

PVC Profile Processing Centre PIM 6508



8-axis CNC-controlled machining centre, specifically designed for processing of PVC profiles

The machine can perform operations on all four sides of PVC profiles, including milling, opening key holes, water slots, hinge holes, handle holes, marking, saw blade cutting etc. The PIM6508 has programming features to provide maximum productivity and minimum waste. Up to 10 lengths of PVC profile can be placed on the feeding conveyor of the machine at one time with a 3-axis enabled pneumatic gripper moving them individually through the milling & cutting centre. Barcode labels are automatically printed for the finished pieces, providing clear identification for subsequent processing.

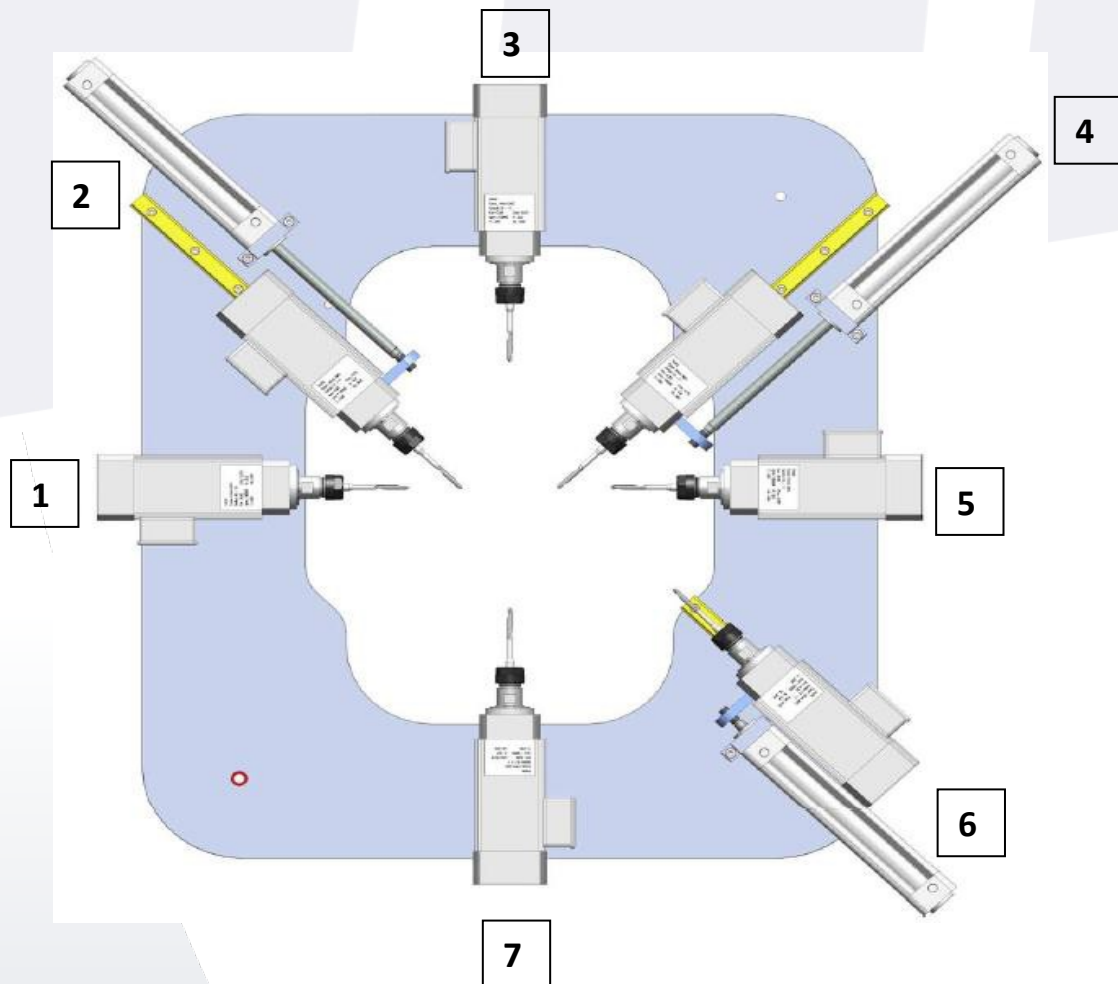
FEATURES

- Fully automated feeding, carrying, positioning, cutting and transferring units
- Pneumatic gripper for accurate positioning of the profile
- Horizontal and vertical clamping of workpiece during the sawing operation
- Profile processing capacity of 1200-1600 profile metres per shift
- Automatic conveyor unit with capacity to hold up to 10 lengths of profile
- Servo-controlled Ø500 mm saw blade with rotation from 30° to 150°, accurate to $\pm 0.1^\circ$ allows for simultaneous milling and cutting operations
- Window-based PC operation via 15.6" LCD touch screen monitor
- User friendly interface software is compatible with CAD programs
- Easy integration with CNC welding and corner cleaning machines
- Automatic frame and sash profile recognition system
- Automatic profile width and height dimension control system
- Automatic tool lubrication system
- Remote system access is possible to allow remote technical support
- Optional built-in waste conveyor

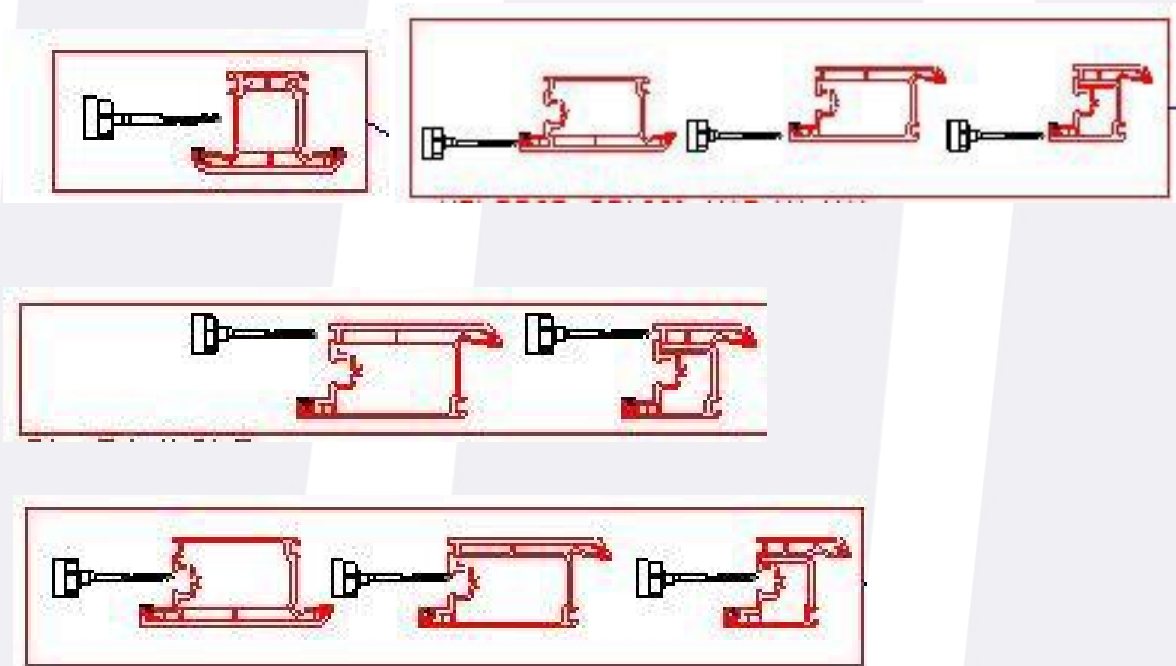
SECTION 1 System Detail

1 MILLING UNIT

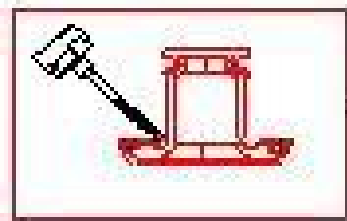
7 high performance HERTZ motors, placed on milling unit, performs all required operations (grooving the channel and slots, marking etc.) on the four sides of profile in a short time. Processing unit maintains its motion in 3 axes by means of servo motors in accordance with saw. Milling unit can operate simultaneously with saw mechanism. The motion capability of 750 mm provides the feature of processing the profiles of the same length at once without moving them. Operations performed by milling unit are given below.



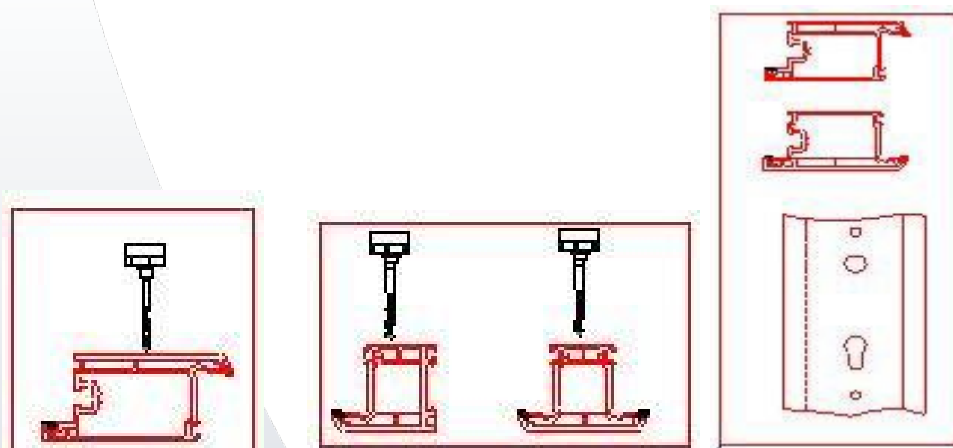
Milling Unit **Number- 1:** Grooving drain channel, Drilling hinge hole, Marking, Drilling, Milling espagnolette and lock channel



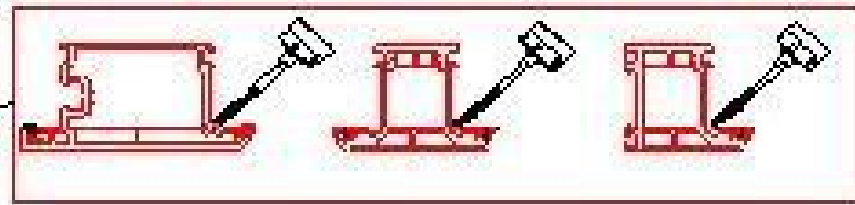
Milling Unit **Number- 2:** Grooving drain channel



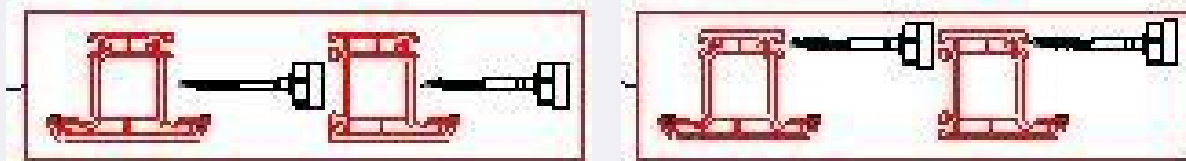
Milling Unit **Number- 3:** Grooving drain channel, and Drilling dimensioning, door handle, barrel and strike plate centering holes



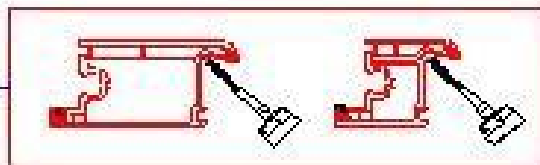
Milling Unit **Number- 4:** Grooving drain channel



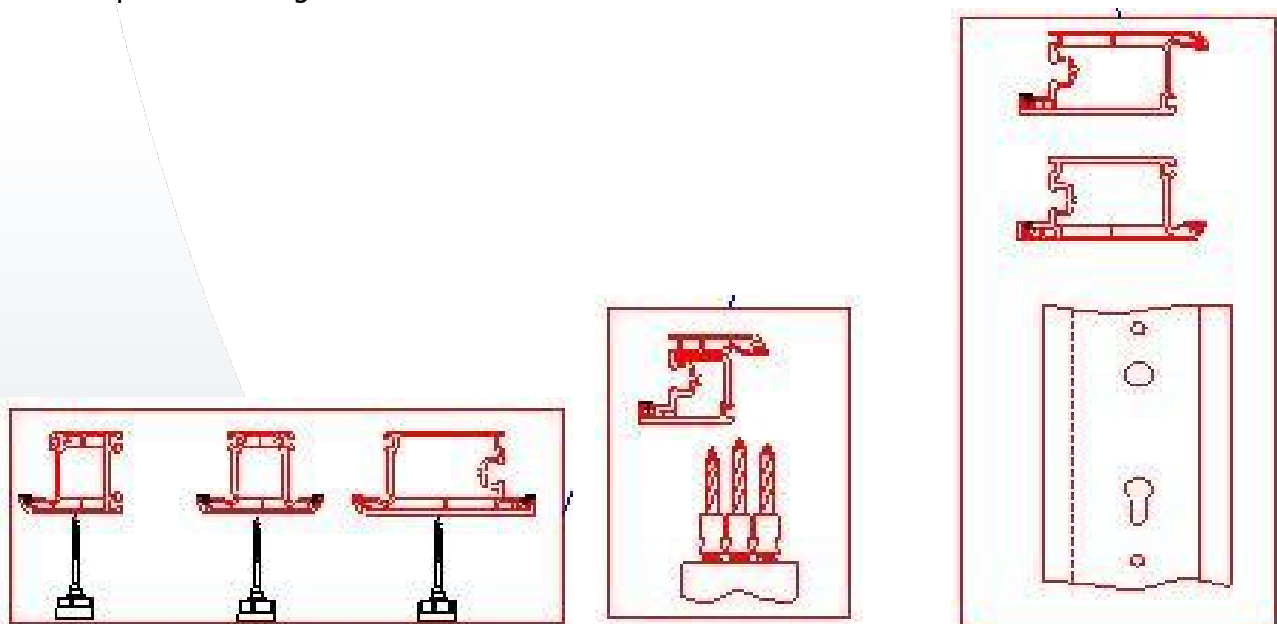
Milling Unit **Number- 5:** Grooving drain channel, Drilling hinge hole, Marking meeting rail, and Drilling



Milling Unit **Number- 6:** Grooving drain channel



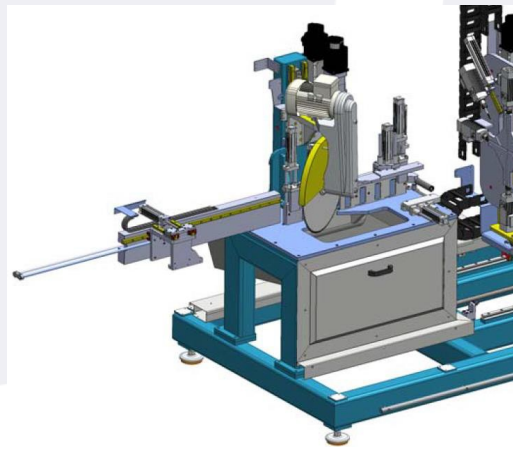
Milling Unit **Number- 7:** Grooving drain channel, and Drilling dimensioning, door handle, barrel and strike plate centering holes



2. CUTTING UNIT

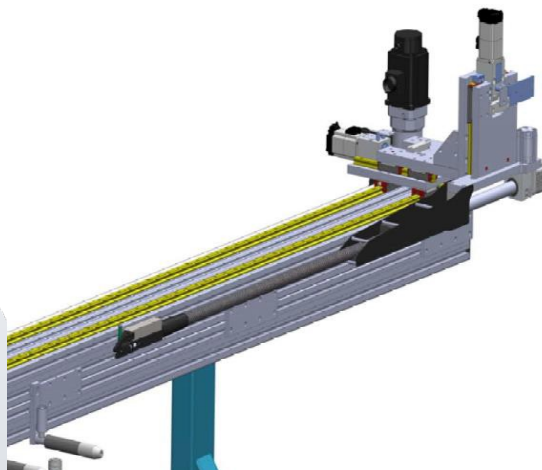
Profile cutting unit allows cutting angles between 30° – 150° with by means of its 500 mm diameter saw. By having an overhanging cutting mechanism, it is aimed that the unit is not affected with cutting chips. Chip channel, situated under the cutting mechanism, provides transfer of chip and waste of profiles to chip conveyor. Cutting unit works synchronously with milling unit, and its motion in two axes is provided by servo motors.

Cutting unit is equipped with robot arm which provides the transfer of processed profiles to outlet conveyor. At the front of the machine, there is moving doors with plexiglass window, which allows easy follow up of the operations such as, processing and cutting of workpiece, for the operator. By doing so the safety of the operator is maintained.



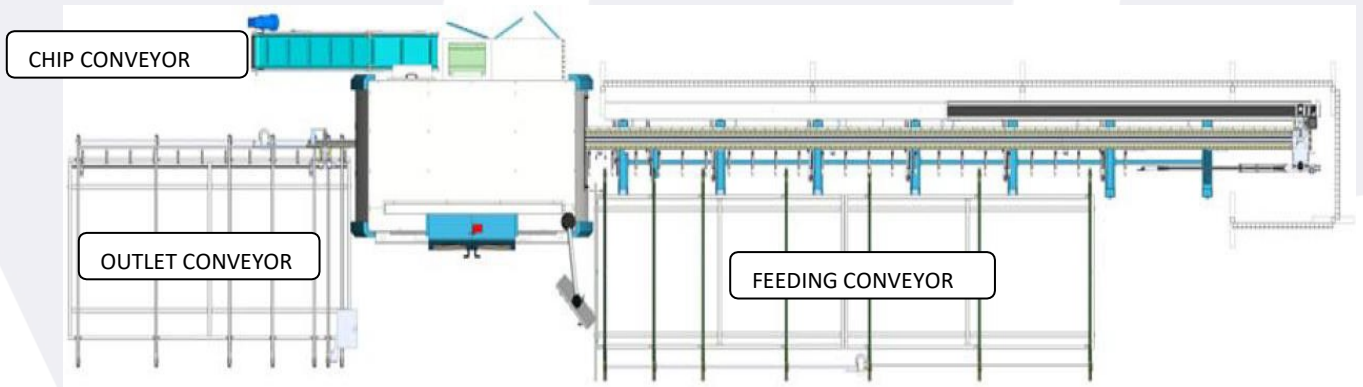
3. PROFILE HANDLING ROBOT

The profiles, transferred from profile feeding conveyor to handling robot, are placed on the processing center of the machine by the robot arm which is made of composite material and has special profile holding jaws. Profile handling robot works synchronously with processing center and carries profiles of length between 0.7 and 6.5 m.



4. PROFILE FEEDING, PROFILE REMOVAL and CHIP CONVEYORS

The profiles to be processed are placed by the operator on the profile feeding conveyor. By pressing on start button, the profiles on the conveyor are placed over the feeding robot carrier by the conveyor which works synchronously with robot arm. The profiles processed in milling and cutting units are transferred to outlet conveyor. Chip and cutting waste are removed by chip conveyor. Conveyors are made of aluminum and steel profiles, and designed by considering the work ergonomics of operator such that, it allows manual and sequential loading of workpieces. Metal parts are coated with electrostatic powder to provide the resistance to corrosion.



5. NUMERICAL CONTROL

1. Numerical Control Hardware

Numerical control hardware includes the following components:

- Windows 7 Professional
- Intel® Atom™ CPU D2500
- 1.87 GHz Dual core
- 2 GB Ram
- 32 – bit Operation System
- RS 232 Serial and Parallel ports
- 5 USB port
- 15" Color Touchscreen
- 1 Ethernet port for Network connection
- Touch Input
- 32 Gb SSD Hard Disk

2. Numerical Control Software

Numerical Control Software provides the control of the following functions:

- Displaying position of axes on screen, manual control of axes, automatic lubrication, profile support, machine safety door, etc.
- Tool Table: It is used for storing tool parameters and can also be utilized for offset.
- CNC Set-up Tables: Machine parameters which allows the maintenance (Axial length, origins, offset values)

6. MACRO PROGRAMS

The processing routines of the machine are delivered with CAD (optimization) software. The machine reads these routines and performs the operations in required dimensions automatically. The user interface and profile registration operations can be used by operator after a short training. The values of the macro programs are provided by CAD software, but operator can change the required values on the display. Some of the operations performed by machine are listed below:

1. Quadrilateral channel
2. Channel with chamfer
3. Line grooving (Drain channel)
4. Ventilation channel
5. Barrel hole on right
6. Barrel hole on left
7. Circle
8. Marking the meeting rail at required amount
9. Marking the hinge at required amount and dimension

Yilmaz develops the macro routines by considering its ease of understanding. Programs are designed such that they work together with all CAD software.

Moreover all the processed profiles are allowed to be stored in system. Profile dimensions (width, height, and length etc.), processed according to warehouse code, are recognized automatically.

7. REMOTE ACCESS

Yilmaz Makine Technical Service has the opportunity of having remote access to CNC machine. This connection is provided by either LAN (Local Area Network) via Ethernet board of USB 3G internet service. Remote access allows quick upgrade of software versions, and change or detailed analysis of machine parameters for maintenance purposes. Moreover remote access provides fault detection and tracing.

SECTION 2 Technical Data

AXIS	
Total axis	8
Max. profile length (mm)	6500
Min. profile length (mm)	700
POSITIONING SPEED	
Axis speed (m/min.)	X-Axis:30 / Y-Axis:30 / Z-Axis:30
U-axis profile infeed speed (m/min.)	100
AUTOMATIC CUTTING MODULE	
Saw blade dia. (mm)	500
Saw blade cutting range (°)	from 30° to 150°
AUTOMATIC MILLING	
Total milling motor	7
Min. machinable profile dim. (mm) (WxH)	40x40
Max. machinable profile dim. (mm) (WxH)	130x180
FUNCTIONS	
Multi-piece operations such as milling, opening key holes, water slots, hinge holes, handle holes, marking, saw blade cutting etc.)	
GENERAL	
Net and gross weight (kg)	3070 - 3400
Net dim. (mm) (LxWxH)	15650 X 3200 X 2100
Packing Dim. (mm) (LxWxH)	1pc. 3200x2500x220 1pc. 6150x950x1700, 1pc. 3550x950x1210 1pc. 3550x2250x900 1pc. 2450x700x1460
Voltage-frequency	400V 3P-50/60 Hz
Total power (kW)	8