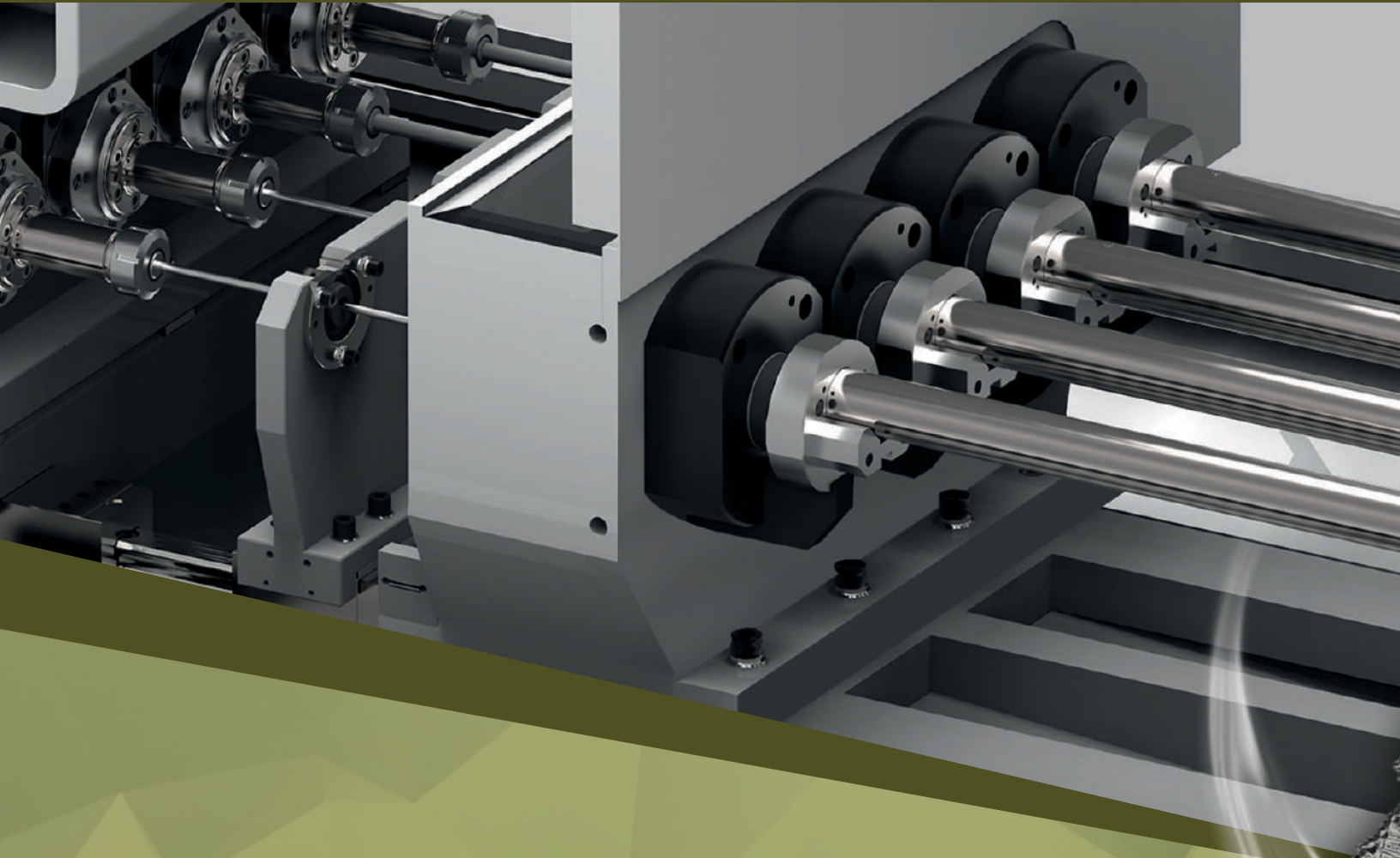




MACHINE TOOL SOLUTIONS FOR
GUN BARREL
MANUFACTURING

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GUN DRILLING

Gun drilling operation is considered one of the most critical operations in the barrel making process. This process really decides the quality of the finished barrel. Precihole Gun drilling machines for barrels offer the best combination of output parameters like hole straightness, surface finish and bore tolerance. They are designed to be reliable and repeatable to achieve high volume production. These machines are complete solutions that are being used in a 24X7 mode by many customers.



SALIENT FEATURES

- Robot readiness for easy integration in an automated cell
- Part counter rotation for good hole straightness
- Quick clamping arrangement for ease of loading and unloading parts
- High pressure coolant and fine filtration system
- Oil chilling and Auto Lubrication included
- Mitsubishi PLC controls with well-designed operator friendly screens



Model		GVN12C	GVN20C
Drilling Diameter Range (Ø)	mm	5 - 12.7	5 - 20
	in	0.2 - 0.5	0.2 - 0.75
Spindles	nos.	1 / 2 / 4	1/2
Max. Drilling Depth	mm	600 / 800 / 1000	
	in	24 / 30 / 40	
Barrel OD Range	mm	20 - 50	20 - 80
	in	0.75 - 2	0.75 - 3
Gun Drilling Feed Range	mm / min	0 - 200	
	in / min	0 - 8	
Max. Component Weight	kg	30	40
	lbs	65	88
Power Per Spindle	kW	2.2	5.5
	hp	3	7.5
Spindle Speed	rpm	1000 - 6400	700 - 6400

PULL REAMING

Precihole Pull Reaming machines provide all necessary features to improve the surface finish and size consistency in the bore of a gun barrel. This operation is next after gun drilling. Pull reaming removes all irregularities in the hole by improving surface finish and preparing the hole for rifling. The machine can be configured to be robot ready. This includes automation for reamer insertion and retrieval as well as auto door opening and closing.



SALIENT FEATURES

- Robot readiness for easy integration in an automated cell
- Automation for reamer insertion and retrieval
- Integrated unibody design for a compact footprint
- component indexing arrangement for ease of loading and unloading parts
- High pressure coolant and fine filtration system
- Oil chilling and Auto Lubrication
- Mitsubishi PLC controls with well-designed operator friendly screens

MODEL		PRVN12
Reaming Diameter Range (Ø)	mm	5 - 12.7
	in	0.2 - 0.5
Spindles	nos.	1 / 2
Max. Reaming Depth	mm	600 / 800 / 1000
	in	24 / 30 / 40
Barrel OD Range	mm	20 - 50
	in	0.75 - 2
Max. Component Weight	kg	30
	lbs	65
Reamer Feed Range	mm/min	0 - 500
	in/min	0 - 20
Power Per Spindle	kW	1.5
	hp	2
Spindle Speed	rpm	10 - 3000

VERTICAL HONING

High precision barrel manufacturing requires the bore to be honed to precision before rifling. The surface pattern, surface finish and taper ovality achieved on these machines is excellent. Precihole vertical honing machines incorporate all the features necessary to upgrade the quality of gun barrels to make them high precision. Honing solutions offered by Precihole are complete solutions comprising of the machine, tooling, tooling accessories as well as recommendations on honing oil suited for this fine machining operation.

SALIENT FEATURES

- Use of servo technology for precision control over linear motion, spindle rotation and tool expansion
- Modular design to support single or multiple spindles
- Operator friendly self-learning controls with custom screens
- Fine coolant filtration system with oil chilling and rare earth magnetic separator for optimal process performance
- Option of linear indexing table and part loading fixtures for multistage high production honing requirements



Model		VHM12	VHM20
Honing Diameter Range (Ø)	mm	Ø5 - Ø12.7	Ø5 - Ø20
	in	Ø0.2 - Ø0.5	Ø0.2 - Ø0.78
Spindles	nos.	1 / 2	
Max. length of Barrel	mm	600 / 800 / 1000	
	in	24 / 30 / 40	
Barrel OD Range	mm	20 - 50	
	in	0.75 - 2	
Max. Part Weight	kg	30	40
	lbs	65	88
Stroking Speed	m/min	10 - 30	
	ft/min	33 - 100	
Spindle Speed	rpm	10 - 1800	10 - 1500

BUTTON RIFLING

Precihole Button Rifling Machines incorporate state of the art features to form precision grooves in small caliber gun barrels. The rifling button is pulled and rotated precisely through the barrel. The machine uses anti-backlash helical guides and rotary encoder to interpolate linear and rotary motions. This combination produces highly precise twists in the barrel. Rifling operation is extremely fast at 40-50 IPM pull feeds.



SALIENT FEATURES

- Robot readiness for integration in an automated cell
- Automation for insertion of rifling button and retrieval back to original position
- Auto barrel clamping and unclamping
- Auto tool clamping and unclamping
- Auto lubrication of tool and barrel for smooth operation
- Customized screens with graphing for operator friendly usage

MODEL		BRVN12
Rifling Size Range (Ø)	mm	5 - 12.7
	in	0.2 - 0.5
Spindles	nos.	1
Max. Rifling Depth	mm	600 / 800 / 1000
	in	24 / 30 / 40
Barrel OD range	mm	20 - 50
	in	0.75 - 2
Max. Part Weight	kg	30
	lbs	65
Max. Rifling Feed	mm/min	0 - 2000
	in/min	0 - 80
Rifling Pull Force	tons	12

CUT RIFLING

Precihole Cut Rifling Machines produce extremely accurate and precise barrels by cutting grooves using a single point cutting tool. Work piece is clamped rigidly in a self-centering vice. Servo controls ensure precision indexing and pulling to cut grooves. Cycle repeats till the intended depth of grooves is reached. Typically, depth of cut is programmed to be about 0.004 mm or 0.00015". This rifling process can be used where very high precision and repeatability are required in the barrel for a weapon system like a sniper rifle or a match gun. This process is capable of rifling conventional grooves or 5R rifling grooves and can handle progressive or gain twists.



SALIENT FEATURES

- Compact unibody design for space saving
- Clamping of barrel in self-centering vice for a rigid hold required during rifling operation
- Tool supports to reduce any vibration during rifling operation
- Use of latest servo technology for precision and high repeatability of tool position for every pass
- Customized screens for operator friendly usage
- Complete solution including machine and tooling from one source

MODEL		CRVN12
Rifling Size Range (Ø)	mm	5 - 12.7
	in	0.2 - 0.5
Spindles	nos.	1
Max. length of Barrel	mm	600 / 800 / 1000
	in	25 / 30 / 40
Barrel OD range	mm	20 - 50
	in	0.75 - 2
Max. Part Weight	kg	30
	lbs	65
Max. Rifling Feed	mm/min	0 - 10000
	in/min	0 - 400
Progressive Twist		Yes

BROACH RIFLING (SHORT BARRELS)

Precihole’s Broach Rifling Machines are engineered for high-precision barrel manufacturing using a multi-tooth broach tool that cuts rifling grooves in a single pass efficiently. The setup begins with the installation of the caliber-specific tool assembly onto the tool head spindle. Once mounted, the corresponding rifling program is loaded via the HMI (Human-Machine Interface) console, allowing operators to configure preferred parameters such as feed rate and cycle time with ease. To ensure absolute stability and alignment, barrel blanks are rigidly chucked on the work head box, providing full-length support throughout the broaching cycle. The tool is programmed to broach grooves at a defined twist rate, completing the rifling in one pass, which significantly increases throughput while maintaining exceptional consistency and surface finish.

All critical rifling characteristics—twist direction (left- or right-hand), number of grooves, groove depth, and groove profile—are fully determined by the geometry of the broach tool itself. The machine is versatile in its capability to produce both standard (conventional) rifling and 5R rifling, accommodating a wide range of ballistic performance requirements. Due to its precision, speed, and repeatability, this method is widely adopted for manufacturing pistol barrels, grenade launcher barrels, and other small to medium-caliber firearms. Precihole’s solution delivers a robust combination of accuracy, automation, and flexibility, making it an ideal choice for both high-volume production and mission-critical defense applications.



MODEL		BRVN12	BRVN40
Application		Pistol Barrels	Grenade Launcher Barrel
Broaching Diameter (Ø)	mm	8 - 13	20 - 40
	in	0.3 - 0.5	0.78 - 1.57
Configuration		Part Stationary - Tool Rotating and Pulling	Part Stationary - Tool Rotating and Pulling
No. of Spindles	nos.	1	1
Maximum length of Barrel	mm	200	300
	in	8	12
Maximum Barrel OD	mm	50	50
	in	2	2
Max Barrel Weight	kg	5	10
	lbs	12	22
Max. Broaching Force	N	10,000	25,000
Pull Feed Range	mm/min	0 - 2000	
	ipm	0 - 80	

LAPPING

Precihole Lapping Machines lap/polish the bores and grooves in the barrel after button rifling or cut rifling. This process helps improve the surface finish by getting rid of any burr or surface deformities like deep tool or chatter marks on the ID. This is the last process in barrel ID making before chambering and profiling. The machine is capable of handling cast lead or hard nylon brush tool during operation. Choice of using cast lead or hard nylon tool depends on the level of polishing needed on the barrel.

MODEL	LPVN12	
Lapping Size Range (Ø)	mm	5 - 13
	in	0.2 - 0.51
Spindles	nos.	1 / 2 / 4
Length of barrel	mm	600 / 800 / 1000
	in	24 / 30 / 40
Barrel OD Range (Ø)	mm	20 - 50
	in	0.75 - 2
Max. Barrel Weight	kg	30
	lbs	65
Max. Lapping Feed	m / min	0 - 50
	ft / min	0 - 164
Lapping Technology	Cast Lead or Hard Nylon / Brass Brush with Lapping Paste	



CLEANING STATION

Barrels need to be cleaned thoroughly during many intermittent steps of the manufacturing process. Barrel cleaning ensures that the barrel ID is void of any debris that might have been collected during the drilling, reaming, honing, rifling or lapping processes. Any debris left could cause issues with tool life and accuracy of the barrel. Precihole has developed a cleaning station that manages to clean the bore and grooves with a solvent or air.

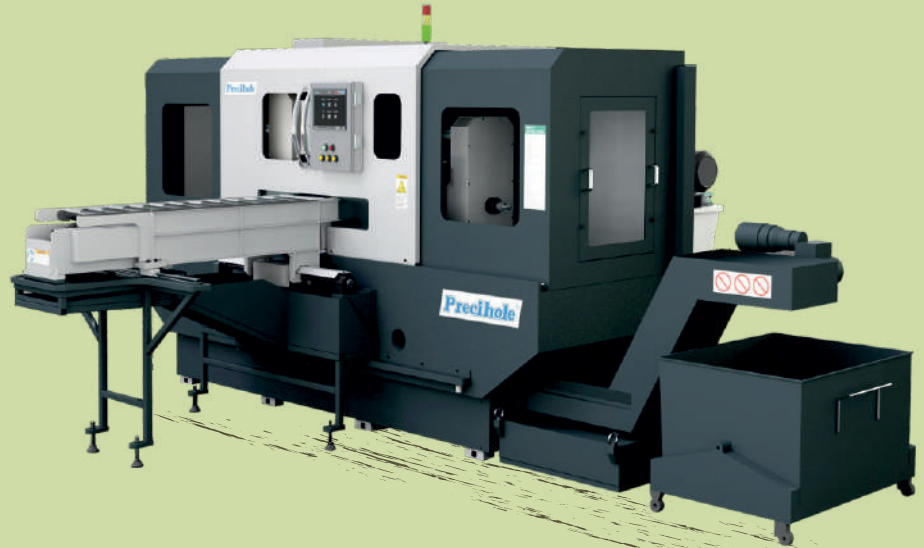
MODEL	CLSN12	
Cleaning size range	mm	5 - 13
	in	0.2 - 0.51
Length of barrel	mm	600 / 800 / 1000
	in	24 / 30 / 40
Barrel OD Range (Ø)	mm	20 - 50
	in	0.75 - 2
Cleaning Technology	By Air and Solvent	
No of cleaning stations	2 (Independent)	



FACING & CHAMFERING

Precihole provides a facing and chamfering machine for barrel rods to be end machined quickly and accurately. The quality of the face and chamfer on rods is critical to achieving good straightness on the subsequent gun drilling operation. The operation is done simultaneously on both ends with special tools. This eliminates the need for the rod to be inserted into chucks on a machining center and reversing it again to machine the other side. Cycle time is around 30s for facing and chamfering resulting in high volume production. Automation for loading and unloading barrels can be added. This includes use of a conveyor or robot.

MODEL		FCVN 50
Barrel OD Range (Ø)	mm	20 - 50
	in	0.75 - 2
Spindles	nos.	2 (one at either end)
Max. Barrel Length	mm	600 / 800 / 1000
	in	24 / 30 / 40
Barrel Clamping System		Self-Centering Vices
Max. Component Weight	kg	30
	lbs	65
Spindle Speed	rpm	500 - 2500
Power Per Spindle	kW	5.5
	hp	7.5



STRAIGHTENING PRESS

Barrels need to be straightened during various stages of conversion between a rod to a finished barrel. Precihole provides a compact and precise solution for this operation. Barrel blank straightness is a critical factor that determines the final accuracy of the weapon system. Barrels are long and slender shafts that bend during heat treatment, machining or stress relieving. This press helps to correct the deflection by holding the barrel in a simply supported configuration and pressing the area with the bend in the opposite direction.

MODEL		BSP10
Barrel OD Range	mm	20 - 50
	in	0.78 - 2
No of Stations	nos.	1
Max. Length of Barrel	mm	600 / 800 / 1000
	in	24 / 30 / 40
Push Force	tons	19
Pressing Stroke	mm	100
	in	4



BTA DRILLING

Precihole Deep Hole Drilling Machines are built to manufacture medium and large caliber artillery barrels. Machines incorporate the latest drilling technology available for this process in the world. Machines are customized to suit length and size requirements of the barrel and provide excellent straightness, surface finish and bore tolerance. These machines can drill holes from Ø20 mm to Ø155 mm. The design of the machine is robust to endure high torque generated during the drilling process. Length to diameter ratios of up to 150 are possible. Counter boring, Pull boring can be added on same machine as options.



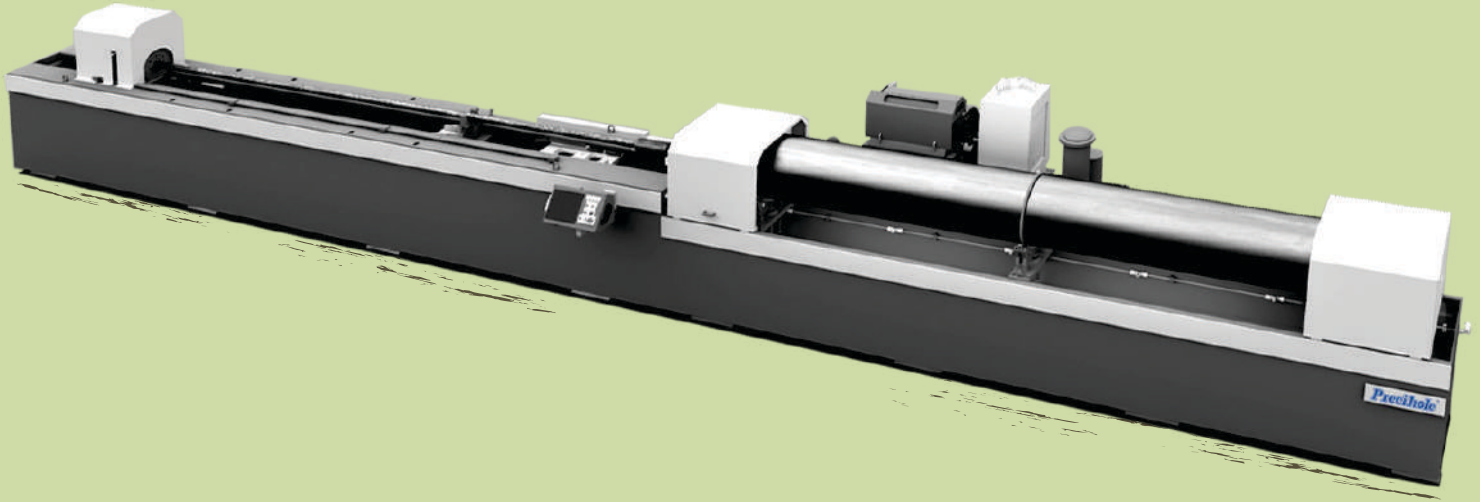
SALIENT FEATURES

- Component Counter rotation to ensure excellent straightness
- Use of anti-backlash rack and pinion systems and servo drives for linear motion
- Vibration dampeners to provide adequate tube support
- Three jaw self centering chuck for job clamping
- High pressure coolant and 25 micron filtration system
- Fanuc / Siemens CNC controls with customized screens

MODEL		BVN40	BVN65	BVN100	BVN155
Solid Drilling Diameter Range (Ø)	mm	20 - 40	20 - 65	30 - 100	50 - 160
	in	0.78 - 1.57	0.78 - 2.5	1.2 - 4	2 - 6.5
Part Counter rotation		Yes	Yes	Yes	Yes
Counter Boring Diameter Range (Ø)	mm	-	65 - 100	100 - 125	150 - 200
	in	-	2.55 - 4	4 - 5	6 - 8
Pull Boring	mm	-	40 - 100	40 - 125	50 - 200
	in	-	1.57 - 4	1.57 - 6	2 - 8
No. of Spindles	nos.	1	1	1	1
Maximum length of Barrel	mm	3000	4000	5000	10000
	in	120	157	196	400
Maximum Barrel OD	mm	100	150	150	250
	in	4	6	6	10
Max. barrel weight	kg	200	570	700	2500
	lbs	450	1250	1540	5500
Power Per Spindle	kW	15	22	37	75
	hp	20	30	50	100
Spindle Speed	rpm	400 - 2500	250 - 1750	100 - 1300	50 - 800

HORIZONTAL HONING

Precihole Horizontal Honing Machines cover the requirements of honing the complete range of medium and large caliber artillery barrels from Ø20 mm to Ø155 mm. The maximum length of the barrel can be up to 5000 mm. The honing solution includes the machine as well as all the tooling and tooling accessories needed. The design of the machine is optimized to allow quick loading and unloading of barrel. Precision control of depth and diameter of the barrel are ensured by using PLC controls and servo drives.



SALIENT FEATURES

- Use of precision rack and pinion and servo drives for reciprocating linear motion
- Special fixturing for quick component location and clamping
- 10 micron fine coolant filtration system
- Fanuc / Siemens CNC controls
- User friendly machine operation

MODEL		HHM40	HHM120	HHM155
Honing Diameter Range (Ø)	mm	20 - 40	30 - 125	50 - 160
	in	0.78 - 1.57	1.2 - 5	2 - 6.5
Configuration		Part Stationary - Tool Rotating and Feeding		
No. of Spindles	nos.	1	1	1
Max. length of Barrel	mm	3000	5000	10000
	in	120	196	400
Max. Barrel OD	mm	100	150	250
	in	4	6	10
Max. Barrel Weight	kg	200	900	2500
	lbs	450	2000	5500
Spindle Speed	rpm	10 - 500	10 - 300	10 - 300
Feed Range	m / min	0 - 30		
	ft / min	0 - 100		

BROACH RIFLING

Precihole is proud to be in a very small elite group of machine manufacturers in the world that can provide a broach rifling machine for medium and large caliber weapon systems. Broach rifling creates spiral grooves in the barrel using a hook cutter. The linear and rotary motion of the hook cutter are precision controlled for accuracy using a servo drive and ball screw or rack and pinion mechanism. The broach cutters are progressive in size and each cutter cuts a size slightly bigger than the previous one.



SALIENT FEATURES

- Use of ball screw or precision rack and pinion and servo drives for reciprocating linear motion
- Precision interpolation and control of linear and rotary axes of the spindle
- Special fixturing for quick component location and clamping
- 10 micron fine coolant filtration system
- Fanuc / Siemens CNC controls
- User friendly machine operation

MODEL		BRM40	BRM100	BRM155
Rifling Diameter Range (Ø)	mm	20 - 40	20 - 100	50 - 160
	in	0.78 - 1.57	1.18 - 5	2 - 6.5
Configuration		Part Stationary - Tool Rotating and Pulling	Part Stationary - Tool Rotating and Pulling	Part Stationary - Tool Rotating and Pulling
No. of Spindles	nos.	1	1	1
Max. length of Barrel	mm	3000	5000	10000
	in	120	196	400
Max. Barrel OD	mm	100	150	250
	in	4	6	10
Max. Barrel Weight	kg	200	900	2500
	lbs	450	2000	5500
Max. Broaching Force	N	30,000	1,00,000	1,50,000
Feed Range	m / min	0 - 8		
	ft / min	0 - 25		

Precihole®

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