

A240-PD2-P

- ▶ Universal workstation for handling complex connections.
- ▶ For robot use or as manual work station.
- ▶ Saving and retrieving of process data via FTP login.



- ▶ Extremely fast infeed movement - Double speed to other drive systems
- ▶ Efficient tool movements with minimum wear - Parallel Drive (PD) drive, MDS patent
- ▶ Active tolerance compensation system
- ▶ Feeding system and control outside the robot cell
- ▶ Physical valuation and data control
- ▶ Data retrieval and digitization with **MDS-VIS +**



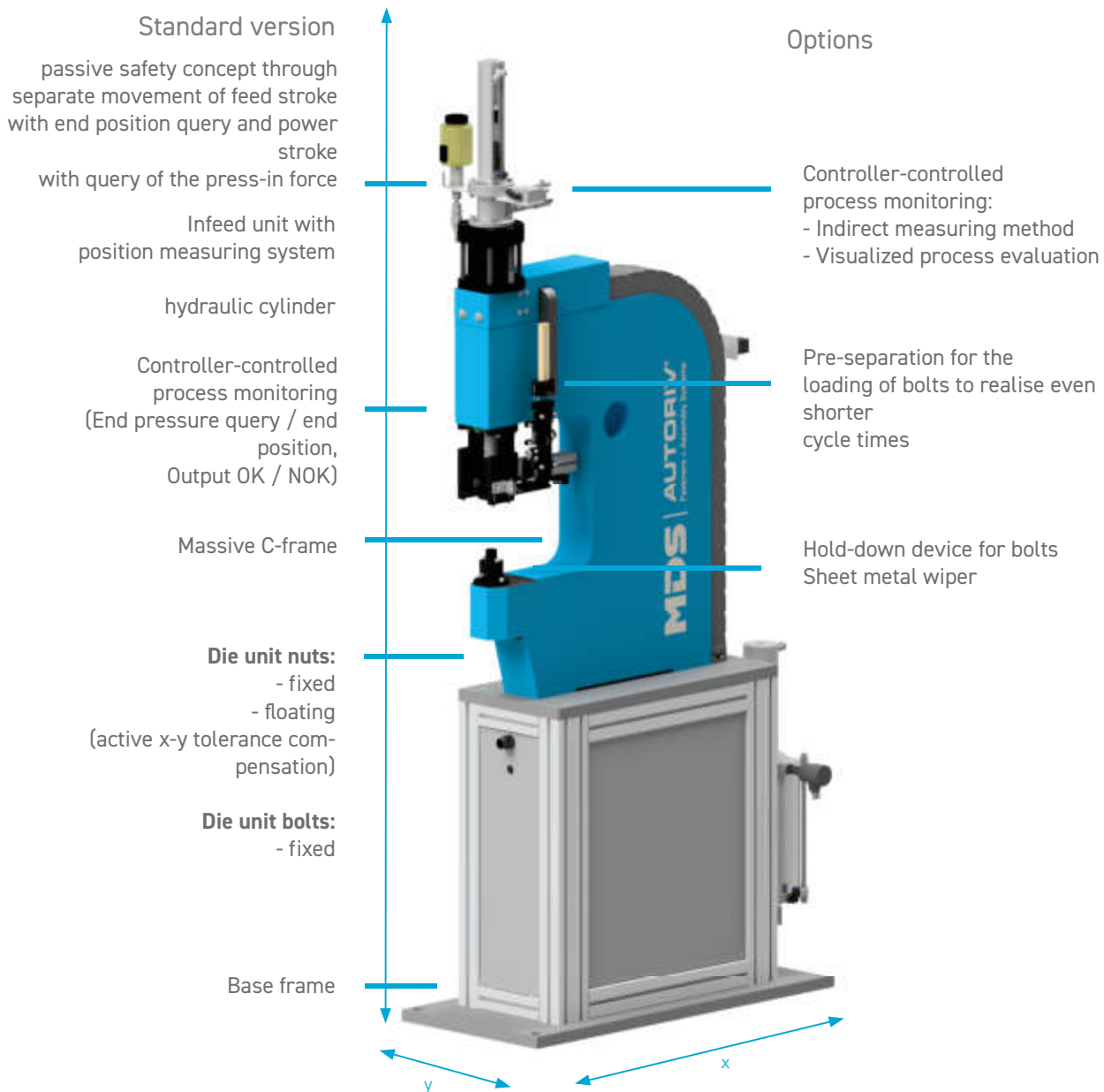
A240	A220	CP	FTP

AUTORIV A240-PD2-P universal workstation: The setting unit

Depending on the product variant, the massive C-frame is designed for **45 kN, 80 kN, 150 kN** or **300 kN** compressive force.

The **AUTORIV A240-PD2-P** setting unit is generally designed for the processing of bolts or nuts. The force is introduced with a hydraulic cylinder. The base of the C-frame houses the electrical and pneumatic controls and protects them from dirt or damage. The base panel is removable on one side for quick and easy access to the components.

Example: AUTORIV A240-PD2-P

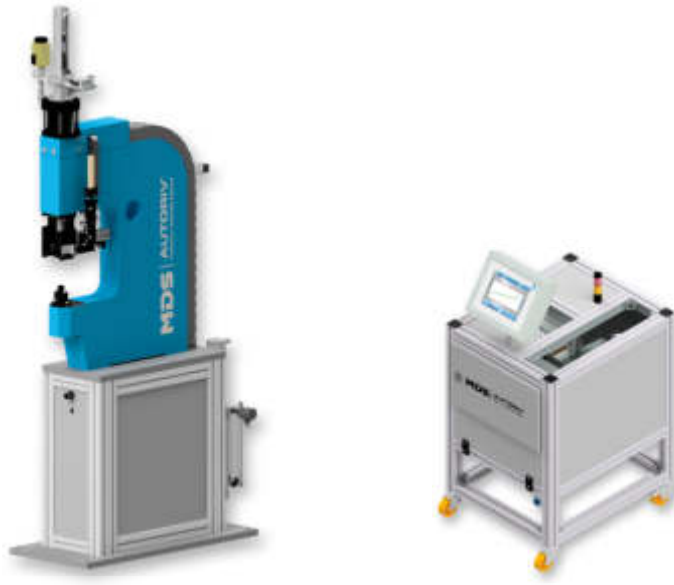


AUTORIV A240-PD2-P: Data availability and evaluation



- ▶ MDS-Vis+ supports both commissioning and operation of the system, since MDS-Vis+ always provides up-to-date information.
- ▶ Force-displacement curves form the basis of quality monitoring. With the monitoring-window technology, the force-displacement information collected over the entire connection process can be used for the evaluation.
- ▶ The MDS curve viewer supports analysis of production data. This makes it easier to compare production data and find fault causes better.

AUTORIV A240-PD2-P: The universal workstation



Technical Specifications: Setting unit (example: unloading 250 mm)

Setting unit	A240-PD2-P-45-N/-S	A240-PD2-P-80-N/-S	A240-PD2-P-150-N/-S	A240-PD2-P-300-N/-S
Length x width x height (x, y, z)	939 x 423 x 2025 mm	939 x 423 x 2245 mm	939 x 423 x 2245 mm	1120 x 423 x 2490 mm
Pneumatic supply	6 bar	6 bar	6 bar	6 bar
Compressed air consumption	approx. 350 l/min **	approx. 500 l/min **	approx. 750 l/min **	approx. 1000 l/min **
Feed stroke	200 mm (100-300 mm)	200 mm (100-300 mm)	200 mm (100-300 mm)	200 mm (100-300 mm)
Electrical supply	24 V/DC	24 V/DC	24 V/DC	24 V/DC
Amperage	1,5 A	1,5 A	1,5 A	1,5 A
Press-in force	to 45 kN	to 80 kN	to 150 kN	to 300 kN
Cycle time*	ab 1,9 s	ab 1,9 s	ab 1,9 s	ab 2,5 s
Power stroke	0-6 mm (0-16 mm)	0-6 mm (0-16 mm)	0-6 mm (0-16mm)	0-6 mm (0-16mm)
Unloading	250 mm (250-750 mm)	250 mm (250-750 mm)	250 mm (250-750 mm)	250 mm (250-750 mm)
Tool opening	170 mm (max. 220 mm)	170 mm (max. 220 mm)	170 mm (max. 220 mm)	170 mm (max. 220 mm)
Weight	from 500 kg	from 500 kg	from 670 kg	from 700 kg
Sound emission	approx. 78 db	approx. 78 db	approx. 78 db	approx. 78 db

Special adaptations of the **AUTORIV A240-PD2-P** setting unit are possible on request at any time. "N" stands for the nuts system solution (press-in nuts and self-piercing nuts). "S" stands for the bolt system solution (press-fit bolt).

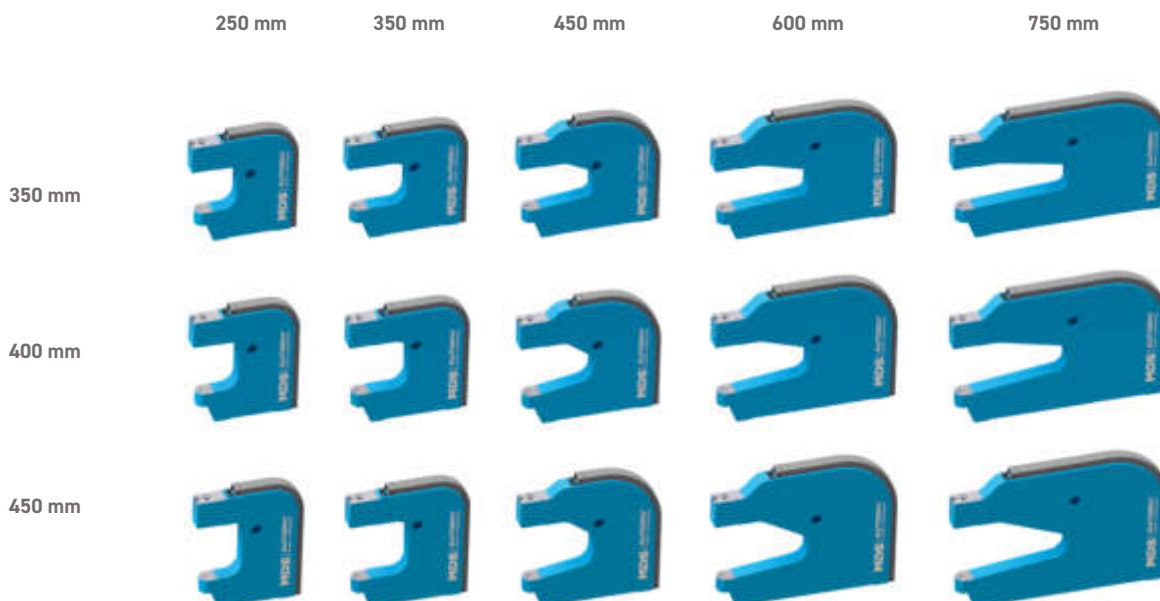
* Based on the ideal conditions specified by MDS.

** With a cycle time of 2 s and a press force of 25 kN, or a cycle time of 2.5 s and a press force of 50 kN.

AUTORIV A240-PD2-P universal workstation: Modular structure

- ▶ The AUTORIV A240-PD2-P setting unit has an excellent universal, modular design. Depending on the area of application and task, different product variants and size characteristics can be selected.
- ▶ **Press-in forces: 45 kN, 80 kN, 150 kN or 300 kN** are available for selection at 6 bar compressed air supply.
- ▶ **C-frame:** The C frame of the [AUTORIV A240-PD2-P](#) setting unit is available in the required height and depth in different sizes and can be optimally adapted to individual requirements.
- ▶ **Jaw depths of 250 mm, 350 mm, 450 mm, 600 mm or 750 mm** ensure machining of large, projecting components with optimally adapted cycle time.
- ▶ **Feed strokes:** Depending on the jaw height of the C-frame, **0 to 200 mm** or **0 to 250 mm** feed stroke is possible.
- ▶ The insertion height of the components is customized and can be freely selected **from 1000 mm** upwards.
- ▶ The [AUTORIV A240-PD2-P](#) setting unit can be easily connected to the [AUTORIV A000](#) feeder system up to a distance of 10 m. Special lengths of up to 12 m are possible.

Selectable jaw depths:



AUTORIV A240-PD2-P universal workstation: The feeding system

The operation of the **AUTORIV A240-PD2-P** setting unit is designed to work with an **AUTORIV A000** feeding system. The feed unit contains the setting unit as well as the interface to the higher-level control.

The feed unit is set up well accessible outside the robot cell. Using various electromechanical processes, it loads and separates the fasteners.

The fasteners are supplied to the setting unit through a special chute hose with compressed air.

Profinet, or EtherNet/IP are available for selection as interface connection.

A feeding unit can supply up to two setting units with the same type of fastener.

Example of an AUTORIV A000 feeding system with options:

Standard version

Option

AUTORIV controller
for control,
process monitoring
and evaluation

Hopper

Conveyor system

Feeding rail with
separator

Interface connection to the
higher-level controller, alter-
natively with:
- Profinet
- EtherNet/IP

Power / pneumatic line
and chute hose
Length: 5 m or 10 m
Special lengths up to 12
m

Dimensions (x, y, z / z1):

930 x 750 x 1130 mm /
1560 mm

Special adaptations of the **AUTORIV 240-PD2-P** setting unit are possible at any time, depending on the needs of the customer.

AUTORIV A240-PD2-P: Advantages of the universal workstation



Short cycle time

Due to the additional loading or pre-separation of the fasteners in the setting unit, the length of the shot tube and the associated shot time has no influence on the cycle time.



Extremely fast infeed movement by hybrid drive system (Parallel Drive)

The patented "Parallel Drive" drive system (separation of infeed movement and power stroke) from AUTORIV® enables extremely fast tool movements. The force in the AUTORIV A240-PD2-P setting unit is transmitted hydraulically by a pneumatically driven pressure booster. Even at low pressure and small line diameters (large cycle time savings, especially with long infeed movements) results in a very fast feed movement.



Active tolerance compensation

For nut components, the active, patented tolerance compensation is made possible by a floating die, in the case of bolt components, the compensation is achieved by the floating robot gripper.



Active tool protection / active pre-test

Only when the delivery of a fastener to the component is successful, will the power stroke be triggered. The position measuring system triggers the power stroke only if the delivery takes place within the defined travel tolerance.



Good accessibility

The positioning of the AUTORIV A000 feed unit outside the robot cell provides optimal accessibility for the operator and maintenance personnel.



System technology from one provider

Experience and a process-proven technology gained in more than 50 years of development have resulted in this complete system. The innovative mechanics of the system ensure a minimum susceptibility to interference.

AUTORIV A240-PD2-P universal workstation: Assembly method

The robot picks up the component to be processed and feeds it to the AUTORIV A240-PD2-P.

The robot inserts the component on the die. The active tolerance compensation system compensates component and insertion tolerances.

The supervisory control system gives the clearance for the pressing operation. The integrated position measuring system gives the starting signal for the press-in operation as soon as a fastener is in position. If there are deviations from the target specifications (e.g., sheet thickness, fastener height), the insertion process is aborted and an error message will be output to the supervisory controller. As a result, a faulty insertion process is almost impossible.

The press-in operation is pressure-controlled. When the specified pressure is reached, an OK message (insertion process successful) will be output. If the pressure is not reached, the system locks out and forwards the applicable signal to the supervisory control system.

In the case of press-fit elements with pilot holes, positional tolerances can be compensated for by the patented, active tolerance compensation system from AUTORIV to max. ± 0.5 mm.

For self-piercing fasteners, a position tolerance of ± 0.5 mm must generally be assumed if no further positioning aids are provided.

The fastener supply and the electrical components are located outside the robot cell fencing. The fasteners are loaded into the large feed hopper.

AUTORIV A240-PD2-P universal workstation: Assembly method

The quality of a fastener to be processed limits or maximizes potential automation.

A fastener optimally matched to automated processing ensures extremely high availability. That is why AUTORIV consistently offers elements that excellently harmonize in terms of their design and the associated automation.

The **AUTORIV A240-PD2-P** robot workstation is known for the fully automatic, process-reliable and high-quality processing of nuts and bolts **in the thread sizes M5 to M12**.

Variable connections in thin and thick sheet metal or plastic:

- ▶ Press-fit nuts (N) of the **AUTORIV** CP series **with pilot holes** in the components.
- ▶ Piercing nuts (N) of the **AUTORIV** CP series **without pilot holes** in one operation.
- ▶ Press-fit bolts (S) of the **AUTORIV** CP series **with pilot holes** in the components.
- ▶ Piercing bolts of the **AUTORIV** CP series **without pilot holes** in one operation.
- ▶ Rivet nuts of the **AUTORIV** CP series **with pilot holes** in the components.

Nuts are available in “round” or “square” versions:

- ▶ Outer diameter or edge length is **min. 10 mm to max. 25 mm**.
- ▶ Total height is **min. 4 mm to max. 25 mm**.

Press-in bolts are available in the “round” version:

- ▶ Processable shaft length of the bolt is **max. 30 mm**
- ▶ Outer diameter of the head is **min. 10 mm to max. 25 mm**

In addition, **AUTORIV** offers further special elements for customer-specific applications.

fasteners



Assembly systems



AUTORIV

Application examples:



Roof frame



Piercing bolts in metal plate



Connection with press-fit nuts

Processable fasteners and sizes*:

Press-fit and piercing nuts

D. 10-25 mm

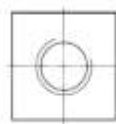
L. 4-15 mm



Square nuts

D. 10-25 mm

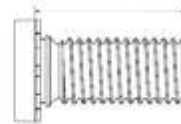
L. 4-15 mm



Press-fit bolts

D. 10-25 mm

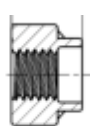
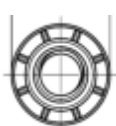
L. max. 30 mm



Rivet nuts

D. 10-25 mm

L. 4-15 mm



D. 10-25 mm

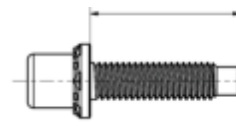
L. 4-15 mm



Piercing bolts

L. max. 30 mm

D. 10-25 mm



*Other dimensions and sizes on request.

Processable fasteners standard:



ACNA

Press-fit bolts for thick plates



SHS

Countersinking press-fit bolts



ACNS

Press-fit bolts for thick plates



TBB

Press-fit bolts for medium plate thicknesses



ACS

Press-fit bolts for medium plates thicknesses



ACB

Press-fit bolts for thin plates



ACN

Press-fit nuts for thick plates



ATR

Rivet nuts for all sheet thicknesses



ASN

Press-fit nuts for thick plates



HRN-C

Tank-rivet nuts



ARN

Rivet nuts for all sheet thicknesses



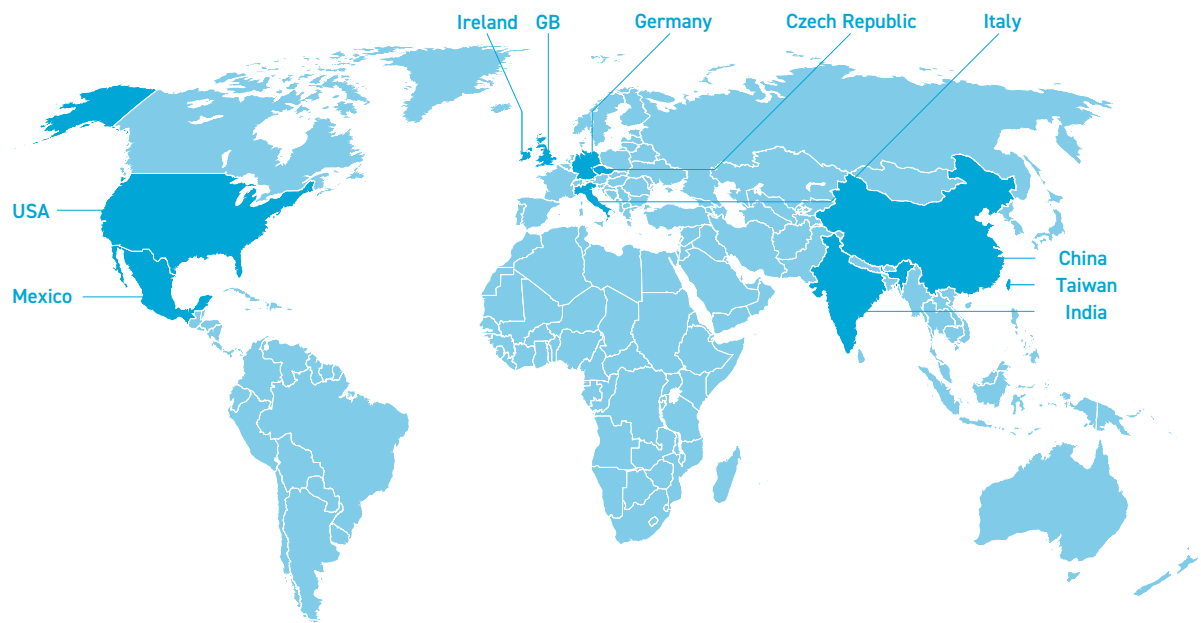
STN

Self-piercing nuts for thin sheets

Automated Fastener and Assembly Systems (A-FAS Group)

MDS is a shareholder of the A-FAS Group, which includes nine companies in Europe, Asia and North America. Each of these legally and economically independent companies has a very specialised orientation. The combination of these synergetic specialisations and a consistent strategy defined by the Board of Directors of A-FAS result in a globally unique service

portfolio with great customer benefit. Complete systems, consisting of automations and automation-oriented fasteners or small parts from a single source. From development and manufacturing to delivery, from hand tools to robot systems, and all of this globally.



AUTORIV: A MDS brand

MDS Maschinen- & Werkzeugbau GmbH & Co. KG

Ditthornstraße 22
93055 Regensburg
GERMANY

Tel.: +49 941-6042-210

Fax: +49 941-6042-162

E-mail: vertrieb@mds-r.de

Web: www.autoriv.com

MDS Fastening Systems, LLC

P.O. Box 417
Washington, MI 48094
USA

E-mail: inquiries@mds-fs.com

Web: www.autoriv.com