

HELLER MCH

Machining Centers

# A Powerful Range

Flexible and Strong



**HELLER**

## MCH Models – a new Generation of Machining Centers State-of-the-Art Horizontal Machining Centers

- Powerful
- Dynamic
- Flexible

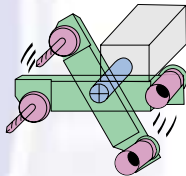
MCH 250  
MCH 280  
MCH 300  
MCH 350  
MCH 400  
MCH 450  
MCH 460

SK50 / HSK A-100

800x800x800  
1000x800x800  
1000x1000x1000  
1250x1000x1000  
1400x1000x1250  
1600x1200x1250  
2000x1400x1250

### MCH – The Cutting Edge In Machining

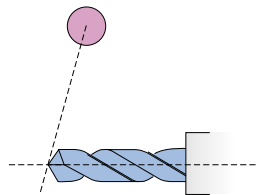
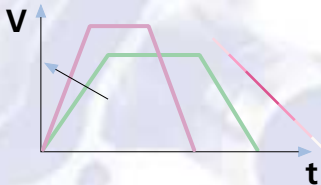
High dynamics with improved positioning and circular machining accuracy.



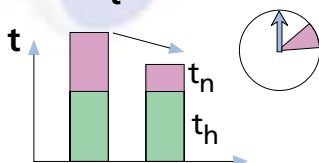
1. Automatic tool changer guarantees short chip-to-chip times.

2. Speed package:

- More acceleration
- Increased drive power
- Extended speed range



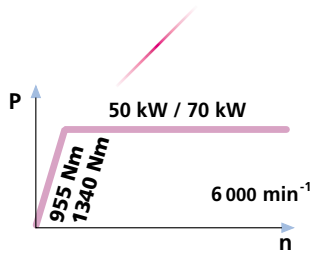
3. Drill fracture sensing reduces unproductive idle times.



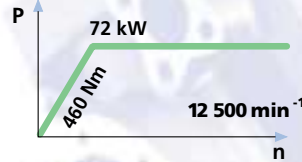
Remarkably reduced idle times!



## MCH Machining Centers – Powerful In Every Application



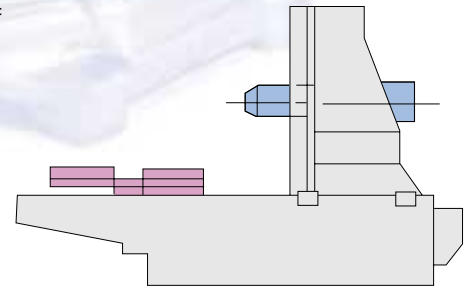
Drive gears for optimum torque



High speed spindle for cutting performance

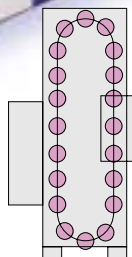
## MCH – Rigid Construction For Optimum Precision

- Rigid construction of machine bed and column optimized through FEA.
- Guideways with pre-loaded roller bearings and high positioning accuracy.
- Highly developed spindle concept for optimal precision and productivity.
- Digital feed drives integrated into machine design.

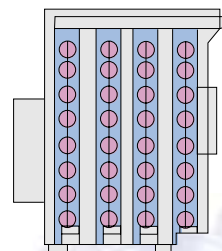


## Impressive Flexibility

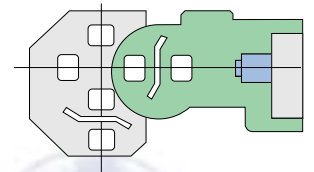
You decide on the option



**Chain magazine**, 50/100 pockets, highly productive with short tool-to-tool times



**Rack magazine**, up to 405 pockets, for frequent application changes with high tool capacity

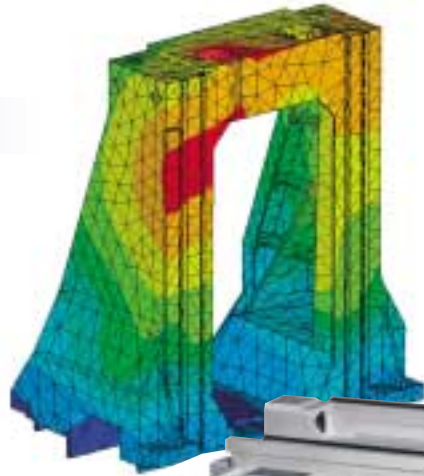


**System solutions** from pallet pools to FMS

# HELLER MCH

## Machine Bed

- Rigid one piece cast iron construction for high precision performance and easy installation
- T-shaped bed has integrated X and Y feed drives
- Axis configuration allows constant work area volume in Z-axis positioning range



## Gantry Column

- Thermosymmetrically constructed gantry column
- Best design for superior machine dynamics
- Cast iron construction



## Drive Control And Path Measurement Systems

- Digital feed drives designed for highest dynamics
- Thermosymmetrically mounted measuring scales for direct path measurements

## Guideways

- X, Y and Z axis are designed and equipped with low friction, pre-loaded roller bearings
- Low friction, no backlash, rigid
  - High positioning accuracy
  - Minimum lubrication

## Pallet Changer And Setting-Station

- Swiveling pallet changer – integrated into the machine bed – reduces chip-to-chip times
- Pallet and clamping fixture completely enclosed during change
- Manually rotated setting station with 4x90° indexing (automatically rotated setting station optional)
- Setting station clearly arranged and easily accessible



## Rotary Indexing Table

- Fixed rotary table 360x1° for precise repetition as standard equipment
- NC rotary table 360,000x0.001° available as an option
- Pallet alignment by fixed location pins (for precise repetition)





## Spindle Unit And Tool Changer

### Two Range Gear Drive

- 955 Nm / 1340 Nm
- 45-6000 min<sup>-1</sup>

- Spindle drive with precision bearings and free of transverse forces
- All bearings with metered oil-air-lubrication
- Easy to maintain spindle

### Main Spindle Driven by Hollowshaft Motor

- 45-12500 min<sup>-1</sup>
- 460 Nm

concept, spindle replacement from the front, no offsets required

- Online thermo growth compensation



### Tool Changer

- Pure mechanical tool change shank with double gripper
- Tool change time reduced to a minimum

## Tool Management

### High Speed Chain Magazine

### Universal Rack Magazine



- Shortest tool selection path
- Capacity of 50 tools, 100 tools optional
- Oversized tools up to 600 mm length available as an option
- Control panel with high resolution display for tool magazine (available as option for MCH 250/280)

- For features like tool life management refer to control options
- Variable location coding ensures immediate tool availability

- Up to 405 places
- Tool change concept allows tool change parallel to machining or, alternatively, fix place coding



## Coolant Unit And Chip Removal

- Standard coolant unit without disposable media filter (edge filter 350 µm and vacuum rotation filter 40 µm)

- Some of the available options:

- Larger coolant pump
- Multi-step pump for internal coolant supply through spindle, up to 70 bar
- Coolant chiller
- Interface for automatic operation
- Installation of coolant unit behind machine (takes up least floor space, e.g. in linear linked operation)

- Optimum chip removal through steep chip chutes and powerful scraping conveyors on each side of the Z-axis



## Standard Installation

1. Separate coolant unit
2. Scraping conveyor
3. Hydraulic unit
4. Central lubrication unit



## Controls

- State-of-the-art Siemens Control 840 D

- Additional Heller modifications for more flexibility and functionality

- Integrated tool data administration
- Integrated pallet data administration
- Integrated process monitoring
- PM - features
- Spindle torque and speed display
- Different display screens

- Additional function range „FMS-Control“ on FMS-Systems from HELLER control technology

## Extensions

### Dynamic Package

Speed options with "MCH Dynamic Package" available for high machining performance

- Speed: + 20%
- Axis acceleration: + 75%

### System Solutions for Top Productivity

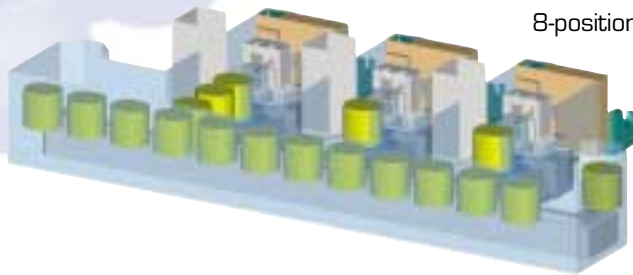
#### Flexible Manufacturing Systems = Machines + Automation

Characteristics:

- Independent cycle set-up
- Standard machine component swing area fits all pallet pools
- Pools accessible through maintenance doors
- Job administration through machine controls

4-position rotary pallet pool  $\triangleq$  6 pallets in the system

8-position pallet pool (expandable)  $\triangleq$  10 pallets in the system

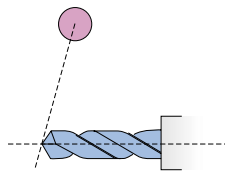


HELLER machining centers have a compact design - ideal for integration into flexible manufacturing systems. Machining centers are available with all options for linear linkage, automatic robot loading, and overhead transfer gantry.

Setting station or rotary table loading available.

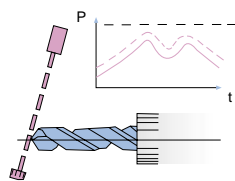
## Options

(Additional information available upon request)



### Tool Monitoring

- Drill Fracture Sensing



- Integrated Process Monitoring
- Tool Gauging

### SINTDI

Simple determination of required tools reduces setup time

### Tool Coding

Machining of Magnesium with Waterbased Coolant

Multihead Spindle Mounting (MSK)

### Hydraulic Workpiece Clamping



### Measuring Probe

Improved long-term accuracy and rigid and stable mechanical operation

### 5<sup>th</sup> Axis

Machining of 5 sides in one setup

### Automatic Rotating Setting Stations

### Remote Diagnostics

### Minimum Quantity Lubrication (MQL)

### Tool and Die Package

Powerful computer, simultaneous interpolation of axes, short cycle times, high speed with look-ahead

# We are here for you



## Machines

- Machining Centers
- Multi-head Changers
- Flexible Manufacturing Systems
- Flexible System Transfer Lines
- Machines for Crankshafts and Camshafts

## Projects and Processes

- Consulting
- Project Engineering
- Simultaneous Engineering
- Time Studies
- Full System Supplier

## Services

- After-sales Service
- Technology and Training Center
- Hotline/Teleservice
- Commissioning
- Spare Part Service
- Maintenance

## Our innovations – your success

DEUTSCHLAND

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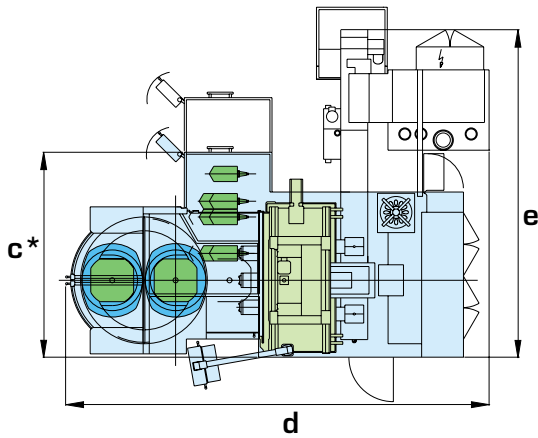
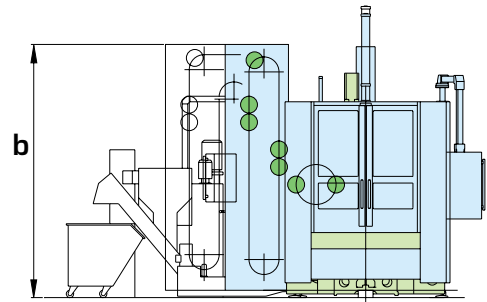
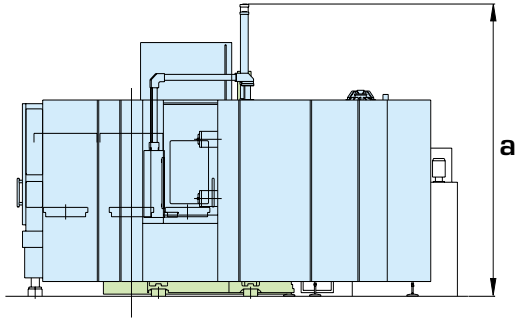
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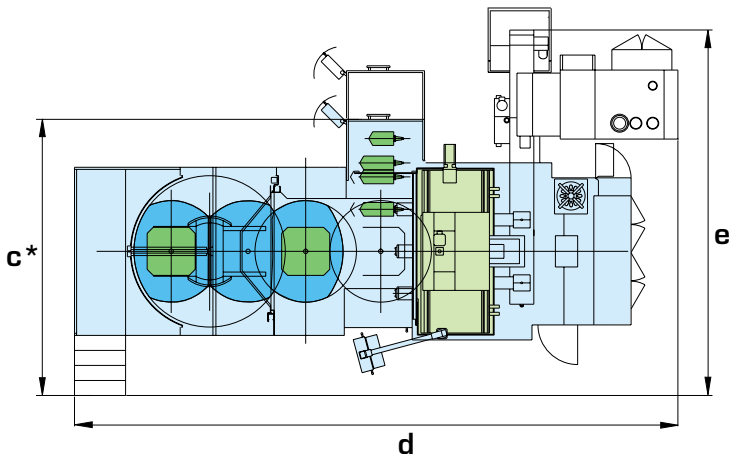
# HELLER



# HELLER MCH



MCH	250	280	300	350
a	4000	4000	4400	4400
b	3500	3500	3500	3500
c *	3100	3300	3500	3600
d	6300	6300	7100	7100
e	4900	5000	5200	5200



MCH	400	450	460
a	4400	4800	5200
b	3500	3500	3500
c *	4700	4800	5000
d	10100	10100	10300
e	6200	6200	6200

\* Chain magazine, 50 pockets

# HELLER MCH

Model		MCH 250		
Working range	Longitudinal stroke (X-axis)	mm	800	
	Vertical stroke (Y-axis)	mm	800	
	Transverse stroke (Z-axis)	mm	800	
Feed thrusts	X- and Y-axis with duty cycle = 40%	N	15000	
	Z-axis with duty cycle = 40%	N	17500	
Speeds	In X-, Y- and Z-axis / rapid traverse	mm/min.	50000	
	Acceleration	m/s <sup>2</sup>	4.0	
Dynamic package*	In X-, Y- and Z-axis / rapid traverse	mm/min.	60000	
	Acceleration	m/s <sup>2</sup>	7.0	
Spindle unit	Spindle diameter in front bearing	mm	100	
	Spindle taper	SK/HSK	50/A100	
Gear unit	Drive power/torque (max.) with duty cycle = 40%	kW/Nm	43/822	
	Speed range	1/min.	45-6000	
Hollow shaft unit*	Drive power/torque (max.) with duty cycle = 40%	kW/Nm	72/460	
	Speed range	1/min.	45-12500	
Enhanced gear unit* (further types available on request)	Drive power/torque (max.) with duty cycle = 40%	kW/Nm	60/1145	
	Speed range	1/min.	45-6000	
Tool magazine	Max. tool diameter (all places occupied)	mm	112	
	Max. admissible tool weight	daN	25/35*	
	Max. admissible moment of tool taken by gripper	Ncm	2200/5000*	
	Chip-to-chip time to VDI	to 12/25 daN	s	4.1/5.1
Dynamic package*	to 12/25 daN	s	3.8/4.8	
Chain-type magazine	Tool pockets	number	50/100*	
	Max. tool length (from spindle nose)	mm	600	
	Max. tool diameter (free places required)	mm	228/280*	
Rack-type magazine*	Tool pockets	number	106/234/405	
	Max. tool length (from spindle nose)	mm	600	
	Max. tool diameter (free places required)	mm	280	
Rotary table	Max. admissible clamping load (center)	daN	800	
Rotary indexing table	Indexing division	degrees	360 x 1°	
	Indexing accuracy	arc s	6	
	Indexing times	for 45°/180°	s	2.7/3.5
Rotary feed table*	Indexing division	degrees	360,000 x 0.001°	
	Indexing accuracy	arc s	10	
	Indexing times	for 45°/180°	s	0,9/1,8
Pallet changer	Pallet design	mm	630 x 630	
	Pallet changing accuracy in X-, Y- and Z-axis	mm	0,01	
	Pallet changing time	s	12	
Measuring system	Direct linear scales in X-, Y- und Z-axis with highest resolution			
	Positioning tolerance Tp (to VDI/DGQ 3441)	mm	0.007	
Coolant unit	Coolant tank capacity, basic version, volume	approx. l	1500	
	Coolant pump, delivery volume	at 3 bars	l/min.	170+40
		at 50 bars	l/min.	28
		at 40 bars*	l/min.	38
	at 70 bars*	l/min.	22	
Installation data	Machine weight	approx. daN	19000	
	Total power requirement, basic version	approx. kVA	85	
	Mains connection		400 V / 50 Hz	
	Compressed air	bars	6	
Machine control	Siemens SINUMERIK 840 D		■	
	Fanuc 160i-MB		■	

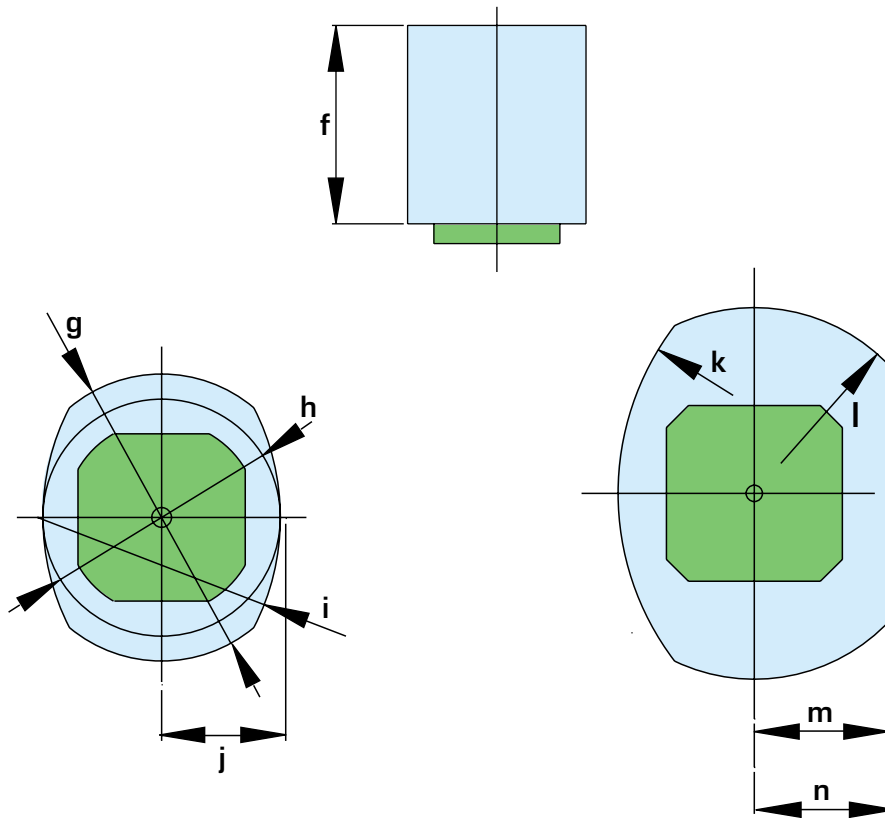
Remark: All data relates to Siemens control SINUMERIK 840 D

\* Option

MCH 280	MCH 300	MCH 350	MCH 400	MCH 450	MCH 460
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1000	1000	1250	1400	1600	2000
800	1000	1000	1000	1200	1400
800	1000	1000	1250	1250	1250
15000	15000	15000	15000	15000	15000
17500	17500	17500	17500	17500	17500
50000	50000	50000	40000	40000	40000
4.0	4.0	4.0	4.0	4.0	4.0
60000	60000	60000	-	-	-
7.0	5.0	5.0	-	-	-
100	100	100	100	100	100
50/A100	50/A100	50/A100	50/A100	50/A100	50/A100
43/822	43/822	43/822	43/822	43/822	43/822
45-6000	45-6000	45-6000	45-6000	45-6000	45-6000
72/460	72/460	72/460	72/460	72/460	72/460
45-12500	45-12500	45-12500	45-12500	45-12500	45-12500
60/1145	60/1145	60/1145	60/1145	60/1145	60/1145
45-6000	45-6000	45-6000	45-6000	45-6000	45-6000
112	112	112	112	112	112
25/35*	25/35*	25/35*	25/35*	25/35*	25/35*
2200/5000*	2200/5000*	2200/5000*	2200/5000*	2200/5000*	2200/5000*
4.3/5.3	4.4/5.4	4.7/5.7	5.4/6.4	5.7/6.7	6.1/7.1
4.0/5.0	4.2/5.2	4.5/5.5	-	-	-
50/100*	50/100*	50/100*	50/100*	50/100*	50/100*
600	600	600	600	600	600
228/280*	228/280*	228/280*	228/280*	228/280*	228/280*
106/234/405	106/234/405	106/234/405	106/234/405	106/234/405	106/234/405
600	600	600	600/1000*	600/1000*	600/1000*
280	280	280	280/320*	280/320*	280/320*
800	1250	1250	2500/4000*	2500/4000*	2500/4000*
360 x 1°	360 x 1°	360 x 1°	360 x 1°	360 x 1°	360 x 1°
6	6	6	6	6	6
2.7/3.5	3.8/5.1	3.8/5.1	2.9/4.6	2.9/4.6	2.9/4.6
360,000 x 0.001°	360,000 x 0.001°	360,000 x 0.001°	360,000 x 0.001°	360,000 x 0.001°	360,000 x 0.001°
10	10	10	10	10	10
0.9/1.8	1.1/3.2	1.1/3.2	1.6/3.7	1.6/3.7	1.6/3.7
630 x 630	800 x 800	800 x 800	800 x 800	800 x 1000	800 x 1000
0.01	0.02	0.02	0.02	0.02	0.02
12	17	17	27/40*	27/40*	27/40*
0.007	0.009	0.009	0.01	0.01	0.01
1500	1500	1500	2500	2500	2500
170+40	170+40	170+40	230+70	230+70	230+70
28	28	28	28	28	28
38	38	38	38	38	38
22	22	22	22	22	22
19500	21000	22000	26000	27000	28000
85	85	85	85	85	85
400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz	400 V / 50 Hz
6	6	6	6	6	6
■	■	■	■	■	■
■	■	■	■	■	■

# HELLER MCH



**MCH 250 280 300 350**

f	1000	1000	1200	1200
g	Ø 1090	Ø 1290	Ø 1290	Ø 1540
h	Ø 900	Ø 900	Ø 1250	Ø 1250
i	R 920	R 920	R 1285	R 1285
j	470	470	660	660

**MCH 400 450 460**

f	1450	1450	1450
k	R 1260	R 1260	R 1500
l	Ø 1690	Ø 1890	Ø 2290
m	620	620	620
n	640	640	640