



Precision Built Solutions™

MC-B SERIES OPTIONS

OPT-2116	SPIDER COOL PROGRAMMABLE COOLANT NOZZLE Programmable nozzle moves automatically to adjust for differences in tool length. Can also be set to oscillate mode for flushing action.
OPT-2165	10-MICRON COOLANT FILTRATION SYSTEM 10-micron coolant filtration system features up to 10-GPM flow rate with a replaceable element.
OPT-2118	OIL SKIMMER Automatically removes tramp oil from your coolant system.
OPT-2112	SPRAY MIST COOLANT SYSTEM
OPT-2169	MIST COLLECTION SYSTEM
OPT-2114	AIR BLAST SYSTEM Programmable air nozzle for plastic, graphite and other dry materials.
OPT-9220	AUTOMATIC DOOR Electric operated automatic door opener.
OPT-9233	ELECTRICAL CABINET AIR CONDITIONER Replaces standard fan vented cabinet with a sealed cabinet. Air conditioning unit keeps inside temperature at the desired set temperature regardless of what the outside temperature is. Recommended for area where ambient temperature exceeds 100 degrees Fahrenheit.
OPT-2132	AUTOMATIC PALLET SHUTTLE SYSTEM
OPT-2120	ABRASIVE MATERIAL MACHINING PACKAGE Includes one piece sealed way covers that protect the ways from abrasive contaminates. Includes a sealed electrical cabinet with an high efficiency heat exchanger.

EXTENDED TRAVEL

OPT-4340	EXTENDED 38" Z TRAVEL (MC-60) Spindle nose to table increases to 2" - 40"
OPT-5313	EXTENDED 35" Y TRAVEL (MC-60) Spindle to column is increased to 36"
OPT-5313	EXTENDED 40" Y TRAVEL (MC/VB-80, 100) Spindle to column is increased to 41"
OPT-4341	EXTENDED 34" Z TRAVEL (MC/VB-80, 100) Spindle nose to table increases to 4" - 38"

CHIP REMOVAL

OPT-2102	CHIP AUGER SYSTEM UP TO 60" X TRAVEL
OPT-4113	DUAL CHIP AUGER SYSTEM 70" - 100" X TRAVEL
OPT-8039	CHIP CONVEYOR SYSTEM UP TO 60" TRAVEL
OPT-4149	DUAL CHIP CONVEYOR SYSTEM 70" - 100" X TRAVEL
OPT-2104	HIGH PRESSURE WASHDOWN SYSTEM & WASHDOWN HOSE Flushes chips into auger or conveyor system.

40 TAPER SPINDLE OPTIONS

OPT-2200	10,000 RPM 40 TAPER SPINDLE Includes refrigeration unit and air purge seal.
OPT-2202	12,000 RPM 40 TAPER IN-LINE SPINDLE Includes refrigeration unit and air purge seal.
OPT-2204	15,000 RPM 40 TAPER IN-LINE SPINDLE Includes refrigeration unit and air purge seal.
OPT-2205	21,000 RPM 30 TAPER ELECTRIC SPINDLE Includes refrigeration unit, air purge seal, conversion of ATC to 30 taper.

- OPT-2206 **30,000 RPM 30 TAPER ELECTRIC SPINDLE** Includes refrigeration unit, air purge seal, oil/air lube system, conversion of ATC to 30 taper.
- OPT-4206 **HIGH TORQUE 40 HP SPINDLE MOTOR UPGRADE (Siemens control only)** Powerful 40 HP spindle motor develops 204 ft./lbs. of torque at only 350 RPM. Requires 80 Amp service.
- OPT-4208 **2 SPEED AUTO-SHIFT GEARED HEAD (40 TAPER)** High torque ZF gearbox provides 500 ft/lbs. torque at 350 RPM with standard 25 HP motor or an incredible 800 ft/lbs. at 350 RPM with the optional 40 HP motor. Includes refrigeration unit, max speed 6,000 RPM.
- OPT-2213 **350 PSI COOLANT THRU SPINDLE SYSTEM** High pressure, adjustable 100-350 PSI thru spindle coolant system. Includes high volume 8-gallon / minute pump and 10-micron replaceable filter. Features full pressure even with tool coolant holes up to .200" diameter. Includes top cover. 40 or 50 taper spindles.
- OPT-2212 **1,000 PSI COOLANT THRU SPINDLE SYSTEM** High pressure, adjustable 300-1,000 PSI thru spindle coolant system. Includes high volume 8-gallon / minute pump. This allows full pressure even with tool coolant holes up to .100" diameter. System includes 10-micron replaceable filter cartridge. Includes top cover. 40 or 50 taper spindles.
- OPT-2216 **BIG PLUS TAPER SPINDLE FOR CAT OR BT** Dual contact Big Plus spindle improves cutting performance with use of special Big plus holders. Also accepts standard 40 taper holders for normal performance.
- OPT-9209 **BT-40 SPINDLE** For Japanese style BT-40 tooling.

AUTOMATIC TOOL CHANGERS - 40 TAPER

- OPT-4103 **UPGRADE TO 40 STATION ARM TYPE AUTOMATIC TOOL CHANGER** Column mounted, twin arm, 40 + 1 Station tool changer holds up to 3.55" (adjacent) and 6.00" (empty pocket) diameter tools, 11" long, 17.50 lbs. Tool change time 3 seconds.
- OPT-4109 **UPGRADE TO 60 STATION ARM TYPE AUTOMATIC TOOL CHANGER FOR 40 TAPER** Column mounted, twin arm, 60 + 1 Station tool changer holds up to 3.55" (adjacent) and 6.00" (empty pocket) diameter tools, 11" long, 17.50 lbs. Tool change time 3 seconds.

50 TAPER SPINDLE OPTIONS

- OPT-4212 **50 TAPER SPINDLE - 6,000 RPM**
- OPT-4213 **50 TAPER SPINDLE - 8,000 RPM**
- OPT-4217 **50 TAPER SPINDLE - 10,000 RPM - In-Line type**
- OPT-4206 **HIGH TORQUE 40 HP SPINDLE MOTOR UPGRADE (Siemens control only)** Powerful 40 HP spindle motor develops 204 ft./lbs. of torque at only 350 RPM. Requires 80 Amp service.
- OPT-4247 **2 SPEED AUTO-SHIFT GEARED HEAD (50 TAPER)** High torque ZF gearbox provides 500 ft/lbs. torque at 350 RPM with 30 HP motor or an incredible 800 ft/lbs. at 350 RPM with the 40 HP motor. Includes refrigeration unit, max speed 6,000 RPM.
- OPT-9237 **BT-50 SPINDLE** For Japanese style BT-50 tooling.

AUTOMATIC TOOL CHANGERS - 50 TAPER

- OPT-4142 **UPGRADE TO 24 STATION ARM TYPE ATC FOR 50 TAPER VERTICAL** Column mounted, twin arm, 24 station tool changer holds up to 4.9"(adjacent) and 9.85" (empty pocket) diameter tools, 16" long, 33 lbs. Tool change time 4 seconds.
- OPT-4107 **UPGRADE TO 40 STATION ARM TYPE ATC FOR 50 TAPER VERTICAL** Chain drive large capacity ATC is column mounted, twin arm, 40 station tool changer holds up to 4.9"(adjacent) and 9.85" (empty pocket) diameter tools, 16" long, 33 lbs. Tool change time 4 seconds.

RISER BLOCKS

- OPT-4122 **4" COLUMN RISER BLOCK**
- OPT-4124 **8" COLUMN RISER BLOCK**
- OPT-4125 **12" COLUMN RISER BLOCK**

ROTARY TABLE CONTROLLERS

- OPT-4306 4TH AXIS DRIVE AND WIRING for 6" to 10" Rotary Tables Add this option to any Fryer machine in order to control the 4th axis rotary tables as a full contouring 4th axis. Includes drive, wiring and 4th axis software.
- OPT-4305 4TH AXIS DRIVE AND WIRING for 12" to 32" Rotary Tables Add this option to any Fryer machine in order to control the 4th axis rotary tables as a full contouring 4th axis. Includes drive, wiring and 4th axis software.
- OPT-4349 5TH AXIS DRIVE AND WIRING for 6" to 12" Trunnion Tables Add this option to any Fryer machine in order to control the two axis rotary tables as a full contouring 4th and 5th axis. Includes drives, wiring and special 5 axis software. Requires 4th axis Drive and Wiring.
- OPT-4350 5th AXIS DRIVE AND WIRING for 16" to 32" Trunnion Tables Add this option to any Fryer machine in order to control the two axis rotary tables as a full contouring 4th and 5th axis. Includes drives, wiring and special 5 axis software. Requires 4th axis Drive and Wiring.

4th AXIS ROTARY TABLES

*Fryer made rotary tables feature exceptional quality and accuracy. Dual worm gear drive, high torque disc brake, AC brushless motor, coolant tight motor housing, quick disconnect cable set, table clamp set and ground locating keys.
Requires 4th axis drive wiring.*

- OPT-1002 RT-170 6" 4TH AXIS ROTARY TABLE
- OPT-1003 6" TAILSTOCK
- OPT-1004 6" ROTARY TABLE CHUCK
- OPT-4310 RT-200 8" 4TH AXIS ROTARY TABLE
- OPT-4311 8" TAILSTOCK
- OPT-4360 8" HEAVY DUTY TAILSTOCK Tailstock includes a cast iron body, keyed table and features a faceplate to hold a 3-jaw chuck or a center. Also includes high torque pneumatic disc brake.
- OPT-4351 8" ROTARY TABLE CHUCK
- OPT-4312 RT-250 10" 4TH AXIS ROTARY TABLE
- OPT-4313 10" TAILSTOCK
- OPT-4361 10" HEAVY DUTY TAILSTOCK Tailstock includes a cast iron body, keyed table and features a faceplate to hold a 3-jaw chuck or a center. Also includes high torque pneumatic disc brake.
- OPT-4353 10" ROTARY TABLE CHUCK
- OPT-4314 RT-320 12" 4TH AXIS ROTARY TABLE
- OPT-4315 12" TAILSTOCK
- OPT-4362 12" HEAVY DUTY TAILSTOCK Tailstock includes a cast iron body, keyed table and features a faceplate to hold a 3-jaw chuck or a center. Also includes high torque pneumatic disc brake.
- OPT-4355 12" ROTARY TABLE CHUCK
- OPT-4318 RT-400 16" 4TH AXIS ROTARY TABLE
- OPT-4319 16" TAILSTOCK
- OPT-4359 16" ROTARY TABLE CHUCK

5th AXIS TRUNNION ROTARY TABLES

Fryer made 5th axis rotary tables are perfect for multisided machining as well as full 5 axis contouring. Ultra precise ring and worm gear set ensure dead-on accuracy. All tables feature trunnion style full support for heavy duty cutting, hydraulic disc brake, table clamp set, quick disconnect cable set and ground locating keys.

Requires 4th & 5th axis rotary table controllers above.

- OPT-8503 TRT-120 6" 5TH AXIS TRUNNION ROTARY TABLE

OPT-8505	TRT-200 8" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8507	TRT-250 10" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8509	TRT-320 12" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8510	TRT-450 18" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8517	TRT-500 20" 5 TH AXIS TRUNNION ROTARY TABLE

GLASS SCALES

OPT-1102	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION - X & Y AXIS (MODELS UP TO 40" X TRAVEL) This is a super accurate system using dual feedback. The standard encoders provide a stable servo loop while the ultra precision scales provide final position accuracy.
OPT-2122	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION - X & Y AXIS (MODELS UP TO 60" X TRAVEL)
OPT-4127	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – X & Y AXIS (MODELS WITH 70" - 100" X TRAVEL)
OPT-2124	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – Z AXIS (MODELS WITH UP TO 30" Z TRAVEL)
OPT-2125	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – Z AXIS (MODELS WITH 30" - 40" Z TRAVEL)

CONTROL OPTIONS - FRYER / SIEMENS 828 HS

OPT-0602	REMOTE ELECTRONIC HANDWHEEL Handy jog handwheel is located in a portable box with coiled cord. Features axis selector switch and a resolution selector for coarse or fine movement. Remote stop start is also included.
OPT-2146	HANDWHEEL RUN FUNCTION This feature allows you to control your program execution with the electronic handwheel. Turning the handwheel causes the program to run, with you controlling the feedrate. You can move forwards and even backwards with this handy feature. Designed to make proving-out programs easier with safety and confidence.
OPT-2158	SWIVEL FUNCTION This innovative function allows the operator to enter the angle of an adjustable right angle toolholder into the control. X and Z axes are then automatically slaved to allow milling and drilling. Addition of the remote handwheel option provides for manual movement.
OPT-2147	DXF FILE IMPORT FEATURE Allows you to import DXF files and quickly convert to a conversational program. Automatically create points for drilling operations or contours for milling.
OPT-4133	IN-PROCESS PART PROBE MEASUREMENT CYCLES This feature allows you to measure part features during program execution. Can also be used in MDI mode after cutting the part to then measure certain features and display the measurement
OPT-9104	HIGH SPEED NETWORK INTERFACE High speed Ethernet port is the ideal way to connect your machine to your LAN (local area network). Features 10/100 MB/s bandwidth for fast uploads and downloads of part programs. Also features a drip feed option that allows you to run part programs larger than the memory of the machine.
OPT-2140	REMOTE MONITORING Allows monitoring of the CNC from any remote location where internet access is available. Check cycle times, spindle load, feedrate override position, program being run and more. Requires network interface option.
OPT-2100	SIEMENS OFFLINE PROGRAMMING SOFTWARE Easy-to-use software package that installs on a standard desktop PC and duplicates the control functions. Allows full programming and part program verification. Single package for lathe and mill. Windows 7-10 compatible.
OPT-2151	EXPANDED MEMORY 100 MB Standard memory of 6 MB is increased to 100 MB for handling larger CAM programs.
OPT-2142	3D HIGH SPEED MACHINING Features high speed 1.5ms block processing and 500 block look-ahead. Advance Surface features jerk control and nano smoothing with a compressor mode which determines optimal velocity for programs containing circular and linear blocks. High speed roughing parameters and lower speed finishing parameters provide incredible surface finish at lowest possible cutting time.
OPT-2163	RESIDUAL MATERIAL DETECTION This software option allows re-machining of pocket milling contours with a tool smaller than the original tool. The control will remember where material has already been machined and will cut only the residual material.

- OPT-2156 **EXTENDED OPERATOR FUNCTIONS** Includes additional part probing cycles, teach function, the ability to save tool data and tool offset data, save MDI programs and other features.
- OPT-2154 **4TH AXIS SURFACE CYCLES** Allows programming of XYZ coordinates and cycles like pockets and engraving. These are then automatically projected onto a cylindrical surface. For use with 4th axis rotary tables.
- OPT-2156 **ADAPTIVE FEED CONTROL** This cycle monitors the spindle load and varies the feed rate accordingly. By entering the maximum spindle load and then entering a range of minimum and maximum feedrate override values, the control monitors these settings and adjusts the feeds automatically. When approaching corners and radii the feed rate will slow down, during straight line moves the feedrate increases to shorten the cutting time and help produce more parts per hour.
- OPT-2144 **FRYER - SIEMENS TOUCH 2400 CNC CONTROL UPGRADE** The 2400 CNC is based on the powerful Siemens Sinumerik One platform. This control features a 19" touch screen display, 5 axis simultaneously expandable and advanced operator functions. Includes Handwheel Run and Run Verify features as well as Probe Cycles. Software options for this control are slightly different than the 828-HS control, contact the factory for additional information on these options.
- OPT-9200 **SPARE "M" FUNCTION** Use to connect remote devices like indexers, shuttles, clamps, etc.
- OPT-9203 **SPARE "M" FUNCTION -- PACKAGE OF 10**

CONTROL OPTIONS - FANUC

- OPT-0217 FANUC 0i MF PLUS CNC UPGRADE
- OPT-9950 FANUC 31i B5 - 5 axis CNC UPGRADE
- OPT-4244 HIGH TORQUE 40 HP SPINDLE MOTOR AND DRIVE
- STD USB PORT FOR MEMORY STICK DEVICES
- OPT-0218 2 MB PROGRAM STORAGE MEMORY
- OPT-0222 WORK OFFSETS – 48 PAIR STANDARD
- OPT-0217 **HANDWHEEL RUN FUNCTION** This feature allows you to control your program execution with the electronic handwheel. Turning the handwheel causes the program to run, with you controlling the feedrate. You can move forwards and even backwards with this handy feature. Designed to make proving-out programs easier with safety and confidence.
- OPT-0212 **REMOTE ELECTRONIC HANDWHEEL** Handy jog handwheel is located in a portable box with coiled cord. Features axis selector switch and a resolution selector for coarse or fine movement. Remote stop start is also included.
- OPT-0213 **MANUAL GUIDE I CONVERSATIONAL PROGRAMMING** - Powerful Manual Guide i guides you through complex programming at the machine without having to remember G codes. Includes 3D solid model verification feature.
- OPT-0215 **FAST DATA SERVER** - 2 GB part storage, unlimited file size using drip feed buffer, FTP server capable.
- OPT-0214 **HIGH SPEED NETWORK INTERFACE** High speed Ethernet port is the ideal way to connect your machine to your LAN (local area network). Features 10/100 MB/s bandwidth for fast uploads and downloads of part programs. Also features a drip feed option that allows you to run part programs larger than the memory of the machine.
- OPT-0219 **3D HIGH SPEED MACHINING** Features 200 block look ahead, AICC2, smooth tolerance, jerk control, and fine surface machining.
- OPT-9200 **SPARE "M" FUNCTION** Use to connect remote devices like indexers, shuttles, clamps, etc.
- OPT-9203 **SPARE "M" FUNCTION -- PACKAGE OF 10**
- OPT-0221 **TEACH MODE** Allows you to record manual positions using the handwheels to create a program

PROBES

- OPT-4230 **FRYER AUTOMATIC TOOL AND PART PROBE PACKAGE** This package includes table mounted tool probe to auto set the tool length offset and a wired part probe to auto set pocket centers, bosses, and find edges. The simple graphical interface included gives the operator the fastest set-up possible.
- OPT-9222 **MARPOSS WIRELESS TOOL AND PART PROBE PACKAGE** Includes a wireless (IR) table mounted tool probe that automatically measures and sets your tool length and diameter offsets. Included is an easy to use wireless part probe that works with the ATC and allows you to quickly find edges, hole centers, bosses and many more shapes. Simple graphical menus make operations fast and can also be used to measure part geometry.

- OPT-3508 **MARPOSS IR WIRELESS PART PROBE ONLY** Infrared (IR) probe is ideal for 3-axis applications. The part probe works with the ATC and allows you to quickly find edges, hole centers, bosses and many more shapes. Simple graphical menus make operations fast and can also be used to measure part geometry.
- OPT-2128 **RENISHAW WIRELESS TOOL AND PART PROBE PACKAGE** Includes a wireless (IR) table mounted tool probe that automatically measures and sets your tool length and diameter offsets. Included is an easy to use wireless (IR) part probe that works with the ATC and allows you to quickly find edges, hole centers, bosses and many more shapes. Simple graphical menus make operations fast and can also be used to measure part geometry.
- OPT-9217 **RENISHAW IR WIRELESS PART PROBE ONLY** Infrared (IR) probe is ideal for 3-axis applications. The part probe works with the ATC and allows you to quickly find edges, hole centers, bosses and many more shapes. Simple graphical menus make operations fast and can also be used to measure part geometry.
- OPT-4132 **RENISHAW NC4 LASER TOOL PROBE** The Renishaw NC4 is the latest generation of non-contact tool setter and their most compact design. Repeatability of trigger points (2 sigma) $\pm 1.0 \mu\text{m}$ at 1 m separation; minimum tool diameter for measurement $\text{\O}0.03 \text{ mm}$ (0.001 in). Maximum tool diameter is 80mm

TOOLING & WORKHOLDING

- OPT-4214 **SANDVIK #40 V-FLANGE TOOLING PACKAGE** Standard tooling package includes: (6) collet chucks with the following collet sizes: (1) 1/4"; (2) 3/8 "; (2) 1/2 "; (1) 5/8"; (1) 3/4"; (1) 1". Solid end mill holders as follows: (2) 3/8 "; (2) 1/2 "; (1) 5/8 "; (1) 3/4"; (1) 1". (1) 3/4"; (1) 1", (1) 1/2" keyless drill chuck with holder, collet chuck wrench & set-up fixture, (14) retention knobs.
- OPT-9097 **PACKAGE OF 12 CAT-40 OR BT-40 RETENTION KNOBS** (specify at time of order)
- OPT-9101 **PACKAGE OF 12 CAT-40 OR BT-40 RETENTION KNOBS FOR THRU SPINDLE COOLANT** (specify at time of order)
- OPT-4215 **SANDVIK #50 V-FLANGE TOOLING PACKAGE**
Standard tooling package includes: (6) collet chucks with the following collet sizes: (1) 1/4"; (2) 3/8 "; (2) 1/2 "; (1) 5/8"; (1) 3/4"; (1) 1". Solid end mill holders as follows: (2) 3/8 "; (2) 1/2 "; (1) 5/8 "; (1) 3/4"; (1) 1", (1) 1/2" keyless drill chuck with holder, collet chuck wrench & set-up fixture, (14) retention knobs.
- OPT-9096 **PACKAGE OF 12 CAT-50 OR BT-50 RETENTION KNOBS** Specify at time of order.
- OPT-9109 **PACKAGE OF 12 CAT-50 OR BT-50 RETENTION KNOBS FOR THRU SPINDLE COOLANT** Specify at time of order.
- OPT-8002 **6" HIGH PRECISION VISE - KURT BRAND - MADE IN USA**
- OPT-8003 **8" HIGH PRECISION VISE- KURT BRAND - MADE IN USA**

FACTORY SERVICES

- OPT-9000 **FACTORY SET-UP & TRAINING AT YOUR FACILITY for MC-30/40/45/60** (3 Days Contiguous US. Includes travel expenses) Training for Siemens Control only.
- OPT-9002 **FACTORY SET-UP & TRAINING AT YOUR FACILITY for MC-80/100** (3 Days Contiguous US. Includes travel expenses) Training for Siemens Control only.
- OPT-9996 **TRAINING ONLY -- 1 DAY** Expenses and travel time additional.
- OPT-8999 **RUN-OFF AT FACTORY**

ELECTRICAL

- V440 **380-500 VAC 3 PHASE STANDARD**
- OPT-9210 **CHANGE TO 208-250 VAC 3 PHASE POWER 30KVA** (use with 30HP motor)
- OPT-9213 **CHANGE TO 208-250 VAC 3 PHASE POWER 45KVA** (use with 40HP motor)