



PRONAL: BOLSAS DE ELEVACIÓN NEUMÁTICA

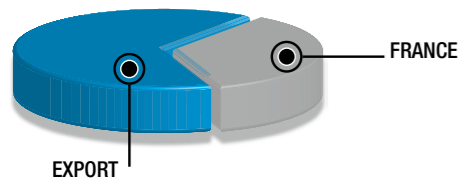
UNA SOLUCIÓN FLEXIBLE PARA UNA VARIEDAD DE FUNCIONES MECÁNICAS EN NUMEROSAS APLICACIONES

GENERAL

An industrial SME for more than 50 years, **PRONAL** is constantly working to create and improve their design of their state of the art flexible and/ or inflatable structures made from **Elastomers and Plastomers**.

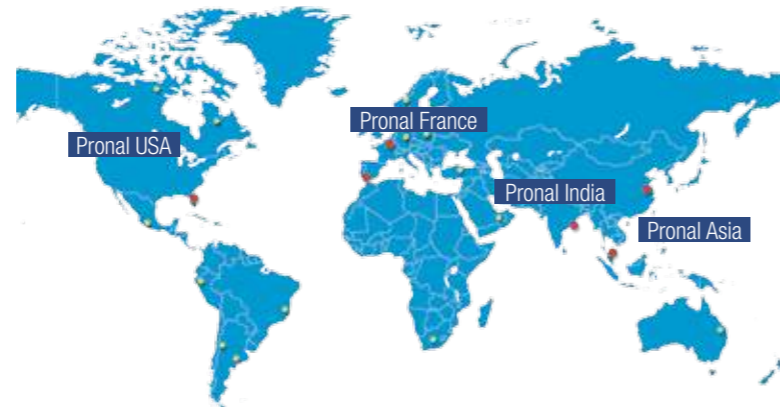
Its product range encompasses :

- flexible lifting bags
- membranes
- lifting cushions
- grippers
- compensators
- aircraft lifting cushions
- flexible storage
- pipe stoppers
- numerous products made to custom design



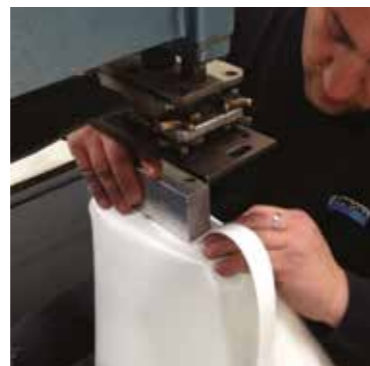
**70% OF TOTAL
TURNOVER GOES
TO EXPORT**

A GLOBAL PRESENCE



● Registered office and subsidiaries ● Agents or representatives

A STATE-OF-THE-ART production facility



HIGH-FREQUENCY
WELDING



VULCANIZATION

THE CORE OF OUR BUSINESS

PRONAL's development strategy is underpinned by 3 key priorities :



• INNOVATION

Increasing innovation in the fields of materials and technologies, with the constant goal of enhancing their performance.



• DIVERSIFICATION

Product diversification centred on the concept of flexibility.



• QUALITY

Quality maintained at all levels, with constant attention to customers' needs.

The concept of flexibility



- Lightness
- Impermeability
- High traction strength
- Flexibility
- Elasticity
- Resistance to climatic conditions, abrasion and perforation

Our fields of Activity :



DEFENSE

Rigid and flexible tanks
Permanent or transport bladders



OFFSHORE

Components for floating
of platforms...



NUCLEAR

Hydraulic testing
Cleaning...



CONSTRUCTION/ ENVIRONMENTAL PROTECTION

Flexible storage tanks
Plugging of sewer line



MECHANICAL INDUSTRIES

Pneumatic lifting bags
High pressure lifting bags



AERONAUTIC

Aircraft lifting cushions
Onboard fuel tanks

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LIFTING BAGS

The Pronal lifting bags offer a solution for all applications that require :

 **SHORT**
stroke

 **MINIMAL**
thickness

 **HIGH**
lift capacity

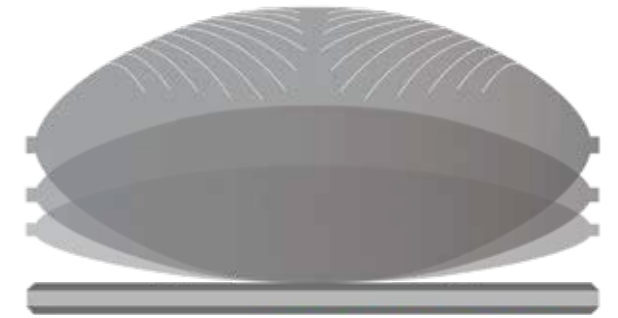


PRONAL LIFTING BAGS

GENERAL

Each year, hundreds of customers choose the Pronal lifting bags to optimize the operation in their plants.

- High quality
- Excellent customer service
- Technical know-how



Thousands
of the Pronal lifting bags are in service worldwide



More than 90
specialized partners (OEM's, users, installers,...)



4 groups
of air lifting bags



Design **Solutions**
for special industrial applications

MANUFACTURING OF LIFTING BAGS



DESIGN STAGE

- Conceptualize new products
- Research and test new materials
- Optimize manufacturing



MANUFACTURING

- From cutting the material to final assembly
- Attention to highest quality demands
- Meet customers' requirements



WELDING / VULCANIZING

- High frequency welding
- Vulcanizing in autoclave
- Achieve perfect homogeneity of the assembly



TESTING

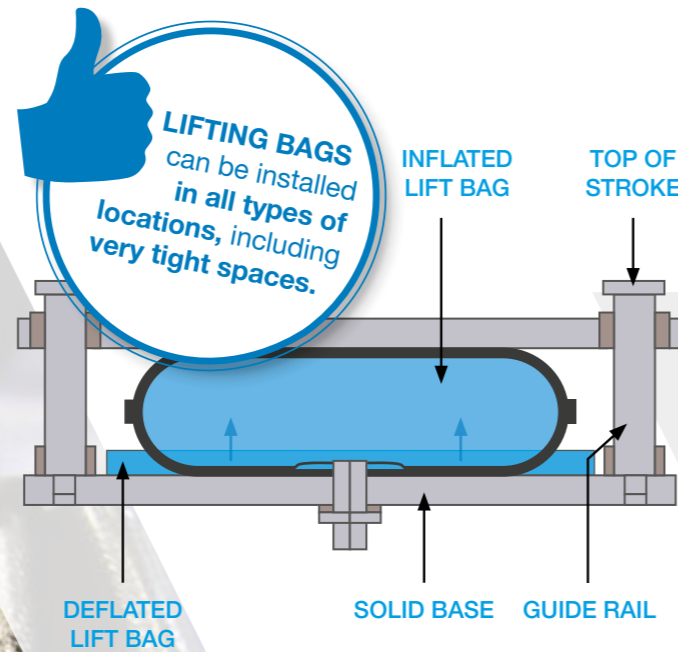
- Assembly of accessories
- Individual testing of lifting bags
- Compliance with ISO 9001-14001 and OHSAS 18001



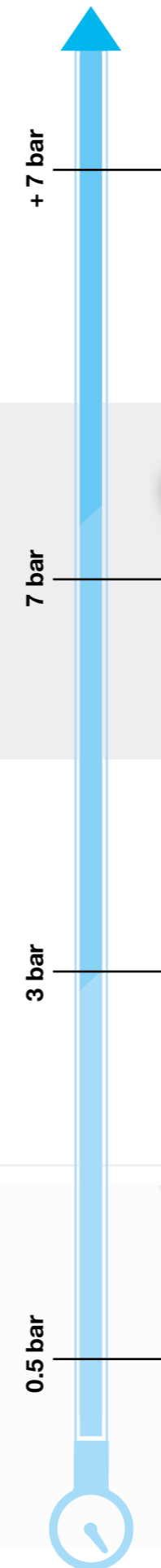
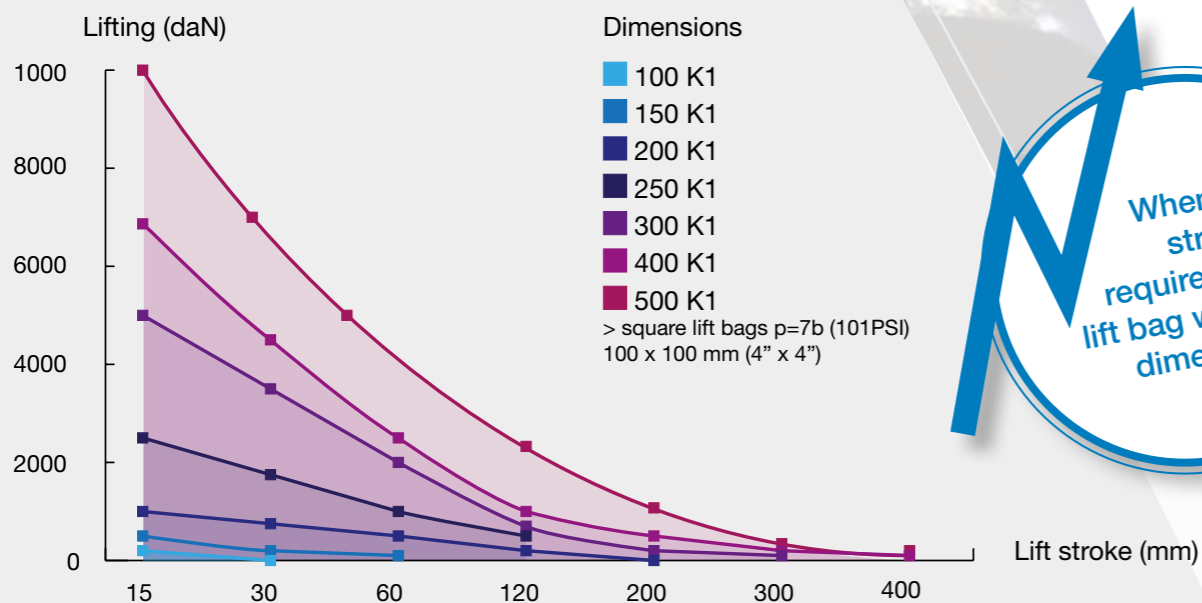


- LOW THICKNESS**
- MAINTENANCE FREE**
- CUSTOM DESIGN**
- EVEN DISTRIBUTION OF LIFTING FORCE**
- HIGH LIFTING CAPACITY**
- INFLATION WITH AIR, WATER, OIL...**

THE PRODUCT

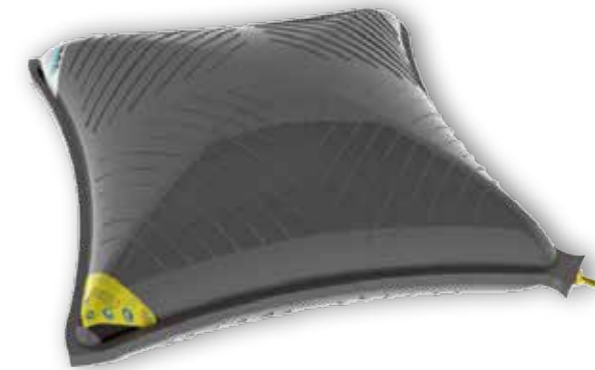


HIGH RESISTANCE AND EVEN DISTRIBUTION



Very high pressure (high resistance)
For applications requiring **high lifting force**

- Working pressure : > 7 bar (min)
- Deflated thickness : > 20 mm
- Assembly method : Hot vulcanization in an autoclave



High pressure
For applications requiring **high lifting force**

- Working pressure : 7 bar (max)
- Deflated thickness : ≈ 18 mm
- Assembly method : Hot vulcanization in an autoclave



Medium pressure
Moderate lifting force to lift or move (for moderate loads)

- Working pressure : 3 bar (max)
- Deflated thickness : ≈ 12 mm
- Assembly method : Hot vulcanization in an autoclave



Low pressure
To hold or to move at low pressure

- Working pressure : 0.5 bar (max)
- Deflated thickness : ≈ 2 mm
- Assembly method : HF welding





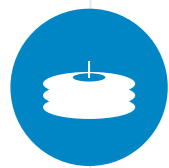
STANDARD RANGE

PRONAL developed a standard range of lifting bags based on different properties :

- Inflation with **AIR, WATER OR OIL**
- Working pressure of **7 BAR** (depending on the application)
- Different shapes and dimensions : **SQUARE - ROUND, FROM 100X100 MM TO 500X500 MM**
- Temperature range from **-20°C TO +70°C**
- Standard inflation **PORT STEM 1/4" OR 3/4"** in the center of the lifting bag surface
- A **LABEL CONTAINING** the **PART NUMBER** and the serial number

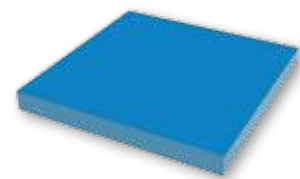


Due to many different applications, we offer custom designs to meet specific requirements : **implantation, resistance, temperature...**



THE SHAPES

You have a project, we have the solution. We produce lift bags of different shapes depending on the requirements of the application (See page 10).



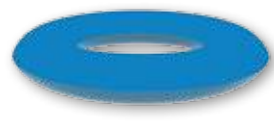
SQUARE



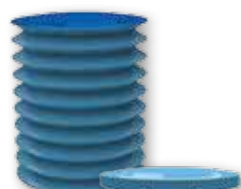
RECTANGULAR



ROUND



DONUT SHAPE



MULTI STAGE



CUSTOM SHAPE



MATERIALS

Each product design must meet the operational requirements for each application. PRONAL offers different materials in order to optimize the strength and the capacity of the lift bags.



FOOD GRADE MATERIALS ARE AVAILABLE



TEMPERATURE RESISTANCE UP TO 150°C



LONG PRODUCT LIFE



MATERIAL TO SUIT THE APPLICATION



RESISTANT (TO OIL, UV RAYS, ABRASION...)



COATING OF THE SURFACE



ACCESSORIES

The lifting bags can be equipped with different accessories depending on the application.



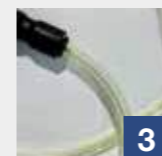
1 - Inflation valve 1/8", 1/4", 1/2" and 3/4"

Can be placed on the top, side or corner of the lifting bag.



2 - Threaded insert M05, M06, M08

Vulcanized into the top or side of the lifting bag.



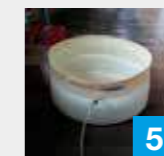
3 - Inflation tube made of PU

It can be placed on the side, corner or the bottom of the lifting bag.



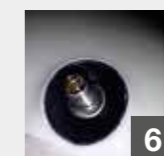
4 - Velcro strap holder

Used to hold the bag under certain conditions.



5 - Holding skirt

It can be used to hold a lift bag around a pipe.



6 - Schrader Valve

It can be placed on the surface of the bag.



Heat press

PRESSING



- Press
- Bond fabric to roof of car
- Mould closure
- Bonding of mirrors



Blocking a wheel

SQUEEZE / MANIPULATE

- Gripping of bottles
- Handling of fragile parts
- Robots
- Squeezing of complex forms
- Braking of rollers

LIFTING

- Lifting a container
- Lifting of loads
- Lift table
- Maintenance work
- Vehicle lifting



Platform lifting



- Vacuum sealing
- Sealing of underwater locks
- Inflatable seals
- Sealing of a trough during emptying

SEALING / DAMPENING



Pipe Sealing



Guiding and blocking in sorting machines

GUIDING

- Web guide
- Felt guide
- Guiding of grinding arm
- Leveling of stone blocks

THE USE OF OUR LIFTING BAGS is already found in many fields...



Automotive



Industrial



Food



Textile



Energy



Civil Defense



Pharmaceutical



Public places



Water treatment



Wood industry



Logistics



Glass

LIFTING CUSHIONS

PRONAL lifting bags are designed to efficiently lift, push, compress or isolate objects in industrial applications.

SIMPLE
to use

QUICK
to install

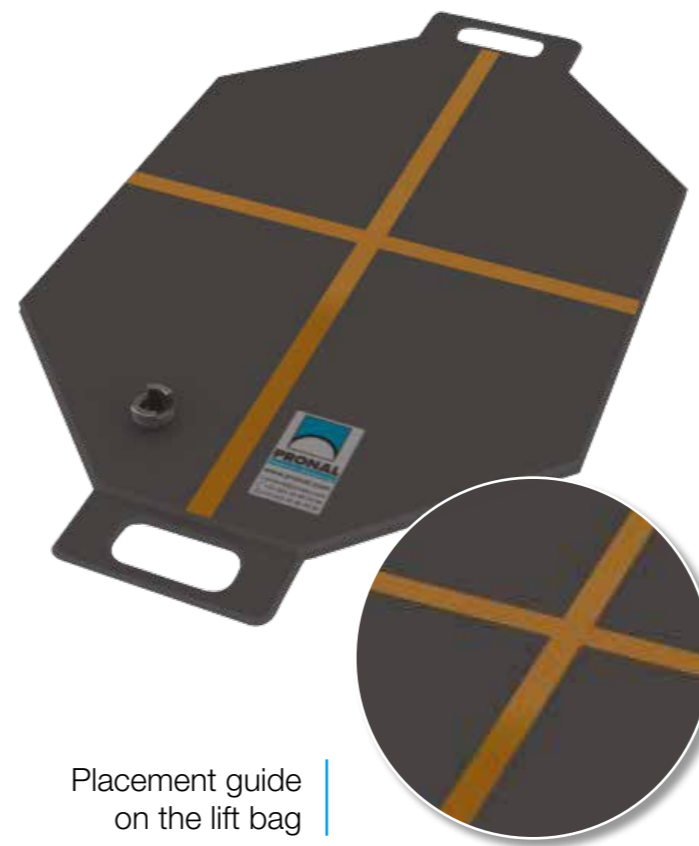
Steady
LIFTING



CBP : LOW PRESSURE LIFTING BAGS

Pronal low pressure lifting bags are suitable for lifting loads of up to 5 tons.

The design allows a greater stroke and inflation using a vehicle exhaust. Due to hot vulcanization, these lift bags are resistant to abrasion, friction, different ground conditions...



Placement guide on the lift bag

ADVANTAGES



Autonomous inflation



Stackable



Placement guide



Compact and light weight

REF.	DIMENSIONS (mm)	THICKNESS (mm)	WEIGHT (KG)	MAX LIFT CAPACITY (t)	SERVICE PRESSURE (bar)	PROOF PRESSURE (bar)	MAX STROKE (mm)	NOMINAL AIR VOLUME (L)	VOLUME AT 0,5 BAR
CBP 1.5	520x580	25	5	1.5	0.50	0.75	400	120	180
CBP 2	600x750	25	8	2.2	0.50	0.75	500	225	338
CBP 3	700x860	25	10.5	3	0.50	0.75	600	361	541
CBP 5	910x1120	25	18.7	5	0.50	0.75	760	774	1161

For all CBP type liftbags : Working pressure (bar) = 0.5 / Test pressure (bar) = 0.75 / Safety factor > 3



Stackable for greater lift height



Undercarriage cleaning



To lift a vehicle to change a tire



Cylindrical

PRONAL Cylindrical Lifting Bags are used for lifting loads, machinery or vehicles in any working sector.

Due to its design, CLCs offer a significantly higher lifting height than conventional lifting bags.

ADVANTAGES

- Lift height up to 1000 mm
- Can be used on any type of ground
- Lifting of loads up to 12 tons
- Medium pressure (1 bar)

REF.	CODE	DIMENSIONS (mm)	THICKNESS (mm)	WEIGHT (kg)	MAX LIFT CAPACITY (T)	MAX LIFTING HEIGHT (mm)	AIR CAPACITY (l)
3T	112370	610	50	2 - 2.5	2.98	430	266
5T	112371	760	50	3.5 - 4	4.63	590	570
7T	112372	910	70	6 - 6.5	6.63	610	840
12T	112373	1220	100	12 - 13	11.92	1000	2475

For all CLC models : Working pressure (bar) = 1 | Pressure test (bar) = 1 | Bursting pressure > 3.5



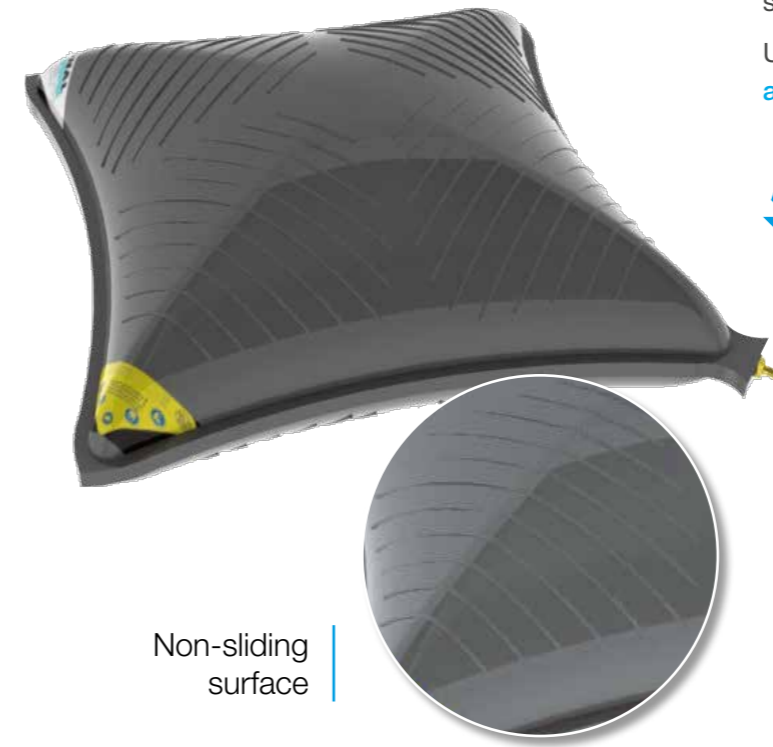
Moving or holding of automotive parts



Emergency lifting - civil defense -



Mould displacement - Steel industry -



Non-sliding surface

Due to how lightweight and thin they are, PRONAL high-pressure lifting bag can be used in numerous fields, such as the construction industry...

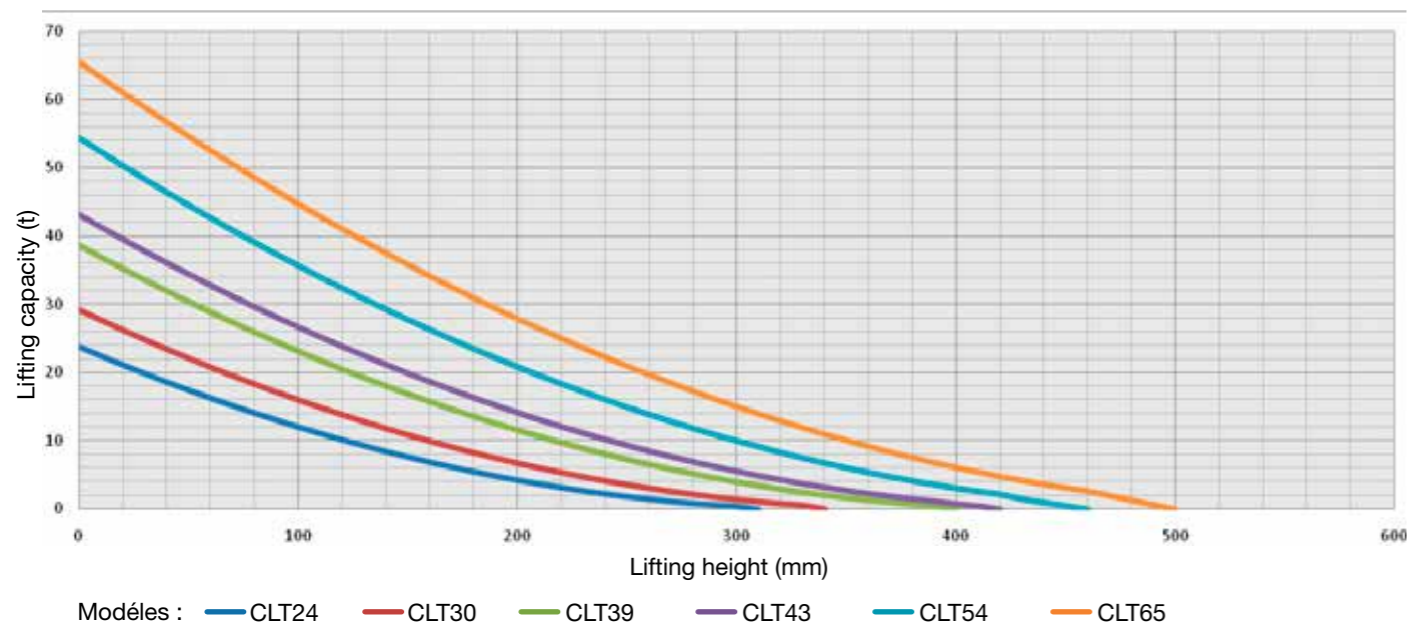
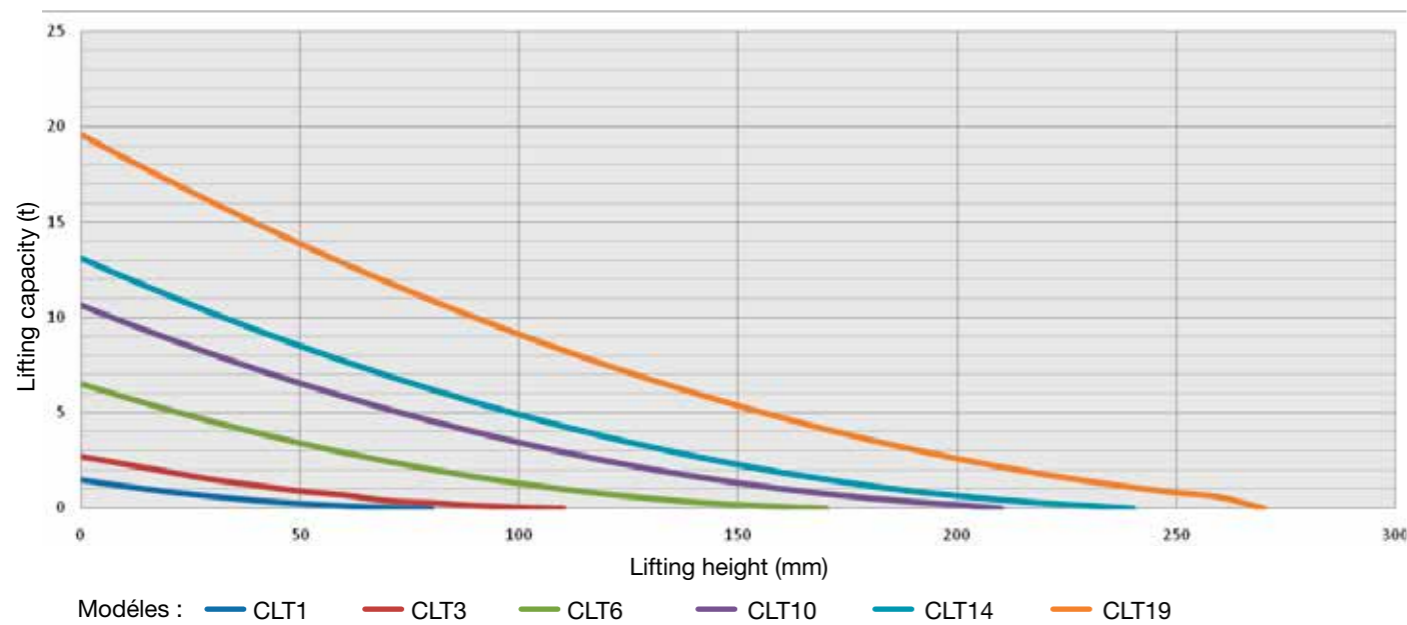
Unlike the hydraulic jack, they have a very small footprint at rest.

ADVANTAGES

- Lift loads of up to 65 tons
- Lifting Height of up to 500 mm
- Inflatable on unstable soil
- Working pressure of 8 bar

REF.	CODE	DIMENSIONS (mm)	THICKNESS (mm)	WEIGHT (kg)	MAX LIFT CAPACITY (T)	MAX LIFT HEIGHT (mm)	AIR CAPACITY (l)
CLT 1	058156	150x150	25	0.6	1	90	5
CLT 3	058157	200x200	25	1	3	115	12
CLT 6	058158	300x300	25	3	6	175	41
CLT 10	058159	380x380	25	4	10	220	84
CLT 14	058160	420x420	25	5	14	245	113
CLT 19	058161	510x510	25	8	19	295	203
CLT 24	058162	560x560	25	9	24	320	269
CLT 24L	058163	1000x320	25	9	24	215	227
CLT 30	058164	620x620	25	10	30	345	365
CLT 43	058165	750x750	25	15	43	410	365
CLT 54	058166	840x840	25	19	54	465	908
CLT 65	058167	920x920	25	22	65	515	1190

For all CLT models : Working pressure (bar) = 8 | Pressure test (bar) = 12 | Bursting pressure > 4



Thin and compact, PRONAL's Platform-Lifting Bags are used to effortlessly lift heavy horizontal objects.
Securely stackable by three, they offer a 500 mm sought-after lifting height in several fields of activity.

ADVANTAGES

- Operate in conjunction with PRONAL control systems
- Up to 10 bar inflation
- Stackable by three
- Flat top and bottom

REF.	CODE	DIMENSIONS (mm)	THICKNESS (mm)	WEIGHT (kg)	MAX LIFT CAPACITY (T)	MAX LIFTING HEIGHT (mm)	AIR CAPACITY (l)
CPF 30/33	112929	560x560	25	11	31.4	170	32
CPF 38/42	111957	620x620	25	12	38.4	170	42
CPF 54/60	112930	750x750	25	18	56.3	170	68
CPF 68/74	112931	840x840	25	22	70.6	170	90
CPF 81/89	112932	920x920	25	26	84.6	170	112

For all CPF models : Working pressure (bar) = 10 | Pressure test (bar) = 12 | Bursting pressure > 4



Lifting for track maintenance
- Construction Machinery -



Lifting and leveling of pipelines
- Construction -



Lifting a forklift
- Maintenance -














Stackable by three for a higher stroke



Lifting of blocks Stone, extrication
- Civil Protection -



Intervention on forklift truck
Maintenance - Industry

	REF.	DESIGNATION	CLC	CLT	CPF
	67752	"Joystick" Deadman controller, plastic housing, 2 outlets 1/4", 10 bar			✓
	66908	"Joystick" Deadman controller, plastic housing, 2 outlets 1/4", 8 bar		✓	
	67753	"Joystick" Deadman controller, plastic housing, 2 outlets 1/4", 1 bar	✓		
	67754	"Joystick" Deadman controller, plastic housing, 3 outlets 1/4", 10 bar			✓
	67755	"Joystick" Deadman controller, plastic housing, 3 outlets 1/4", 8 bar		✓	
	67756	"Joystick" Deadman controller, plastic housing, 3 outlets 1/4", 1 bar	✓		
	67759	"Push button" Deadman controller, aluminium housing, 1 outlet 1/4", 10 bar			✓
	66907	"Push button" Deadman controller, aluminium housing, 1 outlet 1/4", 8 bar		✓	
	67760	"Push button" Deadman controller, aluminium housing, 1 outlet 1/4", 1 bar	✓		
	67757	"Push button" Deadman controller, aluminium housing, 2 outlets 1/4", 10 bar			✓
	66906	"Push button" Deadman controller, aluminium housing, 2 outlets 1/4", 8 bar		✓	
	67758	"Push button" Deadman controller, aluminium housing, 2 outlets 1/4", 1 bar	✓		
	67761	"Simplified" controller, 1 outlet 1/4", 10 bar			✓
	67192	"Simplified" controller, 1 outlet 1/4", 8 bar		✓	
	67762	"Simplified" controller, 1 outlet 1/4", 1 bar	✓		
	67763	"Simplified" controller, 2 outlets 1/4", 10 bar			✓
	67193	"Simplified" controller, 2 outlets 1/4", 8 bar		✓	
	67764	"Simplified" controller, 2 outlets 1/4", 1 bar	✓		
	67180	Inflation hose, Red 5 m Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	66902	Inflation hose, Red 10 m Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	67179	Inflation hose, Blue 5 m Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	66901	Inflation hose, Blue 10 m Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	67751	Inflation hose, Yellow 5 m Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	67750	Inflation hose, Yellow 10 m Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	67187	Adaptor Claw Universal coupling	✓	✓	✓
	67188	Adaptor "Tête de chat" Universal coupling	✓	✓	✓
	66904	Shut off unit Universal coupler 1/4" + nipple 1/4"	✓	✓	✓
	66905	Pressure regulator 200 bar / 10 bar	✓	✓	✓

COMPENSATORS



Pronal compensators have been developed for the purpose of separating hydraulic fluids, absorb volume variations or for shock dampening.

➤ **PERFECT**
air tightness

➤ **QUICK**
installation

➤ **LONG**
product life





OVERVIEW

Compensators are normally installed inside hydraulic tanks **tanks and do not require any power source**. They compensate the change in volume of oil or other fluids by inflating or filling. The fluid does not come in contact with the atmosphere and **is protected from contamination**.

They can also be used for shock dampening.

ADVANTAGES



Easy & quick to deploy



Large compatibility with hydrocarbons



Very high resistant



Custom composition



Perfect sealing

APPLICATIONS

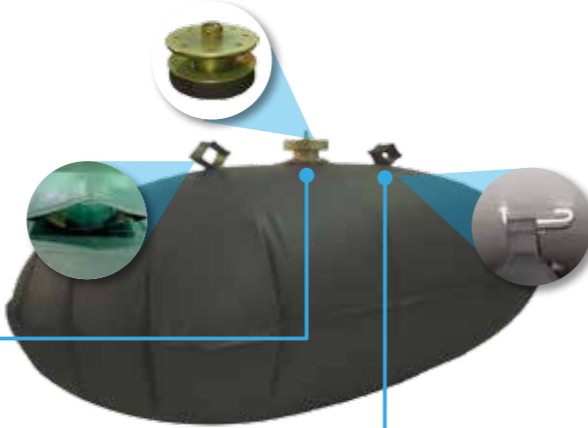
Compensators are used for :

- Compensate volume changes in fluids
- Separate gases or fluids
- Sealing of hydraulic circuits
- Shock dampening



STP

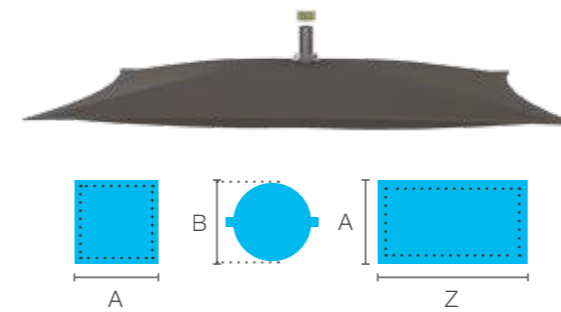
The **separators** are designed to **protect the oil in electric power transformers**. They provide separation of air from transformer oil inside the transformer oil tanks. Due to high mechanical strength, the STP separators are **high performance hydraulic compensators**.



(large selection of models) **FLANGE**
For hose connection

ATTACHMENT LUGS
For securing the separator inside the conservator tank

EXP



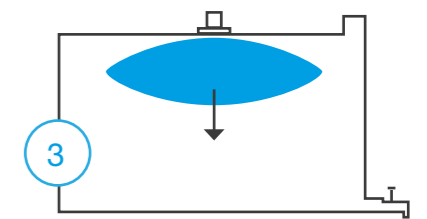
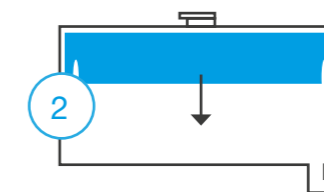
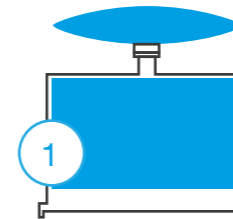
The **EXP compensators** from Pronal allow it possible to **protect hydraulic fluids**. These bladders compensate volume changes in fluids.

This «additional tank» can be **installed in the interior or the exterior of the tank**.

MAXIMUM VOLUME L	EXP. CYLINDRI.	EXP. SQUARE		EXP. RECTANGULAR (SHORT)			EXP. RECTANGULAR (LONG)		
	mm	mm		mm			mm		
	B	A	B	Z	A	B	Z	A	B
1	Ø250	240	128	260	190	96	400	140	64
4	Ø368	320	178	400	280	153	490	240	127
10	Ø465	420	242	520	360	204	760	280	153
15	Ø520	480	280	580	400	229	860	320	178
20	Ø580	520	306	640	440	255	920	340	191
25	Ø640	560	331	700	460	267	980	360	204
30	Ø664	600	357	720	500	293	1060	380	217
40	Ø706	660	395	800	540	318	1160	420	242
50	Ø784	700	420	840	580	344	1260	440	255
60	Ø810	740	446	900	620	369	1360	460	267
70	Ø850	780	471	940	640	382	1460	480	280

Other shapes available

INSTALLATION



Protection of motor oil in a gate lock
- Hydraulics -



Protection of transformer oil
- Electric -



Absorbing of pressure shock wave in a power plant
- Industrial -



OVERVIEW

Pneumatic grippers are designed for **palletizing and depalletizing of bottles of different shapes.**

All models are available in two standard lengths.

ADVANTAGES



Low thickness when deflated



Can adjust to different surfaces



Even pressure distribution



Quick and simple installation

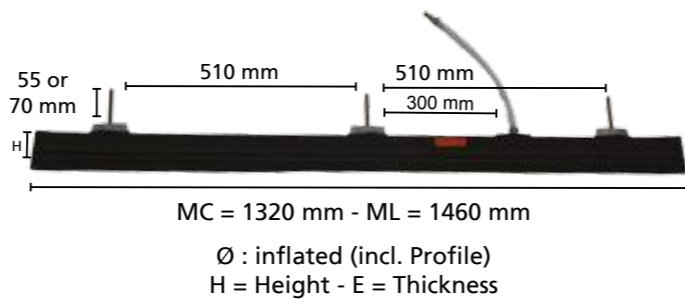
STANDARD RANGE

Our standard range is available in two lengths: 1320 and 1460mm. The size, accessories, materials can be tailored to specific requirements.

Ref.	Ø (mm)	H (mm)	E (mm)
MC 20	20	36	7.5
MC 27	27	48	7.5
MC 33	33	55	7.5
MC 37	37	63	7.5
MC 47	47	79	7.5
MC 57	57	93	7.5
MC 67	67	108	8.5
MC 80	80	129	8.5
MC 90	90	146	8.5
MC 100	100	162	8.5



TECHNICAL DATA



SPECIAL RANGE (Long 1320 ou 1460 mm)

1. Short grip

2. Semi inflated



Flexible tanks

- Wastewater and Industrial waste
- Process water
- Fire fighting water
- Buffer storage



Pneumatic plugs

- Temporary plugging
- Pipe cleaning
- Pipe repair
- Stopping of leaks



Environment and human protection

- Inflatable trench shoring
- Spill prevention
- Flood barriers



DIPRAX
PROYECTOS Y
AUTOMATISMOS
GENERALES



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