airtec
Pneumatic Engineering BV

VMECA

Vacuum Auto - Locking system

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Vacuum Auto Locking system

Introduction

In the automobile industries today, vacuum is widely used for a pick and place applications on automobile parts and finished products. Through this, many jigs and fixtures are made to be able to fit each sizes and shapes of the parts depending on the car model.

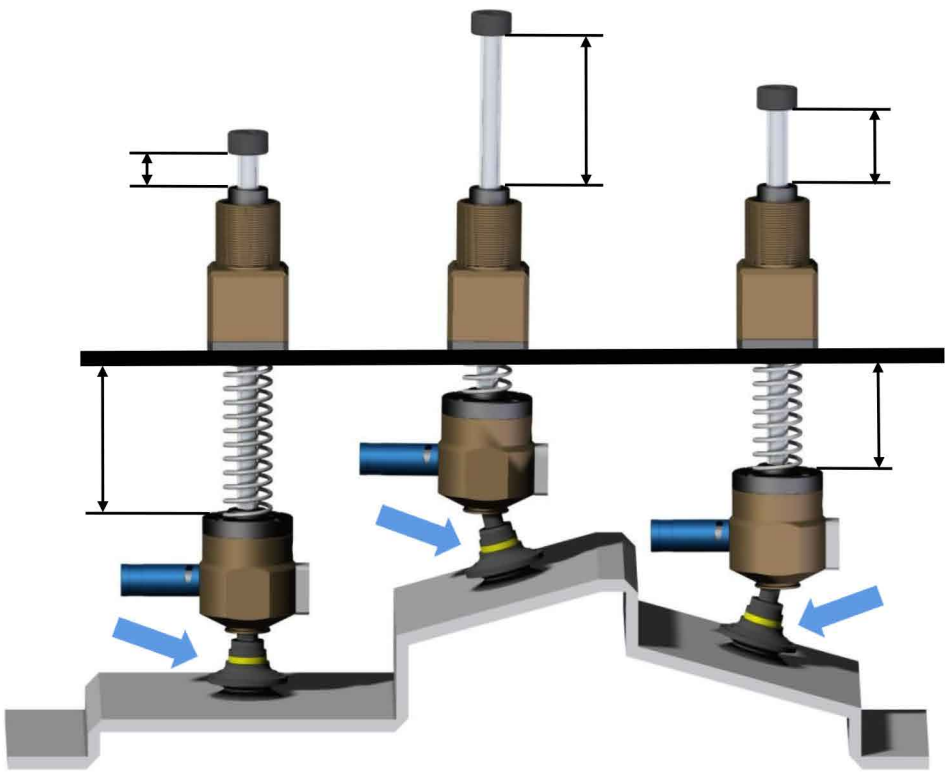
However, there are several problems that automobile manufacturers face when using these jigs/fixtures:

Storage space
Downtime when replacing jigs/fixtures
Increases dangers when changing jigs/fixtures
Decreased productivity

So, what is the solution to your problems?

Our answer to you is our VMECA VALOCK SYSTEM. The VALOCK is designed to cover the work of multiple jigs/fixtures to pick and place various different sizes, shapes, and products with just one setting. VALOCK is capable of locking position and angle of the handling product. With this feature, the VALOCK can solve these problems:

Requires less storage space
Less downtime – Jigs/fixtures doesn't need to be changes as frequently
Less danger - Jigs/fixtures doesn't need to be changes as frequently
Increased productivity



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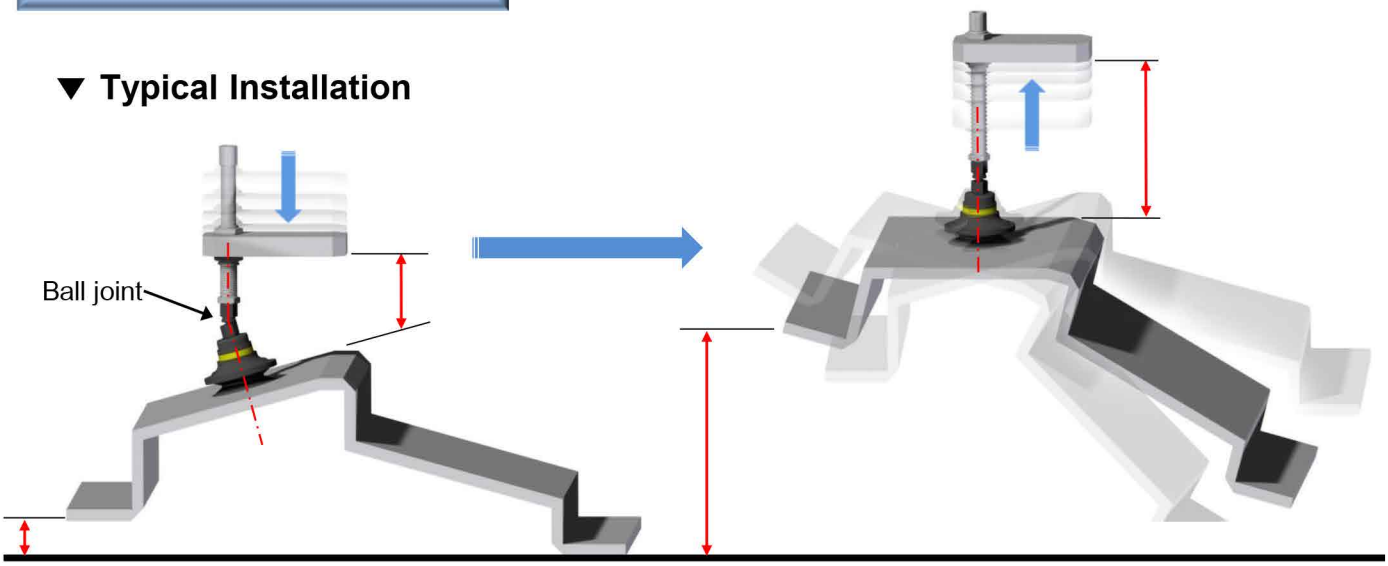
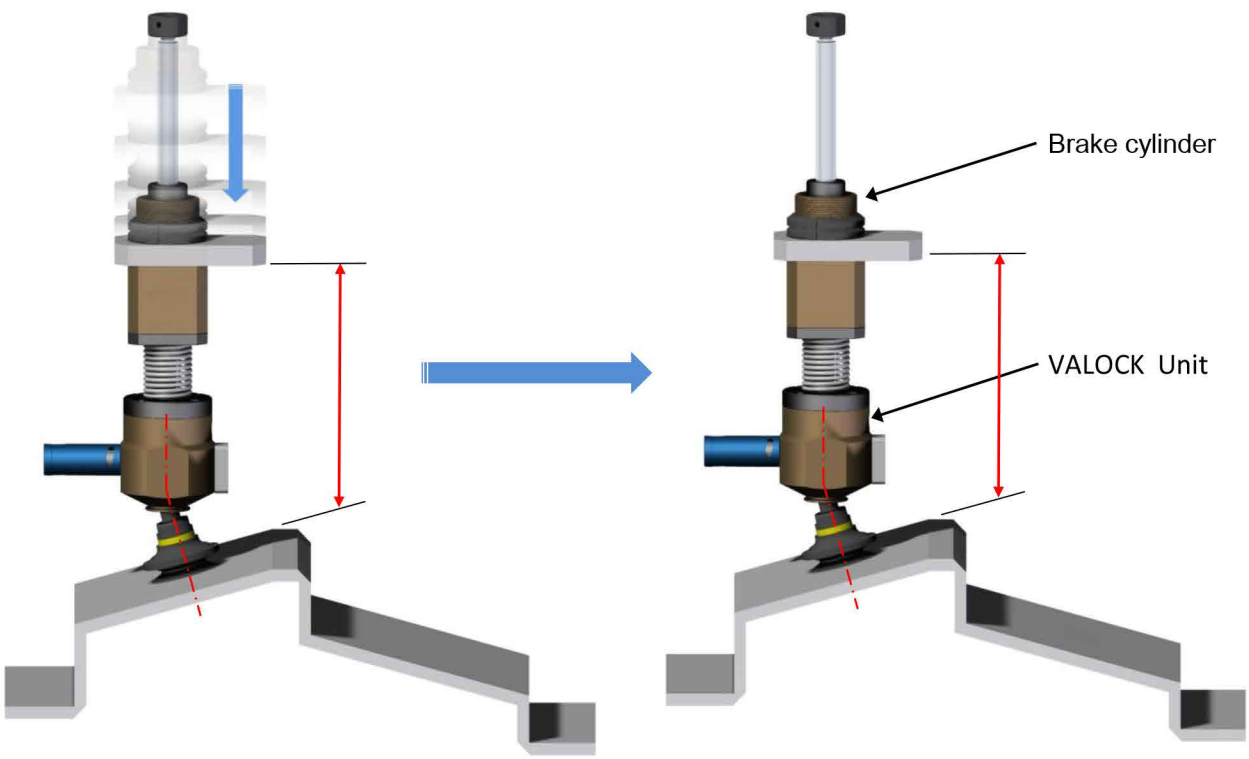
• Comparisons of Characteristics

▼ Typical Installation



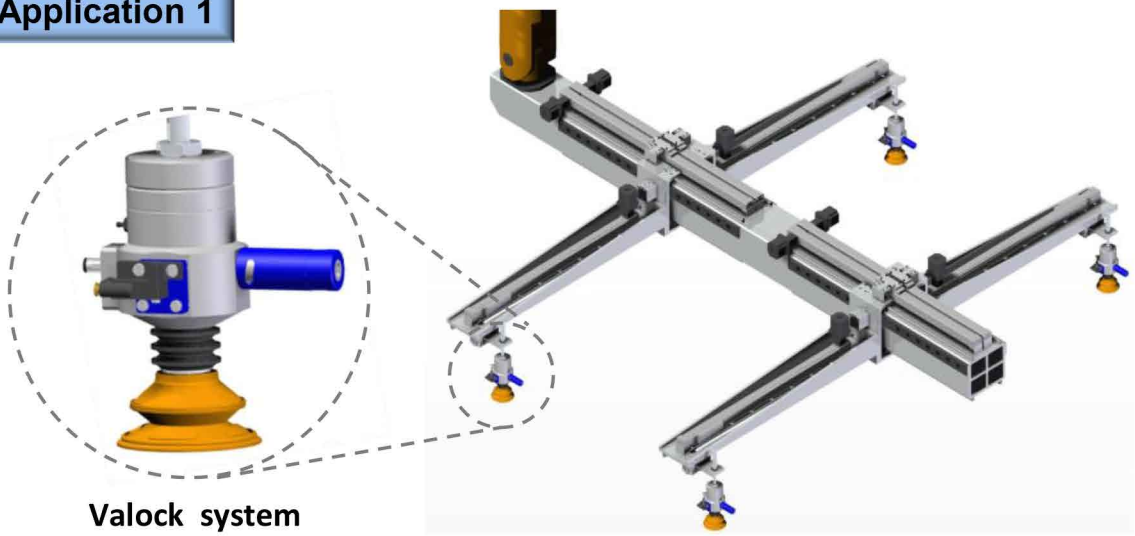
A ball joint is used in a typical installation which makes it prone to shaking easily and tilting to the heavier end while it is being transferred.
To solve this problem, many automobile industries makes special jigs using many level compensators, ball joints, and suction cups to fit the shape of the product.

▼ New solution



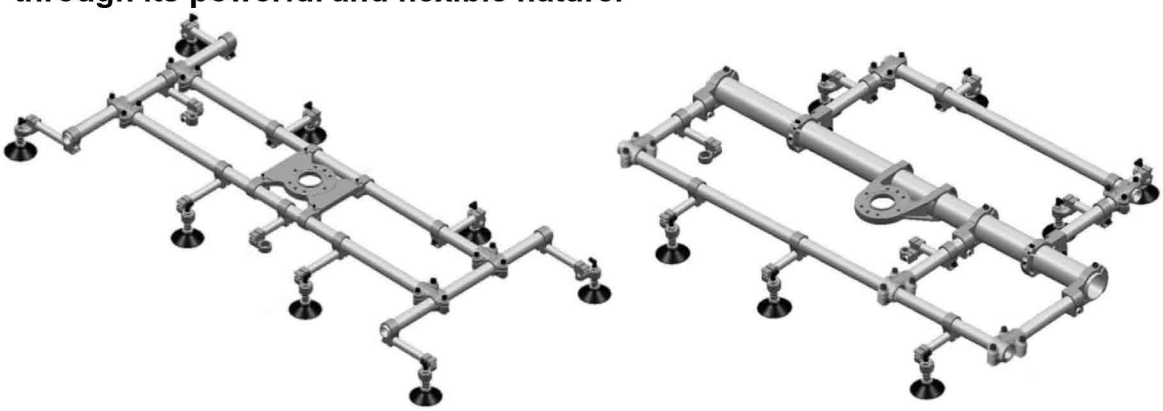
The VMECA VALOCK can automatically position and powerfully fix the handling the product in its original form when transferring the product of various different shapes and sizes. With this advantage the VMECA VALOCK eliminates the necessity of using multiple jigs/fixtures.

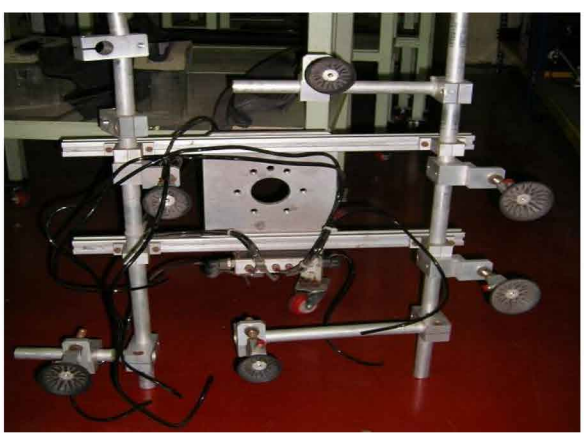
• Application 1

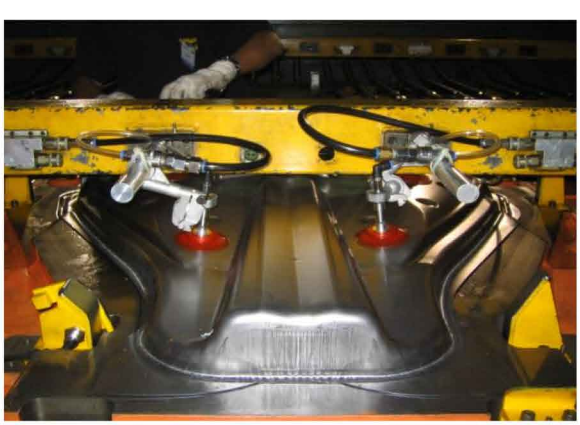


Valock system

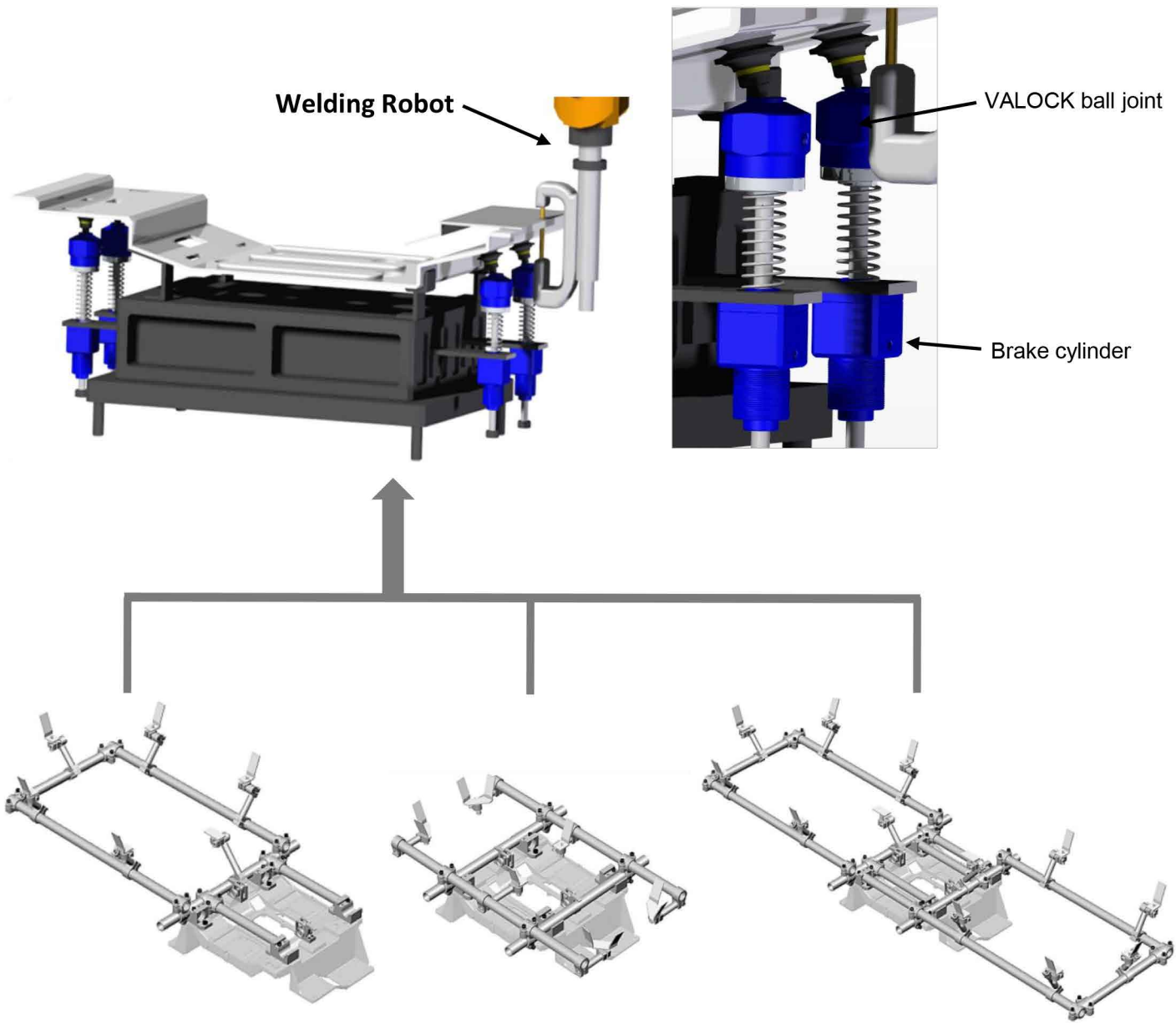
The VALOCK SYSTEM is excellent in reducing the numbers of jigs through its powerful and flexible nature.





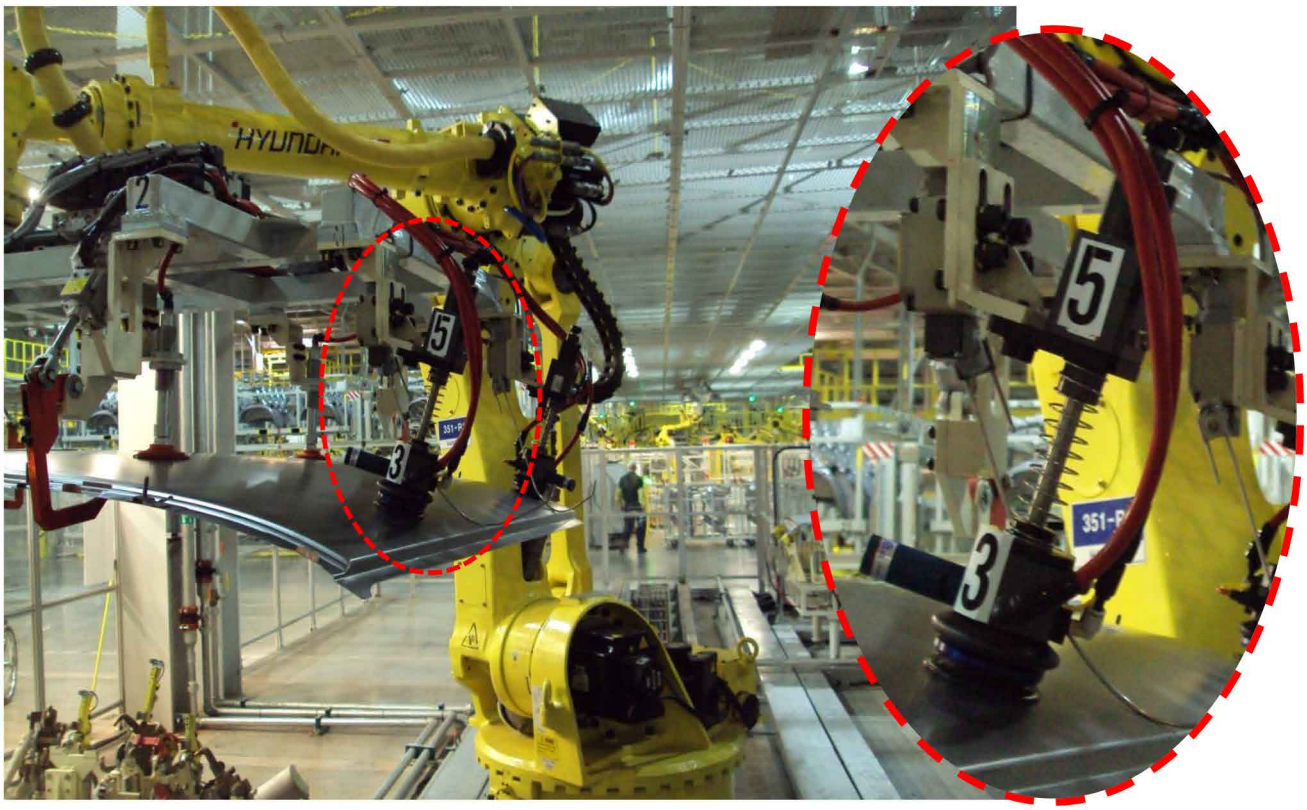


• Application 2

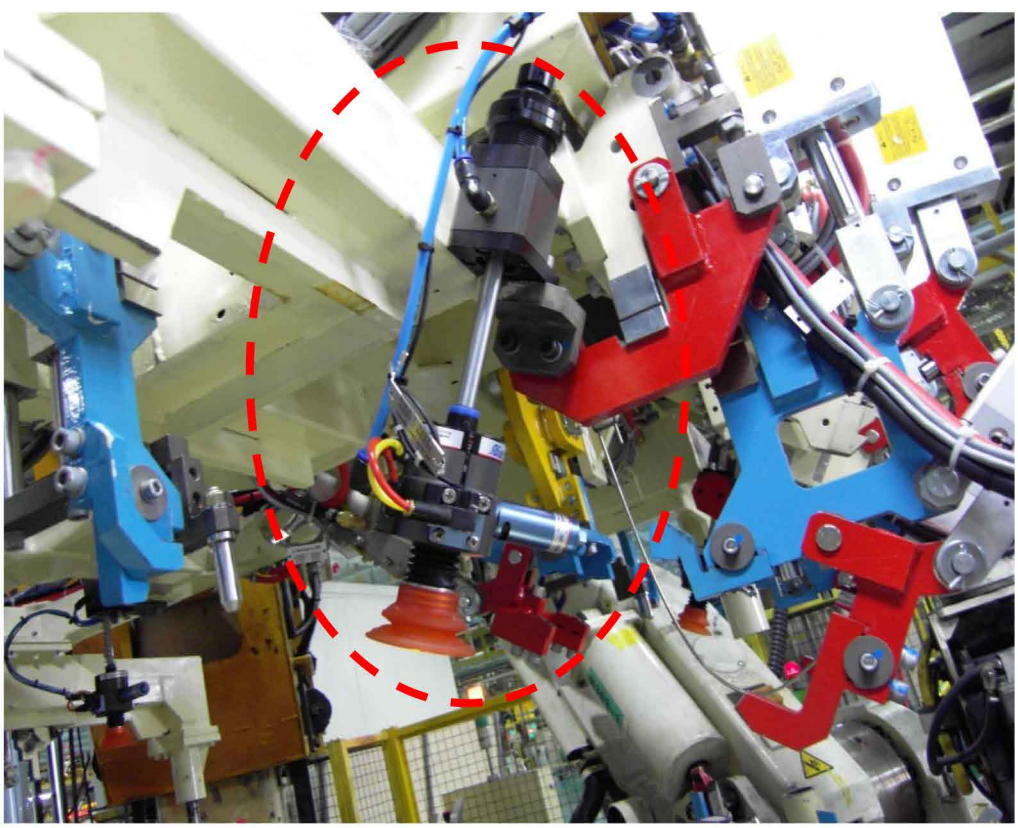


In a robot welding line, various clamping devices are used to fit the irregular shapes of the work piece. With all the advantages that the VMECA VALOCK SYSTEM offers, only one is necessary to powerfully fix and clamp the work piece.

• Application 3



▲ VALOCK System in Automobile industry



▲VALOCK System in Welding application

VL 40.. Series

Features

✓ Automatic flexible positioning which fixates and locks its positioning regardless of shape
(Elimination of multiple special jigs/fixtures reduces cost)

✓ Doesn't vibrate and move its positioning while product is being transferred

✓ Various shapes of products can be handled with one VALOCK SYSTEM

Advantage of VMECA VALOCK System

✓ Integrated with the VMECA Vacuum Cartridge Pump

✓ Quick response time

✓ Interlocking module – Automatically fixes and locks ball joint at -60kPa
(Doesn't require an additional locking control valve)

✓ Optimized suction cup design for panel/metal sheet handling

▲Integrated Vacuum Cartridge

▲ Interlocking Module

▲ Specialized suction cup

Order No.

VL 4060DF - M - SG - B408L - NC

① ② ③ ④ ⑤ ⑥

① Ball joint piston O.D.
- VL 40 - Ø40

② Suction Cup
- 60DF - Ø60, Feet inside, Deep type
- 70DF - Ø70, Feet inside, Deep type

③ Interlocking Module
- No mark - Not attached
- M - Included

☞ refer to page 11

④ Vacuum Sensor (Switch)
- No mark - Not included
- SG(P) - Solid state switch, 3-wire type with 1m length
- S(P) - Solid state switch, M8- 3Pin M8 male connector with 0.15m

※Remark : ① S..(P) → Output type : PNP open collector.
② VCM8 32 : M8-3Pin female connector only for S or S(P)

⑤ Brake cylinder
- B408L - Cylinder Locking Piston Ø40 Stroke 80mm

* contact VMECA for non-standard stroke.

⑥ Type of Brake cylinder
- NC - Normal Close Type

VL 40.. Series

Technical Data

• VALOCK's Ball-Joint

Model	VL 40..	Remark
Ball-Joint angle	±15° X 360°	
Ball-joint moment torque	30 kg·cm	at 7 bar
Supply air pressure	5 ~ 7 bar	
Minimum hose inner diameter	Ø4	
Supply Air Connection	M5	
Connection thread	PF 1/8"	Female
NET Weight (kg)	0.56 kg	Without brake cylinder and vacuum pad

• Vacuum Cartridge Pump of VALOCK SYSTEM

Model	VC 203S..	Remark
Supply air pressure	3 ~ 6 bar	Max. 7 bar
Max. vacuum level	- 90 kPa	at 3.1 bar
Air consumption	32 Nl/min	at 4 bar
Max. vacuum flow rate	85.8 Nl/min	at 4 bar

..B 408L - NC

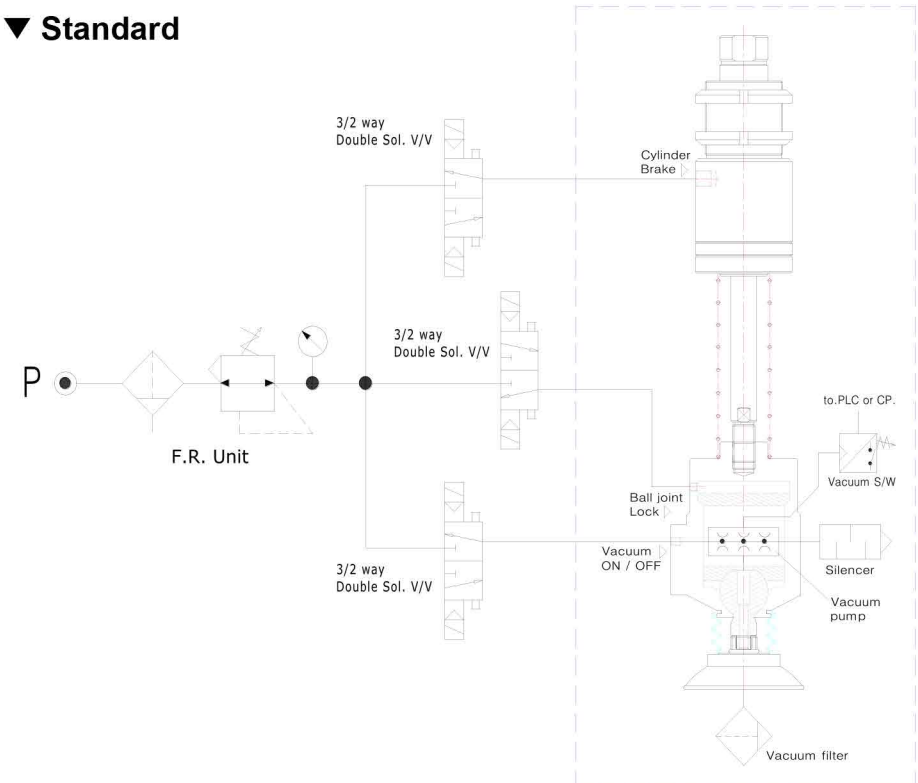
Technical Data

• Features of Brake cylinder

Model	..B 408L - NC	Remark
Cylinder locking piston diameter	Ø40	
Cylinder Stroke	80mm	contact VMECA for non-standard stroke
Fluid	Compressed air	
Supply air pressure	5 ~ 7 bar	
Min. hose inner diameter	Ø4	
Up-down brake force (N)	16 kgf	at 4 bar
Supply Air Connection	G 1/8"	
Cylinder load thread	G 1/8"	
NET Weight (kg)	0.8 kg	without VALOCK Unit

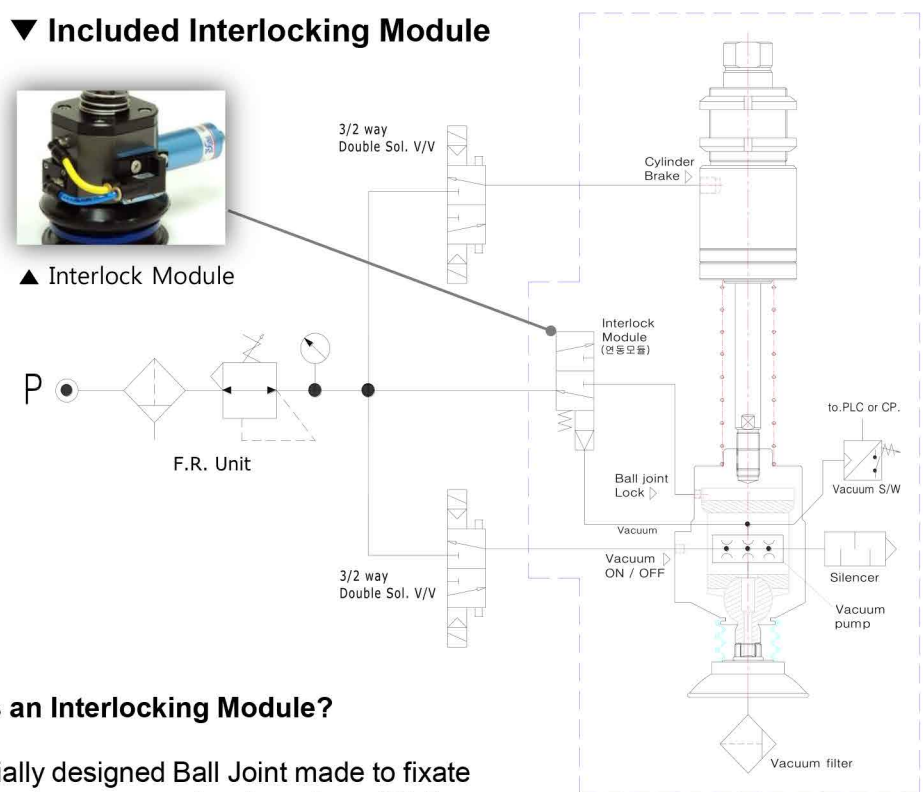
Circuit Diagram

▼ Standard



▼ Included Interlocking Module

▲ Interlock Module

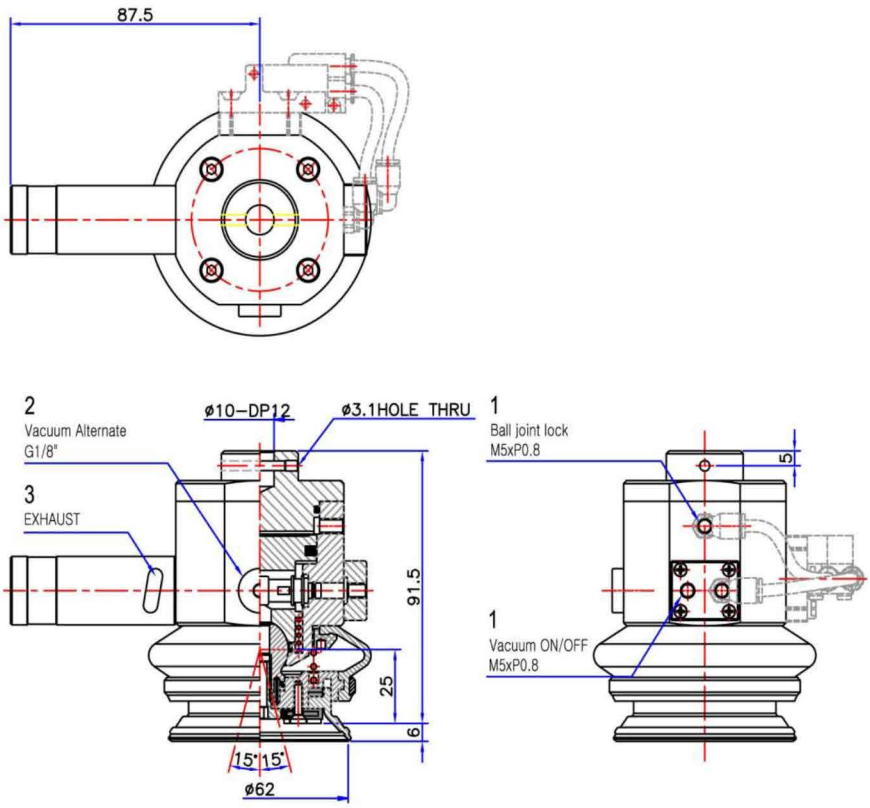


What is an Interlocking Module?

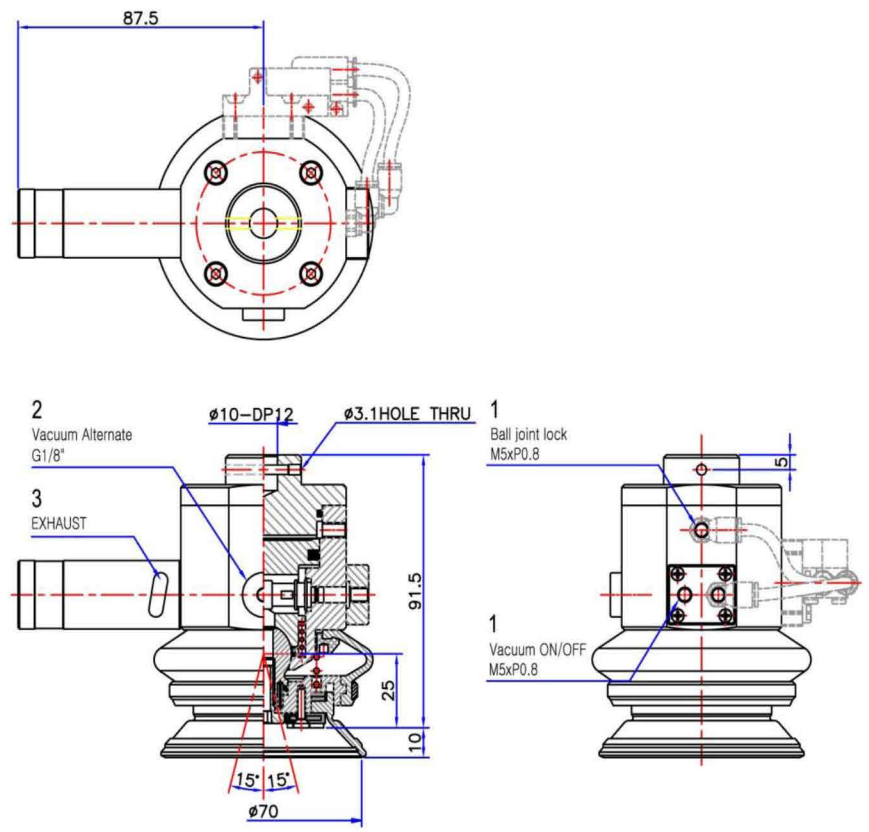
A specially designed Ball Joint made to fixate its angle when vacuum level reaches -60kPa automatically. This eliminates the necessity of mounting a vacuum on/off valve and Ball Joint control valve.

Dimension

▼ VL 4060DF..



▼ VL 4070DF..



Dimension

▼ .. B 408L - NC