



Precision Built Solutions™

HR SERIES OPTIONS

- 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-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-2120 GRAPHITE MACHINING PACKAGE This package includes one piece sealed way covers and a sealed electrical cabinet with an high efficiency heat exchanger. Available for all models. Contact factory.

EXTENDED TRAVEL

- OPT-4344 EXTENDED 72" Y TRAVEL (HB + HR-70, 120, 160)
- OPT-4343 EXTENDED 46" Z TRAVEL (HB + HR-70, 120, 160) Spindle nose to table center increases to 53"

CHIP REMOVAL

- OPT-2102 CHIP AUGER SYSTEM UP TO 60" X TRAVEL
- OPT-4156 CHIP AUGER SYSTEM UP TO 70" X TRAVEL
- OPT-4148 DUAL CHIP AUGER SYSTEM 120" - 160" X TRAVEL
- OPT-8039 CHIP CONVEYOR SYSTEM UP TO 60" TRAVEL
- OPT-4157 CHIP CONVEYOR SYSTEM UP TO 70" TRAVEL
- OPT-4150 DUAL CHIP CONVEYOR SYSTEM 120" - 160" X TRAVEL
- OPT-2104 HIGH PRESSURE WASHDOWN SYSTEM & WASHDOWN HOSE (flushes chips into auger or conveyor system)

CHIP GUARDING

OPT-4375	FULL MACHINE GUARD (HR-40)
OPT-4008	FULL MACHINE GUARD (HR/HB-70)
OPT-4009	FULL MACHINE GUARD (HR/HB-120)
OPT-4010	FULL MACHINE GUARD (HR/HB-160)

50 TAPER SPINDLE OPTIONS

OPT-4218	SPINDLE ARBOR ATTACHMENT - 50 taper arbor support handles arbors up to 25" long. Ideal for slotting cutters. Removable. Arbor is included.
OPT-4213	50 TAPER SPINDLE - 8,000 RPM
OPT-4217	50 TAPER SPINDLE - 10,000 RPM - In-Line type, direct coupled
OPT-4247	2 SPEED AUTO-SHIFT GEARED HEAD (50 TAPER) High torque ZF gearbox provides 1,224 ft/lbs torque (HR series only) at 350 RPM with the standard 40 HP motor. Includes refrigeration unit, max speed 6,000 RPM.
OPT-9237	BT-50 SPINDLE (for Japanese style BT-50 tooling)
OPT-4207	HIGH TORQUE 55 HP SPINDLE MOTOR UPGRADE (2200 control only) Powerful 55 HP spindle motor develops 375 ft/lbs of torque (HR series only) at only 350 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.
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.

AUTOMATIC TOOL CHANGERS - 50 TAPER

OPT-2013	24 STATION ARM TYPE ATC FOR 50 TAPER HORIZONTAL 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-2015	40 STATION ARM TYPE ATC FOR 50 TAPER HORIZONTAL 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.
OPT-4144	60 STATION ARM TYPE ATC FOR 50 TAPER HORIZONTAL Chain drive large capacity ATC is column mounted, twin arm, 60 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

BUILT-IN 4th AXIS ROTARY TABLES

- OPT-4378 24" BUILT-IN 4TH AXIS ROTARY TABLE (HR-40 ONLY) Includes 24" x 51" machine table with center, flush mounted 24" 4th axis rotary table. Full interpolated contouring and positioning. 12 arc/sec accuracy. 6,000 lbs capacity. Includes rotary table controller and hydraulic brake.
- OPT-4379 36" BUILT-IN 4TH AXIS ROTARY TABLE (HR and HB-70 ONLY) Includes 36" x 80" machine table with center, flush mounted 36" 4th axis rotary table. Full interpolated contouring and positioning. 12 arc/sec accuracy. 10,000 lbs capacity. Includes rotary table controller and hydraulic brake.
- OPT-4381 40" BUILT-IN 4TH AXIS ROTARY TABLE (HR and HB-120/160 ONLY) Includes full size machine table with center, flush mounted 40" 4th axis rotary table. Full interpolated contouring and positioning. 12 arc/sec accuracy. 10,000 lbs capacity. Includes rotary table controller and hydraulic brake.

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)

TABLE MOUNTED 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)

Requires rotary table controller above

- OPT-1002 6" 4TH AXIS ROTARY TABLE
- OPT-1003 6" TAILSTOCK
- OPT-1004 6" ROTARY TABLE CHUCK
- OPT-4310 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	10" 4 TH 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	12" 4 TH 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	16" 4 TH AXIS ROTARY TABLE
OPT-4319	16" TAILSTOCK
OPT-4359	16" ROTARY TABLE CHUCK
OPT-4321	20" 4 TH AXIS ROTARY TABLE
OPT-4320	25" 4 TH AXIS ROTARY TABLE
OPT-4322	32" 4 TH AXIS ROTARY TABLE
OPT-4324	40" 4 TH AXIS ROTARY TABLE

TABLE MOUNTED 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	6" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8505	8" 5 TH AXIS TRUNNION ROTARY TABLE

OPT-8507	10" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8509	12" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8510	18" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8517	20" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8519	24" 5 TH AXIS TRUNNION ROTARY TABLE
OPT-8520	32" 5 TH AXIS TRUNNION ROTARY TABLE

GLASS SCALES

OPT-2122	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION - X & Y AXIS (<i>MODELS UP TO 60" X TRAVEL</i>) 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-4127	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – X & Y AXIS (<i>MODELS WITH 70" - 100" X TRAVEL</i>)
OPT-4128	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – X & Y AXIS (<i>MODELS WITH 120" - 160" X TRAVEL</i>)
OPT-2124	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – Z AXIS (<i>MODELS WITH UP TO 30" Z TRAVEL</i>)
OPT-2125	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – Z AXIS (<i>MODELS WITH 30" - 40" Z TRAVEL</i>)
OPT-4129	HEIDENHAIN GLASS SCALE FEEDBACK 0.000050" RESOLUTION – Z AXIS (<i>MODELS WITH 40" - 72" Z TRAVEL</i>)

CONTROL OPTIONS - SIEMENS 2200 (840D)

OPT-0602	REMOTE ELECTRONIC HANDWHEEL Handy jog handwheel is located in a portable box. Features axis selector switch and a resolution selector for coarse or fine movement. Remote stop start is also included. Also features an innovative function which allows you to control the movement (forwards or backwards) and feedrate of running a part program (Handwheel Run).
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 spooling option that allows you to run part programs larger than the memory of the machine. Available in a wireless package for \$200.00 extra.
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-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-9200	SPARE "M" FUNCTION (use to connect remote devices like indexers, shuttles, clamps, etc.)

- OPT-9203 SPARE "M" FUNCTION -- PACKAGE OF 10
- 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 compatible.
- OPT-2155 MEMORY LOCK KEY
- 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 residual material.
- OPT-2152 EXPANDED MEMORY 6 GB - Standard memory of 3 MB is increased to 6 GB 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-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-4242 5 AXIS SPECIAL FUNCTION PACKAGE Package includes Rotary Tool Center Point Compensation (TRAORI command) and 3D tool nose compensation both of which make it easier to program minor changes to size of the part without having to repost a new program. Also included is the 3D high speed machining package described above.

CONTROL OPTIONS - FANUC

- OPT-0217 FANUC 0i MF FOR VB,HR,HB,TC
- OPT-9950 FANUC 31i A5 - 5 axis CNC
- OPT-0216 HIGH TORQUE 30 HP SPINDLE MOTOR AND DRIVE HR/HB
- OPT-0214 HIGH SPEED ETHERNET NETWORK PORT (100 MB/SEC)
- STD USB PORT FOR MEMORY STICK DEVICES
- OPT-0212 REMOTE ELECTRONIC HANDWHEEL WITH AXIS AND RESOLUTION SELECT
- OPT-0218 2 MB PROGRAM STORAGE MEMORY UPGRADE (512K STANDARD)
- OPT-0213 HIGH SPEED MACHINING PACKAGE for 0i (Fanuc AiCC nano) This package is designed for die mold applications where the ultimate in performance is desired. Features 2 millisecond block processing speed with 200 block look ahead. Bell shaped ACC/DEC interpolation. Nano smoothing and jerk control included
- OPT-0222 WORK OFFSETS – 48 PAIR STANDARD
- OPT-0226 I ADAPT Lowers cycle times by up to 40% by automatically optimizing the cutting feedrate based on the actual load on the spindle.
- FANUC SPECIAL OPTIONS - Fryer offers all Fanuc available options. Many of these options offer special features and performance and should be discussed with the factory.

PROBES

- OPT-9222 **MARPOSS WIRELESS TOOL AND WIRELESS PART PROBE PACKAGE** Package includes a wireless (IR) table mounted tool probe that automatically measures and sets your tool length and diameter offsets. Also 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.
- 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.
- OPT-2128 **RENISHAW WIRELESS TOOL AND PART PROBE PACKAGE** Special package includes a wireless table mounted tool probe that automatically measures and sets your tool length and diameter offsets. Also 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. System 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.
- 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 $\varnothing 0.03 \text{ mm}$ (0.001 in). Maximum tool diameter is 80mm

TOOLING & WORKHOLDING

- 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)

FACTORY SERVICES

- OPT-9098 **ASSEMBLY and START-UP AT YOUR FACILITY (SPECIALTY AND LARGE MACHINES - MILL)**
- 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-9213 **CHANGE TO 208-245 VAC 3 PHASE POWER 45KVA**