Achieving Optimum Balance for Maximum Value

# HD Process Pumps

Heavy Duty Pumps for Tough Applications

TUTHILL Pump Group

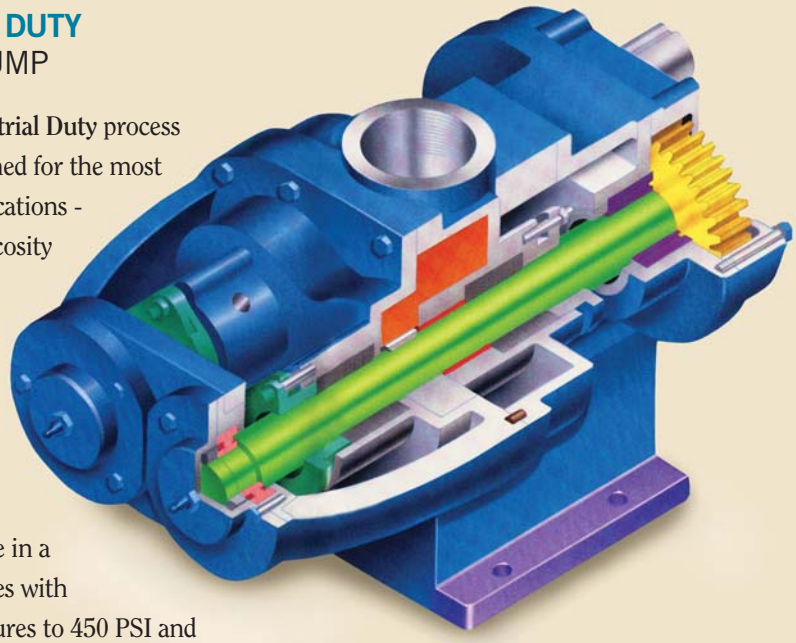
Engineered Solutions

# HD PROCESS PUMPS

Tuthill offers the HD series for the most demanding applications – slurries, high viscosity products, suspended solids, concentrated acids, chemicals, high temperature liquids, sludge, resins, sewage and scum, paints, polymers, plastics, pharmaceuticals, foods, and shear sensitive fluids.

This Rotary Positive Displacement, Circumferential Piston pump is Tuthill's severe-duty problem solver. Heavy-Duty Construction provides longer life in the toughest pumping applications.

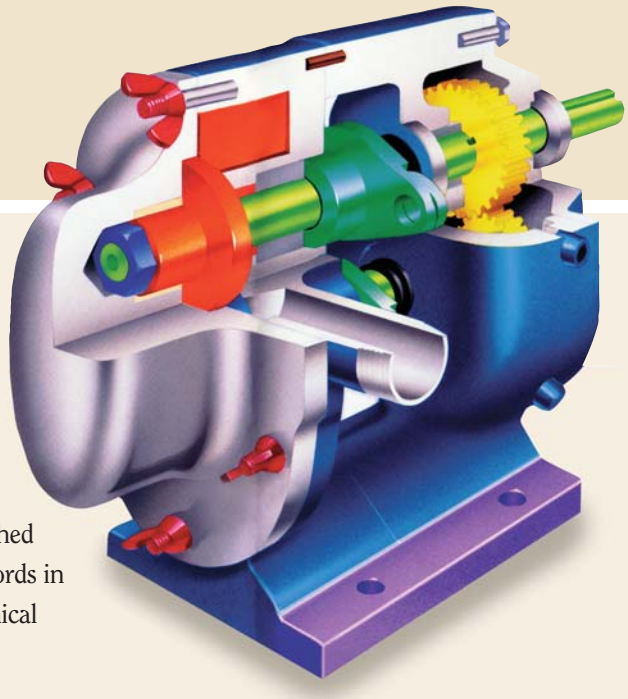
## TUTHILL **INDUSTRIAL DUTY** PROCESS PUMP



Tuthill HD **Industrial Duty** process pumps are designed for the most demanding applications - slurries, high viscosity fluids, suspended solids, chemicals, polymers, pharmaceuticals, foods, and shear sensitive fluids.

They are available in a wide range of sizes with differential pressures to 450 PSI and viscosities to 4,400,000 cst.

## TUTHILL **STANDARD DUTY** PROCESS PUMP

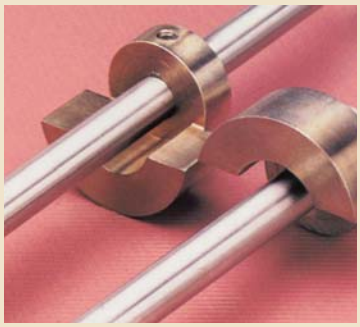


Tuthill **Standard Duty** HD process pumps were developed particularly for sanitary applications and have established outstanding performance records in the food processing and chemical processing markets.

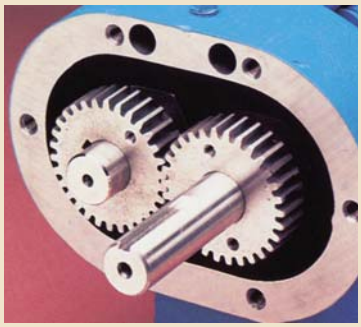
The faceplate and impellers of Tuthill's Standard Duty HD process pumps may be quickly removed for easy cleaning and inspection without removal of the process piping. Since the bearing surfaces are located within the pump faceplate, there are only two stuffing boxes, fitted with Teflon® impregnated graphite packing, pure Teflon® packing, or mechanical seal. All materials used in 316 stainless steel pumps are compatible with food products and are USDA approved.

- External timing gears in separate oil filled reservoir provide safe, non-contact synchronous impeller action.
- Oil lubricated roller bearings provide support for maximum radial loading in models 70A, 120A, 330 and 600.
- Constant diameter shafts (no steps in torque transmission areas) for maximum strength and minimum deflection.
- Housing bushing, positioned under maximum radial load, assuring minimum shaft deflection.
- Packing and stuffing box is standard construction. Packing gland is split and constructed in 316SS. Pumps can also be outfitted with mechanical seals.
- Impellers provided in single lobe or double lobe design.
- No metal to metal contact in fluid chamber.
- Housing and gearcase are foot mounted to minimize distortion and vibration.
- Heavy duty, grease lubricated, double-row ball bearings for combined radial loading and axial positioning.
- Casings and gearcase are precision machined and dowel pin aligned. Procedure results in full interchangeability should field replacement be required.

**DOUBLE LOBE IMPELLERS**
Available for higher operating speeds.

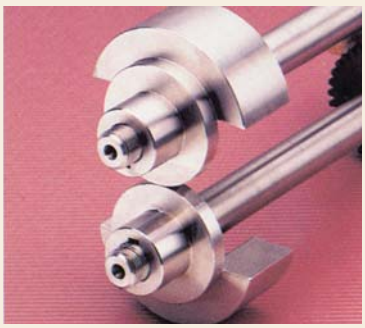


**SINGLE LOBE IMPELLERS**
Single lobe impellers provide maximum strength for highly viscous fluids and slurries, and high discharge pressure as well as minimal shear characteristics on the fluids.

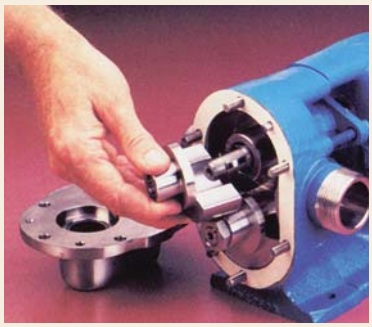


**EXTERNAL TIMING GEARS**
Timing gears are separated from the fluid chamber, thus eliminating a source of agitation and breakdown of the material being pumped.

- External timing gears in separate oil filled reservoir provide safe, synchronous impeller action.
- Constant diameter shafts (no steps in torque transmission areas) for maximum strength and minimum deflection.
- Housing bushing, positioned under maximum radial load, assuring minimum shaft deflection.
- Packing and stuffing box is standard construction. Packing gland is split and constructed in 316SS. Pumps can also be outfitted with mechanical seals.
- Single lobe impellers provide maximum strength and minimum shear contact in fluid chamber.
- No metal to metal contact in the fluid chamber.
- Housing and gearcase are foot mounted to minimize distortion and vibration.
- Casings and gearcase are precision machined and dowel pin aligned. Procedure results in full interchangeability should field replacement be required.
- Faceplate (cover) accessible and easily removable for easy cleaning and inspection.
- Wingnuts allow easy removal of impeller for cleaning and inspection.
- Faceplate bushings provide simple bearing supports for the impellers - no cantilevered shafts as in some competitive designs.



**STANDARD DUTY SHAFT/IMPELLER**



**STANDARD DUTY PUMP FLUID CHAMBER**
Faceplate and impellers may be quickly removed for easy cleaning and inspection. An obvious requirement for sanitary applications, this feature also makes Tuthill's Standard Duty process pumps valuable in industrial applications involving color changes, or where products are being processed in batches.

**HIGH VISCOSITY** Tuthill HD pumps can handle materials with viscosities to 4,400,000 cst...including silicones, adhesives, pastes, slurries, suspended solids, semi-solids, etc.

**HIGH PRESSURE** Some models can be furnished suitable to operate at differential pressures to 450 psi.

**RUN DRY WITHOUT DAMAGE** The slow positive movement of the impellers and the lack of contact between rotating and stationary elements in the fluid chamber allows HD pumps to run dry without damage. They can operate efficiently where other positive displacement pumps may fail.

**HIGH TEMPERATURE** Pumps can be furnished suitable for use with fluid temperatures to 525°F.

**HIGH VACUUM** Tuthill HD pumps are self-priming and able to operate under high vacuum/low NPSH conditions as well as pressurized inlet conditions.

**EXTERNAL BEARING CHAMBER** Material being pumped through the fluid chamber is separated from lubricated bearings or gear lubricant chambers, eliminating contamination.

**SHAFT SEALS** Standard shaft sealing is Teflon® impregnated graphite packing. Pumps are also available with lantern rings, special packings, and triple lip cartridge or mechanical seals.

**EXTERNALLY TIMED GEARS** Timing gears are separated from the fluid chamber, thus eliminating a source of agitation and breakdown of the material being pumped as well as providing a clean source of gear lubrication.

**SLOW SPEED FOR LONGER WEAR AND LOWER SHEAR** Slow speed operation of these pumps creates slow internal velocities which result in increased wear life, impart less shear to the product, and enable the pump to handle high viscosity fluids.

**REVERSIBLE** The direction of flow may be reversed simply by changing the direction of rotation.

**MATERIALS OF CONSTRUCTION** HD Process pumps are provided as standard in 316 stainless steel or ductile iron. Exotic alloys are also available on a special order basis.

## NO METAL-TO-METAL CONTACT IN THE COMPLETELY ISOLATED FLUID CHAMBER

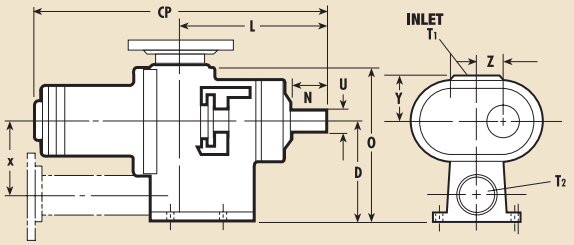

1. Top impeller has started suction cycle and is completing the discharge cycle. Lower impeller is transferring liquid from the suction to the discharge side of the pump.
2. Top impeller completes suction cycle. Lower impeller starting to discharge.
3. Top impeller is transferring liquid from suction to discharge. Lower impeller has started the suction cycle and is finishing the discharge cycle.
4. Top impeller starting discharge cycle. Lower impeller finishing suction cycle.

## STANDARD MATERIALS OF CONSTRUCTION

| | Industrial | Standard |
|---|---|---|
| Housing | Ductile Iron | Ductile Irol |
| | 316 Stainless Steel | 316 Stainless Steel |
| Housing Bearing | DU* | Bronze |
| | Carbon | Carbon |
| Faceplate | Ductile Iron | Ductile Iron |
| | 316 Stainless Steel | 316 Stainless Steel |
| Faceplate Bearing | Outboard Ball Bearing | Ductile Iron |
| | | Carbon |
| Impellers | Ductile Iron | Ductile Iron |
| | 316 Stainless Steel | 316 Stainless Steel |
| Shafts | Hardened 1141 Carbon Steel | Hardened 1141 Carbon Steel |
| | 316 Stainless Steel | 316 Stainless Steel |
| Gearcase | Gray Iron | Gray Iron |

*BRONZE IN MODEL 330

## MODELS 30A, 2A, 3A, 70A, 120A & 330



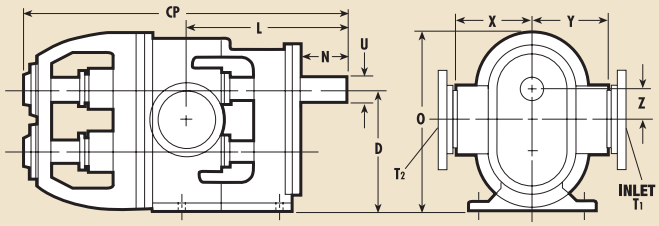

| MODEL | PORT SIZE T1 IN. | T1 MM | T2 IN. | T2 MM | PER 100 REV. GAL. | LTR. | MAX. DIFF. PRESSURE ▲ PSI | BAR | MAX. RPM PUMPING ELEMENT ▲ | CP IN. | CP MM | D IN. | D MM | L IN. | L MM | N IN. | N MM | O IN. | O MM | U IN. | U MM | X IN. | X MM | Y IN. | Y MM | Z IN. | Z MM | WEIGHT LBS. | KG. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30A ♦ | 1½ | 38 | 1½ | 38 | 5.5 | 21 | 150 | 10.3 | 450 | 18¾ | 476 | 5¾ | 146 | 10⅝ | 270 | 2⅛ | 54 | 8⅞ | 225 | 1 | 25 | 4 | 102 | 3⅛ | 79 | 1¼ | 32 | 100 | 45 |
| 2A ♦ | 2 | 51 | 2 | 51 | 15.0 | 57 | 150 | 10.3 | 450 | 24¾ | 629 | 8¼ | 210 | 14⅝ | 371 | 3⅛ | 79 | 12⅝ | 321 | 1⅜ | 35 | 5¾ | 146 | 4⅜ | 111 | 2 | 51 | 250 | 113 |
| 3A ♦ | 3 | 76 | 3 | 76 | 30.0 | 114 | 150 | 10.3 | 450 | 24¾ | 629 | 8¼ | 210 | 13¾ | 349 | 3⅛ | 79 | 12⅝ | 321 | 1⅜ | 35 | 5¾ | 146 | 4⅜ | 111 | 2 | 51 | 270 | 122 |
| 70A ♦ | 3 | 76 | 2 | 51 | 15.0 | 57 | 450 | 31.0 | 450 | 24⅜ | 619 | 8½ | 216 | 12⅝ | 321 | 3½ | 89 | 13¼ | 337 | 1⅞ | 48 | 6¼ | 159 | 4¾ | 121 | 2½ | 64 | 280 | 127 |
| 120A♦ | 4 | 102 | 3 | 76 | 30.0 | 114 | 450 | 31.0 | 450 | 24⅜ | 619 | 8½ | 216 | 12⅜ | 314 | 3½ | 89 | 13¼ | 337 | 1⅞ | 48 | 6¼ | 159 | 4¾ | 121 | 2½ | 64 | 300 | 136 |
| 330 | 5 | 127 | 4 | 102 | 70.0 | 265 | 450 | 31.0 | 450 | 29⁵/₁₆ | 745 | 10¾ | 273 | 14¼ | 362 | 4 | 102 | 16⅞ | 429 | 2¼ | 57 | 7⅞ | 200 | 6⅛ | 156 | 3³/₁₆ | 81 | 550 | 249 |

▲ **CAUTION:** THE FLUID BEING PUMPED MUST ALWAYS BE SPECIFIED. APPLICATIONS ABOVE 200 PSI/13.8 BAR, 350ºF/177ºC, OR 200 RPM MUST BE REVIEWED BY TUTHILL TO INSURE PROPER PUMP SELECTION.

♦ AVAILABLE WITH BUILT-IN BY-PASS

★ SUCTION AND DISCHARGE PORTS CAN BE REVERSED BY CHANGING SHAFT ROTATION

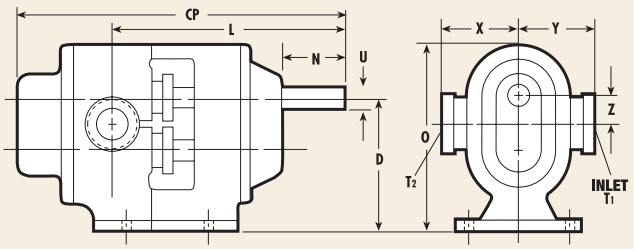
## MODEL 600




| MODEL | PORT SIZE T1 IN. | T1 MM | T2 IN. | T2 MM | PER 100 REV. GAL. | LTR. | MAX. DIFF. PRESSURE ▲ PSI | BAR | MAX. RPM PUMPING ELEMENT ▲ | CP IN. | CP MM | D IN. | D MM | L IN. | L MM | N IN. | N MM | O IN. | O MM | U IN. | U MM | X IN. | X MM | Y IN. | Y MM | Z IN. | Z MM | WEIGHT LBS. | KG. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600 | 6 | 152 | 6 | 152 | 148.0 | 560 | 450 | 31.0 | 450 | 36⁹/₁₆ | 929 | 13¾ | 349 | 18⁹/₁₆ | 471 | 5⁷/₁₆ | 138 | 20¼ | 514 | 2½ | 64 | 9 | 229 | 9 | 229 | 3½ | 89 | 900 | 408 |

▲ **CAUTION:** THE FLUID BEING PUMPED MUST ALWAYS BE SPECIFIED. APPLICATIONS ABOVE 200 PSI/13.8 BAR, 350ºF/177ºC, OR 200 RPM MUST BE REVIEWED BY TUTHILL TO INSURE PROPER PUMP SELECTION.

## MODELS 5A, 10, 16, 25A, 65, 125A




| MODEL | PORT SIZE T1 IN. | T1 MM | T2 IN. | T2 MM | PER 100 REV. GAL. | LTR. | MAX. DIFF. PRESSURE PSI | BAR | MAX. RPM PUMPING ELEMENT | CP IN. | CP MM | D IN. | D MM | L IN. | L MM | N IN. | N MM | O IN. | O MM | U IN. | U MM | X IN. | X MM | Y IN. | Y MM | Z IN. | Z MM | WEIGHT LBS. | KG. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5A ♦ | 1 | 25 | 1 | 25 | 0.8 | 3 | 200 | 13.8 | 600 | 11¹³/₁₆ | 300 | 5³/₁₆ | 132 | 8¹⁵/₁₆ | 227 | 2¹/₁₆ | 52 | 7⁵/₁₆ | 186 | ¾ | 19 | 3⁵/₁₆ | 84 | 3⁵/₁₆ | 84 | 1 | 25 | 35 | 16 |
| 10 ♦ | 1 | 25 | 1 | 25 | 1.3 | 5 | 200 | 13.8 | 600 | 11¹³/₁₆ | 300 | 5³/₁₆ | 132 | 8¹³/₁₆ | 227 | 2¹/₁₆ | 52 | 7⁵/₁₆ | 186 | ¾ | 19 | 3⁵/₁₆ | 84 | 3⁵/₁₆ | 84 | 1 | 25 | 40 | 18 |
| 16 ♦ | 1½ | 38 | 1½ | 38 | 2.8 | 11 | 200 | 13.8 | 600 | 12⅞ | 327 | 5³/₁₆ | 132 | 9¼ | 235 | 2½ | 64 | 7⁵/₁₆ | 186 | ¾ | 19 | 3⁵/₁₆ | 84 | 3⁵/₁₆ | 84 | 1 | 25 | 45 | 20 |
| 25A | 1½ | 38 | 1½ | 38 | 5.5 | 21 | 200 | 13.8 | 450 | 14¼ | 362 | 6 | 152 | 10⅜ | 264 | 3 | 76 | 8¾ | 222 | 1 | 25 | 4 | 102 | 4 | 102 | 1¼ | 32 | 65 | 29 |
| 65 | 2 | 51 | 2 | 51 | 15.0 | 57 | 200 | 13.8 | 450 | 20⅞ | 530 | 9½ | 241 | 15½ | 394 | 4¹⁵/₁₆ | 125 | 13½ | 343 | 1⅜ | 35 | 5⅝ | 143 | 5⅝ | 143 | 2 | 51 | 180 | 81 |
| 125A | 2½ | 64 | 2½ | 64 | 25.0 | 95 | 200 | 13.8 | 450 | 21¹¹/₁₆ | 551 | 9½ | 241 | 15⁵/₁₆ | 389 | 4¹⁵/₁₆ | 125 | 13 | 330 | 1⅜ | 35 | 5⅝ | 143 | 5⅝ | 143 | 2 | 51 | 215 | 97 |

**CAUTION:** THE FLUID BEING PUMPED MUST ALWAYS BE SPECIFIED

♦ AVAILABLE WITH BUILT-IN 3:1 GEAR REDUCTION.

ALL MODELS AVAILABLE WITH BUILT-IN BYPASS.

TUTHILL
Pump Group

www.tuthillpump.com

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visit www.tuthillpump.com/distributors

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