



**MIRAGE**  
AN ENERPAC BRAND

## DL RICCI CLAMSHELL ACCESSORIES

## Counter Bore and Single Point Assemblies



Mirage offer a wide range of bolt on accessories which expand the operational capabilities of a standard clamshell configuration. Each accessory is engineered and manufactured to the same exacting standards as the machines themselves.

### SWIVEL HEAD

The swivel head attaches directly to the tool block and provides angle cutting - with up to 60° of adjustability in the head. This bolt on accessory is ideally suited for facing, RTJ grooves, boring and angle boring.

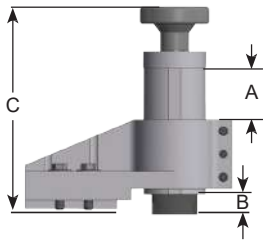
### COUNTER BORE ASSEMBLY

This assembly attaches directly to the tool block slide to aid in positioning and can be installed immediately following sever / bevel applications. Utilizing the same machine set-up assures that the counter bore assembly is concentric to the sever / bevel cut and perpendicular to the sever line.

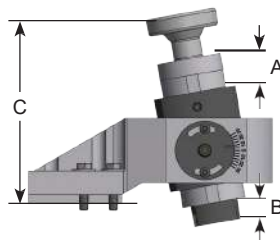
### SINGLE POINT ASSEMBLY

This assembly is comprised of a single point facing head matched with a clamshell specific facing bar. The single point head attaches to the bar and is fed radially as the clamshell rotates. In a fixed position the head can be axially advanced manually.

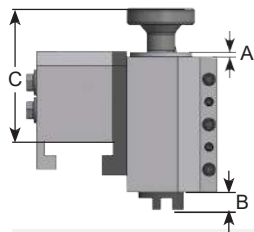
COUNTER BORE



SWIVEL HEAD



SINGLE POINT

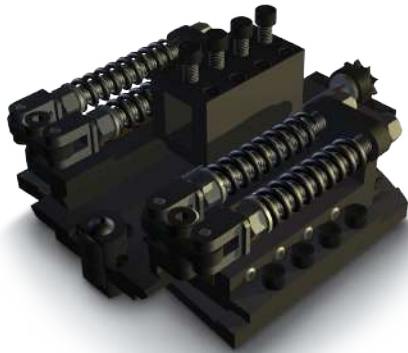


Each of the above assemblies attach to all NB, MS and HD clamshells and are available in 152.4mm (63.5mm of travel) and 254mm (165.1mm of travel) lengths.

Model	Unit of Measure	(A) Tube Travel	(B) Feed Stroke	(C) Max Clearance	Machine Weight
Counter Bore 152.4mm	Std. - in	2.5	2	9.03	11.25
	Metric - mm	63.5	50.8	229.4	5.1
Counter Bore 254mm	Std. - in	6.5	6	13	15.25
	Metric - mm	165.1	152.4	318.3	6.9
Swivel Head 152.4mm	Std. - in	2.5	2	9.03	18
	Metric - mm	63.5	50.8	229.4	8.2
Swivel Head 254mm	Std. - in	6.5	6	13	22
	Metric - mm	165.1	152.4	318.3	10.0
Single Point 152.4mm*	Std. - in	2.5	2	7.16	11.25
	Metric - mm	63.5	50.8	181.9	5.1
Single Point 254mm*	Std. - in	6.5	6	11.16	15.25
	Metric - mm	165.1	152.4	283.5	6.9

\*Must be matched with a clamshell specific bridge

# Out of Round and Low Profile Slides



### Out of Round Slides

Used for machining deformed pipe, the block rides on the OD of the pipe and reacts to the errors in roundness with a dual compensating spring assembly.

### Low Profile Slides

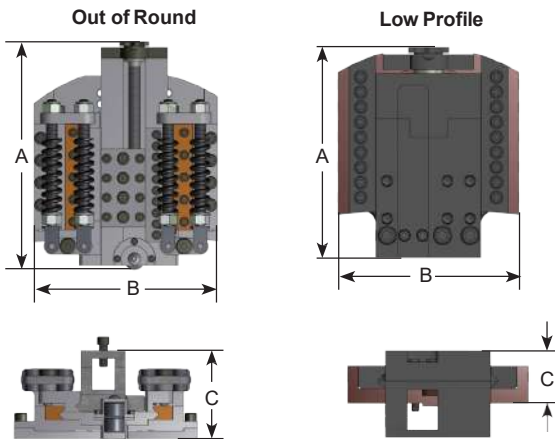
Low profile tool block slides bring the cut line closer to the back of the machine by reducing axial clearance required for cutting. This makes the low profile slide ideal when severing or bevelling is required on short runs of straight pipes.

Requires a clamshell 203.2mm (8") larger than the nominal pipe size.

Can be used to sever and bore on as little as 63.5mm to 88.9mm of pipe (2-1/2" to 3-1/2").

## DESCRIPTION

Mirage offer an assortment of optional tool block slides which extend the operational capabilities of a standard clamshell configuration. Tool block slides mount directly to the face of the clamshells and accept the full array of Mirage bits.



Model	Part Number	Unit of Measure	Tool Block Travel	A	B	C	Machine Weight
Low Profile	F0130A0016XX	Std. - in	3.25	7	6	2.86	18.9 lbs
		Metric - mm	82.6	177.8	152.4	72.6	8.6 kg
OORS	F0130A0022XX	Std. - in	1.00	10.24	8.26	3.79	28.9 lbs
		Metric - mm	25.4	260.1	209.8	96.3	13.1 kg

## Axial Feed Tool Block Slides



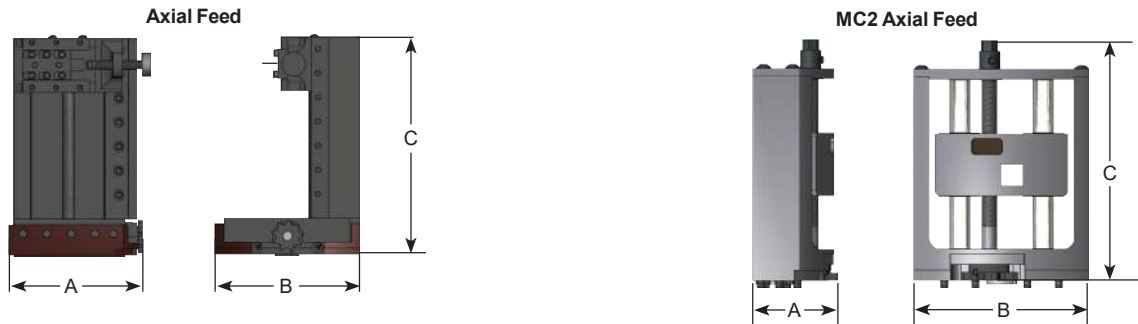
### Axial Feed Slides

The axial feed tool block slide bolts directly to all NB, MS and HD clamshells and is designed to remove materials from the OD of a pipe. It is available in three standard ranges including 184.2mm (7.25"), 133.4mm (5.25"), and 57.2mm (2.25") of axial travel. Combined with a clamshell, the axial feed is ideal for weld overlay removal and for journal turning applications where certain areas of shaft are worn.

Mirage also offer an axial feed assembly for the MC2A for the removal of socket weld joints.

## DESCRIPTION

Mirage offer a wide range of bolt on accessories which expand the operational capabilities of a standard clamshell configuration. Tool block slides mount directly to the face of the clamshells and accept the full array of Mirage bits.



Model	Part Number	Unit of Measure	Tool Block Travel	A	B	C	Machine Weight
7.25 AFS	F0140A1304XX	Std. - in	7.25	5.56	6	10.99	34.5
		Metric - mm	184.2	141.2	152.4	279.1	15.6
5.25 AFS	F0140A1139XX	Std. - in	5.25	5.56	6	8.99	29.4
		Metric - mm	133.4	141.2	152.4	228.3	13.3
2.25 AFS	903-1606	Std. - in	2.25	5.56	6	5.99	23.2
		Metric - mm	57.2	141.2	152.4	152.1	10.5
MC2A AFS	F0135A0020AD	Std. - in	2	1.9	4.2	5.75	5.5
		Metric - mm	50.8	48.3	106.7	146.1	2.5

## FEATURES

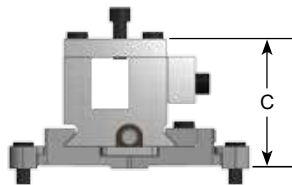
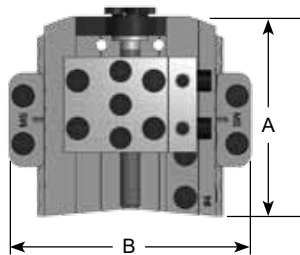
- External side mount clamps provide quick repositioning of the tool block slide
- Electroless nickel plating provides increased corrosion resistance
- Lengthened tool block provides increased grib contact
- Single grib construction allows for faster adjustment and set-up
- Side position hash marks assure correct alignment of opposing QuickSlides

Mirage maintains a wide assortment of specialty tool block slides as well, which extend the capabilities of our NB, MS and HD Clamshells, including:

- Out of round slides, which work with up to 1" out of round pipe
- Low profile slides, which allow cutting and beveling on as little as 2-1/2" – 3-1/2" pipe, depending on the prep
- Axial feed slides, ideal for weld overlay removal and for journal turning applications where certain areas of the shaft are worn

## DESCRIPTION

QuickSlide Tool Block Slides are devices that mount directly to the face of a clamshell and hold the bits that actually cut or bevel pipe. QuickSlides from Mirage are available in various lengths allowing multiple mounting positions to account for radial clearance issues and wall thickness prep requirements.



Externally mounted clamps allow for quick and easy positioning

Model	Unit of Measure	Tool Block Travel	A	B	C	Weight
#2TBS	Std. -in	1.5	3.24	6.37	3.37	9.9
	Metric - mm	38.1	82.3	161.8	85.6	251.5
#3TBS	Std. -in	2.5	4.24	6.37	3.37	10.8
	Metric - mm	63.5	107.7	161.8	85.6	274.3
#4TBS	Std. -in	3.5	5.24	6.37	3.37	11.7
	Metric - mm	88.9	133.1	161.8	85.6	297.2
#7TBS	Std. -in	6.5	8.24	6.37	3.37	14.4
	Metric - mm	165.1	209.3	161.8	85.6	365.8



## DESCRIPTION

Mirage offer an assortment of motor and motor mount configurations to meet onsite power and machining application needs.

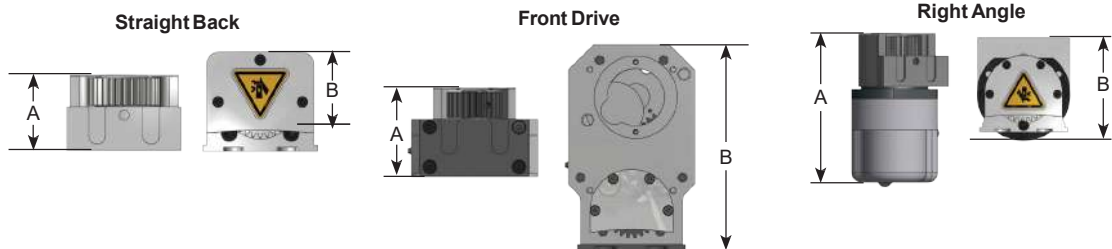
### Motors

Drive motors are available in hydraulic, pneumatic and electric options. Varying speed and torque ratings are available to match the motor with the machining application being performed.

### Mounts

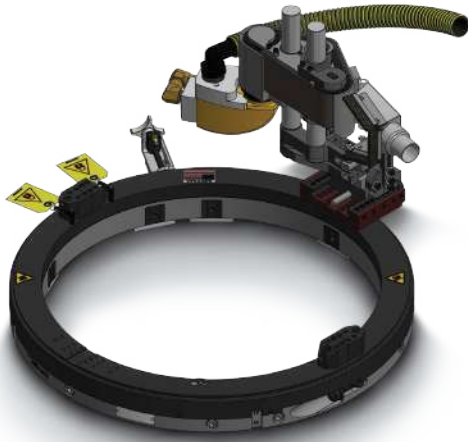
Motor mounts attach the chosen drive option to the clamshell. Mounts allow the machine to be configured to specific applications to optimise radial / axial clearance and increase operator safety. They are available in straight back, right angle and front drive reversible options.

- Straight back mounts are most common and position the drive away from the face of the clamshell and parallel with the pipe.
- Right angle mount positions the drive at 45° to the pipe and can rotate to avoid obstructions.
- Front drive reverse mounts position the drive up and out allowing the clamshell to be flush mounted.



Model	Part Number	Unit of Measure	A	B	Machine Weight
Straight Back	F4022A1014XX	Std. - in	2.8	3.0	3.4
		Metric - mm	69.9	76.2	1.5
Right Angle Adj	F4022A1354XX	Std. - in	7.9	5.0	16
		Metric - mm	200.7	127.0	7.3
Front Drive Rev	F4022A1336XX	Std. - in	3.5	8.1	10.7
		Metric - mm	89.4	206.5	4.9

## Overlay Sander



Mirage's Overlay Sander is a bolt-on accessory to the Clamshell series of machines, and is capable of removing weld material from stainless, carbon steel, Inconel and alloy 600.

One repair option is to perform a weld overlay on the existing weld. Once the welding is performed, the surface must be smoothed to allow UT readings to be taken. A 63 RMS or better finish is required for a true reading. This application is becoming more and more popular around the industry to repair versus replace major components and piping systems.

The Overlay Sander is ideal for removing weldments on the following applications:

- PWR hot and cold leg nozzles
- BWR N2 reactor and safe end nozzles
- Pressuriser nozzles
- Jet pump flow nozzles
- Surge nozzles

### DESCRIPTION

Life extension of plants depends on the reliability of existing systems in the facility. Specific areas of concern are the weldments at critical components.

Ultrasonic testing is required to measure Intergranular Stress Corrosion Cracking (IGSCC) which relates to erosion or cracking in the weldment. To measure this there needs to be a clean, smooth surface for measurement. This smooth surface can be created using the Overlay Sander.



Installed machine performing overlay sanding operation



Completed overlay sanding on a pressuriser nozzle

## Profile Slide Attachment



### FEATURES

- Two models (see chart on next page):
- PSS for 203.2 mm– 609.6 mm (8"–24") clamshell diameters and uses two pairs of standard lengthshafts
- PSL for 660.4 mm– 1270.0 mm (26"–50") clamshell diameters and uses one pair of fixed length shafts and two pairs of adjustable length shafts
- Profile can cut up to 127.0 mm (5") wall with standard templates
- Assembly will produce safe hands free weld preps
- Bolts directly to Ricci clamshells using quick slide bolt hole configuration or standard hole configuration
- Slide can be fixed in a stationary position for counterboring
- The optional cable fed counterbore automates the process during operation and thus improves safety
- Optional weld prep templates are also available

### DESCRIPTION

The profile slide attachment from Mirage is an automated method of single point cutting a weld prep on the end of a pipe using a template to establish the prep profile, which is especially useful on heavy wall weld preps. The profile slide attachment bolts to the face of the clamshell and is automatically fed a predetermined amount for each revolution of the clamshell.

The assembly can be mounted on all NB, MS and HD clamshells from 203.2 mm (8") to 1270 mm (50") and are available in two models.

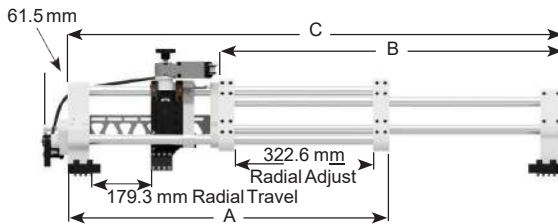
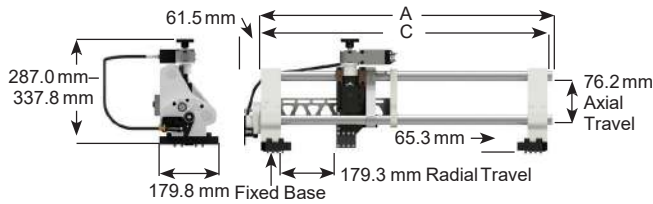


Cam feed with spring return



Mounts to any NB, MS, or HD clamshell





## SPECIFICATIONS

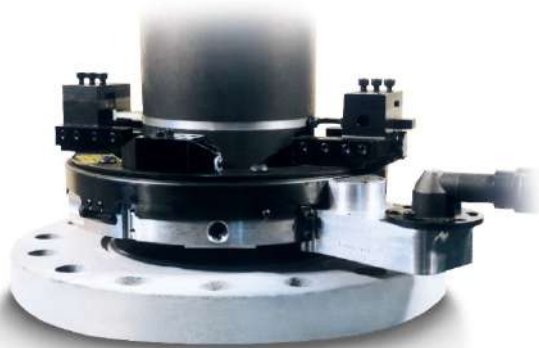
Model	Unit of Measure	A	B	C	Clamshell Compatibility
PSS	Std - in	21.5	—	13.9–21.6	NB8, NB10, NB12, MS12, NB14, MS14, NB16, MS16
	Metric - mm	546.1	—	352.6–549.4	
	Std - in	29.5	—	23.5–29.6	NB18, MS18, NB20, MS20, NB24, MS24
	Metric - mm	749.3	—	596.9–752.6	
PSL	Std - in	29.5	18.5	31.5–44.5	NB26, NB28, MS28, NB30, MS30, HD28, NB32, MS32, HD30, HD32, NB36, MS36, MS36.5, HD36, NB39, MS39
	Metric - mm	749.3	469.9	800.1–1130.3	
	Std - in	29.5	31.5	45.3–58.0	NB40, HD39, MS42, NB43, HD43, HD45, MS48, MS50, HD48, HD50
	Metric - mm	749.3	800.1	1150.6–1473.2	

Part Number	Description
F0152C0001XX-SK	PSS 8"–24" (203.2 mm–609.6 mm)
F0152C0002XX-SK	PSL 26"–50" (660.4 mm–1270.0 mm)
F0152C0003XX-SK	PSS 8"–24" (203.2 mm–609.6 mm) with Counterbore
F0152C0004XX-SK	PSL 26"–50" (660.4 mm–1270.0 mm) with Counterbore

## OPTIONAL WELD PREP TEMPLATES

Part Number	Description
006BH0054732	20°
006BH0054290	20°–10°,
	1"–3" (25.4 mm–76.2 mm)
006BH0054724	20°–10°,
	3"–5" (76.2 mm–127.0 mm)
006BH0053697	37.5°
006BH0054289	37.5°–10°,
	1"–3" (25.4 mm–76.2 mm)
006BH0054381	37.5°–10°,
	3"–5" (76.2 mm–127.0 mm)
006BH0054731	30°
006BH0054729	30–10°,
	1"–3" (25.4 mm–76.2 mm)
006BH0054730	30–10°,
	3"–5" (76.2 mm–127.0 mm)

# External Casing Cutter

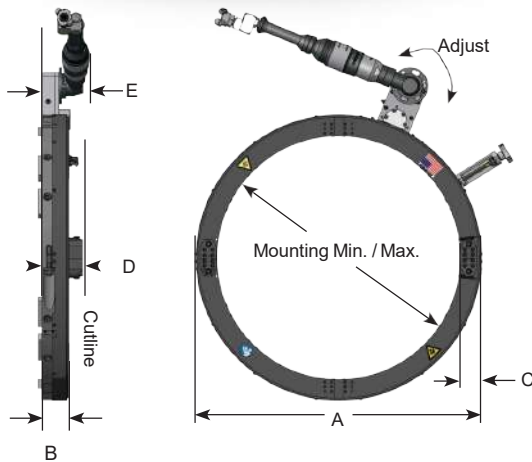


The Mirage series of external casing cutters utilise the NB clamshell narrow body platform equipped with a low profile motor and mount configuration. This combination makes the external casing cutters ideal for flush mount applications.

**Features:**

- Models cover a range from 104.8 mm (4.125") to 825.5 mm (32.5") OD
- Bi-directional drive and low profile pneumatic motor allow for flush mounting
- Drive motor can be adjusted if obstructions are present
- Utilises the proven NB series split frame clamshell platform
- Accepts a wide range of standard clamshell accessories

**See next page for our internal-external casing cutters to cut and/or bevel casing below the wellhead.**

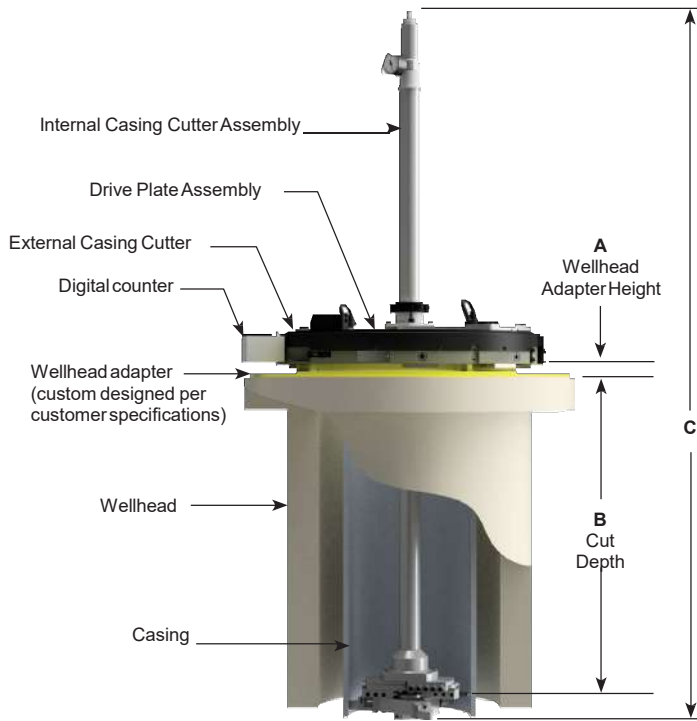


B = 76.2 mm (3")  
C = 57.2 mm (2.25")

D = 114.3 mm (4.5")  
E = 120.7 mm (4.75")

Part Number	Drive	Clamshell Size	Machine ID		A		Extension Size	Mounting Range		Machine Weight						
			inches	mm	inches	mm		inches	mm	lbs	kg					
F0185A0060XA-SK	Air	NB6	6.88	174.63	11.60	294.64	None	6.13–6.88	155.58–174.63	70.4	31.9					
F0185H0060XA-SK	Hydraulic						1/2"	5.13–5.88	130.18–149.23							
F0185A0080XA-SK	Air	NB8	8.75	222.25	13.60	345.44	None	8.00–8.75	203.20–222.25	74.2	33.7					
F0185H0080XA-SK	Hydraulic						1/2"	7.00–7.75	177.80–196.85							
F0185A0100XA-SK	Air	NB10	11.25	287.75	16.00	406.40	None	10.50–11.25	266.70–285.75	77.0	34.9					
F0185H0100XA-SK	Hydraulic						3/4"	9.75–10.50	247.65–266.70							
F0185A0140XA-SK	Air	NB14	14.50	368.30	19.20	487.68	None	13.75–14.50	349.25–368.30	104.0	47.2					
F0185H0140XA-SK	Hydraulic						1/2"	12.75–13.50	323.85–342.90							
F0185A0200XA-SK	Air						NB20	20.50	520.70	25.20	640.08	None	19.75–20.50	501.65–520.70	116.0	52.6
												F0185H0200XA-SK	Hydraulic	3/4"		
F0185A0260XA-SK	Air	NB26	26.50	673.10	31.20	792.48	None	25.75–26.50	654.05–673.10	133.0	60.3					
F0185H0260XA-SK	Hydraulic						1"	23.75–24.50	603.25–622.30							
F0185A0320XA-SK	Air	NB32	32.50	825.50	37.20	944.88	None	31.75–32.50	806.45–825.50	153.0	69.4					
F0185H0320XA-SK	Hydraulic						1"	29.75–30.50	755.65–774.70							

# Internal-External Casing Cutter



A = 30 mm (1.20")  
 B = 1685.3 mm (66.35")  
 C = 37.3 mm–1259 mm (1.47"–49.57")

### Machining Capacity

Part Number	Drive	Clamshell Size	Extension Size	Mounting Range	
				inches	mm
F0190A0100XA-SK	Air	NB10	None	10.50–11.25	266.70–285.75
F0190H0100XA-SK	Hydraulic		3/4"	9.0–9.75	228.60–247.65
F0190A0140XA-SK	Air	NB14	None	13.75–14.50	349.25–368.30
F0190H0140XA-SK	Hydraulic		1/2"	12.75–13.50	323.85–342.90
			1-1/4"	11.25–12.00	285.75–304.80
			1-3/4"	10.25–11.00	260.35–279.40
F0190A0200XA-SK	Air	NB20	None	19.75–20.50	501.65–520.70
F0190H0200XA-SK	Hydraulic		3/4"	18.25–19.00	463.55–482.60
			2"	15.75–16.50	400.05–419.10
F0190A0260XA-SK	Air	NB26	None	25.75–26.50	654.05–673.10
F0190H0260XA-SK	Hydraulic		1"	23.75–24.50	603.25–622.30

### DESCRIPTION

Mirage portable casing cutters include an internal-external casing cutter option. This new technology utilizes the industry leading NB series clamshell. Users can attach our internal casing cutter assembly to our NB clamshell and internally sever and bevel for a variety of applications.

Certified and experienced technicians can be provided to perform the job safely and provides operators a full turnkey testing package, delivering a first-class maintenance solution for facility assets.

### FEATURES

- Internal mounting system activated with screw pump technology
- Interchangeable locators to accommodate multiple size casings
- Ability to sever and bevel existing casing
- Variety of high speed tooling solutions available
- Digital counter allows for remote monitoring of tool bit positioning
- Reversible drive motors
- Internal cutter depth up to 1270 mm (50") from wellhead flange
- Removable drive plate to accommodate easy set up
- Wellhead flange mounting assemblies are not part of the standard kit, but can be customised and provided; contact us for additional details and pricing

### SPECIFICATIONS

OD Casing Size	9.625–13.375 API casings
Mounting System	Three-leg with single-leg hydraulic
Tool Holders	8.54" (217 mm) to 13.5" (343 mm) mechanical star wheel feed
Counter	Digital with proximity sensor
Tooling	High speed steel severers and bevels
Feed Rate	0.004" (0.10 mm) per revolution
Power	Pneumatic or Hydraulic
Weight	69 lbs. (31.3 kg) Internal assembly



### DESCRIPTION

Mirage provides a broad range of tool bits to enhance and extend the capabilities of our pipe cutting and bevelling machines. Through the use of certified raw materials and an exacting manufacturing process these bits are suitable for the most demanding machining applications.

The Mirage range includes sever, bevel, double-bevel, compound bevel and counter bore bits as well as a chipless cutter insert (see below). The bit assortment is available in different lengths and types of tool steel to precisely mate tooling with applications. We also offer custom designed tooling for applications not covered by our standard listing.

### TERMINOLOGY

- Counterbore: leaves an inside diameter angled edge
- J-Prep: outside diameter bevel with a radius and lip
- Severing: straight cut, no bevel
- Square: a 90° face on a surface
- Severing: straight cut, no bevel
- Right hand bevel: bevel the end of the pipe the machine is mounted on
- Left hand bevel: bevel the end of the pipe opposite of where the machine is mounted
- Double bevel: simultaneously bevel both sides of the pipe
- Compound bevel: two or more bevels using one tool bit

Left Hand Sever & Bevel		Right Hand Sever & Bevel		Straight Severs		Sever Double Bevel	
37° sever bevels are used on less than 3/4" (19.05 mm) wall pipe	37°-10° sever bevels are used on 3/4" (19.05 mm) and greater wall pipe	37° sever bevels are used on less than 3/4" (19.05 mm) wall pipe	37°-10° sever bevels are used on 3/4" (19.05 mm) and greater wall pipe	Used on less than 1-1/4" (31.75 mm) wall pipe	Used on greater than 1-1/4" (31.75 mm) wall pipe	3.5" long sever double bevel 37° for up to 1/2" (12.7 mm) wall pipe	7.0" long sever double bevel 37° for up to 1/2" (12.7 mm) wall pipe

### Popular Tool Bits – Grade M2

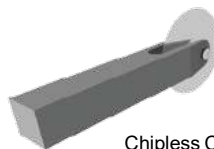
Part Number	Description	Std - in	Metric - mm
006EA0040962	Bevel Ctr - 37° RH	1 x 1 x 3.5	25.4 X 25.4 X 88.9
006EF0041053	Sever Ctr - Bevel 1/8" (3.175 mm)	1 x 1 x 3.5	25.4 X 25.4 X 88.9
006EA0040967	Bevel Ctr - 37° LH	1 x 1 x 3.5	25.4 X 25.4 X 88.9
006EF0041050	Sever Ctr - Bevel 1/8" (3.175 mm)	1 x 1 x 3.5	25.4 X 25.4 X 88.9
006EA0040970	Bevel Ctr - Dbl 37°	1 x 1 x 3.5	25.4 X 25.4 X 88.9
006EF0041063	Sever Ctr - Bevel Dbl 37°	1 x 1 x 3.5	25.4 X 25.4 X 88.9
006EA0040965	Bevel Ctr - 37-10° 0.092 LAND LH	1 x 1 x 7	25.4 X 25.4 X 177.8
006EF0041054	Sever Ctr - Bevel 1/8" (3.175 mm)	1 x 1 x 7	25.4 X 25.4 X 177.8
006EA0040966	Bevel Ctr - 37-10° 0.092 LAND RH	1 x 1 x 7	25.4 X 25.4 X 177.8
006EF0041055	Sever Ctr - Bevel 1/8" (3.175 mm)	1 x 1 x 7	25.4 X 25.4 X 177.8
006EF0041041	Sever Ctr - 3/8" (9.525 mm)	1/2 x 1 x 3.5	12.7 X 25.4 X 88.9
006EF0041034	Sever Ctr - 1/4" (6.35 mm)	1/2 x 1 x 3.5	12.7 X 25.4 X 88.9
006EF0041042	Sever Ctr - 3/8" (9.525 mm)	1/2 x 1 x 7	12.7 X 25.4 X 177.8
006EF0041035	Sever Ctr - 1/4" (6.35 mm)	1/2 x 1 x 7	12.7 X 25.4 X 177.8

### FEATURES AND BENEFITS

- Made from high speed tool steel which can be re-sharpened, extending tool life
- Carbide and tungsten steel options are available for harder surfaces or exotic alloys
- Severing tools are 12.7 mm x 25.4 mm (1/2" x 1") and bevelling tools are 25.4 mm x 25.4 mm (1" x 1")
- All tooling is interchangeable between all the clamshell models (NB, MS, HD)
- Custom configurations available upon request
- Tooling Regrind Program reduces project costs

### CHIPLESS CUTTER

The Chipless Cutter ensures chip free severing is accomplished in rapid time and with minimal cleanup. It is designed to prevent debris from being produced and contaminating the inside of the piping system in high purity and process applications where debris is a critical danger. The compact size of the cutter makes it easy to apply in spaces with limited clearance.



Chipless Cutter

Part Number	Description
006EX0045174	Chipless (Pizza) Cutter