

# SECTION 2

## PROPOSED TECHNICAL SOLUTION

PLEASE NOTE THIS TECHNICAL BROCHURE IS FOR REFERENCE PUROSES ONLY . ANY SPECIFICATION NEEDS TO BE CHECKED AGAINST THE MACHINE . TOOLING SUPPLIED IS AS PER DESCRIBED IN THE AUCTION LOT. NOT AS IN THIS BROCHURE

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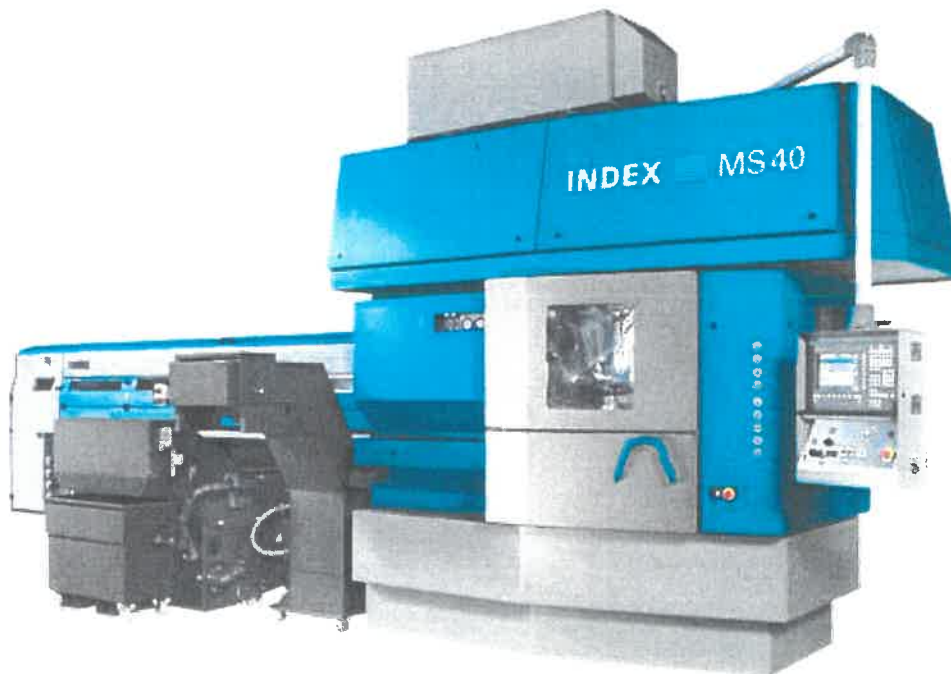
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## **SECTION TWO**

### **DESCRIPTION OF THE INDEX MS40 CNC MULTI-SPINDLE**

#### **1.0 GENERAL SPECIFICATION OF MACHINE**



*Figure 1 – Index MS40 CNC Multi*

#### **1.1 36004 INDEX MS 40C, DOUBLE NCU**

Index MS 40C CNC Compact-Multiline lathe with double NCU.

Design features:

Welded drag, headstock with 6 turning spindles.

Bar pass-through: maximum 40 mm,  
Speed: maximum 7,000 rpm

Nominal speed: 3,900 rpm

Power at 25% duty cycle 24 kW

Torque at 25% duty cycle 57 Nm

Controllable 3-phase electric drive (AC hollow shaft motor)



*Figure 2 – Index MS 40 Spindle Drum*

**1.2 DC000006 ELECTRICAL AND MECHANICAL ATTACHMENT PARTS**

**1.3 36072 INDEX CONTROL SYSTEM C200-SL, MS40C, DOUBLE NCU**

**1.4 29610 MACHINE CONTROL PANEL**

Machine control panel, equipped with a flat screen for C200-4D, 47 cm.

Touch-sensitive IP65 glass front, framed in metal front panel with capacitive touchscreen technology.

Machine control panel according to Index layout with back-lit keys and switches for visual activation signaling.

**1.5 29404 DISPLAY TEXT**

Default language English, when delivered.

**1.6 36075 CONTROL CABINET MS40C**



Figure 3 – MS 40 Ergonomic Layout

### 1.7 29619 "SMARTLIGHT" SIGNAL LAMP WITH LED

Free allocation possible.

Pre-setting:

Top, red (hydraulics off, emergency stop, displays - flashing)

Top, green (in production, continuous light)

Centre, yellow (operator assistance, maintenance - continuous light)

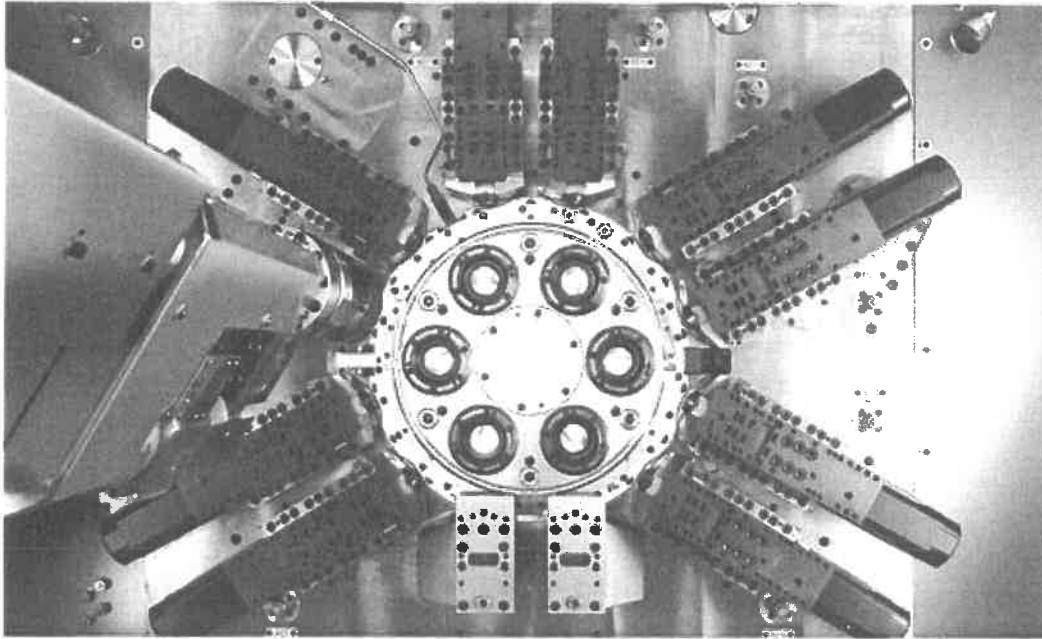
Bottom, blue (basic position - continuous light)

Complete lamp, red (fault, flashing)

### 1.8 29470 NOTE: CONNECTION TO TN SYSTEM

The machine is designed for connection to a TN system.

Caution: Other types of supply require an isolating transformer!



*Figure 4 – MS 40 The Working Area*

#### **1.9 36702 COMPLIANCE WITH EC DIRECTIVE**

The machine will receive an EC declaration of conformity and a CE mark.

This confirmation needs to be reviewed for any modifications to the order. Issuing of the EC declaration of conformity and attachment of the CE mark will be on condition of a final examination of the operational machine/system by the manufacturer.

#### **1.10 36706 USER DOCUMENTATION**

1x in paper form – supplied together with the machine.

1x in electronic form on CD-ROM (all documents in PDF format)

Delivery takes place within 4 weeks after commissioning the machine.

A detailed breakdown of the user documentation is available upon request.

#### **1.11 29331 LANGUAGE OF THE DOCUMENTATION**

English.

#### **1.12 29302 SAFETY-RELEVANT SIGNS ON THE MACHINE**

In English.

#### **1.13 29323 NON-SAFETY-RELEVANT SIGNS ON THE MACHINE**

In English.



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**1.14 29614 INDEX MULTI-SPINDLE LATHES**

Index multi-spindle lathes generally require cutting oil (based on mineral oil) as a cooling lubricant. The use of unsuitable water-based cooling lubricants (so-called emulsions) or of cutting oils that are not based on mineral oil can cause considerable damage to the machine. Therefore, these cooling lubricants may be used only with prior written approval by Index. The resulting requirements for increased maintenance must be followed carefully.

Considering the interactions between cooling lubricant, the material used in each case, any additives, etc., Index's approval is limited to the basic safety of using the cooling lubricant on the machine. The testing and avoidance of interactions are the responsibility of the operator – Index rejects any liability. Be sure to conduct adequate tests prior to production use.

**1.15 29675 CUSTOMER INFORMATION AND DOCUMENTATION**

If components are provided by the customer, we need customer information/documentation as follows:

During the bidding phase:

Detailed function description

Interface description

Customer delivery commitment for the provision, for timely processing of orders

With delivery of the customer's provision:

User manual in German

Declaration of conformity

Installation/integration instructions

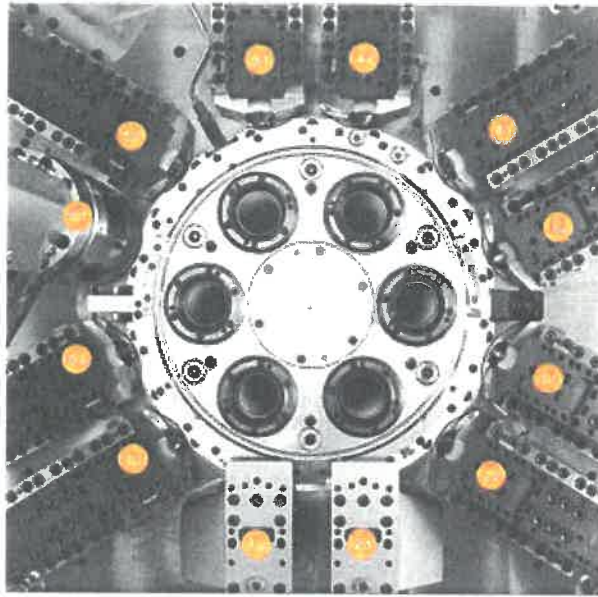
The technology/safety of the provisions must meet the current state of the art.

We reserve the right to reject any components provided with defects.

Failure to comply with above points may lead to postponements and additional costs for the processing of orders.

**1.16 29456 NC OPTION SYNCHRONOUS SPINDLE/POLYGON TURNING**

NC option synchronous spindle/polygon turning, including electronic shaft.



*Figure 5 – MS 40 Slide Layout*

**1.17 UE000011 SLIDE UNITS, NO.1 HEADSTOCK**

**1.18 36113 SLIDE UNIT 1.1**

X-axis and Z-axis NC controlled.

**1.19 36123 SLIDE UNIT 1.2**

X-axis and Z-axis NC controlled.

**1.20 36213 SLIDE UNIT 2.1**

X-axis and Z-axis NC controlled.

**1.21 36223 SLIDE UNIT 2.2**

X-axis and Z-axis NC controlled.

**1.22 36313 SLIDE UNIT 3.1**

X-axis and Z-axis NC controlled.

**1.23 36323 SLIDE UNIT 3.2**

X-axis and Z-axis NC controlled.

**1.24 36413 SLIDE UNIT 4.1**

X-axis and Z-axis NC controlled.

**1.25 36423 SLIDE UNIT 4.2**

X-axis and Z-axis NC controlled.

**1.26 36513 SLIDE UNIT 5.1**

X-axis and Z-axis NC controlled.

**1.27 36523 SLIDE UNIT 5.2**

X-axis and Z-axis NC controlled.

**1.28 36618 SLIDE UNIT 6.1**

Swivel axis and Z-axis NC controlled.

**1.29 36623 SLIDE UNIT 6.2**

X-axis and Z-axis NC controlled.

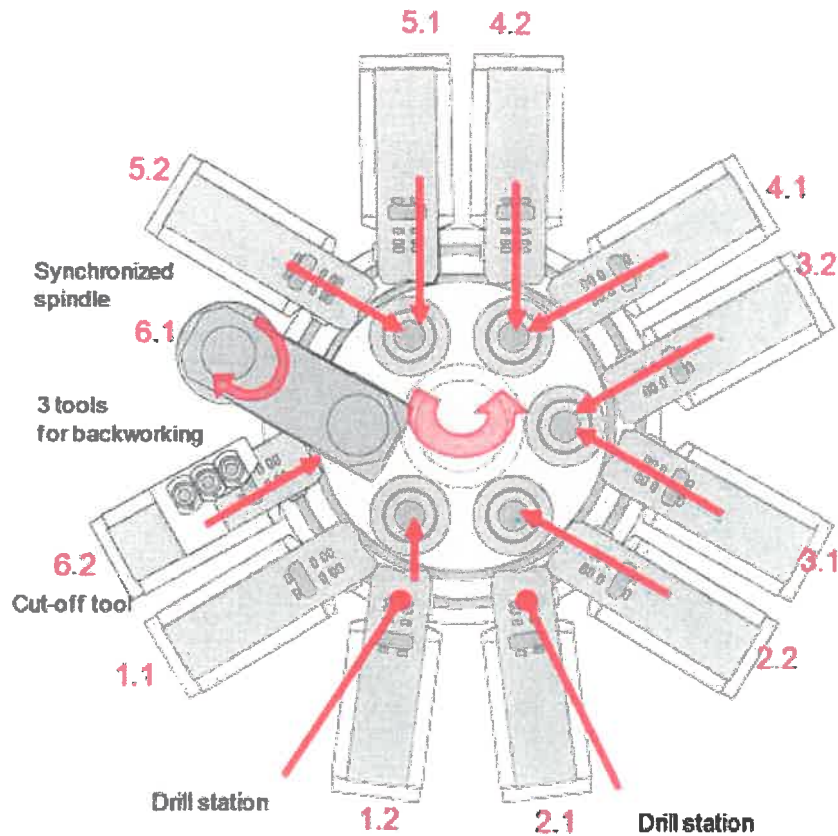


Figure 6 – Slide Configuration

**1.30 UE000001 CLAMPING DEVICES FOR MAIN SPINDLE****1.31 36711 6 COLLET MOUNTINGS TOPLUS MS40**

1 set (6 pcs.) of collet mountings TOPlus MS40 for tension clamping in the main spindles,

Maximum clamping diameter: 40 mm

**1.32 UE000004 WORKPIECE FEEDER****1.33 36739 IEMCA SIR MS40 SIDE LOADER**

The IEMCA SIR MS40 side loader is an integrated loading magazine designed and built by IEMCA exclusively for MS40 machines and sold only by Index.

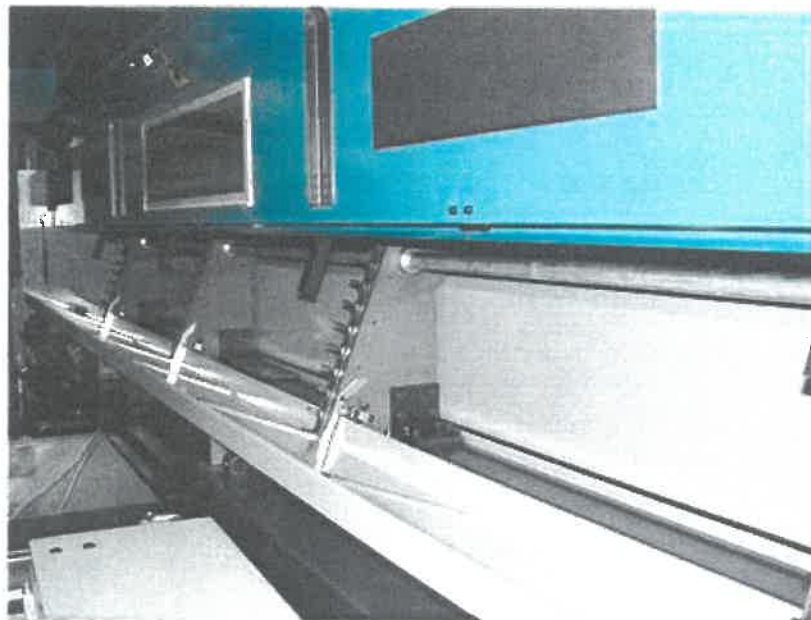
**1.34 36746 IEMCA SIR MS40/33/P**

Rack loader: 50 Hz  
D13-24-33-41  
Bar length: 3,300 mm  
with drilling unit and minimum quantity lubrication unit  
Bar storage: 500 mm bearing surface  
Profibus DP slave interface.

**Notes:**

Drill bits and collets for the drilling unit are not included and must be ordered separately.

The magazine is only partly suitable for the use of shaped material.



*Figure 7 – The IEMCA Bar Feed*

**1.35 36756 BAR PUSHERS**

1 set (6 pcs.) of bar stock pushers for  
bar diameters: D19 mm-D23 mm  
Consisting of:  
6 bar stock pushers D18  
6 rotating sleeves D18

**1.36 36760 CLAMPING SLEEVES**

1 set (6 pcs.) of internal clamping sleeves D18 mm for  
bar diameters: D19 mm – D23 mm  
bore diameter: D15 mm

**1.37 36764 EXTERNAL STOPS**

1 set (6 pcs.) of external stops D18 mm for  
bar diameters: D19 mm – D23 mm, pre-machined.

**1.38 36757 BAR PUSHERS**

1 set (6 pcs.) of bar stock pushers for  
bar diameters: D24 mm-D32 mm  
Consisting of:  
6 bar stock pushers D23  
6 rotating sleeves D23

**1.39 36761 CLAMPING SLEEVES**

1 set (6 pcs.) of internal clamping sleeves D23 mm for  
bar diameters: D24 mm – D32 mm  
bore diameter: D15 mm

**1.40 36765 EXTERNAL STOPS**

1 set (6 pcs.) of external stops D23 mm for  
material diameter: 24 mm - D32 mm, pre-machined.

**1.41 36758 BAR PUSHERS**

1 set (6 pcs.) of bar stock pushers for  
bar diameters: D33 mm-D40 mm,  
Consisting of:  
6 bar stock pushers D32  
6 rotating sleeves D32

**1.42 36762 INTERNAL CLAMPING SLEEVES**

1 set (6 pcs.) of internal clamping sleeves D32 mm for  
bar diameters: D33 mm – D40 mm  
bore diameter: D15 mm.

**1.43 36766 EXTERNAL STOPS**

1 set (6 pcs.) of external stops D32 mm for  
material diameter: 33 mm - D40 mm, pre-machined

**1.44 36767 SPINDLE LINERS**

1 set (6 pcs.) of two-piece spindle liner tubes  
diameter mm

**1.45 36767 SPINDLE LINERS**

1 set (6 pcs.) of two-piece spindle liner tubes  
diameter mm

**1.46 36767 SPINDLE LINERS**

1 set (6 pcs.) of two-piece spindle liner tubes  
diameter mm

**1.47 36769 MS- UNIMAG INTERFACE**

Equip machine with MS-UNIMAG interface (electrics only) for connecting a bar feeder or bar loading magazine, without connection cable, for third-party brands (must be adapted to UNIMAG interface, offer cover for clamping cylinder).  
Profibus

**1.48 UE000003 WORKPIECE DISCHARGE UNIT****1.49 36790 WORKPIECE REMOVAL VIA CHUTE**

In spindle position 6.

**1.50 36798 WORKPIECE CONVEYOR BELT**

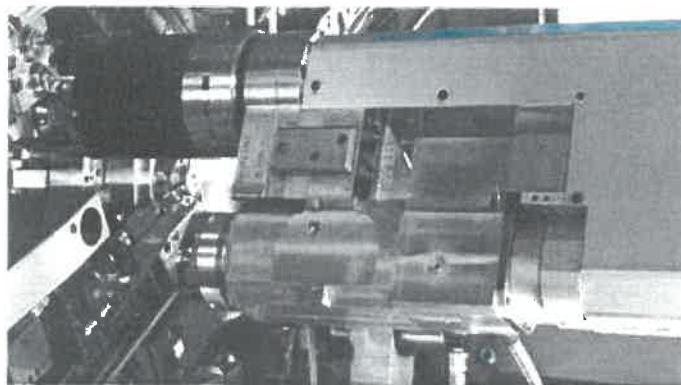
In spindle position 6, machine-integrated.

**1.51 36886 EXTERNAL CONVEYOR**

Conveyor belt outside machine, including cooling lubricant return, to remove workpieces from spindle position 6

**1.52 UE000013 SYNCHRONIZING DEVICES****1.53 36909 SYNCHRONIZING DEVICE POSITION 6.1**

Workpiece ejector  
Preparation for coolant supply through the synchronous spindle



*Figure 8 – The Synchronised Spindle*

**1.54 36808 THREE-JAW CHUCK RÖHM KFD-HS 110/3**

Jaw stroke = 1.34 mm  
Inner diameter = 41.0 mm

**1.55 UE000012 AUXILIARY DRIVES****1.56 36817 TOOL DRIVE UNIT**

Tool drive unit, reinforced, VDI-25 (without converter).  
Adequate number of electrical preparations required.

**1.57 36822 POLYGON AND THREAD MILLING UNIT**

Polygon and thread milling unit with speed ratio  $i=5:1$ , inductive encoder for reference inquiry and internal oil lubrication, with INDEX short taper mounting (without converter).

Adequate number of electrical preparations required.

**1.58 36832 REAR MACHINING UNIT ON SLIDE POSITION 6.2**

For maximum 3 drill holding blocks for stationary tools.

Mounting bores closed with blind plug on delivery.

**1.59 36840 OIL/AIR LUBRICATION FOR TOOL HOLDER**

For one to maximum six units.

Note: Suitability must be confirmed by the manufacturer of the tool holder.

**1.60 36841 ELECTRICAL PREPARATION FOR TWO ADDITIONAL DRIVE UNITS**

Including electronic shaft, spindle positions 1,2,3 (position-synchronous mode for main and counter spindles).

Can be used for all auxiliary drives with incremental encoder.

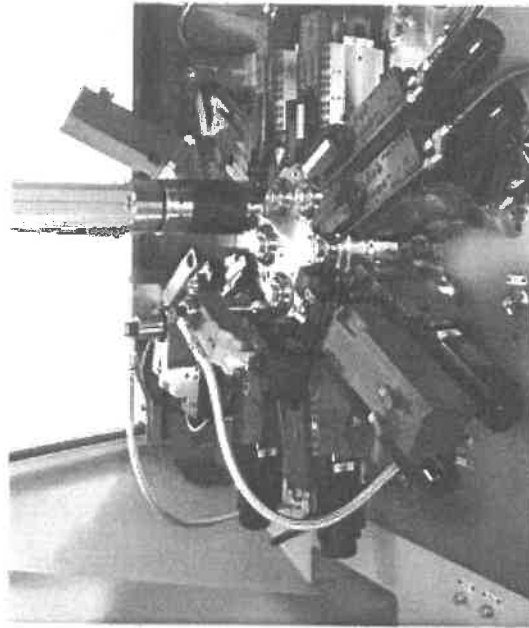
Double module.

**1.61 36843 ELECTRICAL PREPARATION FOR TWO ADDITIONAL DRIVE UNITS**

including electronic shaft, spindle positions 4,5,6 (position-synchronous mode for main and counter spindles).

Can be used for all auxiliary drives with incremental encoder.

Double module.



*Figure 9 – The Machine Working Area*

**1.62 UE000009 MACHINE EQUIPMENT OPTIONS**

**1.63 36859 400V/50HZ COOLING UNIT**

Cooling capacity 37 kW at 40°C.

**1.64 36869 AUTOMATIC CO2 FIRE EXTINGUISHING SYSTEM**

With fire detection, CO2 extinguishing tank and control unit.

Suitable only under certain conditions for machining magnesium or magnesium alloys.

**1.65 36871 BÜCHEL COOLING LUBRICANT MIST EXTRACTION & FILTER SYST.**

(type SH 2000-PEV-T/TR), two-stage version, one stage used.

**1.66 29520 ADDITIONAL FILTER ELEMENT**

For coolant mist extraction and filter system, including installation.

**1.67 29615 INDEX STANDARD COLOUR**

Machine base pedestal in dust grey RAL7037

Machine base outside in light grey RAL7035

Sliding guard made of structured stainless steel sheet

Control panel in turquoise RAL5018

Machine enclosure in turquoise RAL5018

False ceiling made of stainless steel (brushed)

(MS22/MS22-8/MS32/MS40/MS52)



False ceiling in dust grey RAL7037  
 (MS16/MS16plus)  
 Control cabinet in light gray RAL7035  
 Cooling lubricant system and chip conveyor in umbra RAL7022

#### **1.68 UE000005 COOLANT SUPPLY AND CHIP REMOVAL**

#### **1.69 36863 STANDARDIZED COMMUNICATION INTERFACE UNICOOL-DP**

Between the machine and an external cooling lubricant cleaning unit.

Interface for cooling lubricant cleaning units from Knoll, Mayfran, and GS Industrietechnik.

Communication via Profibus DP interface according to Index specification.

If a system integration of a provided unit is done at the end customer's site, the technician's travel expenses must also be paid.

For additional specifications, see product description Y9401.2005\*.

#### **1.70 29477 SLAT BAND CHIP CONVEYOR**

(transverse version), discharge height 1,200mm,  
 discharging to front, including lifting pump for filter unit.

#### **1.71 29553 COOLING LUBRICANT FOR CLEANING SYSTEM 50HZ**

Consisting of:

Cooling lubricant tank:	capacity of 800 litres
Vacuum rotation filter:	capacity 650 litres
absolute filter fineness:	100 µm

Plate heat exchanger for cooling lubricant cooling

Heat exchanger pump	80 l/min at 7 bar, 2.2 kW
---------------------	---------------------------

Low-pressure pump	300 l/min at 4 bar, 5.5 kW
-------------------	----------------------------

High-pressure pump	55 l/min at 40 bar, 5.5 kW
--------------------	----------------------------

Double switch filter for high-pressure pump, 2 filter elements, retained particle size 100 µm, electric soiling indicator, maximum differential pressure 5 bar.

Inline pressure-reducing valve,

Pressure control range	5-40 bar with pilot valve, throughput 100 l/min
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Electrical control cabinet with Siemens control, system ET200S,  
 with Profibus DP slave interface, electrical connection 3\*400V, 50Hz.

#### **1.72 29486 ADDITIONAL COOLING LUBRICANT**

High pressure pump 400V / 50Hz, 55 l/min at  
 40 bar, if using oil.

**1.73 36813 COOLING LUBRICANT SUPPLY**

With pressure relief through the first synchronizing device.

**1.74 UE000006 ELECTRICAL/SOFTWARE OPTIONS****1.75 29555 FREELY PROGRAMMABLE INTERFACE**

16 inputs and 16 outputs.

**1.76 29454 TRANSMIT/TRACTYL FUNCTION**

For C200-4D control system, including face and circumferential milling operations.

**1.77 36864 TELESERVICE VIA VPN CONNECTION**

VPN connection between the machine and INDEX customer service.

The communication software, in conjunction with the built-in Teleservice module, allows remote maintenance of the machine by the Index customer service. The connection is established through the dial-out process, i.e., from the Teleservice module to the Index customer service.

The Teleservice module is configured at the factory-according to the customer's network configuration. The customer is required to designate an IT contact person for this purpose.

The customer needs to provide a network connection (RJ-45 patch cable) to the network outlet on the control cabinet. The integration of the Index machine in the customer network and the configuration of the customer's firewall are exclusively the customer's responsibility. The customer is solely responsible for the security of its network against viruses, worms, Trojan horses, etc.

The Index Teleservice is free of charge during the warranty period. After the warranty period, the Index Teleservice will be charged according to the current price list. Alternatively you can order the "Teleservice extension pack".

Additional support on site is charged by time and material. Service details for Teleservice support are to be arranged separately.

Accompanying documentation:  
Technical brief description  
Teleservice configuration questionnaire  
INDEX standard solution (graphic)  
Teleservice services and conditions

**1.78 UE000014 TOOL/WORKPIECE SETUP****1.79 UE000007 ACCEPTANCE / COMMISSIONING / TERMS OF DELIVERY**

**1.80 29537 MACHINE PACKAGING**

Machine packed for shipping, protected against dust and moisture with polyethylene film.

**1.81 29629 TERMS OF DELIVERY**

According to Incoterms 2010: FCA – Free carrier

Place of delivery: Truck loading area in the delivery plant (Esslingen, Deizisau or Reichenbach)

**1.82 29899 RATED CAPACITY**

85 kW

**1.83 29898 CONNECTED LOAD**

101 KVA

**1.84 29897 RATED CURRENT**

145 A

**1.85 29896 MAXIMUM BACK-UP FUSE**

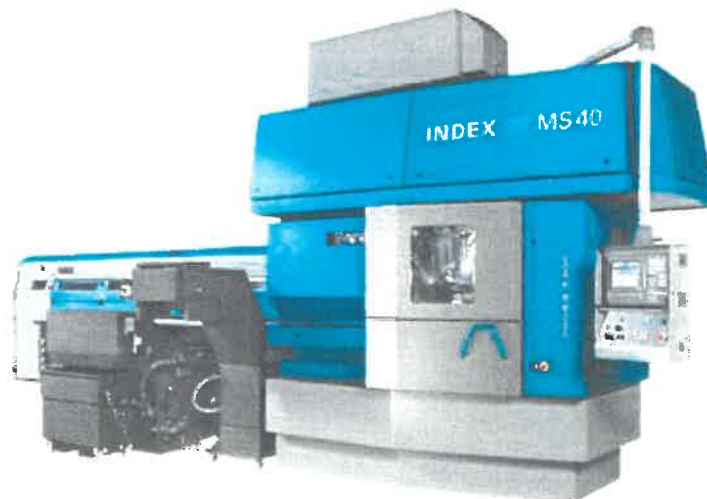
160 A

**1.86 29464 NOTE: VOLTAGE**

400 V

**1.87 29468 NOTE: ELECTRICAL SYSTEM FREQUENCY**

50 Hz



*Figure 10 – The Index MS 40 CNC Multi Spindle*