

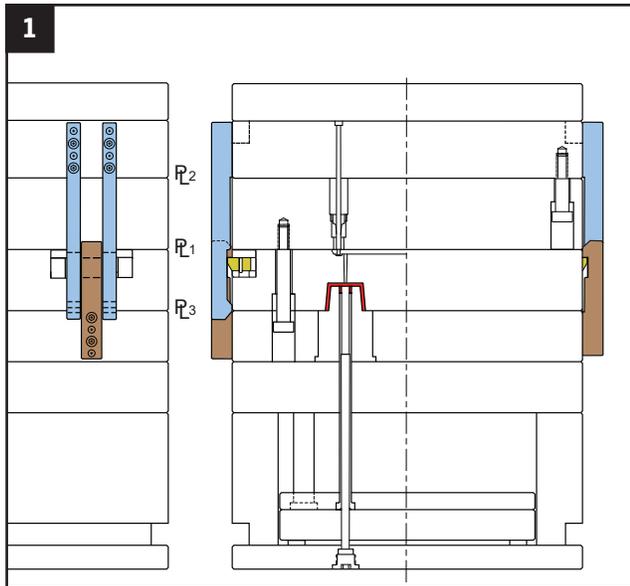


# PLATE LOCKS

## EXTERNAL CAM-DRIVEN SYSTEM

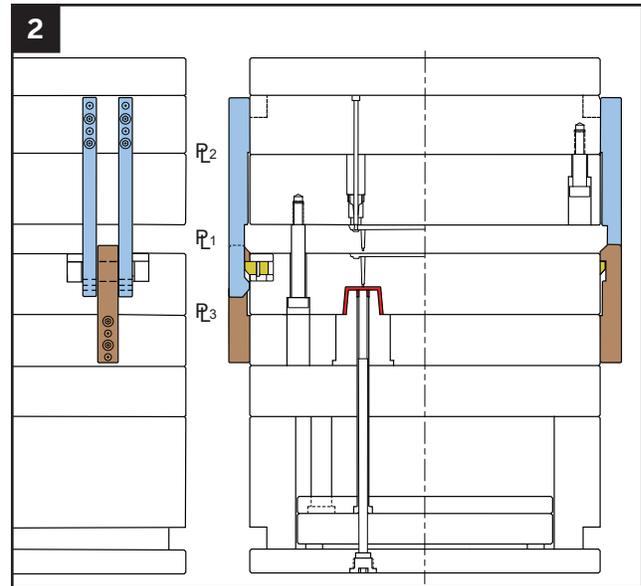
The Cam-Driven External Plate Locks allow for parting line sequencing via a versatile design with minimal machining for different applications, including:

- 3-Plate Sequencing
- Dual Ejection
- Stripper Plate Sequencing



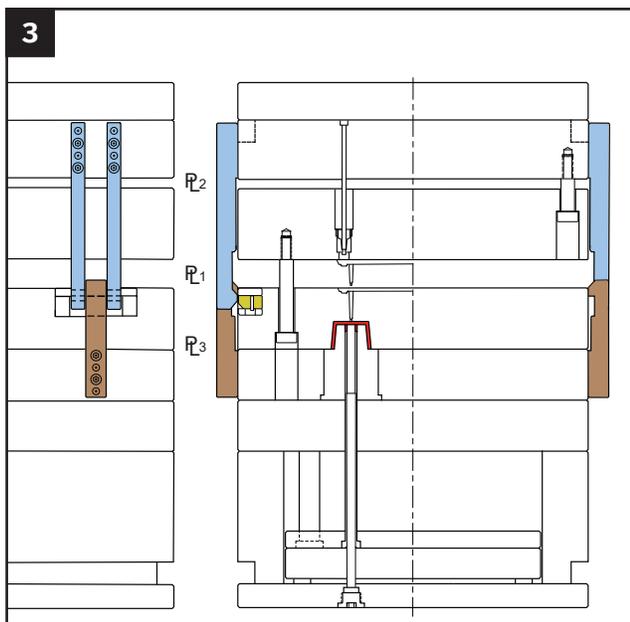
### Mold Closed: Lock Engaged

In this 3-plate application, three parting lines are utilized for ejecting the part and runner.



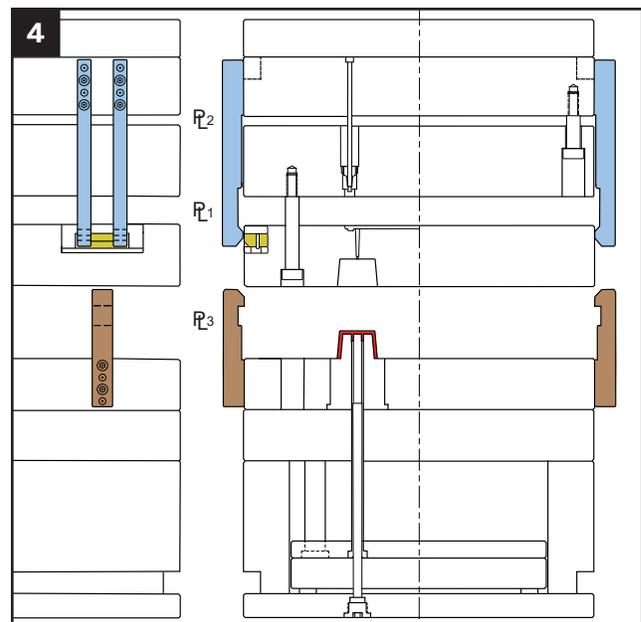
### First Parting Line Opens

The Puller Pin pulls the runner and breaks the gate, while parting line #3 is held closed by the Plate Lock.



### Stroke Continues

After stripper bolts crossing parting line #2 and #3 bottom out, the Wedge Block is fully disengaged from Latch Bar.



### Main Parting Line Opens

With both parting line stripper bolts bottomed out and the Latch Bar released, parting line #3 is free to open.

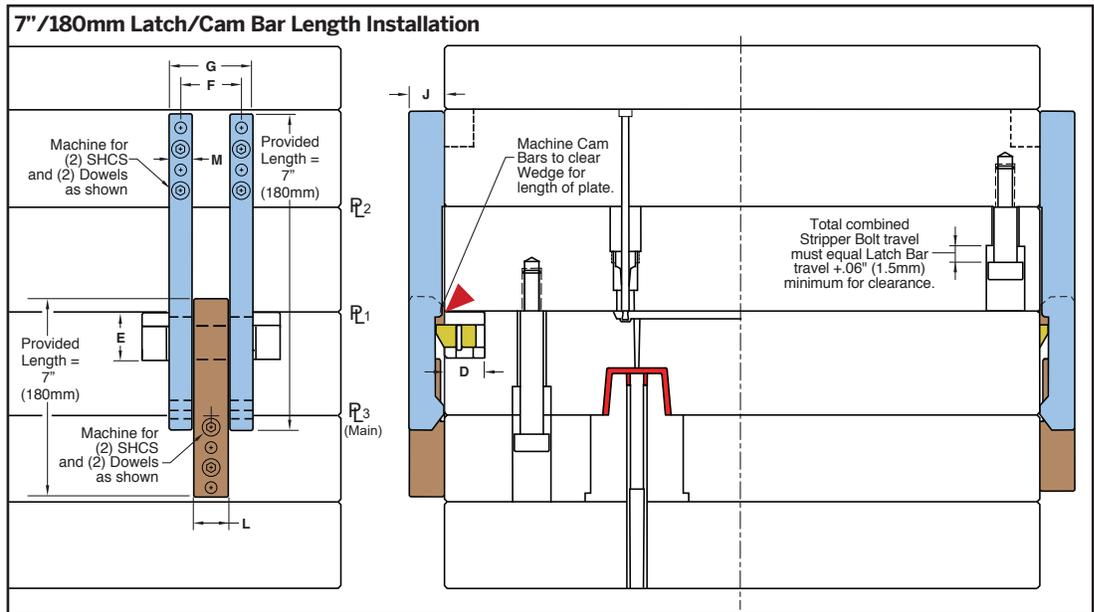
- The 7"/180mm assemblies are suggested for pulling 2,000 lbs (900kg) each and the 12"/300mm assemblies are suggested for pulling 3,000 lbs (1360 kg) each. Weight ratings may vary based on gate size, friction conditions, and velocity.
- On molds that are 12" wide or more, Progressive recommends four assemblies, two sets per side on the opposite ends of the mold.
- Using four assemblies of the -S version (to push plates) is recommended for plates 12" or greater in width.

# PLATE LOCKS

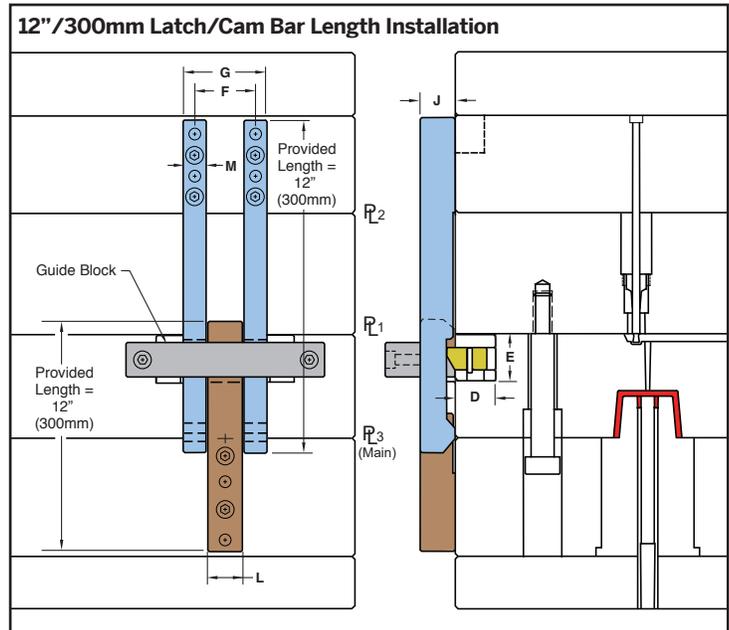
## 3-PLATE APPLICATION

### Design & Installation:

1. Determine Latch travel.
2. Determine Stripper Bolt travel, .06 minimum clearance past Latch release.
3. Determine the Cam Bar length by utilizing the gauge pin and timing diagram on the opposite page.
4. Machine the Latch Bar so that with the mold closed there is .001" clearance between the Wedge Block and Latch Bar as shown on in the timing diagram.
5. Machine (2) counterbores and (2) dowels for Latch and Cam Bar as shown. Two (2) dowels are recommended for proper alignment.
6. For all assemblies, the Wedge Block Assembly is installed according to the pocket dimensions below.
7. For the 12"/300mm assemblies, the Guide Block must be installed over the Latch and Cam Bars. The Guide Block will help to avoid deflection, causing latch timing issues, during production and can be purchased for optional use on the 7"/180mm assemblies. Screw size and locations are shown below, and it is suggested that location is on the center of the Wedge Block Assembly pocket, opposite the spring pressure.

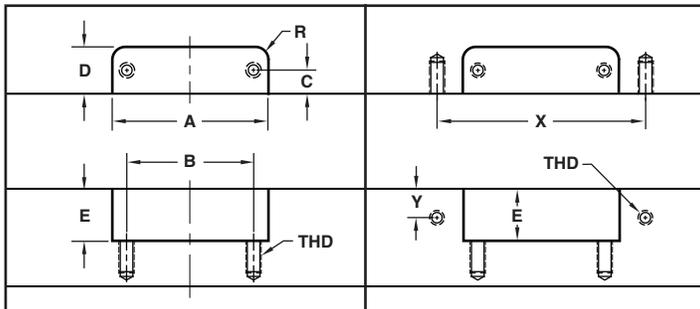


▶ CAD insertion point



Wedge Block Assembly Installation

Guide Block Installation



### Inch Standard

CATALOG NUMBER	A +.001 -.000	B ± .005	C ± .005	D +.001 -.000	E +.001 -.000	F ± .005	G Ref	J	L	M	R Pocket	X ± .005	Y ± .005	THD
PLC75-7	3.001	2.44	.45	.900	1.000	1.31	1.80	.750	.750	.500	.250	3.625	.500	1/4-20 x .50 Deep
PLC75-12														

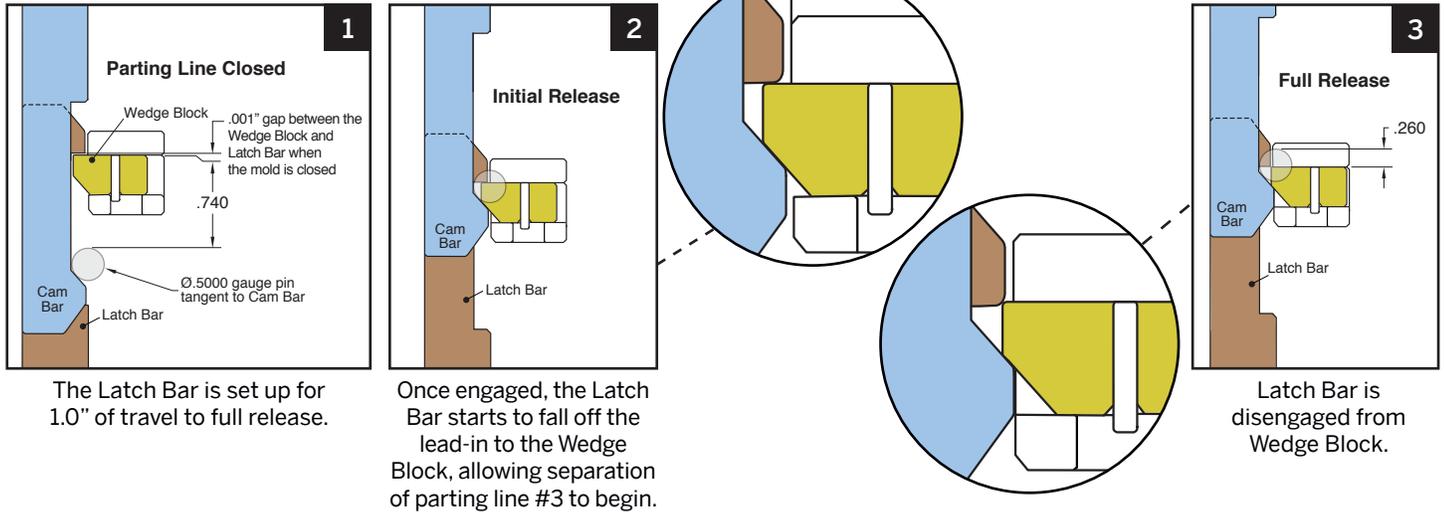
### Metric Standard

CATALOG NUMBER	A +.03 -.00	B ± .1	C ± .1	D +.03 -.00	E +.03 -.00	F ± .1	G Ref	J	L	M	R Pocket	X ± .1	Y ± .1	THD
PLCM20-180	80.02	64	12	24	27	35	49	20	20	14	7	92	13.5	M6-1.0 x 10mm Deep
PLCM20-300														

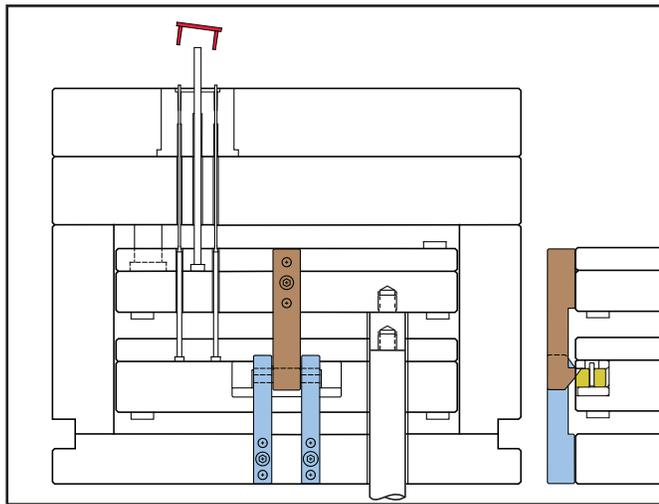


# PLATE LOCKS TIMING

## For Cam Bar Release Point

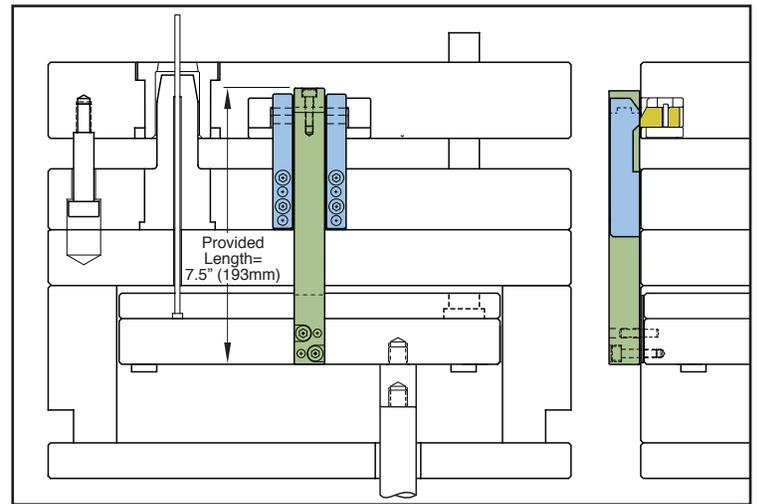


# PLATE LOCKS APPLICATIONS



## Dual Ejection

Plate Locks keep both ejector sets together until the release point. The Wedge Block Assembly would be installed in the bottom ejector plate, following the installation of all components.

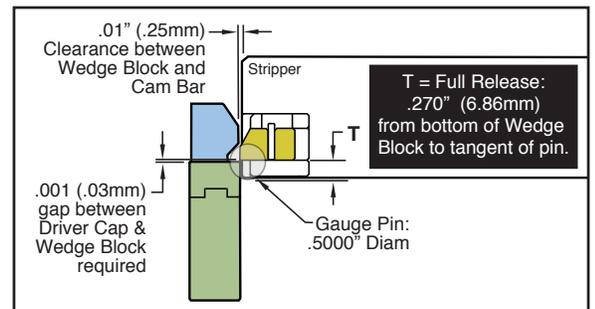


## Stripper Plate

The Drivers push the stripper plate forward until the parts are stripped from the core. The lock then releases, allowing the ejector pins to push the parts from the stripper plate.

## Stripper Plate Design & Installation Guidelines:

- Stripper plate applications can be utilized as shown above with the optional Stripper Plate Kit as sold on page J-4. The Latch Bar will be discarded and replaced with the Driver, Cap, and Spacer offered in the kit.
- All pocket and component machining is similar to the 3-plate application shown on page J-2 except for calculation of the "T" dimension for timing the release point according to the graphic at right.
- Use the Spacer as a template for machining the bolts/dowels on the Driver/Cap assembly.
- Attach the Spacer to the Driver, which will provide .03" / .75mm gap between the Driver and the mold to avoid interference.



# PLATE LOCKS

## EXTERNAL CAM-DRIVEN SYSTEM

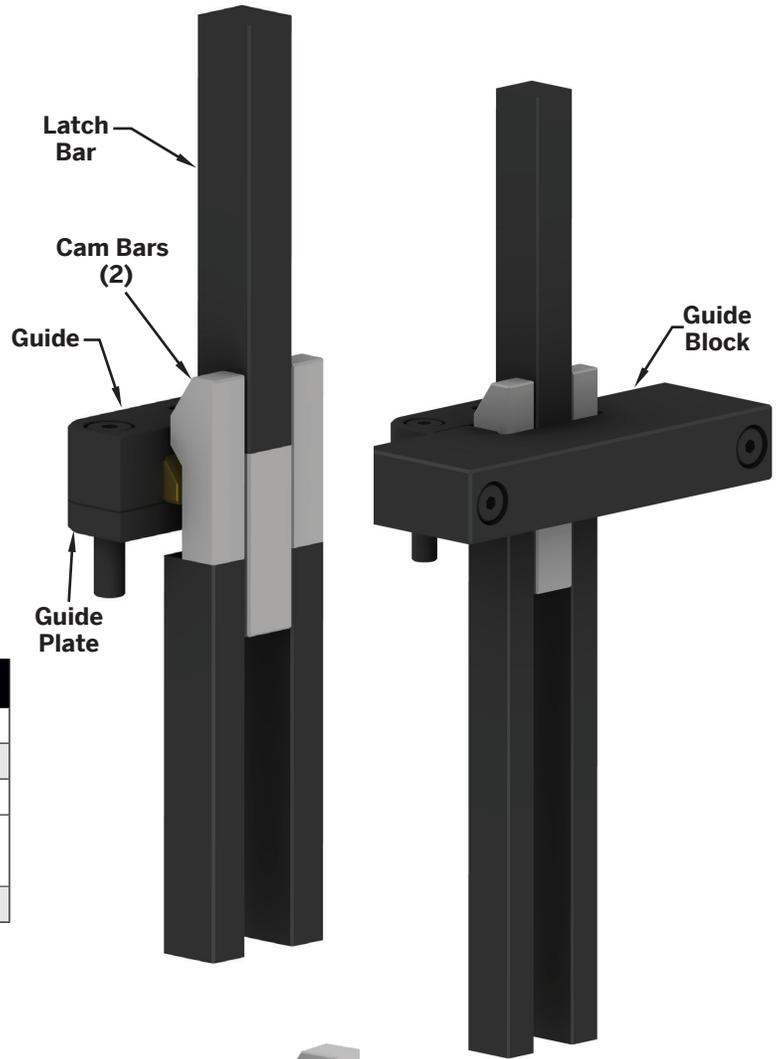
ASSEMBLY CATALOG NUMBER	LATCH/CAM BAR LENGTHS
PLC75-7	7.0
PLC75-12	12.0
PLCM20-180	180mm
PLCM20-300	300mm

### Assemblies include:

- All machined components listed below.
- Items within the Wedge Block Assembly:
  - Compression Springs (2)
  - 1/4-20 LHCS or M6-1.0 LHCS (2 per assembly)
  - 1/8 or 3mm Diameter Dowel Pin (1 per assembly)
- Screws within the Guide Block (12"/300mm assemblies)
  - 1/4-20 LHCS or M6-1.0 LHCS (2 per assembly)

PART NAME	MATERIAL/TREATMENT
Latch Bar	4340, 35-40 HRC, Nitride/Black Oxide
Cam Bars (2)	4340, 35-40 HRC, Nitride/Black Oxide
Wedge Block Assembly	Wedge Block: A-2, 58-60 HRC Titanium Nitride
	Guide & Guide Plate: H-13, 52-54 HRC Nitride/Black Oxide
Guide Block	H-13, 52-54 HRC, Nitride/Black Oxide

- The Guide Block may also be utilized on the 7"/180mm assemblies. To order, specify PLC75-GBA for inch standard and PLCM20-GBA for metric.



## STRIPPER PLATE KIT

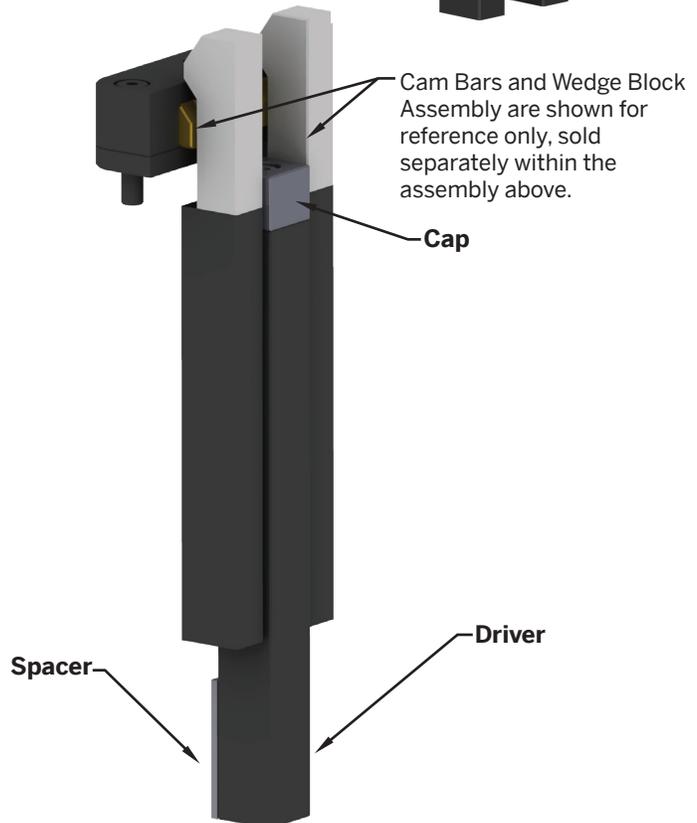
For stripper plate applications, purchase the appropriate metric or inch assembly from the top of the page and the matching kit below. The mold maker will discard the Latch Bar, replacing it with the Cap/Driver/Spacer shown at right.

CATALOG NUMBER	STANDARD
PLC75-S	Inch
PLCM20-S	Metric

### Assembly includes:

- All machined components listed below.
- (1) #10-32 x .75 or M5-.8 x 30mm SHCS

PART NAME	MATERIAL/TREATMENT
Cap	4340, 35-40 HRC, Nitride
Driver	4140, 28-35 HRC, Black Oxide
Spacer	303 Stainless Steel, 35-40 HRC

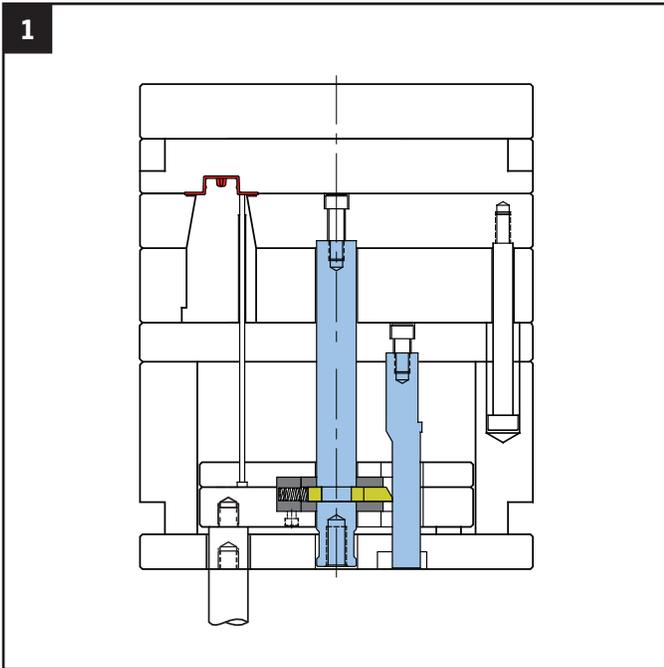




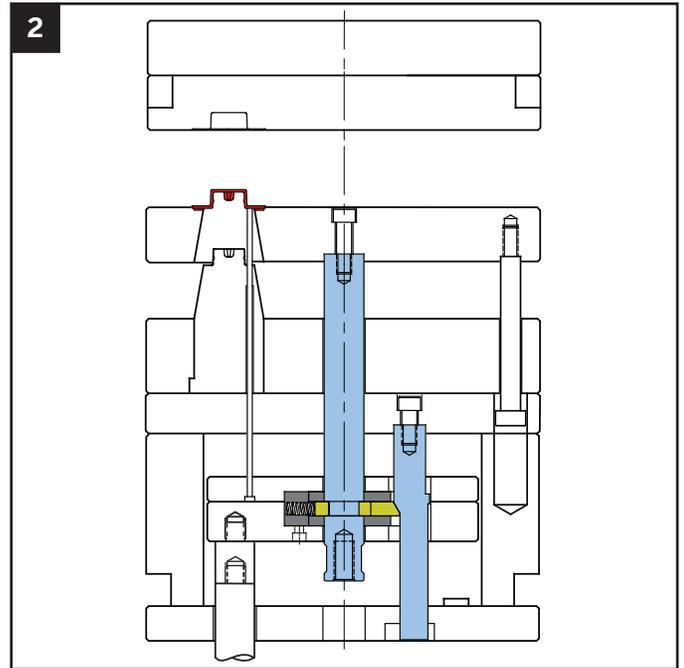
# PLATE LOCKS

## INTERNAL EJECTION SYSTEM

Internal Plate Locks provide a positive, mechanical method for locking and actuating plates in molds requiring multiple ejection actions. Optionally, using the press knock-out locations, the internal ejection system can be used to actuate the ejectors after the stripper plates.

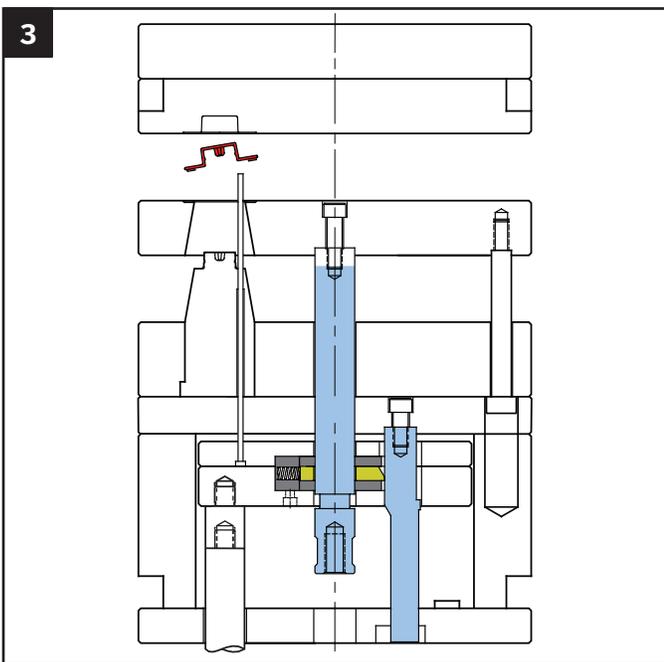


**Mold Closed**



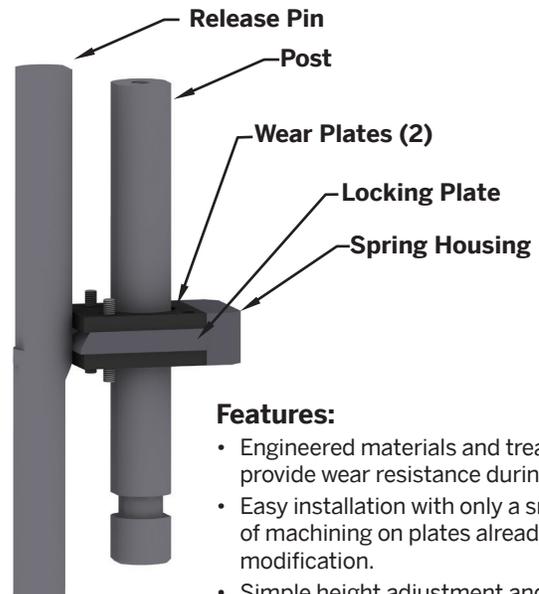
**Mold Open: Plate Strips Part From Core**

Lock begins to disengage and stripper and ejector plates move forward.



**Mold Open: Part Ejected From Plate**

With the stripper plate stopped, the ejector system continues and pushes the part from the plate.

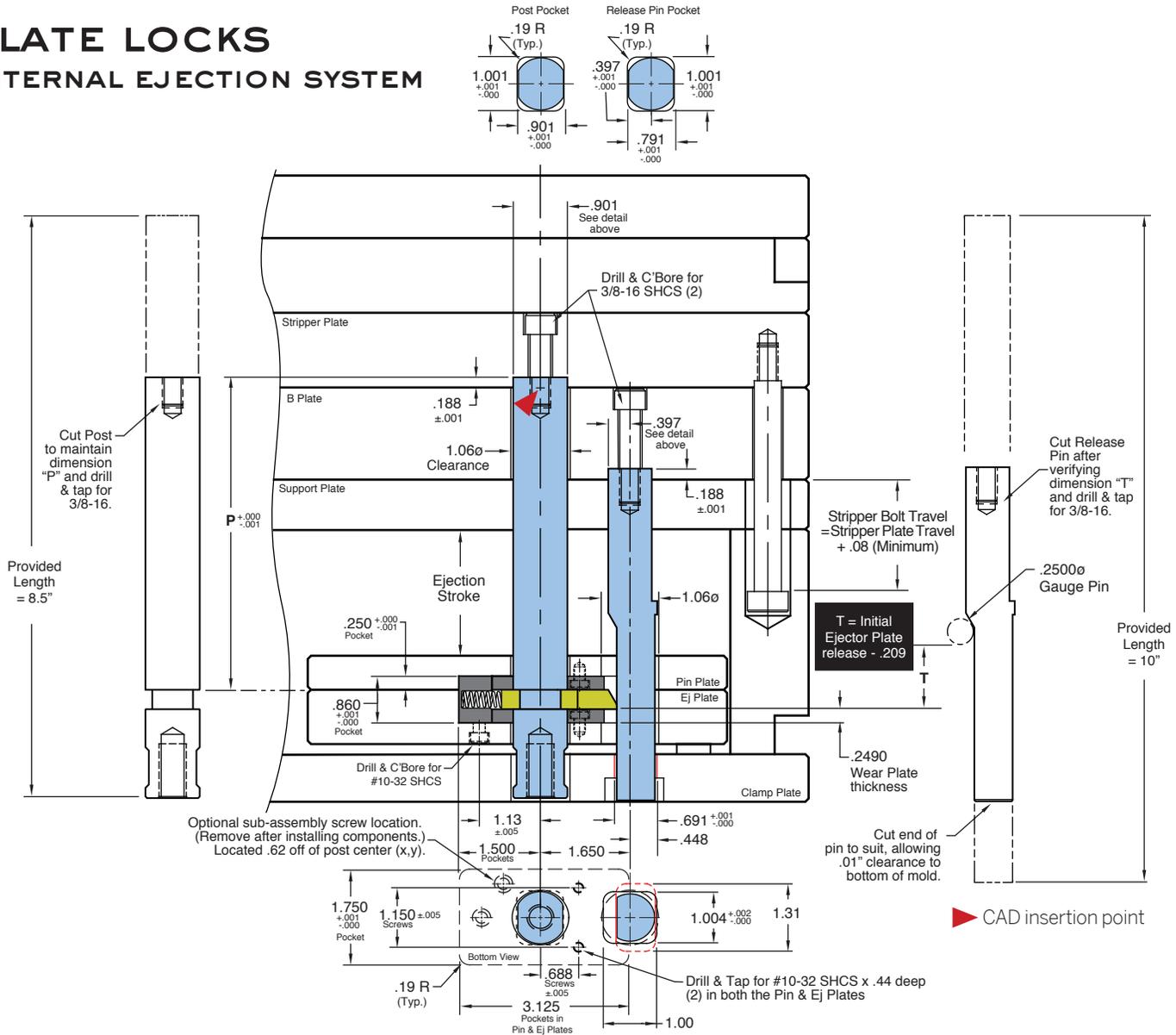


**Features:**

- Engineered materials and treatments provide wear resistance during production.
- Easy installation with only a small amount of machining on plates already requiring modification.
- Simple height adjustment and timing.
- Designed to re-engage when fully retracted.
- For activating large mold plates, multiple Internal Plate Locks can be installed.

# PLATE LOCKS

## INTERNAL EJECTION SYSTEM



CATALOG NUMBER	DESCRIPTION
PLN100	Internal Plate Lock Assembly

### Assembly includes:

- All five machined components listed at right.
- Compression Springs (2)
- #10-32 LHCS (4)

PART NAME	MATERIAL/TREATMENT
Locking Plate	A-2, 58-60 HRC
Wear Plate (2)	H-13 50-54 HRC, Nitrided, Black Oxide
Spring Housing	4140, 28-32 HRC
Release Pin	4340, 30-35 HRC, Nitrided
Post	4340, 30-35 HRC, Nitrided

### Design Guidelines:

- It is recommended that ejector rods or PKO extensions are tied into the pin plates and guided ejection is utilized.
- For small molds (12 x 20 max), one or two assemblies may be used. For molds larger than 12 x 20, four assemblies should be installed.
- On all designs, consider fastener and assembly access points and install the Plate Locks equal distances from center to ensure proper balance of the mold.
- Determine the Post length by verifying the distance in dimension "P" according to the information above. Cut, drill, and tap the Post to suit.
- By using a .250 diameter gauge pin tangent to the flat and the angle on the Release Pin, determine the release point "T" as shown above.
- Calculate the overall length of the Release Pin and then cut, drill, and tap.

### Installation Guidelines:

- Machine all pockets per the drawing above.
- Bolt the Release Pin and Post to the B-side plates.
- Ejector plates are then assembled with the Wear Plate, Locking Plate, and Spring Housing.
- Locking plate is retracted to allow for the temporary keeper screw installed. This allows the Locking Plate to pass over the Post and also have clearance to Release Pin.
- Ejector plates are to be installed onto guided ejector pins and placed in the proper location, lining up Locking Plate with relief in the Post.
- Finally, remove the temporary keeper screw, allowing the Locking Plate to snap into the relief within the Post.