

ARGO 70 RM



1.0 BASIC SPECIFICATIONS

1.1 Structure

The structure is made of a base with a sliding upright in its rear section. Both are in electrowelded steel duly stabilised after each work phase to ensure that there is no interior tension; they are sized to guarantee stability and precision during machining operations.

1.2 Axes Sliding

The axes slide on high precision, robust, reliable linear guide-ways with recirculating ball blocks equipped with oil scrapers and with medium/high preloading.

1.3 Axes Movement

The independent axes are controlled by brushless Yaskawa servomotors by means of:

- Pinion, rack and mechanical system for backlash recovery for X axis (longitudinal)
- High precision ground recirculating ball screw and preloaded lead for Y (transversal) and Z (vertical) axes. The Z axis drive is equipped with an electro-magnetic brake which is enabled if mains power is cut-off.

The digital servomotors not only allow for short, optimal positioning and adjustment times, but also high head positioning speed. The position of the axes is detected by means of a rotating transducer.

1.4 Spindle Head

Constructed with a system of crossed tables in lightweight alloy to obtain a reduction in weight, high resistance to loads and accuracy in the mechanical work they perform, all at the same time. The solution used has considerable advantages in terms of machining precision and maintenance.

1.5 Electrospindle

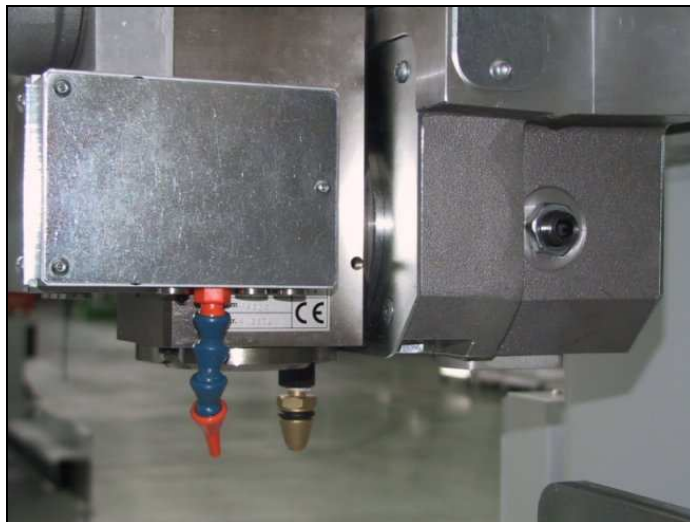
Designed by Fom Industrie, this electrospindle ensures important performances, both at low number of revolutions as well as at high speed, to satisfy the increasing needs in terms of flexibility. The 4kW electrospindle is equipped with constant torque, rotation speed up to 12,000 rpm, adjustable, positioning 0°/ 90°/ 180° for machining the three profile sides, forced air cooling, ISO 30 DIN 69871 tool coupling and relative presence detecting micro-switch. The tools are locked into place mechanically, and released by means of a pneumatic system. Front and rear high speed precision bearings guarantee strict control of the electrospindle axial and radial stress during the work phases. The electrospindle rotation speed is managed by a static frequency changer (inverter), complete with:

- Display for visualisation of diagnostics in case of anomalies.
- Protection from voltage and current overloads.
- Automatically controlled tool rotation braking action.
- Resistor for braking power dissipation.



1.6 Tools Lubrication

With pure oil, by means of a sprayer with over-pressure device (minimal lubrication).



1.7 Tools Magazine

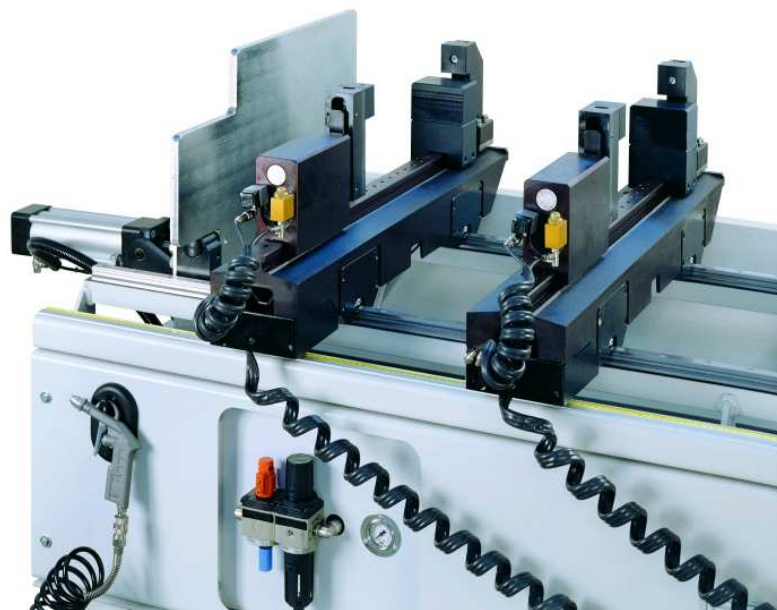
Located on the upright, protected by a rotating door, it has 6 slots and can rotate in both directions; it is provided with an "absolut" encoder for detecting the position. The rotation movement is managed by a static frequency changers (inverter) which guarantees more precision and positionig speed.



1.8 Working Area

Situated on the base and made up of:

- 4 pneumatic vices (expandable) for locking the profiles. They slide on flat guide-ways with manual locking. Manual movement/positioning with position indicated on the control unit monitor. A sensor mounted on the upright verifies possible collision risk. Clamping jaws are positioned using a patented pushbutton system. Patented pivoting clamping system ensures optimum adhesion to the profile.
- 1 retractable sliding pneumatic stop.



1.9 Electric cabinet

Equipped with filters for protection against emission and reception disturbances (EMQ); it is separate from the command console and contains the machine drives, the static frequency changer (inverter), the Vision numeric control complete with the machine control devices; it has an IP 55 protection grade against dust and liquids.

1.10 Command console

It incorporates the user interface made up of a PC, pendant push button strip, Display and alphanumeric keyboard; it includes:

- Connection to laser bar code reader.
- Connection to remote control units.

1.11 Protection and Safety Devices

In compliance with the requirements of EC directive 98/37 and successive modifications, the protection and safety devices are made up of:

- Acoustic insulation head cap.
- Mechanical cams and safety micro-switch for operator protection during alternating work phases.
- Photoelectric cell barrier.
- Rear and lateral barrier fences.

2.0 CONTROL EQUIPMENT

2.1 Omega 200

Made up of:

- Extractible shelves (right and left) for mouse support.
- Mobile control console
- Network to machine electrical cabinet with RJ 45 attachment for the network line
- Optical USB mouse
- Remote unit with display for axis movement (available on request)
- Pendant push button strip complete of potentiometer for the adjustment of the overfeed of the axes

It is possible to arrange a PC with the follow characteristics:

- Colour display with flat screen TFT 17"
- USB English Keyboard
- Laser gun for bar code reading

PC **PENTIUM 4** comprising:

- Front loading CD-ROM 24X
 - Front loading 3,5" 1,44 MB disk drive
 - 40 GB Hard disk (7.200 rpm) or higher
 - 2 serial ports
 - 8 USB ports (6 back, 2 front)
 - 512 MB Ram memory
 - Ethernet network card: 10/100 Mbps
 - ATI Radeon X300 128MB graphic card
 - Interior loudspeaker
-
- Follow programs :
 - **Windows XP Professional SP2.**
 - **FomCam.**
 - **Vision Interface 4** software for managing blocks of manual control and service on line - assistance interface

Note: The programs are to be installed on a P.C. and with the above characteristics.

2.2. FOM CAM



Graphic interface based on the Windows operating system for planning the machining operations and the pieces which automatically generates the CNC program that can be executed by the machining centre.

Program features:

- Easy to learn and easy to use, highly flexible
- 3D simulation of parts, tools and machinings
- Display the piece position on the machine
- Double cell machines management
- Vises and fixtures management
- Machining library for accessories
- DXF Profile Library
- Vise position optimization
- Automatic bar-code recognition
- Integration with ProF2 (window software)
- Cutting line and machining center management
- 5 axis machining

FomCam is the new easy-to-use CadCam solution for the 3D and 2D machining design on profiles. FomCam supports all **FOM machining centers**, the FOM 3, 4 and 5 axis machines and the cutting and machining lines. An intuitive software solution, FomCam was developed in close collaboration with expert machine tool users and manufacturers in the industrial and window manufacturing sectors. FomCam makes possible any kind of machining and ensures the quality of the NC code.

Simplify the working process

It has never been that easy to use a machining center: FomCam's user interface is extremely intuitive as it gives both 2D and 3D simulation options and offers a detailed summary of the machinings added on the part.



Vise and part positioning in the machine

FomCam automatically generates the CNC codes to be executed on the machine, considering single or double cell, left or right stop, or custom fixture setups for the simultaneous machining of more than one part. FomCam finds automatically the best strategies for vise positioning and simulates the toolpath before the machine starts the job.

Parameterized machinings

The machinings are parameterized. They are easily modified, edited or repeated by changing the numeric data in the model. FomCam applies the update to each machining in real time.

Machining optimizations

To make the machining even faster, the software automatically minimizes the numbers of tool changes and spindle movements saving considerable time.

Libraries

FomCam manages the Profile libraries with 3D and 2D views, the machine's Tool Libraries and the Machining Libraries of the single profiles.

Add the machinings for memorized groups

FomCam lets you proceed rapidly with the machinings for an accessory: just select a code from the accessories list and the X-position on the piece: all machinings referred to the accessory, including the tool data, will be added automatically.

Maximum production control

FomCam directly controls the machining center as it transfers the CNC code and controls its execution. It is not necessary to exit the program while the center is working.

More productivity through automation

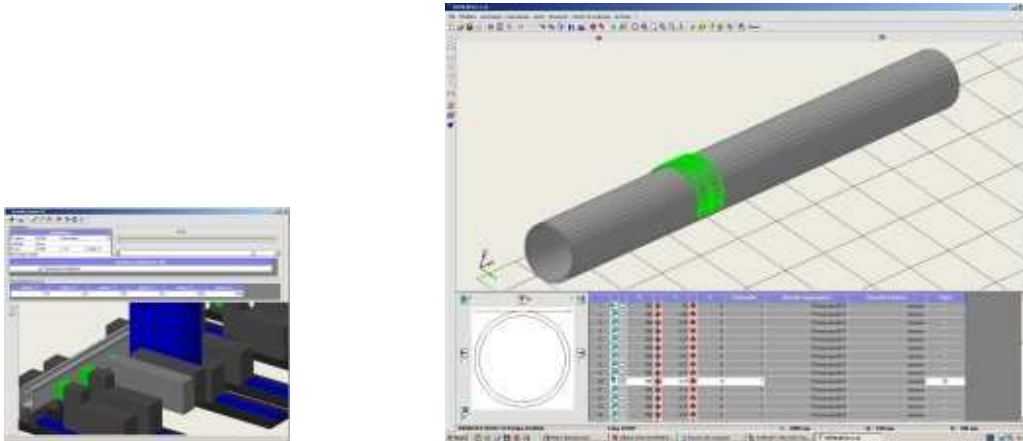
The machining cycle starts with the scan of the bar-code on the part. Based on the bar-code data, the center starts the machinings that were defined for this part in the Accessories Library. FomCam also allows to interrupt and re-start the machining list and to view the status info of each part, i.e. the total of repetitions requested and the number of repetitions executed so far.

High-efficiency double cell machinings

Save even more time and avoid production still-stands using the FomCam double cell machining functions. These functions allow to position the vises in one cell while the other cell is working without interruption.

FOMCAM - SIMULATION

Simulate every step of the NC code generation with the intuitive FomCam graphical interface. The visualisations of the components, machinings and tools are 3 dimensional, and the view points can be changed with a simple mouse-click. The 3D views also include different vise setups with multiple components.

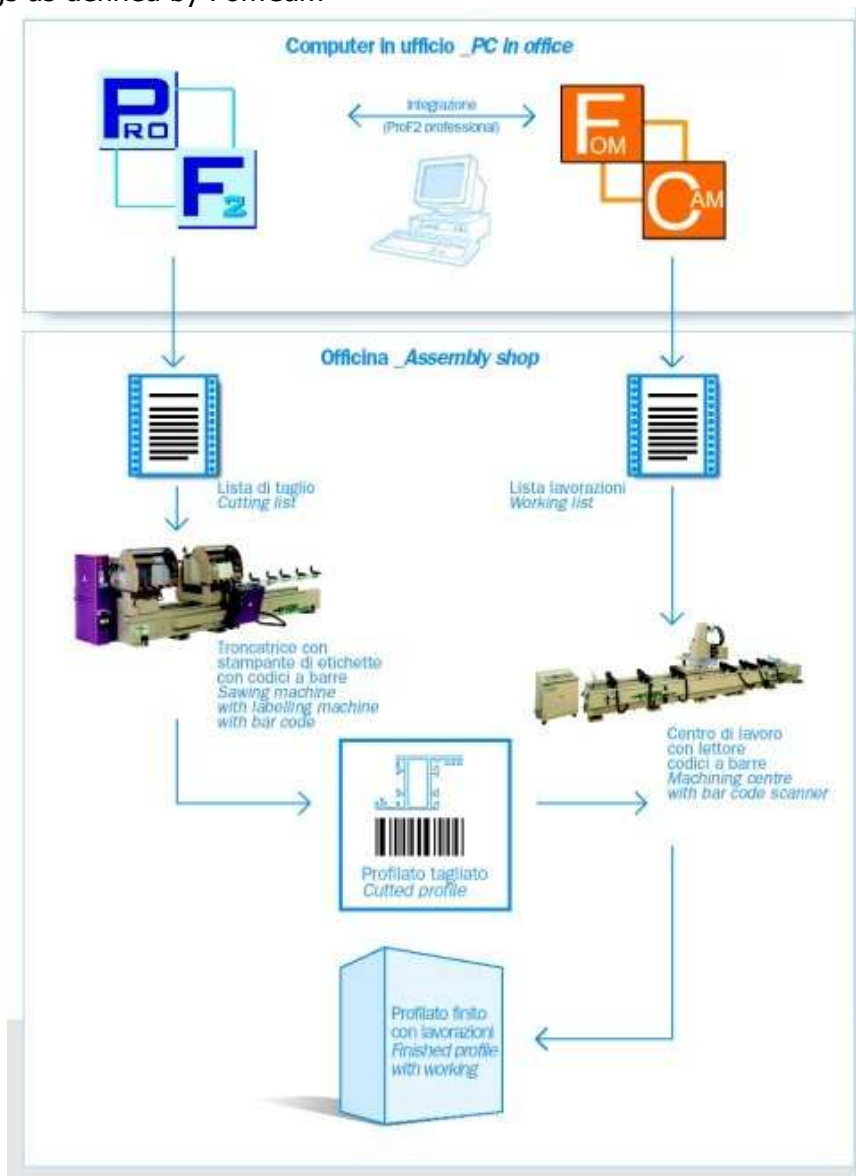


Machining time calculation

Based on the simulation functions, FomCam calculates the exact cycle time of a machining before starting it. FomCam also shows the time schedule within the various machining stages. This calculation is also possible for a list of pieces, including the repetitions, as an estimate of the production time of an entire order.

FOMCAM AND PROF2 INTEGRATION PACKAGE FOR WINDOW AND DOOR MANUFACTURERS

A software solution that enables window and door manufacturers to take advantage of FomCam, as it integrates with the window and door design program ProF2. This integration package will design windows, doors and curtain walls, define the machining strategies and generate the cutting and machining lists. Design the structure and select the profiles with ProF2. Use FomCam to define the machinings for each selected part and the program automatically calculates both the cutting and the machining lists. The optimized cutting list is transmitted to the sawing machine. The sawing machine bar codes and labels the part. The machining center reads the label and executes the machinings as defined by FomCam

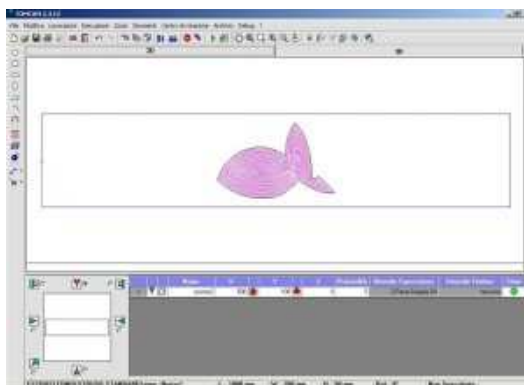


FOMCAM - OPTIONAL MODULES

FomCam also offers a series of optionals based on different needs.

Machinings from DXF

The Machinings from DXF module imports and reads any type of machinings starting from a DXF. This tool allows to create any kind of form for a machining without involving DXF.



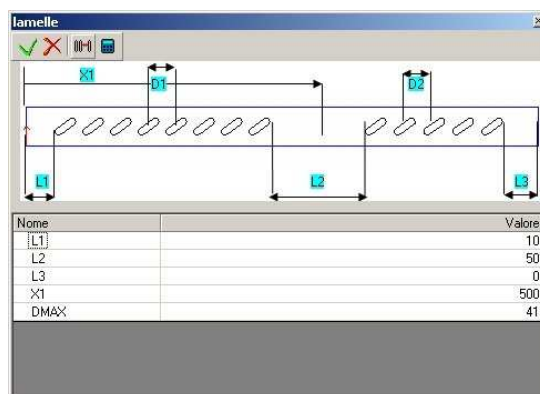
Bar code reader

Reads the bar code and starts the machinings on the selected piece.

Wizards and guided compositions

This module offers some useful features:

In security shutters, it generates automatically the position of the blades. It lets you insert pre-holes into steel machinings. It allows to design bands as a single block and to perform the machinings dividing it into many pieces.



3.0 TURNKEY SYSTEM

FOM INDUSTRIE not only offers its Clients a machine tool, but also a "turnkey" productive system to solve all of the problems involved in production. The company's experience is at the client's disposition to optimise the relationship between machining centre performance and the technological machining requirements, the service relies on:

- A CAD-CAM system for creating a project which provides for piece design, automatic creation of the program and simulation of the machining operations.
- A vast archive of projects created for companies operating in important industrial sectors (automotive, railways, naval, furniture, transport, aeronautic, textile).
- Facilitated contacts with the most important and qualified suppliers of tools and equipment.

4.0 DOCUMENTATION

Every machining centre comes with a printed copy of the following documentation:

- User and maintenance manual, complete with electric and pneumatic diagrams.
- Control unit user's manual.

The manuals are available in Italian and English.

| TECHNICAL SPECIFICATIONS | | | ARGO 70RM |
|------------------------------|----------------------------------------|------------------|---------------------|
| Axes travel | | | |
| X axis – longitudinal travel | | mm | 7.030 |
| Y axis – transversal travel | | mm | 1.100 |
| Z axis – vertical travel | | mm | 425 |
| Electrospindle rotation | | ° | 0°/90°/180 |
| Work capacity | | | |
| X axis | Longitudinal travel | mm | 6.770 |
| Y axis | Transversal travel with electrospindle | 90° | 540 |
| | | 0-90° | 460 |
| | | 90° 180° | 540 |
| | | 0°-180° | 460 |
| Z axis | vertical travel | 90° | 300 |
| | | 0-90° | 250 |
| | | 90° 180° | 250 |
| | | 0°-180° | 250 |
| Axes movement | | | |
| X axis | Rapid traverse | m/1' | 100 |
| | Acceleration | m/s ² | 2,5 |
| Y axis | Rapid traverse | m/1' | 60 |
| | Acceleration | m/s ² | 3 |
| Z axis | Rapid traverse | m/1' | 30 |
| | Acceleration | m/s ² | 2 |
| Machine precision | | | |
| Positioning precision | | | ± 0,13 |
| Repeatability precision | | | ± 0,07 |
| Electrospindle | | | |
| Cone | | | ISO 30 DIN 69871 |
| Power 4 Kw | Max. torque | Nm | 6,5 |
| | Max. rotation speed | rpm | 12.000 |
| Tool magazine | | | |
| Tool replacement time | | sec. | 8 |
| Number of tools possible | | N° | 6 |
| Maximum tool weight | | Kg. | 6 |
| Maximum tool length | | mm | 124 |
| Maximum tool diameter | | mm | 220 |

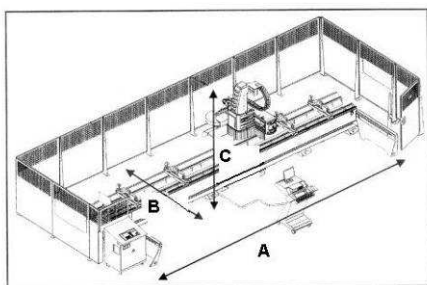
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| TECHNICAL SPECIFICATIONS | ARGO 70RM |
|---------------------------------|------------------|

| | | |
|------------------------|--|-------------|
| Numeric control | | |
| Type | | VISION PLUS |

| | | |
|-----------------------------------------------------|----------|---------|
| Technical data for installation | | |
| Total installed power | kW | 727 |
| Air consumption - cone cleaning | NI/min | 35 |
| Air consumption per cycle | NI | 44,5 |
| Continuous air consumption - electrospindle cooling | NI / min | 200 |
| Connection voltage | V | 380/460 |
| Connection frequency | Hz | 50/60 |
| Working pressure | atm | 7 |

| | | |
|-------------------|----|-------|
| Dimensions | | |
| Length | mm | 8.307 |
| Width | mm | 1.875 |
| Height | mm | 2.460 |
| Weight | Kg | 3.200 |

Overall dimensions (machine without protection):



| A (mm) | B (mm) | C (mm) | Kg |
|--------|--------|--------|------|
| 8307 | 1875 | 2460 | 3200 |

STANDARD ACCESSORIES:

| Description |
|-----------------------------------------------------------------------------------------------------------------------|
| Electrospindle FOM 4Kw 12.000 rpm (ISO 30) |
| 6 position tool magazine. (ISO 30) Note: possible housing of single/double tool angular unit and blade-holder cone |
| No.4 pneumatic vices with manual positioning |
| LH receding pneumatic stop |
| Head integral guard kit with pneumatic lifting |
| Tool micro-drop lubrication by pure oil |
| Chip bin |
| Set up for forced evacuation of fumes collectors |
| Photocell barrier |
| Rear and side fences and swinging gate |
| Machine handling kit |
| Electronic equipment "Vision Plus" |
| PC+monitor+Operating System in English |
| Control Console |
| Software licence for FOMCAM program |

SPECIAL VOLTAGE MOTORS / PLANET VERSION UL-CSA:

| Description | Code |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Additional charge for special voltage and cycles (external transformer) (Standard motor 380-460V three-phase 50/60Hz) | ZG-79247 |
| Additional charge for electrical equipment in compliance with UL-CSA standards. (The additional charge includes the electrical equipment with cables and special components/measurement unit in inches) | ZG-79156 |

**OPTIONALS:
ELECTROSPINDLES**

| Description | CODE | 40RM | 70RM |
|--------------------------------------------------------------------|----------|------------|------------|
| | | 40RM CZ | 70RM CZ |
| Surcharge for FOM 4KW 17.000 r.p.m. electrospindle (ISO 30) | PR-26944 | * | * |
| Surcharge for FOM 4KW 17.000 r.p.m. electrospindle (HSK 40) | PR-26207 | * | * |
| Surcharge for FOM 4KW 17.000 r.p.m. electrospindle (HSK 40) | PR-26945 | * | * |

TOOL MAGAZINE:

| Description | CODE | 40RM | 70RM |
|-----------------------------------------------------------------------------------------------------------------------------------|----------|------------|------------|
| | | 40RM CZ | 70RM CZ |
| Surcharge for 12-position tool magazine (ISO 30) | PR-26772 | * | * |
| Surcharge for 20-position tool magazine Note: Housing of single-/double- tool angular unit and blade-holder cone not possible. | PR-26773 | * | * |

CLAMPS:

| Description | CODE | 40RM | 70RM |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|---------|
| | | 40RM CZ | 70RM CZ |
| Additional standard clamps (manual positioning) (No.2) Note: Argo 70 RM max 4 clamps – Argo 40RM max 2 clamps | PR-26783 | * | * |
| Surcharge for transforming the standard clamps into clamps with positioning through carriage. Note: clamp positioned by means of the head | PR-26786 | * | * |
| Additional clamps with positioning through carriage (No.2) Note: Only with PR-26786 Note: Argo 70 RM max 4 clamps – Argo 40RM max 2 clamps | PR-26784 | * | * |
| Surcharge for transforming the standard clamps into clamps with independent positioning | PR-26787 | * | |
| Surcharge for transforming the standard clamps into clamps with independent positioning | PR-26795 | | * |
| Additional clamps with independent positioning (No.2) Note: Only with PR-26787 or PR-26795 Note: Argo 70 RM max 4 clamps – Argo 40RM max 2 clamps | PR-26785 | * | * |

OPTIONALS:

| Description | CODE | 40RM | 70RM |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|---------|
| | | 40RM CZ | 70RM CZ |
| Dual station (For non CZ version) Note: At least No. 2 additional clamps required. | PR-26775 | * | |
| Dual station (For CZ version) Note: At least No. 2 additional clamps required. | PR-26776 | * | |
| Dual station (For non CZ version) Note: At least No. 2 additional clamps required. | PR-26777 | | * |
| Dual station (For CZ version) Note: At least No. 2 additional clamps required. | PR-26778 | | * |
| Dual station (For non CZ version) Note: at least No. 4 additional clamps required. | PR 27262 | | * |
| Dual station (For CZ version) Note: at least No. 4 additional clamps required. | PR 27263 | | * |
| RH profile stop kit for long pieces machining or for two pieces without dual station Note: Accessory not available if the dual station is standard | PR-26774 | * | * |
| Flowdrill kit Note: Lubricating oil not included | PR-26791 | * | * |
| Profile-end machining kit with angle head | PR-26792 | * | * |
| Cooling system by emulsified oil with coolant recovery Note: accessory not available with PR-26788 o PR-26789 | PR-26793 | * | * |
| Cooling system by emulsified oil with coolant recovery Note: Accessory available only with PR-26788 or PR-26789 | PR-26794 | * | * |
| Chip conveyor belt. | PR-26788 | * | |

| | | | |
|-----------------------------------------------------------------------------------------------------|----------|---|---|
| Note: accessory not available with PR-26793 | | | |
| Chip conveyor belt. Note: accessory not available with PR-26793 | PR-26789 | | * |
| Forced/timed lubricating system for linear guideways and ball screws | PR-26790 | * | * |
| Machine handling kit for container | PR-25636 | * | * |
| Machine handling kit Note: compulsory with article XX-11272 | PR-26462 | * | * |
| N°2 Fume Exhauster mod. Losma) (Only for Version CZ) Nota: at least No. 2 for each working area | PR-26409 | * | * |

SOFTWARE:

| Descrizione | CODICE | 40RM | 70RM |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|---------|
| | | 40RM CZ | 70RM CZ |
| Software licence for office FOMCAM program | ZP-26866 | * | * |
| Additional FOMCAM licence for office (see pag.9) NOTE: Only with ZP-26866 | ZP-26868 | * | * |
| Kit for the insertion of geometries 'defined by the user' and import of drawings in DXF format for FOMCAM | ZB710210 | * | * |
| Kit for the graphic designing in 3D for FOMCAM | ZB710213 | * | * |
| Kit for the importation of datas for CNC by means of FOM protocol for FOMCAM | ZB710214 | * | * |
| Kit for the importation of datas for CNC by means of a non FOM's protocol | ZB710238 | * | * |
| Software licence for tapping cycle. | ZB 78091 | * | * |
| Kit for tele-service with analogue line. | PR-26264 | * | * |
| Bar-code optical reader and relevant software for the management of the working lists with module for data importation for CNC by means of Fom protocol for FOMCAM. (ZB710214) | PR-26895 | * | * |
| Bar-code optical reader and relevant software for the management of the working lists with module for data importation for CNC by means of a non-Fom's protocol per FOMCAM. (ZB710238) | PR-27042 | * | * |
| Wireless bar-code optical reader and relevant software for the management of the working lists with module for data importation for CNC by means of FOM protocol for FOMCAM. (ZB710214) | PR-27302 | * | * |
| Wireless bar-code optical reader and relevant software for the management of the working lists with module for data importation for CNC by means of non-Fom's protocol for FOMCAM. (ZB710238) | PR-27303 | * | * |
| Software licence for "Clock", module for times calculation for FOMCAM | ZB710453 | * | * |
| Software licence for "Wizard", module for FOMCAM | ZB710598 | * | * |
| Software licence for "Production", cutting lists management. | ZP710562 | * | * |
| Working module Production and integration with FOMCAM | ZP710563 | * | * |

