



















Matsuura CUBLEX-42

A New Era in Unmanned Multi-Tasking Machines has Arrived. Milling & Turning: "One Hit" Multi Pallet, 5-Axis CNC Processing

The **CUBLEX-42** 5-Axis Multi-Tasking machine tool ushers in a new era of high performance CNC production processing, expanding the manufacturing horizons & possibilities of CNC users worldwide.

Process Integration

CUBLEX-42 Main Features

- Developed from the market proven design of the Matsuura **MAM72-42V**, the **CUBLEX-42** offers users outstanding 5-Axis Milling capabilities coupled with an integrated high end Turning Center.
- Highly rigid & stable Milling & Turning.
- Spacious machining area with minimal interference.
- Eliminates accumulated errors & vastly reduces set-up times by removing the need for separate Milling & Turning machines.
- Robust & proven 1,800 min⁻¹ chuck rotational speed in turning mode.
- One Hit processing, large multi pallet changers & Milling & Turning in the same machine tool assures extended periods of reliable unmanned operation.
- Small Machine Footprint.





Process Integration & Optimization Creates A Cost Effective CNC Production Environment

The Matsuura CUBLEX-42 - Two machines in One

Integrated Milling & Turning functionality offers a vast reduction in set up & production times, & removes accumulated errors between operations.





Features

Billet size: Ø400×H150 (Ø15.74×H5.90 in.). Precision turning & high accuracy simultaneous 5-aaxis machining - on one machine tool. R4 ball-end mill machining pitch 0.15 surface roughness Rz 0.1 enabled.

- Workpiece: Pulley Material: A5052
- No. of tools : 22 • Cycle Time : 22 hr. & 10 min.







The 2nd Process

	Details	Mode		D
1	Holes of Ø20 mm (Ø0.78 in.)	Milling	1	Ho
2	Rough Turning of Outline	Turning	2	Ro
3	Rough Milling of Pockets of Top Surface/Finish of Taper Parts/Finish of Flat Surface	Milling	3	Ro
4	Rough Milling of Pockets	Milling	4	Ro
5	Rough Milling of Pockets/Rough Milling of Fillet of Top Surface	Milling	5	На
6	Drilling for M12	Milling	6	Pc
7	Chamfering	Milling	-	
8	M12 Tapping	Milling	1	Ro
9	Finish Milling of Pocket of Top Surface, Fillet Side	Milling	8	Se
10	Finish Turning of Inner Diameter	Turning	9	Fir
11	Semi-Finish Turning of Outer Diameter	Turning	10	Ro
12	Finish Turning of Outer Diameter	Turning	11	Ro
13	Milling of Text Characters	Milling	12	Fir
	1			

	Details	Mode
1	Holes of Ø29.5 mm (Ø1.1 in.)	Milling
2	Rough Turning of Top Surface/Outer Diameter	Turning
3	Rough Milling of Gear Parts/Finish	Milling
4	Rough Turning of Inner Diameter	Turning
5	Holes of Ø29.5 mm (Ø1.1 in.)	Milling
6	Rough Turning of Inner Diameter	Turning
7	Rough Turning of Inner Diameter	Milling
8	Semi Finish Turning of Inner Diameter	Turning
9	Finish Turning of Inner Diameter	Turning
0	Rough Milling of Pockets	Milling
1	Rough Milling of Pockets	Milling
12	Finish Milling of Pockets	Milling





GibbsCAM is a world leader for leading CAD/CAM software technology. GibbsCAM & Matsuura work very closely to bring you instant CAD/CAM functionality, & a factory approved post processor & machine simulation model specific for the Matsuura machine you have purchased, allowing you to rapidly maximize your investment with us.

The 1st Process

Process Integration achieves Reduced Set Up & Cycle Times. Multi Pallet Unmanned Operation Achieves a Faster Return on Investment.

The **CUBLEX-42** Reduces Product Time to Market

Machining Achieved in One Set-Up / on One Machine To reduce the cycle time of a complete component that requires both Milling & Turning, addressing the problem of multiple operations across different machine tools is key. Producing the component in one succinct Milling & Turning process on one machine is a crucial benefit of the **CUBLEX-42**

5-Axis Milling & Turning on One Machine

Process Integration offers your process a market advantage over your competitors.

Outstanding "Lights Out" Performance

The **CUBLEX-42** incorporating a multi pallet system guarantees cost effective & formidable unmanned production.

APC Options: From a Standard Twin Pallet to Full FMS



% Floor Plans show Optional Matrix Magazine of 320 tools

ATC Options: From Standard 40 to Max. 540 Tools : HSK-A63W



80-Tool Magazine (Chain Magazine)

320-Tool Magazine (Matrix Magazine)

High Speed Rotation & High Accuracy Positioning : Matsuura's Unique DD Technology

Ultra Robust DD Turning Spindle Motor

Designed in house by Matsuura, the DD C-Axis Motor achieves high positional accuracy during Milling & high speed rotation whilst Turning.

Horizontal & Vertical Turning

The **CUBLEX-42** turns equally well in either Horizontal or Vertical orientation. The wide X-Axis stroke offers users a significant advantage & opens up new machining possibilities over other multi-tasking machines currently on the market.

Max. Rotation Speed 1,800 min⁻¹

A table rotation speed of 1,800 min⁻¹ assures exceptional surface finish in cast iron or steel.





Travels of CUBLEX-42

Turning Test Results

	Material	Outer Diameter : D	Cutting Depth/Diameter	Rotation Speed	Feedrate (per rotation)	Quantity
Vertical	15057	Ø250 mm (9.84 in.)	6 mm (0.23 in.)	800 min ⁻¹	0.4 mm (0.015 in.)	754 cc / min
	A5057	Ø120 mm (4.72 in.)	8 mm (0.31 in.)	1,800 min-1	0.45 mm (0.017 in.)	1,221 cc / min
D	S45C	Ø247 mm (9.72 in.)	5 mm (0.19 in.)	200 min-1	0.16 mm (0.006 in.)	62 cc / min
		Ø107 mm (4.21 in.)	6 mm (0.23 in.)	800 min ⁻¹	0.36 mm (0.014 in.)	290 cc / min
Horizontal	A 5057	Ø250 mm (9.84 in.)	6 mm (0.23 in.)	800 min ⁻¹	0.4 mm (0.015 in.)	754 cc / min
	A5057	Ø120 mm (4.72 in.)	6 mm (0.23 in.)	1,800 min ⁻¹	0.45 mm (0.017 in.)	1,221 cc / min
	S45C	Ø420 mm (16.53 in.)	3 mm (0.11 in.)	200 min ⁻¹	0.2 mm (0.007 in.)	79.1 cc / min
		Ø120 mm (4.72 in.)	8 mm (0.31 in.)	800 min ⁻¹	0.25 mm (0.009 in.)	301.4 cc/min

Cylindrical Turning Test Results



Cylinderity						
2.09 µm						
(0.000082 in.)						
[Turning Conditions]						
Material Aluminum(AF						

Material	Aluminum(A5052)
Workpiece Size	Ø140×H130 mm (Ø5.51×H5.11 in.)
Tool	Cermet coating HSS
Rotation Speed	1,800 min ⁻¹
Turning Depth	0.1 mm/rev. (0.0039 ipr)

Imbalance Check Function

Patent Pending

This function allows the balance of the workpiece to be set before turning. Imbalance in the workpiece during rotation & turning is accurately monitored to prevent problems with unwieldy or uneven components.



Optional Grinding Functions

Taylor Hobson

Option

Grinding is achieved by rotating the C-Axis of 1,800 min⁻¹ and the spindle with a grindstone of 12,000 min⁻¹ at the same time.

Providing 3 Type (A/B/C) Grinding Functions

Type A [Basic Option]

· Y-Axis dust control cover, External nozzle, Chopping function

- Type B [Filtering Ability 5 µm (0.000196 in.)]
 - Type A
 - + 7 MPa coolant thru spindle + Oil temperature controller

Type C [Filtering Ability 3 µm (0.000118 in.)]

- Туре В
- + Clean tank system with centrifugal machine (80L)

The Matsuura Hi-Tech Spindle : Designed & Built In-House

Assembled in a Clean Room Environment

Matsuura's Spindle Engineers work in a dedicated Clean Room complex to assure the highest standards of build quality & reliability. Our ultra precision spindles are guaranteed to have a runout of less than 1 μ m (0.000039 in.) - this is an actual measured value at the spindle nose.

ICTM-HSK standard

The **CUBLEX Series** utilises the ICTM-HSK standard for Turning Mills. This allows for superb combined Milling & Turning functionality.

Maintenance Free & Eco Friendly

The Spindle bearing is lubricated by an automated grease supply system. Low noise operation, with minimum air requirement. Eco friendly & maintenance free.

Spindle Lock System

Matsuura's unique Drum Break locking system is integrated into the spindle to clamp the tool during turning operations. This strong & robust system assures high accuracy turning.



Spindle Motor Power & Torque Diagram



Cutting Test Results

	Material	Tool Details	Cutting Width & Depth	Spindle Speed	Feedrate	Quantity		Material	Tool Details	Spindle Speed	Feedrate	Quantity
Facemill	A5052	Ø80mm (3.14 in.) 3 tooth	W=70 mm (2.75 in.) D=4 mm (0.15 in.)	5,500 min ⁻¹	4,500 mm / min (177.16 ipm)	1,260 cc/min	Drill	A5052	Ø33mm (1.29 in.)	1,200 min ⁻¹	500 mm / min (19.68 ipm)	427 cc/min
w	S45C	Ø80mm (3.14 in.) 5 tooth	W=70 mm (2.75 in.) D=3mm (0.11 in.)	900 min ⁻¹	1,600 mm / min (62.99 ipm)	336 cc/min		S45C	Ø33mm (1.29 in.)	1,200 min ⁻¹	220 mm/min (8.66 ipm)	188 cc/min
Endmill	A5052	Ø25mm (1 in.) 2 tooth	W=22 mm (0.80 in.) D=6 mm (0.25 in.)	12,000 min ⁻¹	8,000 mm / min (314.96 ipm)	1,056 cc/min	Тар Й	A5052	M36 XP4.0	120 min-1	480 mm / min (18.89 ipm)	
W	S45C	Ø20mm (0.78 in.) 4 tooth	W=3 mm (0.11 in.) D=30 mm (1.18 in.)	5,000 min ⁻¹	3,500 mm / min (137.79 ipm)	315 cc/min		S45C	M24 XP3.0	100 min ^{_1}	300 mm/min (11.81 ipm)	

Circularity



Spindle Thermal Displacement Compensation

Matsuura's own Thermal Displacement Compensation function assures long periods of accurate machining performance.



Multi Faceted Tooling

The spindle acts as another axis and can be programmed and locked in any position within 360 degrees. This enables the use of multi-faceted tooling to reduce tool change times and the need for extra tool holders/ pockets. For example, when you use a triple insert cutter the spindle can be locked at 120-degree increments.





The Matsuura Siemens **G-Tech 840DI** NC Matsuura G-Tech 840DI

Offering the latest high performance CPU supporting Windows XP Professional, this NC leads the field in functionality for Multi-Tasking machine tools. Integrated USB Port, 10.4 inch color monitor with easy to use Hot Keys are just some of the features of this ergonomic, easy to use state of the art NC.

Windows XP Professional is a Microsoft Corporation Trademark

Unique High Speed & High Accuracy Machining Controls

After compressing a maximum of 50 blocks and engaging the 100 Block Look Ahead function, IZ-1/COMP interpolates & "best-fits" B-Spline to the programmed points.





Automatically Controlled Toolpath / Tool Speed

TRAORI

5-Axis Transformation (TRAORI) is the kinematics transformation function of *G-Tech840DI* which realizes easy tool center point programming for 5-Axis machining. The path and path velocity of the tool center point, can be programmed based on the workpiece coordinate system, in the same way as that for 3-Axis machine tools.



Intelligent Precision Control Standard

IPC

When utilizing this software, setting the required part accuracy level is quick, simple and user friendly, allowing you to prioritize precision against speed.



Proven Software Performance Standard

Handy Man IIY

Handy Man IIY provides major savings by reducing set-up, programming, operating & maintenance times.

Effortless G-Code Functionality Standard

Changing G-Codes is quick & simple.

Mode	G-Code
Milling	G300
Turning (Vertical)	G301
Turning (Horizontal)	G302
Grinding (Option)	G303

NC Packages

Option

Matsuura provides a wide selection of cost effective NC Software collections for high speed & 5-Axis machining. These packages are tailored to your production requirements & can be upgraded at a later date as your workload changes.

5-Axis Package **RTCP** (**TRAORI, CUT3DC, etc.**)

Complex Shaped Parts or Precise Molds	17 1/COMP
(Max. 5,000 block look ahead + Spline Interpolation	

Easy Programming (3+2-Axis)

CYCLE800

G-Tech 840DI offers, as standard feature, CYCLE800 which takes over necessary calculations of coordinate values including necessary axes motions. When rotary axis positioning is used complex calculations are necessary to account for machine axis configuration cycle800 automatically makes these calculations, establishing a suitable work coordinate system for the new surface & its orientation.



Tool Diameter Interpolations on 5-Axis Option

CUT3DC

CUT3DC sets the value of tool-off-sets automatically for simultaneous 5-Axis machining according to the pre-set value. It enables the safe & automatic use of different diameter tools during 5-Axis machining with the table tilted.



Specifications

Movement and Ranges		
X-Axis Travel	mm (in.)	520 (20.47)
Y-Axis Travel	mm (in.)	730 (28.74)
Z-Axis Travel	mm (in.)	510 (20.07)
A-Axis Travel	deg	-110 ~ +10
C-Axis Travel	deg	360
Pallet		
Pallet Working Surface	mm (in.)	Ø300 (Ø11.81)
Pallet Loading Capacity	kg (lb.)	200 (440)
Pallet Max. Work Size	mm (in.)	Ø420 × H350 (Ø16.53 × H13.77)
Spindle		
Spindle Speed Range	min⁻¹	40 ~ 12,000
Type of Spindle Taper Hole		HSK-A63W (ICTM)
Spindle Bearing Inner Diameter	mm (in.)	Ø80 (Ø3.14)
Max. Spindle Torque	N·m/min¹	167 / 630
Spindle Drive Motor	kW (HP)	7.5 / 11 (15)
Feedrate		
Rapid Traverse Rate (X/Y/Z)	mm/min (ipm)	50,000 / 50,000 / 50,000 (1,968.5 / 1,968.5 / 1,968.5)
Rapid Traverse Rate (A)	min-1	30
Rapid Traverse Rate (C : Milling/Turning)	min-1	200 / 1,800
Min. Movement Increment (X/Y/Z)	mm (in.)	0.001 (0.000039)
Min. Movement Increment (A/C)	deg	0.001
Automatic Tool Changer		
Type of Tool Shank		HSK-A63W (ICTM)
Tool Storage Capacity		40 (Chain Type)
Max. Tool Diameter	mm (in.)	Ø96 (Ø3.77)(When the pockets on both sides are empty) Ø150 (Ø5.90)(Designated Pockets Only)
Max. Tool Length	mm (in.)	300 (11.81) 350 (13.77)(Tool Dia.Ø106 (4.17) with Conditions)
Max. Tool Mass	kg (lb.)	10 (22)
Method of Tool Selection		Memory Random
Tool Change Arm		Double Grip Type
Tool Changing Time (Tool to Tool)	sec	0.9
Tool Changing Time (Chip to Chip)	sec	4.1

Automatic Pallet Changer		
Number of Pallets	pcs	2
Methods of Pallet Change		Rotary Type
Pallet Changing Time(pallet to pallet)	sec	16.4 (Excl.Door Open/Close Time)
Pallet Clamping Force	kN	41.5
Pallet Weight / 1 Pallet	kg (lb.)	34 (74)
Power Sources		
Power Capacity	kVA	63 (Depending on Options)
Input Power	V	AC 200/220 ±10%
Frequency Required	Hz	50 / 60 ±1
Air Source	MPa	0.54 ~ 0.93
Volume of Compressed Air	NL/min	Min.50 Max.300
Tank Capacity		
Hydraulic Oil Tank Capacity	L	40
Coolant Tank Capacity	L	600
Standard Accessories		
01. Total Splash Guard	02.	ATC Auto Door
03. Work Station for PC2	04.	Safety Cover for Work Station
05. Synchronized Tapping	06.	AD-TAP Function
07. IPC Function	08.	Spindle Oil Cooler
09. C-Axis Oil Cooler	10.	Auto Grease Supply Unit
11. Coolant Unit	12.	Spiral Chip Conveyor
13. Chip Flush	14.	Movable Manual Pulse Generator
15. Spindle Overload Protect	16.	Workpiece Counter (9 sorts of M Function)
17. Spindle Thermal Displaceme	ent Con	npensation System
18. Work Light	19.	Standard Mechanical Tools & Tool Box
20. Machine Color Paint		
21. Levelling Pads & Bolts (Not a	utilized	for the foundation)
22. Scale Feedback for the A/C-Axi	s 23.	Handy Man IIY
24 Imbalanced Check Function	25.	Matsuura Safetv Specification

Outline **Floor Plan** mm (inch) mm (inch) Front View R. 7400 (291.33) 5389 (212.16) 950 (37.4) *** Oil Cooler for C-Axis Hydraulic Unit Spindle Oil Cooler . Leveling Bolts 11-M32×P2 Working Area N**G**ener Ŵ 40-Tool Magazine 2477 (97.51) 3630 (142.91) 2477 (97.51) 35 Space for Pulling Out the Coolant Tank **Right Side View** N Ъ 1090 (42.91) 1090 1090 (42.91) 1360 665 (26.18) 49 325 290 (11.41) 1109 (43.66) 665 (26.18) 3090 (121.65) ÷ 600 (23.62) 1125 2324 (91.49) Hydraulic Unit Coolant Tank Z Ľ ľ UPP ᇉ Main Control Panel ∠_Air Power 5389 (212.16)

Equipment

Spindle						
12,000 min ⁻¹ (L 7.5/11 kW, H5.5/10 kW, Auto Grease Lubrication)						
20,000 min ⁻¹ (L 11/18 kW, H15/18	8.5 kW, Auto Grease Lubrication)					
ATC						
40 (HSK-A63W Chain Type)		0				
80 (HSK-A63W Chain Type)						
120 / 150 / 180 / 210 / 240	(HSK-A63 240Tool Base of Matrix Type)					
120 / 160 / 200 / 240 / 280 / 32	20 (HSK-A63 320Tool Base of Matrix Type)					
360 / 400 / 440 / 480 / 520	(HSK-A63 520Tool Base of Matrix Type)					
High Accuracy Control						
Scale Feedback X/Y-Ax	is					
Z-Axis						
X/Y/Z-	Axis					
A-Axis		0				
C-Axis		\bigcirc				
Spindle Thermal Displacemen	nt Compensation	\bigcirc				
Axes Thermal Displacement (Compensation					
APC						
PC2		0				
PC5 (Floor Pallet System)						
PC11 (Floor Pallet System)						
PC24 (Tower Pallet System)						
Coolant						
Coolant Unit		0				
Coolant Thru Spindle Vacuu	m Type Coolant Thru A					
Vacuu	m Type Coolant Thru B					
Vacuu	m Type Coolant Thru C (2 MPa)					
Vacuu	Vacuum Type Coolant Thru C (5 MPa)					
	m Type Coolant Thru C (5 MPa)					
Vacuu	m Type Coolant Thru C (5 MPa) m Type Coolant Thru C (7 MPa)					
Coolant Flow Checker	m Type Coolant Thru C (5 MPa) m Type Coolant Thru C (7 MPa)					
Coolant Flow Checker Mist Separator Unit	m Type Coolant Thru C (5 MPa) m Type Coolant Thru C (7 MPa) Without Fire Protect Damper					
Vacuu Coolant Flow Checker Mist Separator Unit	m Type Coolant Thru C (5 MPa) m Type Coolant Thru C (7 MPa) Without Fire Protect Damper With Fire Protect Damper					
Vacuu Coolant Flow Checker Mist Separator Unit Coolant Temperature Controll	m Type Coolant Thru C (5 MPa) m Type Coolant Thru C (7 MPa) Without Fire Protect Damper With Fire Protect Damper er Separate Type, 100L Tank					



Tailstock Unit

Broken Tool Detection (Contact Type)

Swarf Management	
Total Splash Guard	\bigcirc
ATC Auto Door	0
Spiral Chip Conveyor	0
Chip Flush System	0
External Nozzle 2 MPa with Spindle Thru	
External Nozzle 5 MPa with Spindle Thru	
External Nozzle 7 MPa with Spindle Thru	
Lift-Up Chip Conveyor (Scraper, Drum)	
Lift-Up Chip Conveyor (Hinge, Drum)	
Chip Bucket	
Workpiece Cleaning Gun (Machine Side)	
Operation & Maintenance Support	
AD – TAP Function	0
IPC Function	0
Handy Man IIY	0
Grease Supply Unit for the Guideway	0
Work Light	\bigcirc
Movable Manual Pulse Generator	\bigcirc
8 Sets of Extra M Function	
Spindle Load Monitoring Function	
Weekly Timer	
Spindle Run Hour meter	
Rotary Wiper (Air Supply System)	
Rotary Wiper (Electrical System)	
Automatic Operation Run Hour Display Unit	
Workpiece Counter	
Optional Block Skip 1~7	
Program End Announcement Light (Red, Yellow, Green)	
Safety Regulation	
Matsuura Safety Specification	0
CE / CSA / GB Mark	
In-Process Measurement + Tool Breakage	
In-Process Measurement/Auto Centering (Optical Touch Probe)	
Broken Tool Detection/Auto Tool Length Measurement (Touch Sensor)	
Broken Tool Detection/Auto Tool Length Measurement (Laser Sensor)	
In-Process Measurement (Optical Touch Probe) & Broken Tool Detection (Touch Sensor)	
In-Process Measurement (Optical Touch Probe) & Broken Tool Detection(Laser Sensor)	
Grinding Function Refer to details on the page 9	
Grinding Function A	
Grinding Function B	
Grinding Function C	





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• Product specifications and dimensions are subject to change without prior notice.

• The photos may show optional accessories

Products are subject to all applicable export control laws and regulations.