



FOREWORD

The Battioni Pagani® vacuum/pressure blowers pumps were designed and constructed in compliance with the EEC safety regulations and were assessed for risks according to the standard UNI EN *ISO* 12100:2010; in particular they are in conformity with directive 2006/42/CE and subsequent modifications and additions.

Since the design of this pump complies with the definition of a machine as contained in the Machinery Directive 2006/42/EC, the pump bears the CE mark on its identification plate. However, it must be pointed out that because of its application and the purpose for which it is supplied, which specifies that it be installed by the buyer (without motive power), Battioni Pagani® refuses any and all responsibility if the instructions in this operation and maintenance manual are not followed.

This manual contains the Declaration of CE conformity and all the instructions required by users, and by the manufacturers of plant systems, for using our products safely. As a result, the manual must always be kept near the BLW vacuum/pressure blowers pump. Carefully read the instructions contained in this manual before proceeding with any operation with and on the BLW vacuum/pressure blowers pump.



This danger symbol in the manual means that important instructions relating to safety are being provided. Operators are the first recipients of this information and are responsible for compliance, not only in relation to themselves, but also in relation to other persons exposed to the risks associated with use.

The descriptions and illustrations in this manual are purely indicative.

The manufacturer reserves the right to make any type of change to this manual at any time.

WARRANTY

At the moment of receiving the vacuum/pressure blowers pump, check that it is complete with all its parts.

Any anomalies or missing parts must be communicated within 8 days of receipt of the product.

The Supplier guarantees that the product sold is free from defects and undertakes to repair or, by final decision, to replace the faulty parts only if the defects are clearly attributed to the manufacturing process or to the materials used. In any case the costs of labour, travel and transport, and any customs expenses, shall be paid by the Purchaser. The vendor is not obliged to pay damages except in the case of fraud or serious offence.

All parts subject to normal wear are excluded from the warranty. The warranty will cease to be valid if:

- the faults reported are the result of accidents or obvious carelessness or negligence by the Purchaser,
- the parts have been modified, repaired or fitted by persons not authorised by the vendor,
- the failures and breakages have been caused by use that is unsuitable or heavier than that provided for by the vendor.
- the Purchaser has failed to make the payments as agreed under the contract.

The warranty rights of the Purchaser are invalidated where the same does not report to the Vendor any defects within 8 days of discovery, notwithstanding the provisions of art. 1512 of the Italian Civil Code. The Vendor reserves the right to make changes or improvements to its products without any obligation to make such changes or improvements to the units already previously produced and/or delivered. The Vendor reserves the right to make changes or improvements to his/her products without being obliged to make the same changes or improvements to the units already produced and/or delivered previously.

Thank you for choosing Battioni Pagani®.

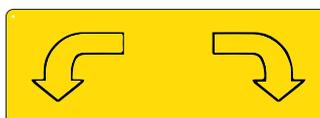
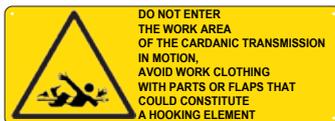




COMPULSORY SAFETY SIGNS THAT THE SYSTEM MANUFACTURER MUST PLACE AT THE WORKPLACE AND AROUND THE BLW VACUUM/PRESSURE BLOWERS PUMP



PERSONAL PROTECTION EQUIPMENT THAT MUST BE USED



INDICATION OF THE DIRECTION OF ROTATION OF THE HANDLE TO SELECT THE ASPIRATION OR COMPRESSION PHASES.



DISPLAY THE SAFETY SIGNS IN A VISIBLE POSITION AND NEAR THE PUMP

CONDITIONS AND LIMITS OF USE LIST OF DANGERS

In the Common Market countries, the installation must comply with directive 2006/42/CE and subsequent modifications, while in the other countries it must comply with the safety regulations of the country.

This pump for vacuum/pressure blowers was designed to create a vacuum or pressure inside a tank connected to it.

Under no circumstances must liquids, dust or any kind of solid matter enter the vacuum/pressure blowers because they could cause it to break. Therefore it is necessary to equip the system with overflow safety valves.

Use of the vacuum/pressure blowers pump for any purpose other than that specified is absolutely forbidden, not provided for by the manufacturer and therefore highly dangerous.

Do not use the vacuum/pressure blowers pump to handle flammable and/or explosive liquids and materials or for materials that give off flammable gasses.

Do not use the vacuum/pressure blowers pump in a potentially explosive atmosphere.

Never remove the guards fitted on the vacuum/pressure blowers pump and always check their efficiency every time the machine is used.

Any intervention must be carried out with the machine stopped and by qualified personnel.

Unqualified personnel are not authorised to work on or near the vacuum/pressure blowers pump.

Battioni Pagani® will not be responsible for problems, breakages and accidents due to failure to apply the instructions contained in the manual, non-compliance with current standards and failure to apply due diligence during the manoeuvre, maintenance or repair operations, even if not expressly mentioned in this manual.

Failure to comply with the instructions provided in this manual may result in the following dangers:

- Danger of being crushed by the weight of the vacuum/pressure blowers pump during handling and transportation;
- Danger of becoming caught in the transmission parts in case of removal of the appropriate protections (avoid clothing with wide sleeves, ties, bracelets, necklaces, etc.);
- Heat dangers due to the temperatures that can be reached by the vacuum/pressure blowers pump;
- Acoustic danger due to the noise generated and to failure to use personal means of protection;
- Danger of severing for the operator during testing with intake and delivery tubes detached from the vacuum/pressure blowers pump;
- Danger of projection of fluid and solid materials owing to heavy breakage of the vacuum/pressure blowers pump;





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1.0 - GENERAL INFORMATION

1.1 - GENERAL DESCRIPTION

The BLW vacuum/pressure blowers pump is suitable to be used as an air compressor/decompresser, combined with a watertight tank suitable to be put into vacuum and under pressure the liquid loading/unloading/distribution. The vacuum/pressure blowers pump is equipped with three adjustable bends.

One bend is in communication with the tank, the other in the atmosphere and the third one is connected to the Ballast cooling. By appropriately turning the reversing gear inside the vacuum/pressure blowers pump, it is possible to connect the intake to one of the elbows creating where necessary vacuum or pressure inside the tank.

Pumping of the air is obtained through the rotation of two suitably shaped rotors that counter-rotate in relation to each other.

The incoming air is trapped in a chamber formed by the body and the rotors thanks to the particular shape of the latter and discharged to the output.

PUMP FOR BLW VACUUM/PRESSURE BLOWERS



Neither a cooling system nor lubrication is required in the pumping zone: the air discharged into the atmosphere is also free from pollutants such as oil, resins etc...

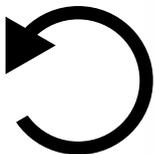
The pumping capacity is obtained by careful control of the distances of the rotors from each other and with the body of the vacuum/pressure blowers pump.

1.2 - BLW VERSIONS

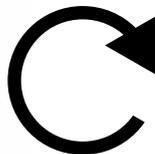
The BLW vacuum/pressure blowers pump is available in the following versions:

VERSION BLW / P (FOR PULLEY APPLICATION)

CCW on request



CW standard

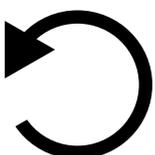


BLW / P The PTO is driven by a pulley. The version can be recognised by the identification plate bearing the wording:

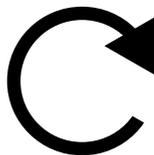
P = PULLEY TRANSMISSION

VERSION BLW / PM (FOR PULLEY APPLICATION)

CCW on request



CW standard



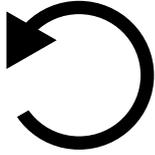
BLW / PM The PTO is driven by a pulley, which has a built-in gearbox. The version can be recognised by the identification plate bearing the wording:

PM = TRASMISSIONE PULEGGIA/PULLEY TRANSMISSION

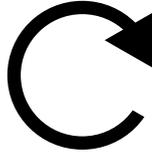


VERSION BLW / H (WITH HYDRAULIC MOTOR)

CCW on request



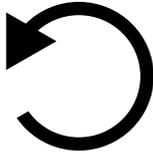
CW standard



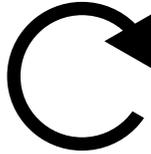
BLW / H The PTO is driven by a hydraulic gear engine. This version can be identified by the hydraulic motor support located at the front and by the identification plate with the wording:
H = HYDRAULIC TRANSMISSION

VERSION BLW / P - PM - H/SC (WITHOUT MANIFOLD)

CCW on request



CW standard



BLW / SC The SC version can be recognised by the fact that the pump does not have a manifold, but two sleeves, and by the identification plate bearing the wording:
SC = WITHOUT MANIFOLD

1.3 - TECHNICAL DATA

MODEL	QG	SPEED (RPM)	VACUUM													PRESSURE								WEIGHT P Kg	WEIGHT H Kg	SPL dB (A)	
			30%				60%				80%				MAX VACUUM bar kW	1.5 BAR (ABS)				2 BAR (ABS)							
			l/min	m³/h	cfm	kW	l/min	m³/h	cfm	kW	l/min	m³/h	cfm	kW		l/min	m³/h	cfm	kW	l/min	m³/h	cfm	kW				
BLW 140 P-H	840 m³/h 14000 l/min 494 cfm	2500	6100	366	215	5	4600	276	162	8	1364	82	48	10	-0.8	10	5740	344	203	7	5340	320	189	13	140	150	78
		3000	7400	444	261	6	6220	373	220	10	2824	169	100	13	-0.85	13	7100	426	251	9	6400	384	226	16			
		3500	8500	510	300	7	7480	449	264	11	4284	257	151	14	-0.87	15	8500	510	300	10	7850	471	277	18			
		4000	9500	570	335	8	8700	522	307	13	5744	345	203	16	-0.88	18	9480	569	335	12	8850	531	313	22			
		4800	11200	672	396	11	10300	618	364	16	8080	485	285	20	-0.9	22	11100	666	392	16	10500	630	371	27			
BLW 210 P-H	1350 m³/h 22600 l/min 798 cfm	2000	9473	568	335	7	8240	494	291	13	3327	200	117	17	-0.8	17	9894	594	349	12	9295	558	328	21	210	240	80
		2400	11985	719	423	10	9352	561	330	16	5839	350	206	21	-0.82	21	12406	744	438	13	11807	708	417	25			
		2800	14497	870	512	11	11869	712	419	20	8351	501	295	25	-0.85	26	14918	895	527	16	14320	859	506	29			
		3200	17009	1021	601	13	14381	863	508	23	10863	652	384	29	-0.87	31	17430	1046	616	19	16831	1010	594	35			
		3600	19521	1171	689	16	16893	1014	597	26	13375	803	472	33	-0.9	36	19942	1197	704	22	19343	1161	683	40			
BLW 270 P-H	1770 m³/h 29500 l/min 1040 cfm	2000	12742	765	450	10	9645	579	341	17	4299	258	152	22	-0.8	22	13238	794	467	15	12533	752	443	27	235	270	82
		2400	16018	961	566	12	12921	775	456	22	6775	407	239	28	-0.82	29	16514	991	583	18	15809	949	558	33			
		2800	19294	1158	681	15	16197	972	572	26	9051	543	320	33	-0.85	36	19790	1187	699	22	19085	1145	674	40			
		3200	22570	1354	797	19	19473	1168	688	31	13327	800	471	39	-0.87	43	23066	1384	815	26	22361	1342	790	46			
		3600	25486	1529	900	23	22749	1365	803	37	16603	996	586	45	-0.9	50	26342	1581	930	31	25637	1538	905	56			
BLW 300 P-H	2000 m³/h 33300 l/min 1177 cfm	2000	15065	904	532	12	10074	604	356	21	5499	330	194	28	-0.82	28	16100	966	569	18	13800	828	487	33	270	310	84
		2400	19090	1145	674	15	13915	835	491	26	7015	421	248	34	-0.86	36	20010	1201	707	21	18170	1090	642	40			
		2800	22655	1359	800	19	17250	1035	609	32	10350	621	366	40	-0.88	44	23575	1415	833	25	22080	1325	780	48			
		3200	25990	1559	918	24	19550	1173	690	39	14145	849	500	47	-0.89	51	27025	1622	954	30	24840	1490	877	57			
		3600	30130	1808	1064	29	24150	1449	853	45	17595	1056	621	54	-0.91	60	30360	1822	1072	37	28865	1732	1019	65			
BLW 400 P-H	2570 m³/h 42800 l/min 1511 cfm	2000	18400	1104	650	16	12707.5	762	449	27	2300	138	81	35	-0.82	36	18400	1104	650	22	15295	918	540	43	295	330	84
		2400	23575	1415	833	20	17250	1035	609	35	8050	483	284	43	-0.86	45	23000	1380	812	27	20993.25	1260	741	50			
		2800	27899	1674	985	26	22057	1323	779	42	12420	745	439	52	-0.88	55	27600	1656	975	33	25507	1530	901	60			
		3200	33821.5	2029	1194	33	28980	1739	1023	50	21275	1277	751	62	-0.91	67	33350	2001	1178	40	31590.5	1895	1116	73			
		3600	37421	2245	1322	40	32900.35	1974	1162	56	26910	1615	950	71	-0.93	78	37375	2243	1320	55	34270	2056	1210	84			



MODEL	QG	SPEED (RPM)	VACUUM														PRESSURE								WEIGHT kg	SPL dB (A)
			30%				60%				80%				MAX VACUUM		1.5 BAR (ABS)				2 BAR (ABS)					
			l/min	m³/h	cfm	KW	l/min	m³/h	cfm	KW	L/MIN	m³/h	cfm	KW	bar	KW	l/min	m³/h	cfm	KW	l/min	m³/h	cfm	KW		
BLW 185 PM	1180 m³/h 19600 l/min 692 cfm	1200	16580	995	586	13	14021	841	495	22	10590	635	374	28	-0.87	30	16990	1019	600	18	16400	984	579	34	225	80
BLW 210 PM	1350m³/h 22600 l/min 798CFM	1200	19521	1171	689	16	16893	1014	597	26	13375	803	472	33	-0.88	36	19942	1197	704	22	19343	1161	683	40	225	80
BLW 255 PM	1530m³/h 25500 l/min 900 cfm	1200	22000	1320	777	19	18980	1139	670	33	11550	693	408	38	-0.90	42	22480	1349	794	25	21800	1308	770	45	250	82
BLW 270 PM	1770 m³/h 29500 l/min 1040 cfm	1200	25486	1529	900	23	22749	1365	803	37	18603	1116	657	45	-0.90	50	26342	1581	930	31	25637	1538	905	56	250	82
BLW 300 PM	2000 m³/h 33300 l/min 1177 cfm	1200	30130	1809	1064	29	24150	1450	853	45	17595	1056	621	54	-0.91	54	30360	1822	1072	37	28865	1733	1019	65	305	84
BLW 355 PM	2220 m³/h 37000 l/min 1306 cfm	1200	33700	2023	1190	31	28500	1711	1006	50	21000	1261	742	61	-0.92	66	33000	1981	1165	39	31500	1891	1112	70	330	84
BLW 400 PM	2570 m³/h 42800 l/min 1511 cfm	1200	37421	2246	1322	40	32900	1975	1162	56	26910	1615	950	71	-0.93	78	37375	2243	1320	55	34270	2057	1210	84	330	84

QG: Volume displacement at maximum speed

REFERENCE CONDITIONS

Gas conveyed: Air
Reference temperature 20°C (68°F)
Absolute reference pressure 1013 mbar (14.7 psi)
The data reported in the table are subject to a tolerance of +/- 5% .

OPERATING LIMITS

Maximum pressure 2 bar (ABS)
Maximum discharge temperature 150°C (302°F)
Minimum ambient temperature -20°C (4°F)
Maximum ambient temperature +40°C (104°F)

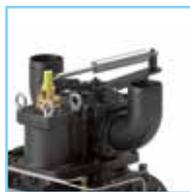
SOUND PRESSURE (SPL)

Pump sound pressure with injection silencer and discharge silencer.
Operating conditions: 80% of the maximum speed, vacuum at 60% and distance of 7 metres in open field.

1.4 - OPTIONAL BLW



Rotary Cylinder Hydraulic
Ø 100 Code 5090000108
Ø 120 Code 5090000150



Hydraulic Cylinder
Ø 100 Code 6080200315
Ø 120 Code 6080200510



Rotary Cylinder Pneumatic
Ø 100 Code 6080200306
Ø 120 Code 6080200508



Adjustable bend Suction Filter
Ø 100 Code 6080200483
Ø 120 Code 6080200329



Air Suction Filter Kit
1300 Code 6080200426
3300 Code 6080200514



Anti-vibration device
Code 5060010022



Flushing Kit
Code 6080200325



Battioni Pagani Flushing Fluid 5 l
Code 5070200102



Pump Active Controller

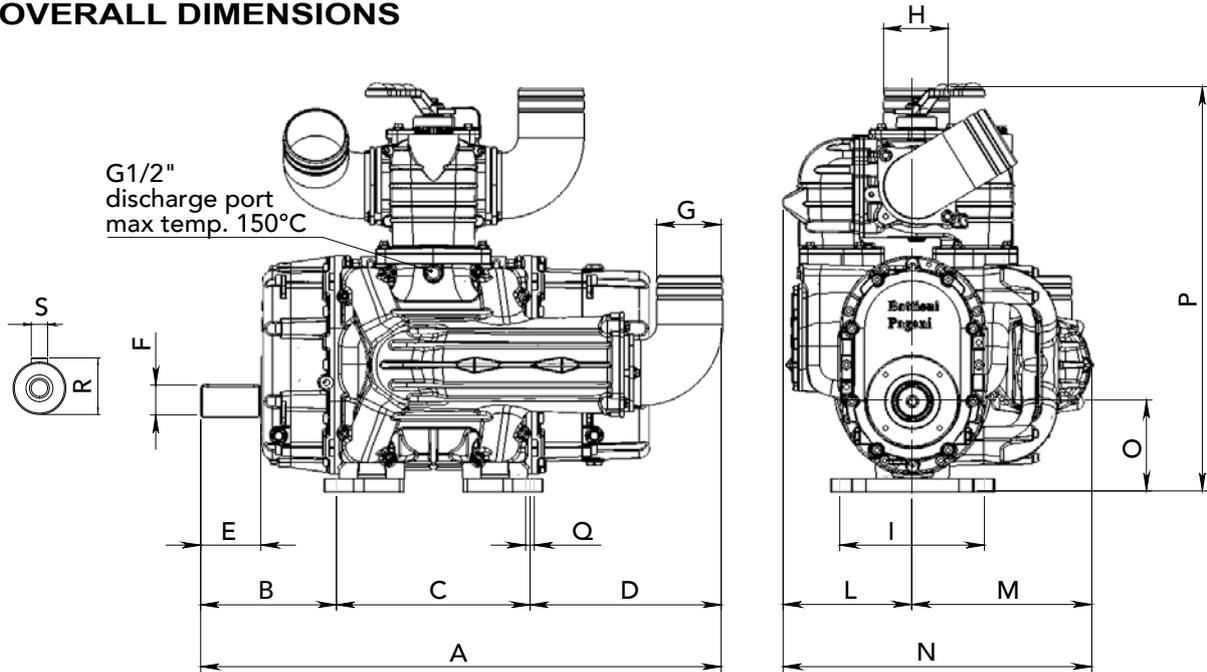


Coating Custom-made on request



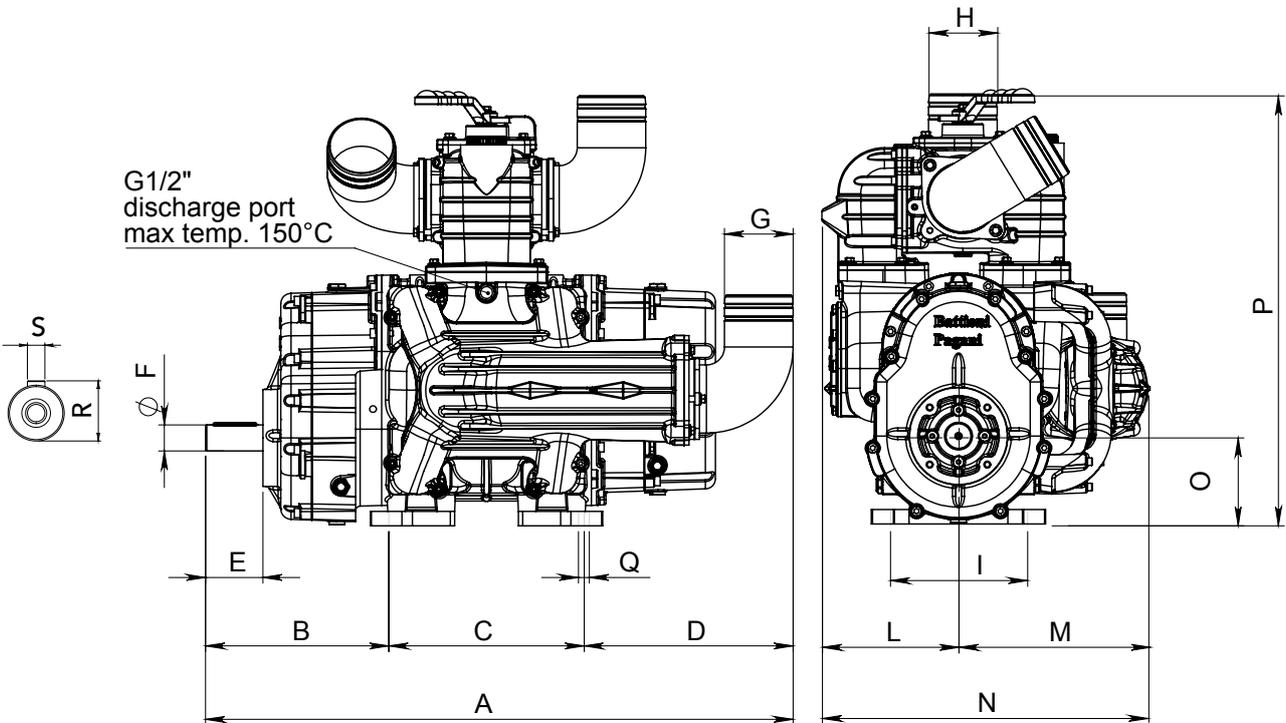
1.5 - OVERALL DIMENSIONS

BLW/P



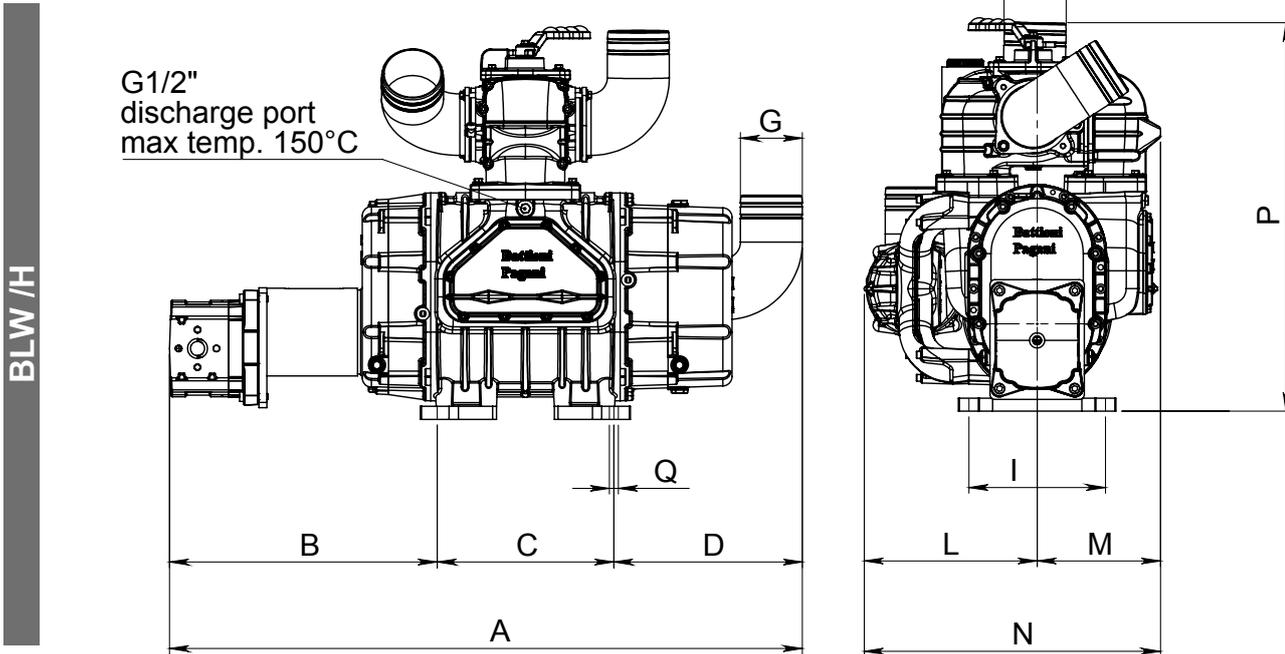
Model	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
BLW 140/P	708	160	277	271	80	Ø 38 k6	Ø 100	Ø 100	260	231	180	411	130	568	Ø 12	41	10
BLW 210/P	787	241	224	322	110	Ø 48 m6	Ø 100	Ø 100	260	214	325	539	150	649	Ø 18	51.5	14
BLW 270/P	856	238	300	318	110	Ø 48 m6	Ø 100	Ø 100	260	214	325	539	150	649	Ø 18	51.5	14
BLW 300/P	877	248	274	355	110	Ø 55 m6	Ø 120	Ø 120	260	220	325	545	168	743	Ø 18	59	16
BLW 400/P	953	248	354	351	110	Ø 55 m6	Ø 120	Ø 120	260	220	325	545	168	743	Ø 18	59	16

BLW/PM



Model	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
BLW 185 / PM	857	314	224	319	96.5	Ø 45 k6	Ø 100	Ø 100	260	214	325	540	120	650	Ø 18	48.5	14
BLW 210 / PM	857	314	224	319	96.5	Ø 45 k6	Ø 100	Ø 100	260	214	325	540	120	650	Ø 18	48.5	14
BLW 255 / PM	930	311	300	319	96.5	Ø 45 k6	Ø 100	Ø 100	260	214	325	540	120	650	Ø 18	48.5	14
BLW 270 / PM	930	311	300	319	96.5	Ø 45 k6	Ø 100	Ø 100	260	214	325	540	120	650	Ø 18	48.5	14
BLW 300 / PM	933	304	274	355	96.5	Ø 45 k6	Ø 120	Ø 120	260	235	330	565	152.5	745.5	Ø 18	48.5	14
BLW 355 / PM	1021	317	354	350	96.5	Ø 45 k6	Ø 120	Ø 120	260	235	330	565	152.5	745.5	Ø 18	48.5	14
BLW 400 / PM	1021	317	354	350	96.5	Ø 45 k6	Ø 120	Ø 120	260	235	330	565	152.5	745.5	Ø 18	48.5	14

ENGLISH



Model	A	B	C	D	G	H	I	L	M	N	P	Q
BLW 140/H	872	324	277	271	Ø 100	Ø 100	260	180	231	411	568	Ø 12
BLW 210/H	1000	454	224	322	Ø 100	Ø 100	260	325	214	539	649	Ø 18
BLW 270/H	1069	451	300	318	Ø 100	Ø 100	260	325	214	539	649	Ø 18
BLW 300/H	1090	461	274	355	Ø 120	Ø 120	260	325	220	545	743	Ø 18
BLW 400/H	1204	499	354	351	Ø 120	Ø 120	260	325	220	545	743	Ø 18

1.6 - IDENTIFICATION PLATE

The BLW vacuum/pressure blowers pump is provided equipped with an identification plate on which are indicated:

- model name
- serial number
- year of manufacturing
- maximum relative pressure
- maximum vacuum
- maximum absorbed power
- maximum number revolutions
- max weight capacity
- CE Marking
- weight



Each identification plate is protected with a special protective film that can be removed once painted.

This film was introduced to ensure the traceability of the above information and to avoid invalidating the

warranty.



2.0 - PACKING, STORAGE, HANDLING AND TRANSPORTATION

2.1 - GENERAL INSTRUCTIONS FOR THE USER AND OPERATOR

Before starting the vacuum/pressure blowers pump, it is essential that the operator knows how to perform all the operations described in this manual and how to apply them each time during use or maintenance of the vacuum/pressure blowers pump.

The operator should not perform under their own initiative operations or interventions that are not permitted in this manual.

Before maintenance or repair on the blowers pump it is necessary to make sure that it is impossible to start the vacuum/pressure blowers pump. It is therefore mandatory to disconnect the pump from the belts if version P or PM, or from the hydraulic system if version H. This is to prevent accidental start-up which could cause injury to persons and/or damage to the vacuum/pressure blowers pump.

Starting from 70°C the user must install and the operator must use adequate protection devices to prevent direct contact with hot parts of the blowers pump. Before carrying out maintenance or repair operations on the vacuum/pressure blowers pump, wait for it to cool down to at least a temperature of below 40°C.

2.2 - PACKAGING

The vacuum/pressure blowers pump is supplied unpacked. Upon request the following packaging types are available:

- Wooden base and shrink-wrap;
- Wooden cases and shrink-wrap for shipment by sea or air;

2.3 - STORAGE

In order to preserve the vacuum/pressure blowers pump correctly, it must be stored:

- Indoors, sheltered from adverse weather conditions;
- Resting horizontally on its four feet.
- Climatic storage conditions:
 - Temperature between -20°C and 40°C
 - Relative humidity from 15% to 80%
- For different weather conditions, contact the Battioni Pagani® technical office
- The material stored in the warehouse must be protected periodically (every 6 months) with protective oil which must be sprayed on the inside of the pump to protect the rotors and the pump body.

2.4 - HANDLING AND TRANSPORTATION

To view the data concerning the mass of the BLW vacuum/pressure blowers pump, consult the technical data annexed to paragraph 1.3 - TECHNICAL DATA.

The BLW vacuum/pressure blowers pump must be handled:

- Exclusively using equipment with adequate load and capacity strength.
- Harnessed with a strap;
- Lifted by forklift truck (if on pallet), bridge crane, crane or hoist.

Loosen the screws that secure the 4 feet of the vacuum/pressure blowers pump to the pallet.

For safety reasons, use a strap to lift the vacuum/pressure blowers pump.

Pass the strap beneath the vacuum/pressure blowers pump, between the fixing feet, as shown in the figure, or between the body and the manifold where possible.

Attach the strap to the lifting equipment.





3.0 - INSTALLATION



The BLW pump must be placed vertically on a flat horizontal surface with a maximum inclination of 5° and fixed by means of screws that lock the feet.



All installation operations must be carried out with the utmost care by suitably trained personnel and with the power take-off disconnected.



During installation operations, it is advisable to use the personal protection equipment listed to the side.



Should it be necessary to paint the vacuum/pressure blowers pump, do not paint the identification plate, the oil level indicator and the vent plugs.

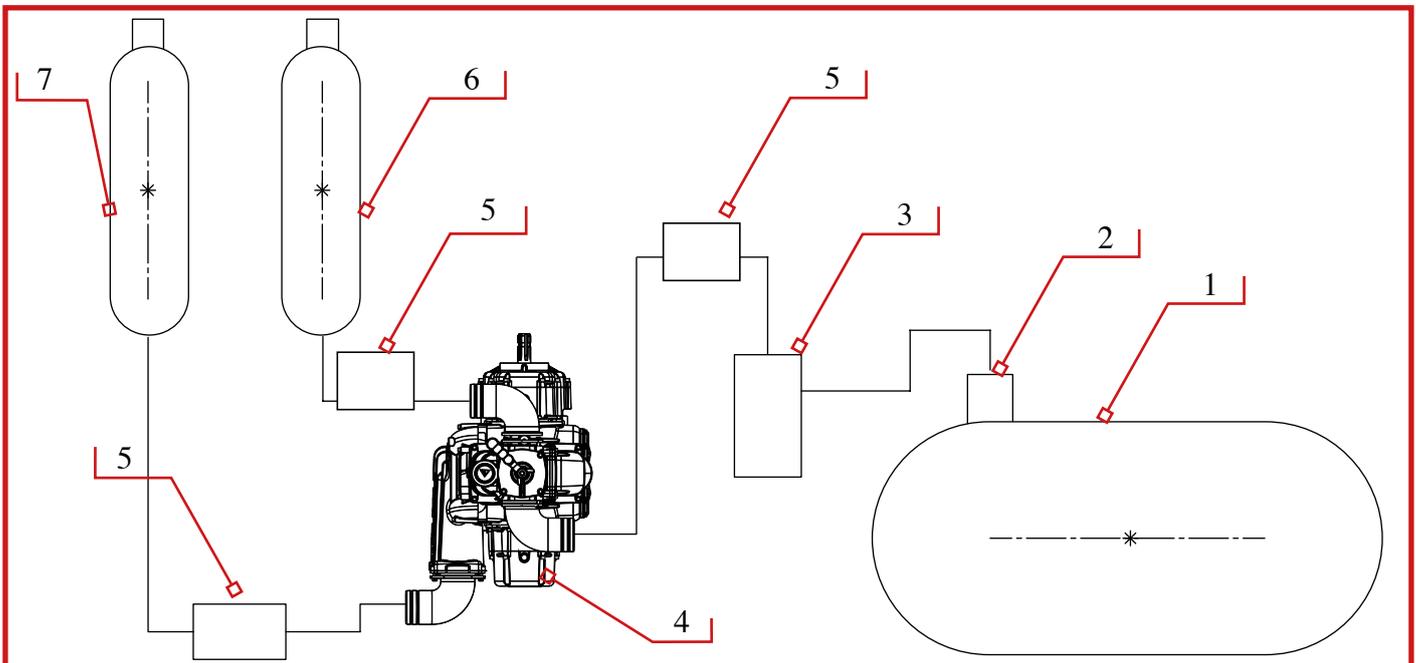


Always avoid the entry of liquids arriving from the tank inside the vacuum/pressure blowers pump. IT IS therefore necessary to provide a system for the interception of the liquids coming from the tank in order to prevent their entry into the pumping zone.



Provide a noise reduction system both for the main air circuit and for the cooling circuit.

3.1 - INSTALLATION DIAGRAM



- | | | |
|--------------------|--------------------------------------|-----------------------------------|
| 1. Cistern | 4. AIDA vacuum/pressure blowers pump | 6. Main air silencer |
| 2. Primary valve | 5. Air circuit filter (OPTIONAL) | 7. Air cooling circuit silencer . |
| 3. Secondary valve | | |



The vacuum/pressure blowers pump should be assembled and installed using the following procedure:

- 1) Assemble the vacuum/pressure blowers pump horizontally with its feet facing downwards.
- 2) Bolt the vacuum/pressure blowers pump via passing screws and nuts in the appropriate slots or holes provided in the feet.
- 3-P/PM) To install the BLW vacuum/pressure blowers pump version .../P and PM, it is necessary to install / secure a driven pulley on the shaft; the driven pulley must be installed as close as possible to the drive element, trying to limit the length of the free section (see diagram below). Never transfer axial loads. Then connect the driven pulley to the driving pulley with the correct length of driving belts.

The number and type of belts must be calculated based on the power to be transmitted to the BLW vacuum/pressure blowers pump.

When this operation has been completed, the necessary guard must be installed to isolate the driving parts (pulleys and belts) and prevent access to them by the operators.



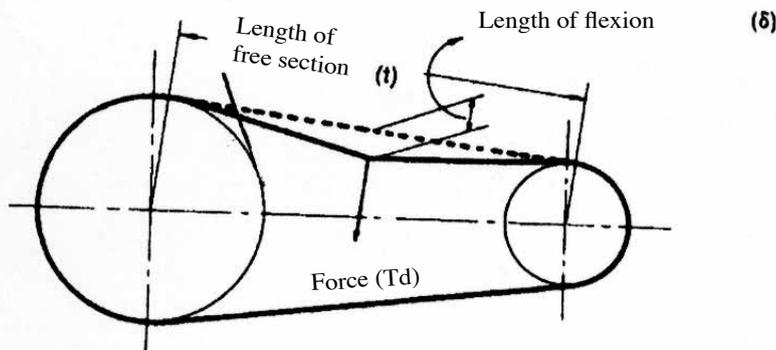
The tension of the belts must be such that, with the bands pulled, they can still be stretched by approximately 2 cm. A higher belt tension can cause the shaft to break

- The best tension is the lower one where the belt doesn't slide under max loading condition.
- Check frequently the tension during first 24/48 hours of running phase.
- The over-tension reduces the life of belt and bearing.
- Keep belts free from any material which may cause sliding.
- Check the transmission periodically. Set it when sliding.

To check the tension on a normal transmission, proceed as follows:

- Measure the length of free stretch, t.
- In the middle of the free stretch of the belt (t) apply a force (perpendicular to the free stretch) sufficient to bend the belt 1.6 mm per 100 mm in length of the free stretch. For example, the bending of a free stretch of 1000 mm is 16 mm.
- Compare the force you have applied and measured through a instrument with data stated under our table. If the force is included between "minimum force" data, it means that the belt is not enough stretched. If the force exceeds "max force" data, it means that the belt is too stretched.

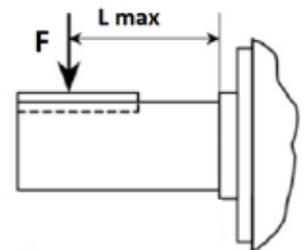
However, a new transmission can be initially tensioned to twice the value of "min strength" to allow normal adjustment of tension during operation.



Section	Force	
	Min	Max
	Kg.	Kg.
A	0.68	1.02
B	1.58	2.38
C	2.93	4.75

BELT TENSION (only for the PM version)

Model	F.max (N)	Ø Pulley min (mm)	L max. (mm)	Belt type	No.
BLW 185/PM	6000	200	45	XPB	4
BLW 210/PM	6000	200	45	XPB	4
BLW 255/PM	6000	200	45	XPB	4
BLW 270/PM	6000	250	45	XPB	4
BLW 300/PM	6000	250	45	XPB	4
BLW 355/PM	6000	250	45	XPB	4
BLW 400/PM	6000	300	45	XPB	5



Do not use the BLW pump with a direction of rotation other than that indicated by the arrow.

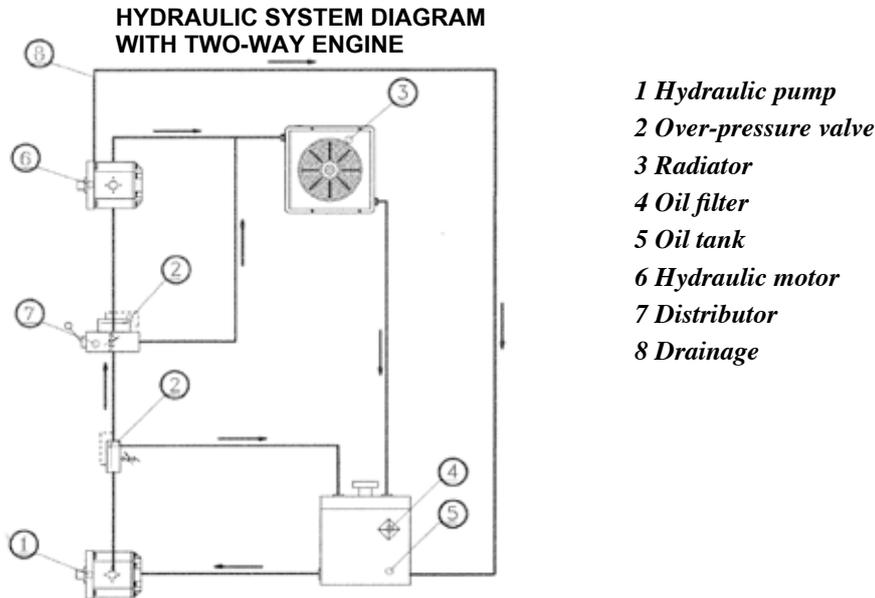
3/H) To install the BLW /H vacuum/pressure blowers pump, it is necessary to install a hydraulic motor on the support located at the front (if not supplied already installed), secure it using appropriate screws and connect the hydraulic pump pipes to the hydraulic motor.

4) Then connect the intake/compression pipe of the tank car to the BLW vacuum/pressure blowers pump tightening it to the adjustable elbow using metal clamping bands in relation to the diameter of the pipe.

3.2 - HYDRAULIC DIAGRAM OF BLW /H VACUUM/PRESSURE BLOWERS PUMP

The hydraulic system required to operate the BLW /H vacuum/pressure blowers pump is shown in the version with bidirectional motor below and with the technical characteristics of the hydraulic motor in table 1.

Make sure that the direction of rotation is correct with the hydraulic circuit connections.



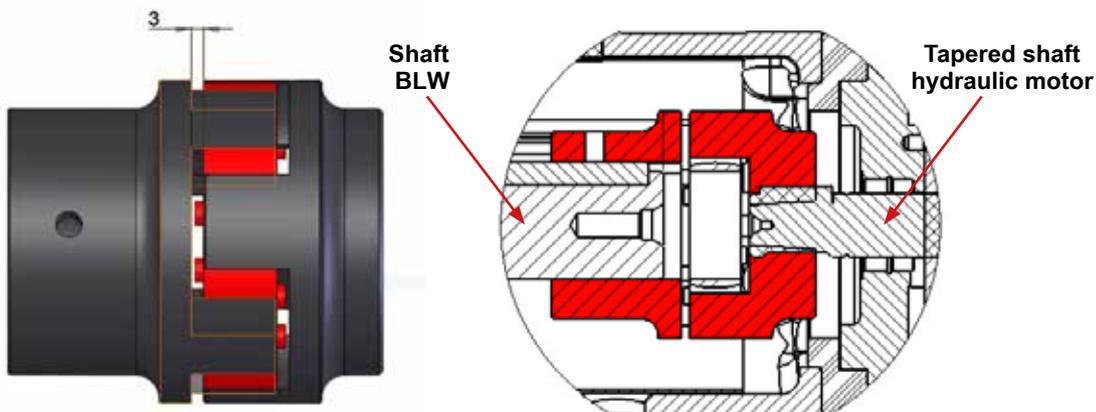
3.3 - FLEXIBLE COUPLING/HYDRAULIC MOTOR COUPLING

Insert the half-coupling on the shaft of the BLW and secure it with the grub screw on the tab.



Attention: do not use the hammer to insert the half-couplings, but use suitable insertion tools.

Insert the other half-coupling on the conical shaft of the hydraulic motor and fix with a nut and washer.



distance between the 2 half-couplings	axial deviation	radial deviation	angular deviation
3 mm	1 mm	0.13 mm	0.13 mm



Alignment errors cause premature wear of the bearings and of the elastic connecting joint



3.4 - INSTRUCTIONS FOR USE AND MAINTENANCE OF THE HYDRAULIC MOTOR



Ensure the direction of rotation is consistent with the circuit connections.

TANK: The tank capacity must be in accordance with the operating conditions of the system. A heat exchanger should be installed if necessary. The intake and return lines in the tank must be spaced apart (by inserting a vertical divider) to prevent the return-line oil from being taken up again immediately.

PIPING: The lines must have a nominal diameter which is at least as large as the openings of the engine and must be perfectly sealed. A length of flexible tubing is recommended to reduce the transmission of vibrations. All return lines must end below the minimum oil level, to prevent foaming.

FILTRATION: We recommend filtering the entire system flow.

HYDRAULIC FLUID: Use hydraulic fluid conforming to the ISO/DIN standards. Avoid using mixtures of different oils which could result in decomposition and reduction of the oil's lubricating power.

DRAINAGE HOLE: in bidirectional motors with drainage hole, connect the hole with the oil tank with a pipe. To avoid the forming of foam inside the tank, the hose must be connected below the minimum level.

STARTING UP: Check that all circuit connections are exact and that the entire system is completely clean. Insert the oil in the tank, using a filter. Bleed the circuit to assist in filling. Set the pressure relief valves to the lowest possible setting. Turn on the system for a few moments at minimum speed, then bleed the circuit again and check the level of oil in the tank. If the temperature difference between engine and fluid exceeds 10°C, rapidly switch the system on and off to heat it up gradually. Then gradually increase the pressure and speed of rotation until the pre-set operating levels as specified in the catalogue are attained.

PERIODICAL CHECKS – MAINTENANCE: Keep the outer surface clean. Replace filters regularly to keep the fluid clean. The oil level must be checked and replaced periodically depending on the system's operating conditions.

PROBLEM- SHOOTING: If the circuit is open (i.e. downstream of the engine there is the oil tank and not the pump) where the engine continues to rotate with the engine off, this is not a case of overpressure but of cavitation. To solve the problem, a uni-directional valve is required which would convey the oil, or part of it via calibration, from the engine delivery to its inlet in order to prevent the engine pumping air.

- The circuit is closed. There may be overpressure. To resolve the problem either install an overpressure relief valve, as we recommend in the attached system diagram, or a calibrated uni-directional valve that partly bypasses the engine. Compared to the first case, the last option is more affordable and less invasive on a system that already exists as it does not require an additional hole in the tank.

MODEL	MOTOR	DISPLACEMENT	WORKING OIL PRESSURE	MAX OIL PRESSURE	rpm MAX	CONFIGURATION	CONNECTIONS
HYDRAULIC MOTOR DATA							
BLW 140 H	PLM 20.16	16.85	180	250	4000	RIGHT+LEFT	G 1/2" - G 3/4"
BLW 210 H	KM 30.43	43.98	170	250	3000	DX	G1" - G1"
BLW 270 H	KM 30.43	43.98	220	250	3000	DX	G1" - G1"
BLW 300 H	KM 40.73	72.60	160	300	3200	RIGHT+LEFT	G1" - G1"1/4
BLW 300 H	KM 30.43	43.98	240	250	3000	DX	G1" - G1"
BLW 400 H	KM 40.73	72.60	200	300	3200	RIGHT+LEFT	G1" - G1"1/4



4.0 - TESTING AND RUNNING IN



During testing and break-in operations it is advisable to use the personal protection equipment listed to the side.



4.1 - TESTING

All Battioni Pagani® vacuum/pressure blowers pumps are tested before delivery at our factory.

4.2 - RUNNING IN

The running in period foreseen for a vacuum/pressure blowers pump is 30 effective working hours. During that period the working parameters must be reduced by 20%.



ATTENTION: *do not operate the vacuum/pressure blowers pump in the opposite direction of rotation.*

5.0 - START-UP, OPERATION, SHUTDOWN

5.1 - START-UP



During start-up, operation and shutdown manoeuvres it is advisable to use the personal protection equipment listed to the side.



The vacuum/pressure blowers pump does not have a start command. To start it simply transmit motion to the PTO in the manner appropriate to the version being used. Make sure, before starting the motor, that the vacuum/pressure blowers pump is supplied with oil for lubrication of the bearings and gears in the front and rear casing.



Before starting the vacuum/pressure blowers pump, ensure that the guards on all the moving parts are in place and efficient. Any damaged or missing components must be replaced and installed correctly.

5.2 - DAILY CHECKS TO BE PERFORMED

	CHECK	FREQUENCY
CHECKS TO BE PERFORMED	Check Pressure	DAILY
	Check temperature	
	Check absorbed power	
	Check abnormal noises	
	Oil level (front and rear)	



During the first few hours of operation, check that there are no abnormal vibrations or noises. In the event of anomalies, stop the vacuum/pressure pump immediately and contact the Battioni Pagani® Service



5.3 - OPERATING LIMITS



During use, do not exceed the conditions of speed and power established by the manual.



ATTENTION: the BLW is not suitable for conveying toxic, flammable or dangerous gases.



ATTENTION: the BLW is not suitable for working in potentially explosive environments. For environments classified as potentially explosive, use the ATEX BLW



ATTENTION: the introduction of solids or liquids will seriously damage the BLW.

5.4 - CONTROL DEVICES

A handle (1), located at the top of the manifold, is provided for the control of intake and compression phases. This can be operated manually. To establish in which direction the handle must be turned to select the intake or compression phase, follow the instructions provided by the manufacturer of the system. If the reversing gear locks up, use a lever to lift the handle.



Selection of the suction or compression phase using the handle must be performed with the blowers pump stopped.



5.5 - STOP

To stop the vacuum/pressure blowers pump it is necessary to suspend the PTO motion transmission in a manner that varies depending on the versions in order to avoid unintentional activation. Eliminate the differential pressure from the system and bring it back to atmospheric pressure.



6.0 - MAINTENANCE



During all maintenance operations it is advisable to use the personal protection equipment listed to the side.



All maintenance operations, inspections, checks and repairs should be carried out with the greatest care and with the power take-off disconnected.



Before proceeding with maintenance operations, it is advisable to wait for the BLW pump to cool down and to return to a temperature of below 40°C.



Before performing maintenance, remove the differential pressure from the system and restore it to atmospheric pressure.

6.1 - UNINSTALLING THE BLW VACUUM/PRESSURE BLOWERS PUMP

The BLW vacuum/pressure blowers pump must be uninstalled using the following procedure:

BLW / H	BLW / P- PM
1) Stop the hydraulic system.	1) Stop the pulley drive.
2) Remove the hydraulic connections to the engine.	2) Remove the transmission belts.
3) Remove the connection pipe that joins the tank to the BLW pump, unscrewing the metal clamp and removing the pipe from the sleeve.	3) Remove the connection pipe that joins the tank to the BLW pump, unscrewing the metal clamp and removing the pipe from the sleeve.
4) Remove any hydraulic or pneumatic connections.	4) Remove any hydraulic or pneumatic connections.
5) Remove the fixing screws and de-install the BLW vacuum/pressure blowers pump	5) Remove the fixing screws and de-install the BLW vacuum/pressure blowers pump

6.2 - TYPES OF MAINTENANCE AND RELATED FREQUENCY

The following table shows the maintenance required to keep the machine in perfect working order.

TYPE OF MAINTENANCE	FREQUENCY
Oil level inspection	upon each use
Manifold cone greasing	every week
Filter cleaning	where required
Oil top-up	where required
Oil replacement	1000 work hours or 12 months
Seal replacement	when necessary or each time the parts that contain the seals open
Checking of operation of the manifold check valve and Ballast	12 months
Replacement of the manifold check valve and Ballast	3 years



6.3 - RECOMMENDED SPARE PARTS

The table shows the recommended spare parts for normal use of the vacuum/pressure blowers pump according to their envisaged service life.

DESCRIPTION	OPERATION		
	1 year	3 years	5 years
Bearings and ring nuts (KIT)	-	1	2
Cogged wheels (KIT)	-	1	2
Segment seals (KIT)	-	1	2
Lip seal-type seals (KIT)	1	2	4
OIL CAPS (KIT)	1	2	4
Seals (KIT)	1	2	4
Check valve	-	1	2



Battioni Pagani® disclaims any responsibility for breakages or accidents due to the use of non-original spare parts.

ENGLISH

6.4 - LUBRICANTS SUGGESTED FOR LUBRICATION

For lubrication of the vacuum/pressure blowers pump, the use of an ISO VG 220 synthetic oil based on polyalphaolefins for high temperatures is recommended. In the internal tests carried out at our factory, the Mobil SHC 630 oil based on PAO was tested.



Do not use mineral oil with EP additives or synthetic oil based on silicones or diesters.

6.5 - OIL LEVEL INSPECTION

- Upon each use check of the pump check the oil level by means of the oil level inspection points.
- Repeat the operation both in the front casing and in the rear casing.
- The oil level must be checked with the pump stopped and cold

6.6 - OIL TOP UP

If, at the end of a periodic inspection, the oil level proves to be low, top up.

- Unscrew and remove the oil filler cap.
- Add the correct quantity of oil, checking the level from the oil level inspection point.
- Tighten the filler cap.
- Repeat the operation both in the front casing and in the rear casing.

6.7 - OIL CHANGE

Every 1000 hours of work or 12 months, replace the oil in both the front casing and in the rear casing.

- Place a container suitable to recover the used oil beneath the oil drain plug.
- Unscrew and remove the oil drain cap.
- To facilitate the emptying process, unscrew and remove the oil filler cap.
- Before proceeding to insert the oil in the casings, check that the oil drain plugs are tightly closed.
- Open the oil drain plugs and proceed with oil insertion to the pre-set level using a fully synthetic oil PAO ISO VG 220.
- Repeat the operation both in the front casing and in the rear casing.
- Tighten the oil filler caps.



MODEL	OIL QUANTITY		
	FRONT CASING	REAR CASING	TOTAL
BLW 185 -210 - 255 - 270 PM	0.80 litres	0.80 litres	1.6 litres
BLW 300 - 355 - 400 PM	0.90 litres	0.90 litres	1.8 litres
BLW 140 P - H	0.25 litres	0.35 litres	0.6 litres
BLW 210 - 270 P - H	0.30 litres	0.80 litres	1.1 litres
BLW 300 - 400 P - H	0.35 litres	0.90 litres	1.25 litres



6.8 - DISMANTLING AND REASSEMBLY

It is not permitted to disassemble the BLW vacuum/pressure blowers pump during the warranty period, otherwise it will be forfeited. In the event of disassembly, any repairs and reassembly must only be performed by qualified and authorised personnel. Only the instructions for routine maintenance are provided in this manual. Damage caused by incorrect operations performed during the disassembly and reassembly of the BLW is not covered by the warranty.

6.8.1 DISMANTLING



During all disassembly operations it is advisable to use the personal protective equipment listed to the side.



All disassembly operations must be carried out with the utmost care and with the power take-off removed.



Before proceeding with the disassembly, remove the differential pressure from the system and restore it to atmospheric pressure.



Before proceeding with disassembly operations, it is advisable to wait for the BLW pump to cool down and to return to a temperature of below 40°C.

6.8.2 FRONT CASING DISASSEMBLY

- Empty the front oil casing.
- Loosen the fixing screws from the gearbox cover

6.8.3 REAR CASING DISASSEMBLY

- Empty the rear oil casing
- Unscrew the casing fixing screws

6.9 - REASSEMBLY

Before refitting the front casing or the rear casing, thoroughly clean all the parts and dampen with oil any parts that will be sliding against one another.

6.9.1 REFITTING THE FRONT CASING

- Fit the front casing with a new seal.
- Secure the front casing with the screws.
- Lubricate the sealing lip and the sliding seat on the shaft with grease.
- Assemble the oil seal on the front casing using a suitable buffer to avoid damaging the lip of the seal.
- Return the oil level to the correct value.

6.9.2 REASSEMBLY OF THE REAR CASING

- Mount the rear casing with a new seal.
- Secure the casing with the screws
- Return the oil level to the correct value

7.0 - CLEANING

7.1 - BODY WASH

Battioni Pagani® recommends the use of Battioni Pagani Flushing Fluid, a fluid for the cleaning and protection of pumps, designed for maintenance of the Battioni Pagani® vacuum/pressure pumps.

Perform an internal wash with the Flushing Fluid every 10 hours of work and whenever material enters the pump.

To correctly preserve the vacuum/pressure blowers pump, its body must be washed before any lengthy period of inactivity.



ATTENTION: *Do not use water to wash the body to avoid the formation of rust.*



8.0 - TROUBLESHOOTING

PROBLEMS	CAUSES	SOLUTIONS
Little or no vacuum or pressure	Air infiltration or leakage from the system	Check the system
	Reversing gear incorrectly positioned	Position reversing gear correctly
	The pump is running in reverse	Reversing the direction of rotation
	The pipes are poorly applied	Check the system
	The Ballast check valve does not work	Examine the check valve
	Filter clogged	Clean the filter
Excessive heating of the vacuum/pressure blowers pump	Excessive pressure	Reduce pressure
	Excessive vacuum	Reduce vacuum
	Excessive operating time	Rotate the pump in freeblowing mode
	Ballast duct obstructed	Verify correct functioning of ballast system (cap + silencer + pipe + valve)
	Filter clogged	Clean the filter
Output of pumped liquid in the tank from the silencer	Malfunctioning of primary and secondary valves	Check valves
	Secondary valve full	Empty secondary valve
The BLW rotates in the opposite direction at the end of the work cycle	Non-functioning check valve	Fix the check valve
P.T.O. does not rotate	A foreign body has penetrated the pumping chamber	Remove the foreign body through the rotor inspection door
	Rotors stuck	Open the hatch and wash with descaling liquid

8.1 - TECHNICAL ASSISTANCE

Contact Battioni Pagani® authorised distributors for technical assistance or supply of accessories and spare parts.

9.0 - PUTTING OUT OF SERVICE AND DEMOLITION

Before demolishing the BLW vacuum/pressure blowers pump, it is necessary to divide the following materials:

- lubricating oil;
- parts in rubber and plastic;
- parts in cast iron and steel;
- aluminium parts;
- once separated, the items must be disposed of in an appropriate manner according to the regulations in force.

Do not discard the vacuum/pressure blowers pump into the environment.

For disposal of the lubricating oil make use of specialised treatment services.



Dispose of the used oil in accordance with the local regulations in force.