

EN

CT SERIES

ORIGINAL INSTRUCTIONS



Rev. 03
26-04-2012

COMPANY WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

INDEX

- 1. General caution**
- 2. Operating directions**
- 3. Technical data**
 - 3.1. Size and weight
 - 3.2. Structural specifications
 - 3.3. Performances
 - 3.3.1. Conveyed Gas
 - 3.3.2. Use limitation
 - 3.3.3. Working in vacuum CT30
 - 3.3.4. Working in pressure CT30
 - 3.3.5. Working in vacuum CT50
 - 3.3.6. Working in pressure CT50
 - 3.3.7. Working in vacuum CT8
 - 3.3.8. Working in pressure CT80
 - 3.3.9. Working in vacuum CT 105
 - 3.3.10. Working in vacuum CT 130
 - 3.3.11. Working in pressure CT130
 - 3.3.12. Noisiness
- 4. Safety and prevention of accidents**
- 5. Installation**
 - 5.1. Obligatory attachments
 - 5.2. Control upon receipt
 - 5.3. Preservation in warehouse
 - 5.4. Blower assemblage
- 6. Line vacuum – pressure**
- 7. Overheating alarm**
- 8. Belt drive**
- 9. Hydraulic drive**
- 10. Starting the system**
- 11. Directions for use**
- 12. Warnings of use**
- 13. Maintenance**
 - 13.1 Ordinary maintenance
 - 13.2 Extraordinary maintenance
- 14. Working anomalies**
- 15. Scrapping**

1. GENERAL CAUTION

In this handbook there are all the necessary information useful to set up, start, use and maintain the compressor.

- Knowing the handbook is fundamental in order to correctly use the machinery. The constructor is not responsible for damages resulting from inappropriate, wrong or irrational use.
- The application of the directions of use and maintenance is the necessary condition in order to get the recognition of the guarantee on the defective parts.
- Follow the safety instructions. Do not use the machinery in ways different from the ones indicated in the handbook.

Therefore, it is necessary that:

- The users and the installer should know the instructions reported in the handbook.
- The handbook should be available to all the users

2. OPERATING DIRECTIONS

This handbook concerns the compressors belonging to the line CT designed to create maximum relative pressure equal to 1,1 bar and to create a maximum vacuum equal to 55% .

The models CT have been conceived to operate with the axle of the horizontal or vertical valves as well as with the direction of rotation on the right or on the left.

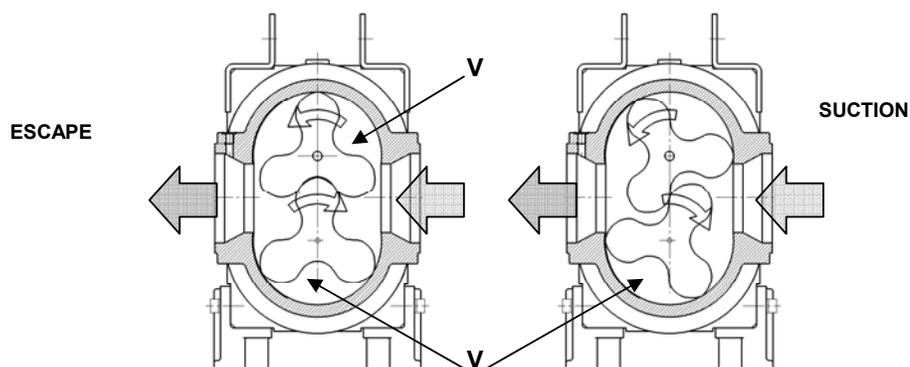
This handbook describes a standard construction and it doesn't assume project details for any other variation.

In the case the customer doesn't find all the necessary information in this handbook, he is requested to ask the JUROP S.p.A for them.

The compressor of the line CT is mainly made up by a cast iron housing in which two rotors with a joined profile rotate, with a contrary direction of rotation between each other and without a reciprocal contact, and they are synchronized through a pair of tooth wheels lubricated with oil.

The housing is closed by two flanges on the extremities which seat the support bearings for the shafts reels holder and the system of air seal in the passage zones.

During the rotation, two consecutive rotating lobes of each rotor skim the housing inside the surface, delimiting in so doing a volume chamber V that entraps the air. In process of rotation the entrapped air moves from the suction valve to the escape valve. On each complete turn of rotation, the compressor can move 6 times the volume of the gas contained between the two consecutive lobes and the housing. The capacity is based on the rotation speed of the machinery and on the difference of pressure existing between the forcing valve and the suction. Consequently, it's possible to vary the capacity changing the machinery number of turns by using belt drive with a different ratio in the primitive diameter of the pulleys, or by using direct combination with the electric engine and the inverter. The air or the pumped gas is free from contaminations, since there is no presence of lubricants in the chamber where the work of compression has place.



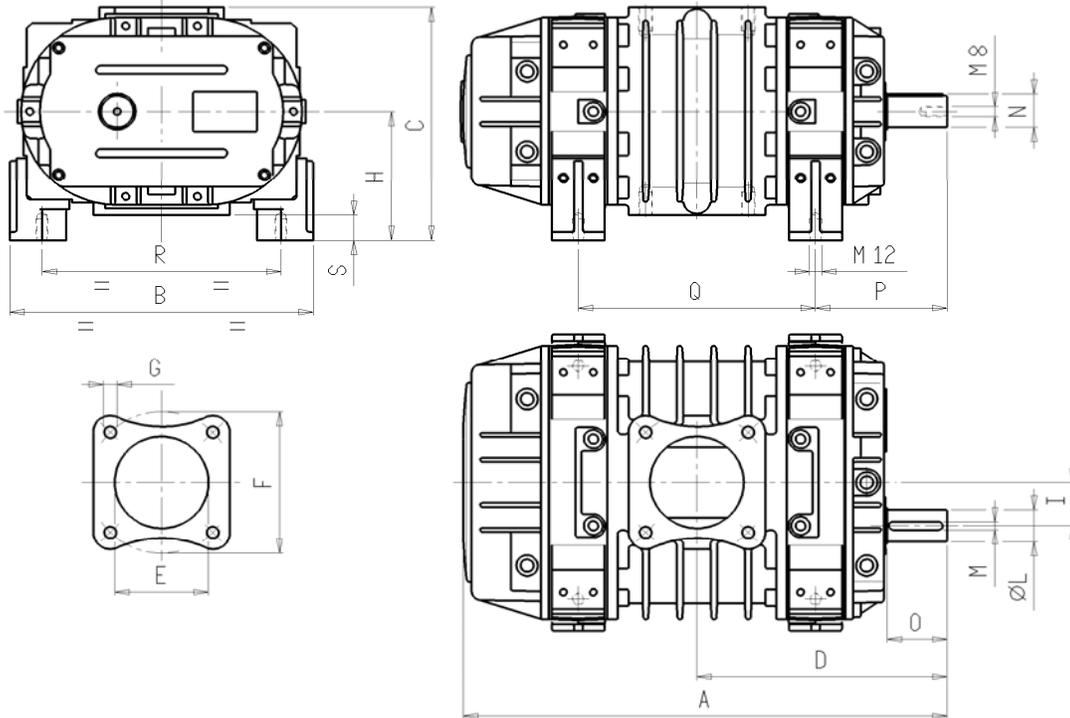
3. TECHNICAL DATA

3.1 Size and weight

Weight:

CT 30	CT 50	CT 80	CT 105	CT 130
45 kg	55 kg	106 kg	118 kg	132 kg

CT with vertical vents

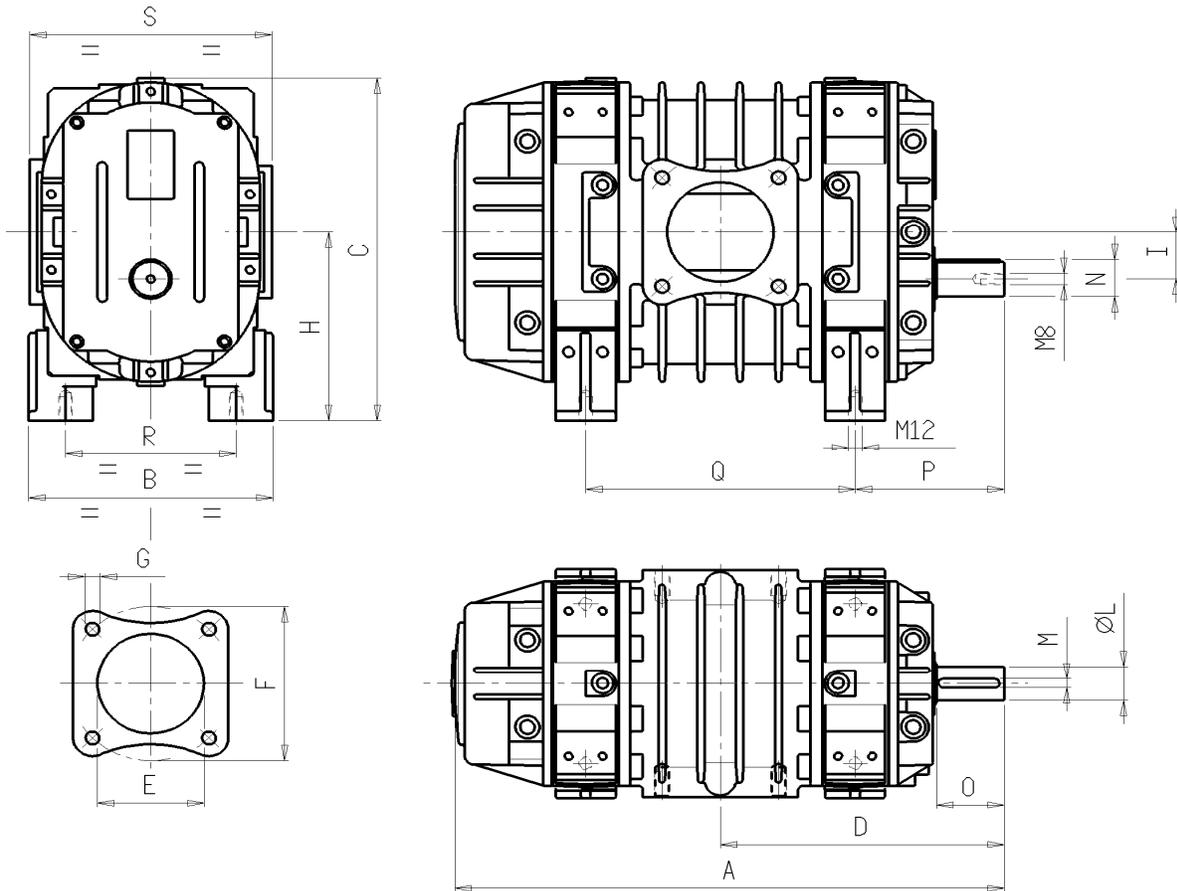


Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
CT30	421	283	230	218,5	55	110	M 12	125	37,5	25 (g6)	8 (h9)	28	50	129	179	280	20
CT50	481			248,5	70	130									239		

Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
CT80	517	356	280	268	85	150	M16	155	52	38 (g6)	10 (h9)	40.4	70	154	228	280	30
CT105	567			293	110	170									278		
CT130	617			318											328		

NB: The compressor is represented with left shaft. Available also with right shaft.

CT with horizontal vents



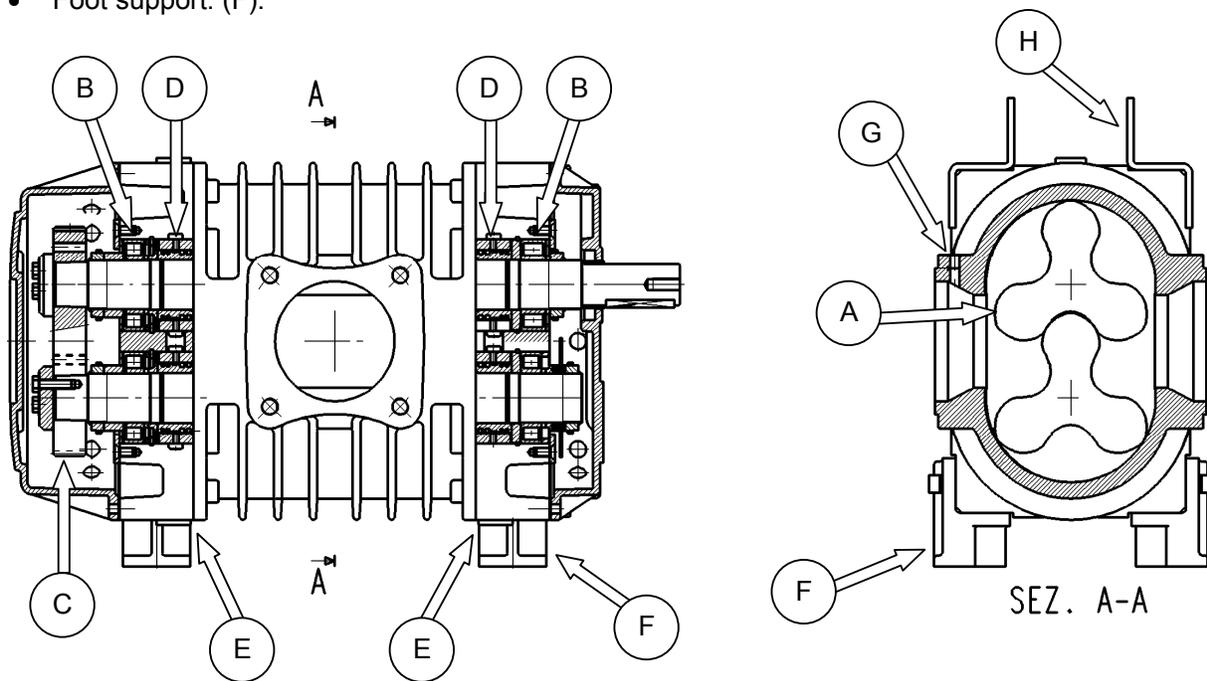
Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
CT30	421	230	297	218,5	55	110	M 12	162,5	37,5	25 (g6)	8 (h9)	28	50	129	179	154	230
CT50	481			248,5	70	130									239		

Mod.	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
CT80	517	252	376	268	85	150	M16	207	52	38 (g6)	10 (h9)	40.4	70	154	228	176	250
CT105	567			293	110	170									278		
CT130	617			318											328		

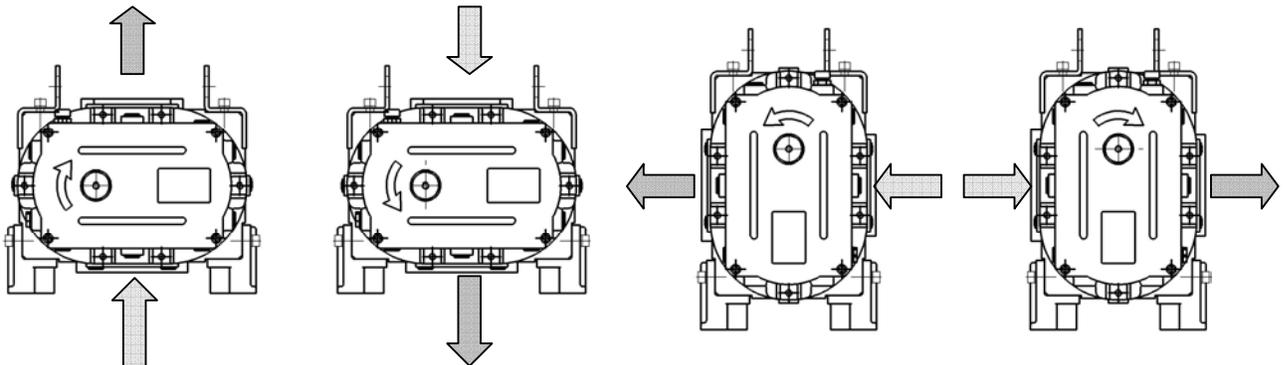
NB: The compressor is represented with bottom shaft. It is also available with top shaft.

3.2 Structural specifications

- Volumetric pump with trilobated rotors in cast iron highly resistant and dynamically balanced to reduce the vibrations (A) in synchronized rotation by phase gears of high precision without axial thrust
- It doesn't give out oil in the atmosphere.
- Working without wear, reduced maintenance.
- Clockwise or anticlockwise rotation on request.
- Cylindrical roller-bearings (B) and gears (C) lubricated with oil in the front and rear boxes.
- Long lasting labyrinth internal seals (D) with iron cast rings and with vent-hole in atmosphere.
- Control points for the leaks in the labyrinth seal (E).
- Seal and gaskets for high temperatures.
- Pressure plug on the escape valve (G), if it is present
- Lifting connections (H).
- Foot support. (F).



Relation between the direction of rotation and the air flow.



3.3 PERFORMANCES

3.3.1 CONVEYED GAS



The blower is suitable to convey filtrated air: if other gases are sucked up you should verify the compatibility with the present lubricants and with the materials constituent the part with which those gases are in contact. Because of the inevitable gas leaking the blower is not suitable to pump toxic, explosive and dangerous gases. The Jurop places a technical service at disposal for possible information. The entrance of foreign housings or liquids may damage the compressor.

USE LIMITATION

CT30 – CT50

RPM		P ₂ (mbar)	P ₂ -P ₁ (mbar)	T ₂ (°C)	T ₂ - T ₁ (°C)
Min	Max	Max	Max	Max	Max
2000	4800	2000	1000	160	130

CT80 – CT105 – CT130

RPM		P ₂ (mbar)	P ₂ -P ₁ (mbar)	T ₂ (°C)	T ₂ - T ₁ (°C)
Min	Max	Max	Max	Max	Max
2000	4500	2000	1000	160	130

P₁ : Absolute pressure in suction
P₂ : absolute pressure in forcing

T₁ : temperature in suction
T₂ : temperature in forcing

3.3.3 WORKING IN VACUUM CT 30

RPM	VAC. 10%			VAC. 20%			VAC. 30%			VAC. 40%			VAC. 50%			VAC. 55%*		
	Q	P	T2-T1	Q	P	T2-T1												
	moh	KW	°C	moh	KW	°C												
2000	105	0,3		65	0,7		25	1,0	43,7	75	1,6		27,5	1,7	97			
3000	205	0,7		185	1,3		160	1,9	42,3	140	2,4		115	3,0	96,5	105	3,3	
4000	290	1,3		285	2,1		280	2,8	42,2	275	3,5		260	4,2	94,1	255	4,6	
4800	345	2,2		325	2,9		310	3,6	44	290	4,4		275	5,1	94,5	265	5,4	

3.3.4. WORKING IN PRESSURE CT 30

RPM	1.2 bar abs.			1.4 bar abs.			1.6 bar abs.			1.8 bar abs.			2.0 bar abs.			2.1 bar abs.*		
	Q	P	T2-T1	Q	P	T2-T1												
	moh	KW	°C	moh	KW	°C												
2000	95	0,9		75	1,6		50	2,4	78	30	3,1		10	3,9	141,5	5	4,2	
3000	180	1,5		160	2,7		135	3,9	67,4	110	5,1		85	6,4	132,5	75	7,0	
4000	255	2,6		235	4,2		210	5,7	68	185	7,3		165	8,9	121,6	155	9,6	
4800	325	3,6		300	5,4		275	7,2	68,6	250	8,9		225	11	94,5	215	12	



3.3.5. WORKING IN VACUUM CT 50

RPM	VAC. 10%			VAC. 20%			VAC. 30%			VAC. 40%			VAC. 50%			VAC. 55%*		
	Q	P	T2-T1	Q	P	T2-T1												
	moh	kW	°C	moh	kW	°C												
2000	185	0,4		165	1,0		145	1,5		120	2,0		100	2,5	98.3	90	2,8	
3000	325	0,8		300	1,7		270	2,5		240	3,4		215	4,3	88.5	200	4,7	
4000	435	1,8		410	2,9		380	4,1		355	5,2		330	6,4	88	315	7,0	
4800	525	2,5		505	3,8		485	5,2		465	6,5		445	7,8	90.7	435	8,5	

3.3.6. WORKING IN PRESSURE CT 50

RPM	1.2 bar abs.			1.4 bar abs.			1.6 bar abs.			1.8 bar abs.			2.0 bar abs.			2.1 bar abs.*		
	Q	P	T2-T1	Q	P	T2-T1												
	moh	kW	°C	moh	kW	°C												
2000	180	1,2		150	2,4		125	3,6	69.6	100	4,8		75	5,9	135.9	60	6,5	
3000	300	2,3		270	4,0		245	5,6	65.9	215	7,3		190	9,0	121	175	9,8	
4000	420	3,5		390	5,7		365	8,0	62.8	340	10		315	12	111.6	300	14	
4800	515	4,7		490	7,5		470	10	64.3	445	13		420	16	112.4	410	17	

3.3.7 WORKING IN VACUUM CT 80

RPM	VAC. 10%			VAC. 20%			VAC. 30%			VAC. 40%			VAC. 50%			VAC. 55%*		
	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1
	moh	kW	°C	moh	kW	°C	moh	kW	°C	moh	kW	°C	moh	kW	°C	moh	kW	°C
2000	343	1,1		310	2,2	25	272	3,2	41	230	4,3	63	184	5,4	96	158	5,9	118
3000	536	2,2		511	3,6	24	481	5,1	41	446	6,5	62	406	7,9	92	384	8,6	114
4000	740	4,1		716	5,9	26	678	7,7	44	624	9,5	66	556	11	98	516	12	114
4500	824	5,1		796	7,1	28	768	9,1	45	741	11,2	68	715	13	98	702	14	118

3.3.8 WORKING IN PRESSURE CT 80

RPM	1.2 bar abs.			1.4 bar abs.			1.6 bar abs.			1.8 bar abs.			2.0 bar abs.			2.1 bar abs.*		
	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1									
	moh	kW	°C	moh	kW	°C	moh	kW	°C									
2000	322	2,6	21	296	4,5	43	270	6,4	69	244	8,3	94	218	10	124	205	11	132
3000	524	4,2	22	496	7,1	43	468	10	66	440	13	89	412	16	114	400	17	125
4000	710	6,3	24	683	10	45	656	14	67	630	18	89	603	23	113	590	25	123
4500	814	7,7	26	787	12	50	760	17	71	734	22	90	707	26	110	694	29	122

3.3.9 WORKING IN VACUUM CT 105

RPM	VAC. 10%		VAC. 20%			VAC. 30%			VAC. 40%			VAC. 50%			VAC. 55%*		
	Q	P	Q	P	T2-T1	Q	P	T2-T1									
	moh	kW	moh	kW	°C	moh	kW	°C									
2000	450	1,7	407	2,9	27	365	4,0	39	321	5,2	61	277	6,4	98	254	7,0	122
3000	688	2,9	660	4,8	25	632	6,7	40	604	8,5	61	576	10	95	562	11	117
4000	943	5,1	925	7,4	26	898	9,7	41	862	12	65	817	14	96	791	15	118
4500	1040	6,1	1005	8,7	29	975	11	45	950	14	66	931	17	99	924	18	118

3.3.10 WORKING IN PRESSURE CT 105

RPM	1.2 bar abs.			1.4 bar abs.			1.6 bar abs.			1.8 bar abs.			2.0 bar abs.			2.1 bar abs.*		
	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1	Q	P	T2-T1
	moh	kW	°C	moh	kW	°C	moh	kW	°C	moh	kW	°C	moh	kW	°C	moh	kW	°C
2000	418	3,5	28	390	6,0	41	361	8,5	68	332	11	94	304	13	125	290	15	135
3000	686	6,1	24	655	9,9	41	623	14	67	592	18	92	560	21	115	545	23	130
4000	956	8,7	25	922	14	45	888	19	68	853	24	93	818	30	113	800	32	126
4500	996	9,7	24	976	15	47	956	21	69	937	27	91	917	33	114	908	36	122

(*) : it exceeds the usage limits. Conditions excluded from the continue service.

! : $T_2 - T_1 > 130^\circ\text{C}$ it exceeds the usage limits. Conditions excluded from the continue service.

Conveyed gas: air

Absolute pressure of reference: 1013 mbar

Working in pressure: free suction

Working in open air.

Temperature of reference: 20°C



3.3.11 WORKING IN VACUUM CT 130

RPM	VAC. 10%		VAC. 20%		VAC. 30%			VAC. 40%			VAC. 50%			VAC. 55%*		
	Q moh	P kW	Q moh	P kW	Q moh	P kW	T2-T1 °C	Q moh	P kW	T2-T1 °C	Q moh	P kW	T2-T1 °C	Q moh	P kW	T2-T1 °C
2000	530	1,8	513	3,5	491	5,1	49	464	6,7	75	430	8,3	103	413	9,1	121
3000	812	3,9	788	6,1	763	8,2	46	738	10	73	713	12	99	700	13	121
4000	1115	6,8	1095	9,5	1070	12	51	1040	15	75	1008	18	100	990	19	119
4500	1200	8,1	1200	12,3	1180	14	52	1150	17	76	1130	20	105	1100	22	128

3.3.12 WORKING IN PRESSURE CT 130

RPM	1.2 bar abs.		1.4 bar abs.		1.6 bar abs.			1.8 bar abs.			2.0 bar abs.			2.1 bar abs.*		
	Q moh	P kW	Q moh	P kW	Q moh	P kW	T2-T1 °C	Q moh	P kW	T2-T1 °C	Q moh	P kW	T2-T1 °C	Q moh	P kW	T2-T1 °C
2000	483	4,5	460	7,5	433	10	76	410	14	100	382	17	125	370	18	132
3000	773	7,0	745	12	716	17	71	690	22	95	660	26	118	646	29	128
4000	1046	10	1022	17	1000	24	73	972	30	96	950	37	118	935	40	128
4500	1160	13	1130	20	1110	27	72	1090	35	93	1060	42	115	1050	45	125

(*) : it exceeds the usage limits. Conditions excluded from the continue service.

! : $T_2 - T_1 > 130^\circ\text{C}$ it exceeds the usage limits. Conditions excluded from the continue service.

Conveyed gas: air

Absolute pressure of reference: 1013 mbar

Working in pressure: free suction

Working in open air.

Temperature of reference: 20°C

3.3.13 NOISINESS

WORKING IN VACUUM CT 30 – CT 50

SPEED rpm	CT 30 LwA dB (A)			CT 50 LwA dB (A)		
	0%	30%	50%	0%	30%	50%
2000	85,9	87,4	0	78,7	79,5	82,1
3000	87,3	88,5	89,1	81,3	86,1	89,6
4000	89,9	93,9	93,4	83,4	88,4	90,7
4800	93,7	94,5	96,5	84,4	90	91,8

WORKING IN PRESSURE CT 30 – CT 50

SPEED rpm	CT 30 LwA dB (A)			CT 50 LwA dB (A)		
	1000 mbar(abs)	1600 mbar(abs)	2000 mbar(abs)	1000 mbar(abs)	1600 mbar(abs)	2000 mbar(abs)
2000	85,9	88,3	90,2	78,7	83,4	87
3000	87,3	90,4	91,6	81,3	89,1	92,7
4000	89,9	95,9	97,1	83,4	91,2	95,7
4800	93,7	96,8	99,3	84,4	92,4	98,6

WORKING IN VACUUM CT 80 – CT 105 – CT 130

SPEED rpm	CT 80 LwA dB (A)			CT 105 LwA dB (A)			CT 130 LwA dB (A)		
	10%	30%	50%	10%	30%	50%	10%	30%	50%
2000	79,0	79,3	81,7	82,6	84,1	84,5	84,4	87,0	91,2
3000	85,5	85,9	86,1	87,1	87,8	88,8	88,7	90,8	92,8
4000	85,6	87,9	89,9	87,3	88,4	92,3	89,4	92,0	95,4
4500	88,5	91,0	92,2	90,3	92,9	93,8	91,1	95,5	97,3

WORKING IN PRESSURE CT 80 – CT 105 – CT 130

SPEED rpm	CT 80 LwA dB (A)			CT 105 LwA dB (A)			CT 130 LwA dB (A)		
	1400 mbar(abs)	1800 mbar(abs)	2000 mbar(abs)	1400 mbar(abs)	1800 mbar(abs)	2000 mbar(abs)	1400 mbar(abs)	1800 mbar(abs)	2000 mbar(abs)
2000	81,1	84,0	85,6	83,7	89,3	91,9	89,7	93,9	94,8
3000	87,6	92,8	93,9	88,8	96,5	98,7	91,4	100,2	102,6
4000	90,5	93,2	97,3	93,0	98,7	99,9	97,0	103,3	104,3
4500	92,1	96,7	98,5	96,6	102,5	103,2	98,7	104,2	105,4

Noisiness is influenced by the working speed and pressure: the data reported above indicate the maximum noisiness of the compressor according to the speed. The real noisiness is influenced also by the condition of installation:

- Presence of close walls which reflect the noise
- Assemblage on anti-vibrating supports.
- Use of sleeves on the pipes in order to damp the vibrations' diffusion.

4. SAFETY AND PREVENTION OF ACCIDENTS



FOLLOW THE FOLLOWING DIRECTIONS CAREFULLY

- During the transport of the machinery use appropriate slings. Lean the pump on stable points.
- Installation and maintenance have to be performed only by qualified personnel using adequate clothes and the necessary protection and instruments.
- Before each maintenance intervention:
 - Stop the compressor and bring again the system to the atmospheric pressure and to the room temperature.
 - Disconnect the transmission of power
 - Work only on still and cold pumps.
- During the working the pump components may reach very high temperatures (superior to 170°C). Use all the necessary cautions to avoid the contact.
- People working close to the compressor should avoid the exposure to the noise produced by the machinery if they are not equipped with the adequate protection.
- Do not insert hands or objects inside the compressor's working valves. The rotors may cause serious damage.
- Do not start the machinery without the safety devices necessary for the transmission members. Substitute the damaged protections.
- Safety-valves: turn the air flow far from the operators
- Do not use the compressor above the usage limitations indicated: there is the possibility of breakage and possible damages for the operators.

5 INSTALLATION

5.1. OBLIGATORY ATTACHMENTS

- Silencer during the suction
- Overheating alarm to connect to the thermostat on the escape valve.
- Security filter adequate and/or cleaner on the inlet pipeline to avoid the suction of foreign housings or liquids.
- Adequate security-valves

5.2. CONTROL UPON RECEIPT

- Remove the packing eliminating all the material that could be dangerous if inhaled.
- At the goods arrival, make sure all the articles are entire,
- Make sure the compressor has the identification plate. Machineries which do not present the plate are considered anonymous and potentially dangerous: they should not be used, otherwise the constructor declines all responsibilities. In case, contact the seller.

5.3. PRESERVATION IN WAREHOUSE

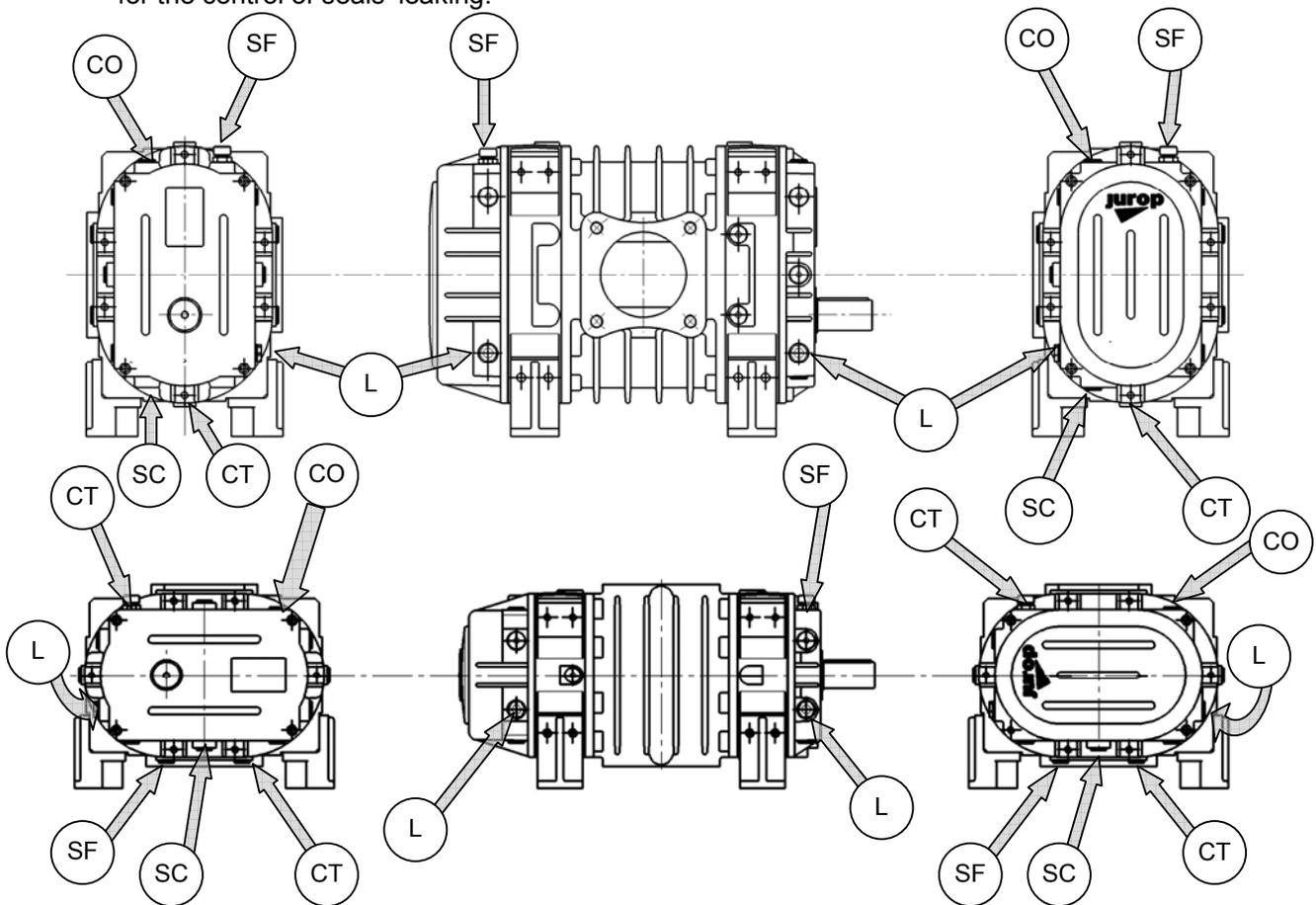
If the compressor is not to be used for a long time:

- Remove the valves' protections and apply a protection oil film on the inside surface of the housing, the rotors and the sides.
- Keep in a close and dry place. Do not remove the protection on the valves. Renew periodically the preservation condition.

5.4. BLOWER ASSEMBLAGE

The assembled compressor should be accessible for maintenance and it should be fixed rigidly on a loom or levelled base (maximum inclination 3°). The structure has to be dimensioned to avoid flexions or vibrations.

- Guarantee the space necessary to the circulation of the air in order to get to the cooling around the compressor and to avoid the exposure to dirt and deposits.
- Arrange the space to reach the discharge, topping-up and oil control plugs and also the plugs for the control of seals' leaking.





Legend:

Front and rear boxes			
L : oil quantity	SF : vent-hole box	SC : oil discharge	CO : oil charge
Check seal conditions		Front and rear bed	
CT : seal control			

The plugs for the discharge, the control of the level and the oil discharge are assembled correctly during the final inspection in the factory. Do not modify their position.

CAUTION

Modifications in the direction of rotation or in the assemblage position have to be arranged with our Technical Assistance Service.

NOTE

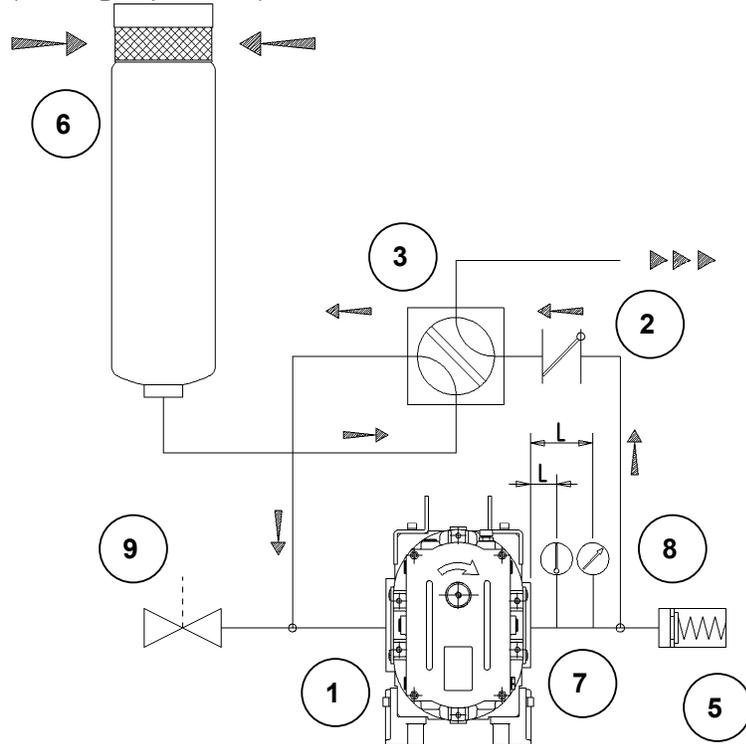
The direction of the blower determines the flow direction (see the paragraph "Dimensions").

6. THE VACUUM- PRESSURE LINE

- The diameter of the line vacuum-pressure pipes must be adequate to the capacity of the compressor and, in any case, never inferior to the valves diameter.
- Pipes should not increase the dilatation of the compressor's housing with their weight (1). Use rubber sleeves resisting to the temperature.
- When assembling, remove the protection on the valves. Pipes and all the components of the line should be clean.
- Avoid strangling or narrow curves where it's not indispensable.
- The escape pipe reaches high temperatures. Isolate adequately.
- A claper valve (2) in the forcing pump of the compressor avoids the rotation in the opposite direction when stopping the machinery.
- Maximum pressure safety-valve (5) on the forcing pump: to assemble close to the compressor.
- The valve should avoid the compressor exceeds the pressure of 2100 mbar or, anyway, the maximum pressure for that system. Do not interpose any gate on the line.
- Manometer (8) and thermometer (7) should be placed on a distance not superior to 35 cm from the compressor's escape valve.
- If necessary, apply:
 - Cleaner or suction filter. Liquids or solid material don't have to reach the compressor.
 - 4 way switch (3) to generate both vacuum and pressure in the system (this is unnecessary if you have to produce only vacuum or only pressure).

VACUUM-PRESSURE LINE

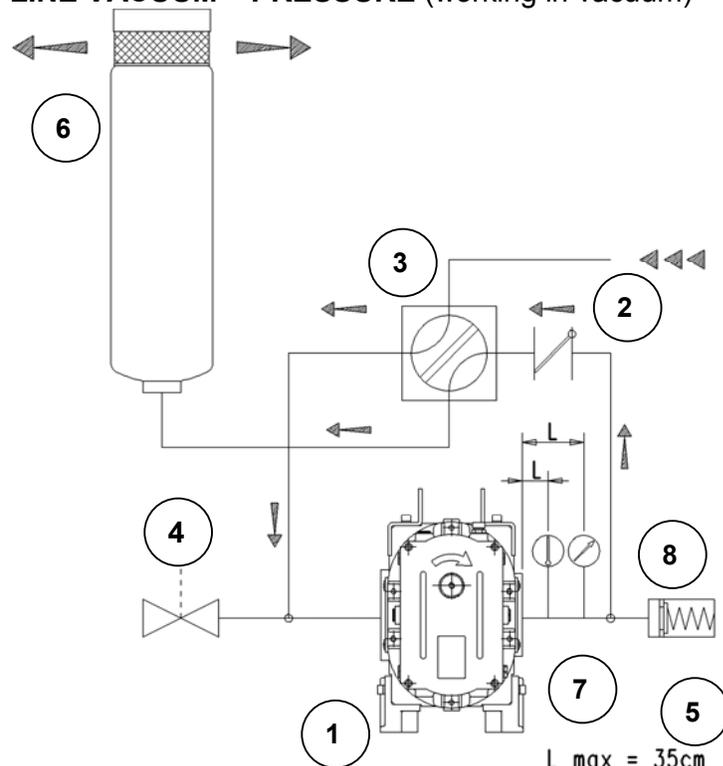
(working in pressure)



L max = 35cm

POS.	DESCRIPTION
1	Compressor CT
2	Clapet valve
3	4 way switch (opt.)
4	Vacuum-breaker valve (opt.)
5	Maximum pressure valve
6	Silencer
7	Thermostat
8	Manometer
9	Maximum pressure valve

LINE VACUUM – PRESSURE (working in vacuum)



L max = 35cm

The rotation of the 4 way switch (if present) allows the suction from the silencer and the sending of air in the system. Check the speed to not create an exaggerated depression in forcing; the maximum degree of vacuum allowed is 55%.

NOTE

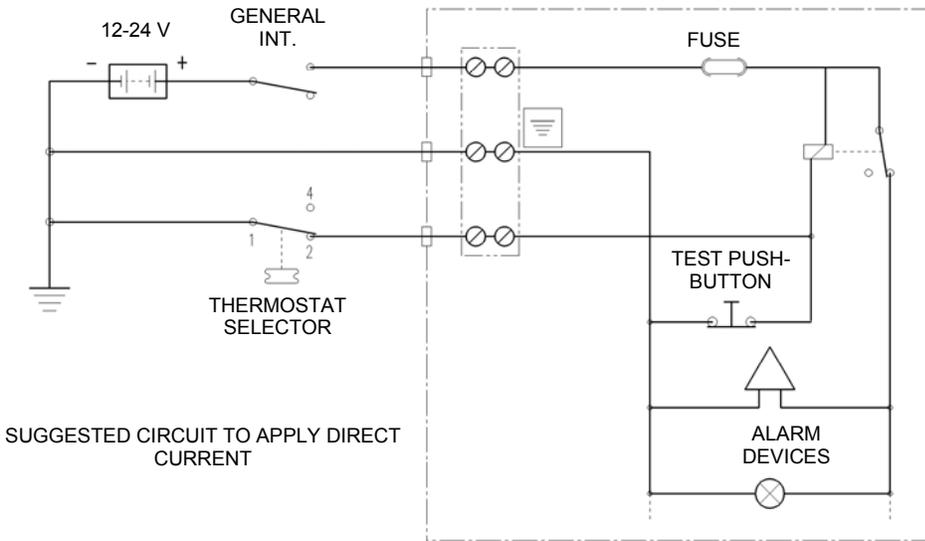
In case of overheating, the opening of the safety-gate applied on the inlet pipeline doesn't cool the pump working in pressure. Stop the transmission.



The clapet valve on the compressor's forcing pump avoids the rotation on the opposite direction when the machinery is stopped over load and it is necessary to leak the circuit:

- Before carrying out the maintenance on the compressor or the transmission. The difference in pressure inside the system may put the machinery in rotation.
- Before restart the machinery: it would take an elevated pair at the starting.

7. OVERHEATING ALARM



Once reached the maximum temperature of exercise, the electric selector has to stoke the alarm devices or open a gate on the vacuum line.

Electric

specifications of the unipolar selector SPDT:

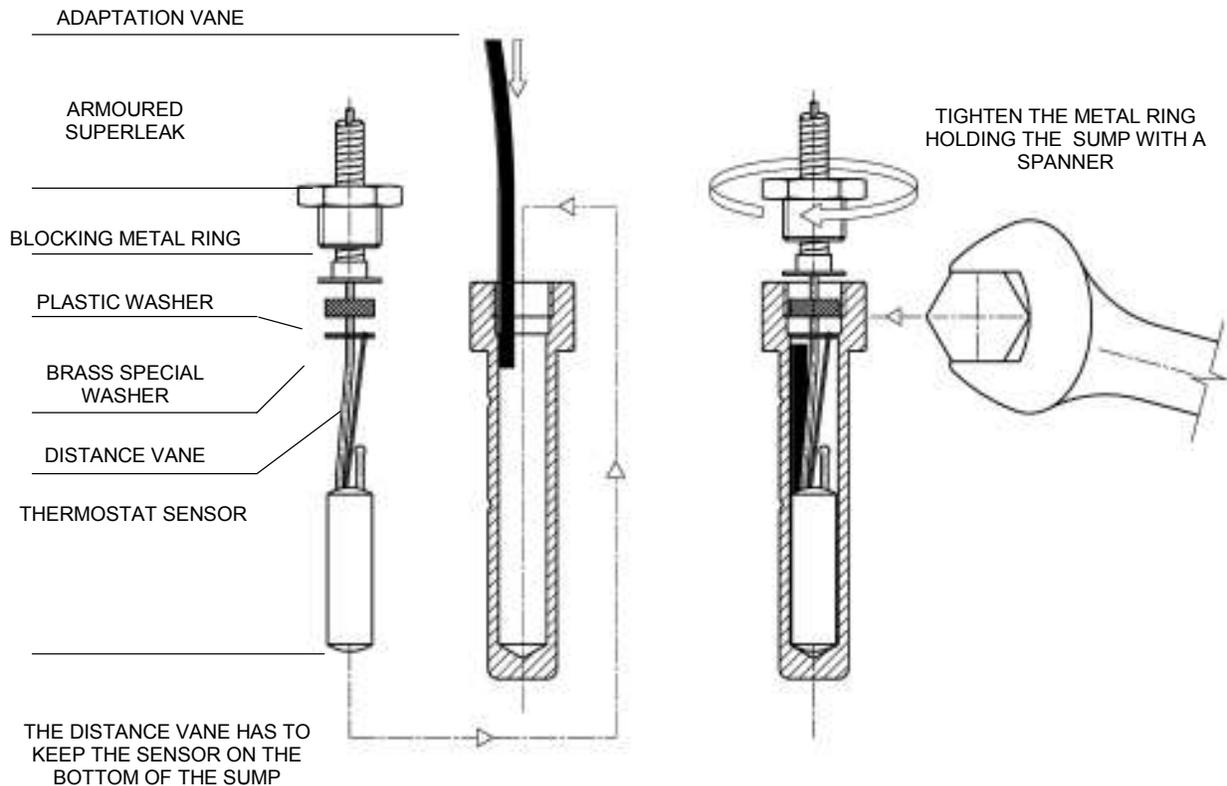
- Direct current feeding: max 220V, 12W cc-13 (command coils feeding)
- Alternating current feeding:
 - max 440V, 10A ca-1 (resistive load)
 - max 440V, 6A ca-3 (start-stop induction motors)
 - max 440V, 4A ca-15 (coils feeding absorption control > 72VA)

Protection: IP67 (IEC 529 e DIN 40050).

Room Temperature: from -40 to +70°C.

Fairlead: Pg 13.5 for cables from 5 to 14 mm.

Use the selector's contact normally closed (NC) to feed the coil with one relay power. In this way (see the above electric scheme) the alarm siren works also when the connection wires would break accidentally (protection from the system breakdown).



THE ADAPTATION VANE HAS TO COMPENSATE THE SENSOR PLAY IN THE SEAT OF THE SUMP.

THERMOSTAT CODE 4028249B00
SUMP CODE: 4028249B01

Application of the sensor:

- In case of disassembly, assemble again as indicated in the drawings.
- Unwind the sensor's armoured superleak trying to avoid the strict curves or the cracking. Fix the unit to a stable support /avoid vibration or accidental crash).
- Room temperature may affect the thermostat working. The calibration set in the factory is adequate to be used between 0°C and 40°C. If the thermostat is used at extreme temperatures (under 0°C or 40°C) a correction of calibration may be necessary. In case, contact the technical assistance service.

In order to warrant the efficiency of the thermostat, verify that:

- The distance vane keeps the sensor on the bottom of the sump.
- The adaptation vane has to eliminate the play between the sensor and its seat in the sump, in order to guarantee an effective transmission of the heat.
- The sump has to be blocked in the seat with two screws without head. Position the sump in the range **30 and 50 cm from the escape valve**.
- The thermostat's sensor has to be plunged in the air flow coming from the escape valve.



The overheating may cause the blocking of the compressor damaging also the transmission. Stop or cool making it to function with free outfall. Reuse again the compressor over load only when the alarm stops.

8. BELT DRIVE

Assemble the pulley on the smooth shaft of the compressor without many sudden changes. In order to warrant the working to the maximum performance, the minor pulley of the transmission (normally assembled on the compressor) should have the following specifications:

CT 30 – CT 50

SPEED rpm	Dp min Mm	n° race CT 30	n° race CT 50	Kind of belts
until 5000	150	2 x SPZ	3 x SPZ	XPZ

CT 80 – CT 105 – CT 130

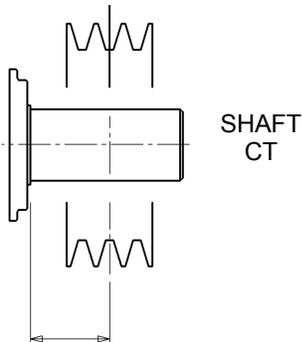
SPEED rpm	Dp min Mm	n° race CT 80	n° race CT 105	n° race CT 130	Kind of belts
until 2800	160	2 x SPA	3 x SPA	4 x SPA	XPA
above 2800	180				

ATTENTION

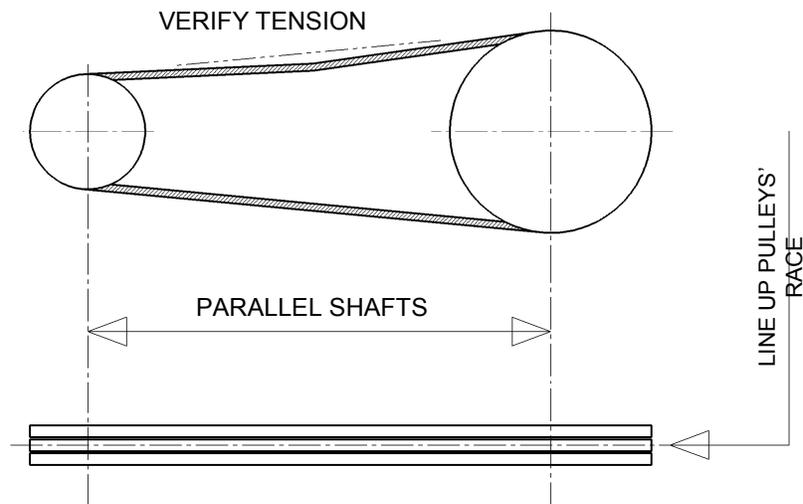
A greater change (that is a bigger number of belts) or a primitive diameter inferior to the one indicated, may overload to excess the shaft and the anterior bearing, creating slipping of the belts and leaking of lubricant oil from the seat of the transmission axle.

Line up the pulleys correctly and do not exceed in putting the belt under pressure: do respect the indication of the belts' manufacturer. In any case, do not get over the maximum load allowed on the pump shaft (see scheme).

MAX LOAD CT80-105-130 = 5000 N
MAX LOAD CT 30-50 = 1200 N



L MAX CT80-105-130 = 55mm
L MAX CT 30-50 = 25 mm



A contained transmission ratio lengthens the belts' life and reduces the overload on the shafts. When it's possible, prefer:

- Pulleys with a primitive diameter bigger than the one indicated.
- Motors or force plugs with speed as close as possible to the one of the compressor.

9. HYDRAULIC TRANSMISSION CT 80 – CT 105 – CT 130

Only for the models CT 80, CT 105 e CT 130 it's possible to carry out the transmission by means of an hydraulic motor with high pressure, utilisable in open or close circuits.

- **Specifications of the motor**

Model CT	Cylinder Capacity	Operative pressure max.	Absolute Press. Drainage max	Capacity
	cc/rev	bar	bar	l/min
CT 80	19.6	200	1.5	93
CT 105	19.6	230	1.5	93
CT 130	19.6	330	1.5	93

- **Capacity and pressure:** to define according to the performances requested to the blower (speed and pressure of exercise).
- **Fluid:** mineral oil for hydraulic equipments HL-HM ISO 6443-4.

Temperature	minimum viscosity	optimal viscosity	maximum viscosity (starting)
°C	cSt	cSt	cSt
-25 / +90	10	15 - 40	800

On the base of the temperature of exercise you can identify the viscosity adequate to the fluid.

Operative temperature (°C)	Viscosity (cSt) at 40°C
30°C – 40°C	22
60°C – 80°C	46 o 68

- **Filtering:** class 19/16 according to ISO 4406.
- **Verify the connections inside the circuit:** they must be coherent with the direction of rotation of the suction (see the scheme on the side)

10. STARTING THE SYSTEM

Verify the front and rear level of oil

Verify that all the protections, security and overheating alarm are correctly installed

Verify that in the vacuum line and in the pressure one there is no obstructions.

Verify the direction of rotation: open all the valves of the system and start slowly.



The rotation in the wrong direction is allowed just at low speed: there could be damages to the line and/or to the compressor.

Close the valves and raise the pressure or vacuum degree.

Verify the speed over load and working: there should be no vibration or anomalous noises.

Verify the efficiency of the overheating alarm.

11. DIRECTIONS FOR USE

Do not put the excess flow drain pipe into the blower suction.

Adjust the flow by working on the rotation system: do not use the safety valve to discharge the excess flow.

Do not throttle the pipes.

Avoid anticlockwise rotation at the time of the stopping. This phenomenon is caused by the difference of pressure between the forcing valve and the suction valve. Use non-recoil valves along the line.

Avoid stressed starts : they overload both transmission and motor.

11. WARNINGS OF USE



The builder declines any responsibility for damages caused by not observing the installation, usage and maintenance rules.

- The overheating alarm warns the operator that the temperature has reached the operative limit.
 - Stop the compressor and wait for the machine cooling.
 - If possible, let it work with a free outfall for all the time needed.
 - It is possible to restart the work only when the temperature has normalized.
 - If the alarm is often activated during the regular usage, it is necessary to check the using conditions (temperature, pressure, systems) and the installation conditions.
- At a very low room temperature (e. g. in winter) reduced temperatures occur near the drain pipe and the overheating alarm is not activated even if one works at high speed and vacuum degree. It is recommended not to exceed a difference of temperature of 130°C between aspirated and unloaded air, since that can cause the components' anomalous expansions and the compressor' s blocking. Refer to tables paragraph 2.3.2 and paragraph 2.3.3: if the value $T_2 - T_1$ is indicated as "!", it exceeds 130°C. Avoid the continuous service at these conditions even if the overheating alarm is not activated.

After working in dusty environments, after inhaling liquids accidentally or before a long period of inactivity, it is advisable to wash the compressor inside.

Before this operation, wait until the compressor is cooled. It would be better to make it turn for a few minutes with a free outfall (vac. 0%) or stop it.



Avoid maintenance works on very hot compressors (for instance, after a day of work) without previously cooling them.

Prepare a mixture of 1-2 liters of water and of a noninflammable detergent with passivating and protective properties. We recommend the use of Henkel P3 Neutrasel 2860 IT; 5% concentration in water.

- Use a sleeve along the inlet pipeline to introduce the detergent fluid.
- Start at low speed (approximately 2000 rpm) and maintain a low degree of vacuum (vac. 10-20%). Slowly introduce the mixture prepared.
- The detergent mixture thus introduced remains in suspension in the air and is then discharged through the silencer.
- When working under pressure only, open the pressure line on the forcing pump to avoid contaminations of the detergent fluid with the system, have the detergent fluid aspirated from the suction valve.
- The detergent mixture thus introduced remains in suspension in the air and is then discharged through the outfall.
- At this point, it is necessary to dry the compressor's internal components to obtain a good protection from oxidation. Once the detergent mixture has finished, let it turn with a free outfall for a few minutes, then work on the valves and the vent to raise the degree of vacuum until vac. 50-60% MAX is reached for a couple of minutes.

- When working under pressure only, let the machine turn with a free outfall for a couple of minutes. By means of this operation also the remaining water is dried by hot air and the detergent has a protective function in avoiding the oxidation of the cast-iron internal parts
- The cleansing by means of this detergent is able to guarantee protection for some days' inactivity. If the compressor is not used for more than two weeks, it is advisable to have 200 cc of anti-rust water-repellent protective oil aspired (or, in its absence, a very thin engine oil), after cleaning and drying the internal parts as indicated above.

Avoid also this maintenance work on very hot aspirators (for instance, after a day of work) if they have not been previously cooled.

Dispose of the traces of oil as established by the regulations in force.

12. MAINTENANCE

12.1 ORDINARY MAINTENANCE

Before starting any maintenance work, apply the safety measures indicated in the paragraph "Safety and accident prevention".

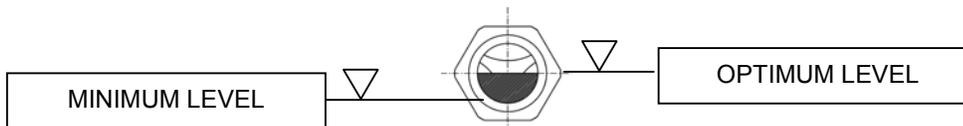
The compressor maintenance is reduced to a minimum and basically consists in substituting the lubrication oil.

PUMP STATUS	CONTROL	FREQUENCY
IN USE	Pressure	D
	Rotation system	D
	Temperature	D
	Noisiness	D
IDLE MACHINE	Oil level	D
	Oil change front box	1000 h
	Oil change rear box	2000 h
	Filters and purifiers vacuum line - pressure	W

Frequency: D: daily W: weekly

NOTES

- Check the oil level in both boxes with cold pump.

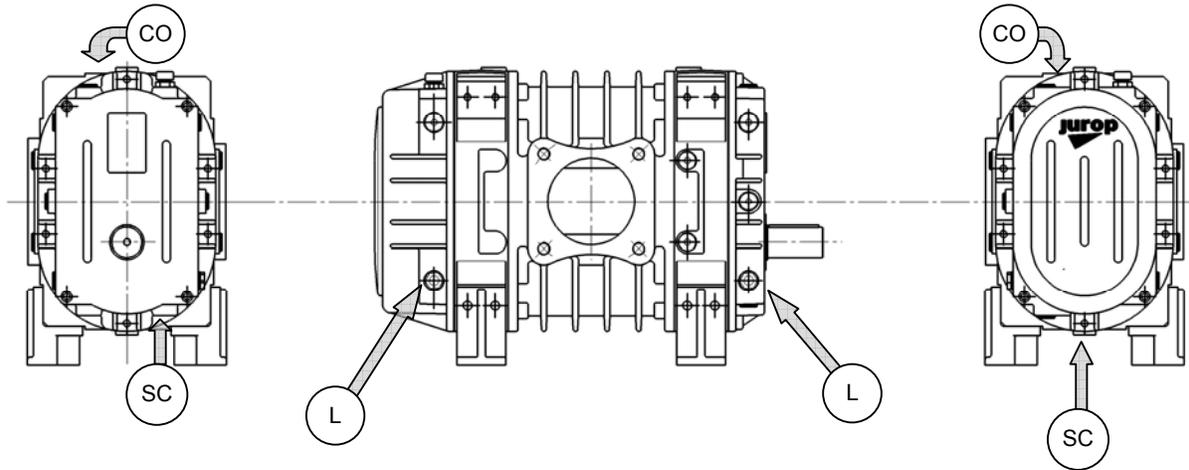


WARNING

- Oil level must not fall below the minimum: risk of quick wear on the internal components.
- The accidental breaking of the labyrinth internal seals causes a fall in oil level inside the boxes. Oil does not reach rotors but builds up in the seal leak control points (see paragraph "Constructive Features"). Unscrew the plug and check (see also paragraph: "Working anomalies", "Oil leak from sealings").



POSITIONING WITH HORIZONTAL VENTS

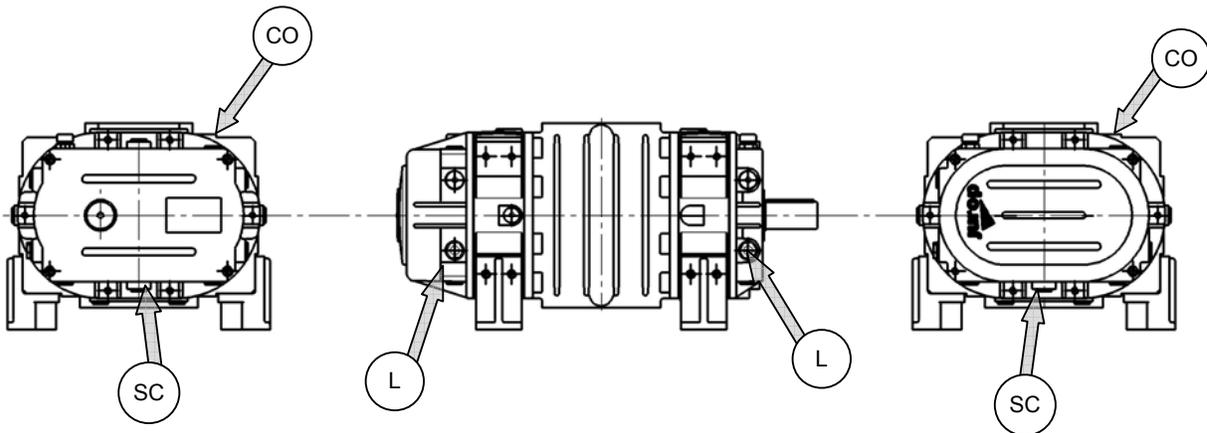


CT 30 – CT 50 – CT 80 – CT 105 – CT 130

Oil quantity (l)	
Rear box	Front box
0.6	0.7

L: Level warning light **CO:** Loaded plug **SC:** Unloaded plug

POSITIONING WITH VERTICAL VENTS



CT 30 – CT 50 – CT 80 – CT 105 – CT 130

Oil quantity (l)	
Rear box	Front box
1	1.3

L: Level warning light **CO:** Loaded plug **SC:** Unloaded plug

Recommended lubricant: gear synthetic oil:

TENNEX FACTOR SYNT ISO 150

In the absence of synthetic oil, it is possible to fill up with polialfaolefine-based gear lubricant (PAO)

Brand	ENI	ESSO	SHELL	TOTAL	MOBIL	BP
ISO VG150	BLASIA SX 100	MOBIL SHC 629	OMALA OIL RL 150	CARTER SH 150	SHC 629	ENERSYN HTX 150

Fill up with the same type of oil: avoid mixtures of several different lubricants. In order not to lose the biodegradability features, use the recommended lubricant during the following oil change.

12.2 EXTRAORDINARY MAINTENANCE

Except for the cases indicated below, a CT extraordinary maintenance is permitted to authorized personnel only, on penalty of the guarantee's forfeiture.



Before starting any maintenance work, apply the safety measures showed in the paragraph: " Safety and accident prevention"

Rotors and housing cleansing

Necessary to remove strong deposits.

- Take the pipes down from the suction and escape valves.
- Clean the housing and rotors' internal surface with solvents, and scour without scratching.

13. WORKING ANOMALIES

Performance reduction	
Incorrect system	Control and restore
Blocked or leaking pipes and/or filters	Check conditions and restore
Small pipes	Check pump's highest performances
Not calibrated safety valves	Check and calibrate

Overheating	
Excessive room and/or aspired air temperature.	Reduce pressure or vacuum degree
Small pipes	Check the real pressure near the pump vents during the suction and forcing. Do not exceed the operating limits.

Oil leaking	
Front seal ring wear	Replace
Broken level signs	Replace
Leaking from seals (oil in the labyrinth seal leaking control points).	Too high oil level. Restore. Check slant (max. 3°). If that is not enough, contact service centre to control labyrinth seals.

Vibrations or anomalous noisiness (stop the fan)	
Start of rotors' blocking	Temperature beyond the intended operative limits ($T_2 > 160^{\circ}\text{C}$ and/or $T_2 - T_1 > 130^{\circ}\text{C}$: see paragraph 11). Leave it to cool. Restart only when the alarm is deactivated.
Furred-up rotors	Take pipes down and clean rotors and housing.
Fluids or foreign housings suction	If they have caused deposits, it is necessary to take pipes down and clean rotors and housing.
Irregular power transmission	Check conditions. Avoid using cardan joints with an excessive angle.

14. SCRAPPING

Before scrapping it is necessary to properly subdivide and dispose of the following materials:

- lubricating oil
- rubber and plastic parts
- cast-iron, steel and aluminum parts.