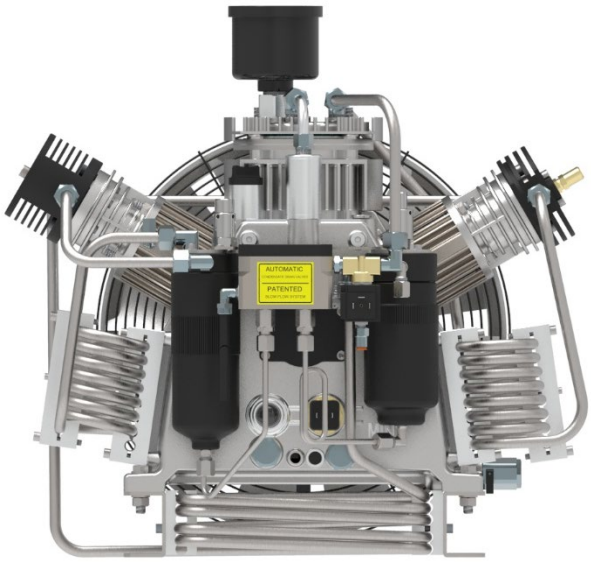
User & Maintenance Manual

Nuvair Compact 270 Compressor Block



Nardi Pacific 27 Block

Nuvair Compact 270

SKU 8033.x-N

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DESCRIPTION OF THE COMPRESSOR BLOCK

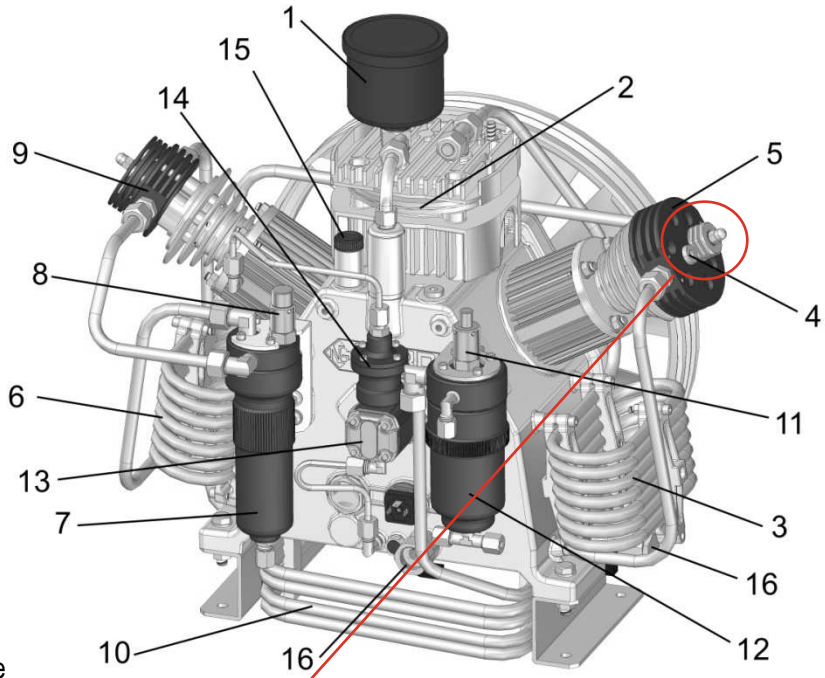
The Nardi **PACIFIC 27** (built into the **Nuvair Compact 270**) compressor block has a range of uses for high pressure air up to a maximum of 330 bar (4700 psi). The block consist of three stages driven by three pistons. The first stage is in the center, the second is on the right and the third is on the opposite side.

The compressor block is a single body unit including several intermediate separators that are placed between the cooling serpentines (inter-cooler pipes) of the various stages. The flywheel of the compressor does not require balancing because it is made of ultralight alloy materials while the compressor has a crankshaft complete with counterweights that eliminate vibration due to dead times or non-compression times.

The movement of pistons is transmitted through the connecting rods using roller bearings. The roller bearings have a high workload and as a result the mechanism is very strong. Cylinders are made in aluminum with a barrel in cast iron inside.

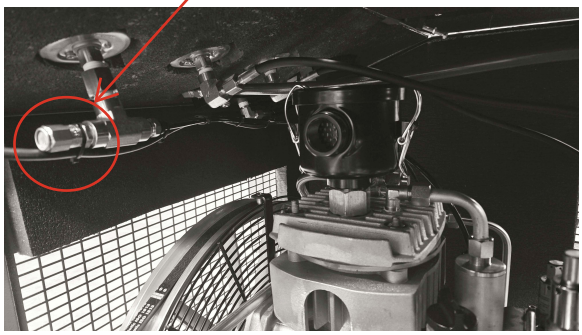
This allows the machine to be the most technologically advanced product available in the market. The main advantage is that the cooling fins dissipate heat much faster and is more resistant to corrosion, compared to cast iron.

The machine has a large capacity oil storage sump of 3.5 liters, a gear oil pump for forced-fed lubrication followed by an oil filter and a magnet that holds back all the iron particles inside the sump. This way the oil will remain clean which in turn makes the machine more reliable.



COMPRESSOR BLOCK COMPONENTS

1. Intake filter 1st stage
2. Compression valve 1st stage
3. Intercooler 1st stage
4. Safety valve 1st stage relocated to bottom of 1st interstage pressure gauge
5. Head 2nd stage
6. Intermediate separator 2nd stage
7. Intercooler 2nd stage
8. Safety Valve 2nd stage
9. Head 3rd stage
10. Intercooler 3rd stage
11. Safety valve 3rd stage and relief valve
12. Intermediate separator 3rd stage
13. Gear oil pump for forced-feed lubrication
14. Oil filter
15. Oil refill plug
16. Oil sump drain plug and tap



MAINTENANCE AND SERVICE

MAINTENANCE OPERATIONS

Your compressor block needs regular maintenance and service over time. In addition to increasing the life of the machine, regular maintenance keeps it performing consistently and running efficiently.

It is very important to track all maintenance operations performed on the compressor, keep a historical record of the parts that have been replaced, the date maintenance was done, the hours of operation of the machine up to the date maintenance is done, and the signature of the qualified technician who serviced the machine.

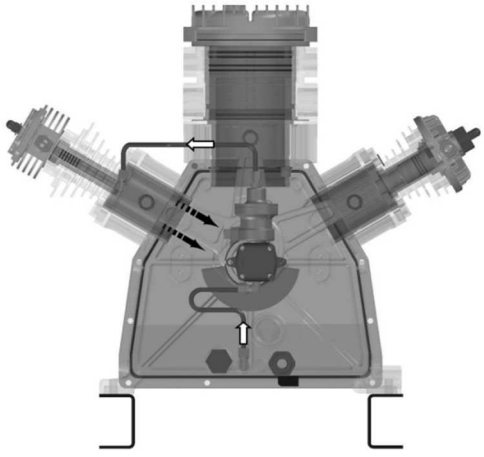
IMPORTANT: **All maintenance operations must be performed by qualified technical staff.**

IMPORTANT: **All maintenance operations must be performed with the machine switched off and the power cable disconnected.**

LUBRICATION SYSTEM

NARDI compressors have two different lubrication systems:

- **Splash Lubrication:** This method of lubrication is done mechanically with the movement of the connecting rod. With every rotation, a dipper, at the bottom of the connecting rod is submerged in oil at high speed. When the dipper emerges from the oil sump in the lower part of the crankcase, the oil is thrown upward as droplets or fine mist, providing adequate lubrication to the cylinders and the crankshaft.
- **Force-feed Lubrication:** This type of lubrication is done through an oil gear pump that force-feeds oil and that is driven by the shaft. Oil sucked from the sump is pumped to the piston of the last stage and filtered by a micron filter. In its movement the oil pump sprays oil to all moving parts.



OIL

Oil is a very important component for the life of the compressor over time. Nardi Compressori has studied in detail the compressor so that it has a large capacity oil sump and oil filter. A magnet has been fixed on the case to attract all metallic impurities that settle at the bottom of the case.
Nardi Compressori recommends using our oil that has been designed and tested specifically for this machine.
The compressor is usually supplied with oil to be used only with non-mixed air (21% oxygen).

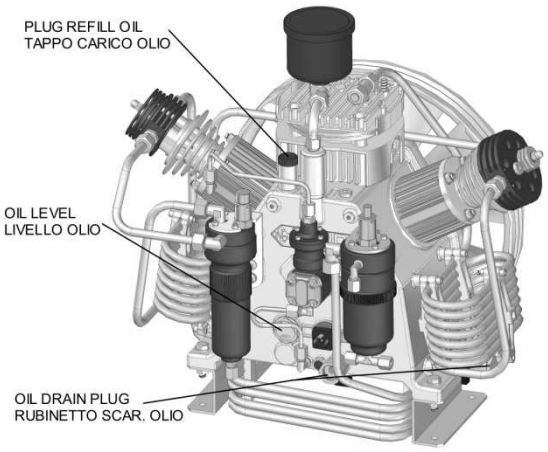
Oil Characteristics:

- Low carbon deposit
- No carbonizing effect
- Good anticorrosive properties
- Physiological and toxicological suitability

OIL CHANGE

The steps for changing the oil of the compressor are as follows:

- Make sure you have enough oil on hand to make the change.
- Switch the compressor on for 15 - 20 minutes to heat the oil and make it more fluid.
- Remove the oil refill plug along with the oil breather extension.
- Remove the oil drain plug and before opening the tap make sure you have a container to catch the exhausted oil.
- Close the tap and replace the oil drain plug.
- Pour the new oil slowly down the oil filler neck.
- Make sure that it reaches the maximum level (MAX).
- Do not exceed this level.
- Close the oil refill plug.



CHANGE TYPE OF OIL

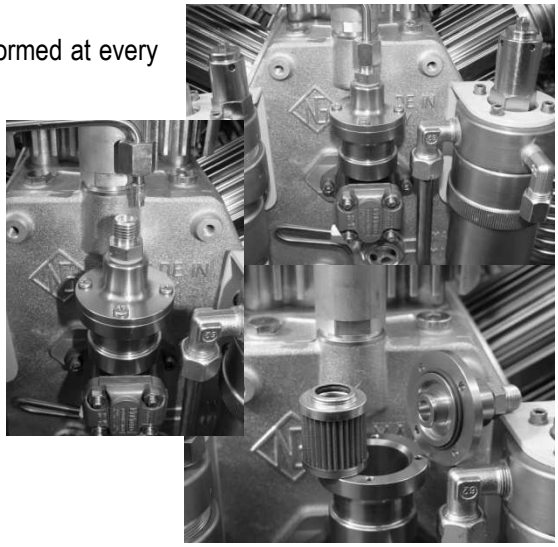
To avoid serious damage to the compressor when changing the type of oil, you must strictly follow the following steps:

- Follow the steps on the oil change.
- Change or clean all parts that have old oil.
- After 10 hours of operation of the compressor check if there is contamination.
- If the oil has been contaminated change it again.
- Do not mix different types of oil and always use the same type of oil.

CHANGE OIL FILTER (Only for compressors with oil pump)

The steps for changing the oil filter are as follows (this is to be performed at every oil change):

- Unscrew the nut of the fitting that holds the tube that delivers the oil to the last cylinder using a 14mm wrench and disconnect it.
- Unscrew the four screws of the oil filter housing using a Phillips screwdriver.
- Lift the oil filter housing cap with the tube attached to it and remove the filter.
- Check if it is necessary to change the O-ring on the oil filter house housing.
- Close everything, turn on the compressor and make sure there are no oil leaks.



OIL LEVEL SHUTDOWN

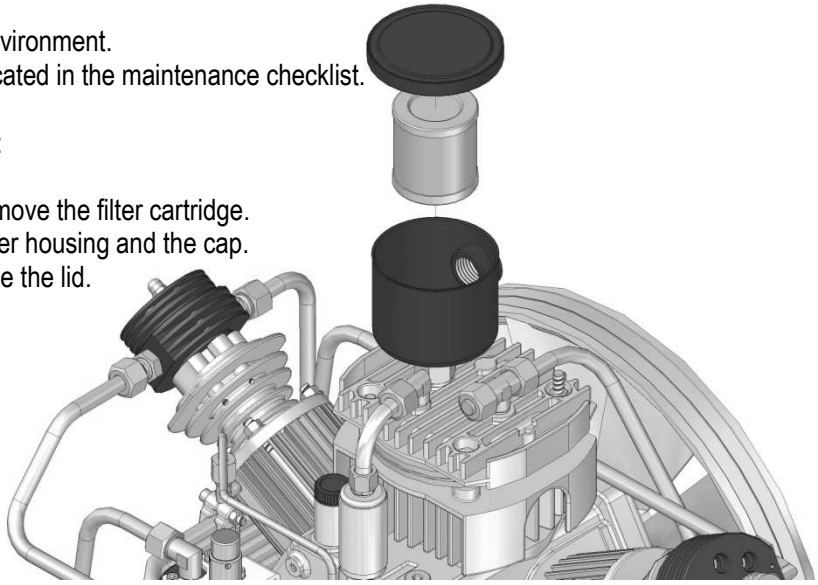
When the oil level drops below the minimum threshold, the low oil level switch will shut down the compressor.

In some cases, when the oil level is close to the minimum, it may trigger a shutdown. After a short period, the compressor may restart as the oil in the process trickles back into the sump. However, upon restarting, the compressor can lower the sump level again, triggering another low oil shutdown. To prevent this, ensure that the pump oil is at the required level.

CHANGE INTAKE FILTER

The filter traps any impurities present in the environment.
It must be replaced at regular intervals as indicated in the maintenance checklist.
It should not be washed but replaced.
The steps for changing the filter are as follows:

- Release the latches on the lid and remove the filter cartridge.
- Clean with a damp cloth inside the filter housing and the cap.
- Insert the new filter cartridge and close the lid.



MAINTENANCE OF INTERMEDIATE SEPARATORS

In the compression phase the air undergoes a temperature increase that from one stage and the other is cooled by a series of cooling coils (intercooler). This sudden thermal change produces condensation which is eliminated by intermediate separators. Within the intermediate separators there are filtering elements that need to be changed periodically.

The steps for changing the filtering elements are as follows:

- With the compressor switched off, depressurize the separators using the condensate drain tap.
- Unscrew the bottom part of the separators.
- Unscrew the filtering element and replace it with a new one.
- Wipe the bottom of the separator housing with a damp cloth and make sure there is no corrosion.
- Replace the O-rings.
- Close the separator securely.

When used at a pressure exceeding 300 bar (4351 psi), intermediate separators must be replaced after 10,000 hours.

CARBON FILTER FOR BREATHING AIR

The carbon filter is used to remove the water and oil residues that have passed the intermediate separators. The filter operates in a chemical fashion, not mechanical, with materials that absorb water and oil particles, making the compressed air breathable.

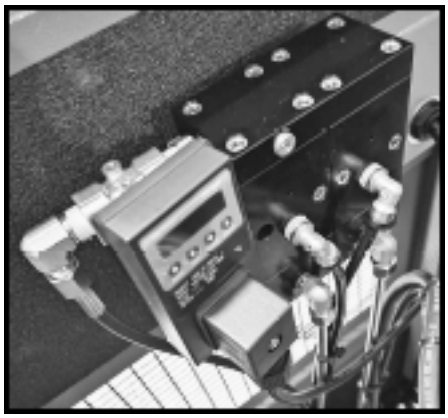
Replacement filters:

NUV65240-MHC: Replacement filter for Molecular Sieve, Carbon, and Hopcolite – Breathing air filter.

NUV65240-MC: Replacement filter for Molecular Sieve and Carbon – Suitable for breathing air, but cannot convert CO to CO2.

NUV65240-M: Replacement filter for industrial drying only.

AUTO DRAIN



Automate your compressor condensate draining process with auto drains. Eliminate the need for an operator to manually drain the compressor every 10 to 15 minutes. Improper condensate draining practices may lead to diminished filter life, increased operating temperature, and compressor damage.

The interior of the Filter Bowls can be cleaned using a mild diluted cleaning solution, followed by a thorough rinse with clean water. This helps to extend the lifespan of the element, bowl, and auto drain assembly.

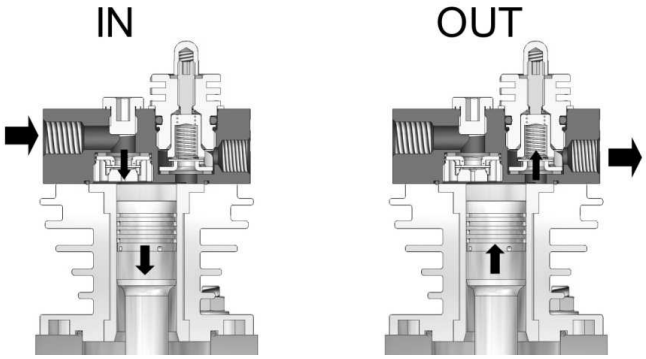
PRESSURE MAINTAINING VALVE

This type of valve has the purpose of maintaining constant pressure in the final filter. In this way, it is possible to eliminate a greater volume of water, improving the air quality and the life of the cartridge. When the compressor is switched on, the valve stays closed until the entire system reaches 150 bar (2176 psi), and subsequently it opens.

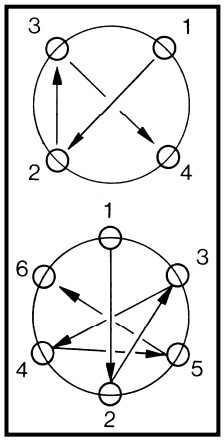
This valve is factory set. No further calibration is required.

HEADS AND COMPRESSION VALVES

The intake or exhaust compression valves are either reed type or plate type. Normally in the first stage there is a reed valve which opens and closes according to the flow of air that is created by the piston motion. The system operation is the same in all the various stages. The only thing that changes is the type and size of the valves and the plates.
It is important that the valve replacement and cleaning is performed by trained personnel.



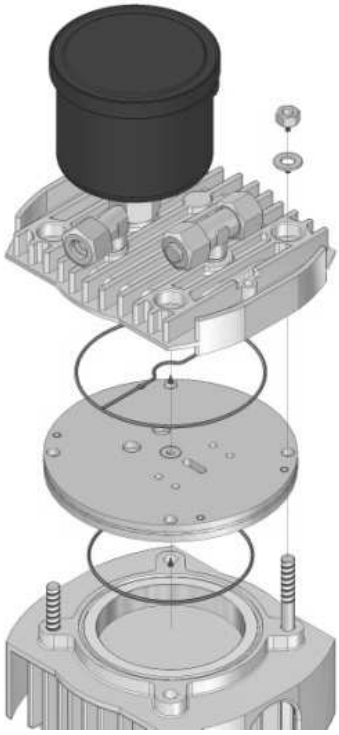
The steps for replacement of the valves are the following:



- Replace all the parts of the valve and not just some elements.
- Carefully clean the valves and remove all carbon deposits without scratching the valve.
- Be careful when reassembling the valves to follow the right sequence of the components. If the valve show scratches due to wear, it must be replaced.
- Replace the O-rings.
- Pay close attention to the image on the right, which shows the tightening sequence of the head screws.
- After performing the maintenance of the valves, switch on the compressor for 30 - 40 minutes, then switch it off and check again the closing of the screws and the dowels that compress the discharge/outlet valve of the lateral cylinders.
- The valves must be checked every 500 hours of operation.
- After 1000 hours of operation the valves and all of their components must be replaced.

VALVE REPLACEMENT – FIRST STAGE

Look carefully at the image below for the exact positioning of the valve and make sure that the written word “TOP” or the letter “T” is facing upwards. If seals or O-rings are not in good condition, they must be replaced.

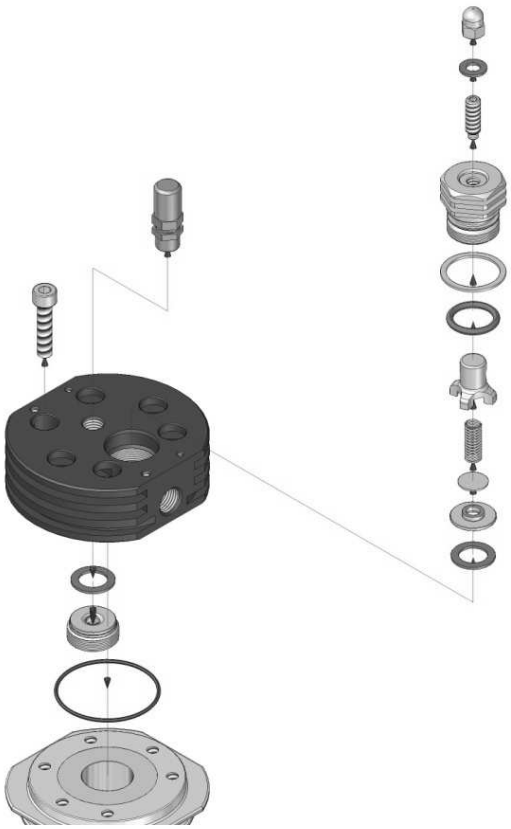


VALVE REPLACEMENT – SECOND STAGE

The steps for replacement or cleaning of this valve are as follows:

To replace the valve, you need to:

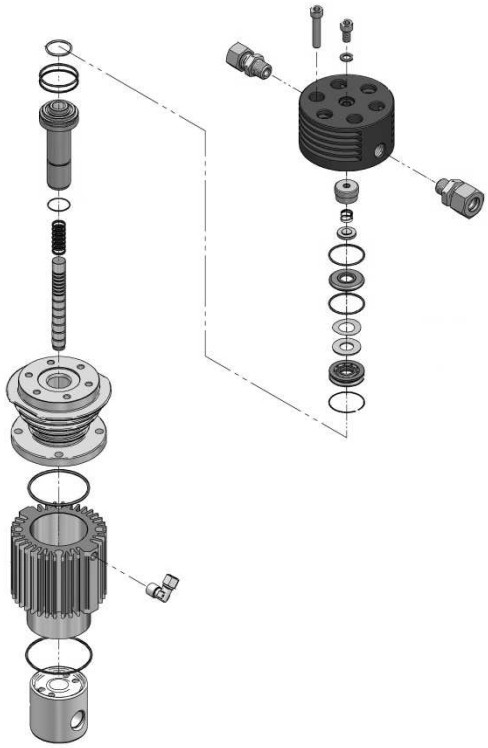
- Disconnect the cooling hoses from the fittings.
- Remove the screws and detach completely the head from the cylinder.
- Put the head in a vice.
- Unscrew the valve bodies (one of these bodies is unscrewed with a special tool that is to be requested to Nardi Compressori).
- Clean and remove all debris.
- If the parts show signs of wear, change the worn parts.
- Mount all the components following the same sequence and changing the seals.
- On the bottom of the head there are three points that need to be engraved with a punch after the valve is set.
- Test the valve by blowing compressed air in the flow direction.
- Check the O-ring seal and replace if damaged.
- Attach the head to the cylinder.
- Secure the cooling tubes.



VALVE REPLACEMENT – THIRD STAGE

The steps for replacement or cleaning of the valve are the following::

- Disconnect the cooling hoses from the fittings.
- Remove the screws and detach completely the head from the cylinder.
- Put the head in a vice.
- Unscrew the valve bodies (one of these bodies is unscrewed with a special tool that is to be requested to Nardi Compressori).
- Clean and remove all debris.
- If the parts show signs of wear, change the worn parts.
- Mount all the components following the same sequence and changing the seals.
- On the bottom of the head there are three points that need to be engraved with a punch after the valve is set.
- Test the valve by blowing compressed air in the flow direction.
- Check the O-ring seal and replace if damaged.
- Attach the head to the cylinder.
- Secure the cooling tubes.



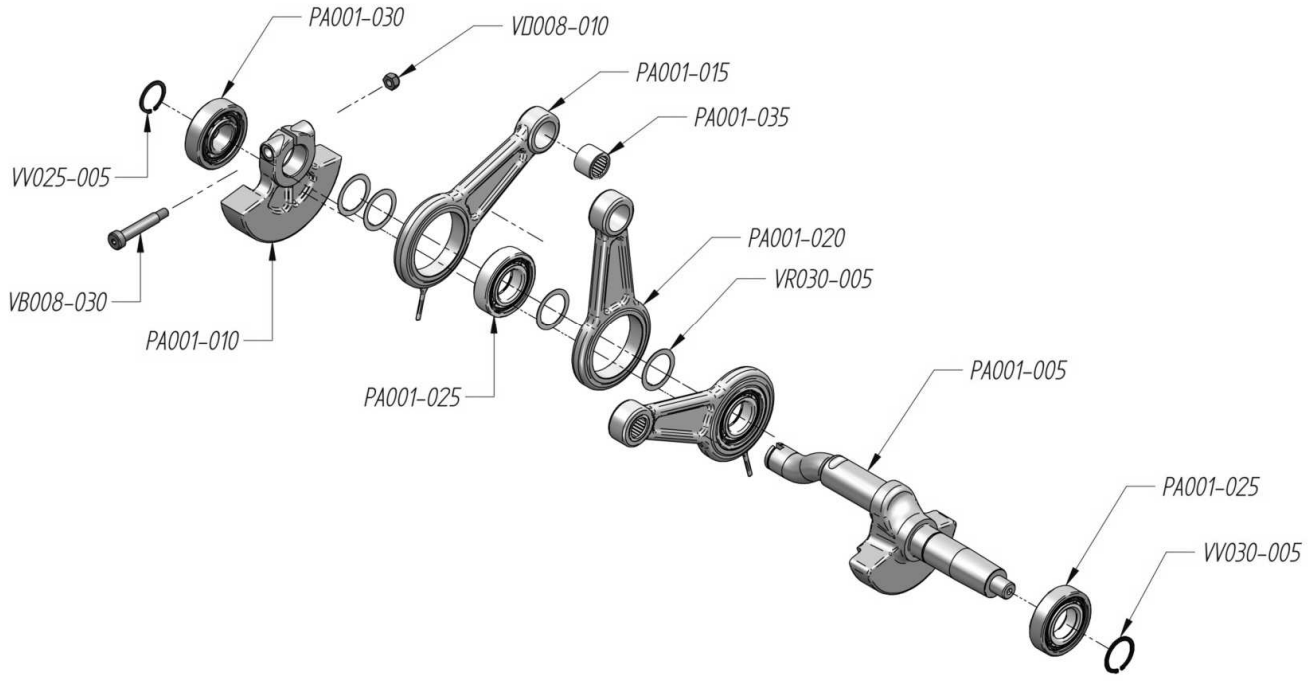
SAFETY VALVES

These valves are of fundamental importance for the safety of the operator and the compressor. They are valves calibrated at a certain pressure, which discharge the air in the event of anomalies or malfunctions. Each cylinder is equipped with a safety valve, and each valve has a different calibration set:

SAFETY VALVE	MAXIMUM PRESSURE
1st STAGE	11 BAR
2nd STAGE	80 BAR
3rd STAGE	225/330 BAR

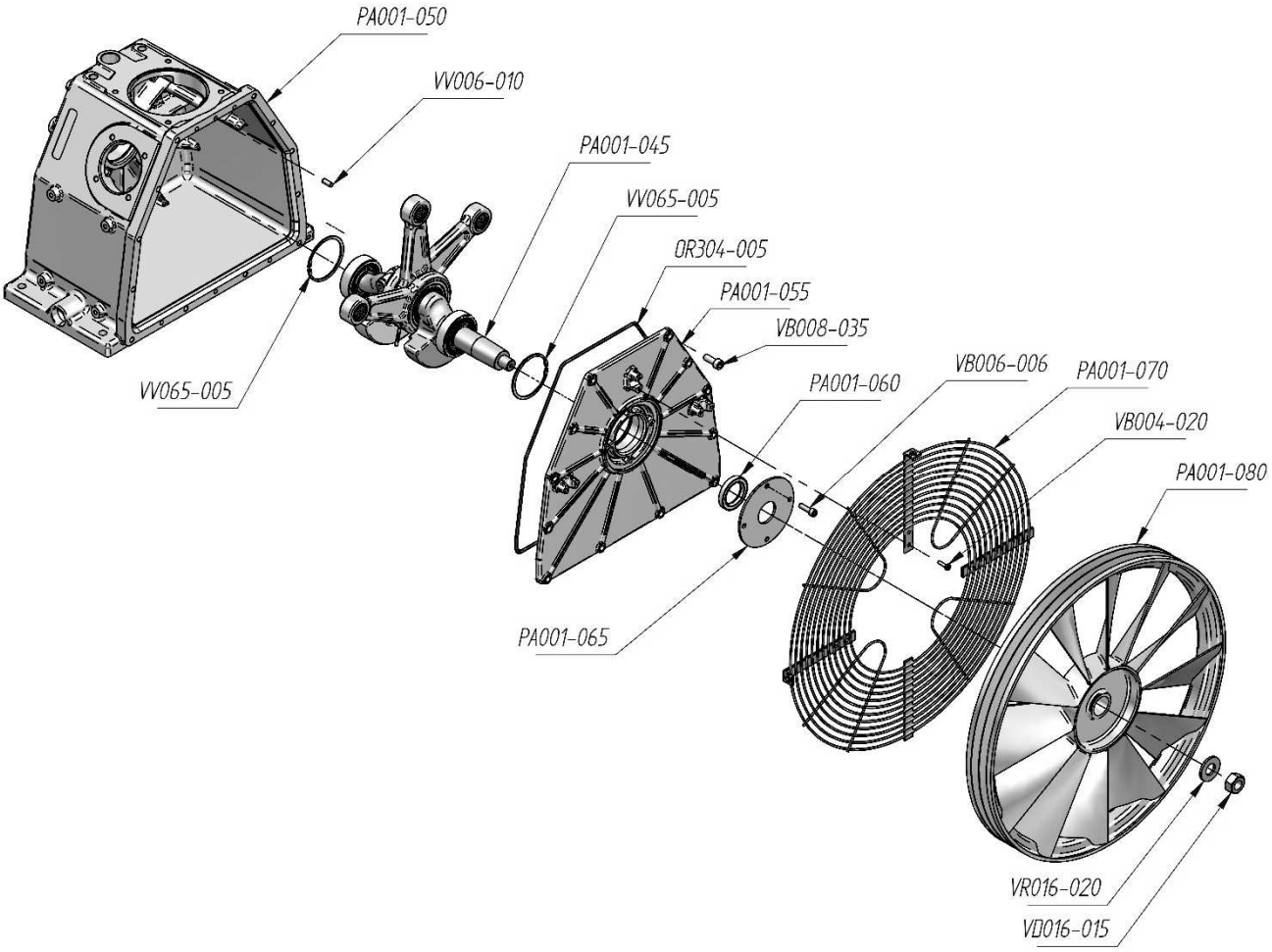
IT IS NOT ALLOWED TO CHANGE THE MAXIMUM PRESSURE CALIBRATION OF ANY VALVE. ANY CHANGES CAN CAUSE SERIOUS DAMAGE AND CONSEQUENT VOID OF THE WARRANTY!!

	SPARE PARTS **PACIFIC 27** ***Driving gear***	PA001-045 Rev.00 2015 Rev. 00



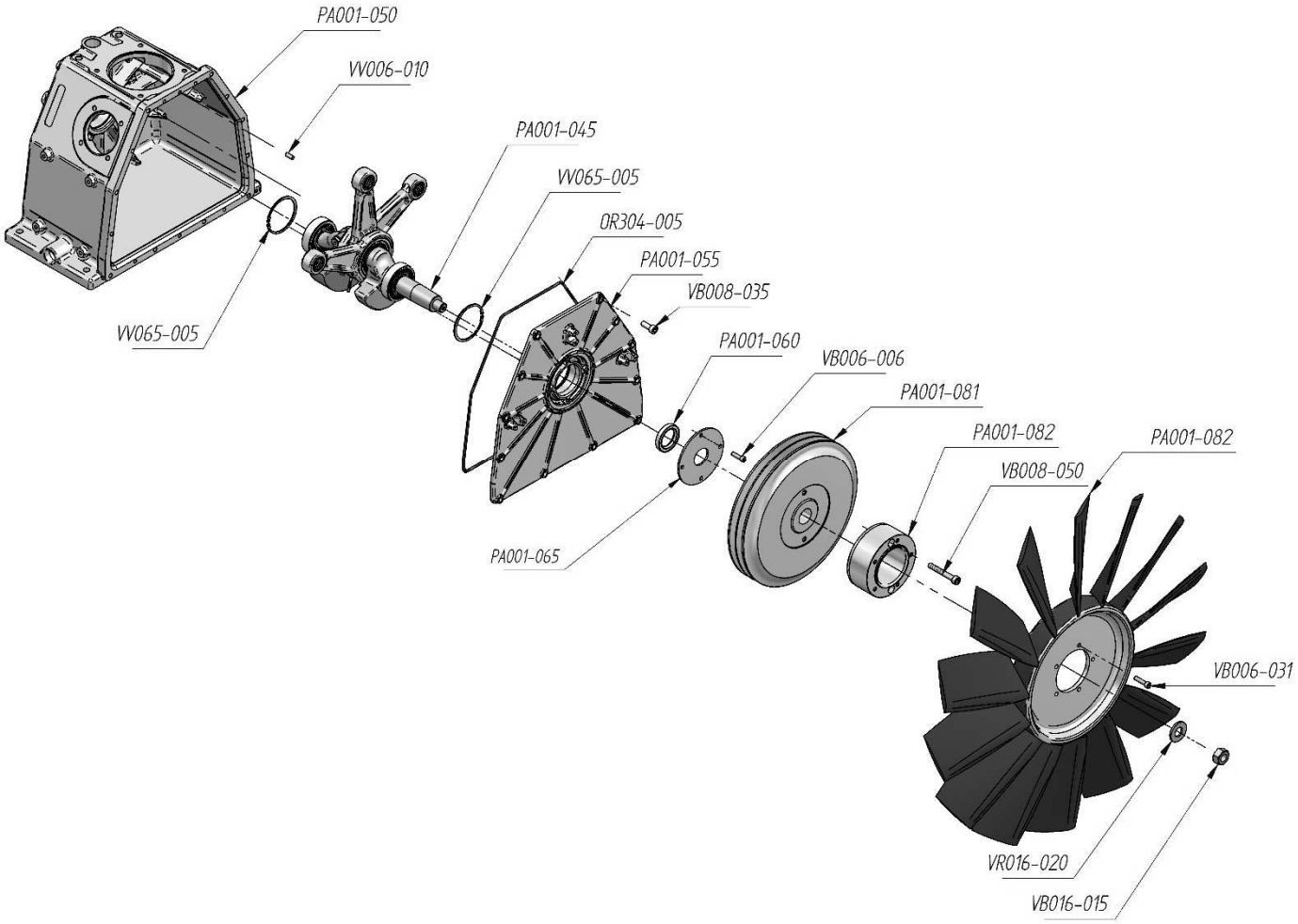
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
PA001-006	*Shaft*		PA001-025	*Roller bearing*		VD008-010	*Nut*	
PA001-011	*Counterbalance*		PA001-030	*Roller bearing*		VR030-005	*Washer*	
PA001-015	*Connecting rod with oil thrower pin*		PA001-035	*Roller bearing*		VV025-005	*Safety ring*	
PA001-020	*Connecting rod*		VB008-030	*Screw*		VV030-005	*Safety ring*	

	SPARE PARTS **PACIFIC 27** ***Driving gear with Crankcase***	PA001-051 Rev.00 2015 Rev. 00



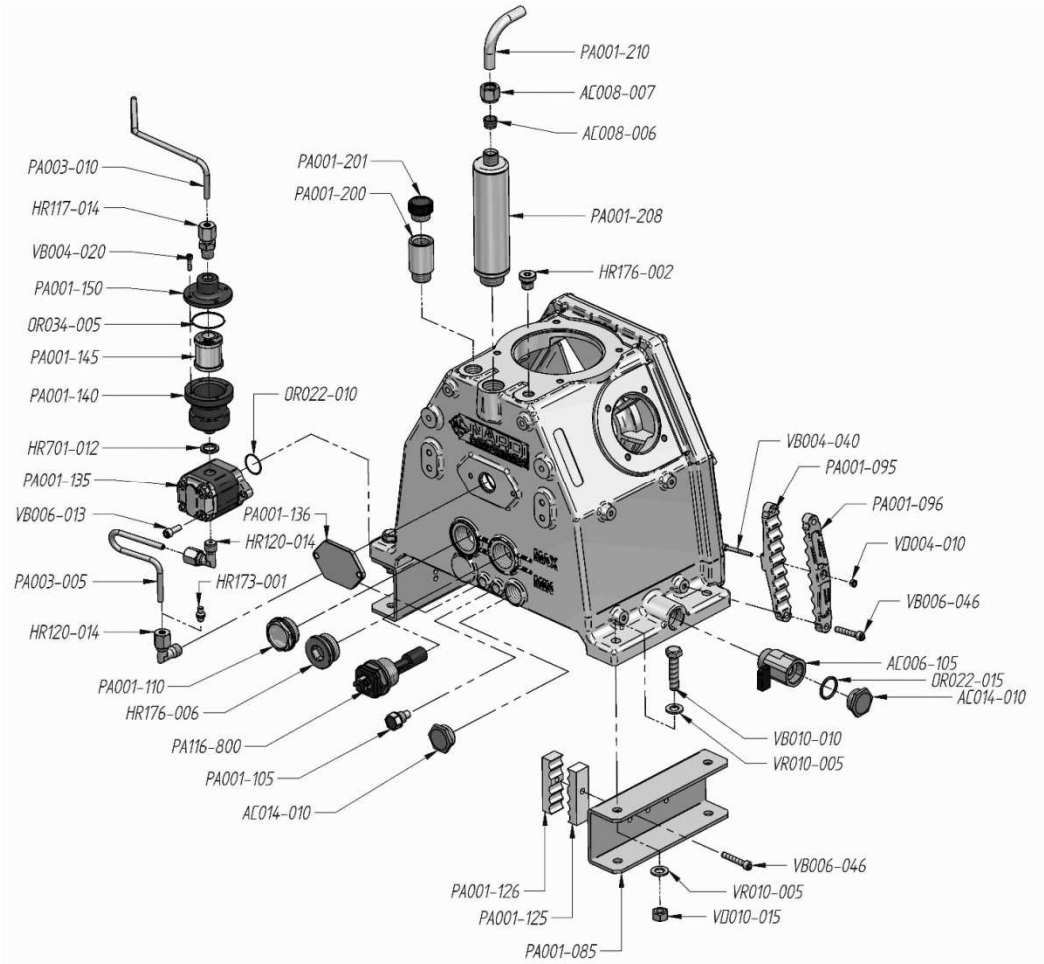
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
OR304-005	*O-ring*		PA001-065	*Oil seal flange*		VB008-035	*Screw*	
PA001-045	*Shaft complete of connecting rod*		PA001-070	*Metal protection*		VD016-015	*Nut*	
PA001-050	*Compressor crankcase*		PA001-080	*Pulley-fan compressor*		VR016-020	*Washer*	
PA001-055	*Closing crankcase flange*		VB004-020	*Screw*		VV006-010	*Pin*	
PA001-060	*Oil seal*		VB006-006	*Screw*		VV065-005	*Safety ring*	

	SPARE PARTS **PACIFIC 27** ***Driving gear with Crankcase***	PA001-056 Rev.01 2015 Rev. 00



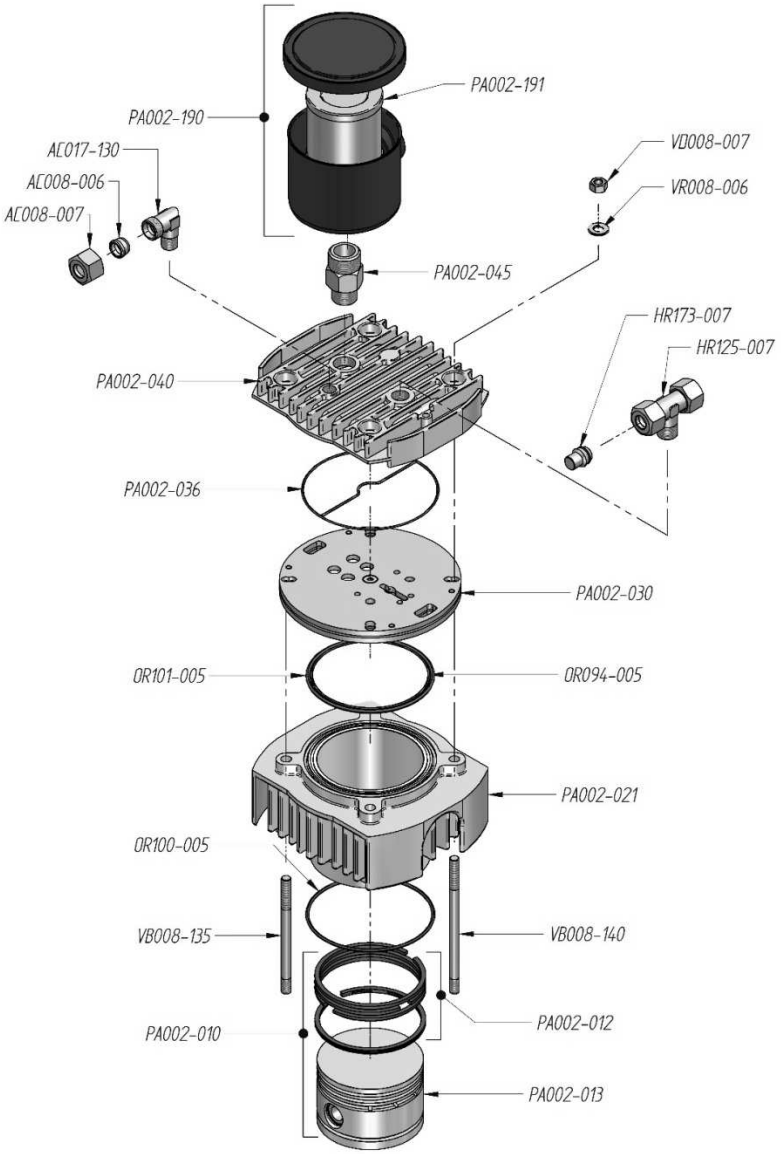
CODE	*DESCRIPTION*		*CODE*	*DESCRIPTION*		*CODE*	*DESCRIPTION*	
OR304-005	*O-ring*		**PA001-065**	*Oil seal flange*		**VB008-035**	*Screw*	
PA001-045	*Shaft complete of connecting rod*		**PA001-081**	*Pulley*		**VD016-015**	*Nut*	
PA001-050	*Compressor crankcase*		**PA001-082**	*Fan*		**VR016-020**	*Washer*	
PA001-055	*Closing crankcase flange*		**VB006-006**	*Screw*		**VV006-010**	*Pin*	
PA001-060	*Oil seal*		**VB006-031**	*Screw*		**VV065-005**	*Safety ring*	

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***Crankcase with accessories***	PA001-059 Rev.02 2015 Rev. 00



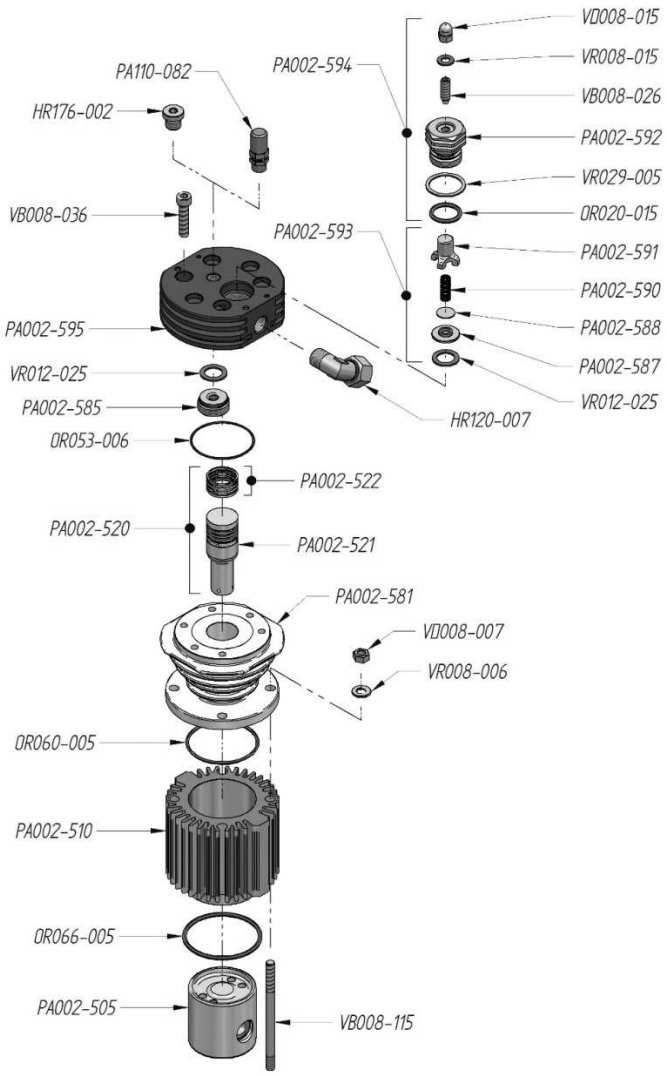
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AC006-105	Ball valve		**PA001-096**	Support cooling tube		**PA003-010**	Tube oil pump	
AC008-006	Ogive for tube 12mm		**PA001-105**	Magnetic plug		**PA116-800**	Oil alert	
AC008-007	Nut for tube 12 mm		**PA001-110**	Visual oil level plug		**VB004-020**	Screw	
AC014-010	Closure plug		**PA001-125**	Support cooling tube		**VB004-046**	Screw	
HR117-014	Pipe fitting		**PA001-126**	Support cooling tube		**VB006-013**	Screw	
HR120-014	Pipe fitting "L"		**PA001-135**	Oil pump		**VB006-046**	Screw	
HR173-001	Closure connection tube		**PA001-136**	Closure flange		**VB010-010**	Screw	
HR176-002	Closure plug		**PA001-140**	Oil filter holder chamber		**VD004-010**	Nut	
HR176-006	Closure plug		**PA001-145**	Oil filter		**VD010-015**	Nut	
HR701-012	Washer gasket		**PA001-150**	Closure oil filter chamber		**VR010-005**	Washer	
OR022-010	O-ring		**PA001-200**	Oil fitting pipe				
OR022-015	O-ring		**PA001-201**	Plug				
OR034-005	O-ring		**PA001-208**	Oil separator				
PA001-085	Support compressor		**PA001-210**	Tube				
PA001-095	Support cooling tube		**PA003-005**	Tube oil pump				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***1st STAGE***	PA001-089 Rev.01 2015 Rev. 00



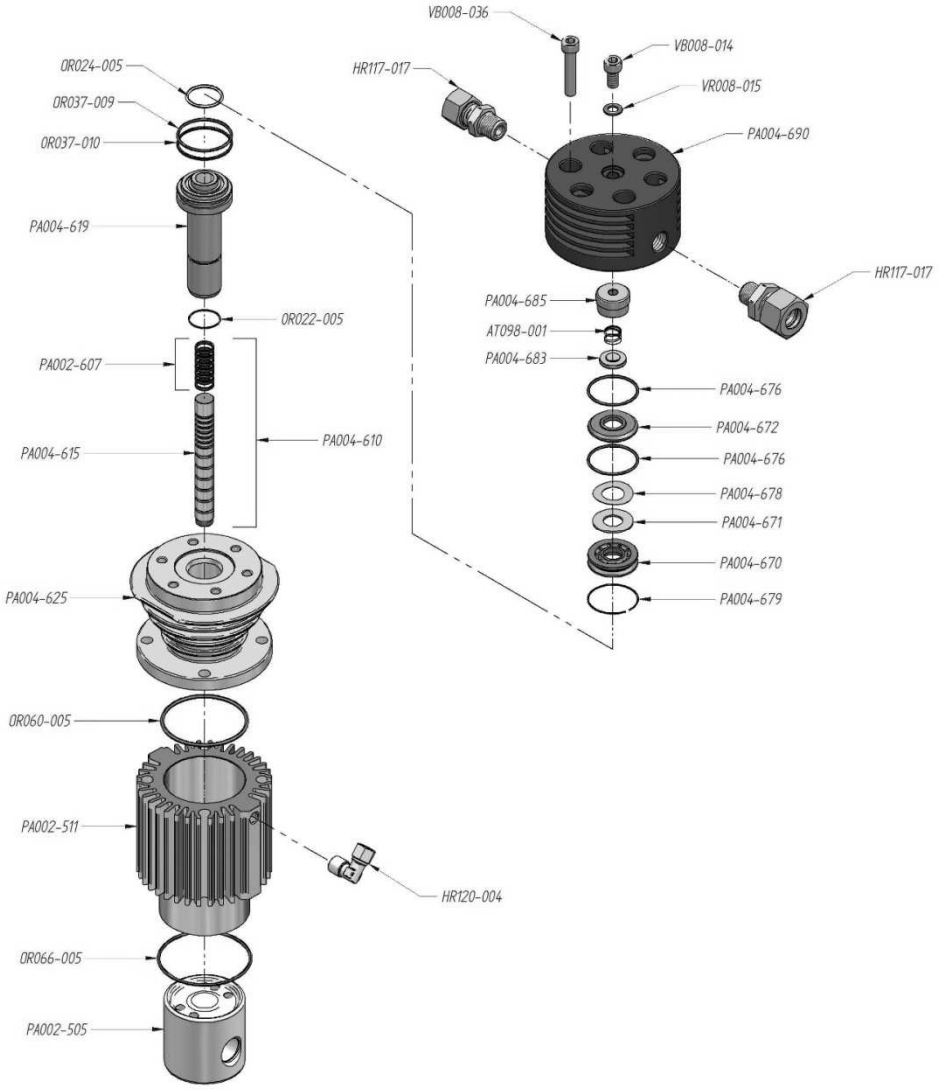
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AC008-006	*Ogive*		**PA002-010**	*Complete piston*		**PA002-190**	*Complete intake filter*	
AC008-007	*Nut*		**PA002-012**	*Set Piston rings*		**PA002-191**	*Intake filter cartridge*	
AC017-130	*Pipe fitting "L"*		**PA002-013**	*Piston*		**VB008-135**	*Screw*	
HR125-007	*Pipe fitting "T"*		**PA002-021**	*Cylinder 1st stage*		**VB008-140**	*Screw*	
HR173-007	*Closure connection*		**PA002-030**	*Plate valve1st stage*		**VD008-007**	*Nut*	
OR094-005	*O-ring*		**PA002-036**	*O-ring*		**VR008-006**	*Washer*	
OR100-005	*O-ring*		**PA002-040**	*Head 1st stage*				
OR101-005	*O-ring*		**PA002-045**	*Connection*				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***2nd STAGE***	PA001-036 Rev.01 2015 Rev. 00



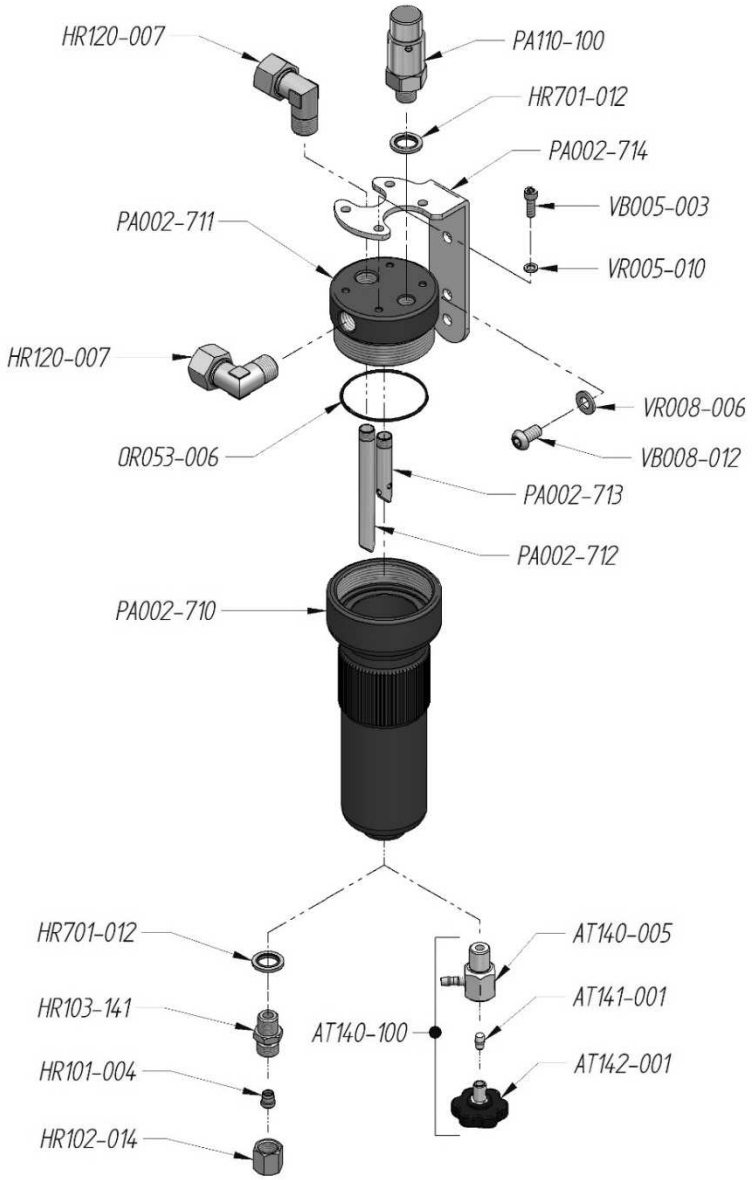
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
HR120-007	*Pipe fitting "L"*		**PA002-581**	*Cylinder*		**VB008-026**	*Screw*	
HR176-002	*Closure plug*		**PA002-585**	*Suction valve*		**VB008-036**	*Screw*	
OR020-015	*O-ring*		**PA002-587**	*Valve seat*		**VB008-115**	*Screw*	
OR053-006	*O-ring*		**PA002-588**	*Valve plate*		**VD008-007**	*Nut*	
OR060-005	*O-ring*		**PA002-590**	*Valve spring*		**VD008-015**	*Nut*	
OR066-005	*O-ring*		**PA002-591**	*Pressure valve insert*		**VR008-006**	*Washer*	
PA002-505	*Piston guide*		**PA002-592**	*Valve coupling*		**VR008-015**	*Washer*	
PA002-510	*Cylinder*		**PA002-593**	*Pressure valve insert*		**VR012-025**	*Washer*	
PA002-520	*Complete piston with rings*		**PA002-594**	*Complete coupling pressure valve*		**VR029-005**	*Washer*	
PA002-521	*Piston*		**PA002-595**	*Valve head*				
PA002-522	*Set piston rings*		**PA110-082**	*Safety valve*				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***3rd STAGE***	PA001-014 Rev.02 2015 Rev. 00



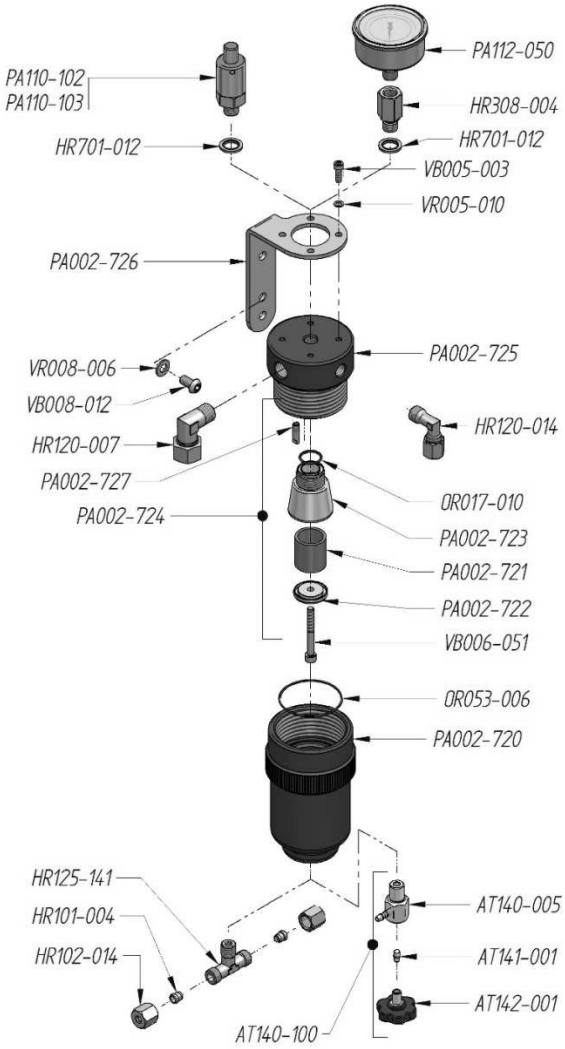
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AT098-001	*Spring*		**PA004-610**	*Complete piston with rings*		**PA004-683**	*Valve top*	
HR117-017	*Pipe fitting direct*		**PA004-615**	*Piston*		**PA004-685**	*Suction valve*	
HR120-004	*Pipe fitting "L"*		**PA002-607**	*Set piston rings*		**PA004-690**	*Valve head*	
OR037-009	*O-ring*		**PA004-619**	*Cylinder's pipe*		**VB008-014**	*Screw*	
OR037-010	*O-ring*		**PA004-625**	*Cylinder*		**VB008-036**	*Screw*	
OR022-005	*O-ring*		**PA004-670**	*Coupling pressure valve*		**VR008-015**	*Washer*	
OR024-005	*O-ring*		**PA004-671**	*Pressure valve*				
OR060-005	*O-ring*		**PA004-672**	*Top valve*				
OR066-005	*O-ring*		**PA004-676**	*Special O-Ring*				
PA002-505	*Piston guide*		**PA004-678**	*Special spring*				
PA002-511	*Cylinder*		**PA004-679**	*Setger valve*				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***Separator 2nd STAGE***	PA002-205 Rev.00 2015 Rev. 00



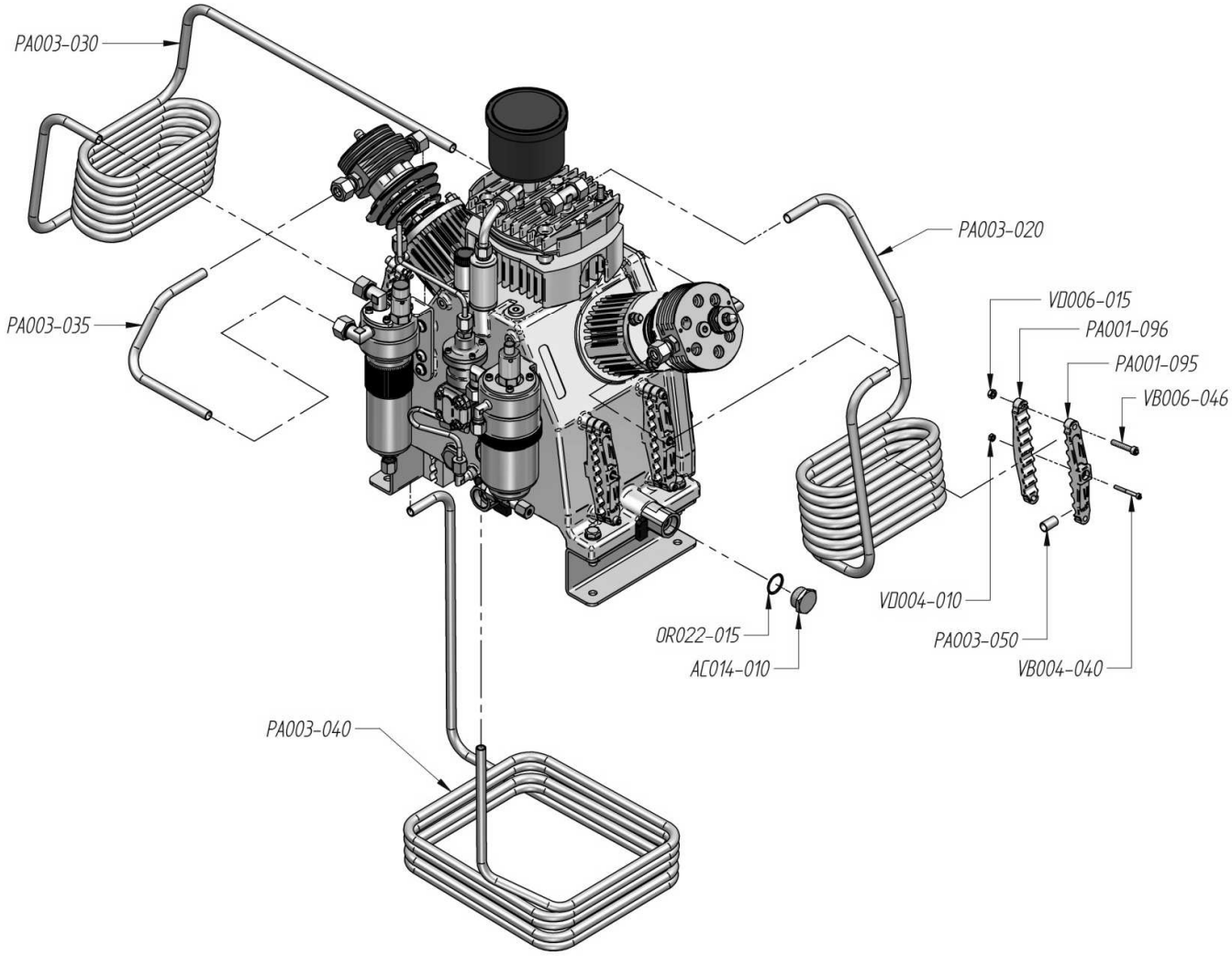
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AT140-005	Body drain valve complete		HR120-007	Pipe fitting "L"		PA002-714	Support filter separator	
AT140-100	Condensate drain valve complete		HR701-012	Washer gasket		PA110-100	Safety valve	
AT141-001	Rilsan nut		OR053-006	O-ring		VB004-021	Screw	
AT142-001	Black screw of discharge		PA002-710	Body filter separator		VB008-012	Screw	
HR101-004	Ogive		PA002-711	Head filter separator		VR004-010	Whasher	
HR102-014	Nut fitting pipe		PA002-712	Tube separator		VR008-006	Whasher	
HR103-141	Body pipe fitting		PA002-713	Tube separator				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***Separator 3rd STAGE***	PA002-210 Rev.00 2015 Rev. 00



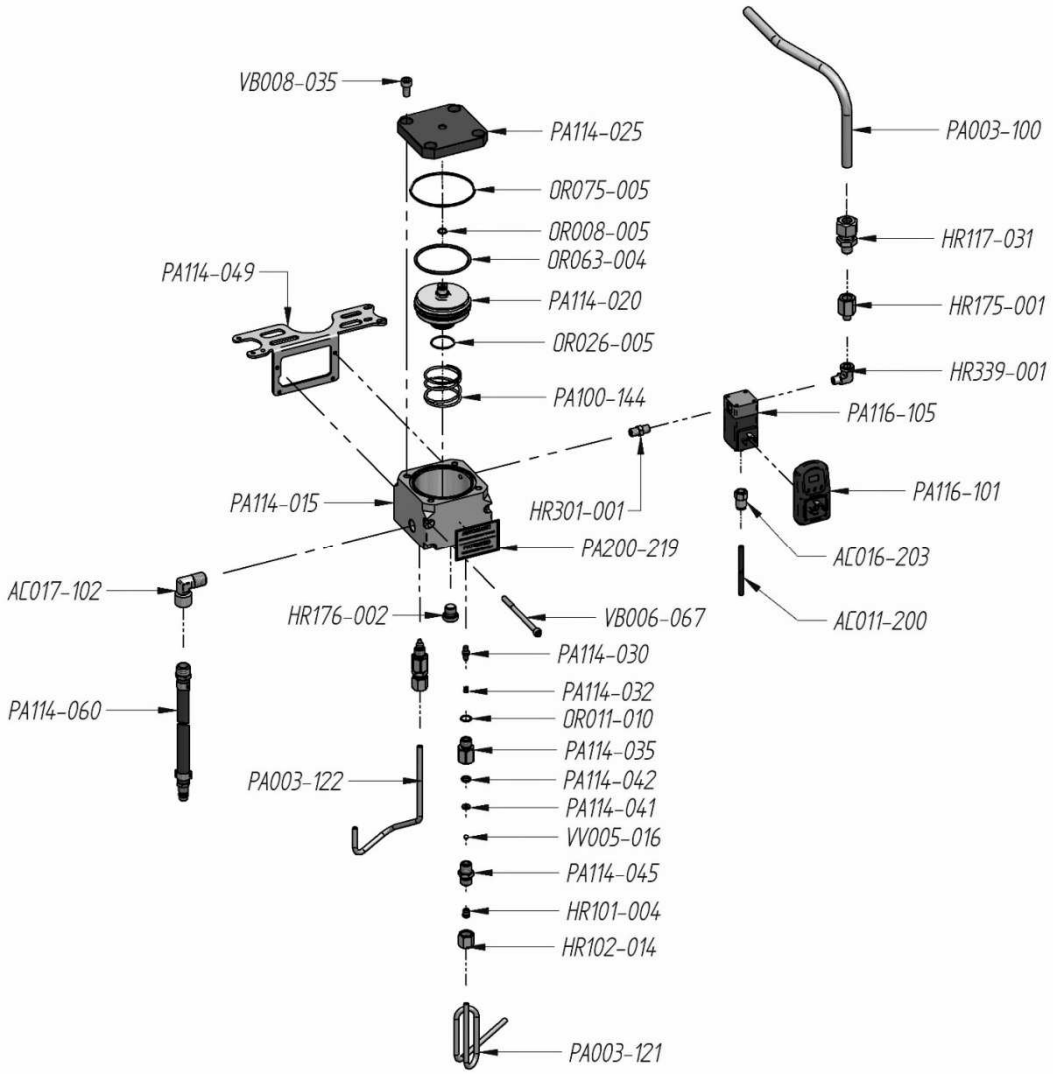
CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AT140-005	*Body drain valve complete*		**OR017-010**	*O-ring*		**PA110-103**	*Safety valve PN 300 bar*	
AT140-100	*Condensate drain valve complete*		**OR053-006**	*O-ring*		**PA112-050**	*Manometer*	
AT141-001	*Rilsan nut*		**PA002-720**	*Body filter separator*		**VB005-003**	*Screw*	
AT142-001	*Black screw of discharge*		**PA002-721**	*Sintered filter*		**VB006-051**	*Screw*	
HR101-004	*Ogive*		**PA002-722**	*Flange*		**VB008-012**	*Screw*	
HR102-014	*Nut filling pipe*		**PA002-723**	*Flange*		**VR005-010**	*Washer*	
HR120-007	*Pipe fitting "L"*		**PA002-724**	*Complete filter separator cartridge*		**VR008-006**	*Washer*	
HR120-014	*Pipe fitting "L"*		**PA002-725**	*Head filter separator*				
HR125-141	*Body pipe fitting "T"*		**PA002-726**	*Support filter separator*				
HR308-004	*Connection*		**PA002-727**	*Tube separator*				
HR701-012	*Washer gasket*		**PA110-102**	*Safety valve PN 200 bar*				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC 27** ***Tube e cooler***	PA003-028 Rev.00 2015 Rev. 00



CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AC014-010	Nut		PA003-030	Inter cooler		VB006-046	Screw	
OR022-015	O-ring		PA003-035	Connecting tube		VD004-010	Nut	
PA001-095	Fixing for cooler		PA003-040	Inter cooler		VD006-015	Nut	
PA001-096	Fixing for cooler		PA003-050	Tube				
PA003-020	Inter cooler		VB004-040	Screw				

NARDI COMPRESSORI	**SPARE PARTS** **PACIFIC** ***Drain Valve***	PA005-013 Rev.00 2015 Rev. 00



CODE	DESCRIPTION		CODE	DESCRIPTION		CODE	DESCRIPTION	
AC011-200	*Rilsan tube*		OR011-010	*O-ring*		PA114-030	*Piston*	
AC016-203	*Connection*		OR026-005	*O-ring*		PA114-032	*Spring*	
AC017-102	*Pipe fitting "L"*		OR063-004	*O-ring*		PA114-035	*Drain valve connection*	
HR101-004	*Ogive*		OR075-005	*O-ring*		PA114-041	*Sealing Ring*	
HR102-014	*Nut fitting pipe*		PA003-100	*Tube*		PA114-042	*Reducer*	
HR117-031	*Pipe fitting*		PA003-121	*Tube*		PA114-045	*Connection INOX*	
HR175-001	*Connection*		PA003-122	*Tube*		PA114-049	*Support condensate drain*	
HR176-002	*Closure plug*		PA110-010	*Spring*		PA114-060	*Hose with fittings for collecting vessel*	
HR301-001	*Nipple*		PA114-015	*Drain valve body*		PA116-101	*Timer*	
HR339-001	*Connection "L"*		PA114-020	*Drain valve piston*		PA116-105	*Solenoid valve 12 Volt DC*	
OR008-005	*O-ring*		PA114-025	*Top flange*		VV005-016	*Sphere*	