



THINK PARTS **THINK TORNOS**



MULTIDECO

Multispindle automatic lathe with
numerical control.

MULTIDECO

Bar turning through the Tornos experience

For more than 100 years Tornos has been producing automatic single spindle and multispindle lathes, which can machine small or large series of the most simple to the highly complex parts, in a way that is both highly accurate and economical.

The company is now offering three product ranges: DECO loose tailstock single spindle machines, the CNC MULTIDECO and MultiAlpha numeric multispindle machines and the SAS 16.6 cam operated multispindle machines.

In order to provide on-going functional improvement, these machines may be complemented with various peripherals and tooling:

- Built-in bar loader.
- Chucker.
- Universal swarf conveyor.
- High-pressure drill.
- Interchangeable tool holders.
- Manipulating and palettising.
- Various milling units.

Whether this is for the car, medical and dental sector, the connector or even horology industry, Tornos is constantly developing innovative tailor-made solutions for its clients to meet market requirements.



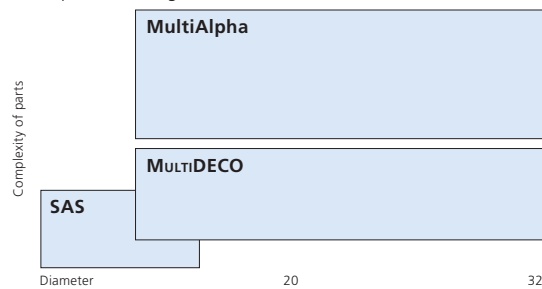
- 1959** First cam-operated multi-spindle.
- 1984** Launch of SAS 16.6.
- 1988** First CNC multispindle lathes.
- 1996** Tornos created the DECO 2000 by joining the benefits of cam operated lathes with those of NC lathes.
- 1997** Tornos combined the advantages of the DECO with the benefits offered by multispindle lathes. Launch of MULTIDECO 20/6.
- 1999** DECO Basic: new range dedicated to executing straightforward parts.
- 2000** Complete range from Ø 1 to 32 (34) mm.
- 2000** More than 3500 DECO machines sold.
- 2001** A new stage has been reached towards larger diameters and an integral solution – the MULTIDECO 32/6i.
- 2003** MULTIDECO 20/8b: more axes, more position, more possibilities.
- 2004** MULTIDECO 20/6b: new version profiting from all the experience acquired with DECO and MULTIDECO.
- 2005** More than 400 MULTIDECO sold.
- 2006** Creation of a new platform for complex parts: MultiAlpha.

PRESENTATION

Multispindle automatic turning machine with parallel numerical control and integrated MULTIDECO bar feeder

From simple to medium complexity parts

Multispindle turning machines

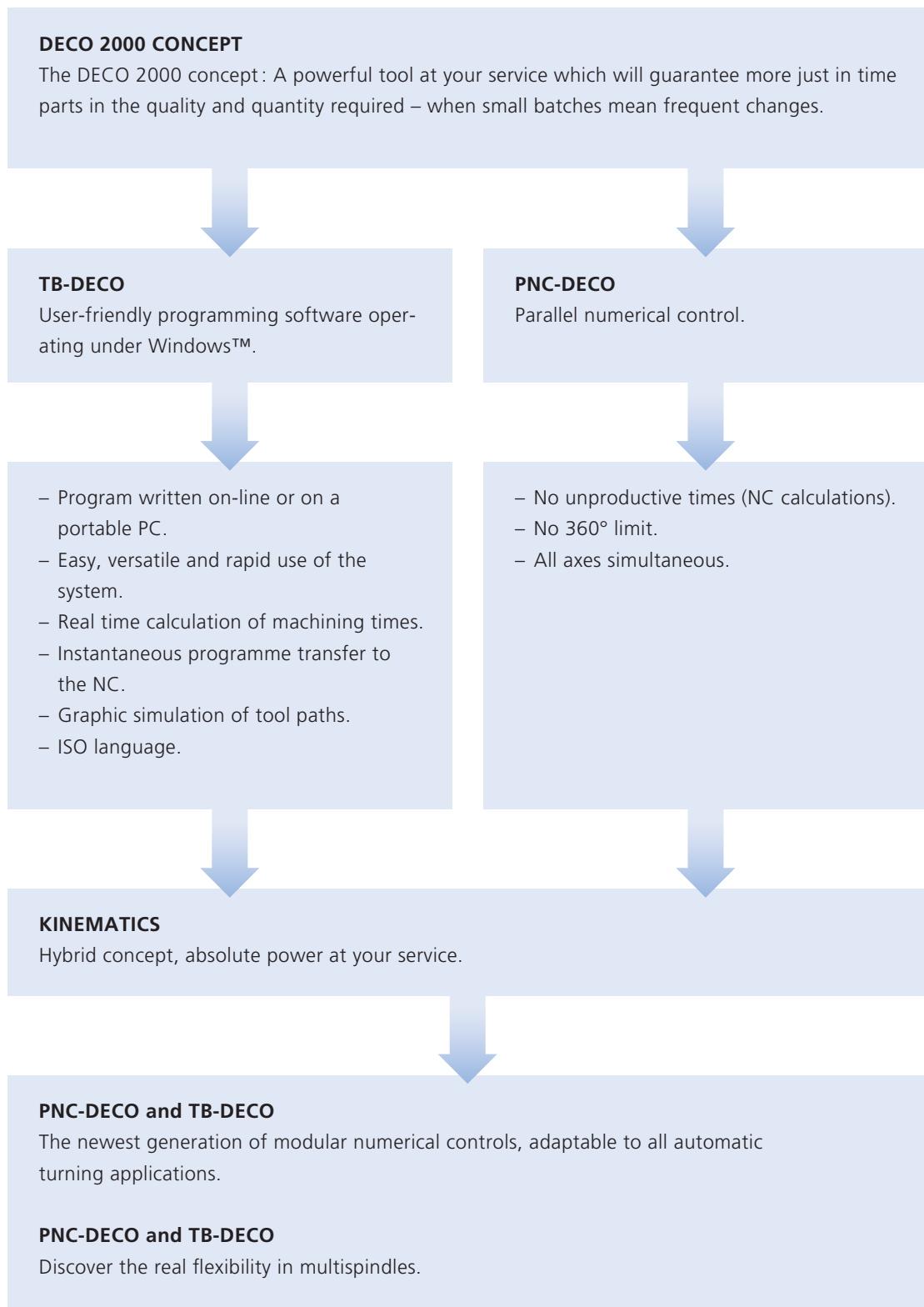


Summary

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- 4-5 The best of both worlds
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THE BEST OF BOTH WORLDS

MULTIDECO gets the most out of bringing CNC and mechanics together...



THE BEST OF BOTH WORLDS

MULTIDECO gets the most out of bringing CNC and mechanics together...

The production tool by excellence, the MULTIDECO comprises :

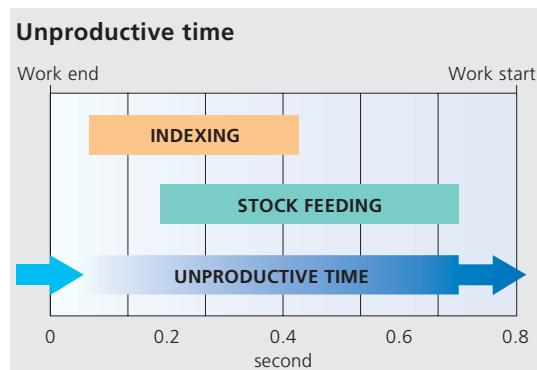
- A MULTIDECO lathe with bar capacity up to 32 (34) mm.
- An integrated barfeeder.
- An universal swarf conveyor.
- A global filtering unit.
- A cooling system.

Hybrid concept

The mechanical part has been created around the hybrid concept already used on the 6 spindle and the 8 spindle version of the MULTIDECO family, for the features which must operate regardless of the component. E.g. spindle locking, collet open/closes, etc.

This concept allows Tornos to propose with MULTIDECO a solution combining the productivity of cam operated machines with the flexibility of the numerical control.

The programming system and unique kinematics create a new concept, which brings the same advantages of versatility and machining capacity that is found in the single spindle lathes, namely, movable tool slides, flexibility, programming.



YOUR KEY BENEFITS

Stiffness, flexibility, suppleness, precision, optimized set-up, cost-effectiveness

Strength

The most reliable solutions, which have been in practice with Tornos for more than 50 years and used daily on more than 4500 multispindle machines throughout the world, such as Hirth coupling, spindles with pre-stressed bearings, as well as the base made from mineral cast iron, mean that the MULTIDECO can lay down new standards in terms of precision and finishing quality.



Flexibility

In order to enhance the interest and universality of the MULTIDECO, the product offered by Tornos is more a solution centred on a basic system than a mere machine.

- Standard commercially available tooling.
- Standard units.
- Position interchangeability.
- Integrated "Mayfran" swarf management system.
- High-pressure pump.
- Cooler.
- Oil mist extraction.

An imposing list of options also completes this brief appraisal.

The merit of this solution is that it has been incorporated since the basic design stage of the machine. Its completely integrated design ensures overall consistency and guarantees performance. The facility of interpolating shapes considerably increase the flexibility of the solution proposed.

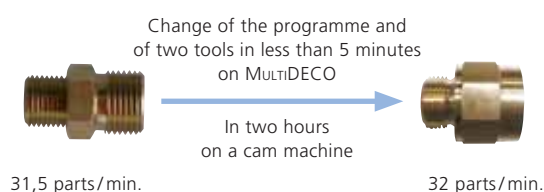
Versatility

The DECO 2000 concept applied to the multispindle world is versatility itself !

- No cam machining.
- No assembly of cam sets.
- Programming real machining times on the TB-DECO.
- Dimension correction during the course of machining, without stopping the machine.
- Machining part families merely by program changes.

Assessing the versatility of the MULTIDECO cannot be measured against conventional technology.

Versatility is also synonymous with the term "adjustment facility" (correction) in real time, during the machining operation, without even having to stop the machine.



Production comparison according to batch size					
	Series time in hours		Total time for the series in	Batch size	Time saving
Cam-operated multispindle m/c. Startup time 24 hrs + production rate of 35 pts/min.	63.8		11.2	10 000	82%
	47.8		32	50 000	33%
	71.6		58.1	100 000	19%
	262		266	500 000	-2%
NB : The more the series is broken down, the greater the difference in favour of the MultiDECO.					
The price difference is compensated by the specific tooling required for cam-operated machine, even after a few series.					

YOUR KEY BENEFITS

Stiffness, flexibility, suppleness, precision, optimized set-up, cost-effectiveness

Optimised set-up time

The MULTIDECO is flexible, accurate and productive. Its integral concept makes it a highly powerful and heavy-duty tool since it dispenses with:

- Lost time because of setting operations.
- Down times for tool readjustments.
- Worn cams requiring replacement.
- Feed clamps on the barfeeder.

These items, which are associated with tooling pre-adjustment and programming in hidden time, make the MULTIDECO a remarkable tool with regard to productivity and return.

Profitability

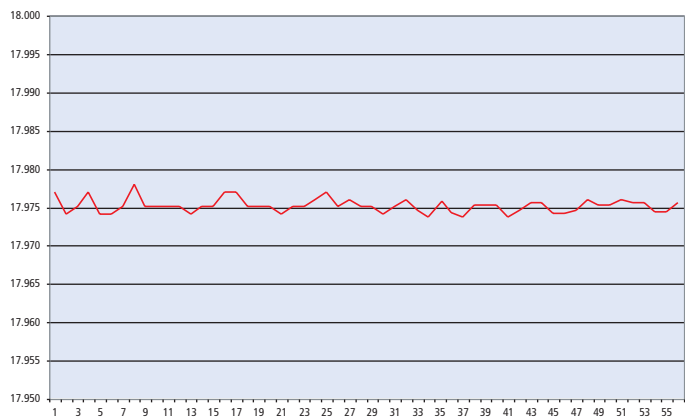
All characteristics are combined to provide a substantial increase in the possibilities offered by the MULTIDECO, especially with respect to its rate of use, reduced setting times and stopping for chip clearing purposes, no cam reworking or machine shut-down to compensate for tool wear. All these features guarantee that the high performance of the MULTIDECO is available to you for an absolute maximum period over the total time available.

Precision

SPC control and the ever growing demand for high precision coupled with the overall development of processes, make the MULTIDECO a tool, which is perfectly adapted to its environment.

- The spindle cooling system.
- Numerical correction of the barrel.
- Fine adaptation of the parameters of the 8 spindles.
- Tool life management.
- Numerical correction of all axes.
- The large number of work stations for finishing as a "complete solution".
- Short part detection.

The design of the oil tank, cooling and filtration system and of fluid distribution, guarantees optimum heat transfer and hence exemplary consistency of results.



Condition of test:

Warming-up time: 60 min.

Productivity 5 parts/min.

Material: AC INOX 303 Ø 20

Sampling: 56 parts in a row

MULTIDECO

Standard equipment

Possibilities

As we have seen before, the MULTIDECO is an open system to meet all your requirements. What is more, all the ergonomic and convenience parameters for meeting the most varied requirements have been provided:

- Chip evacuation directly to the outside of the machine.
- Ventilated and comfortable machining area.
- Through tool coolant flow.
- Spindle stop for cross milling (drilling, milling, eccentric end drilling).
- Positioned stopping (axe c).
- Chucker.
- Independent motor for the counter-spindle with controlled stopping and positioning option.

The MULTIDECO represents the synthesis of Tornos multispindle know-how with the success of the DECO 2000 concept.



Pre-setters



Front and rotating milling attachment



Synchronised broaching attachment



Cross drilling unit



Polygon milling unit
Thread milling unit



Modular tool holders

The world of the multispindle opens up to flexibility

Open systems

- Chucker entails machining rough and forged parts with special profiles.
- The universal swarf conveyor independently evacuates all types of chips from production in the most varied of forms.
- High pressure drilling saves on boring operations thanks to the surface finish quality and precision obtained.
- All calibration, loading, positioning and bar-feeding operations are automatic with the barfeeder.

With the Tornos MSF integrated bar loader, all calibration, loading, and positioning operations, as well as bar feed are automatic. Since control is via the machine, the entire barfeed unit is governed by the machine control. The interface used is quite clear and unique.

The oil bath technology reduces drastically the vibrations, for example when using profiled bars of materials.



Chucker



Integrated swarf conveyor



Cooler

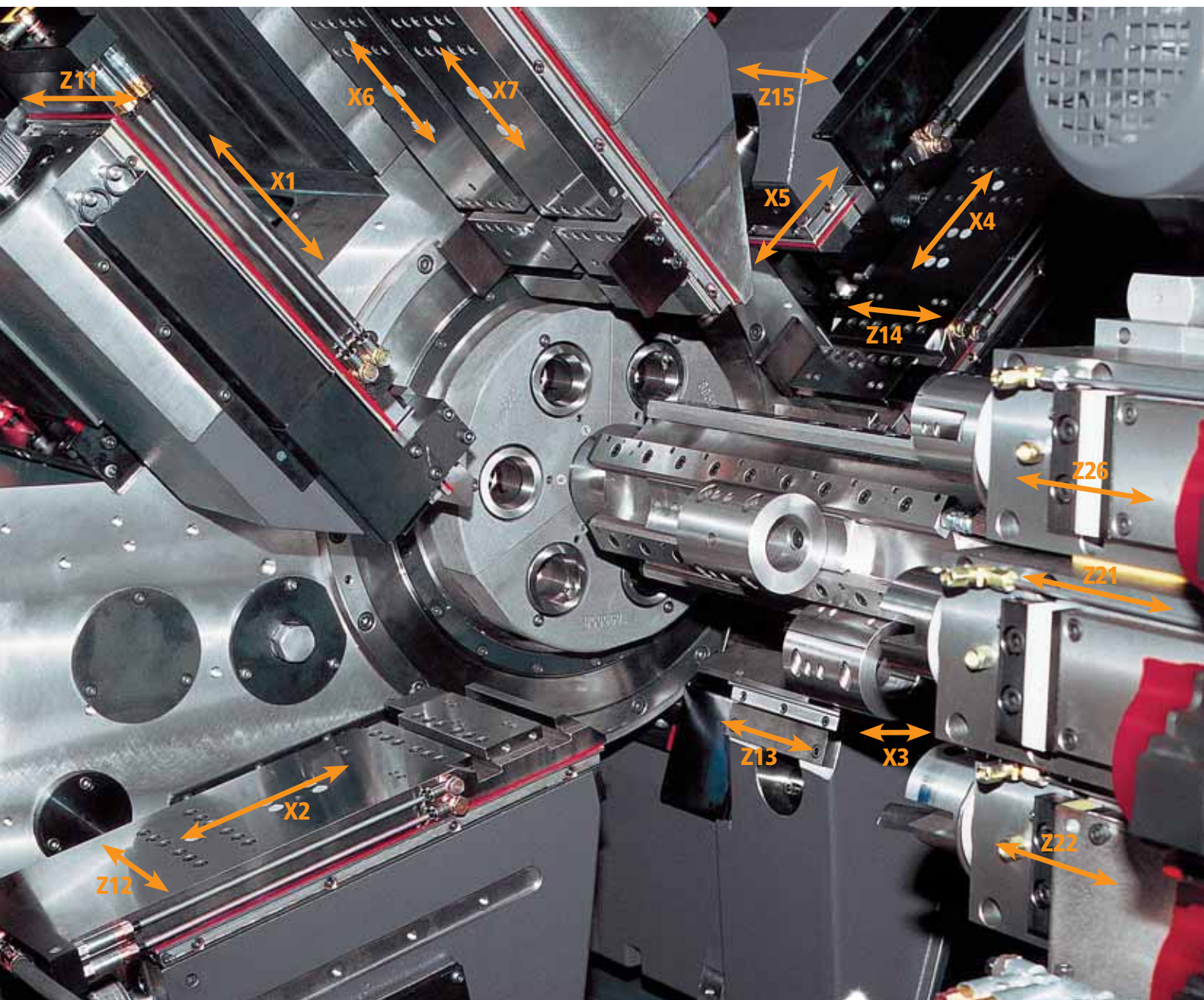


Filtermist



MULTI DECO 20/6b

Technical specifications



MULTIDECO 20/6b

Technical specifications

TECHNICAL CHARACTERISTIC

Bar passage through the spindle (with MSF)	4-20 (24) mm
Max. part length	100 mm
Max. spindle speed	6000 rpm
Max. spindle power	11 kW
Max. spindles torque	70 Nm
Max. drilling, tapping power	2,2 kW
Number of numerical axes	18
Spindle stopping	Yes
C-axis in position 4, 5	Max. 2
Spindles cooling	Yes
Cross slide (X, Z position 1 to 5)	6
Cut off slide (X6)	1
Counter operation slide (X7)	1
End working (Z21-Z25)	5
Counter spindle with c-axis (Z26)	1
Max. counter spindle speed	8000 rpm
Max. counter spindle motor power	1,1 kW
PNC-DECO numerical control	FANUC 16iTB
Barrel lock	Hirth teeth
Integrated barfeeder MSF 522/6	
Capacity Ø	5-22 (24) mm
Loading of hexagon bars	Yes

DETAIL OF AXES

Position 1	Cross slide	X1, Z11
	End working	Z21
Position 2	Cross slide	X2, Z12
	End working	Z22
Position 3	Cross slide	X3, Z13
	End working	Z23
Position 4	Cross slide	X4, Z14
	End working	Z24
Position 5	Cross slide	X5, Z15
	End working	Z25
Position 6	Cutting slide	X6
	Counter operation slide	X7
	End working (counter spindle)	Z26
	Main spindle	S1
	Drilling	S2
	Threading	S3
	Counter spindle	S4

GENERAL CHARACTERISTICS

Max. length (with integrated barfeeder)	mm	5888 (8053)	
Max. width	mm	1548	
Max. height	mm	2210	
Height at spindle centre	mm	1150	
Weight	kg	6000	
Cutting oil tank capacity	l	550	
Control pump flow rate	l/min.	50	
Additional tank	l	450	
Mayfran solution :	Tank capacity	l	1200
	Pump 3,5 bars	l/min.	200
	Pump 35 bars	l/min.	40
	Pump 80 bars	l/min.	20
Installed power	kVA	(32) 43	
Pneumatic group pressure	bars	6	
Ambient working temperature	degrees	10-35	
Colours : grey RAL 7035, blue RAL 5013			
CE/CEM certified			

MULTIDECO 20/8b

Technical specifications

MULTIDECO 20/8b

Bar passage through the spindle (with MSF)	4-20 (24) mm
Max. part length	100 mm
Max. spindle speed	6000 rpm
Max. spindle motor power	15 kW
Max. spindles torque	95 Nm
Max. tapping, drilling motor power	2,2 kW
Number of linear axes	23
Spindle and c-axis stopping	Yes
C-axis in position 4, 5 and 6	Max. 2
Spindles cooling	Yes
Infeed slide (X1)	1
Cross slides (X, Z, position 2-7)	6
Cut off slide (X8)	1
Counter operation slide (X9)	1
End units (Z21-Z27)	7
Max. counter spindle with c-axis (Z28)	1
Max. counter spindle motor speed	8000 rpm
Counter spindle motor power	1,1 kW
PNC-DECO numerical control	FANUC 16iTB
Barrel lock	Hirth teeth
Integrated barfeeder MSF 522 / 8	
Capacity Ø	4-22 (24) mm
Loading of hexagon bars	Yes

MULTIDECO 20/8b [2x4]

Bar passage through the spindle (with MSF)	4-20 (24) mm
Max. part length	100 mm
Max. spindle speed	6000 rpm
Max. spindle motor power	15 kW
Max. spindles torque	95 Nm
Max. tapping, drilling motor power	2,2 kW
Number of linear axes	22
Spindles stopping	Yes
C-axis in position 4, 5 and 6	No
Spindles cooling	Yes
Infeed slide (X1, X5)	2
Cross slides (X, Z, Pos. 2, 3, 6, 7)	4
Cut off slide (X4, X8)	2
Counter operation slide (X4', X9)	2
End units (Z21, Z22, Z23, Z25, Z26, Z27)	6
Counter spindle with c-axis (Z24, Z28)	2
Max. counter spindle motor speed	8000 rpm
Max. counter spindle motor power	1,1 kW
PNC-DECO numerical control	FANUC 16iTB
Barrel lock	Hirth teeth
Integrated barfeeder MSF 522 / 8	
Capacity Ø	4-22 (24) mm
Loading of hexagon bars	Yes



MULTIDECO 20/8b

Technical specifications and MULTIDECO 20/8b [2x4]

DETAIL OF AXES

Position 1	Cross slide	X1	X1
	End working	Z21	Z21
Position 2	Cross slide	X2, Z12	X2, Z12
	End working	Z22	Z22
Position 3	Cross slide	X3, Z13	X3, Z13
	End working	Z23	Z23
Position 4	Cross slide	X4, Z14	X4, X4'
	End working	Z24	Z24
Position 5	Cross slide	X5, Z15	X5
	End working	Z25	Z25
Position 6	Cross slide	X6, Z16	X6, Z16
	End working	Z26	Z26
Position 7	Cross slide	X7, Z17	X7, Z17
	End working	Z27	Z22
Position 8	Cutting Slide	X8	X8
	Counter operation slide	X9	X9
	End working (counter spindle)	Z28	Z28
	Main spindle	S1	S1
	Drilling	S2	S2
	Threading	S3	S3
	Counter spindle	S4	S4

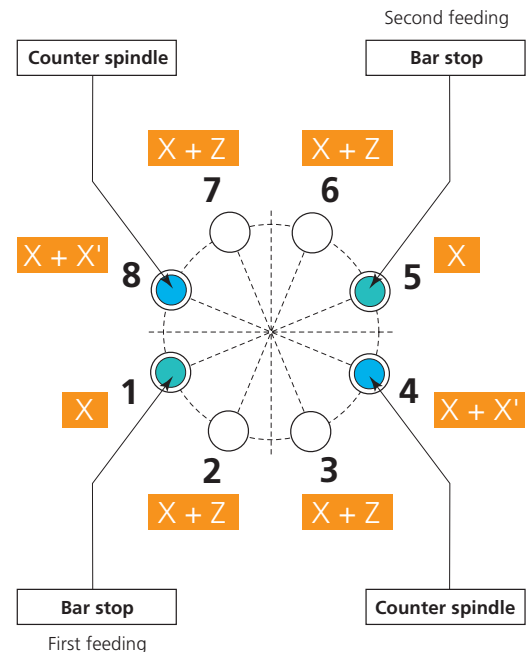
GENERAL CHARACTERISTICS

Length (with integrated barfeeder)	mm	5888 (8053)
Width in protection	mm	1700
Max. height	mm	2210
Height at spindle centre	mm	1150
Weight	kg	6000
Cutting oil tank capacity	l	550
Control pump flow rate	l/min.	150
Additional tank	l	450
Mayfran solution: Tank capacity	l	1200
Pump 3,5 bars	l/min.	200
Pump 35 bars	l/min.	40
Pump 80 bars	l/min.	20
Installed power (with Mayfran)	kVA	46 (80)
Pneumatic group pressure	bars	6
Ambient working temperature	degrees	10-35
Colours: grey RAL 7035, blue RAL 5013		
CE / CEM certified		

MULTIDECO 20/8b [2x4]

High production

The [2x4] spindle layout gives you the opportunity of producing at high production rates, parts that require only a few machining operations. It is an authentic configuration producing two separate parts per cycle ! The parts can be completely different from each other if needed.

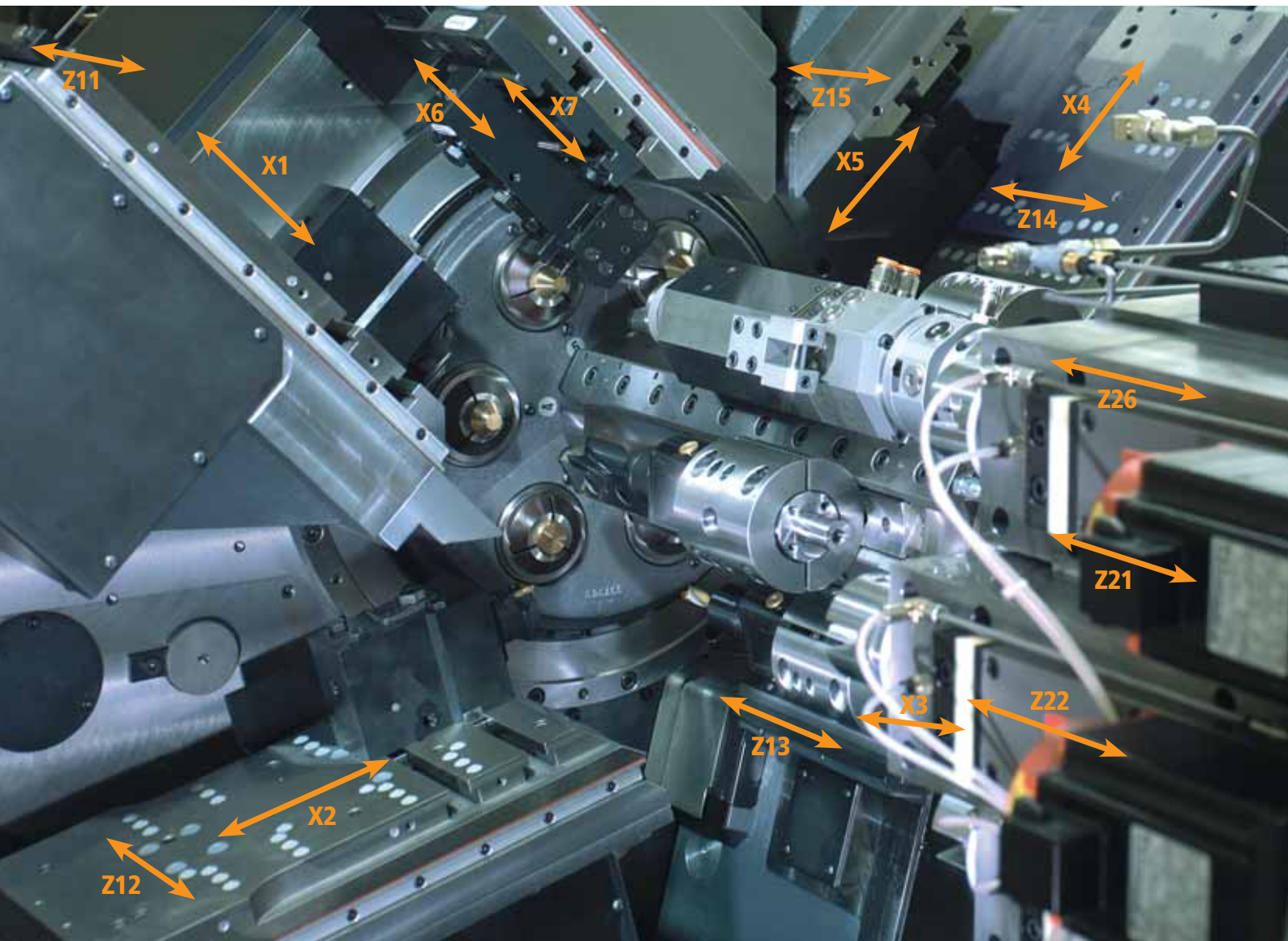


Two machines in one

Simply stated, we can say that the machine is like two four-spindle machines. Feed out in position one. First position has a single axis cross slide for forming and an independent end slide unit. Second & third positions have compound cross slides and independent end slide units. Fourth position we have a cut-off slide, a back operation slide with two tools and a counter spindle. Positions 5, 6, 7 and 8 have exactly the same configuration.

MULTIDECO 32/6i

Technical specifications



MULTIDECO 32/6i

Technical specifications

TECHNICAL CHARACTERISTICS

Bar passage through the spindle (with MSF)	8-32 (34) mm
Max. part length	120 mm
Max. spindle speed	5000 rpm
Max. spindle power	22 kW
Max. spindles torque	140 Nm
Max. drilling, tapping power	3,7 kW
Number of numerical axes	18
Counter operation slide (X7)	1
Cross slide (X, Z, position 1 to 5)	5
Cut off slide (X6)	1
End working (Z21-Z25)	5
Counter spindle with c-axis (Z26)	1
Spindles cooling	Yes
Max. counter spindle rotation speed	8000 rpm
Max. counter spindle motor power	1,1 kW
PNC-DECO control management	FANUC 16iTB
Barrel lock	Hirth teeth
Integrated barfeeder	
Capacity Ø	8-32 (34) mm
Loading of hexagon bars	Yes

DETAIL OF AXES

Position 1	Cross slide	X1, Z11
	End working	Z21
Position 2	Cross slide	X2, Z12
	End working	Z22
Position 3	Cross slide	X3, Z13
	End working	Z23
Position 4	Cross slide	X4, Z14
	End working	Z24
Position 5	Cross slide	X5, Z15
	End working	Z25
Position 6	Cutting slide	X6
	Counter operation slide	X7
	End working (counter spindle)	Z26
	Main spindle	S1
	Drilling	S2
	Threading	S3
	Counter spindle	S4

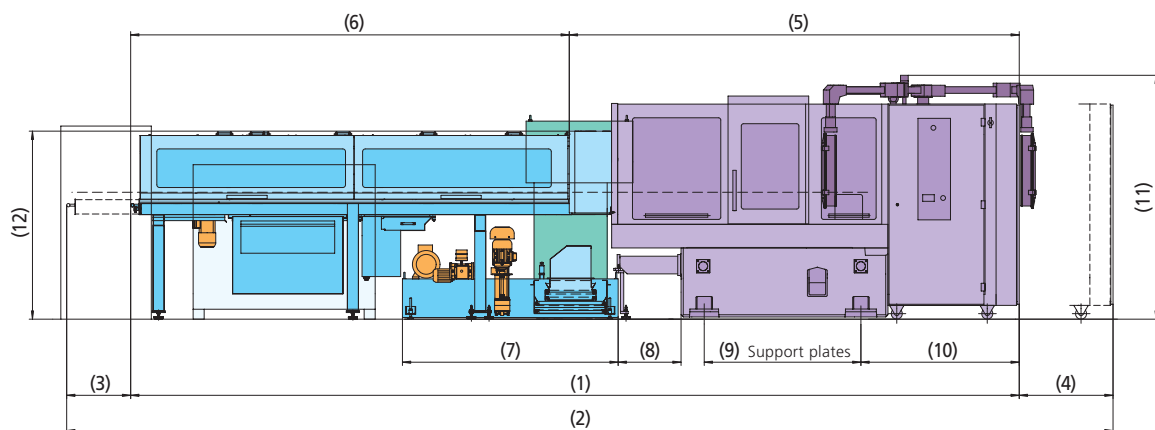
GENERAL CHARACTERISTICS

Max. length (bars 3 m)	mm	8300
Max. width	mm	2790
Max. height	mm	2240
Height at spindle centre	mm	1200
Weight	kg	~10500
Cutting oil tank capacity	l	900-1200
Control pump flow rate	l/min.	200
Mayfran solution:	Tank capacity	l 1200
	Pump 3,5 bars	l/min. 200
	Pump 35 bars	l/min. 40
	Pump 80 bars	l/min. 20
Installed power	kVA	75
Pneumatic group pressure	bars	6
Ambient working temperature	degrees	10-35
Colours: grey RAL 7035, blue RAL 5013		
CE / CEM certified		

DIMENSIONS IN A GLANCE

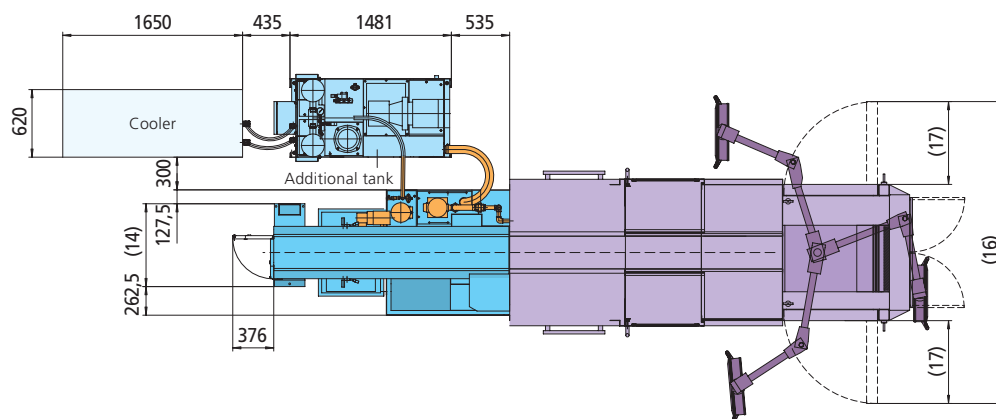
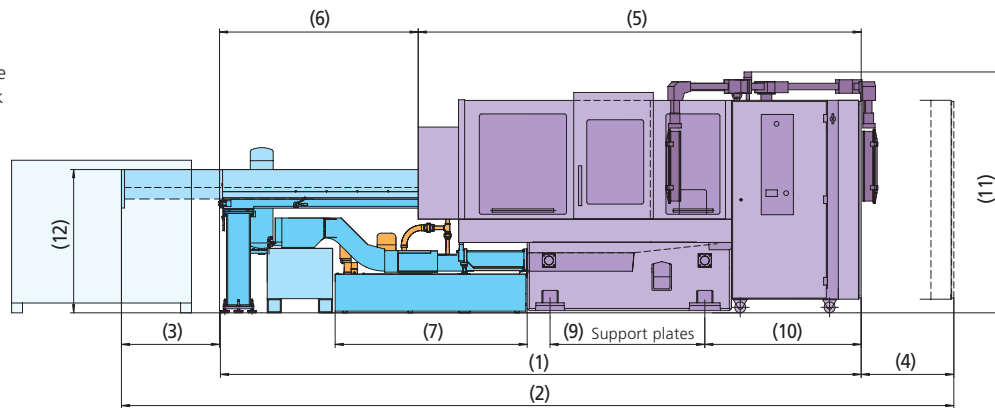
MACHINE	MULTIDECO 20/6b		MULTIDECO 20/8b		MULTIDECO 32/6i
Peripherals	3 m bar guide	3 m MSF barfeeder	3 m bar guide	3 m MSF barfeeder	3 m MSF barfeeder
(1)	5888	8053	5888	8053	8300
(2)	7638	9483	7638	9483	9731
(3)	900	580	900	580	580
(4)	850	850	850	850	851
(5)	4065	4078	4065	4088	4341
(6)	1823	3975	1823	3964	3959
(7)	1762	1955	1762	1955	1955
(8)	–	570	–	570	630
(9)	1420	1420	1420	1420	1530
(10)	1435	1435	1435	1435	1464
(11)	2210	2210	2210	2210	2240
(12)	1314,5	1704	1393,5	1770	1770
(13)	1548	1548	1700	1700	1720
(14)	760	1156	760	1235	1335
(15)	–	2790	–	2790	2790
(16)	2770	2770	2720	2920	3214
(17)	760	760	760	760	827
(18)	1650	1650	1650	1650	1650
(19)	620	620	620	620	620
(20)	–	820	–	820	820
(21)	–	450	–	450	450
(22)	500	500	575	575	610

View with 3 m barfeeder and integrated swarf conveyor (Mayfran)

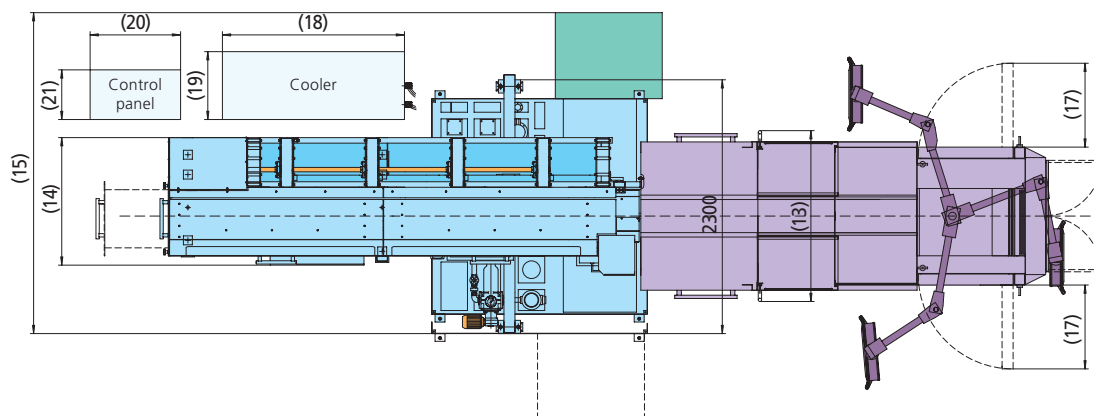


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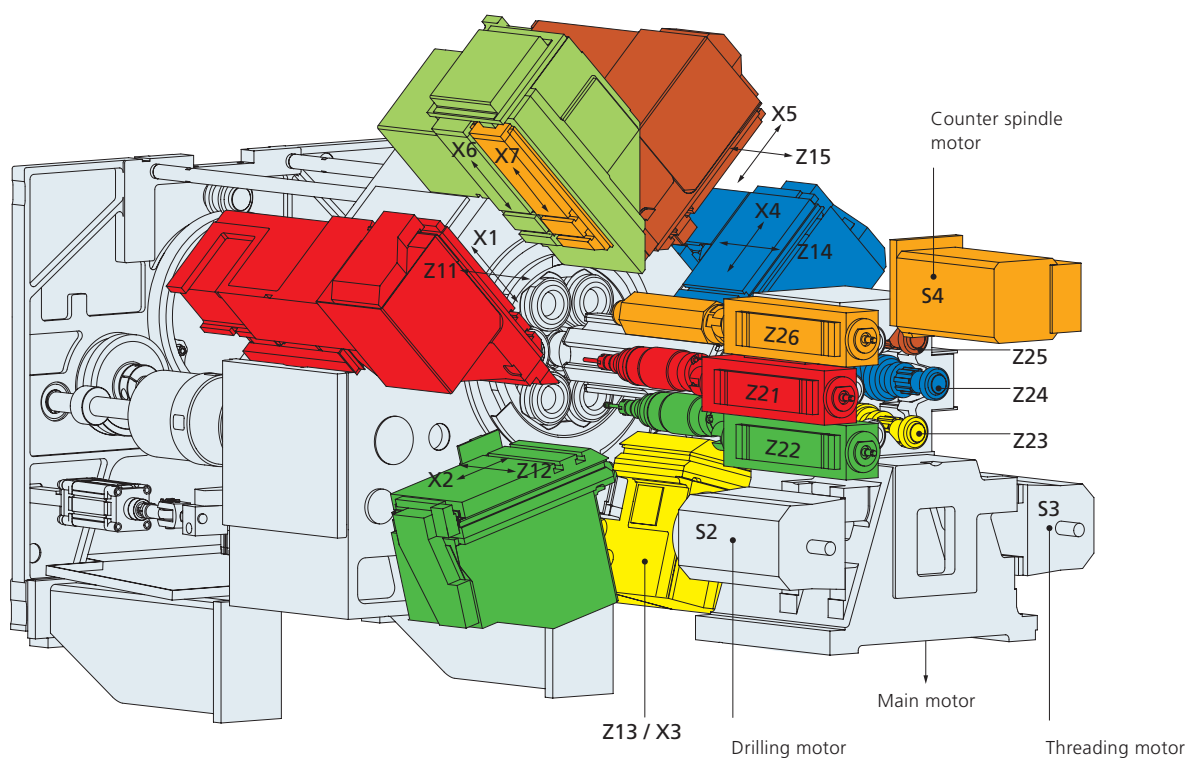
View with 3 m tube
and additional tank



View with 3 m barfeeder and integrated swarf conveyor (Mayfran)



Technical specifications



TECHNICAL CHARACTERISTICS		MULTI DECO 20/6b	MULTI DECO 20/8b	MULTI DECO 32/6i
Bar passage through the spindle (with MSF)	mm	4-20 (24)	4-20 (24)	8-32 (34)
Max. part length without counter operation	mm	100	100	120
Max. part length with counter operations	mm	80	80	100
Max. spindle speed	rpm	6000	6000	5000
Max. spindle power	Kw	11	15	21
Max. spindles torque	Nm	70	95	140
Number of numerical linear axes		18	23	18
Number of c-axis available		2	2	2
Counter spindle and c-axis positioning		Yes	Yes	Yes
Spindles cooling		Yes	Yes	Yes
Cross slides		5	6	5
Simple slides		2	3	2
End working		5	7	5
Barrel lock		Hirth teeth	Hirth teeth	Hirth teeth
Programming system		TB-DECO	TB-DECO	TB-DECO
Numerical control		PNC Fanuc 16iTB	PNC Fanuc 16iTB	PNC Fanuc 16iTB

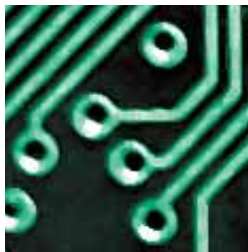
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