OUR STORY

CARR LANE ROEMHELD MFG. CO.

In 1982 an independent joint venture was established to marry the proven product expertise of Roemheld with the marketing know-how and distribution network of Carr Lane Manufacturing. This partnership now offers to the American manufacturer the complete benefits of the finest in international power workholding combined with the best in local service and support.

After initial tests by many companies, both small and large, the word had spread confirming the quality and reliability obtained when using Roemheld Power Workholding products.

We invite you to review this catalog in depth and to call us with any questions about your applications. We at Carr Lane Roemheld welcome the opportunity to help you manufacture your quality product in the most productive way possible — with the world’s most dependable workholding equipment.

Founded in 1952 in St. Louis, Missouri by Earl Walker to make standardized tooling components, Carr Lane Manufacturing has grown, through constant innovation, to become the foremost supplier to the American Machine Tool Industry. Now the most complete line available, Carr Lane Mfg. offers Jig and Fixture Components, Toggle Clamps, Hoist Rings, Alignment Pins, Drill Bushings, Spring Plungers, and Modular Fixturing. Setting the standard for American Tool Engineers, Carr Lane Manufacturing's catalog is recognized as the engineer’s tooling reference.

Drawing upon a centuries-old tradition of German craftsmanship, metalworking was already well established in Laubach, Germany when the Roemheld family began to manage operations in 1870. Development of the hydraulic workholding components began in the early 1960’s and soon grew to dominate the European market.

Today, Roemheld GmbH is by far the world leader in this productivity-enhancing technology, offering a tremendous range of types and sizes of superior design and the highest quality.

SUCCESS GUARANTEED

Find out the advantages of our Quality Guarantee when you work with us!

Carr Lane Roemheld knows your power workholding system needs to be of the highest quality.

That’s why, if you work with us, you’ll get the best system, and top quality results.

We stand behind our products, and provide you with the excellent service you need to remain competitive in today’s manufacturing environment.

REDUCE SET-UP AND DOWNTIME!
Zero Point Mounting System for Quick Change Fixturing

This comprehensive system utilizes clamping components and insertion nipples, which provide an immediate zero point orientation.

• Reduce set up time by as much as 90% with zero point mounting
• Existing fixtures can be easily adapted
• Highly accurate positioning and repeatability
• Increased productivity
• Fast payback
• Set-up times slashed
• Fixture life extended

Use in Conjunction with the Zero Point Mounting System for Faster, More Accurate Fixture Set Ups

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Use in Conjunction with the Zero Point Mounting System for Faster, More Accurate Fixture Set Ups
Power Sources

**Electric Power Units**

Compact Electric Power Units are compact, light weight, modular units ready for installation. Ideal for operating small and midsize clamping systems, and suitable for both single-acting and double-acting cylinders. These zero leakage systems come complete with motor, pump, oil tank, manifold block, pressure gauge, pressure switch, valves and electrical system.

Standard Electric Power Units are the best power source for most uses. Complete, compact, quiet, and fully automatic. Include pump, reservoir, switches, valves, gauge, and numerous safety devices. Extremely long life. Enough fluid capacity for virtually any fixture. Up to 7500 psi output pressures. 120, 220, or 440 volt.

**Air Power Units**

Economical power source, driven by shop air pressure, includes pump, reservoir, valves, gauges, air filter, muffler, and air extractor/dryer. Very quiet. Ideal for hazardous locations. Enough fluid capacity for virtually any fixture. Up to 7500 psi output pressure.

Compact Air Power Units are ideal for smaller hydraulic clamping and assembly fixtures with single or double-acting hydraulic elements. Ordinary shop air is all that is required to drive these units.
Power Sources

Hand Pumps


Screw Pumps

Small enough to mount directly on fixture. Operate manually or with a power torque wrench. Ideal for rotary index tables and palletized fixtures where a feed line is impractical.

Hydraulic Intensifiers

Hydraulic Intensifiers convert hydraulic pressure on the input to a higher pressure on the output. This enables the use of the comparatively low pressure of machine tool hydraulics to pressurize hydraulic clamping fixtures with a correspondingly increased input pressure.

Block style can be used for large fixtures as well as small, because clamps are initially charged by the lower input pressure, through a check valve in the piston. The high-pressure piston is only activated after the desired trigger pressure is reached.

Cylinder style is a more compact version for smaller fixtures.
### Power Sources  ■  Compact Power Units

**Compact Power Units**

**Max. Operating Pressure**  ■  7250 psi (500 bar)

---

**Advantages**
- Modular unit ready for installation
- Compact, light weight design
- Zero leak, directional valves maintain clamping pressure in case of power failure
- Highly reliable radial piston pump ensures long service life
- Fluid immersed, direct drive motor, and finned aluminum housing provides optimum efficiency
- Zero leak fittings and valves
- Sight glass for oil level control
- Oil temperature/level switch

**Application**

Electrically driven high-pressure hydraulic unit for operating small and midsize clamping systems. Suitable for both single-acting and double-acting cylinders. Unit operates intermittently with automatic pressure controls. The required operating pressure is preset on a pressure switch that controls the motor. When the set pressure is reached, the motor is automatically switched off. If the pressure drops 10% below the set value, the pressure switch starts the motor again.

**Description**

Complete with motor, pump, oil tank, manifold block, pressure gauge, pressure switch, valves and electrical system. The radial piston pump is bi-directional and fixed displacement.

Zero leakage poppet type directional valves.

Electrical system to US standards. The control voltage (24VDC or 120 VAC) is supplied by the customer. The oil level and temperature sensor is standard. Optional equipment includes remote control pendant and machine safety pressure switches.

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Subject to change. For further details, including detailed dimensions and mounting instructions, visit www.clrh.com.
### Technical characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>120 VAC 10</th>
<th>230 VAC 30</th>
<th>460 VAC 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pressure</td>
<td>295 bar (4280 psi)</td>
<td>400 bar (5800 psi)</td>
<td>500 bar (7250 psi)</td>
</tr>
<tr>
<td>Power supply frequency</td>
<td>60 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control voltage</td>
<td>120 VAC or 24 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow rate</td>
<td>1.17 L/min (71 cu.in./min)</td>
<td>1.8 L/min (110 cu.in./min)</td>
<td></td>
</tr>
<tr>
<td>Usable fluid capacity</td>
<td>1.85 L (112 cu.in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reservoir capacity</td>
<td>3.9 L (238 cu.in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power @ max. pressure</td>
<td>0.5 kW (0.67 hp)</td>
<td>0.75 kW (1 hp)</td>
<td>0.9 kW (1.2 hp)</td>
</tr>
<tr>
<td>Motor amperage</td>
<td>9.0 amps</td>
<td>3.9 amps</td>
<td>2.1 amps</td>
</tr>
<tr>
<td>Noise level @ 1 meter (3.3 feet)</td>
<td>65 dBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. duty cycle</td>
<td>25-40 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approx. weight w/ one valve &amp; oil</td>
<td>27 kg / 60 lbs</td>
<td></td>
<td>25 kg / 55 lbs</td>
</tr>
</tbody>
</table>

1 Different flow rates, max. pressures and tank sizes available upon request.
2 Control voltage supplied by customer.

### Use this formula to determine part numbers for compact power units.

- **Basic Type**: CLR-KA
- **Motor Voltage**: 1 = 460VAC, 2 = 230VAC, 3 = 120VAC
- **Control Voltage**: 1 = 24VDC, 2 = 120VAC, 3 = w/o elec. panel; 24VDC valves, 4 = w/o elec. panel; 120VAC valves

### Hydraulic circuit examples

**For single-acting cylinders**

![Diagram for single-acting cylinders](image1)

**For double-acting cylinders with pressure switch for machine tool interlock**

![Diagram for double-acting cylinders](image2)

Subject to change. For further details, including detailed dimensions and mounting instructions, visit www.clrh.com.
**Electric Power Units**

**7250/5000 psi max**
Single and double acting

- Complete power unit with electrical and hydraulic controls
- Totally enclosed fan cooled single and three phase universal motors
- Thermal overload relay with automatic reset when normal conditions return
- Remote clamp-unclamp push button switch(s)
- Pressure adjustable from 1500 to maximum
- Quiet long life radial piston pump
- Filler breather with inlet screen
- Leak free fittings and poppet valves

**Adjustable Operating Pressure**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>1160-7250</th>
<th>725-5075</th>
<th>725-5075</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate (cu.in/min)</td>
<td>66 66 66</td>
<td>66 66 66</td>
<td>66 66 66</td>
</tr>
<tr>
<td>Usable fluid capacity (cu.in)</td>
<td>400 400 400</td>
<td>400 400 400</td>
<td>400 400 400</td>
</tr>
<tr>
<td>Reservoir capacity (cu.in)</td>
<td>690 690 690</td>
<td>690 690 690</td>
<td>690 690 690</td>
</tr>
<tr>
<td>Motor horsepower</td>
<td>1.5 1.5 1.0</td>
<td>1.0 1.0 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>Motor amperage</td>
<td>2.1 4.2 6.4</td>
<td>12.8 2.1 4.2</td>
<td>12.8 2.1 4.2</td>
</tr>
<tr>
<td>Noise level @ 3 ft. (dBA)</td>
<td>75 75 75</td>
<td>75 75 75</td>
<td>75 75 75</td>
</tr>
<tr>
<td>Max. uninterrupted running time (sec.)</td>
<td>15-120 15-120 15-120</td>
<td>15-120 15-120 15-120</td>
<td>15-120 15-120 15-120</td>
</tr>
<tr>
<td>Max. % of cycle pump should operate</td>
<td>25-40% 25-40% 25-40%</td>
<td>25-40% 25-40% 25-40%</td>
<td>25-40% 25-40% 25-40%</td>
</tr>
<tr>
<td>Weight (lbs.)</td>
<td>110 110 110</td>
<td>110 110 110</td>
<td>110 110 110</td>
</tr>
</tbody>
</table>

**Part No. Basic Pump (No Controls or Valves)**

<table>
<thead>
<tr>
<th>Power supply</th>
<th>3 Phase</th>
<th>1 Phase</th>
<th>3 Phase</th>
<th>1 Phase</th>
<th>3 Phase</th>
<th>1 Phase</th>
</tr>
</thead>
</table>

All Pump Systems contain Controls and Valve packages ready to go. No add on packages required. Fluid Recommendations are in F&A section.

SPECIALS AVAILABLE, CONSULT ENGINEERING 1-800-827-2526

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**Universal Motor**
- Totally enclosed fan cooled single and three phase universal motors
- Thermal overload relay with automatic reset when normal conditions return
- Remote clamp-unclamp push button switch(s)

**SETUP AND OPERATION:** Connect to fused electrical supply, fill with clean, approved hydraulic fluid and connect to fixture. Mount push button clamping switch near the operator (two furnished with shuttle machine units). Push one button to clamp and unclamp.

**OPERATING PRINCIPLES:** The heart of the unit is a precision, long-life radial-piston pump controlled upon pressure demand by the integral pressure switch. This switch is adjustable, to give you precise and repeatable clamping forces. Automatic pressure control is assured, because the pump restarts if pressure drops. Clamping pressure is assured even with an electrical power failure since the solenoid valves are mechanically held in the clamped position - and only need power to unclamp. The poppet design of these valves means positive, leakage-free sealing.
**Electric Power Units**

Multi-Pressure Pumps

- Complete power unit with electrical and hydraulic controls
- Enclosed fan-cooled single or three phase motor with thermal protection
- Combination temperature/level switch for pump protection
- Remote clamp-unclamp push button switch(es)
- Pressure adjustable from minimum to maximum as shown in pump chart
- Quiet long life radial piston pump
- Filler breather with inlet screen
- Leak free fittings and poppet valves
- Additional pressure gauges provided for reduced pressure circuits

**Adjustable Operating Pressure**

<table>
<thead>
<tr>
<th>Power Supply</th>
<th>1160-7250 psi</th>
<th>725-5075 psi</th>
<th>725-5075 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate (cu.in./min.)</td>
<td>66</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Usable fluid capacity (cu.in.)</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Reservoir capacity (cu.in.)</td>
<td>690</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Motor horsepower</td>
<td>1.5</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Motor amperage</td>
<td>4.2</td>
<td>4.2</td>
<td>6.4</td>
</tr>
<tr>
<td>Nose level @ 3ft. (dBA)</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Flow rate (cu.in/min.)</td>
<td>66</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Usable fluid capacity (cu.in.)</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Reservoir capacity (cu.in.)</td>
<td>690</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Motor horsepower</td>
<td>1.5</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Motor amperage</td>
<td>4.2</td>
<td>4.2</td>
<td>6.4</td>
</tr>
<tr>
<td>Noise level @ 3ft. (dBA)</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

**SET-UP SUMMARY:** Connect to fused electrical supply, fill with oil, and connect to fixture. Prime pump and adjust to desired pressure. Mount push button switch(es) near the operator. Push one button to clamp and unclamp. For complete set-up instructions, see operating manual.

**OPERATING PRINCIPLES:** The heart of the unit is a precision, long-life radial-piston pump controlled upon pressure demand by the integral pressure switch. This switch is adjustable, to give you precise and repeatable clamping forces. The secondary pressure is controlled by a poppet style pressure reducing valve. This secondary low pressure circuit is adjustable between 450 and 5500 psi. Automatic pressure control is assured, because the pump restarts if pressure drops. Clamping pressure is assured even with an electrical power failure since the solenoid valves are mechanically held in the clamped position - and only need power to unclamp. The poppet design of these valves means positive, leakage-free sealing.

---

**Adjustable Operating Pressure**

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<th>Power Supply</th>
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<th>725-5075 psi</th>
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<tbody>
<tr>
<td>Flow rate (cu.in/min.)</td>
<td>66</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>Usable fluid capacity (cu.in.)</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Reservoir capacity (cu.in.)</td>
<td>690</td>
<td>690</td>
<td>690</td>
</tr>
<tr>
<td>Motor horsepower</td>
<td>1.5</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Motor amperage</td>
<td>4.2</td>
<td>4.2</td>
<td>6.4</td>
</tr>
<tr>
<td>Noise level @ 3ft. (dBA)</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Max. uninterrupted running time (sec.)</td>
<td>15-120</td>
<td>15-120</td>
<td>15-120</td>
</tr>
<tr>
<td>Max. % of cycle pump should operate</td>
<td>25-40%</td>
<td>25-40%</td>
<td>25-40%</td>
</tr>
</tbody>
</table>
Electric Power Units

CONTROL OPTIONS: Electric Power Units are offered with three standard hydraulic/electrical-control options: (1) Single acting, (2) Double acting, (3) Single acting for two independent fixtures.

The following hydraulic-circuit diagram shows a single-acting unit.

SAFETY FEATURES: Fail-safe operation in case of electrical-power failure since the solenoid-operated clamping valves are de-energized in “clamped” position. These valves are poppet type, so they provide tight zero leakage sealing. Units are also equipped with fluid-level and fluid-temperature sensors to protect power units from abuse. If fluid level drops below a minimum level or fluid temperature exceeds 140° F, the unit shuts off and lights an LED. When fluid is replenished or temperature drops, the unit resets itself automatically.

MOUNTING: Mount unit upright, preferably above fixture level to keep unit clean. We offer an attractive, economical power-unit stand (below) that bolts to the floor. For mounting directly on machine-tool tables, we offer a vibration-proof mount (also below).

The diagram below shows a double-acting unit. Double-acting units can be used as single acting units simply by capping the return pressure connection, with a CLR-501-F cap fitting.

PRESSURE SETTING: Set system pressure by adjusting the setting screw (5) on the unit’s pressure switch (4) in combination with the knurled knob (3) on the unit’s pressure-relief valve (1). Basically, the pressure switch establishes the minimum system pressure (10% drop below setting) and the pressure-relief valve establishes the maximum in case of over pressurization.

DUTY CYCLE: Electric Power Units are designed specifically and purely for workholding, with intermittent clamping and unclamping between machining cycles (not continuous running). For most workholding applications, actual running time is a small percentage of total cycle time. The graph below shows typical pump-pressure buildup during a machining cycle.

Run time must be less than 40% of total cycle time with maximum fluid level, 25% with minimum fluid level (7250-psi units). Run time must also be less than 120 seconds with maximum fluid level, 15 seconds with minimum fluid level (7250-psi units). Otherwise the fluid will overheat and the unit will shut off automatically.
Electric Power Units

Connection Examples

### Single Fixture
- **Single Acting**
  - (use any Electric Power Unit)

### Single Fixture
- **Double Acting**
  - (use CLR-933-EP or CLR-833-EP)

### Two Fixtures
- **Single Acting**
  - (use CLR-935-EP or CLR-835-EP)

### Multiple Parts Clamped Independently
- **Single Acting or Double Acting**
  - (use any Electric Power Unit)
Air Power Units

7250 psi max
Single and double acting

- Economical and self-contained. Just fill with fluid
- Up to 7250 psi from shop air pressure (only 70-psi air pressure required)
- Tandem, reciprocating pump automatically restarts to maintain system pressure
- Holds pressure even if air supply fails
- Safe in hazardous locations
- Complete turnkey unit includes clamping valve, filter/regulator, lubricator, air and hydraulic pressure gauges, muffler, and air extractor/dryer

**Do not use NPT fittings

OPERATION: Unit is ready to run after you fill the reservoir with fluid (order separately, F&A section) and connect it to an air supply. Adjust the input air pressure, using the unit's air regulator, to adjust output fluid pressure (2200 to 7250-psi range). Only 70-psi air pressure is required to provide 7250-psi fluid pressure.

FLOW CONTROL: When using these power units in small circuits containing a Swing Clamp, Extending Clamp, or fluid-advanced Work Support, a simple flow control valve may be necessary. If clamps do not cycle properly, install flow control valve anywhere along the fluid lines to control flow to any or all workholding components.

<table>
<thead>
<tr>
<th>Input Air Pressure (psi)</th>
<th>Free flow 1500</th>
<th>3000</th>
<th>4500</th>
<th>6000</th>
<th>7250</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>74</td>
<td>23</td>
<td>46</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>40</td>
<td>82</td>
<td>29</td>
<td>62</td>
<td>22</td>
<td>35</td>
</tr>
<tr>
<td>50</td>
<td>88</td>
<td>37</td>
<td>69</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>60</td>
<td>91</td>
<td>43</td>
<td>75</td>
<td>36</td>
<td>60</td>
</tr>
<tr>
<td>70 and higher</td>
<td>94</td>
<td>48</td>
<td>80</td>
<td>42</td>
<td>68</td>
</tr>
</tbody>
</table>

Operating pressure range 2350-7250 psi

- Intensification Ratio: 108:1
- Flow Rate (cu. in./min.): see table
- Min. input air pressure (psi): 14.5
- Usable fluid capacity (cu. in.): 150
- Reservoir capacity (cu. in.): 260
- Noise level at 3 ft. (dBA): 76
- Weight (lbs): 50

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Control option 1</th>
<th>CLR-100-AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>Control option 2</td>
<td>CLR-102-AP</td>
</tr>
<tr>
<td>Part No.</td>
<td>Control option 3</td>
<td>CLR-105-AP</td>
</tr>
<tr>
<td>Part No.</td>
<td>Pump without valves</td>
<td>CLR-106-AP</td>
</tr>
</tbody>
</table>

Fluid Recommendations see F&A section.
### Connection Examples

**Single Fixture**
- **Valve mounted on unit**
  - **Single Acting**
  - CLR-100-AP

**Single Fixture**
- **Remote Valve**
  - **Single Acting**
  - CLR-102-AP

**Multiple Parts Clamped Independently**
- **Single Acting or Double Acting**
  - (Use any Air Power Unit)

**Two Fixtures**
- **Single Acting or Double Acting**
  - (use any Air Power Unit)

---

**7250 psi max**
- **Single and double acting**
- See valves section

---
Air Power Units

- The hydro-pneumatic pump unit can be operated with oil-free air.
- Due to suitable sound insulation only minimum working noises are obtained.
- The low starting pressure (40 psi) guarantees a quick start of the pump and short cycle time.
- The hydro-pneumatic pump unit is delivered ready for connection.

APPLICATION: The hydro-pneumatic pump unit is particularly suitable for smaller hydraulic clamping and assembly fixtures with single or double-acting hydraulic elements. As the power supplied is compressed air, it can be used without restriction in hazardous surroundings.

OPERATION: Single acting version
The single-acting hydro-pneumatic pump unit is manually operated. By operating the pedal the fixture will be clamped or unclamped. The pump delivers oil as long as necessary to achieve the desired hydraulic operating pressure. The air pressure is adjusted by a pneumatic service unit and maintained by an integrated check valve.

Double acting version
By means of a locking device the pneumatic directional control valve (at the pneumatic side) is permanently in the opened switching position. By means of the mounted hand-operated hydraulic 4/3 directional control valve double-acting cylinders can be controlled. In the case of a pressure loss, the pneumatic pump operates automatically until the desired hydraulic pressure is realized.

Fluid Recommendations see F&A section.
**Hand Pumps**

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- Very compact
- Pump and release with the same lever
- Easily adjustable pressure setting
- Choice of hand or foot operation

**Do not use NPT fittings**

**CLAMPING:** Move pump lever downward to pump fluid, through a 40-degree stroke. Lever returns upward by spring force. Repeat until you reach the set pressure and the lever declutches.

**UNCLAMPING:** Lift pump lever 10 degrees upward against spring force to release clamping force instantly.

**CONSTRUCTION:** Totally self-contained power source. Virtually wearfree due to metallic seal on pump piston.

---

**Operating pressure range**

<table>
<thead>
<tr>
<th></th>
<th>0-7250 psi</th>
<th>0-3000 psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement per stroke (cu.in.)</td>
<td>.12</td>
<td>.24</td>
</tr>
<tr>
<td>Usable oil volume (cu.in.)</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Reservoir capacity (cu.in.)</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Relief valve adjustment range (psi)</td>
<td>150-7250</td>
<td>150-3000</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>16-27</td>
<td>16-27</td>
</tr>
<tr>
<td>Part No. with flange and hand lever</td>
<td>CLR-601-HP</td>
<td>CLR-401-HP</td>
</tr>
<tr>
<td>with flange and foot lever</td>
<td>CLR-602-HP</td>
<td>CLR-402-HP</td>
</tr>
<tr>
<td>Part No. with base and hand lever</td>
<td>CLR-603-HP</td>
<td>CLR-403-HP</td>
</tr>
<tr>
<td>with base and foot lever</td>
<td>CLR-604-HP</td>
<td>CLR-404-HP</td>
</tr>
<tr>
<td>Part No. with bracket and hand lever</td>
<td>CLR-605-HP</td>
<td>CLR-405-HP</td>
</tr>
<tr>
<td>with bracket and foot lever</td>
<td>CLR-606-HP</td>
<td>CLR-406-HP</td>
</tr>
<tr>
<td>Part No., pump only</td>
<td>CLR-600-HP</td>
<td>CLR-400-HP</td>
</tr>
</tbody>
</table>

Fluid Recommendations see F&A section.
Hand Pumps

- Two-stage pump for faster pressurization
- Easy pressure adjustment
- Automatic switching from low 850-psi stage to high 7250-psi stage
- Pump and release with the same lever

**Do not use NPT fittings**

CLAMPING: Move pump lever downward to pump fluid, through a 40-degree stroke. Lever returns upward by spring force. Repeat until you reach the set pressure and the lever declutches.

UNCLAMPING: Lift pump lever 10 degrees upward against force to release clamping force instantly.

CONSTRUCTION: Totally self-contained power source. Virtually wearfree due to metallic seal on pump piston.

| Two Stage | 7250 psi max | Single acting |

**Operating pressure range**

| Displacement per stroke up to 900 psi, Low Stage (cu. in.) | .73 |
| Displacement per stroke up to 7250 psi, High Stage (cu. in.) | .15 |
| Usable oil volume (cu. in.) | 50 |
| Reservoir capacity (cu. in.) | 60 |
| Relief valve adjustment range (psi) | 750-7250 |
| Weight (lbs) | 30 |

Part No. CLR-702-HP
Screw Pumps

7250 psi max
Single acting

- Compact pressure source
- Ideal for rotary tables or pallets where fluids supply lines are impractical
- Excellent for holding pressure while fixture is transferred
- Can be used in multiples for more fluid capacity
- May be operated with a power torque wrench (non-impact)
- 7250 psi pressure from 38 ft-lbs torque
**Do not use NPT fittings**

DESIGN CONSIDERATIONS:
1. Include a pressure gauge in the system (see F&A section).
2. All clamps and components must be leak free, so use only Roemheld products.
3. Since fluid capacity is limited, use only on small fixtures. For best results, clamps should use only 65% of total fluid capacity. Due to limited capacity, use only with smallest accumulator CLR-9606-102-PDA.
4. Systems must be bled carefully and designed to avoid air pockets. Include a separate fill plug on the cartridge mounted version, at the highest point in the system.
5. Mount block-type Screw Pump only horizontally with fluid fill port up.
6. For safety on palletized fixtures, use a control cylinder (F&A section) with a position sensor on the machine.

**Operating Pressure Range**

<table>
<thead>
<tr>
<th>Operating Pressure Range</th>
<th>psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total fluid capacity (cu. in.)</td>
<td>1.28</td>
</tr>
<tr>
<td>Fluid displacement per revolution (cu. in.)</td>
<td>0.6</td>
</tr>
<tr>
<td>Installation torque, manifold mounting (ft. lbs.)</td>
<td>58</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**INCH**

| A body thread | 1-1/2-16 |
| B Hex | 1/2 |
| Part No., compact block | CLR-900-SP |
| Part No., manifold mounted | CLR-901-SP |
| Part No., sealing washer | CLR-3000-343-SW |

**METRIC**

| A body thread | M38 x 1.5 |
| B Hex | SW 13 |
| Part No., compact block | CLR-8819-001-SP |
| Part No., manifold mounted | CLR-8819-101-SP |
| Part No., sealing washer | CLR-3000-343-SW |

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Hydraulic Intensifiers

7500 psi max
Single and double acting

Double-Acting Intensifier for Single-Acting Clamps
CLR-8753-200

Double-Acting Intensifier for Double-Acting Clamps
CLR-8753-201

Single-Acting Intensifier for Single-Acting Clamps
CLR-8753-202

FEATURES: Hydraulic intensifiers convert a given hydraulic pressure on the input side into a higher pressure on the output side. This allows using the comparatively low pressure of machine-tool hydraulics to pressurize a hydraulic clamping fixture with 4 times that pressure. Can be used for large fixtures as well as small, because clamps are initially charged by the lower input pressure, through a check valve in the piston. The high-pressure piston is only activated after the desired trigger pressure is reached.

Please contact engineering for additional information

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ROEMHELD
HILMA • STARK

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APPLICATION: The hydraulic intensifier converts a hydraulic pressure on the primary side (input) into a higher pressure on the secondary side (output).

This enables the use of the comparatively low pressure of machine tool hydraulics to pressurize a hydraulic cylinder with a correspondingly increased intensification ratio.

DESCRIPTION: The construction of the hydraulic intensifier corresponds to the principle of pressurizing areas of different sizes. Regulation of the high pressure at the secondary side is made by regulation of the low pressure side and is directly proportional.

First the intensifier delivers a high flow rate at a low pressure (displacement of the cylinders), with increasing counterpressure the intensifier switches automatically to pressure intensification. For unclamping, the cylinder is directly controlled with the low-pressure of the primary side (see example below).

FUNCTION: the oil is supplied through input IN via the check valves RV1, RV2, and DV to the high pressure output H and thereby to the cylinders. In this phase the intensifier is in rapid function. According to the intensification ratio the flow rate can be up to 10 liters/min. With increasing pressure in the cylinder the oscillating pump unit OP (pulsation) automatically functions. If the adjusted high-pressure is obtained, pulsation of the intensifier is stopped. Pulsation continues in case of dynamic application. Max. frequency of pulsation is 30 Hz.

To retract the cylinder, the internal check valve DV is controlled via port R and thereby free return through the intensifier is guaranteed.

IMPORTANT NOTES: The hydraulic oil must be perfectly filtered with particles not larger than nominally 10 micron. This is the reason why we offer a filter unit (part no. CLR-3887-087), which can be directly integrated in the tubing of the low-pressure side. If the intensifier will be used on uncoupled systems (no connection to the pressure generator) a pilot-controlled check valve should be mounted at the high-pressure side (consider min. control pressure for opening). For pilot-operated check valve, see valves section.

When designing an installation, pay attention that there can be leakage between the ports IN and R of the high-pressure intensifier.

Leakage rate approx. 50 cm³/min. When using the intensifier in uncoupled systems there will be a pressure increase in the unclamping line due to the leakage.

— Please contact us.
Hydraulic Intensifier

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FUNCTION: the oil is supplied through input IN via the check valves RV1, RV2, and DV to the high pressure output H and thereby to the cylinders. In this phase the intensifier is in rapid function. According to the intensification i the max. flow rate can be up to 10 liters/min. With increasing pressure in the cylinder the oscillating pump unit OP (pulsation) automatically functions. If the adjusted high-pressure is obtained, pulsation of the intensifier is stopped. Pulsation continues in case of dynamic application. Max. frequency of pulsation is 30 Hz.

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<table>
<thead>
<tr>
<th>Intensification Ratio</th>
<th>3.2</th>
<th>4.0</th>
<th>4.8</th>
<th>6.2</th>
<th>7.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. flow rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-pressure side Qᵢ (cu.in/min)</td>
<td>490</td>
<td>490</td>
<td>490</td>
<td>490</td>
<td>490</td>
</tr>
<tr>
<td>Max. flow rate</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>High pressure side Qᵢ (cu.in/min)</td>
<td>2250</td>
<td>1800</td>
<td>1500</td>
<td>1100</td>
<td>950</td>
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<tr>
<td>Max. operating pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-pressure side Pᵢ psi</td>
<td>7250</td>
<td>7250</td>
<td>7250</td>
<td>7250</td>
<td>7250</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-pressure side Pᵢ psi</td>
<td>22</td>
<td>22</td>
<td>22</td>
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<td>22</td>
</tr>
<tr>
<td>Weight (lbs)</td>
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<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
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<tr>
<td>Part No.</td>
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<td>CLR-8755-140</td>
<td>CLR-8755-148</td>
<td>CLR-8755-162</td>
<td>CLR-8755-175</td>
</tr>
</tbody>
</table>
OUR STORY

CARR LANE ROEMHELD MFG. CO.

In 1982 an independent joint venture was established to marry the proven product expertise of Roemheld with the marketing know-how and distribution network of Carr Lane Manufacturing. This partnership now offers to the American manufacturer the complete benefits of the finest in international power workholding combined with the best in local service and support.

After initial tests by many companies, both small and large, the word had spread confirming the quality and reliability obtained when using Roemheld Power Workholding products.

We invite you to review this catalog in depth and to call us with any questions about your applications. We at Carr Lane Roemheld welcome the opportunity to help you manufacture your quality product in the most productive way possible — with the world’s most dependable workholding equipment.

Founded in 1952 in St. Louis, Missouri, by Earl Walker to make standardized tooling components, Carr Lane Manufacturing has grown, through constant innovation, to become the foremost supplier to the American Machine Tool Industry. Now the most complete line available, Carr Lane Mfg. offers Jig and Fixture Components, Toggle Clamps, Hoist Rings, Alignment Pins, Drill Bushings, Spring Plungers, and Modular Fixturing. Setting the standard for American Tool Engineers, Carr Lane Manufacturing’s catalog is recognized as the engineer’s tooling reference.

Drawing upon a centuries-old tradition of German craftsmanship, metalworking was already well established in Laubach, Germany when the Roemheld family began to manage operations in 1870. Development of the hydraulic workholding components began in the early 1960’s and soon grew to dominate the European market.

Today, Roemheld GmbH is by far the world leader in this productivity-enhancing technology, offering a tremendous range of types and sizes of superior design and the highest quality.

SUCCESS GUARANTEED

Find out the advantages of our Quality Guarantee when you work with us!

Carr Lane Roemheld knows your power workholding system needs to be of the highest quality.

That’s why, if you work with us, you’ll get the best system, and top quality results.

We stand behind our products, and provide you with the excellent service you need to remain competitive in today’s manufacturing environment.

SUCCESS GUARANTEED

REDUCE SET-UP AND DOWNTIME!

For Zero Point Mounting, See Pages 114-116

For Machine Vises, See Pages 94-111

PRECISION MACHINE VISES

INCREASE PRODUCTIVITY

Use in Conjunction with the Zero Point Mounting System for Faster, More Accurate Fixture Set Ups

REDUCE SET-UP AND DOWNTIME!

Zero Point Mounting System for Quick Change Fixturing

This comprehensive system utilizes clamping components and insertion nipples, which provide an immediate zero point orientation.

• Reduce set up time by as much as 90% with zero point mounting
• Existing fixtures can be easily adapted
• Highly accurate positioning and repeatability
• Increased productivity
• Fast payback
• Set-up times slashed
• Fixture life extended

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