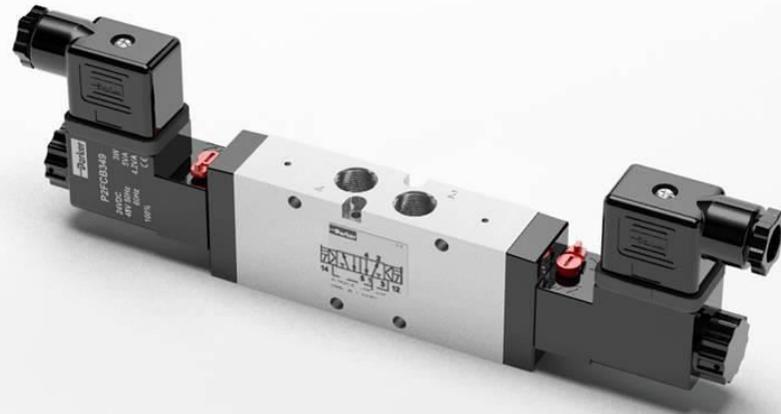


Viking Lite

Directional Control Valves

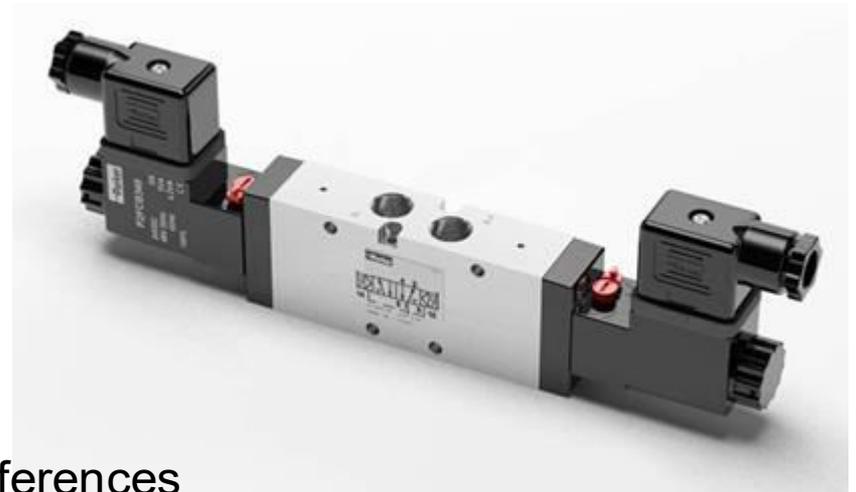
G1/8, G1/4 & G3/8 Body Ported



Viking Lite

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- Strategic rationale
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 - Options & accessories
 - Viking Lite & Xtreme – product differences
- Price & product positioning
- Launch
- Summary



Viking Lite

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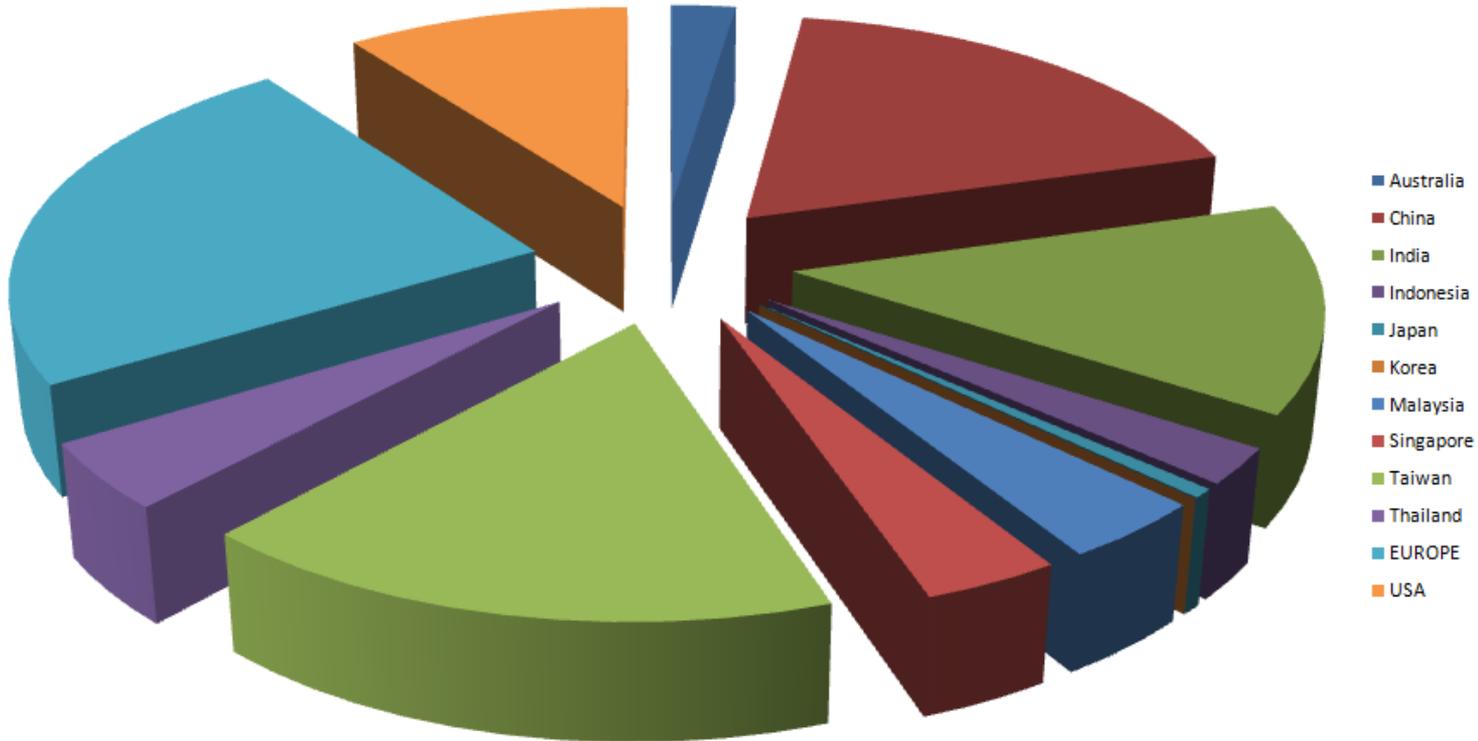
- **Strategic rationale**
- Product information
 - Overview
 - Specification
 - Design features
 - Options & accessories
 - Viking Lite & Xtreme – product differences
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Strategic Rationale

- To penetrate the global in-line valve market
 - \$100m addressable market
- Highly competitive product to address the in-line valve market in all regions of the world
- Standard specification, standard temperatures and pressures
- Complete in-line valve family complimenting existing Viking Xtreme
- The Viking Lite is about taking market share

Global Market Penetration

FY12 VOLUME BY COUNTRY



Viking Lite

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Viking Lite ...

robust, versatile high performance
with long service life

- High performance
- Compact installation dimensions
- Large flow capacity
- Short change-over times
- Low change-over pressure
- Operating pressures up to 10 bar
- Temperature Range -10°C to +50°C.
- Viking Lite range
 - P2LAZ, G1/8 ports
 - P2LBZ, G1/4 ports
 - P2LCZ, G3/8 ports



Viking Lite

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General Specifications

Port Sizes	1/8" (type A) , 1/4" (type B), 3/8" (type C)
Port Threads	BSPP / NPT
Valve Functions	3/2 Solenoid-Solenoid & Solenoid-Spring 5/2 Solenoid-Solenoid & Solenoid-Spring 5/3 Solenoid-Solenoid
Manifold Mount	Yes
External Pilot Ports	No
Body Colour	Natural Anodizing
Operating Temperature	-10 to +50 °C
Maximum Pressure	10 bar
Life	> 10 million cycles
Solenoids	22mm – various voltages
Manual Override	Flush locking

Material Specifications

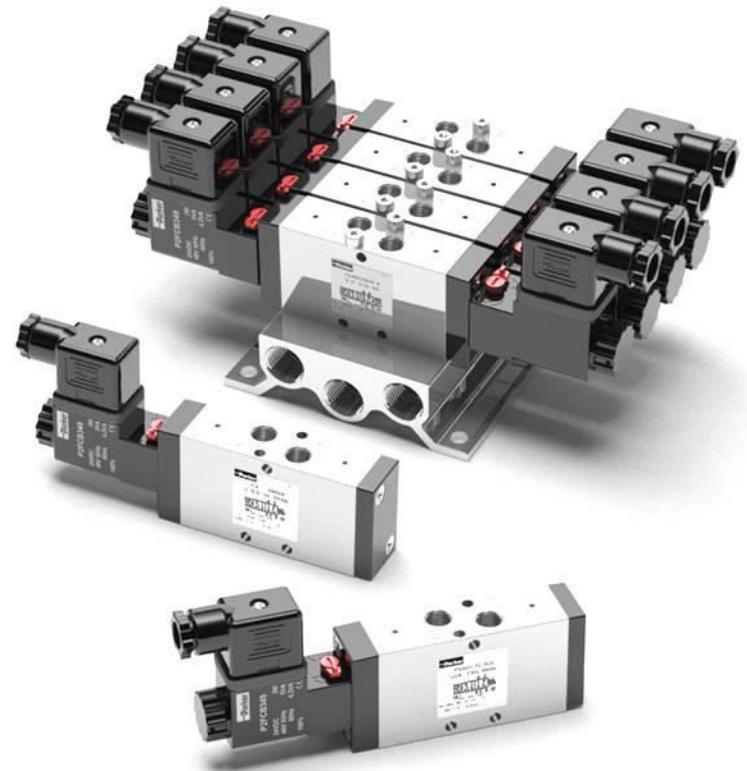
Material Specification

Valve

- Valve body - Anodised aluminium
- End covers - Anodised aluminium
- Spool - Aluminium
- Piston - Acetal plastic/ Anodised aluminium
- End cover sealings - Nitrile rubber
- End cover screws - Zinc plated steel
- Springs - Stainless steel
- Mounting screws for solenoid - Stainless steel
- Spool seals - Nitrile

Accessories

- Manifold bar - Anodised aluminium
- Pressure bar - Anodised aluminium



Viking Lite

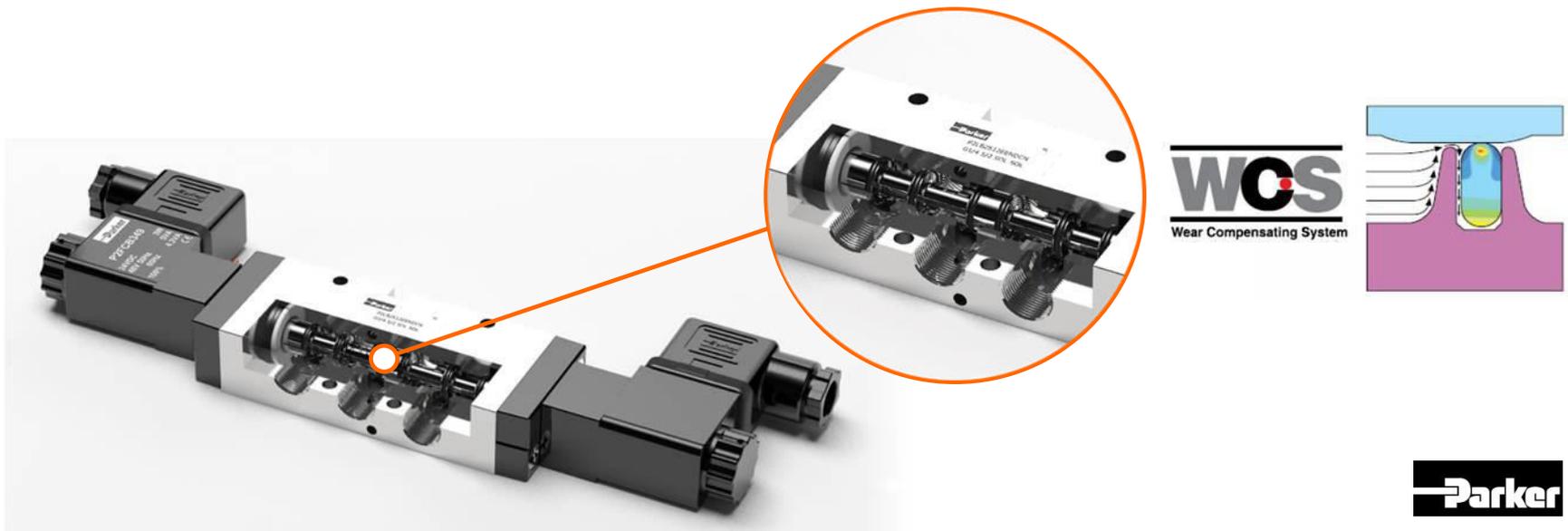
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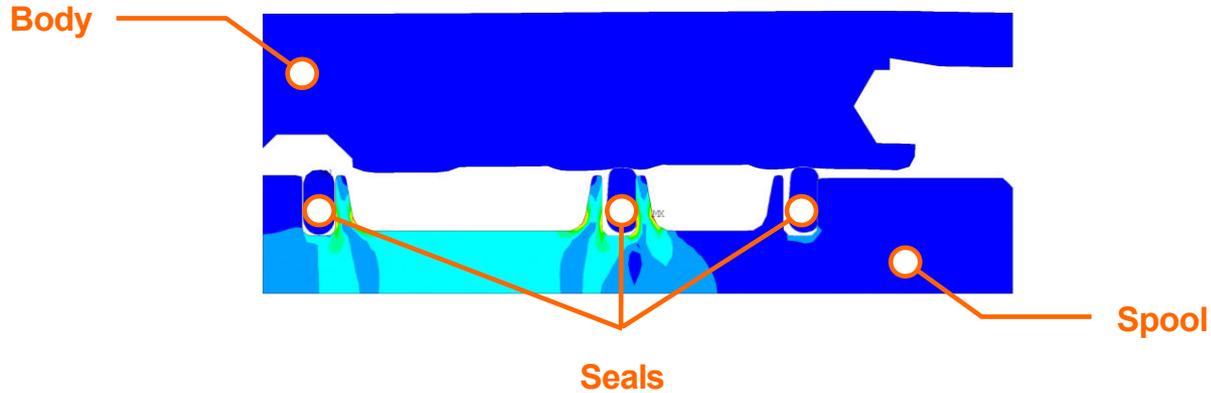
Design Features

Wear Compensating System

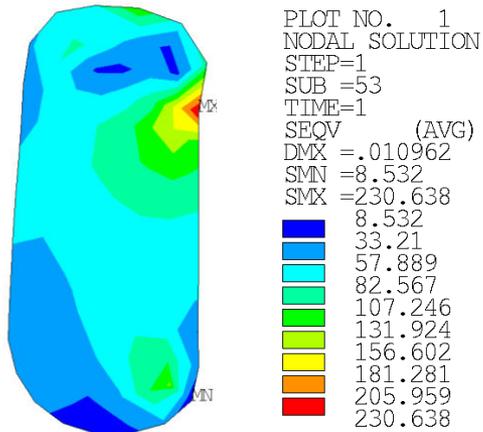
- Viking Lite valves are fitted with dynamic bi-directional spool seals suitable for pressures up to 10 bar, in ambient temperatures -10°C to $+50^{\circ}\text{C}$. Under pressure radial expansion of the seal occurs to maintain sealing contact with the valve bore.
- This sealing method reduces friction, gives lower pilot pressures, providing fast response and less wear. Valves do not require lubrication in operation but they can also be installed in systems that are lubricated.



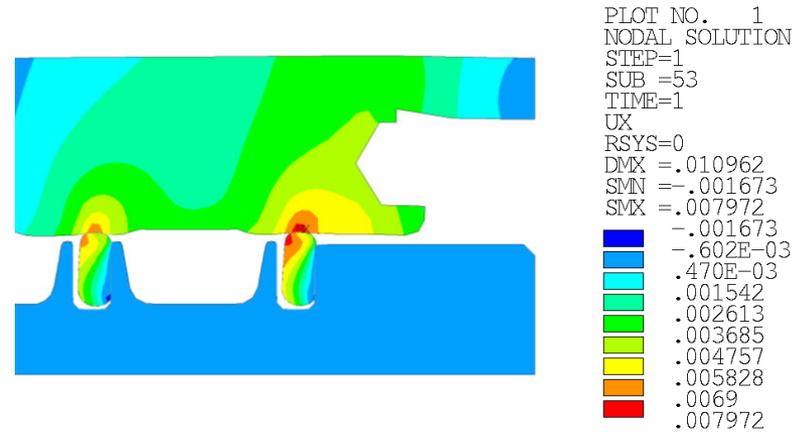
Designed Using FEA Techniques



Von Mises Stress

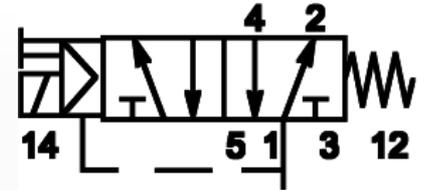
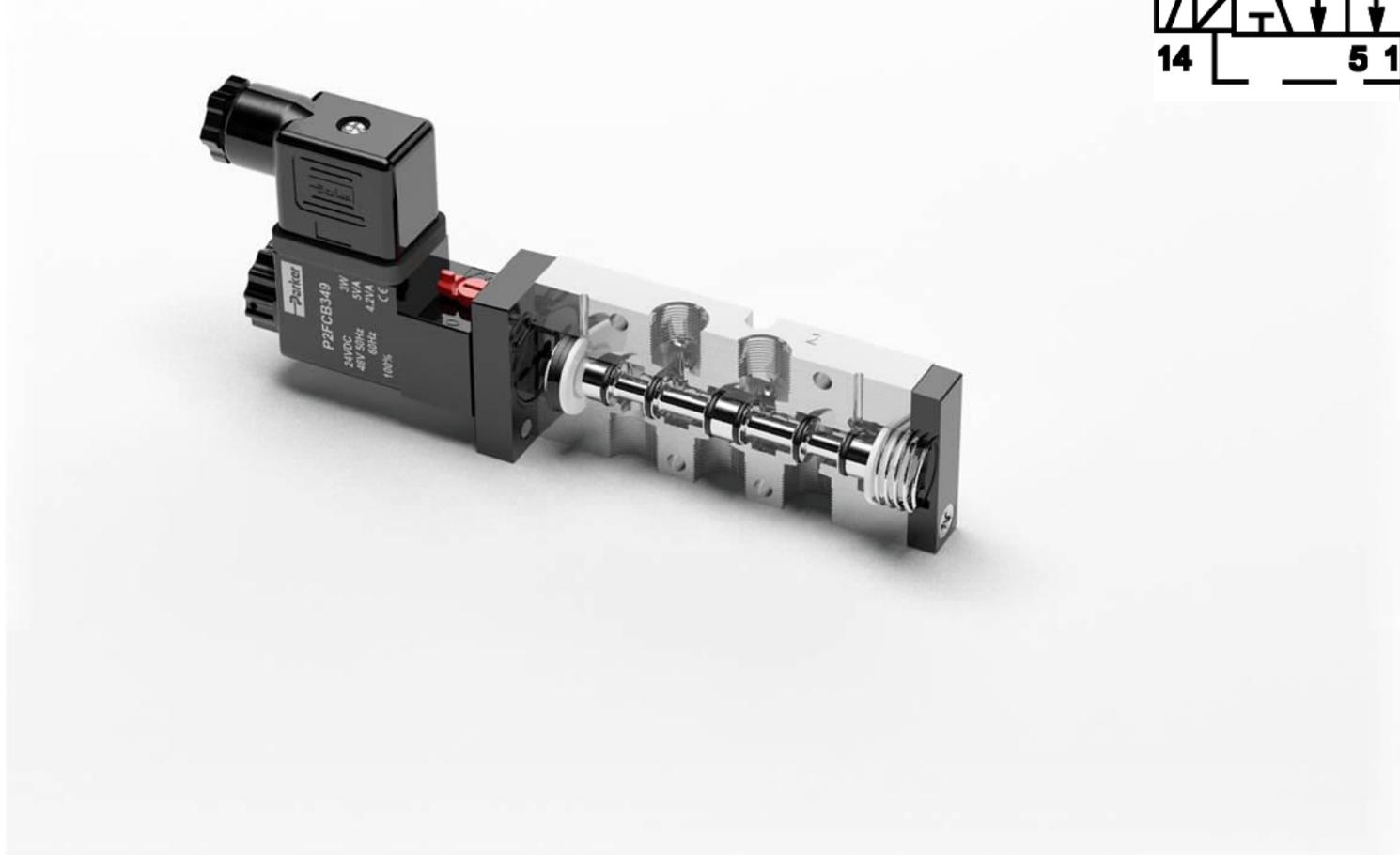


Deflection



Viking Lite

- Valve Operation



Viking Lite

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Part Number Master

Part Number	Description
P2LAZ311EENDCN	G1/8 3/2 SOL-SOL
P2LAZ311ESNDCN	G1/8 3/2 SOL-SPR
P2LAZ511EENDCN	G1/8 5/2 SOL-SOL
P2LAZ511ESNDCN	G1/8 5/2 SOL-SPR
P2LAZ611EENDCN	G1/8 5/3 SOL-SOL PHELD
P2LAZ711EENDCN	G1/8 5/3 SOL-SOL PAPP
P2LAZ811EENDCN	G1/8 5/3 SOL-SOL PEXH
P2LBZ312EENDCN	G1/4 3/2 SOL-SOL
P2LBZ312ESNDCN	G1/4 3/2 SOL-SPR
P2LBZ512EENDCN	G1/4 5/2 SOL-SOL
P2LBZ512ESNDCN	G1/4 5/2 SOL-SPR
P2LBZ612EENDCN	G1/4 5/3 SOL-SOL PHELD
P2LBZ712EENDCN	G1/4 5/3 SOL-SOL PAPP
P2LBZ812EENDCN	G1/4 5/3 SOL-SOL PEXH
P2LCZ313EENDCN	G3/8 3/2 SOL-SOL
P2LCZ313ESNDCN	G3/8 3/2 SOL-SPR
P2LCZ513EENDCN	G3/8 5/2 SOL-SOL
P2LCZ513ESNDCN	G3/8 5/2 SOL-SPR
P2LCZ613EENDCN	G3/8 5/3 SOL-SOL PHELD
P2LCZ713EENDCN	G3/8 5/3 SOL-SOL PAPP
P2LCZ813EENDCN	G3/8 5/3 SOL-SOL PEXH

Part Number	Description
P2LAZ311EENDCB49	G1/8 3/2 SOL-SOL 24VDC
P2LAZ311ESNDCB49	G1/8 3/2 SOL-SPR 24VDC
P2LAZ511EENDCB49	G1/8 5/2 SOL-SOL 24VDC
P2LAZ511ESNDCB49	G1/8 5/2 SOL-SPR 24VDC
P2LAZ611EENDCB49	G1/8 5/3 SOL-SOL PHELD 24VDC
P2LAZ711EENDCB49	G1/8 5/3 SOL-SOL PAPP 24VDC
P2LAZ811EENDCB49	G1/8 5/3 SOL-SOL PEXH 24VDC
P2LBZ312EENDCB49	G1/4 3/2 SOL-SOL 24VDC
P2LBZ312ESNDCB49	G1/4 3/2 SOL-SPR 24VDC
P2LBZ512EENDCB49	G1/4 5/2 SOL-SOL 24VDC
P2LBZ512ESNDCB49	G1/4 5/2 SOL-SPR 24VDC
P2LBZ612EENDCB49	G1/4 5/3 SOL-SOL PHELD 24VDC
P2LBZ712EENDCB49	G1/4 5/3 SOL-SOL PAPP 24VDC
P2LBZ812EENDCB49	G1/4 5/3 SOL-SOL PEXH 24VDC
P2LCZ313EENDCB49	G3/8 3/2 SOL-SOL 24VDC
P2LCZ313ESNDCB49	G3/8 3/2 SOL-SPR 24VDC
P2LCZ513EENDCB49	G3/8 5/2 SOL-SOL 24VDC
P2LCZ513ESNDCB49	G3/8 5/2 SOL-SPR 24VDC
P2LCZ613EENDCB49	G3/8 5/3 SOL-SOL PHELD 24VDC
P2LCZ713EENDCB49	G3/8 5/3 SOL-SOL PAPP 24VDC
P2LCZ813EENDCB49	G3/8 5/3 SOL-SOL PEXH 24VDC

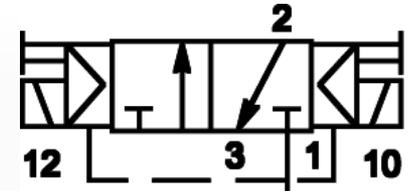
Part Number Master

Part Number	Description
P2LAZ311PP	G1/8 3/2 AIR-AIR
P2LAZ311PS	G1/8 3/2 AIR-SPR
P2LAZ511PP	G1/8 5/2 AIR-AIR
P2LAZ511PS	G1/8 5/2 AIR-SPR
P2LBZ312PP	G1/4 3/2 AIR-AIR
P2LBZ312PS	G1/4 3/2 AIR-SPR
P2LBZ512PP	G1/4 5/2 AIR-AIR
P2LBZ512PS	G1/4 5/2 AIR-SPR
P2LCZ313PP	G3/8 3/2 AIR-AIR
P2LCZ313PS	G3/8 3/2 AIR-SPR
P2LCZ513PP	G3/8 5/2 AIR-AIR
P2LCZ513PS	G3/8 5/2 AIR-SPR



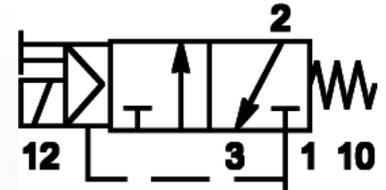
Viking Lite

- P2LAZ 3/2 valves with G1/8 ports



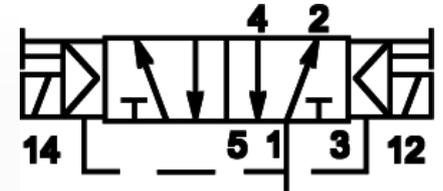
Viking Lite

- P2LAZ 3/2 valves with G1/8 ports



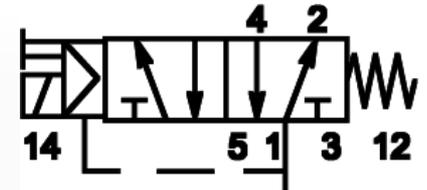
Viking Lite

- P2LAZ 5/2 valves with G1/8 ports



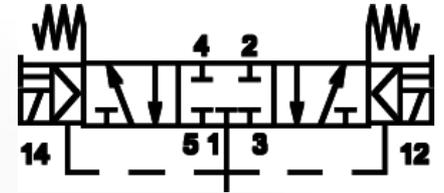
Viking Lite

- P2LAZ 5/2 valves with G1/8 ports



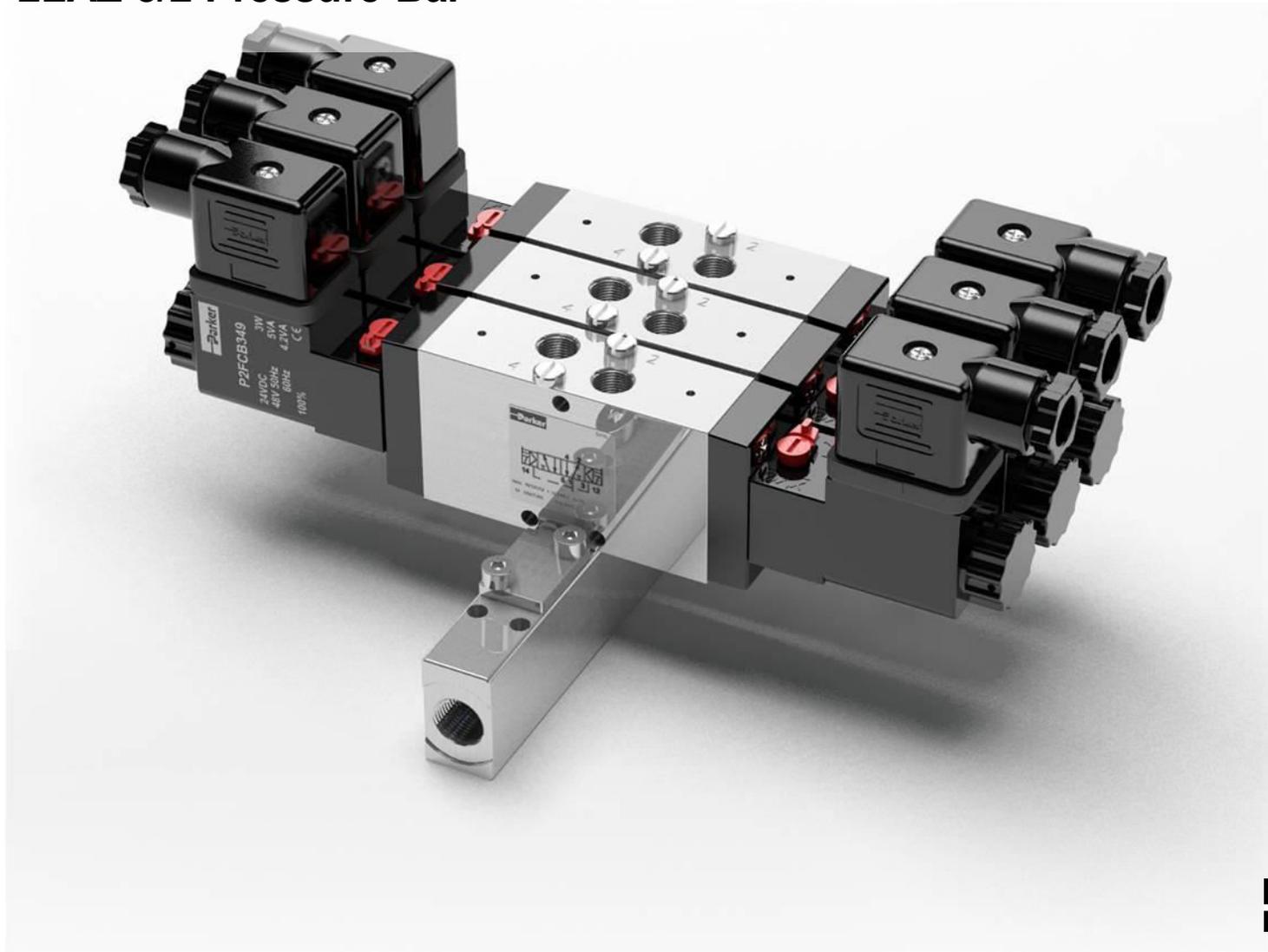
Viking Lite

- P2LAZ 5/3 valves with G1/8 ports



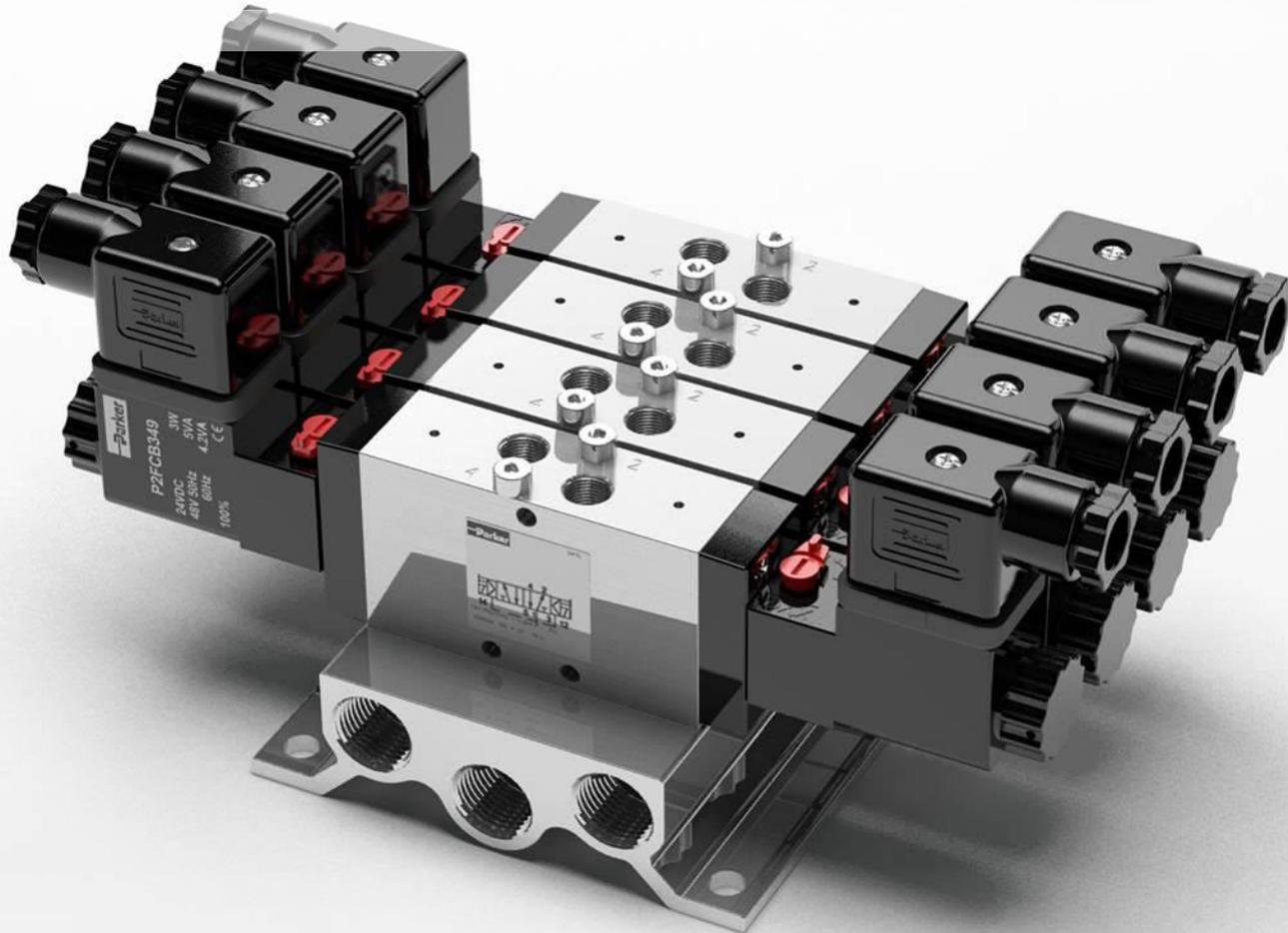
Viking Lite

- P2LAZ 5/2 Pressure Bar



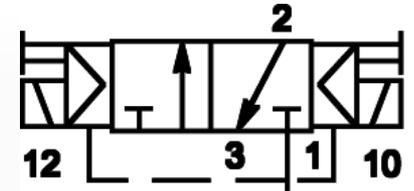
Viking Lite

- P2LAZ 5/2 Manifold Bar



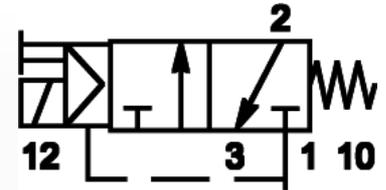
Viking Lite

- P2LBZ 3/2 valves with G1/4 ports



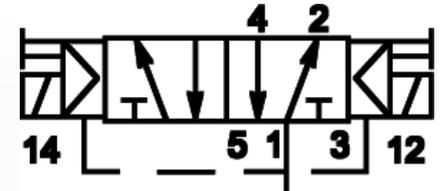
Viking Lite

- P2LBZ 3/2 valves with G1/4 ports



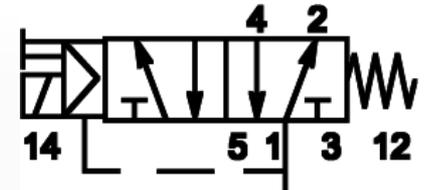
Viking Lite

- P2LBZ 5/2 valves with G1/4 ports



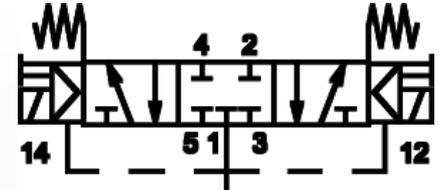
Viking Lite

- P2LBZ 5/2 valves with G1/4 ports



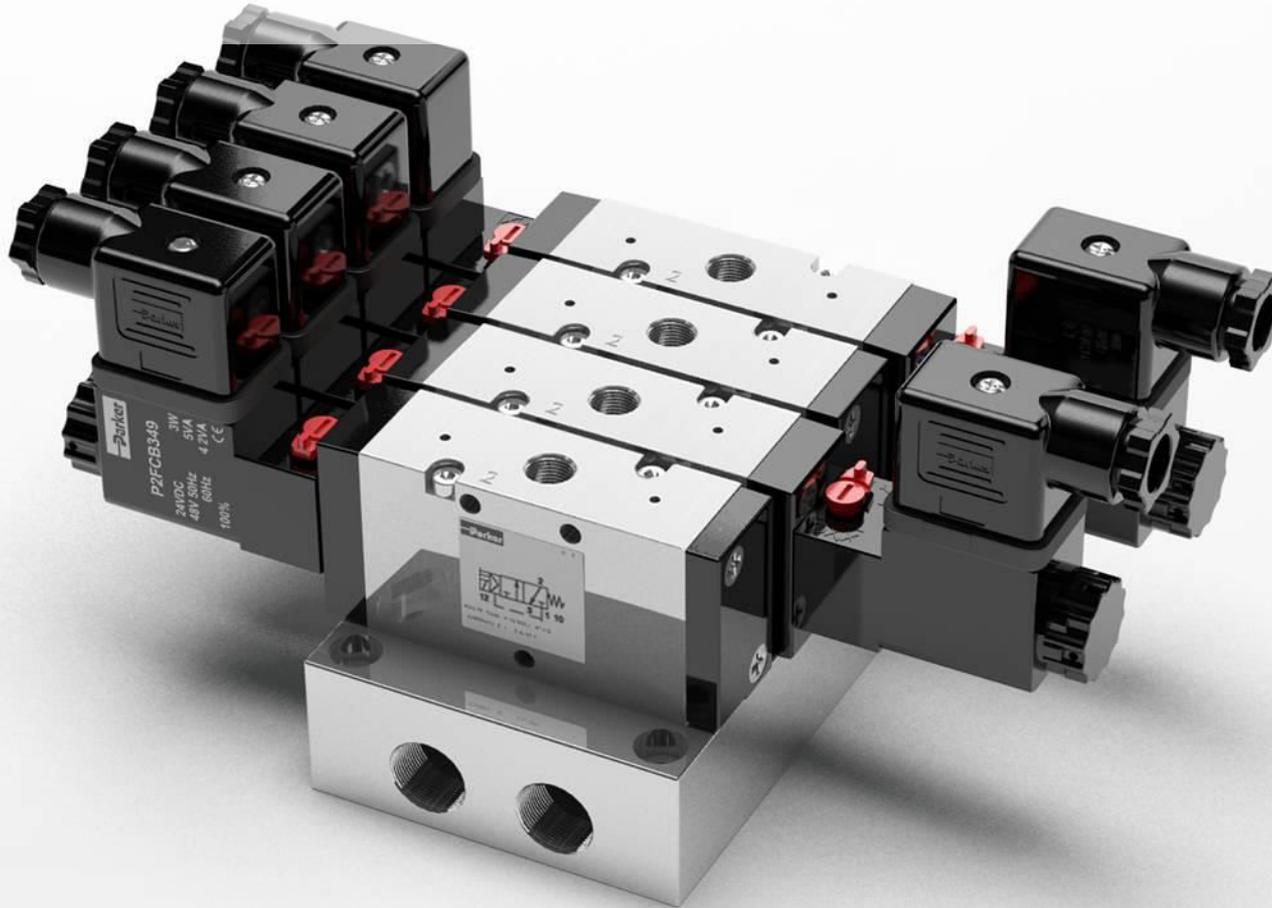
Viking Lite

- P2LBZ 5/3 valves with G1/4 ports



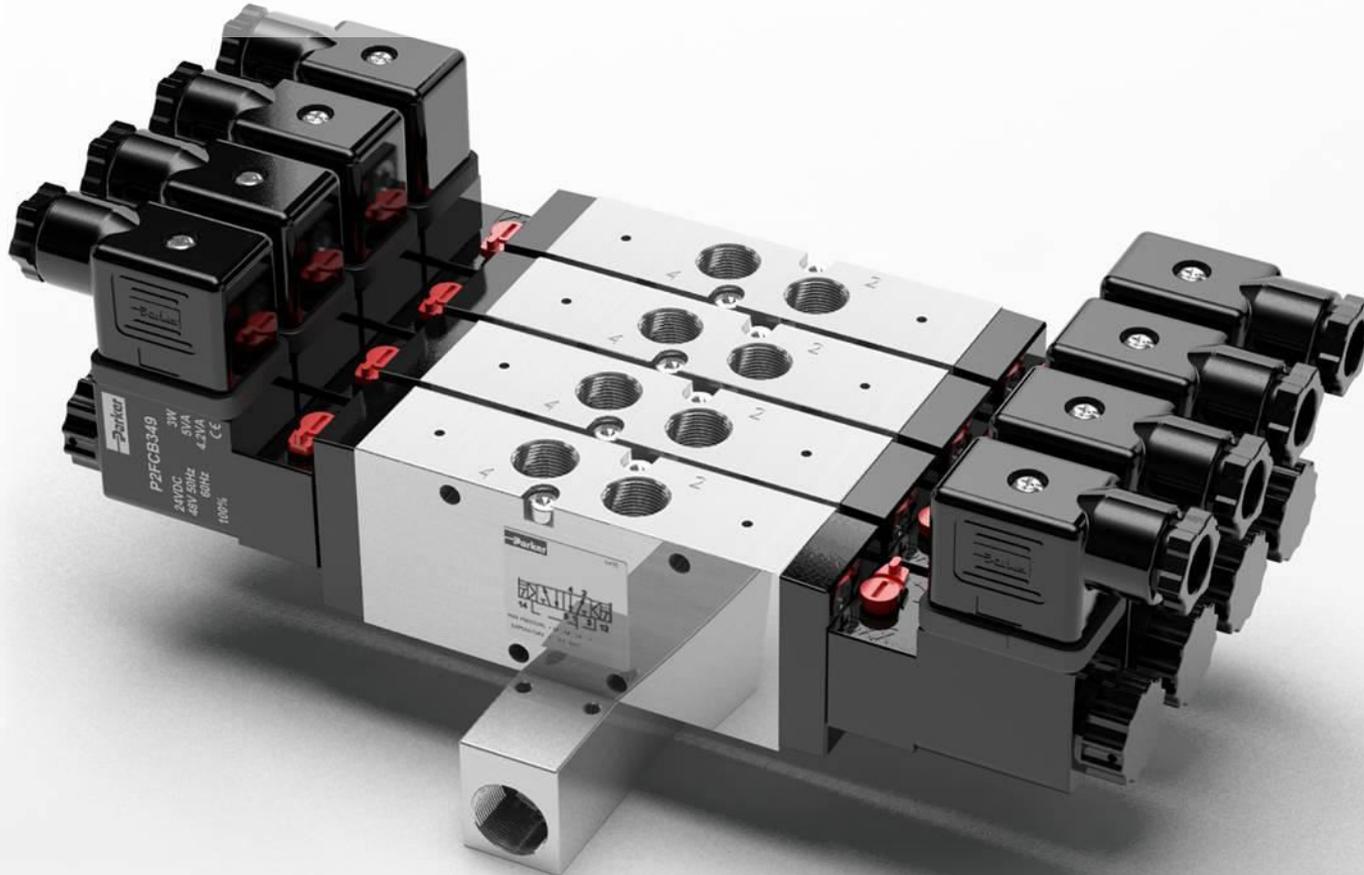
Viking Lite

- P2LBZ 3/2 Manifold Bar



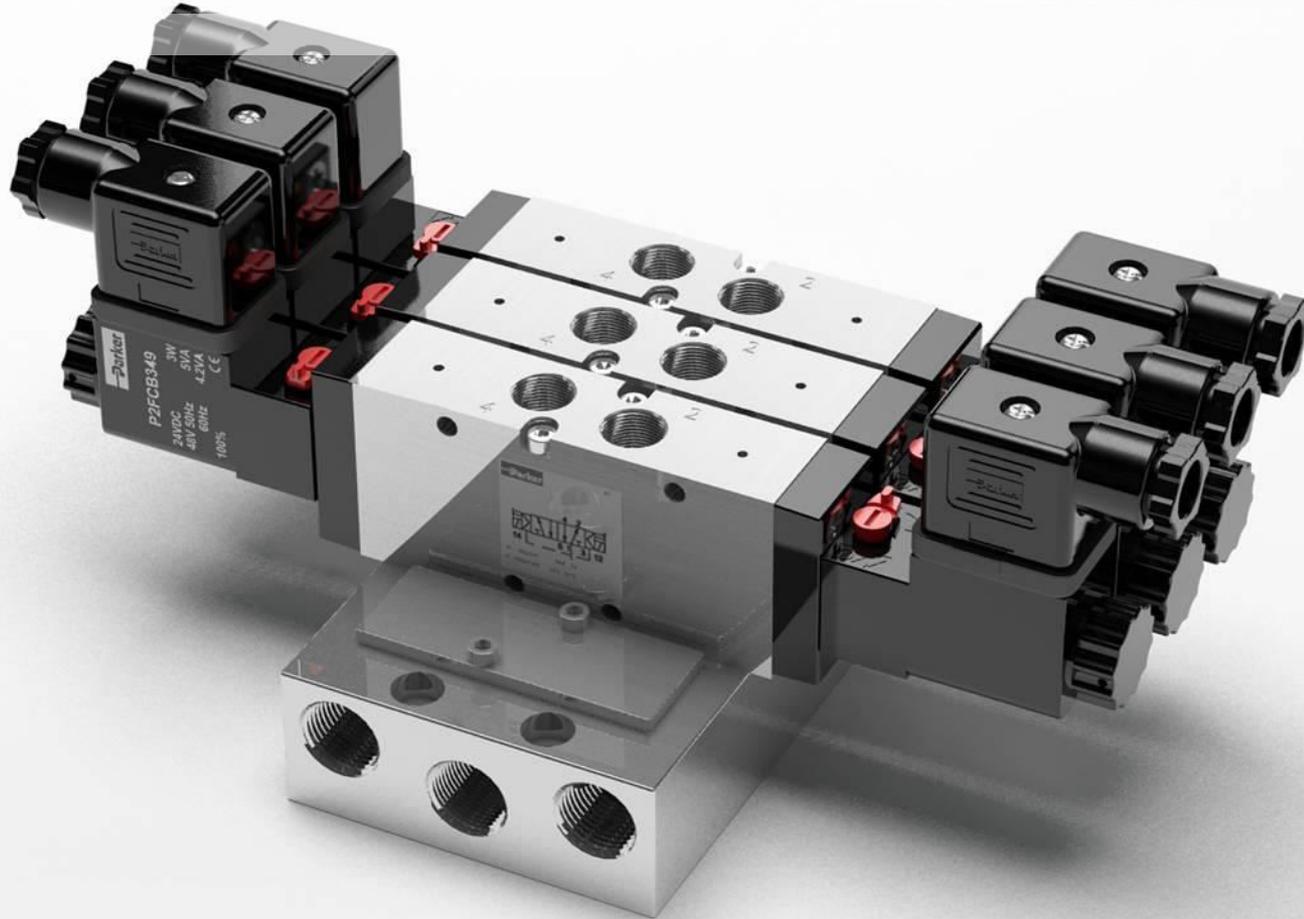
Viking Lite

- P2LBZ 5/2 Pressure Bar



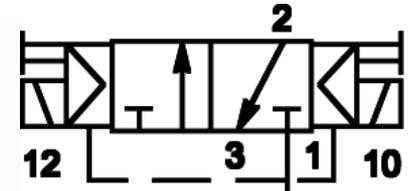
Viking Lite

- P2LBZ 5/2 Manifold Bar



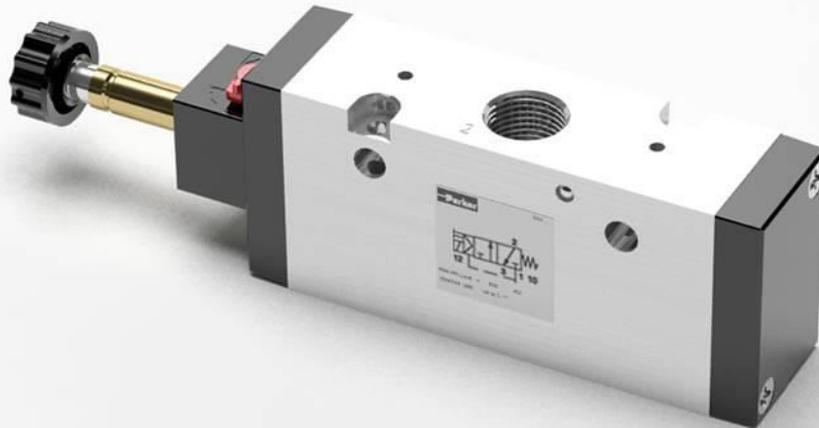
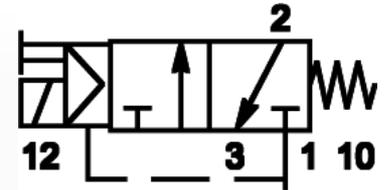
Viking Lite

- P2LCZ 3/2 valves with G3/8 ports



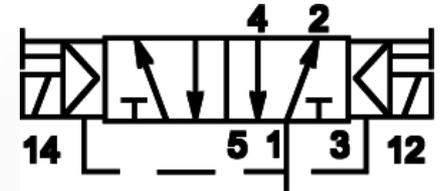
Viking Lite

- P2LCZ valves with G3/8 ports



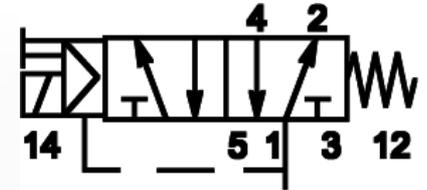
Viking Lite

- P2LCZ 5/2 valves with G3/8 ports



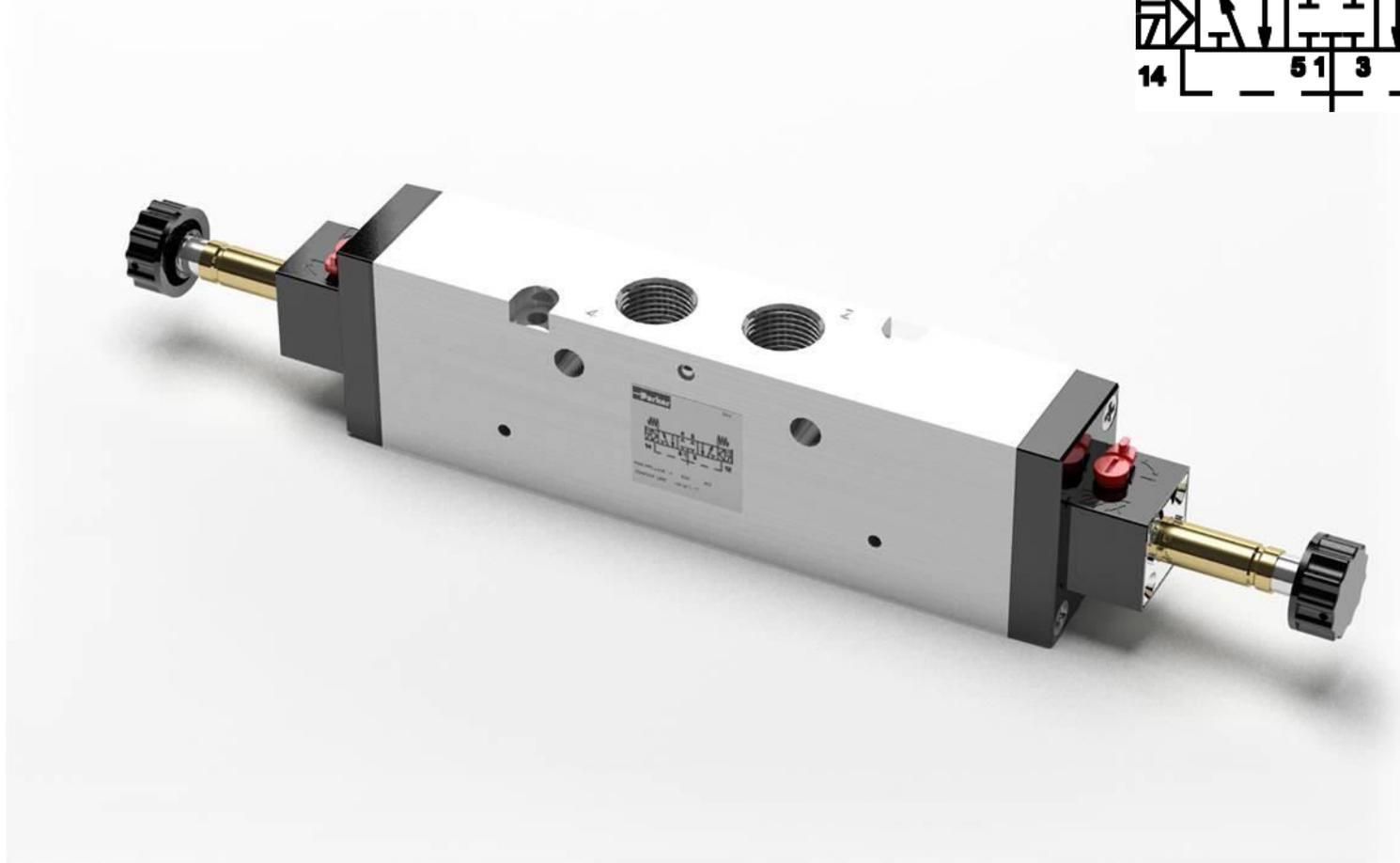
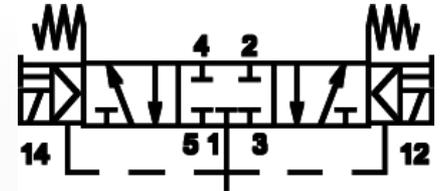
Viking Lite

- P2LCZ 5/2 valves with G3/8 ports



Viking Lite

- P2LCZ 5/3 valves with G3/8 ports



Viking Lite

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Viking Xtreme Vs Viking Lite

	Viking Xtreme	Viking Lite
Temperature Range	-40°C to +60°C	-10°C to +50°C
Maximum Pressure	16 Bar	10 Bar
Port Sizes	1/8, 1/4, 3/8, 1/2	1/8, 1/4, 3/8
Actuators	Pressure, Electric, Lever	Electric Only

Wear Compensating System

- Viking Lite is intended for standard applications for volume business with minimal options.
- “Specials” and modifications are available in the Viking Xtreme range.

Viking Xtreme Vs Viking Lite

- Over moulded Spool

Vs

Loose Seal Spool



Viking Xtreme Vs Viking Lite

- External pilots and protected exhaust

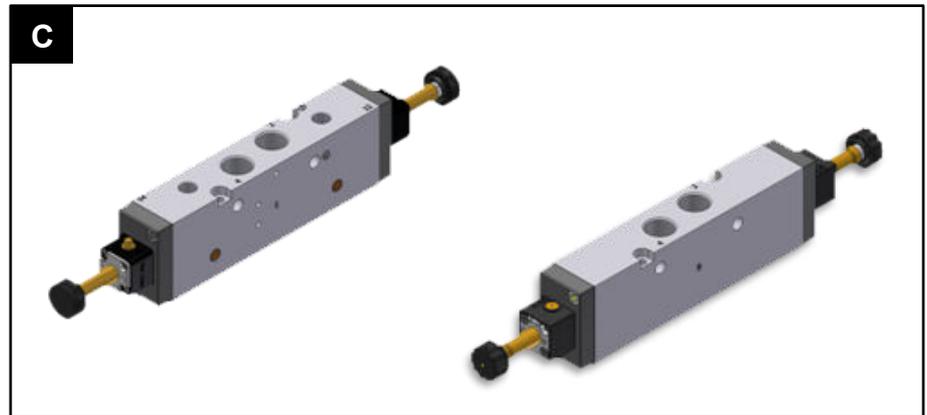
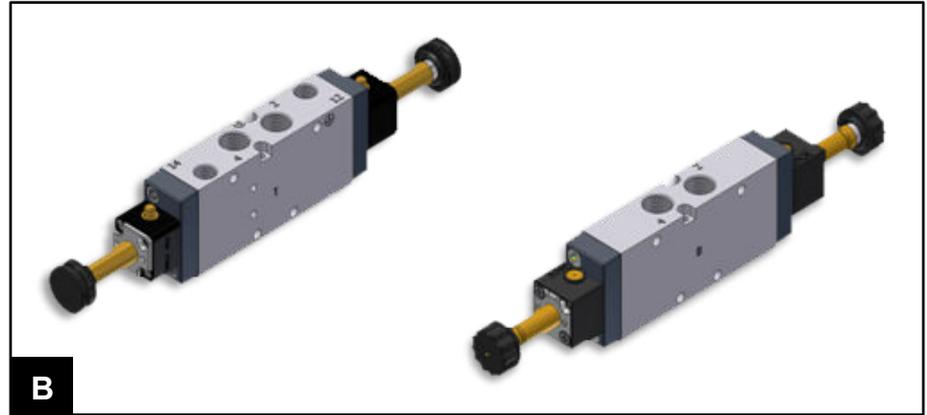
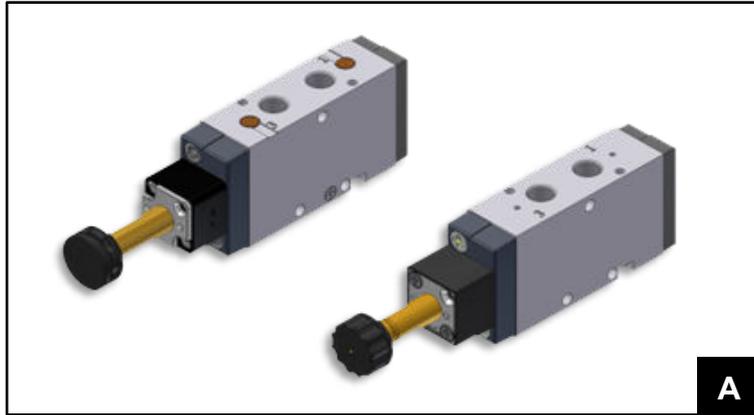
Vs

NO external pilots and
NO protected exhaust



Viking Xtreme Vs Viking Lite

Use of Same Pressure Bars and IEM Manifolds



- Same size^(*) and position of mounting holes^(**)

(*) A-type 5/3 and C-type 3/2 Lite are larger

(**) C-type 3/2 Lite has different mounting holes

Viking Lite

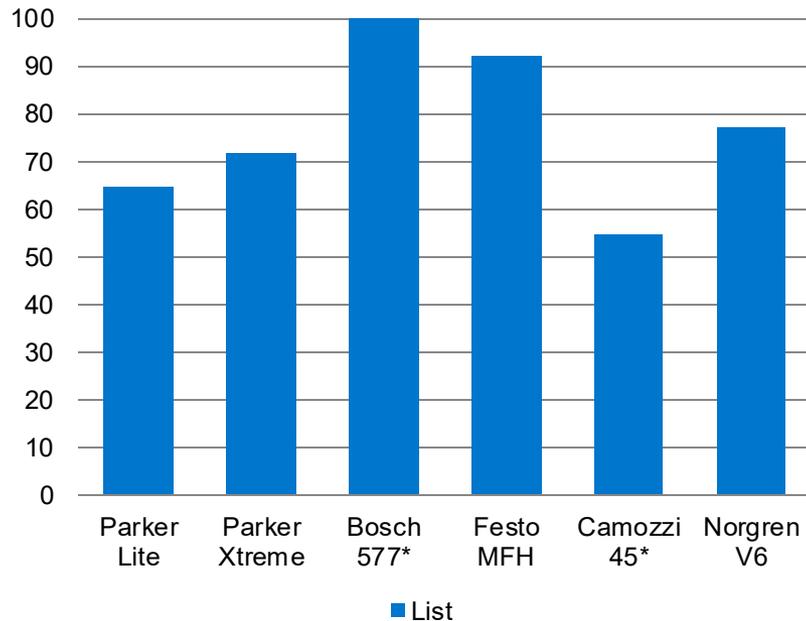
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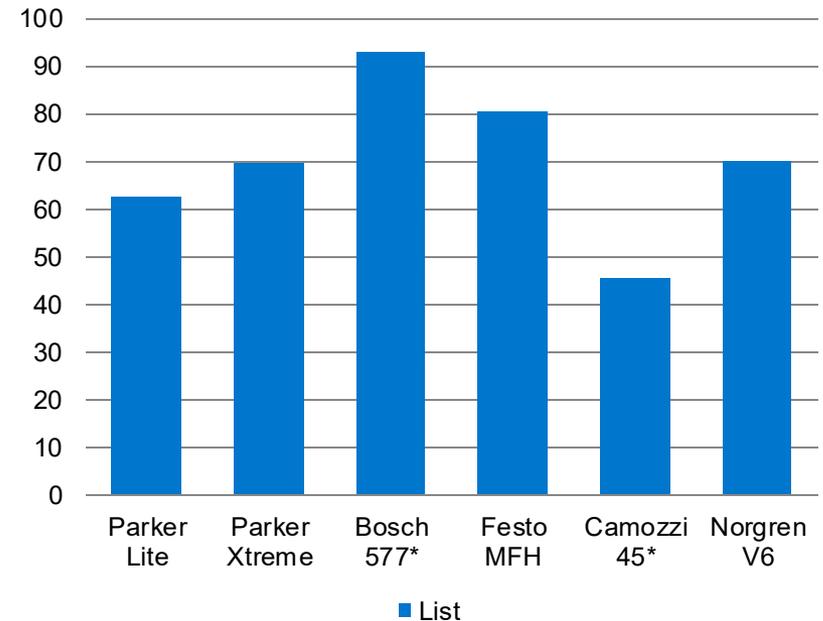
Price & Product Positioning

- List Prices 10% lower than Viking Xtreme

G1/4 5/2 Solenoid-Spring 24VDC



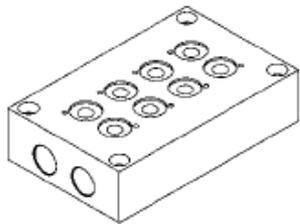
G1/8 5/2 Solenoid-Spring 24VDC



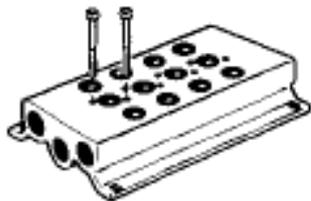
Viking Manifolds Xtreme & Lite

We have completed an exercise of transferring production of Viking manifolds from Europe to China and, as a consequence, we are now in a position where we have reduced our list prices up to 50%.

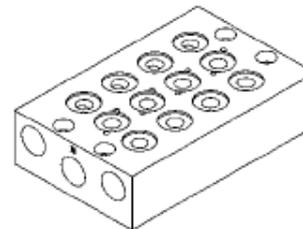
Selling with manifolds increases the chances of repeat business



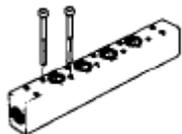
91213202SXZ	P2LAB 3/2 2 ST.BSP MAN KIT
91213204SXZ	P2LAB 3/2 4 ST.BSP MAN KIT
91213206SXZ	P2LAB 3/2 6 ST.BSP MAN KIT
91213208SXZ	P2LAB 3/2 8 ST.BSP MAN KIT
91213210SXZ	P2LAB 3/2 10 ST.BSP MAN KIT
912132BPSXZ	P2LAB 3/2 MAN B/PLATE KIT



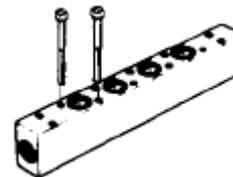
9121658075	P2LA 5/2 4 ST. BSP MANIFOLD
9121658076	P2LA 5/2 6 ST. BSP MANIFOLD
9121658077	P2LA 5/2 8 ST. BSP MANIFOLD
9121658078	P2LA 5/2 10 ST. BSP MANIFOLD
9121658079	P2LA 5/2 12 ST. BSP MANIFOLD
9121658099	P2LA 5/2 14 ST. BSP MANIFOLD



9121594805X	P2LB 5/2 2 ST. BSP MANIFOLD
9121594806X	P2LB 5/2 4 ST. BSP MANIFOLD
9121594807X	P2LB 5/2 6 ST. BSP MANIFOLD
9121594808X	P2LB 5/2 8 ST. BSP MANIFOLD
9121594812X	P2LB 5/2 10 ST. BSP MANIFOLD



9121658070	P2LA 5/2 2 ST.BSP PRESS BAR
9121658071	P2LA 5/2 4 ST.BSP PRESS BAR
9121658072	P2LA 5/2 6 ST.BSP PRESS BAR
9121658073	P2LA 5/2 8 ST.BSP PRESS BAR



9127113301X	P2LB 5/2 2 ST.BSP PRESS BAR
9127113302X	P2LB 5/2 4 ST.BSP PRESS BAR
9127113303X	P2LB 5/2 6 ST.BSP PRESS BAR
9127113304X	P2LB 5/2 8 ST.BSP PRESS BAR
9127113305X	P2LB 5/2 10 ST.BSP PRESS BAR

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Launch date

Stocks In EDCN

Technical catalogues available from EMDC

- English
- French
- German
- Italian
- Swedish



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Summary

- Highly competitive product to address the in-line valve market in all regions of the world
- Low cost manifold options
- Standard specification, standard temperatures and pressures
- Complete in-line valve family complimenting existing Viking Xtreme
- The Viking Lite is about taking market share



**Thank you for
your attention!**

Any Questions?