



S33 Studer Cylindrical Grinding

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Ln #	Qty	Description
1	1	Studer S33 0/30 1xOD
2		Center distance 1000mm (39.370")
3		Center height 175mm (6.890")
4		Machine base of Granitan S103 incl. vibration reducing mounting pads. Synthetic-based surfacing material S200 with oil circulating lubrication. Wheelhead and longitudinal slides with V and flat guideways. Longitudinal table with auxiliary scale for adjusting table mountings
5		Workpiece table swiveling range +8.5deg. with fine adjustment and air cushion for swiveling (incl. support for radial dial indicator)
6		Mechanical graduation metric
7		Wheelhead axis X (NC-axis) 0 deg. Drive by AC-Servo motor via recirculating ball screw. Travel 285mm / 11.22". Programmable infeed speed 0.001-10'000mm/min / .000,04-394ipm
8		Longitudinal axis Z (NC-axis). Drive by AC servo motor via recirculating ball screw. Travel 1150mm (45.276"). Programmable infeed speed 0.001-20'000mm/min / .000,04-786ipm
9		Direct measuring system for X-axis resolution 0.0001mm / 0.000,004" (linear, absolute measuring system, does not require reference point approaching)
10		Direct measuring system of Z-axis resolution 0.0001mm / 0.000,004" (linear, absolute measuring system, does not require reference point approaching)
11		Glass scale interface for direct measuring systems
12		Wheelhead
13		Manual swiveling wheelhead that can be positioned in either 0 deg or 30 deg. Air cushion lift-of which simplifies the man. changeover
14		Wheel guard in tool position T2 right dia.500mm / 20" for external grinding wheels dia.500x80mm / 20x3" form1 (110mm / 4.3" form5)
15		Automatic grinding wheel contact protection, for wheel guard in tool position T2 right

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16		External grinding spindle 1, roller bearing for belt drive. Taper 1:10. Nominal dia. 63mm / 2.48"		
17		Motor 9kW / 12.24hp incl. frequency converter for external grinding spindle 1		
18		Drive motor for external grinding spindle 1 has air cooling		
19		Peripheral speed for external grinding spindle 1: max. 50m/s / 9'840 sfpm programmable as constant cutting speed with frequency converter drive.		
20		Workhead		
21		Universal workhead MT5, roller bearings, spindle nose with internal holding fixture MT5, spindle bore dia.30mm (1.181"). Manual spindle blocking without monitoring. Indirect driving of the workhead spindle (C axis) by means of toothed belt		
22		Manual correction of cylindricity for workhead		
23		Dial indicator incl. support for workhead cylindricity setting		
24		Roundness accuracy when live spindle grinding 0.0004mm (0.0000157")		
25		Normal C axis for cylindrical grinding and circumferentially positioned supports, reference accuracy +/-0.5deg. for workhead spindle stock with indirect drive.		
26		Workpiece drive 3kW / 4.08hp with AC servo motor		
27		Workhead spindle without holding brake		
28		Rpm-range 1-1500rpm, Inching speed 1-50rpm		
29		Air cushion for easy workhead movement during set up.		
30		Tailstock		
31		Tailstock with fitting taper MT4 and 35mm / 1.38" stroke. Barrel dia. 50mm / 1.97" with plain bearing. Mechanically adjustable barrel travel control. Mounting of a dressing tool holder adjustable in height possible		
32		Manual tailstock fine adjustment for cylindricity corrections +/-0.04mm (0.001575") (in diameter)		
33		Hydraulic controlled barrel retraction, incl. monitoring		

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34		Foot pedal (dual channel) for clamping devices for electrically controlled clamping devices (hydraulic tailstock retraction, chucks etc.) Double foot pedal (clamping/unclamping) with over-travel switch on the clamping pedal. Connection cable length 4m		
35		Control System		
36		CNC control Fanuc 0i-TD with: -- inclusive interface to screen with integr. PC -- Integrated PLC controls -- Usable memory 512kByte, memory for 400 programs. -- Approx. 10kByte of the user memory is required by the Studer Operating System Release F and approx. Memory for 15 programs. (The memory requirements for the Studer sample are approx. 5kByte) and approx. Memory for 5 programs) (Cannot be used for High Speed Machining)		
37		Color flat 15" screen (standard) with touch function and integrated personal computer with USB interface outside of and within the operating panel. Note: When connecting an additional PC keyboard is the US keyboard layout (American) predefined.		
38		Operating panel and electrical cabinet permanently fixed to the machine		
39		Air conditioning for control cabinet		
40		AC voltage 400 Volt +/-10%		
41		External auxiliary transformer 30kVA for main voltage 3 x 230/460/480 Volt, 60Hz (UGA)		
42		Mains frequency 60Hz +/-1Hz		
43		Portable operating unit Studer PCU terminal II with graphics TFT color monitor, keyboard, electronic handwheel, override and acceptance button		
44		Approval foot pedal (2-channel) for the execution of movements with open operating doors (with overtravel switched off). Facilitates the set-up of internal grinding spindles and the alignment of workpieces in the chucks. Connection cable length 4m		
45		Connection installation for Ethernet interface for CNC control with Studer operating system Release F according to: -- Exchange of data between the CNC controller with integrated personal computer and an external personal computer with an Ethernet interface -- Enables remote diagnostic service support using on-line Access to the data of the CNC machine control via internet connection. Access to only release customer's consent		

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46		Working hour meter, range 0-99,999h		
47		Operating status light red / orange / green, multicolor LED indicator on the machine: -- red = Fault -- orange = Operator call -- green = Cycle in progress		
48		Dual Check Safety for Fanuc CNC drives of the machine and automatic switch-off (energy switch-off) with open doors for the remaining actuators. Acknowledge button for setting up when the door is open. Lockable safety switch for maintenance work		
49		In the event of an emergency stop or power failure during an active CNC cycle the grinding wheel is automatically lifted off the workpiece or dressing tool. The retraction distance (to prevent tool damage) can be set by the customer, within a possible range of approx. 0.5mm (0.019")		
50		Contact Detection		
51		Electronic contact detection Dittel S6000 with: -- Display and control via StuderWIN -- 2 inputs for contact detection with active or passive sensors, whereby only one sensor can be used simultaneously -- Manual selection of frequency band for each sensor -- Studer software for air gap elimination on the basis of contact detection with selection of sensor-input and programmable sensitivity		
52		Contact ring sensor passive in tool position T2 on wheel guard for contact detection		
53		Semi-Auto Wheel Balancing		
54		Portable MPM 3.BMT230-2.M.24 2-plane balancing unit with 24V DC operating voltage, display unit (with freely selectable manual adjustment of the balancing plane) for manual adjustment of the balancing segments on 2 grinding wheel flanges (one-sided with 2 grinding wheels on a single spindle, or two-sided in connection with a wide grinding wheel) after dynamic unbalancing check (including transport case). Notes: -- 1 device can be used for several machines which are equipped with an interface for manual balancing MPM and the necessary balancing sensors MPM.		

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55		Set of connection cable for portable balancing unit MPM BMT2xx-2 with 24VDC voltage. 1 cable for 24VDC voltage and revolution sensor and 2 cables for balancing sensor (cable length 1.4m)		
56		Interface for manual balancing on tool head / wheelhead H1 to connect a portable MPM BMT100 or BMT2xx balancing unit outside the machine enclosure consisting of: -- Interface with sockets outside the machine enclosure for: - 24 Volt power supply for balancing unit - rpm signal per rpm initiator - balancing signal per balancing sensor -- rpm initiator on the machine (one initiator for each external grinding spindle without balancing head for automatic balancing) -- balancing sensor on the machine (one sensor for each balancing plane) -- Holder for balancing unit		
57		Software		
58		Studer operating system Release F with StuderWIN for Fanuc Oi-TD consisting of: -- Operator-controlled set-up (only one swiveling angle per wheel for dressing and grinding can be set up) -- Manual grinding cycle for a workpiece bearing surface (automatable) -- Pictogramming (programming aid by means of pictograms) -- Grinding cycles for: - Diameter machining - Shoulder machining - Taper machining - Free contour machining (X/Z) -- Workpiece, tool or seat specific correction facility with display of correction process -- Regrinding of single workpiece sections without additional programming effort (Interact) -- Automatic dressing incl. free wheel shape (for a max. of 2 dressing tools per wheel) -- Program manager (tools, programs and customer files) -- Timer function -- Programmable robot cycle sequence (=idle cycle for maintaining thermal machine stability) -- Integrated operating instructions with operation-dependent help system -- Diagnosis pictures for simplified troubleshooting -- Bidirectional transfer of program data via data interface to an external PC		
59		Program Check with Handwheel for Studer operating system Release C or higher. Option allows to control infeed speed in an automatic program cycle through the handwheel. E.g. for testing a new workpiece program when approaching the workpiece or the dressing tool or when approaching a bore		

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60		Workpiece counter with display on screen (counting function via M-command) -- 8-digit workpiece counter, resettable -- 8-digit workpiece totalizer, non-resettable Cycle time display		
61		Control system user interface with imperial measurement units (inches)		
62		StuderTechnology integrated For automatic calculation of optimized workpiece program parameters for standard Studer grinding cycles. Operating instructions are directly integrated into the Help system StuderWIN		
63		Dialog language English for Studer operating system		
64		Language English for Microsoft operating system (only for administrative purposes)		
65		TouchDressing for dressing of a defined amount based on the contact detection Note: Requires sensor for contact detection on the corresponding dressing tool		
66		Length Positioning Probe		
67		Swivelable touch probe 1 (switching) in tool position T2, angled to the machining surface for probe arm with thread M3 and software for compensation. For example, for active longitudinal positioning on shoulders (TouchPositioning)		
68		Probe arm with sphere dia.2mm (0.079"), length 21mm (0.827") for touch probe with M3 thread		
69		Hydraulics and Pneumatics		
70		2-circuit hydraulics nominal pressure 23bar with filter 10µm for hydraulics, nominal pressure 0.8bar with filter 6µm and electric filter-pollution, monitoring for lubrication of the X- and Z-axis, with common tank, oil volume 16 liters, hydraulic unit attached to the electric cabinet		
71		Pneumatic basic unit with compressed air processing (filter, water separator with automatic drain), electr. main valve, circuit pressure surveillance		
72		Coolant System		
73		Type of Coolant: Emulsion		

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74		Standard coolant pressure circuit 0, for nominal pressure up to a maximum of [n/a]		
75		Coolant interface for connection of a coolant supply system according to electr. interface description SDE0096402B. (Power consumption >10A, requires coolant device with own power supply). The required coolant volume and the mechanical interface are shown in the space assignment plan of the machine		
76		Coolant cycle valve 2 for process cooling on grinding wheel in tool holding fixture position 2		
77		Connection to a grinding mist extraction unit on the customer side. Installation by customer		
78		Interface for grinding mist extraction unit duct adapter dia.198mm (7.795") on enclosure for tube connection of the grinding mist extraction unit. Electrical interface according to SDE0096403A. Mechanical arrangement of the duct adapter and necessary suction power are shown on the arrangement plan of the machine		
79		Enclosure		
80		Complete enclosure with operator and maintenance doors, integrated coolant collector tray over the machine base		
81		LED Machine lighting 24V (can be switched on/off)		
82		Door monitoring with electrical locking mechanism Studer standard execution in conformity with EC (in case of power loss the doors are not hold)		
83		Color		
84		Standard machine color -- Machine color (inside and outside) signal white RAL 9003 including peripherals and control cabinet inside and outside -- Color of wheel guards / grinding spindle holders signal red RAL 3001		
85		Documentation		
86		(2) Test certificates of machine geometry		
87		Electrical test certificate according to EN 60204-1 Protective conductor continuity test		
88		Declaration of EC-conformity for EC-compliant safety equipment		

Ln #	Qty	Description	Unit Price	Ext. Price
89		Operating and programming instruction English		
90		Fanuc operator's manual English		
91		Fanuc maintenance manual English		
92		Equipment manual with documentation of external equipment (English/German) for maintenance. By the majority as a PDF file on CD		
93		Studer controlling documentation (English/German) put in the control cabinet, consisting of: -- Electrical schematics machine control (incl. setting parameters) -- Hydraulic schematics -- Pneumatic schematics -- Coolant schematics -- Log book		
94		Software documentation/Data backup Option programs and parameters on data medium		
95		Operating tools		
96		Warranty		
97		The warranty period is 12 months from the date of start-up at the factory of the customer, but max. 15 months after delivery or max. 4000 operating hours		

Ln #	Qty	Description
99	1	<p>Rotary Dressing Table Mount Options to stay with 120mm dressing disks</p> <p>Note: Dressing Disk not included. Can be quoted upon request.</p>
100		<p>Dressing spindle type M 16'340rpm, power supply 0.45kW (0.612hp) with dressing tool holding fixture dia.40-h3 (1.575"), clamping interface I04. Connection cable length 5m and Harting plug HAN-Modul with lateral cable output. (Spindle according to electrical specification 1330366A). Conditions: -- Requires spindle holder with clamping interface I04 -- Requires dressing frequency converter -- Dressing tool has to be ordered separately</p>
101		<p>Dressing device with interface G01 attachable to the workpiece table , movable in direction X, for dressing tool holder provided as accessory</p>
102		<p>Spindle holder 5deg. height adjustable with interface G01 for mounting of a dressing spindle with clamping interface I04. (21.7mm (0.854") distance between interface G01 und I04). Note: Can also be used for spindles with type of mounting W</p>
103		<p>Electric interface 1 for rotary dressing up to max. 3kW driving power. Interface with frequency converter for dressing spindles for the control of a dressing spindle with electric connections according to "Connection diagram dressing spindle coding 1330 366A". Enables programmable number of revolutions of 10-100% of the nominal spindle revolutions in the same or opposite sense of rotation of the grinding wheel</p>
104		<p>Coolant cycle valve CV1 for the process cooling in the area of the workpiece table</p>
105		<p>Use of electric interface 1 rotary dressing for a dressing spindle with contact sensor requires connection installation for a sensor input on the workpiece table</p>

Ln #	Qty	Description
107		Wheel Flanges
108	2	Wheel adaptor dia.500mm / 20" with bore 203.2mm / 8". Width 32-63mm / 1.25-2.5" form1 (80mm / 3" form5) for tapered shaft ends 1:10 with nominal diameter 63mm (2.480"). Incl. balancing segments and graduation
109	1	Wheel changing shaft (length 220mm (8.661")) for more ergonomic grinding wheel change, for shaft end with nominal diameter 63mm (2.480"), including extractor nut (instead of the extraction tool)
110		Between Center Tooling
111	1	Full centre A long dia.35mm (1.378") for internal holding fixture MT4
112	1	Half centre long dia.35/13mm (1.378"/0.512") for internal holding fixture MT4
113	1	MT4 centre adaptor for internal holding fixture MT5 Incl. extractor nut M48x1.5
114		Mist Collection / Coolant System
115	1	Note: Customer to provide Mist Collection Central System
116	1	Paper band filter 100 gal. for emulsion with coolant tank and pump 30 GPM / 35PSI
117	1	Accessory Retrofit at UGNA
118		<i>S33 as described above</i>