Modular Zero Point System ■ Drop Zero®

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

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.

- 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

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.

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

Zero point pull stud

Diamond pull stud

Floating pull stud

Floating pull stud w/o part locating shoulder

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]

Locating Studs for Modular Tooling

Subject to change. For further details, including detailed dimensions and mounting instructions, visit 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:

\[
M_D > 2 \times M_T ?
\]

\[
M_T = F_T \times L_T = 7,000 \text{ N} \times 0.4 \text{ m}
\]

\[
M_T = 2,800 \text{ Nm}
\]

\[
M_D = 2 \times (F_D \times L_1) + 2 \times (F_D \times L_2)
\]

\[
M_D = 2 \times F_D \times (L_1 + L_2)
\]

\[
L_1 = \frac{\text{ØD}}{2} = \frac{0.0889}{2} = 0.04445
\]

\[
L_2 = \frac{\text{ØD}}{2} + \text{Spacing} = 0.04445 + 0.20 = 0.24445
\]

\[
L_1 + L_2 = \text{ØD} + \text{Spacing}
\]

\[
L_1 + L_2 = 0.0889 \text{ m} + 0.20 \text{ m} = 0.2889 \text{ m}
\]

\[
M_D = 2 \times F_D \times (L_1 + L_2) = 2 \times 12,000 \text{ N} \times 0.2889 \text{ m}
\]

\[
M_D = 6,933.6 \text{ Nm}
\]

\[
M_D / M_T > 2 ?
\]

\[
M_D / M_T = 6,933.6 \text{ Nm} / 2,800 \text{ N} \quad M_D / M_T = 2.4 > 2 \checkmark
\]

With this design, a safety factor of two is provided. (All dimensions to be entered in SI units (meters, Newtons))

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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.

### 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.

### Quantities in Each Kit

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* 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.

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