

August 13, 2020

PUNCHMASTER TOOL & DIE LTD.

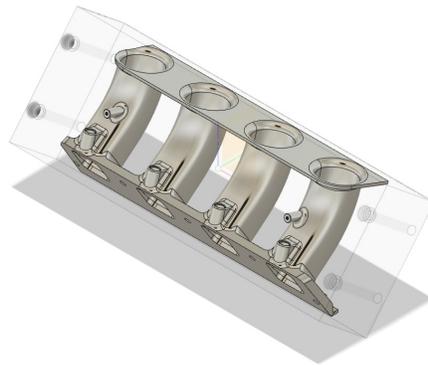
19531 Kennedy Road
Sharon, Ontario L0G 1V0

Attention: Mr. John Xynos

EUMACH HSM-5XA 5-AXIS MACHINING CENTRE

Dear John,

Thank you for the opportunity to quote the **EUMACH HSM-5XA 5-AXIS CENTRE** for the shown intake manifold.

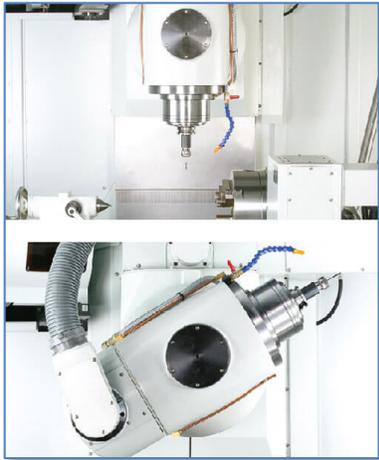


EUMACH HSM-5X

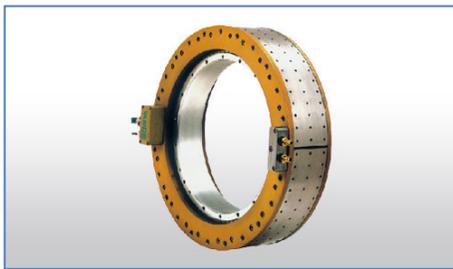
Eumach's newest universal milling center HSM-5X for 5 axis simultaneous operations, besides 3 linear axis, is with a standard B-axis swivel milling head and an add on type A-axis rotary table & tail stock. On the HSM-5XA model.

The HSM-5X series is the newest machine with universal applications, a perfect response to the increasing demand for CNC 5 axis & 5 face machining and the orientation of the work-piece in space in relation to the tool axis provides a vast range of applications for the machining of complex parts.

B-AXIS SWIVEL MILLING HEAD

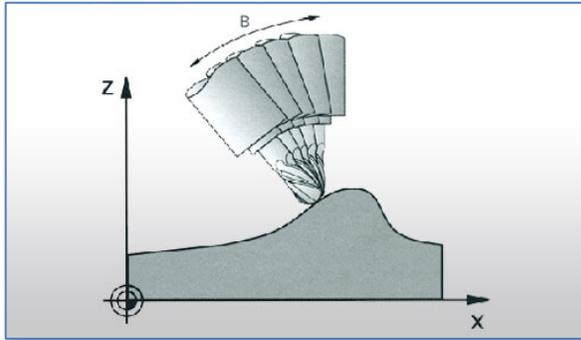


B axis - the highest dynamic swivel milling head with a large swivel range for the negative angles up to 30 degree and it rotates about the tool tip according to work piece, which has several obvious advantages such as greater accuracy, exceptional stiffness and shorter cutting distances, tools & part programs than those by using 2 axis tilting-rotary table or milling head; the separation of the swivel head and rotary table is a better solution with almost no space interference for cutting complex work piece!



The latest technology torque motor manages the B axis continuous swivel milling head , it guarantees maximum movement dynamic and linearity and thanks to the absence of those traditional mechanical kinematics parts, it results a much higher performance on finishing surface. The direct reading system by a high precision angular encoder is being integrated for maximum precision.

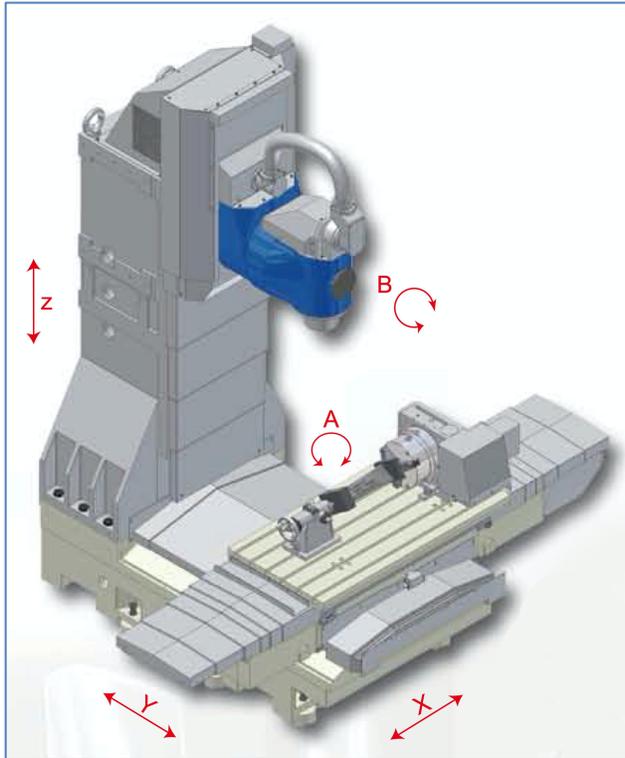
5-AXIS MACHINING



Tool Center Point Management (TCPM)

The offset of the swivel axes is compensated so that the tool tip remains on the contour. Handwheel commands can also be superimposed during machining without the tool tip being moved from the programmed contour.

RIGID FRAME



The optimal structure layout with the highest rigidity by using best components such as Meehanite casting, German made heavy duty roller guide ways on 3 axis and high rigidity transmission components etc. all these ensuring machine rigidity!

The 3 axis guide rails have bearings re-circulating roller enabling feed rates up to 30/30/24M/min., the measurement feedback uses linear scales; the heaviest in its range of the Z axis with parallelepiped guides 45mm enables very good machining with vibration damping in its Z axis 810mm travel.

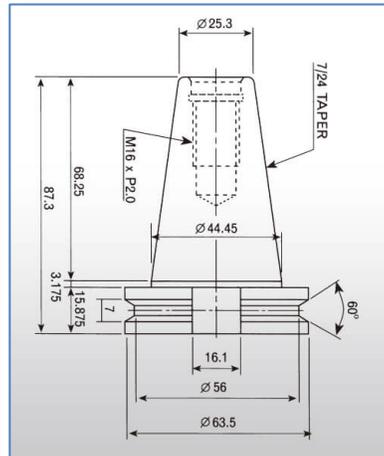
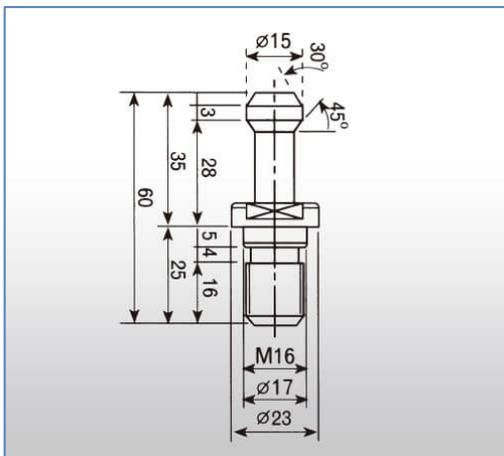


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RETRACTABLE AUTOMATIC TOOL CHANGER



An intelligent automatic tool changer with standard 32 tools stations to suit the unique swivel head, it can move forward 430mm travel from parking position to the tools changing position; maximum tool dimension is $\Phi 150\text{mm}$ diameter / 300mm length / 7kg weight, tool to tool time takes about 2.5 second; optional 40 stations ATC is available on request.





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POWERFUL MOTOR SPINDLE



The standard spindle with BT#40 / 14000RPM / 29.3KW & 35KW / 70Nm & 160Nm satisfy most of various applications, from roughing to finishing even in very tough materials such as tool steels.

GUARDING

The guarding provides protection for the whole of machine, operator and environment, and has been considered as the most ergonomics of the working area which offers an ease of use & maintenance, as well as practical accessibility and visibility for the operator and also the very compact floor space required compared with traditional 5 axis machining centres.



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MACHINE SPECIFICATIONS:

RECTANGULAR T-SLOTTED PLAIN TABLE

size	1200 x 610mm
t-slot	18mm x 6 x 100mm
maximum load capacity	800kg
spindle to plain table distance	from 0 to 940mm

ROTARY TABLE

type	add-on main plain rectangular table
diameter	320mm
centre bore diameter	40mm H7
centre height	210mm
t-slot size	14mm H7
maximum rotation speed	16.6 rpm
hydraulic pressure	50kg/cm ²
positioning accuracy	8" with encoder
repeatability	4" with encoder
maximum load	350kg with tail stock
included accessories	3 jaws and manual tail stock

DISTANCES

from spindle to column cover	629mm
from spindle nose to plain table surface	from 130 to 940mm
from spindle nose to rotary table centre	from 0 to 780mm
from tailstock height to plain table surface	160mm
from spindle to column cover	629mm
from floor to table	882mm

TRAVEL

X axis	1020mm
Y axis	610mm
Z axis	810mm
B axis swivel milling head	+30° to -120°
A axis rotary table	0.001 degree x 360,000
X/Y/Z axis guide ways	35/35/40mm wide Schneeburger linear roller type

SPINDLE

spindle taper	CAT#40
maximum spindle speed	14,000 rpm
front ceramic bearing diameter	70mm
spindle motor	29.6/35kW built-in type
maximum torque	70/160Nm



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FEED RATES

rapid feed rate X/Y/Z axis	36/36/24m per minute
cutting feed rate	from 1 to 20000mm/minute
minimum increment	0.001mm

AUTOMATIC TOOL CHANGER

type	swing arm with 430mm travel
number of tool station	32
maximum tool diameter	150mm
maximum tool length	300mm
maximum tool weight	7kg
tool-to-tool change time	2.5 seconds
chip-to-chip change time	7 seconds

BALLSCREWS

X/Y axis diameter x pitch	40 x 16mm
Z axis diameter x pitch	50 x 12mm
precision class	C3, 0.008mm over 300mm

COOLANT + LUBRICATION + HYDRAULICS

coolant motor	0.86kW
coolant tank volume	250L
coolant motor capacity	20L/minute
lubrication tank motor / volume	25W / 2L
hydraulic tank capacity + volume	50kg/cm ²

ACCURACY

X/Y/Z axis positioning accuracy JIS 6338	+/-0.005mm / 300mm
X/Y/Z axis positioning accuracy VDI 3441	P0.012mm
B + A axis positioning accuracy	8" seconds
X/Y/Z axis repeatability JIS 6338	0.003mm
X/Y/Z axis repeatability VDI 3441	PS0.008mm
B + A axis repeatability	4" seconds
roundness JIS 6338	+/- 0.01mm / 300mm

MACHINE DIMENSIONS

width with chip conveyor + bucket	4376mm
depth with control	3140mm
height	2936mm
weight	9000kg
power requirement	75kVa

Note: Specifications are subject to change without notice.



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FAGOR 8065 POWER SIMULTANEOUS 5-AXIS CONTROL WITH 15" HIGH RESOLUTION COLOUR LCD MONITOR

- 3D colour graphics
- fully conversational programming + standard EIA format G-code programming
- RS232 / Ethernet / USB interface ports
- collision detection
- retrace function
- 200 user definable M functions
- feedrate in inverted function of time
- linear/helical/circular/cylindrical/polar coordinates
- mirror image, scaling, coordinate rotation
- custom macro programming
- g-code programming with on-screen help feature
- DXF file upload for conversational programming cycle
- tool life monitoring + tool inspection
- simulation with execution time estimate
- back ground programming + editing
- optional stop/block skip function
- 2GB program capacity with 2GB compact flash memory
- high speed machining mode with up to 200 blocks look-ahead, 1 ms block processing time
- engraving in X/Y plane + engraving along 4th axis rotary axis in Y/A plane if 4th axis is installed
- additional 20 offsets, unlimited programmable offsets within program
- g-code generation through conversational programming including 3D pocket with island
- automatic tool length calibration finds the tool length automatically
- inside/outside taper threading/boring cycle
- Masteel quick helical taper boring or helical taper threading interpolation programming
- free off-line programming software on the customer's computer
- Fagor remote support program (allowing Fagor to remotely connect to your machine through [TeamViewer](#) to assist in "machine-down" diagnostics, trouble shooting tooling problems and provide programming assistance - all at no charge during the warranty period)



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FAGOR 3-AXIS CONVERSATIONAL PROGRAMMING FEATURES:

We Made It 1-2-3-4 EASY!

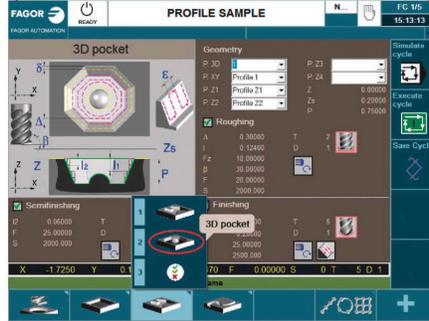
1

Select your cycle of choice



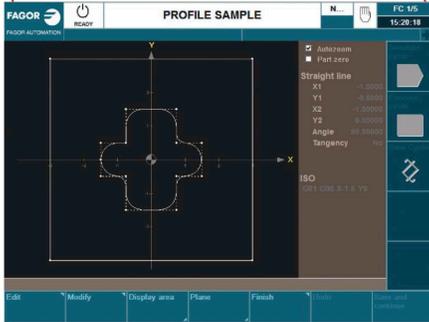
2

Fill in the cycle variables directly from blueprint in seconds



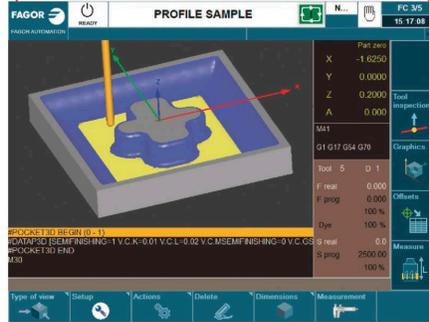
3

Create your Profile if necessary instantly



4

Simulate or Execute utilizing HD Graphics



You can choose from a number of predefined cycles, from SIMPLE to the most COMPLEX: Pocket Milling, Facing, Profile Milling, Boss, Drilling, Tapping Boring....and many more for Milling. Facing, Turning, Taper, Grooving, Threading, Profiling....and many more for Turning.

Fagor Automation...Adapting to your World



fagorautomation.us

Chicago | Dallas | Florida | Los Angeles | Montreal | Atlanta | Toronto

For more information: 800-4A-FAGOR or info@fagor-automation.com



CNC Systems | Digital Servo Motors & Drives | Feedback Systems | DRO Systems | Motion Control Systems

7490 MacDonald Road, Unit 120, Delta, British Columbia V4G 1N2, 800.913.4434
854 78 Avenue, Edmonton, Alberta T6P 1L7, 780.466.4693
940 Winston Churchill Boulevard, Oakville, Ontario L6J 7X5, 905.845.4434



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FAGOR 8065 REMOTE SUPPORT PROGRAM:

FAGOR Remote Support Program

Did you know that a Fagor Automation engineer can remotely connect to your CNC controller and assist in 'machine-down' issue diagnostics, troubleshooting a tooling problem, or even provide programming assistance? This service is free during your system's warranty¹ period, and is now available for a fee (one-time or annual programs are available), for the life of your Fagor CNC Controller.



We're so confident that our engineer can resolve your issues remotely, that we'll give you a 20% discount on any subsequent and required onsite service rates if we can't fix it remotely.²

Post Warranty Remote Support Pricing

One-Time Only Agreement

There will be a connection fee of \$100 CAD, which includes one hour of service/support. Each additional hour will be billed at \$60 CAD...there is a 2-hour minimum.

Ongoing/Annual Agreement

There will be a monthly recurring payment of \$80 CAD for a single machine, \$130 CAD for 2 machines, \$180 CAD for 3 machines, or \$220 CAD for 4 machines, at a single site (for more than 4 machines at a single site, please contact Fagor service for Special Pricing). This will include 2 support sessions per month, per machine, with a maximum of 4 hours support, per session. Additional hours of support will be billed at \$60 CAD. All software updates and upgrades (where possible) will be free for any machine(s) under an annual remote service agreement. Sessions are non-transferrable to other machines...support is tied to the registered serial number(s).

Contact: Fagor Service Department
Phone: (905) 670 7448
Email: service@fagorautomation.on.ca

Request Fagor Remote Support

Company Name: _____

Primary Site Address: _____

Fagor CNC Controller: 8060 8065 8070

Machine Type: Mill Lathe VMC Other

Programming: G-Code Conversational

Number of Machines under Agreement: _____

Duration of Agreement: One-Time Only

Ongoing/Annual Agreement

Payment Method: Fagor Account Terms

Credit Card: VISA MasterCard

Contact Person: _____

Phone: _____

Email: _____

¹ Warranty period for domestically purchased CNC systems is 2 years from registration date. Warranty for imported machines is 1 year from completion of the install.

² Requires current enrollment in an online service agreement. Normal service rate pricing will apply, to obtain 20% discount. No other discounts will apply. Discount applies to labor hours only. Travel hours will be billed accordingly, without discount. Travel expenses, hotel accommodations, rental car, etc. will be billed at actual costs.

Fagor Automation Canada. 3-6380 Tomken Road, Mississauga, ON

Tel (905)670 7448

Fax (905) 670 7449

7490 MacDonald Road, Unit 120, Delta, British Columbia V4G 1N2, 800.913.4434
854 78 Avenue, Edmonton, Alberta T6P 1L7, 780.466.4693
940 Winston Churchill Boulevard, Oakville, Ontario L6J 7X5, 905.845.4434

STANDARD EQUIPMENT

Fagor 8065 control
X/Y/Z axis linear scales
A/X axis high precision absolute encoders
20bar through spindle coolant system
full splash/chip guarding enclosure with removable top
chip conveyor + bucket
machine and control manuals
adjusting tools + tool box

EUMACH HSM-5XA 5-AXIS MACHINING CENTRE PACKAGE PRICE: US \$299,900

TERMS AND CONDITIONS

The pricing

Pricing shown is in US funds.

The above pricing is F.O.B. Masteel in Oakville, Ontario.

Applicable taxes are extra.

CSA approval is included in the pricing.

The payment terms

30% with order, 60% before pick-up, 10% 30 days after delivery.

Warranty

Two (2) years on parts & labour.

Delivery

To be confirmed at the time of ordering.

***CUSTOMER'S RESPONSIBILITY**

- Pick-up the machine at Masteel in Oakville, Ontario.
- Off load the machine from the truck at the customer's site.
- Provide all lifting equipment to move the machine into place for assembly.
- Foundation per requirements.
- Power to the machine.
- Hydraulic + way lube oil plus coolant fluid for the machine.

***MASTEEL'S RESPONSIBILITY**

- Assemble / level the machine on the customer's shop floor and anchor the machine to the customer supplied foundation.
- Complete the machine installation and accuracy test.
- One day of basic machine operator training.

Pre-Start Health and Safety Review (PHSR) is the responsibility of the customer and is not included in the above pricing.

This proposal is valid for thirty (30) days.

We look forward to working with you on this project.

Sincerely,

MASTEEL AMERICA CORPORATION

Ron Nater
Manager, Eastern Canada
phone: 647.270.4434
email: ron@masteels.com
website: www.ronnater.ca