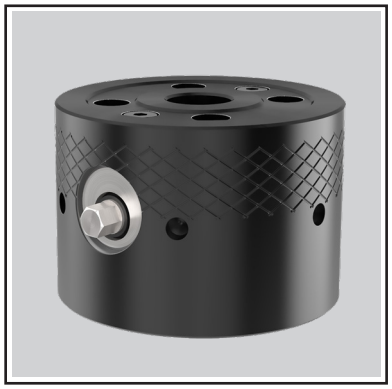
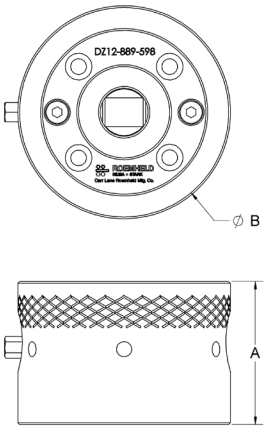
Modular Zero Point System ■ DropZero®

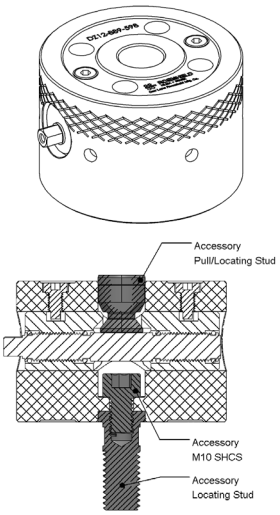
Drop Zero ■ 5 Axis System ■ that locates, clamps and supports a workpiece Manual Operation ■ Max. Retention Force ■ 2700 lbs



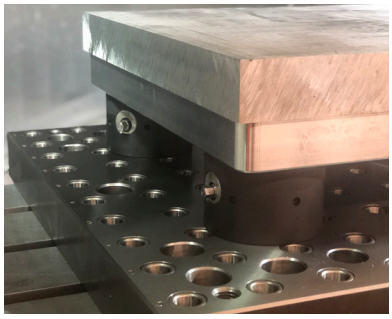
- Reduces setup time and fixturing costs
- Modular design works with all of CLM's ½" and 5/8" modular tooling.
- Can also be used with non-modular tooling
- Elevates workpiece for machine spindle clearance
- Access to all 5 sides of the part
- Stackable for added clearance
- Access to all 5 sides of the part

With a few turns of a wrench, new Drop Zero Modular Zero Point System quickly unloads and loads new parts in one setup, all while having access to all five sides of the workpiece. Pull studs (round, diamond, and floating) are mounted directly to a part, and clamp modules can be mounted to any fixture plate and can be stacked for added height. DropZero gives you better part quality due to a completely machined part in one setup, reduced fixturing costs, and simpler tool paths.

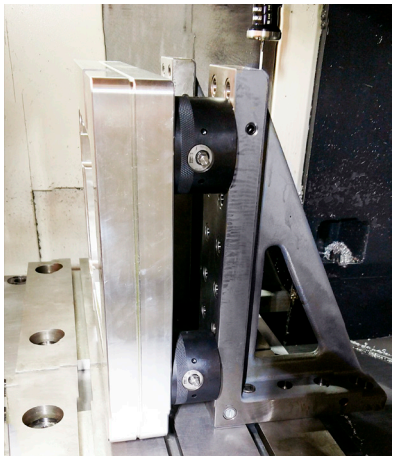




Application Examples



Four Drop Zeros mounted on a Carr Lane Mfg. modular fixturing plate holding an aluminum billet part.



Example of side work for vertical applications.

Operation	Manual
Type	Zero Point Mounting
Retention force (lbs) / Torque (ft-lbs)	2700 lbs/ 45 ft-lbs [12 kN/ 60 Nm]
A (in.)	2.35 ± 0.0004 in [59.8 ±0.01 mm]
Ø B (in.)	3.50 in [88.9 mm]
Weight (lbs)	5.64 lbs [2.56 kg]
Part No.,	**CLR-DZ12-889-598**
Pallet Change Repeatability	**≤ 0.0004 in [0.01 mm]**

Accessories

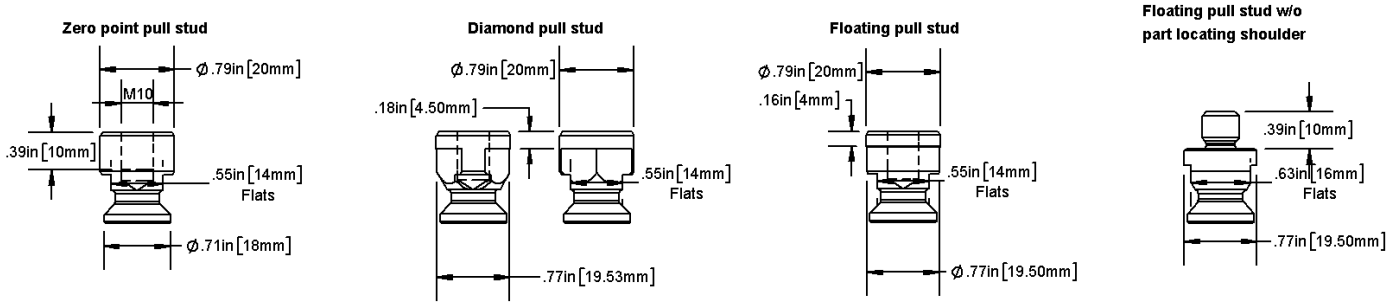
Part No., housing unit only	**CLR-DZ12-889-598-H**
Zero point locating stud/screw (1/2-13 UNC-2A)	**CLR-DZ12T-500Z**
Zero point locating stud/screw (5/8-11 UNC-2A)	**CLR-DZ12T-625Z**
Socket Head Cap Screw	**CLR-M10-1.50X16-SHCS**
Clamping spindle	**CLR-DZ12M-25**
Zero Point pull stud	**CLR-DZ12N-20Z**
Diamond pull stud	**CLR-DZ12N-20D**
Floating pull stud	**CLR-DZ12N-20F**
Floating pull stud without pallet/part locating shoulder	**CLR-DZ12N-195**
Custom standoff	**Available on request**
Custom locating bushings	**Available on request**

Subject to change. For further details, including detailed dimensions and mounting instructions, visit roemheld-usa.com.

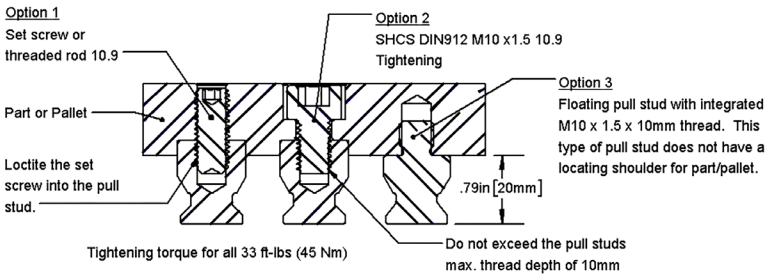
ROEMHELD
HILMA ▪ STARK

Carr Lane Roemheld Mfg. Co.
Sales — Phone (314) 647-6200 Fax (314) 647-5736
Engineering — Phone 1-800-827-2526 Web **roemheld-usa.com**

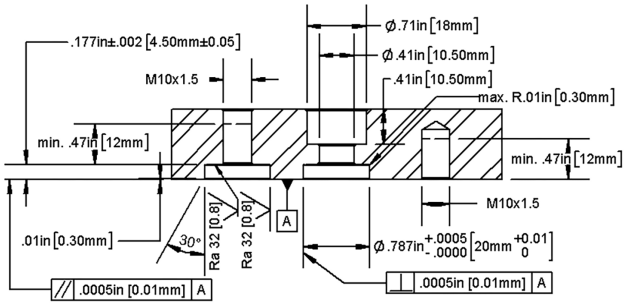
Pull Studs



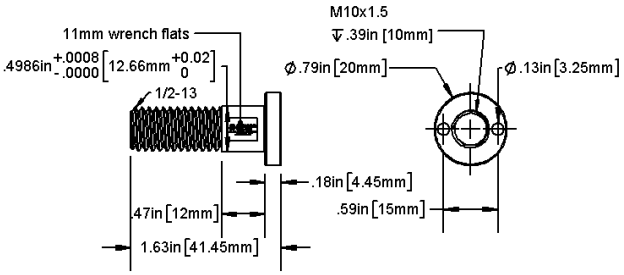
Pull Studs Mounting Options

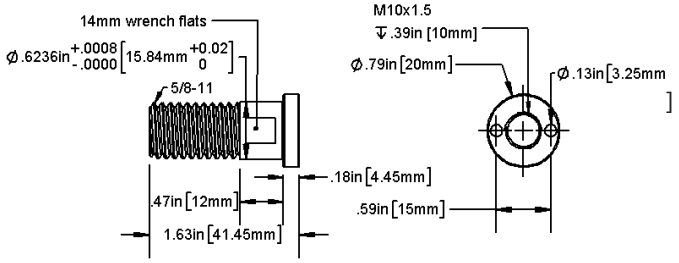


Pull Studs Mounting Options



Locating Studs for Modular Tooling





Subject to change. For further details, including detailed dimensions and mounting instructions, visit roemheld-usa.com.

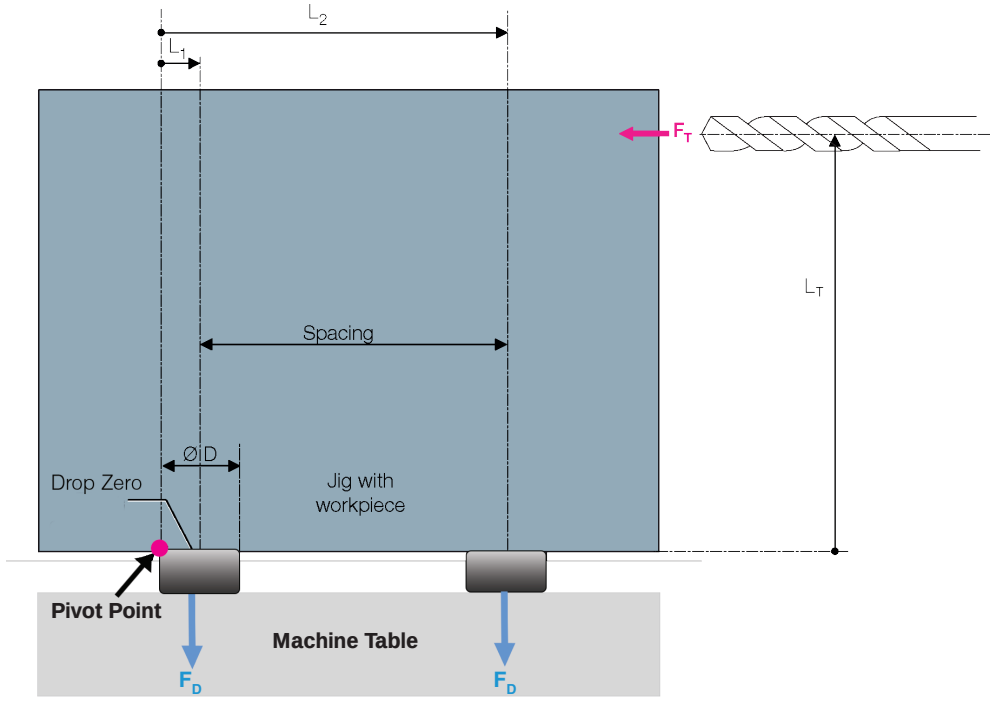
ROEMHELD
HILMA ▪ STARK

Carr Lane Roemheld Mfg. Co.
Sales — Phone (314) 647-6200 Fax (314) 647-5736
Engineering — Phone 1-800-827-2526 Web **roemheld-usa.com**

Tilting torque calculation example
Benefit from our specialist competence

Example:
DropZero clamps, 4x, with 200 x 200 mm spacing and max. feed thrust force of 7 kN with distance of 400 mm.

Question:
Due to the predominance of roughing work, the system should be checked for 2x safety factor. Is the retention force, number of DropZero clamps and the selected spacing right for this application?



Solution:

$M_D > 2 \times M_T$?

$M_T = F_V \times L_V = 7{,}000\ N \times 0.4\ m$
M_T = **2,800 Nm**
$M_D = 2 \times (F_D \times L_1) + 2 \times (F_D \times L_2)$
$M_D = 2x\ F_D \times (L_1 + L_2)$
$L_1 = ØD / 2 = 0.0889/2 = 0.04445$
$L_2 = ØD / 2 + Spacing = 0.04445 + 0.20 = 0.24445$
$L_1 + L_2 = ØD + Spacing$
$L_1 + L_2 = 0.0889\ m + 0.20\ m = 0.2889\ m$
$M_D = 2 \times F_D \times (L_1 + L_2) = 2 \times 12{,}000\ N \times 0.2889\ m$
M_D = **6,933.6 Nm**

M_T : Moment from Feed Thrust Force
M_D : Moment from Retention force
F_T : Feed Thrust Force (7,000 N)
F_D : Retention force (12,000 N)
Spacing = 200 mm = 0.20 m
Ø D: 88.9 mm = 0.0889 m
L_T : 400 mm = 0.40 m

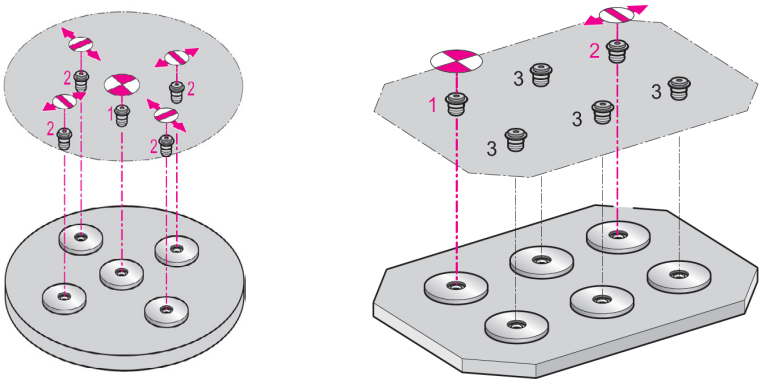
$M_D / M_T > 2$?
M_D / M_T = 6,933 Nm / 2,800 N M_D / M_T = **2.4 > 2** ✓
With this design, a safety factor of two is provided. (All dimensions to be entered in SI units (meters, Newtons))

Subject to change. For further details, including detailed dimensions and mounting instructions, visit roemheld-usa.com.

ROEMHELD
HILMA ▪ STARK

Carr Lane Roemheld Mfg. Co.
Sales — Phone (314) 647-6200 Fax (314) 647-5736
Engineering — Phone 1-800-827-2526 Web **roemheld-usa.com**

Application Examples Of Pull Stud Arrangements



Standard Pull Stud Kits

Every standard Pull Stud Kit comes with at least one Zero-Point Pull Stud, one Diamond Pull Stud and one Locating Dowel. These are good for applications that require high repeatability between change overs.

Bundle Kit Part No.*	Quantities in Each Kit					
	DropZero CLR-DZ12-889-598	Locating Dowel CLR-DZ12D-15	Cap Screw CLR-M10-1.50X16-SHCS	Zero Point (Round) Pull Stud CLR-DZ12N-20Z	Diamond Pull Stud CLR-DZ12N-20D	Floating Pull Stud CLR-DZ12N-20F
CLR-DZ12K-2S	2	2	2	1	1	-
CLR-DZ12K-3S	3	3	3	1	1	1
CLR-DZ12K-4S	4	4	4	1	1	2
CLR-DZ12K-5S	5	5	5	1	1	3
CLR-DZ12K-6S	6	6	6	1	1	4

*** Add "F"** to the end of any of the above part numbers to make all the pull studs in the kit "Floating Pull Studs" part number CLR-DZ12N-20F.

*** Add "-500"** to the end of any of the above part numbers to replace the CLR-DZ12D-15 Locating Dowels with CLR-DZ12T-500Z 1/2-13 Locating Studs for use with Carr Lane Mfg. modular tooling.

*** Add "-625"** to the end of any of the above part numbers to replace the CLR-DZ12D-15 Locating Dowels with CLR-DZ12T-625Z 5/8-11 Locating Studs for use with Carr Lane Mfg. modular tooling.

Non-Standard Pull Stud Kits

Non-standard Pull Stud Kits come with Locating Dowels and our Floating Pull Stud that does not have a locating shoulder for mating with your part or pallet. These are best used for setup applications that do not require high repeatability between change overs or when probing will be done prior to machining.

Bundle Kit Part No.*	Quantities in Each Kit			
	DropZero CLR-DZ12-889-598	Locating Dowel CLR-DZ12D-15	Cap Screw CLR-M10-1.50X16-SHCS	Floating pull stud without pallet/part locating shoulder CLR-DZ12N-195
CLR-DZ12K-2F	2	2	2	2
CLR-DZ12K-3F	3	3	3	3
CLR-DZ12K-4F	4	4	4	4
CLR-DZ12K-5F	5	5	5	5
CLR-DZ12K-6F	6	6	6	6

*** Add "-500"** to the end of any of the above part numbers to replace the CLR-DZ12D-15 Locating Dowels with CLR-DZ12T-500Z 1/2-13 Locating Studs for use with Carr Lane Mfg. modular tooling.

*** Add "-625"** to the end of any of the above part numbers to replace the CLR-DZ12D-15 Locating Dowels with CLR-DZ12T-625Z 5/8-11 Locating Studs for use with Carr Lane Mfg. modular tooling.

Subject to change. For further details, including detailed dimensions and mounting instructions, visit roemheld-usa.com.

Carr Lane Roemheld Mfg. Co.
Sales — Phone (314) 647-6200 Fax (314) 647-5736
Engineering — Phone 1-800-827-2526 Web **roemheld-usa.com**