



WITZIG & FRANK
by HYDROMAT

WITZIG & FRANK TriFlex 5X Multistation 5-Axis Machining Center

The *TriFlex 5X* with its horizontal workstation setup allows precise machining jobs with the highest output just-in-time.

The newly designed machine is based on the original *TRIFLEX* concept developed in the early 2000s and enhances its strengths by adding features of current single and dual spindle machining centers.

Flexibility

- Standardized modular rotary transfer machine
- Integrated standardized automation
- Fixture change without loss of time
- Simultaneous OP 10 and OP 20 machining in the same machine
- Fully flexible 5-axis machining
- Easy programming and operation

Quality

- Simultaneous 5-axis machining with five spindles
- Part loading and unloading parallel to the machining process
- High availability (tool change via 8-station turret, no motor spindle, free chipfall, no sensitive components like guides, drives in the work area)
- Chip-to-chip time < 1.5 sec
- Minimal travel distances in work area

Cost Per Part

- Full compensation of single spindle machining
- Optional thermal compensation
- Fail-safe traceability of quality features
- Inherent rigidity of box in box system with sealed work area
- Direct absolute travel measuring system

Productivity

- Compact machine design
- Highest output on minimal space (-30% vs three double spindle machines)
- Minimal technology cost
- One set of cutting tools (-80%)
- Higher availability (+6%)

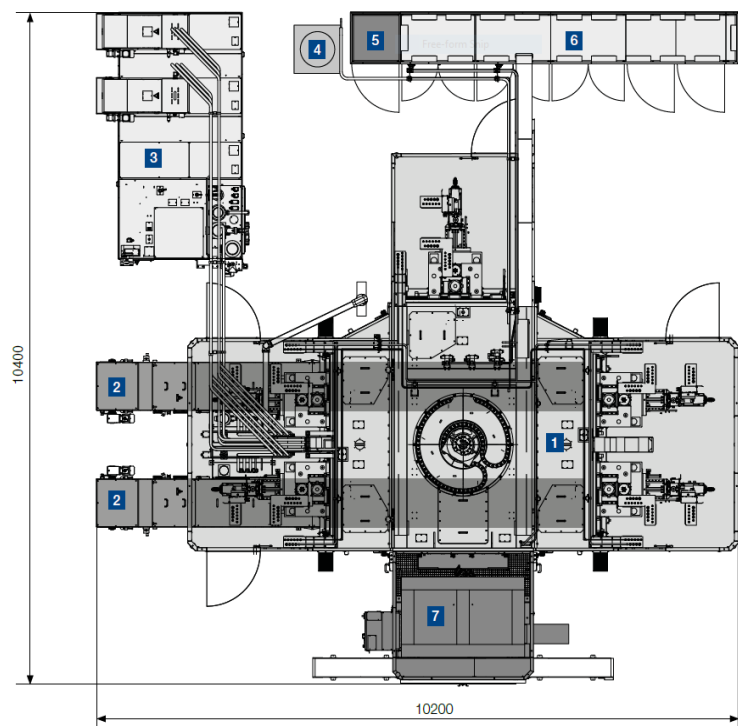


- 1 Machine
- 2 Chip Conveyor
- 3 Coolant Unit
- 4 Cooling Aggregate
- 5 Fluid Cabinet
- 6 Electrical Cabinet
- 7 Automation

TriFlex 5X Advantages

Flexibility • Productivity • Quality • Cost Per Part

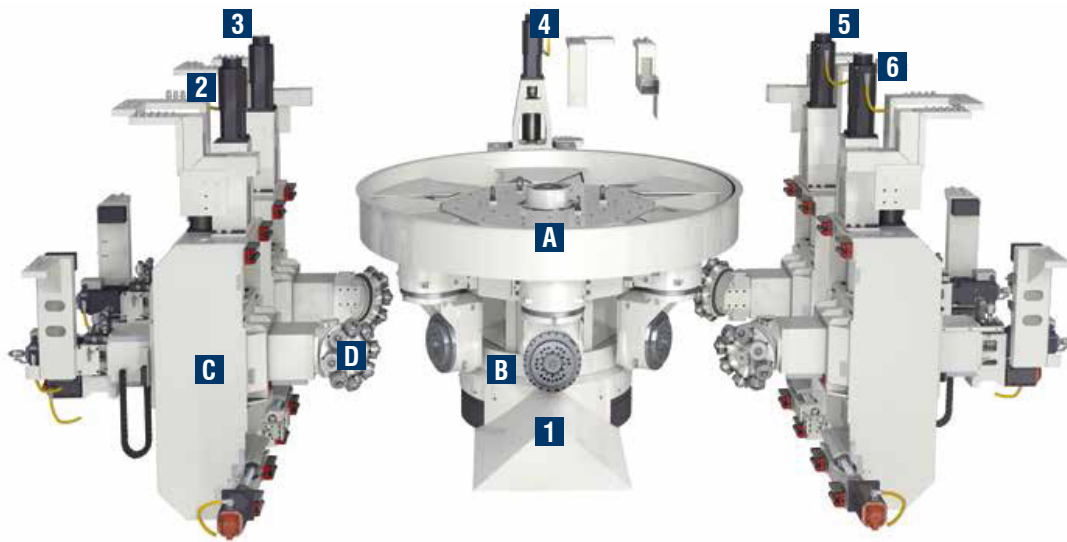
- Complete Machining
- Mass Production
- Single Machine
- Five Sided Machining
- Five Stations
- Single Setup
- Five Axis



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Machine Design & Mechanical Highlights



Machining Stations

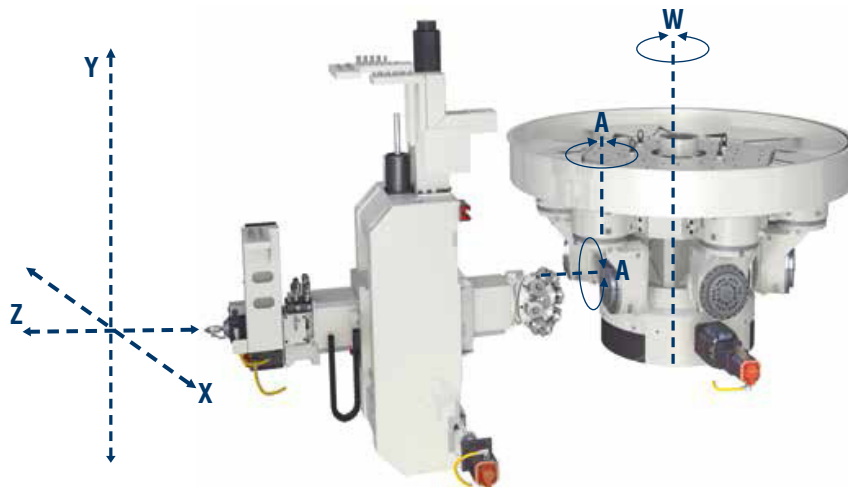
- 1** Loading/Unloading
- 2-6** Machining Units (3-Axis Modules)

Central Components

- A** Central Rotating Unit for Workpiece Transfer
- B** 6x A/B - Axis with Torque Drive for Fully Flexible 5-Axis Machining
- C** 3-Axis Module > Identical in Station 2-6
- D** 8-Fold Tool Turret

Axis Configuration of the TriFlex 5X

3 - Axis Module



Central Rotating Unit

A/B Axes

Machine Frame



Machine Design & Mechanical Highlights

Tool Turrets



Loading/Unloading



Dry Machining



Technical Data

CNC Control: FANUC 31i

Siemens 840D sl Option Available



Tooling System HSK 63 C

		X-Axis	Y-Axis	Z-Axis
Stroke	mm	450 (Station 4:650)	500	450
Rapid Traverse	m/min	50	50	60
Acceleration	m/s ²	5	5	6
Guideway System		Roller Guide Size 55	Roller Guide Size 45	Roller Guide Size 45
Drive System		Ball Screw D50/S20 (Direct)		
Measuring System		Schneberger (Absolute)		
Brake		Motor Brake and Mayr Brake (redundant)		

Part, Fixture	Part Weight incl. fixture max.	kg	250
	Part Length Max	mm	350
	Part Width Max	mm	350
	Part Height Max	mm	350

NC Table/B-Axis	Load Max	kg	600
	Moment of Inertia Max	kgm ²	45
	Tilting Torque Max	Nm	10,000
	Holding Torque Max	Nm	5,000
	Speed Max	rpm	80

NC Table/A-Axis	Load Max	kg	250
	Moment of Inertia Max	kgm ²	20
	Tilting Torque Max	Nm	4,000
	Holding Torque Max	Nm	4,000
	Speed Max	rpm	80

System	L x W x H	mm	10,400 x 10,200 x 4200
	Weight	t	65
	Energy Consumption	kWh	55
	Speed Max	rpm	80

Turret	Tools	no.	8
	Speed Max	rpm.	13,300
	Power (Rated)	kW	20
	Torque (Max)	Nm	175
	Chip-to-Chip Time (Adjacent Tools)	sec	<1.5
	MQL		yes (Option)
	ICS	bar	20/60 (Option)

Central Rotary Table	System		Hirth Ring
	Load Max	kg	9,000
	Moment of Inertia Max	kgm ²	9,500
	Tilting Torque Max	Nm	75,000
	Holding Torque Max	Nm	100,000
	Speed Max	rpm	6

Automotive Powertrain



Automotive Transmission



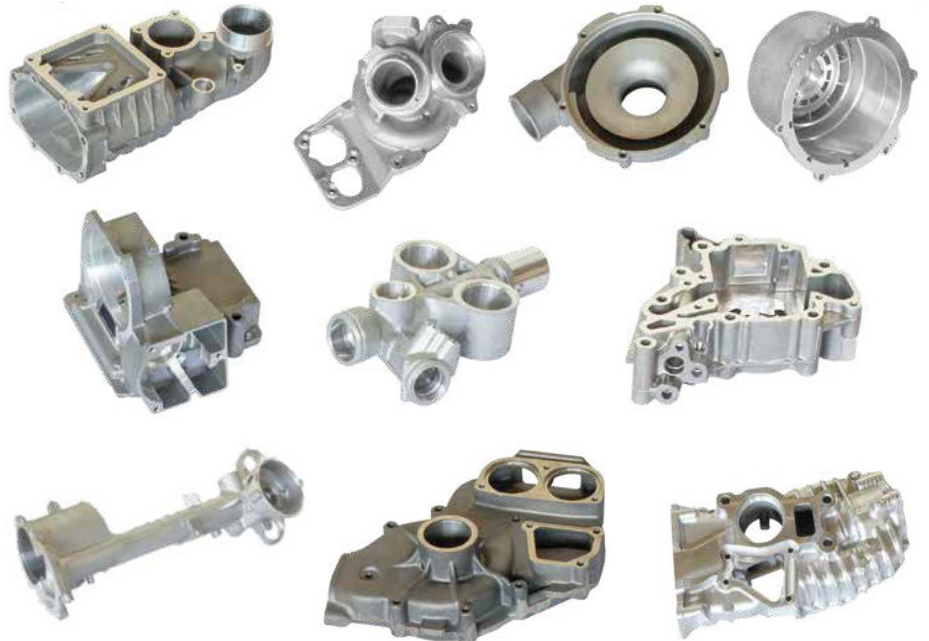
Automotive Engine Parts



Automotive Structural Parts



Automotive Aggregates



Motorcycle Engine and Transmission



Motorcycle Engine and Transmission



**The Benchmark for Volume Production
Unmatched Quality by the Second**

Comparison of Three Linked Dual Spindle Machining Centers Versus a Rotary Transfer Machine

Type	Three Double Spindle Machining Centers with Automation	One TriFlex 5X with Automation
No. of Machines	3	1
No. of Controls	3	1
No. of Chip Conveyors	3	2
No. of Coolant Units	3	1
Space Requirement	approx. 100 m ²	approx. 80 m ²
Energy Consumption	approx. 85 Kwh	approx. 55 Kwh
No. of Fixtures	3 x 2 x 2 = 12	6
No. of Tool Sets per Operation	3 x 2 = 6	1
Technical Availability	92%	96%