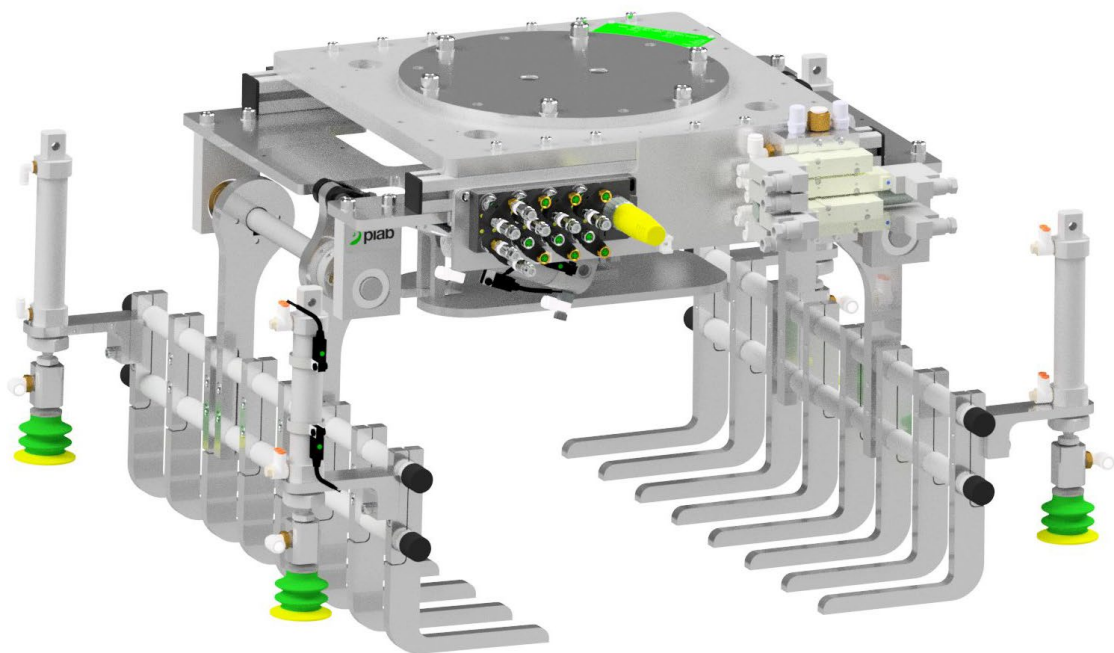


Manual

Lightweight bag gripper

LBG-50





This manual is available in the following languages at piab.com



English



Spanish



Portuguese



German



French



Italian



Polish



Swedish

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1 Introduction to the manual

1.1 About the manual

This Instruction Manual is an integral part of the bag gripper (partly completed machine) and is intended to provide all the information necessary for:

- The party responsible for the production site must ensure that this manual will be read and understood.
- The section on safety should be studied extra carefully.
- The manual should be stored in a known and easily accessible place, which can be digital.
- Carefully study the applicable parts of the manual before doing service and maintenance on the equipment.
- Proper awareness to the issues of security.
- Handling of the device, packed and unpacked in safety conditions.
- Correct installation of the bag gripper.
- Knowledge of its operation and its limits.
- Correct use in safety instructions.
- Carry out maintenance work, properly and safely.
- Dismantling the device safely and in compliance to the current Standards to safeguard workers health and environment.

It is the responsibility of the customer to ensure that in the event this document undergoes changes by the manufacturer, only the updated versions of the manual are present at point of use.

Piab AB reserves the right to modify or improve the device design without notifying customers and without update the Manual given to User yet.

1.2 Safety signs used in the manual

Take note of all warning, mandatory and other signs in this manual. They have the following meaning in this manual:

1.2.1 Warning signs



Warning!

Breach of this information may result in death or serious injury!



Caution!

Breach of this information may result in less personal injury or damage to the machine!



Warning!

Vacuum force



Warning!
Exhaust



Warning!
Unrestricted exhaust

1.2.2 Mandatory signs



Note!
Information that needs extra attention!



Wear eye protection



Wear ear protection

1.3 Target group

This manual, especially the section about safety, shall be read by all staff who will perform any type of work with or in the proximity of the product, including:

- Operating personnel.
- Service and maintenance personnel.
- Cleaning personnel (cleaning of equipment and the area around it).

1.4 Compliance

European Directives

Directive	Standard detail and/or measurement reference
Electromagnetic Compatibility (EMC)	EN/(IEC) 61000-6-2:2005 EN/(IEC) 61000-6-4:2007+A1
Machinery directive EN 2006/42/EC Annex II Part B	
RoHS2 Directive (2011/65/EU)	

2 Declaration of incorporation of partly

DOC-0606152

DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

Description	Model	Series
BAG GRIPPER	LBG50.XXX.XX.XXX.X.XX.XXX.XX	EOAT

Intended use	Max Payload
Gripping system for bag handling of different shapes and sizes.	50 kg

This is to certify that the above item:

- has been manufactured, assembled and tested in accordance with the drawings, standards and internal procedures, as well as good workmanship and skilled labour of the manufacturer.
- is in conformity with the following European directives and standards

Directive	Harmonised standard and/or measurement reference
Machinery Directive 2006/42/EC Annex II part B	EN ISO 12100:2016 Safety of machinery – General principles for design – Risk assessment and risk reduction

- meets the following applied Essential Health and Safety Requirements

1.1.1-1.1.2-1.1.3-1.1.5-1.2.4.4-1.2.6-1.3.2-1.3.4-1.3.7-1.4.2.1-1.4.2.2-1.5.1-1.5.3-1.5.4-1.6.1-1.6.2-1.6.3-1.7.1-1.7.2-1.7.3-1.7.4-1.7.4.1-1.7.4.2

- is intended to be incorporated into machinery or to be assembled with other machinery to constitute machinery covered by Directive 2006/42/EC, as amended.

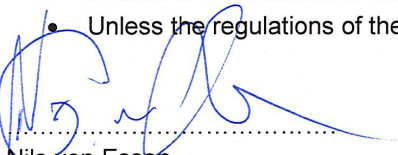
BAN ON: Putting the machinery into service until the machinery into which it is to be incorporated or of which it is to be a component has been found and declared to be in conformity with the provisions of Directive 2006/42/EC and with national implementing legislation, i.e. as a whole, including the machinery referred to in this declaration.

Responsible for the technical file according to Annex VII of the Machinery Directive 2006/42/EC: Madeleine Sheikh, Global Product Manager, Piab AB.

The relevant technical documentation is compiled in accordance with Annex VII B, and undertakes to transmit, in response to a reasoned request by the national authorities, relevant information about the partly completed machine. This declaration of incorporation is issued under the sole responsibility of the manufacturer.

The present declaration loses its validity:

- In case of modification to the machine;
- Unless the regulations of the manual are followed


Nils von Essen
Director Product Management, Piab AB

Place and Date: Danderyd 2023-06-27

Piab AB
P.O. Box 146
Vendevägen 89
SE-182 12 DANDERYD
SWEDEN

Phone +46 (0)8 630 25 00
Fax +46 (0)8 630 26 90
E-mail info-sweden@piab.com
Website www.piab.com



3 Safety

The product is intended to be incorporated into machinery or to be assembled with other machinery to constitute machinery covered by Directive 2006/42/EC, as amended.

It is not allowed to put the product into service until the machinery into which it is to be incorporated or of which it is to be a component has been found and declared to be in conformity with the provision of Directive 2006/42/EC and with national implementing legislation, i.e., as a whole, including the machinery referred to in this declaration.

3.1 General safety



Warning!
Vacuum force



Warning!
Exhaust



Warning!
Unrestricted exhaust

The moving parts must always be used according to the manufacturer's specifications, as outlined in this manual, which must always be available to the operator at work. All safety equipment carried on moving parts to avoid accidents and ensure safety cannot be changed or removed, but they must be adequately safeguarded.

Ensure that the components are properly secured; regularly check that connections are in good working order, as high cycles or vibrations may cause them to loosen.

Verifications must be performed by skilled person; both visual and functional, with the purpose of ensuring the safety of the machine. They include:

- verification of all structures, which must not show cracks, breakage, damage, deformation, corrosion, wear or alteration compared to the original characteristics.
- verification of all the mechanical items.
- verification of all safety devices installed on the machine.
- check all connections with bolts and screws.
- functional verification of the machine.
- check the status of the machine.
- check for tightness and efficiency of all pneumatic connections.

Results of this verification shall be recorded on a Factory Test Report. In the case where the technician responsible for conducting the verification, has found cracks or dangerous anomalies must:

- Promptly notify the manufacturer of the machine.
- Put the machine out of service by providing the necessary checks and/or repairs.
- Make sure that among the parts of the machine, there are no objects.



Note!

If you detect anomalies, these should be removed before restarting the device. A skilled operator shall check the gripper before running giving the approval to use the device.

Check that after any maintenance no object remains between the moving parts. If defective or worn parts are not promptly replaced, the manufacturer assumes no responsibility for any damage that may result from accidents.

To ensure maximum safety of the product, the following must not be allowed to happen:

- tamper with any part of the product.
- leave the moving parts unattended.
- use the machine working but not in full efficiency.
- modify the product to change the originally established use, without the express permission of the manufacturer or without the assumption of full responsibility imposed by Directive 2006/42/EC.
- move the moving parts with manual operations in the event of power failure.

3.2 Safe usage

Lightweight bag gripper (LBG-50) is designed and built for palletizing bags of various sizes and weights. In general, use of the LBG-50 should be restricted to the intent for which it was designed. Modifications to the gripper above and beyond the scope of the product could result in damage to the gripper, bags, or robot.

When maintenance is performed on the LBG-50 assure that all pneumatic and electrical power supplies are turned OFF.

Maintenance and troubleshooting of the LBG-50 should be done as outlined below and in accordance with any safety standards that may exist in the end user facility.

The functionality and longevity of the bag gripper may depend on the environment surrounding, the application, and the quality of the bags. In general, the bag gripper is designed to pick filled bags of good quality in a standard factory environment.

The product described in this manual is designed for implementation in industrial systems; therefore, it must not be used with conditions other than those specified herein.

Piab has bestowed every effort in designing this device to make it safe as possible. In any case this is a machine part and does not include all the protections necessary for use. It is therefore up to the manufacturer of the complete machine, or final assembler, who places on the market, the addition of guards and safety devices.

To this end, for each man-machine interaction, when necessary, has been indicated the following information:

- Minimum skill level request for operator (OSL).
 - State of the product.
 - Residual risks.
 - Personal protective necessary or recommended.
 - Prevention of human errors.
 - Certification / obligations relating to reasonably foreseeable misuse.
-



Warning!

- Do not use the product for other than those established by the manufacturer, different or not mentioned in this manual.
 - Place the machine according to the instructions provided by the manufacturer, otherwise not liable for any inconvenience.
 - Do not let anyone pass above or below the device while lifting. A malfunctioning gripper could cause serious injury or death.
 - It is not allowed to inhibit the safety devices installed on the gripper.
 - Do not use the product with safety devices excluded or not working.
 - Do not circumvent protections and disable any safety devices installed.
 - The safety-critical operations must be carried out in strict accordance with the instructions provided in the relevant sections.
 - Carefully check the proper balance of the gripper during the lifting because there is the danger of overturning of the gripper.
 - Panels must be kept strictly closed.
 - The gripper is not anti-explosion and must not be used in areas at risk of explosion.
 - In case of fire, only use fire extinguishers dry powder or carbon dioxide following the instructions for use and warnings provided by the manufacturer and reported on the fire extinguisher. Never use water!
 - Washing operations must be performed with the devices of electrical power and pneumatic switched-off.
 - Do not use the product with substances with flammability properties.
 - Do not use the product in places with explosion danger, the presence of corrosive substances, with a high concentration of dust or oily substances suspended in the air or exposed to the elements.
 - Do not use the product with electrical jumpers and / or mechanical means which exclude utilities / parts of the machine itself.
-

-
- To avoid equipment damage, do not change any parts of the machine in case of failure, due to a failure to comply with the above, the manufacturer is not liable for the consequences. We recommend that you request any changes directly to the manufacturer.
 - To avoid personal injury, avoid clothes with hooks that can remain attached to the machine parts. Avoid using ties and other loose pieces of clothing. Avoid wearing bulky rings or bracelets that can get caught on the gripper.
-

Manufacturer is deemed not liable for damages caused by the product to persons, animals, or property in the event of:

- use of the product by personnel not adequately trained.
- improper use of the product.
- defective power supply, thermal or pneumatic.
- incorrect installation.
- lack of maintenance.
- unauthorized intervention or modification.
- use of non-original parts or not specific to the model.
- total or partial non-observance of the instructions.
- use contrary to national specifications.
- disasters and exceptional occurrences.

3.2.1 Assembly

Using and maintaining the product should solely be carried out by qualified personnel.

Prior to assembly and disassembly of the components, turn off voltage and compressed air. Install and maintain the components only after thoroughly reading and understanding this manual.

3.2.2 Maintenance



Warning!

Irresponsible use of compressed air may cause injury. Compressed air must never be used for anything else than designated purposes. Remember to always shut off the compressed air when cleaning or servicing the modules.

Maintenance must be carried out in accordance with the instructions in this manual. Prior to any maintenance work, suspend pneumatic/electrical supply, and discharge residual pressure.

3.3 Intended use

- The product is used for handling and palletizing bags and carries out different picking and depositing for various types of bags.
- For the correct gripper operation, the bag must be dry and clean, filled and sealed, without cuts or spills of product. The functionality and longevity of the bag gripper may depend on the environment surrounding the application and the quality of the bags.
- The product is intended for industrial use.

3.4 Misuse

- Do not use the product in places without safety guarding.
- Do not install or use the product if it is damaged.
- Do not use the product exposed for weather conditions or in a room with water vapor, corrosive and/or abrasive powders, fire hazard or environment (air) where fumes could cause an explosion.
- Do not use the product in environment (air) where fumes could cause an explosion.
- An incorrect performance of the grounding may present a risk of electric shock. Always supply the machine from a power capable of guaranteeing the ground connection in accordance with current safety regulations.
- Always disconnect the switch power supply panel before performing any maintenance.
- Strictly follow safety instructions of maintenance in this manual to avoid hazard of crushing.

In designing this device, several safety measures to protect the operator have been incorporated, although there are dangers that cannot be totally reduced through protection techniques.

These dangers, known as "residual risks which cannot be eliminated" are potential dangers not always obvious: it is therefore obligatory to read carefully this manual and all documentation connected with the utmost attention to the requirements regarding safety.

3.5 R.E.S.S Applied and respected

Essential Safety Requirements concerning machines, are contained in Annex I of the Machinery Directive. They are stringent and not modifiable but are still applicable only when they are relevant (i.e. when there is a danger).

ESSENTIAL SAFETY REQUIREMENTS (p.1)		CONFORMITY		
1 - Essential health and safety requirements	APL	CNF	AR PASS	
1.1 - General remarks	✓	✓		
1.1.1 - Definitions	✓	✓		
1.1.2 – Principles of safety integration	✓	✓		
1.1.3 - Materials and products	✓	✓	✓ Allowed	
1.1.4 - Lighting	✗			
1.1.5 – Design of machinery to facilitate its handling	✓	✓	✓ Allowed	
1.1.6 - Ergonomics	✗			
1.1.7 – Operating positions	✗			
1.1.8 - Seating	✗			
1.2 - Control systems	APL	CNF	AR PASS	
1.2.1 - Safety and reliability of control systems	✗			
1.2.2 - Control devices	✗			
1.2.3 - Starting	✗			
1.2.4 - Stopping				
1.2.4.1 - Normal stop	✗			
1.2.4.2 - Operational stop	✗			
1.2.4.3 - Emergency stop	✗			
1.2.4.4 – Assembly of machinery	✓	✓	✓ Allowed	
1.2.5 - Selection of control or operating modes	✗			
1.2.6 - Failure of the power supply	✓	✓	✓ Allowed	
1.3 - Protection against mechanical hazards	APL	CNF	AR PASS	
1.3.1 - Risk of loss of stability	✗			
1.3.2 - Risk of break-up during operation	✓	✓	✓ Allowed	
1.3.3 - Risks due to falling or ejected objects	✗			
1.3.4 - Risks due to surfaces, edges or angles	✓	✓	✓ Allowed	
1.3.5 - Risks related to combined machinery	✗			
1.3.6 - Risks related to variations in operating conditions	✗			
1.3.7 – Risks related to moving parts	✓	✗	✗ Not Allowed ²	
1.3.8 - Choice of protection against risks arising from moving parts				
1.3.8.1 - Moving transmission parts	✗			
1.3.8.2 – Moving parts involved in the process	✗			
1.3.9 - Risks of uncontrolled movements	✗			
1.4 - Required characteristics of guards and protective devices	APL	CNF	AR PASS	
1.4.1 - General requirements	✓			
1.4.2 - Special requirements for guards				
1.4.2.1 - Fixed guards	✓	✗	✗ Not Allowed ²	
1.4.2.2 – Interlocking movable guards	✓	✗	✗ Not Allowed ²	
1.4.2.3 - Adjustable guards restricting access	✗			
1.4.3 - Special requirements for protective devices	✗			

ESSENTIAL SAFETY REQUIREMENTS (p.2)		CONFORMITY'		
1.5 - RISKS DUE TO OTHER HAZARDS		APL	CNF	AR PASS
1.5.1 – Electricity supply		✓	✓	✓ Allowed
1.5.2 - Static electricity		⊗		
1.5.3 - Energy supply other than electricity		✓	✓	
1.5.4 – Errors of fitting		✓	✓	✓ Allowed
1.5.5 - Extreme temperatures		⊗		
1.5.6 - Fire		⊗		
1.5.7 - Explosion		⊗		
1.5.8 - Noise		⊗		
1.5.9 - Vibrations		⊗		
1.5.10 - Radiation		⊗		
1.5.11 - External radiation		⊗		
1.5.12 - Laser radiation		⊗		
1.5.13 - Emission of hazardous materials and substances		⊗		
1.5.14 - Risk of being trapped in a machine		⊗		
1.5.15 - Risk of slipping, tripping or falling		⊗		
1.5.16 - Lightning		⊗		
1.6 - MAINTENANCE		APL	CNF	AR PASS
1.6.1 - Machinery maintenance		✓	⊗	⊗ Not Allowed ²
1.6.2 - Access to operating positions and servicing points		✓	⊗	⊗ Not Allowed ²
1.6.3 - Isolation of energy sources		✓	⊗	⊗ Not Allowed ²
1.6.4 - Operator intervention		⊗		
1.6.5 - Cleaning of internal parts		⊗		
1.7 - INFORMATION		APL	CNF	AR PASS
1.7.1 - Information and warnings on the machinery				
1.7.1.1 - Information and information devices		✓	✓	✓ Allowed
1.7.1.2 - Warning devices				
1.7.2 - Warnings of residual risks		✓	✓	✓ Allowed
1.7.3 - Marking of machinery		✓	✓	
1.7.4 - Instructions				
1.7.4.1 – General principles for the drafting of instructions		✓	✓	
1.7.4.2 - Contents of the instructions		✓	✓	
1.7.4.3 – Sales literature		⊗		
2 – SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR CERTAIN CATEGORIES OF MACHINERY		APL	CNF	AR PASS
2.1 – Foodstuffs machinery and machinery for cosmetics or pharmaceutical products		⊗		
2.2 – Portable hand-held and/or hand-guided machinery		⊗		
2.3 – Machinery for working wood and material with similar physical characteristics		⊗		

SUPPLEMENTARY ESSENTIAL SAFETY REQUIREMENTS (p.3)	CONFORMITY'		
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3 – SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS TO OFFSET HAZARDS DUE TO THE MOBILITY OF MACHINERY	APL	CNF	AR PASS
3.1 - General	⊗		
3.2 – Work positions	⊗		
3.3 – Control systems	⊗		
3.4 – Protection against mechanical hazards	⊗		
3.5 – Protection against other hazards	⊗		
3.6 – Information and indications	⊗		

4 – SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS TO OFFSET HAZARDS DUE TO LIFTING OPERATIONS	APL	CNF	AR PASS
4.1 - General	⊗		
4.2 – Requirements for machinery whose power sources is other than manual effort	⊗		
4.3 – Information and markings	⊗		
4.4 – Instructions	⊗		

5 – SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR MACHINERY INTENDED FOR UNDERGROUND WORK	APL	CNF	AR PASS
5.1 – Risks due to lack of stability	⊗		
5.2 – Movement	⊗		
5.3 – Control devices	⊗		
5.4 – Stopping	⊗		
5.5 – Fire	⊗		
5.6 – Exhaust emissions	⊗		

6 – SUPPLEMENTARY ESSENTIAL HEALTH AND SAFETY REQUIREMENTS FOR MACHINERY PRESENTING PARTICULAR HAZARDS DUE TO THE LIFTING OF PERSONS	APL	CNF	AR PASS
6.1 – General	⊗		
6.2 – Control devices	⊗		
6.3 – Risks to persons in or on the carrier	⊗		
6.4 – Machinery serving fixed landings	⊗		
6.5 – Markings	⊗		

Status table

	Applicability	Conformity	AR Card Pass ⁽¹⁾
1	⊗ Not applicable	Not to be established	✓ Allowed
2	✓ Applicable	✓ Compliant	✓ Allowed
3	✓ Applicable	⊗ Not compliant	⊗ Not allowed
4	✓ Applicable	⊗ Not established	⊗ Not allowed
5	⊗ Not examined	Absent value	⊗ Not allowed

⁽¹⁾ The meaning of "AR card pass" value is the value that indicates, according to the assessment carried out, if the VR card is subject to risk assessment and if the requirement being assessed is "regulatory compliant" (Compliance)

⁽²⁾ The AR PASS "Not Allowed" results indicate a potential risk that must be resolved by the Final Integrator Manufacturer who places the machine on the market

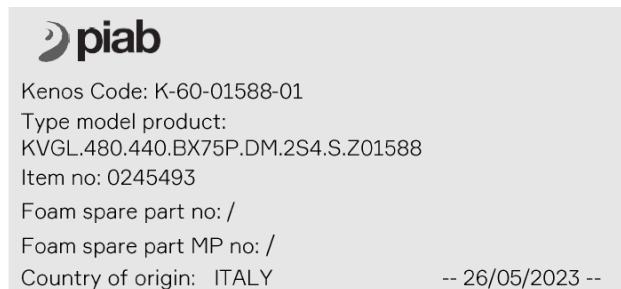
4 Introduction to LBG-50 Bag Gripper

4.1 Manufacturer

Piab AB
P.O. Box 146
SE-18212 DANDERYD
SWEDEN

4.1.1 Identification label

Each unit is identified by a label with identification information. For any communication with Piab AB or service centers always refer to the label information.



4.1.2 Documents/drawings

Gripper drawings are provided as an attachment to this manual. Piab AB also keeps electronic files of mechanical, electrical and pneumatic drawings and diagrams.

5 Overview

The LBG-50 bag gripper consists of the following main functional groups.

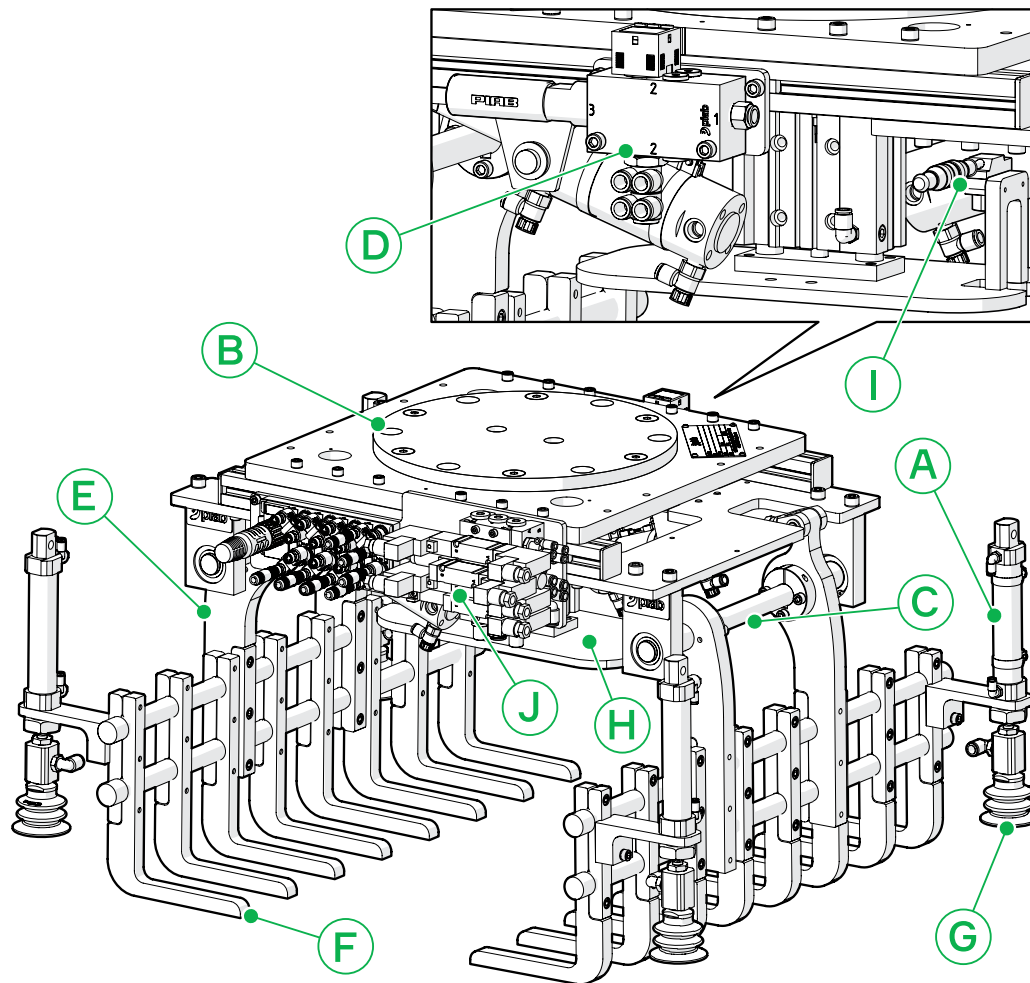


Figure 1 Overview of main functional groups of LBG-50

Pos	Description
A	Slip-sheet cylinder (optional)
B	Robot interface plate
C	Rotational axis
D	Slip-sheet vacuum generator (optional) (other side)
E	Finger arm bracket (vertical arms)
F	Gripper fingers
G	Slip-sheet vacuum cup (optional)
H	Clamp plate
I	Ultrasonic bag presence sensor (on the clamp plate)
J	Solenoid valve

5.1 Hazardous areas

The "hazardous areas" are related to device parts that could be dangerous for the operator if he/she improperly uses it or commits an error of assessment or a negligence error, circumventing these requirements.

Piab AB adopted all the necessary safety measures to eliminate risks of use for the operator, the overall elimination of the risk remains the responsibility of the Final Assembler (Integrator), there are still some areas defined as "dangerous areas" and are indicated in table below and figure 2.

ID	Area	Hazard	Warning	Measures
A	Unrestricted ejector exhaust	Danger for severe injuries  	Keep limbs or parts of the body away from the unrestricted exhaust. 	 Obligation to have guards in place (Final assembler).
				 Prohibition to remove guards.
				  Authorized personnel only.
				 Wear eye protection.
B	Close to the hinges lever arms	Risk of crushing 	Do not place limbs or parts of the body within the range of action.	 Obligation to have guards in place (Final assembler).
				 Prohibition to remove guards.
				  Authorized personnel only.
C	Into the gripper	Risk of crushing 	Do not place limbs or parts of the body within the range of action of the gripper fingers!	 Obligation to have guards in place (Final assembler).
				 Prohibition to remove guards.
				  Authorized personnel only.
D	Adjacent to the slip sheet suction cups	Danger of suction risk to skin 	Do not place limbs or parts of the body inside or against the lip of the suction cups.	 Obligation to have guards in place (Final assembler).
				 Prohibition to remove guards.
				  Authorized personnel only.
E	Lever arm cylinders	Risk of crushing 	Do not place limbs or parts of the body within the range of action of the lever arm cylinders.	 Obligation to have guards in place (Final assembler).
				 Prohibition to remove guards.
				  Authorized personnel only.

ID	Area	Hazard	Warning	Measures
F	Clamp plate cylinders	Risk of crushing 	Do not place limbs or parts of the body within the range of action of the clamp plate cylinders	 Obligation to have guards in place (Final assembler).
				 Prohibition to remove guards.
				 Authorized personnel only

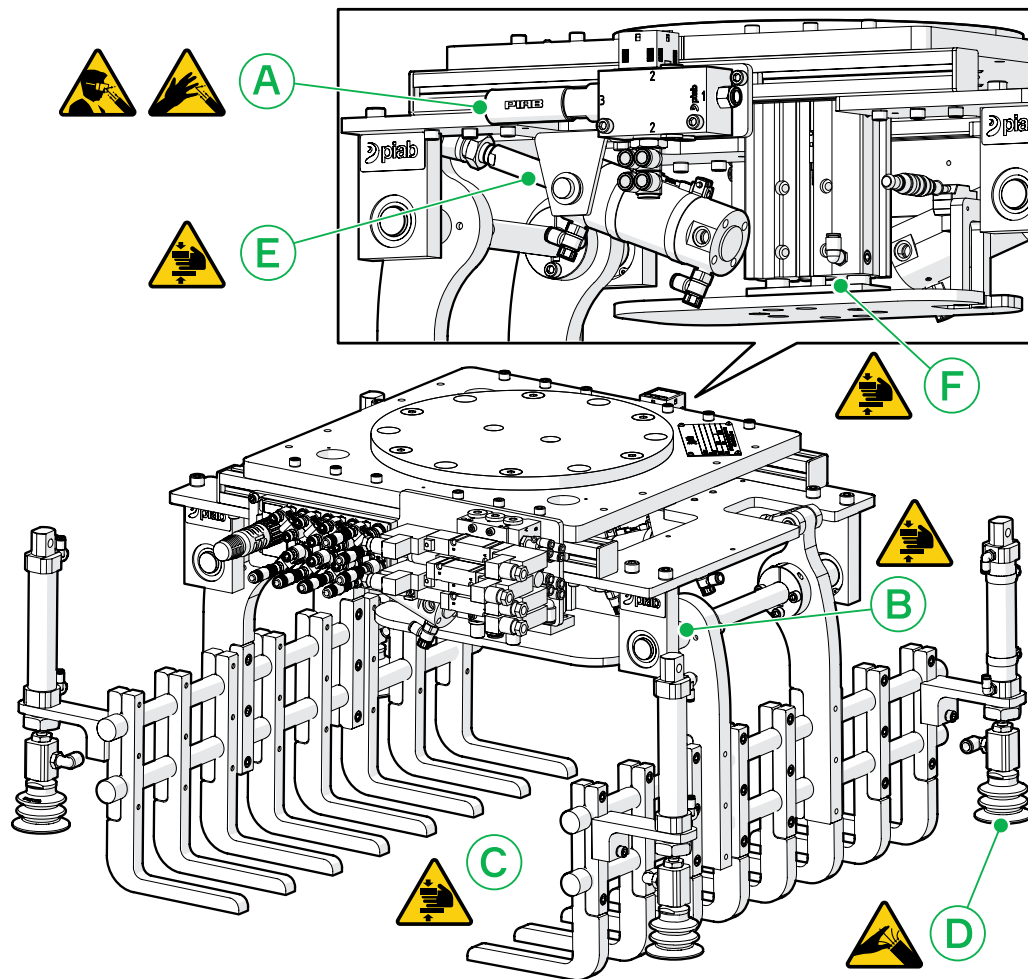


Figure 2 Product overview highlighting hazardous areas of LBG-50

Duties of the Final assembler:

- Make sure the connections required by the device are correct.
- Complete and integrate the Risk Assessment and the relevant ESRs in the technical file of the final machine.
- Carry out the safety functions and the machine parts as required by the Ministerial Decree 2006/42/EC.

5.2 Safety related parts

On the bag gripper there are some devices that perform safety functions. The position of the safety devices is highlighted in the figure below.

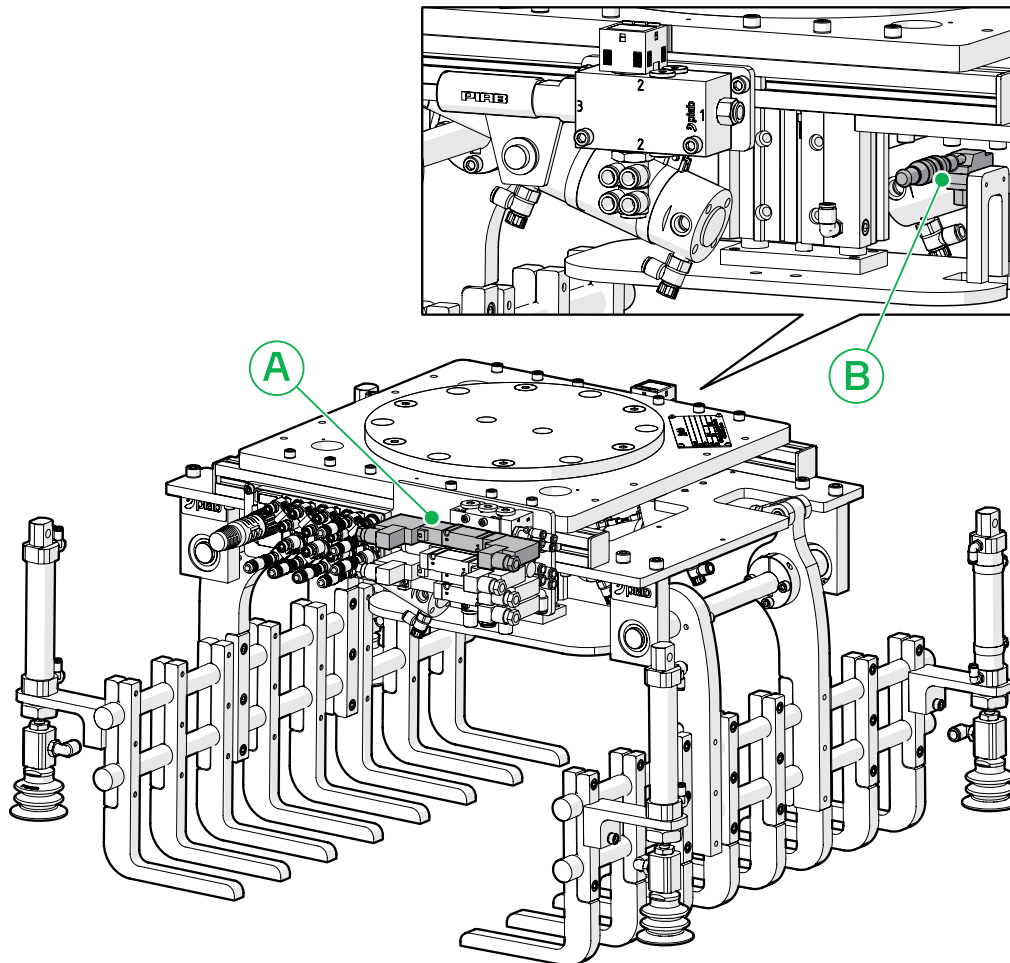


Figure 3 Safety related parts

Pos	Description
A	Closed center valve: allows load retention in case of power failure.
B	Bag presence sensor. This device allows you to check the presence of the bag both in the picking and depositing phase and must be monitored during these operations. The safety function is limited to avoiding a robot crash, it cannot be used for the protection of persons.



Note!

Do not remove or tamper with the safety devices for any reason; at the beginning of each work shift, always check its efficiency.

6 Technical data

Description	Unit	Value
Device name		Lightweight Bag Gripper
Model		LGB-50
Application type		Bag handling
Height	mm [inch]	510 [20.6]
Length		
LBG50.600.xx.xxx.x.xx.xxx.xx	mm [inch]	612 [24.0]
LBG50.700.xx.xxx.x.xx.xxx.xx	mm [inch]	712 [28.0]
Width		
LBG50.xxx.xx.xxx.x.X.xxx.xx	mm [inch]	384-584 [15.1-23.0]
LBG50.xxx.xx.xxx.x.SS.xxx.xx	mm [inch]	566-766 [22.3-30.2]
Bag Height		
LBG50.xxx.xx.100.x.xx.xxx.xx	mm [inch]	115-215 [4.5-8.5]
LBG50.xxx.xx.125.x.xx.xxx.xx	mm [inch]	65-190 [2.5-7.5]
LBG50.xxx.xx.150.x.xx.xxx.xx	mm [inch]	15-165 [0.6-6.5]
Max Bag Length		
LBG50.600.xx.xxx.x.xx.xxx.xx	mm [inch]	550 [21.6]
LBG50.700.xx.xxx.x.xx.xxx.xx	mm [inch]	650 [25.6]
Bag Width	mm [inch]	295-495 [11.5-19.4]
Max payload	kg [lbs]	50 [110]
Installed electric power (Nominal)	VDC	24 (21,6-26,4)
Compressed air quality		7:4:4 (ISO8573-1:2010)
Noise level	dB (A)	78
Temperature range	°C [°F]	10-50 [50-120]
Relative environmental humidity at 20 °C (68 °F)	%	5 < UR < 90

See the configurable data sheet to get the complete technical data

The standard supply kit is shown below:

- Declaration of incorporation; in this manual.
- Instruction manual for installation, use, maintenance, and spare parts catalogue.

The gripper is designed to operate correctly in an industrial-type electromagnetic environment that falls within the emission limits and is protected against induced disturbances.

6.1 Robot interface specification

Description	Unit	Value	
Config. code		LBG50.xxx.xx.xxx.x.x x.xxx.xx	LBG50.xxx.xx.xxx.x.S S.xxx.xx
Device name		LBG-50	LGB-50 with Slip sheet option
Electrical Supply Voltage	VDC	24 VDC (21,6-26,4)	
Current consumption	mA	105	192
Pneumatic supply pressure	MPa [psi]	0,6 [87]	
Tube diameter compressed air (outer)	mm [inch]	10 [0,39]	

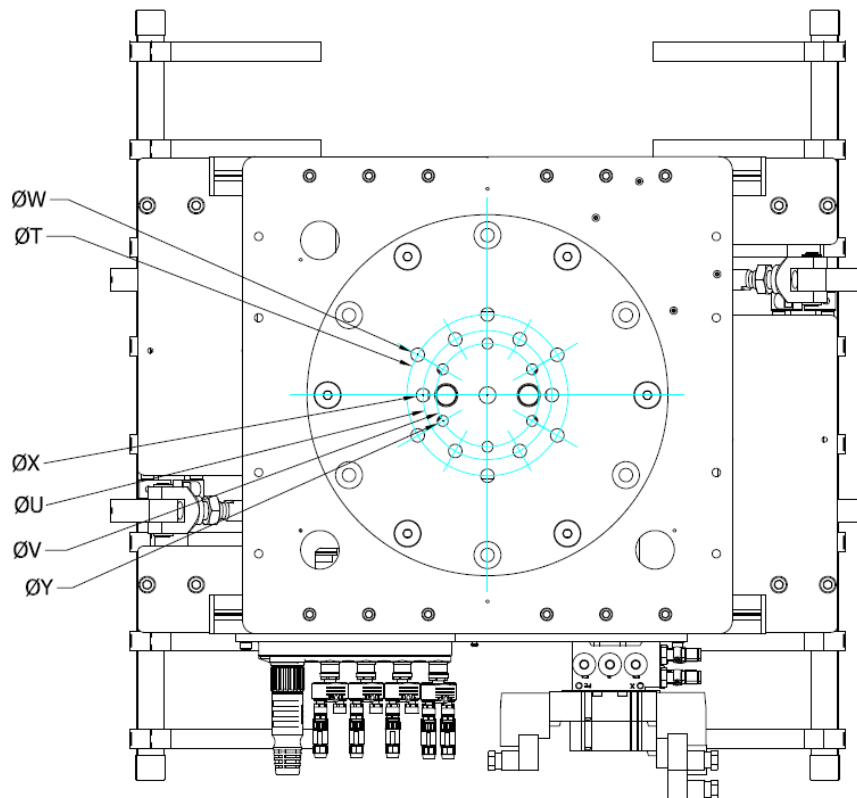
It is recommended to use DIN 912 or similar mounting screws with lock washers to mount the bag gripper to the robot.

6.1.1 Robot interface plate

LBG-50 can be configured with either a pre-drilled interface plate covering the ISO standards 9401-1-80-6-M8 (A), 9401-1-100-6-M8 (B), 9401-1-125-6-M10 (C).

6.1.2 ISO 9401-1-80-6-M8 / ISO 9401-1-100-6-M8 / ISO 9401-1-125-6-M10

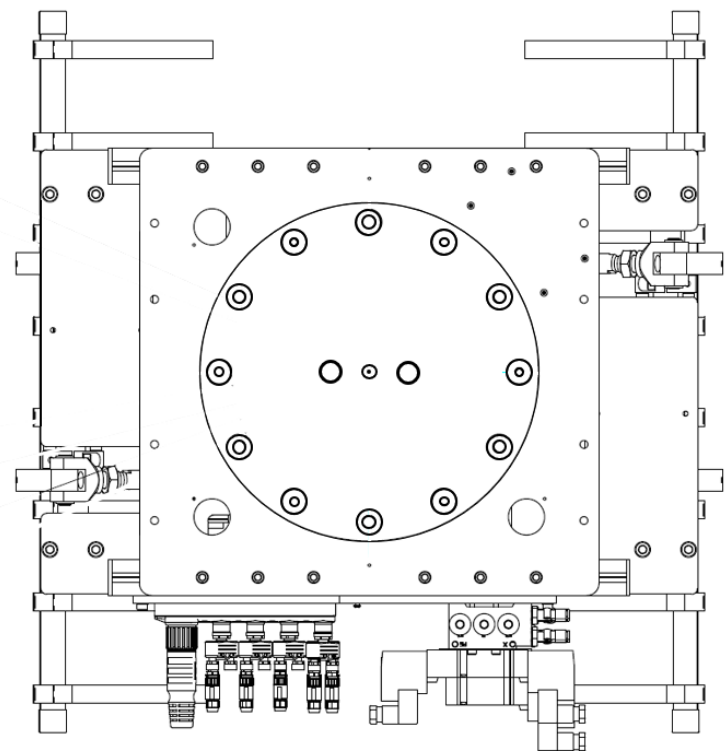
Config. Code: LBG50.xxx.xx.xxx.A/B/C.xx.xxx.xx



Diameter	mm [inch]	Hole diameter	mm [inch]
V	80 [3.15]	Y	8.5 [0.33]
U	100 [3.94]	X	8,5 [0.33]
T	125 [4.92]	W	10,5 [0.41]

6.1.3 Blank interface plate

Config. Code: LBG50.xxx.xx.xxx.X.xx.xxx.xx



6.2 Ultrasonic bag present sensor

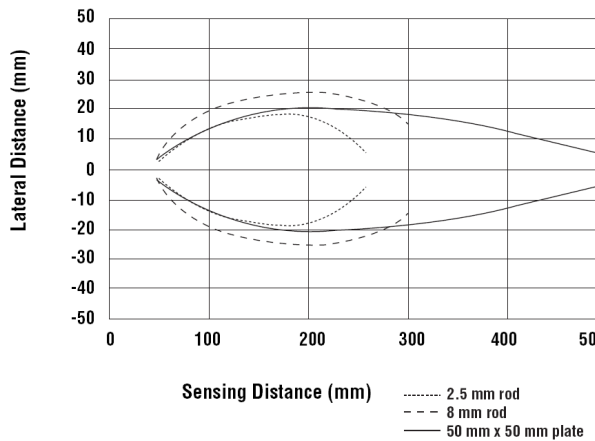
Ultrasonic bag presence sensor should be activated once the fingers close and the clamp plate has been extended. Deactivate the sensor once the fingers open to release the bag. The final assembler must provide for the connection and the intended functionality of this device.

Description		Data
Config. code	LBG50.xxx.xx.xxx.x.xx.xxP.xx	LBG50.xxx.xx.xxx.x.xx.xxN.xx
Models	QS18UPAQ5	QS18UNAQ5
Output type	PNP	NPN
Teach	Integral push button	
Cable	4-wire, 2 m (6.5') cable with shield	

Property	Data	
Sensing Range	50 to 500 mm (2" to 20")	
Supply Voltage	12 to 30 VDC (10% maximum ripple); 25 mA max. (exclusive of load)	
Ultrasonic Frequency	300 kHz, rep. rate 7.5 ms	
Supply Protection Circuitry	Protected against reverse polarity and transient voltages	
Output Configuration	SPST solid-state switch conducts when target is sensed within sensing window; one NPN (current sinking) or one PNP (current sourcing), depending on model.	
Output Protection	Protected against short circuit conditions	
Output Ratings	100 mA maximum load; see Application Note 1 OFF-state leakage current: < 10 micro amps (sourcing); < 200 micro amp (sinking); see Application Note 2 PNP saturation: < 3.0V @ 100 mA NPN saturation: < 1.6V @ 100 mA	
Output Response Time	15 milliseconds	
Delay at Power-Up	300 milliseconds	
Temperature Effect	Non-encapsulated models: $\pm 0.05\%$ per $^{\circ}\text{C}$ from -20° to $+50^{\circ}$ C, $\pm 0.1\%$ per $^{\circ}\text{C}$ from $+50^{\circ}$ to $+60^{\circ}$ C	
Repeatability	0.7 mm	
Minimum Window Size	5 mm	
Hysteresis	1.4 mm	
Adjustments	Sensing window limits: TEACH-mode programming of near and far window limits may be set using the push button	
Indicators	Range Indicator (Red/Green) Green — Target is within sensing range Red — Target is outside sensing range OFF — Sensing power is OFF	Teach/Output Indicator (Yellow/Red) Yellow — Target is within taught limits OFF — Target is outside taught window limits Red — Sensor is in TEACH mode
Construction	Housing: ABS Push Button Housing: ABS Push Button: TPE Light pipes: Polycarbonate	

Environmental Rating	Leak-proof design, rated NEMA 6P; IEC IP67, UL type 1
Connections	4-pin Euro-style 150 mm (6") pig tail QD
Operating Conditions	Temperature: -20° to +60°C (-4° to +140°F) Maximum relative humidity: 100%, non-condensing
Vibration and Mechanical Shock	All models meet Mil. Std. 202F requirements method 201A (vibration: 10 to 60 Hz max., double amplitude 0.06", maximum acceleration 10G). Also meets IEC 947-5-2 requirements: 30G 11 ms duration, half sine wave.
Application Note	1. If supply voltage is > 24 VDC, derate maximum output current 5 mA/°C above 50°C. 2. NPN OFF-state leakage current is < 200 μA for load resistances > 3 kΩ or optically isolated loads. For load current of 100 mA, leakage is < 1% of load current. 3. Objects passing inside the specified near limit may produce a false response.

QS18U Effective Beam Pattern (Typical)



QS18U Maximum Target Rotation Angle

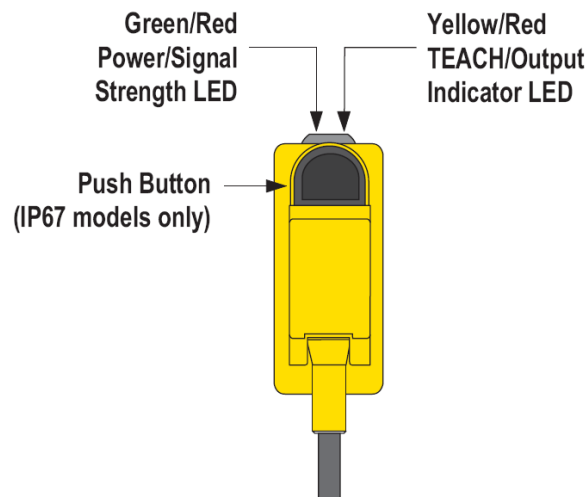
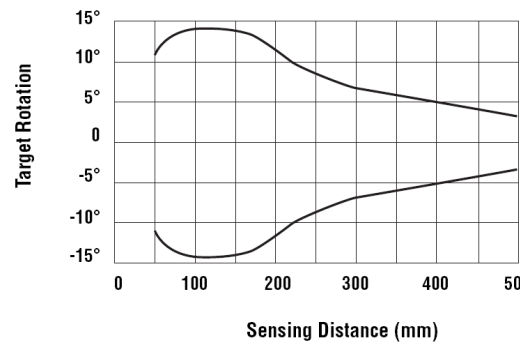


Figure 4 Bag presence sensor

6.3 Cylinder sensors

Description	Data	
Config. code	LBG50.xxx.xx.xxx.x.xx.xxP.xx	LBG50.xxx.xx.xxx.x.xx.xxN.xx
Auto switch model	D-M9PMAPC	D-M9NMAPC
Wiring type	3-wire	
Output type	PNP	NPN
Applicable load	IC circuit, Relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 VDC)	
Current consumption	10 mA or less	
Load voltage	-	28 VDC or less
Load current	40 mA or less	
Internal voltage drop	0.8 V or less at 10 mA	
Leakage current	100 μA or less at 24 VDC	
Indicator light	Operating range: Red LED illuminates Proper operating range: Green LED illuminates	

Sensor type	Color distinction of lead wire			Pin assignment, M8-3 pin		
	Pin 1	Pin 3	Pin 4	Pin 1	Pin 3	Pin 4
DC 3-wire	Brown	Blue	Black	24 VDC	0 VDC	SIGNAL

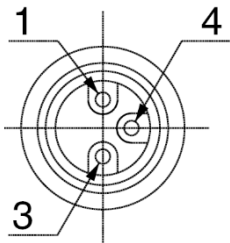


Figure 5 Pin configuration cylinder sensor

Electrical diagram PNP
Config code: LBG50.xxx.xx.xxx.x.xx.xxP.xx

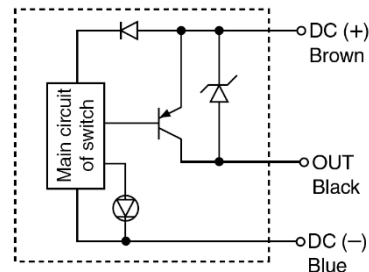


Figure 6 Electrical diagram cylinder sensor PNP

Electrical diagram NPN
Config code: LBG50.xxx.xx.xxx.x.xx.xxN.xx

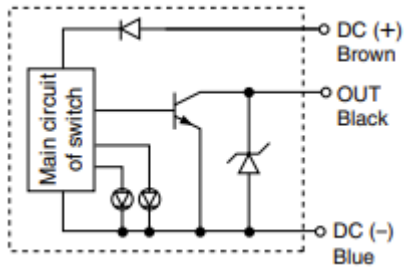


Figure 7 Electrical diagram cylinder sensor NPN

7 Function

The bag gripper must be applied to an automated system and combined with a palletizing robot or a fixed Cartesian automation system.

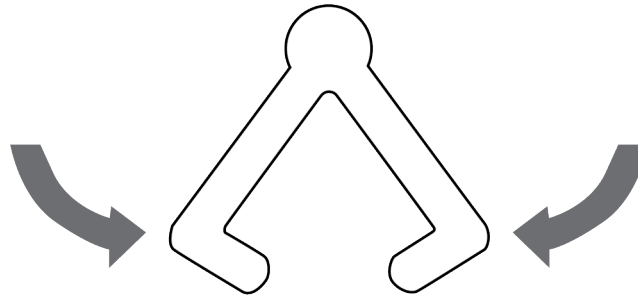


Figure 8 Illustration of bag movement

Supplying compressed air to the internal cylinders of the gripper causes the fingers to close and open.

The main movement carried out by the two sets of fingers is of the angular type and refers to the movement of the gripping fingers with respect to the body of the gripper.

Gripper can be supplied with slip-sheet suction cups (optional).

To grip a bag from a roller conveyor and place it on a pallet follow the sequence as indicated below:

- As the bag gripper approaches the bag on the roller conveyor, the cylinders of the gripper must be retracted causing the fingers to open, see figure 9 below. The bag gripper should be positioned vertically so that when the fingers close, there must be some space between the fingers and the bottom of the bag before lifting.

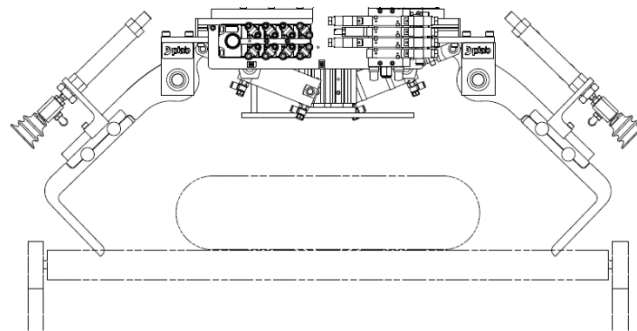


Figure 9 Bag gripper opening

- The fingers are closed to secure the bag, then the clamp cylinder is extended, see figure 10 below.

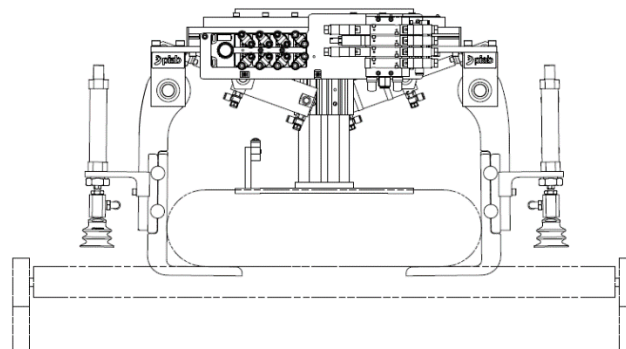


Figure 10 Bag gripper closed position.

- Raise the gripper vertically until the fingers move free of the roller conveyor.
- To place the bags on the pallet, open the fingers and retract the clamp cylinder.

The timing of the sequence depends on the type of bag, its content and the desired cycle speed.

7.1 Operative modes

The sequences indicated below describe the operation and adjustment provided by the gripper according to the product format, and as such, can be configured by the customer:

- Position showing the finger assemblies moved toward center of tool to handle a narrow bag (Factory setting), see figure 11.

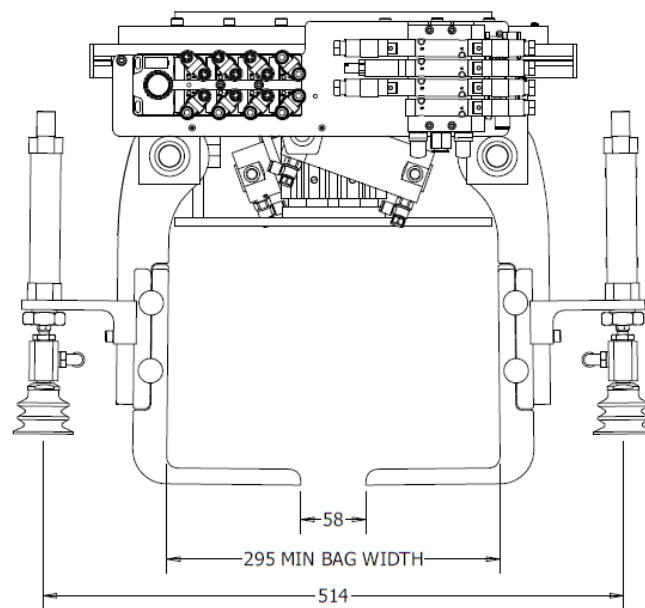


Figure 11 Bag gripper closed position, narrow bag (Factory setting).

- Position showing the maximum opening of the gripper fingers in the narrow bag position (Factory setting), see figure 12.

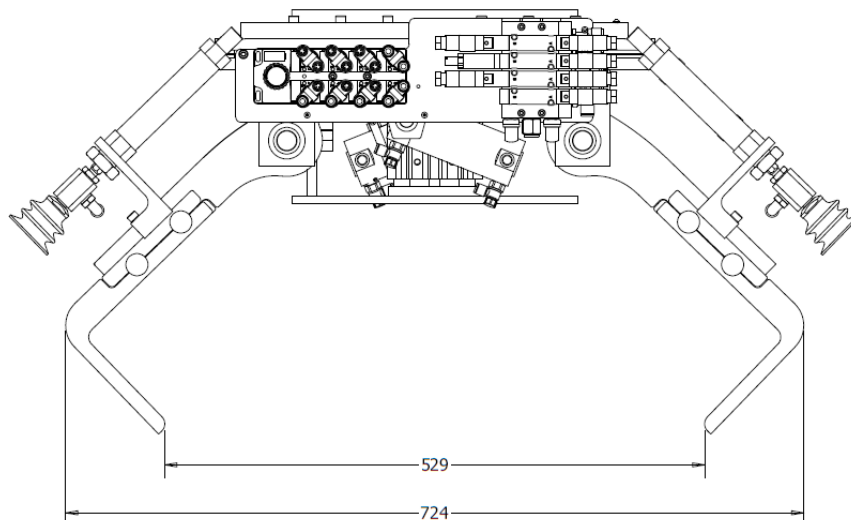


Figure 12 Bag gripper max. opening position, narrow bag (Factory setting)

- Position showing the maximum width with fingers in the closed position (Adjustable by the Customer), see figure 13.

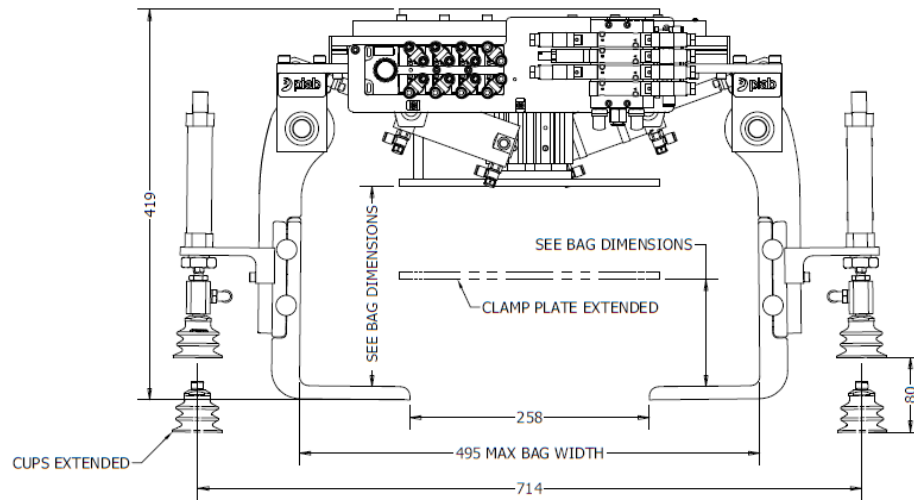


Figure 13 Bag gripper closed position, max. bag width (manually adjustable).

- Position showing the maximum width with fingers in the open position (Adjustable by the Customer), see figure 14.

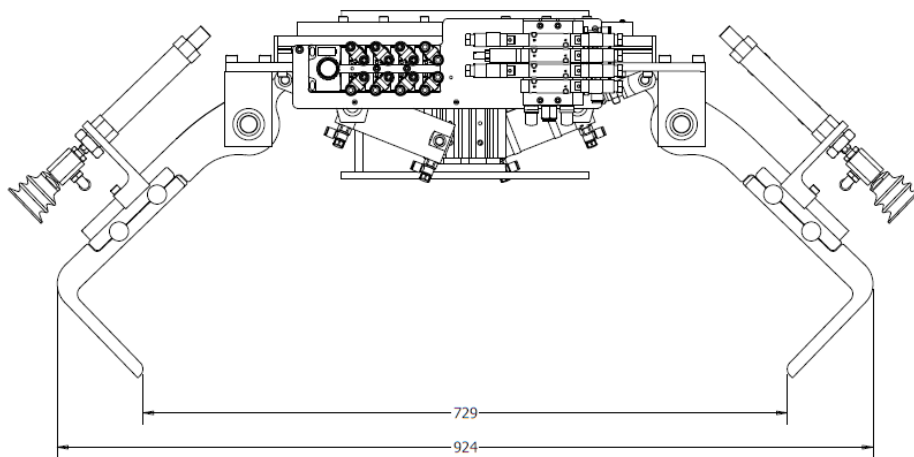


Figure 14 Bag gripper max. opening position (manually adjustable).

8 Installation

The electrical connection between the gripper and the robot must be carried out by qualified personnel.



Warning!

All electrical connection operations must be carried out with the power supply line without voltage (shut off) and by a trained person (in the electrical field) explicitly authorized and always fully complying with the regulations in force.

Full compliance with the local laws of the place of installation is essential.

Consult the wiring diagram in which all the characteristics required for the correct supply of the electrical panel are specified. Use fuses suitable in voltage and power voltage to avoid the danger of fire or overheating.

The product is carefully checked before delivery. Upon receipt, make sure that the product and its packaging have not been damaged during transport and check if it corresponds to what specified in the order and documentation

Power supply must be compatible with the voltage and current specifications indicated on the metal I.D. tag paced on gripper.

The electric system must have the ground connection in accordance with local electrical regulations.

8.1 Environmental conditions

The product is designed to work in a covered factory, with regulated temperature, limited exposure to powders and humidity. The device is designed to work in an environment indicated below. The gripper isn't designed for working in a burst or fire hazard environment. No foreign objects must be present in the work area. Cables and pipes must be protected and must not create an obstacle to the operator or to maintenance personnel.

Customer must install the bag gripper in a suitable work environment, equipped with an electrical and lighting systems that complies with current regulations.

The environment must have a temperature between 10-50 °C (50-120 °F). The electrical equipment can correctly work in environmental conditions with relative humidity not higher than 50%, temperature of 90% a 70°F, (50% a 105°C) with temperature not higher than 70°F (without condensation).

Strong vibrations from the robot may interfere with the gripper's performance.

8.2 Mechanical installation

If you have ordered the LBG-50 gripper with a pre-drilled mounting pattern, it can be mounted directly on the robot by following the next steps.

Step 1: Remove the screws from the LBG-50 to remove the robot mounting plate (see the figure below).

- Step 2:** Mount the plate on the robot (hardware not included).
Max torque M8 screws (ISO 9401-1-80-6-M8 and ISO 9401-1-100-6-M8) 41 Nm.
Max torque M10 screws (ISO 9401-1-125-6-M10) 81 Nm.
- Step 3:** Mount the plate on the LBG-50 using the screws.
Max torque 44 Nm

If you have ordered the LBG-50 gripper without a pre-drilled mounting pattern (blank plate), you will need to drill the hole pattern in the mounting plate after step 1 above.

The connection to the interface plate to the robot requires six M10 x 20 flat head screws to be fixed in the points shown in figure 15 below.

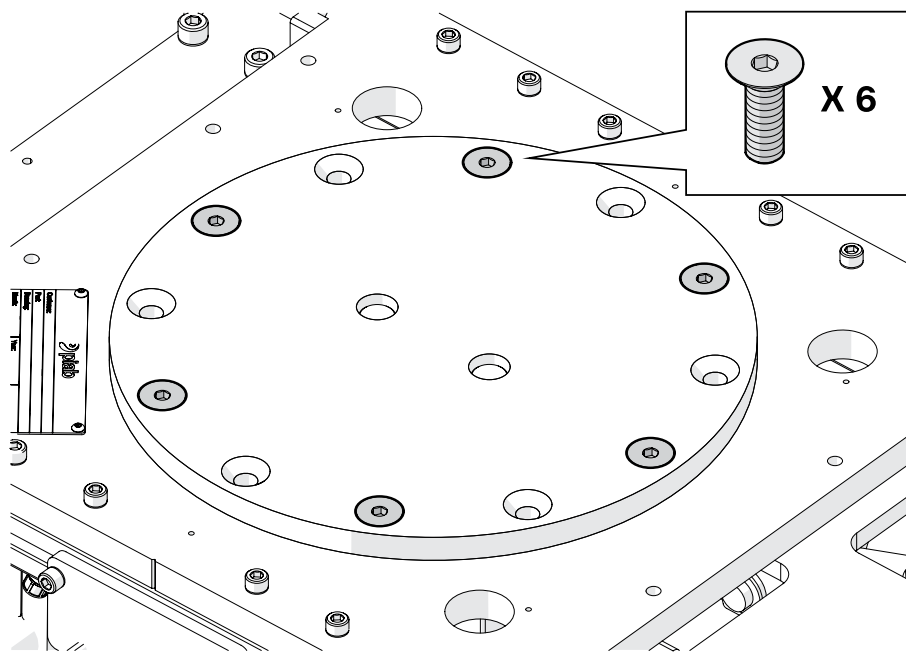


Figure 15 Robot interface mounting plate

8.3 Size change

The following section will describe how to manually adjust the bag gripper for different bag sizes.

8.3.1 Bag width adjustment

To adjust the bag width, loosen but do not remove the screws highlighted in figure 16 below on both sides of the gripper (12 in total).

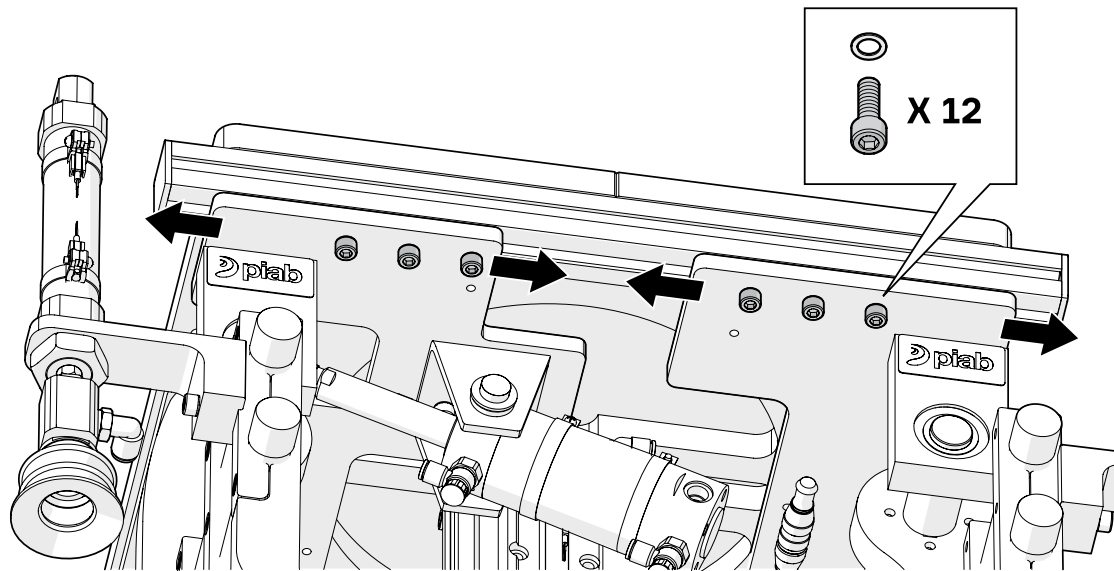


Figure 16 Adjustment of bag width

Slide each side of the LBG-50 outward until you reach the desired bag width and tighten the screws (Max torque 16,8 Nm). It is important to keep the bag centered on the LBG-50. Use a scale to ensure the symmetry from side to side.

8.3.2 Finger spacing adjustment

The fingers are preset for a conveyor of width 75 mm (2,95"), 76.2 mm (3"), 88,9 mm (3,5") or 90 mm (3,54") pitch (depending on chosen configuration) and the fingers are 15 mm (0,59") wide.

To adjust the distance between the fingers to fit the different widths of the roller conveyor, you can loosen the screws shown in figure 17 below and adjust the finger assembly along the guide. Fingers are to be equally spaced to fit between the conveyor rollers. It is recommended that the distance between the rollers on the conveyor be at least 19 mm (0,75"). This allows for finger space of 15 mm (0,59") width. Tighten the screws when desired position has been reached (Max torque 16.8 Nm).

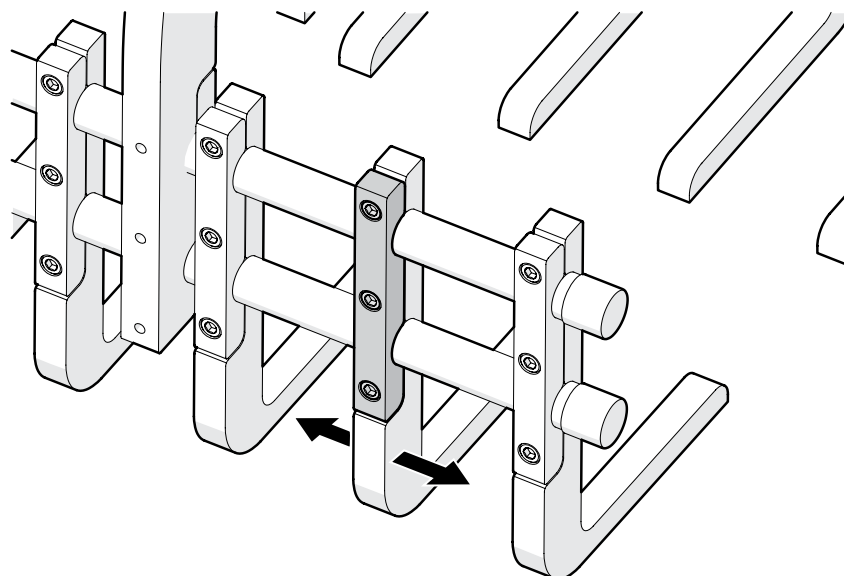


Figure 17 Adjustment of finger spacing

8.4 Pneumatic installation connection

The function of the pneumatic system is to distribute compressed air. The system is installed along the structure of the gripper and is equipped with solenoid valves that feed the air to the actuator cylinders.

The pneumatic connection between the gripper and the customer's compressed air distribution line, must be carried out by qualified personnel.

To correctly connect the pneumatic system, use a tube with a diameter of 10 mm.

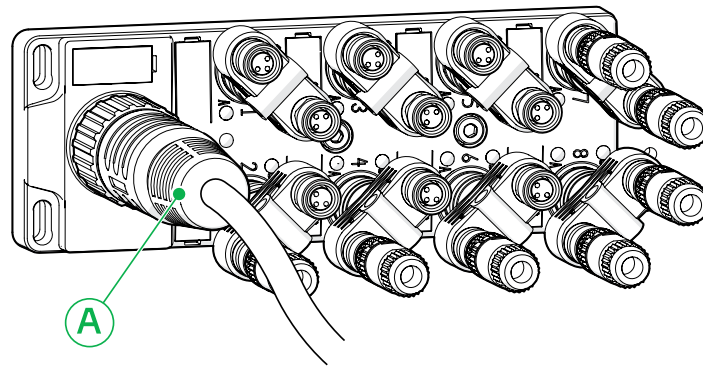


Figure 18 Electrical connection point LBG-50 with Discrete I/O manifold

A: Electrical connection. Discrete I/O.

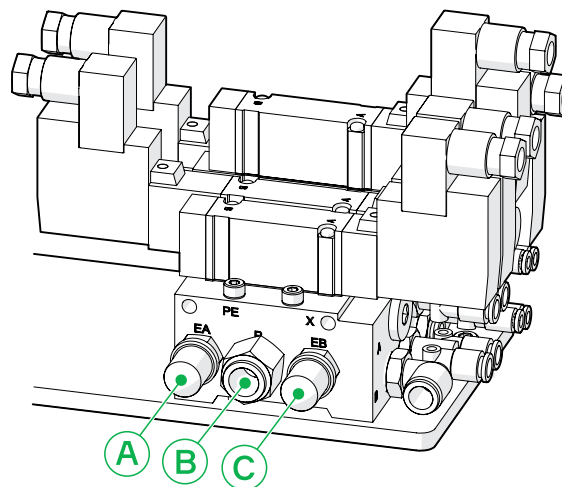


Figure 19 Pneumatic connection point LBG-50 with Discrete I/O manifold

A: EA, Exhaust
B: Compressed air connection, 10 mm
C: EB, Exhaust

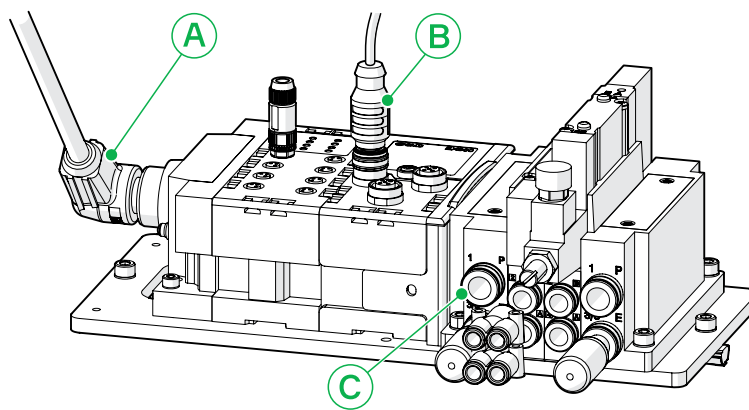


Figure 20 Pneumatic connection point LBG-50 with Ethernet/IP or Profinet manifold

- A: Electrical power
- B: Communication Ethernet/Profinet
- C: Compressed air connection, 10 mm

The pneumatic drawings for the complete gripper are attached as an appendix to this manual at delivery. If lost, the pneumatic drawings can be found on www.piab.com.

8.5 Solenoid valves characteristics

Needed documentation for the solenoid valve package can be found on www.piab.com

8.6 Electric connection/installation

The electrical drawings for the complete gripper are attached as an appendix to this manual at delivery. If lost, the electrical drawings can be found on www.piab.com.

Manuals	
EX600 Ethernet	https://www.smcworld.com/upfiles/manual/en-jp/files/EXxx-OMN0032.pdf
EX600 Profinet	https://www.smcworld.com/upfiles/manual/en-jp/files/EXxx-OMQ0016.pdf

8.7 Preparatory controls

Before starting any new equipment, it's very important to get familiarized with the gripper and its controls. Perform a visual safety check of the device and installation.

Any real or potential source of danger must be removed before proceeding. Know the emergency procedures relevant to the installation in question.

- Check that all anchor points of the gripper are properly tightened.
- Check that all electrical equipment is switched off to prevent starting under load.
- Check that the pneumatic supply line is properly connected.
- Check that all electrical connections are correctly made.
- Verify that the nominal voltage and electrical frequency are the same as those shown on the identification tag, the polarity between phases and neutral, the connection of the ground-cable pre-tested, the absence of voltage between neutral and ground and the direction of engine rotation.

8.8 Gripper off load test

Before carrying out operations, run the gripper empty to test the order and verify the absence of anomalies.

At the end of the adjustment phase, it is necessary to check the efficiency of the regular functioning of the elements making up the gripper (mechanical and electrical parts).

- Linear sliding of the moving parts of the gripper
- Efficiency of the stopping device in case of lack of driving force.
- Conditions and behavior.
- Correct operation and calibration of all safety devices.
- Operation of acoustic and luminous devices.

8.9 Gripper load test

Perform at least one load test to verify the absence of anomalies.

- Check the braking distances of the gripper with test load (ex: fastness and linearity of the braking system).
- Check for any unusual noises and oscillations, structural deformations.
- Correct operation and calibration of all safety devices.

8.10 Programming Bag present sensor

Two teach methods may be used to program the sensor:

- Teach individual minimum and maximum limits, or
- Use Auto-Window feature to center the sensing window around the taught position.

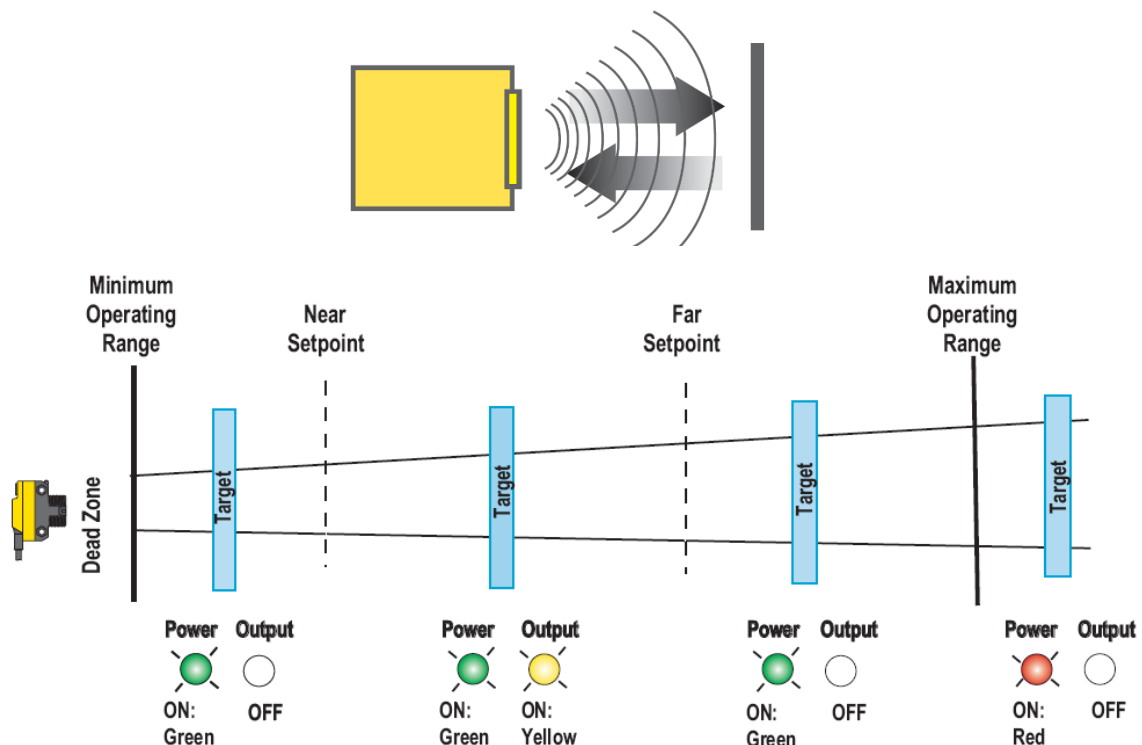


Figure 21 Bag presence sensor functional overview.

Status Indicators

Power On/Off LED	Indicates
OFF	Power is off
ON	Red target is weak or outside sensing range
ON	Green sensor is operating normally, good target.
Output/Teach LED	Indicates
OFF	Target is outside window limits.
Yellow	Target is within window limits.
ON	Red (solid) in Teach mode, waiting for first limit.
ON	Red (flashing) in Teach mode, waiting for second limit.

8.10.1 Teaching Minimum and Maximum Limits

General Notes on Programming:

- The sensor will return to RUN mode if the first teach condition is not registered within 120 s.
- After the first limit is taught, the sensor will remain in PROGRAM mode until the teach sequence is finished.
- To exit PROGRAM mode without saving any changes, press and hold the programming push button > 2 seconds (before teaching the second limit). The sensor will revert to the last saved limits.

Push button (0.04 s < "click" < 0.8 s)	Procedure	Result
Programming mode	Push and hold push button	Output LED: ON red Power LED: ON Green (good signal) or ON red (no signal)
Teach first limit	Position the target for the first limit	Power LED: Must be ON Green
	"Click" the push button	Teach Accepted Output LED: Flashing red Teach Unacceptable Output LED: ON Red
Teach second limit	Position the target for the second limit	Power LED: Must be ON Green
	"Click" the push button	Teach Accepted Output LED: Yellow or OFF Teach Unacceptable Output LED: Flashing Red

8.10.2 Teaching Limits Using the Auto-Window Feature

Teaching the same limit twice automatically centers a 20 mm window on the taught position.

General Notes on Programming:

- The sensor will return to RUN mode if the first teach condition is not registered within 120 s

- After the first limit is taught, the sensor will remain in PROGRAM mode until the teach sequence is finished.
- To exit PROGRAM mode without saving any changes, press and hold the programming push button > 2 seconds (before teaching the second limit). The sensor will revert to the last saved limits.

Push button (0.04 s < “click” < 0.8 s)	Procedure	Result
Programming mode	Push and hold push button	Output LED: ON red Power LED: ON Green (good signal) or ON red (no signal)
Teach limit	Position the target for the first limit	Power LED: Must be ON Green
	“Click” the push button	Teach Accepted Output LED: Flashing red Teach Unacceptable Output LED: ON Red
Re-Teach limit	Without moving the target “Click” the push button	Teach Accepted Output LED: Yellow or OFF Teach Unacceptable Output LED: Flashing Red

9 Troubleshooting

During testing and commissioning, all the necessary adjustments required for the correct functioning of the gripper are made. In the event of a malfunction, entrust the fault finding only to specialized personnel or call the manufacturer's technical assistance.

Anomaly	Cause	Remedy	OSL	PPE	Status
The gripper is not operating	Lack of electrical power	Observe the safety regulations; check the power supply	Mechanical maintenance personnel	Hand protection must be worn in this area! Protective clothing must be worn in this area!	Device on
The gripper is not operating	Lack of electrical and/or air power	Observe the safety regulations; check the electrical and pneumatic connections	1 st level partly completed machine driver	Protective clothing must be worn in this area!	Device on
The gripper is not operating	Lack of command from the robot	Observe the safety regulations; check the I/O monitoring on the robot program	Electrical maintenance personnel	Protective clothing must be worn in this area!	Device on
The gripper is not operating	Lack of electrical and/or air power	Observe the safety regulations; check the on-board wiring for damage	Mechanical maintenance personnel	Hand protection must be worn in this area! Protective clothing must be worn in this area!	Device on
The gripper does not make correct movements	Sensor malfunction	Check for any damaged sensors	Electrical maintenance personnel	Protective clothing must be worn in this area!	Device on
The gripper is not operating	Lack of air pressure	Check the primary and secondary feed pressure (4.8-6.2 bar)	1 st level partly completed machine driver	Protective clothing must be worn in this area!	
The gripper does not make correct movements	Presence of dirt	Check and if necessary clean if in the presence of dust or dirt	Mechanical maintenance personnel	Protective clothing must be worn in this area!	Device on
The cylinders do not move with authority	Leaks in the air circuit	Listen and intervene in the event of any leaks from the pneumatic circuit between cylinders and valves	Mechanical maintenance personnel	Protective clothing must be worn in this area!	Device on
The vacuum cups do not pick up the slip sheet	Lack of vacuum in the circuit	Observe the safety regulations; check the vacuum generator to make sure it is not clogged and is functioning properly	Mechanical maintenance personnel	Hand protection must be worn in this area! Protective clothing must be worn in this area!	Device on
The vacuum cups do not pick up the slip sheet	Lack of vacuum in the circuit	Observe the safety regulations; check the vacuum cups for cuts, tears and clogging	Mechanical maintenance personnel	Protective clothing must be worn in this area!	Device on

10 Service and maintenance

10.1 Maintenance conditions

Routine maintenance is essential to ensure efficiency and safety over time. These actions must be entrusted to competent persons.

Before starting work, display a sign “Machine in maintenance” in a visible position.

When performing maintenance or repair, you should apply what is described below.

- Wear only items approved for safety.
- Be careful to not disperse lubricants liquids in the area.
- Do not climb on the gripper, it is not designed to support people.
- At the end of work, clean any waste or fluid lubrication and pay special attention to retrieve any tools used to operate the gripper.
- At the end of work, repair and properly secure all guards used for protection.

The following maintenance schedule can be used if the following conditions exist:

- Clean ambient conditions at room temperature.
- A continuous supply of clean, dry air at 0,55-0,62 MPa (80-90 psi)
- Cycle rates less than 2 million per year.

Each week:

- Check components to ensure fasteners are tight.
- Manually test cylinders and bearing assemblies for smooth actuation.
- Check lines and cables for damage or pinching.
- Check for dirt and debris to ensure it is not clogging, binding, or blocking components from working properly.



Note!

Pneumatic cylinders are maintenance free and should not be lubricated.

10.2 Cleaning

The bag gripper does not produce any specific residues during its operation, therefore it does not require special cleaning because it does not produce any type of waste resulting from the process.

Cleaning the gripper is an operation to be always performed with the machine in stop condition.

10.3 Lubrication

It's important to periodically use lubrication on the bearings found in the tool after so many cycles.

By means of the pump oiler or other methods, it's possible to easily lubricant with precision all sliding or rotating parts.

Grease can be applied to the internal mechanisms of the device with a brush.

10.4 Maintenance interval

The basic purposes of maintenance are to maintain the gripper so that it can operate under the conditions specified by the manufacturer to ensure the safety of operators and environmental protection. Proper maintenance can extend the useful life of the equipment, thereby preventing failures to avoid intervention later.

The maintenance includes regularly scheduled inspections, controls, and interventions to prevent interruptions and breakdowns, keep under systematic control the condition of lubrication of the gripper and the status of parts subject to wear. Qualified personnel must perform these operations.



Check and try once a month the proper functioning and operation of emergency stops, running an empty gripper.

The operations described must be performed with the times indicated.

Operations	Schedules			Machine status
	1 st round	Week	Half year	
Check the smoothness of the levers and fingers.	1 st level partly completed machine driver			Device on
Check for any foreign objects.	1 st level partly completed machine driver			Device on
Check for the absence of squeaks or forcing of the system.	1 st level partly completed machine driver			Device on the move
Blowing with compressed air around the device.		2 nd level partly completed machine driver		Device on
Manual test of cylinder and bearing movements.		Mechanical maintainer		Device off
Check that the on-board wiring is not damaged.		Electrical maintainer		Device on
Check the tightness of the bolts.		2 nd level partly completed machine driver		Device on

Operations	Schedules			Machine status
	1 st round	Week	Half year	
Check for leaks from the compressed air circuit.		2 nd level partly completed machine driver		Device on
General cleaning of the gripper.		2 nd level partly completed machine driver		Device off
General check of the wiring and on-board sensors.			Electrical maintainer	Device off
Thorough and general cleaning of the gripper.			Mechanical maintainer	Device off

Double the maintenance frequency in the case of aggressive and/or dusty environments.



Note!

Failure to comply with the requirements, exempts to the fabricant from the liability to the effects of the Guarantee.

We enclose below a typical tab of the maintenance, to direct the user to record their interventions during the lifetime of the gripper.

10.5 Extraordinary maintenance

Followings are operations for which is necessary a request for intervention to our Technical Support but can also be performed by qualified personnel otherwise authorized by manufacturer.

Extraordinary maintenance includes interventions that are made in extraordinary events such as breakage or revisions.

Operations	Life (cycles/year)	OSL.	Status
General overhaul of the Bag Gripper	Interval effected by the environment	Mechanical maintainer	Device off



The owner and / or operator should be aware that the repair of that gripper, it may require specialized knowledge and equipment. It is also recommended that the machinery controls are carried out by a specialist and that any defective, dangerous, worn or otherwise parts, should be replaced with original parts supplied by the Fabricant.

11 Support and Spare parts

For any further information regarding the assembly instructions, contact your local Piab sales office.

To properly classify your request, you are kindly requested to send us a detailed description of the problem with the subject "Request for Assistance". Always indicate the identification data on the plate of the gripper as indicated in Chapter 1.



11.1 Spare parts

The list below shows parts subjected to greater wear, or that according to statistics, can be susceptible to consumption or breakdown.

The Customer is advised to have a spare set of the parts listed below, in order to minimize the downtime of the gripper.

Producer	P/N	Description	Function	Config. code
Piab	0106045	S.BX52P3060.G14M.50	Suction cup, Slip sheet	LBG50...xxx.x.SS.xxx.xx
Piab	0223786	Ejector MIDI Si32-2	Vacuum Generator, Slip Sheet	LBG50...xxx.x.SS.xxx.xx
Piab	0245829	Finger Clamp		All
Piab	0245830	Finger		All

Producer	P/N	Description	Function	Config. code
MiSUMi	BGBKA6004ZZ-60	Bearing with housing		All
SMC	CD85KN25-80-B	Cylinder	Slip sheet cylinder	LBG50...xxx.x.SS.xxx.xx
SMC	CDG1BA40-50Z	Cylinder	Finger cylinder	All
SMC	MGPM25-100Z	Cylinder	Clamp stroke 100	LBG50...100.x.xx.xxx.xx
SMC	MGPM25-125Z	Cylinder	Clamp stroke 125	LBG50...125.x.xx.xxx.xx

Producer	P/N	Description	Function	Config. code
SMC	MGPM25-150Z	Cylinder	Clamp stroke 150	LBG50...150.x.xx.xxx.xx
SMC	SY5100-5DZ	Valve 5/2	Ethernet/Profinet valve	LBG50...xxx.x.SS.EN/PRx.xx
SMC	SY5300-5DZ	Valve 5/3	Ethernet/Profinet valve	LBG50...xxx.x.SS.EN/PRx.xx
SMC	SY5100-5U1	Valve 5/2	Discrete I/O valve	LBG50...xxx.x.SS.DIOx.xx
SMC	SY5300-5U1	Valve 5/3	Discrete I/O valve	LBG50...xxx.x.SS.DIOx.xx
Banner Engineering	QS18UPAQ5	PNP Sensor	Bag present sensor	LBG50...xxx.x.xx.xxP.xx
Banner Engineering	QS18UNAQ5	NPN Sensor	Bag present sensor	LBG50...xxx.x.xx.xxN.xx
SMC	D-M9PMAPC	PNP Sensor	Clamp/Finger/Slip sheet cylinder sensor	LBG50...xxx.x.xx.xxP.xx
SMC	D-M9NMAPC	NPN Sensor	Clamp/Finger/Slip sheet cylinder sensor	LBG50...xxx.x.xx.xxN.xx
SMC	ZSE20-P-01-L	PNP Vacuum Switch	Slip sheet present switch	LBG50...xxx.x.xx.xxP.xx
SMC	ZSE20-N-01-L	NPN Vacuum Switch	Slip sheet present switch	LBG50...xxx.x.xx.xxN.xx

Producer	P/N	Manuals
Banner Engineering	QS18UPAQ5 QS18UNAQ5	https://info.bannerengineering.com/cs/groups/public/documents/literature/119287.pdf
SMC	D-M9PMAPC D-M9NMAPC	https://www.smcworld.com/upfiles/manual/en-jp/files/D-xS-OMJ0004.pdf
SMC	ZSE20-P-01-L ZSE20-N-01-L	https://www.smcworld.com/upfiles/manual/en-jp/files/PSxx-OMS0007.pdf

Replace components when exceed maximum limit of operations provided in the component's technical data sheet.

Replace with the same model, or with equivalent characteristics, (e.g. Class II double insulation); Additional information can be found in the relevant data sheet.

It's not recommend to use of non-original parts: if this happens, the warranty (if still in existence) and the manufacturer's responsibility for the use of the device are invalidated, in the event of any damage to persons and / or things.

12 Warranties

The Seller gives its Customers a one-year warranty from the receipt of the Products, accessories, control devices and Piab products included

It is a duty of the Buyer to check the goods at the time of delivery at the agreed destination. Complaints relating to the state of the packaging, quantity, number or external characteristics of the products (apparent defects) must be reported to the seller, under penalty of forfeiture of the guarantee, by means of a reservation noted on the transport document upon receipt of the products; the transport document with the noted reservation must be forwarded to the Seller by fax, e-mail, registered mail with notice of collection, within eight (8) days of the receipt of the goods.

The warranty covers manufacture and materials defects in the Products and it also covers if the Products do not conform to the Product specification, excluding minor defects, if reasonably acceptable and that do not compromise efficiency in their use.

The warranty does not apply to any Product (including any component or other parts in such Products (such as suction cups, filter elements, sealings, hoses, foam, etc.) or to the software of any Products) that it was used other than the intended purpose, and: (a) has been subjected to abuse, misuse, negligence, improper storage, improper handling, improper use, improper installation, abnormal physical stress, abnormal environmental or working conditions, or use, application, installation, care, control or maintenance contrary to any applicable manual or instructions for the Products issued by the Seller or good trade practice regarding the same; or (b) has been reconstructed, repaired or altered by any persons or entities other than the Seller or its authorized representatives, or have a defect as a result of fair wear and tear or willful damage or caused by subsequent damages caused by other defective products.

The product warranty set forth in this Section is the only warranty given by the Seller in relation to the Products. The Customer may not rely, and has not relied, on any other information, statement or warranty (express or implied), whether based on applicable law or otherwise. In any case, the compensation is limited to the price of the products agreed between the parties and is excluded for indirect damages.

During the warranty period, the Seller shall replace or repair, at its own expense, faulty products determined by the Seller, in its sole discretion, to be covered by the warranty set out herein.

It is at the Seller's discretion whether a faulty Product should be returned to the Seller for replacement or if it should be repaired by the Seller at the location of the Customer. Any replaced Products shall become the property of the Seller.

The Seller is not responsible for the cost of fitting replacement parts or components of any Products into any products or alike of the Customer.

These Terms and Conditions shall apply to any repaired or replaced Products by the Seller.

13 Recycling and disposal

Environmental aspects are considered in the development process of Piab's products to make sure that a minimal environmental footprint is used. Piab is certified with ISO-14001.

Piab also complies with:

- RoHS (2002/95/EC)
- REACH (EC 1907/2006)

The ways of handling recycling and disposals vary from country to country, and therefore this process needs to be in full compliance with each national regulation.

If possible, disassemble the product into its various components. Electrical and electronic equipment should be handed over to an authorized body for disposal, as well as the metal parts. All other parts can either be recycled or sorted as waste.

14 Appendix



LBG-50 EOAT
BAG GRIPPER

MAINTENANCE TAB				
Internal Code PPS1	Description BAG GRIPPER			
Serial Number:			Model: LGB-50 EOAT	
Date	* O / X - I / E	Cycle	Intervention Description	Next intervention
WARNINGS / ADVICE				
(deduced from the Manufacturer's use and maintenance / instruction manual)				
Responsible action				
Maintenance Responsible -----			Maintenance Worker -----	

Tab. 5-2 Maintenance Schedule

* Types of Intervention:

O = ordinary

X = extraordinary

I = internal control

E = external control

M = monthly

T = quarterly

S = half yearly

A = annual

B = biannual

PIAB AB P.O. Box 146 SE-18212 Danderyd, Stockholm, Sweden



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A series of horizontal lines for writing, consisting of 20 evenly spaced lines across the page.

Evolving around the world

EUROPE

France

Lagny sur Marne
+33 (0)16-430 82 67
info-france@piab.com

Germany

Butzbach
+49 (0)6033 7960 0
info-germany@piab.com

Italy

Torino
+39 (0)11-226 36 66
info-italy@piab.com

Poland

Gdansk
+48 58 785 08 50
info-poland@piab.com

Spain

Barcelona
+34 (0)93-633 38 76
info-spain@piab.com

Sweden

Danderyd (HQ)
+46 (0)8-630 25 00
info-sweden@piab.com

Mölnådal

Ergonomic Handling
+46 (0)31-67 01 00
info-sweden@piab.com

United Kingdom

Loughborough
+44 (0)15-098 570 10
info-uk@piab.com

AMERICAS

Brazil

Sao Paulo
+55 (0)11-449 290 50
info-brasil@piab.com

Canada

Toronto (ON)
Ergonomic Handling
+1 905 881 1633
eh.ca.info@piab.com

Hingham (MA, US)

+1 800 321 7422
info-usa@piab.com

Mexico

Hingham MA (US)
+1 781 337 7309
info-mxca@piab.com

USA

Hingham (MA)
+1 800 321 7422
info-usa@piab.com

Xenia (OH)

Robotic Gripping
+1 888 727 3628
info-usa@piab.com

ASIA

China

Shanghai
+86 21 5237 6545
info-china@piab.com

India

Pune
+91 8939 15 11 69
info-india@piab.com

Japan

Tokyo
+81 3 6662 8118
info-japan@piab.com

Singapore

Singapore
+65 6455 7006
info-singapore@piab.com