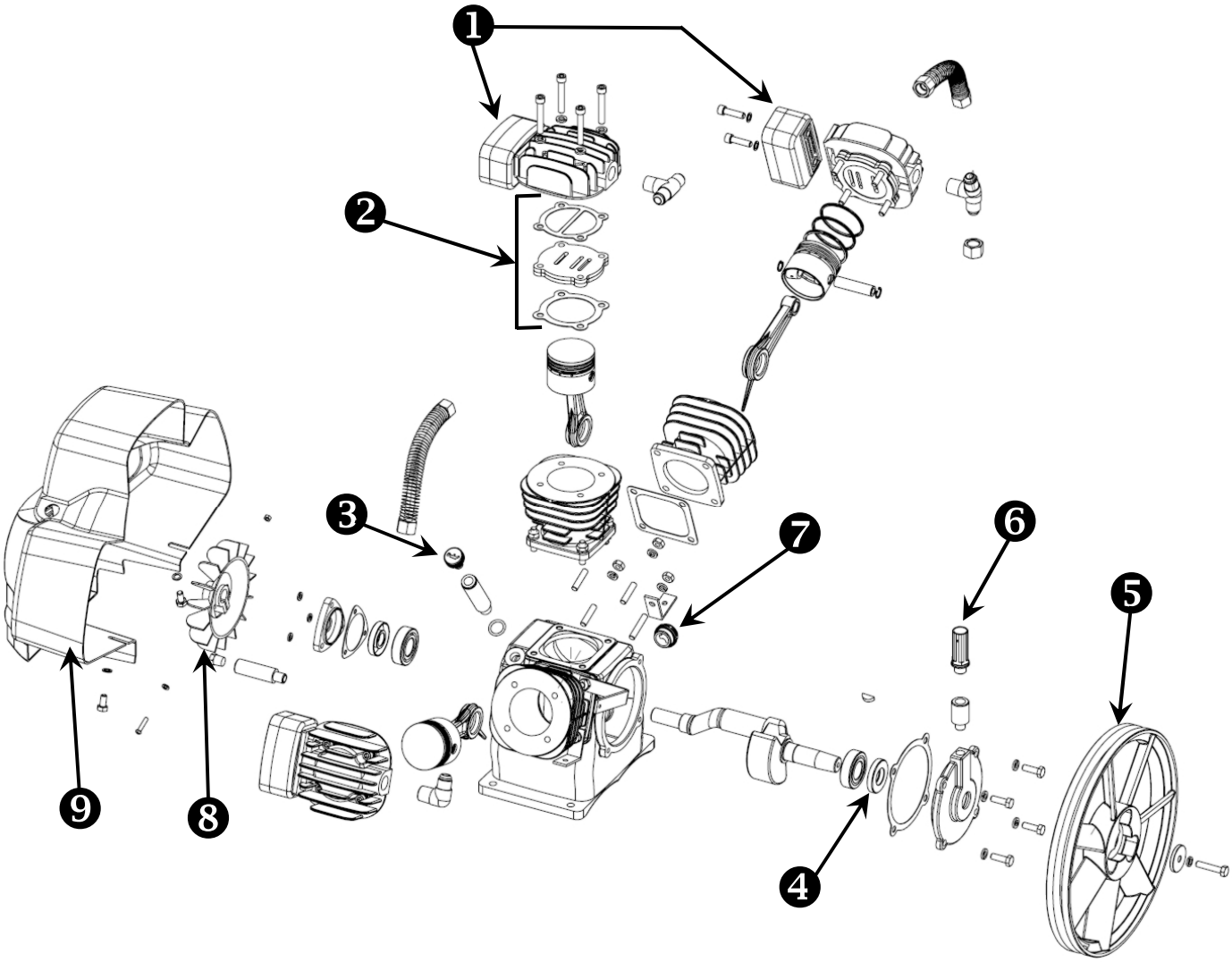
Note: 1. The 'VRK-40' Valve Repair Kit includes the Valve Plates and the Gaskets necessary to install them.

2. The previous 'DEV-30' Pump did not have the Fan Assembly and Shroud Assembly. All other components remain the same.

Maintenance Kits:
The appropriate Maintenance Kit for the 'DEV-30' Pump is the part number 'MK-40' and includes the following:

(3) PB-21177012 Filter Elements
(1) PR-30-4 30 Weight Mineral Oil – 4 litre jug

Compressor Pump – DEV-40



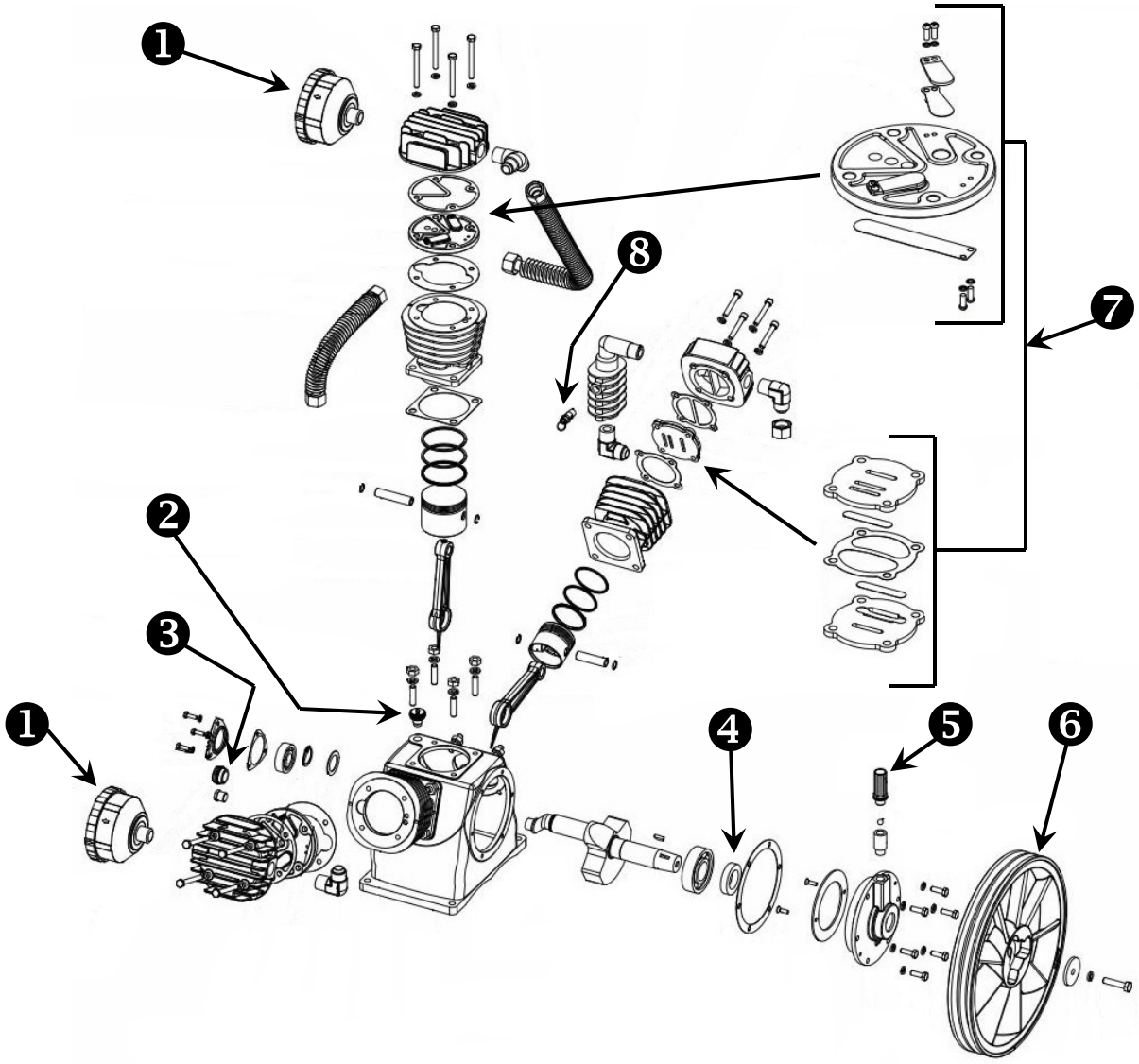
No.	Part Number:	Qty:	Description:	No.	Part Number:	Qty:	Description:
1	PB-21175002	3	Air Filter Assembly	6	PB-21166001	1	Crankcase Breather
	PB-21177012	3	Air Filter Element	7	PB-21164004	1	Oil Sight Glass
2	VRK-40	3	Valve Repair Kit	8	PB-21177001	1	Fan Assembly
3	PB-21167002	1	Oil Fill Plug	9	PB-21177020	1	Shroud Assembly
4	PB-21161004	1	Oil Seal		GK-40	1	Gasket Kit
5	PB-21212003	1	Flywheel		OK-40	1	Overhaul Kit

Note: 1. The 'VRK-40' Valve Repair Kit includes the Valve Plates and the Gaskets necessary to install them.
2. The previous 'DEV-40' Pump did not have the Fan Assembly and Shroud Assembly. All other components remain the same.
3. 'OK-40' Overhaul Kit includes (1) Gasket Kit, (1) Ring Kit, (3) Valve Repair Kits, and (1) Oil Seal.

Maintenance Kits:
The appropriate Maintenance Kit for the 'DEV-40' Pump is the part number 'MK-40' and includes the following:

(3) PB-21177012 Filter Elements
(1) PR-30-4 30 Weight Mineral Oil – 4 litre jug

Compressor Pump – DEV-55



No.	Part Number:	Qty:	Description:	No.	Part Number:	Qty:	Description:
1	PB-21175003	2	Air Filter Assembly	6	PB-21212004	1	Flywheel
	PB-21177010	2	Air Filter Element	7	VRK-55	1	Valve Repair Kit
2	PB-21167002	1	Oil Fill Plug	8	TIA-5075	1	Safety Valve – 75 psi
3	PB-21164004	1	Oil Sight Glass		GK-55	1	Gasket Kit
4	PB-21161005	1	Oil Seal		OK-55	1	Overhaul Kit
5	PB-21166001	1	Crankcase Breather				

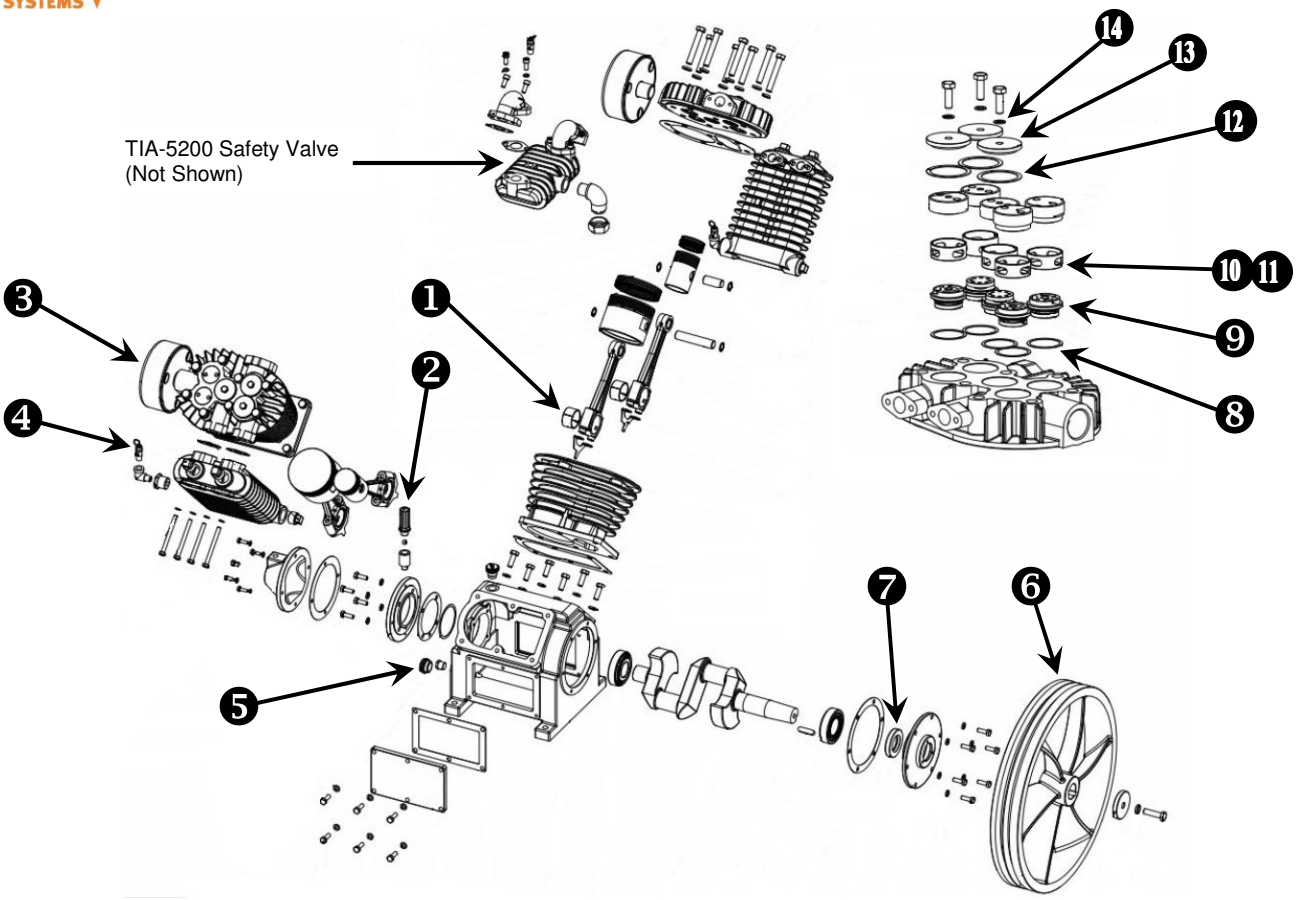
Note: 1. 'OK-55' Overhaul Kit includes (1) Gasket Kit, (1) Ring Kit, (1) Valve Repair Kit, and (1) Oil Seal.

Maintenance Kits:

The appropriate Maintenance Kit for the 'DEV-55' Pump is the part number 'MK-55' and includes the following:

(2) PB-21177010 Filter Elements
(1) PR-30-4 30 Weight Mineral Oil – 4 litre jug

Compressor Pump – DEV-100



No.	Part Number:	Qty:	Description:	No.	Part Number:	Qty:	Description:
1	PB-21135001	8	Bearing Insert	8	PB-11122004	10	Copper Washer (See Note B)
2	PB-21166001	1	Crankcase Breather	9	PB-21124011	10	Valve Assy (See Note B)
3	See 'Note A'	2	Air Filter Assembly	10	PB-21125004	6	Intake Valve Cap Ring
	See 'Note A'	2	Air Filter Element	11	PB-21125003	4	Exhaust Valve Cap Ring
4	TIA-5075	2	Safety Valve – 75 psi	12	PB-21157006	6	Valve Cover Gasket
5	PB-21164004	1	Oil Sight Glass (Round)	13	PB-21125005	6	Valve Cover
	SGK-100	1	Sight Glass Kit (Oval)	14	PB-11122001	24	8 mm Washer
6	PB-21212006	1	Flywheel		GK-100	1	Gasket Kit
7	PB-21161006	1	Oil Seal				

Note A: The Filter Assembly and internal Filter Element have changed. The older style Element is still available, and the Filter Elements are not interchangeable. Please measure the Element to determine which Filter Assembly, Filter Element, and Maintenance Kit is correct.

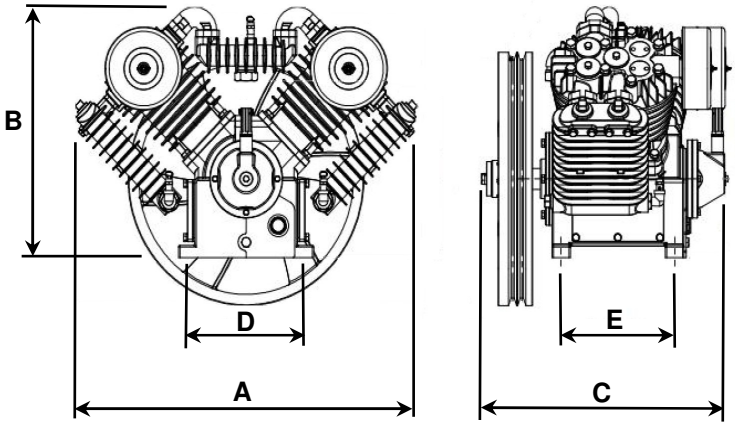
Note B: Please order (1) 'PB-11122004' Washer for every 'PB-21124011' Valve Assembly ordered.

Older Assembly	Older Filter Element	Older Filter Element Dimensions	Older Maintenance Kit
PB-21176001	PB-21177013	4-1/8" OD x 2-3/4" ID x 2"H	MK-100
New Assembly	**New Filter Element**	**New Filter Element Dimensions**	**New Maintenance Kit**
357-9401	357-9701	4-3/8" OD x 3" ID x 2-1/4" H	MK-100-1

Maintenance Kits:
The appropriate Maintenance Kit for the 'DEV-100' Pump is as noted in the chart above and includes the appropriate Air Filter Elements and (1) 4 litre jug of PR-30-4 30 Weight Mineral Oil.

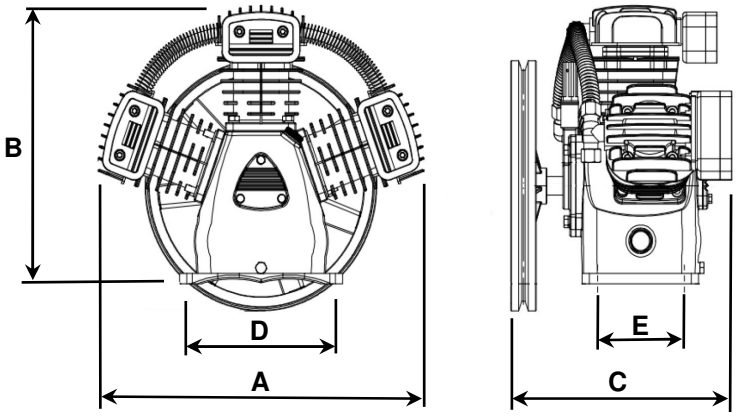
Compressor Pump Specifications

Pump Model	HP	150 psi		Cylinders			Flywheel		Dimensions					Weight
		rpm	CFM (Del'y)	#	Bore	Stroke	Dia.	Sect.	A	B	C	D	E	Lbs
DEV-100	5	456	17.0	4	4.13" & 2.16"	3.5"	18.9"	2B	27.25"	19.75"	21"	9-9/16"	9-1/8"	280
	7.5	585	22.0											
	10	769	30.0											
DEV-55	5	960	16.0		3.15" & 2.56"	2.36"	14.49"	2A	22"	17.5"	17"	9-13/16"	6-5/8"	120
	11 Gas	960	16.0											



Pump	Head Bolt	Torque	
		Ft Lbs	NM
DEV-100	M12-80	73	100
DEV-55	M8-50	22	30

Pump Model	HP	135 psi		125 psi		100 psi		Cylinders			Flywheel		Dimensions					Weight
		rpm	CFM Del'y	rpm	CFM Del'y	rpm	CFM Del'y	#	Bore	Stroke	Dia.	Sect.	A	B	C	D	E	Lbs
DEV-40	3					890	10.5	3	2.56"	1.89"	12.59"	1A	17"	14"	12.5"	7-7/8"	4-3/4"	70
	5			1220	13.0													
DEV-30	2					986	7.4	2	2.56"	1.81"	10.5"	1A	16.2"	13"	11"	8-5/8"	4-13/16"	55
DEV-30-1	3	1160						2	2.56"	1.81"	10.5"	1A	17.3"	14"	11.8"	7-7/8"	4-3/4"	50
DEV-20	1					986	3.2	1	2.56"	1.81"	10.5"	1A	10.7"	13.8"	9.8"	6-1/4"	4-13/16"	40



Pump	Head Bolt	Torque	
		Ft Lbs	NM
DEV-40	M8-50	22	30
DEV-30 (-1)	M8-50	22	30
DEV-20	M8-40	22	30

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