

CTS SELF-PRIMING CENTRIFUGAL PUMPS

2020 | 1



CTS Self-priming Pumps

The self-priming feature allows to use the pump in applications where standard CT pumps do not prove useful.

CTS is an open impeller self-priming centrifugal pump, manufactured from AISI 316L stainless steel.

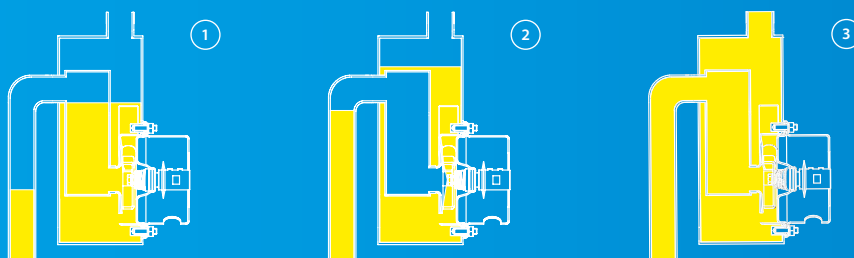
CTS H with excellent electro polished surfaces, FDA approved seals, high finish and mechanical strength, meet the demands from food and sanitary applications.

CTS I with AISI 316L chemical resistance and mechanical strength is a reliable choice for industrial applications.

The self-priming feature allows to use the pump in applications where standard CT pumps do not prove useful. The CTS pump is capable of creating up to 4,5 m of suction lift.



Working principle



- (1) In order for the priming action to be achieved, the pump casing has to be filled with liquid to a level above the impeller.
- (2) When the pump starts its operation, it is evacuating the air from the suction line thus creating negative pressure and lifting the product. The air is mixed with the liquid in the pump casing. The air escapes the casing through the discharge line while the liquid returns to the impeller as it has a higher specific gravity than the liquid/air mixture.
- (3) This process continues until the suction line is completely free of air and the pump can operate as a standard centrifugal pump.

Self-priming vs. standard centrifugal pump comparison

The CTS pump is a great alternative to our standard CT pumps when the self-priming ability is needed.

By replacing only one element - the casing with a self-priming chamber – we can achieve various advantages for our pump.

The pump can now suck the liquid from a lower level than it is positioned or handle liquids with high content of air.

The construction of the pump chamber ensures that there is always enough liquid left inside in order to prime the pump after stoppage.



CT casing

CTS casing

Wide range of applications

The CTS-I series has a very wide range of applications – from transfer of water, to pumping of mild chemicals. Together with the hygienic CTS - H series, the number of applications within food, beverage and pharmaceutical industries increases significantly.



Food & beverage

CTS-H series

Transfer of various ingredients and products like edible oil, flavour, alcohol, dairy products and juice. CTH pumps are also a perfect choice for many applications like transfer of CIP liquids, detergents and water.



Chemical & pharma

CTS-I & CTS-H series

Transfer of a variety of mild chemicals and solvents.



Mechanical industry

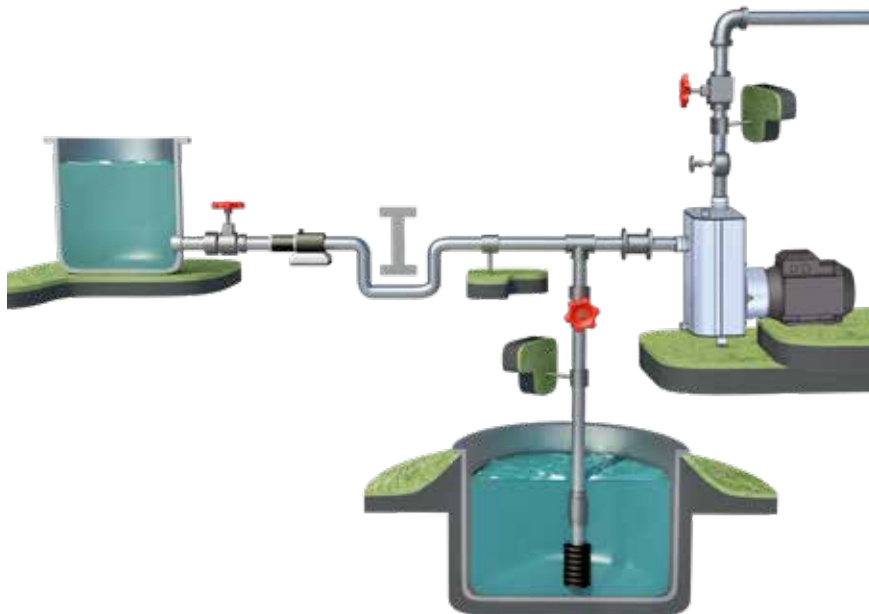
CTS-I series

Handling of oil, lubricants, coolants and detergents etc.

Features & Benefits

- ✓ Wide range of optional executions: lubricated seal for safety, foot valve for quicker starting after stoppage of the pump, appropriate for hygienic applications (CTS H series).
- ✓ Easy installation and maintenance. Only the suction pipe has to be immersed and the pump can be located at a convenient spot. Disassembly of the pump can be done without interfering into the piping.
- ✓ No need for additional pumps or equipment for self-priming.
- ✓ Replace only one part on your CT pump to achieve the self-priming ability.
- ✓ Ideal for highly aerated liquids.

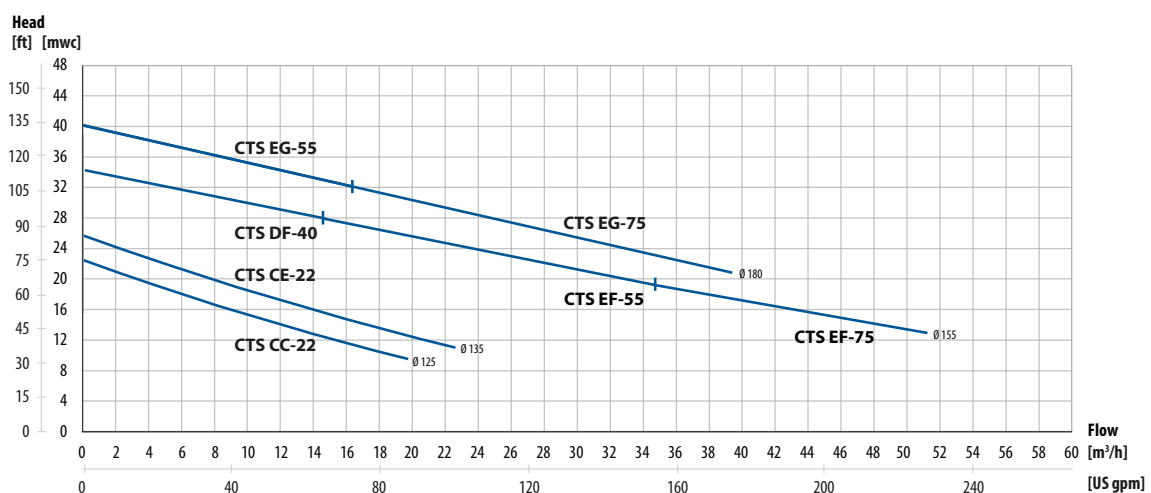
Installation example



Performance curves

The performance curves are based on water. ($T=20\text{ }^{\circ}\text{C}$, $p=1000\text{ kg/m}^3$, $n=2900\text{ rpm}$)

With 2900 rpm motor



CTS Pump code

Tapflo centrifugal self-priming pump Pump execution Casing size Impeller size Pump options Motor power Motor options

CTS **I** **C** **C** - **1CGV3F** - **02** **P**

* = Ask us for complete pump code with all available options and executions. Changes reserved without notice

CTS pumps execution versions

 **Standard**  **Option**

* Certificate delivered with the pump (for other- on request)



USP VI approved materials

U.S. Pharmacopeial Convention (USP) class I to VI defines how a plastic or rubber material may be exposed of human tissue. Class VI requires the most stringent testing and such materials may be used for example in implant devices.

CTS-H

CTS-I



FDA §21 CFR 177 materials

FDA (U.S. Food and Drug Administration) §21 CFR 177 lists polymers, e.g. rubber and plastic materials approved for equipment in contact with food products.



EN 10204

EN 10204 material traceability

The EN 10204 norm gives you a checklist and traceability of materials used in the equipment. 2.1 is a general statement of compliance with material specifications, while 3.1 provides specific track records all the way to the steel mill batch (normally only on metals in contact with the product).



EC 1935/2004 regulation

This EU regulation applies to all food contact materials, e.g. metals, plastics and rubber materials. It requires that these materials are safe, are labeled with the glass-and-fork symbol, are traceable throughout the production chain (according to above EN 10204) and that they are produced according to good manufacturing practice (GMP).



CE compliant

A product classified as machinery that carries the CE mark fulfill the essential health and safety requirements of the EC Machinery Directive 2006/42/EEC.

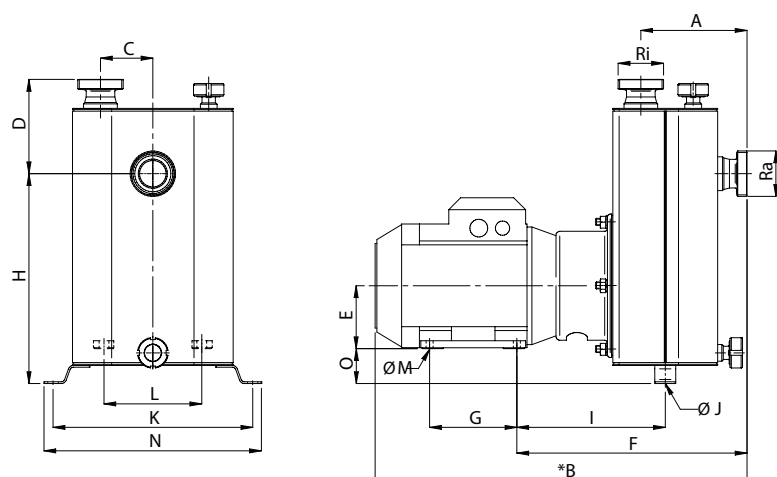


ATEX Directive 94/9/EC

Equipment intended and approved for safe operation in potentially explosive atmospheres. The equipment is divided in main groups, categories, apparatus groups and temperature classes to define its suitability in the actual zone.



CTS pumps - technical data



Connection dimensions

| Connection dimensions BSPT (male thread) | | |
|---|--------|--------|
| Model | Ra | Ri |
| CTSI C.. | 1 1/2" | 1 1/2" |
| CTSI D.. | 2 1/2" | 2" |
| CTSI E.. | 2 1/2" | 2" |

| Connection dimensions DIN 11851 (male thread) | | |
|--|------|------|
| Model | Ra | Ri |
| CTSH C.. | DN40 | DN40 |
| CTSH D.. | DN65 | DN50 |
| CTSH E.. | DN65 | DN50 |

General dimensions

Note: Dimensions in table are the same for CTS-H and CTS-I

| Model | Motor power (kW) | IEC motor size | A | *B | C | D | E | F | G | H | I | ØJ | K | L | ØM | N | O |
|-----------|------------------|----------------|-----|-------|----|-----|-----|-------|-----|-------|-------|----|-----|-----|----|-----|----|
| CTS CC-22 | 2.2 | 90 | 152 | 532,5 | 75 | 135 | 90 | 329,5 | 125 | 300,5 | 212,5 | 9 | 286 | 140 | 10 | 311 | 50 |
| CTS CE-22 | 2.2 | 90 | 152 | 532,5 | 75 | 135 | 90 | 329,5 | 125 | 300,5 | 212,5 | 9 | 286 | 140 | 10 | 311 | 50 |
| CTS DD-40 | 4.0 | 112 | 170 | 641 | 90 | 120 | 112 | 378 | 140 | 377 | 243 | 9 | 336 | 190 | 12 | 362 | 55 |
| CTS DF-40 | 4.0 | 112 | 170 | 641 | 90 | 120 | 112 | 378 | 140 | 377 | 243 | 9 | 336 | 190 | 12 | 362 | 55 |
| CTS EF-55 | 5.5 | 132 | 170 | 692 | 90 | 120 | 132 | 414 | 178 | 377 | 279 | 9 | 336 | 216 | 12 | 362 | 35 |
| CTS EG-55 | 5.5 | 132 | 170 | 692 | 90 | 120 | 132 | 414 | 178 | 377 | 279 | 9 | 336 | 216 | 12 | 362 | 35 |
| CTS EF-75 | 7.5 | 132 | 170 | 692 | 90 | 120 | 132 | 414 | 178 | 377 | 279 | 9 | 336 | 216 | 12 | 362 | 35 |
| CTS EG-75 | 7.5 | 132 | 170 | 692 | 90 | 120 | 132 | 414 | 178 | 377 | 279 | 9 | 336 | 216 | 12 | 362 | 35 |

*This dimension may vary depending on motor brand

Materials, data and limits

| Model | CTS-H | CTS-I |
|-----------------|---|---|
| Casing | Stainless steel AISI 316L electro polished Ra <0.8 | Stainless steel AISI 316L glass blast |
| Impeller | Stainless steel AISI 316L electro polished Ra <0.8, open (standard) or optional semi open type | Stainless steel AISI 316L glass blast, open (standard) or optional semi open type |
| Mechanical seal | Single ceramic/graphite (standard), SiC/SiC or SiC/graphite optional with oil lube | Single ceramic/graphite (standard), SiC/SiC or SiC/graphite, optional with oil lube |
| O-rings | EPDM FDA requirements compliant (standard), FEP/silicone FDA requirements compliant or FKM FDA requirements compliant | EPDM (standard), FKM, FEP/silicone or NBR |
| Motor | IP55, IEC frame B3/B14 (B3 on long coupled version). Available with ATEX cat 2 or 3, Eex e or Eex d motor | |
| Pressure rating | PN 2,5 bar (CTS C) at 20°C; PN 4 bar (CTS D,E) at 20°C | |
| Temperature | max 90°C | |
| Viscosity | max ~200 cSt | |
| Particles | max diameter is 6 mm (with standard open impeller), bigger if soft particles | |

Options and special executions

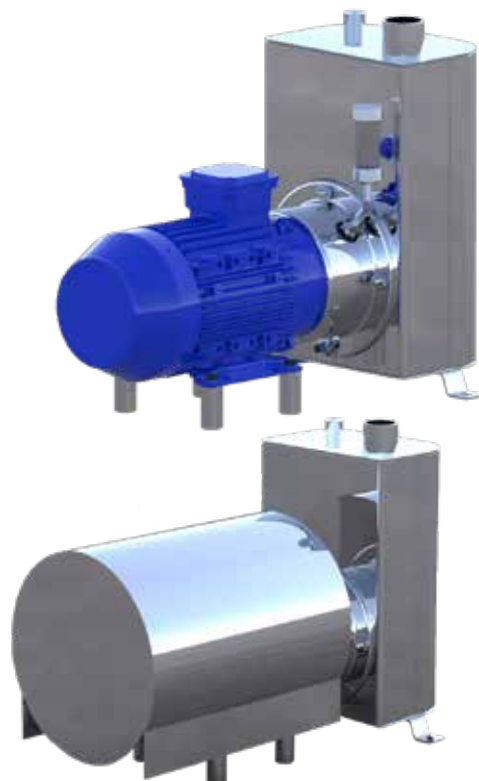
Buffer fluid system (CTS-I and CTS-H)

A great option when the product tends to solidify or crystalize.

A lube reservoir is connected to the air side of the mechanical seal.

Hygienic shroud (CTS-H)

The hygienic motor shroud in polished AISI 316L, protects the motor from spraying water during pump cleaning procedure.

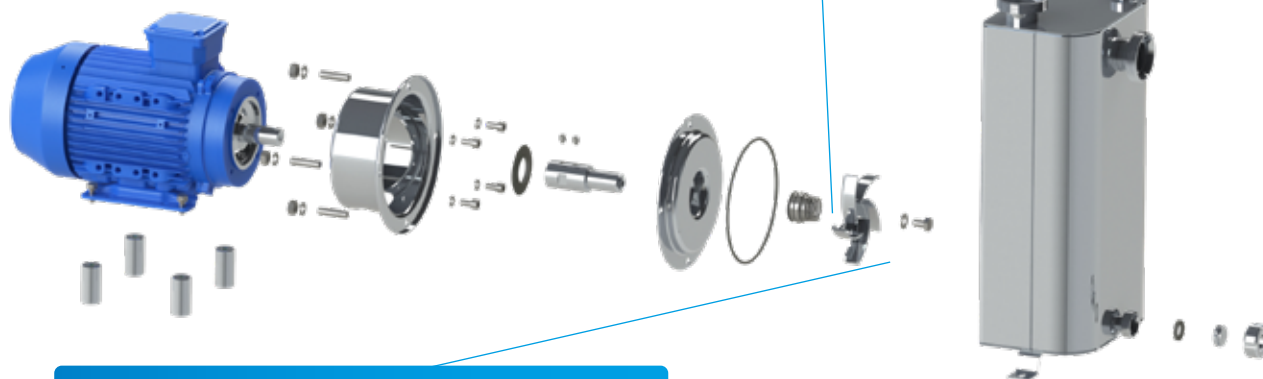


Ingenious design

A very simple and ingenious design, easy and quick maintenance, in many cases completely maintenance free. The effect is very short down time and extremely low maintenance costs.

Mechanical Seal

Standard single mechanical seal provides a wide range of seal face materials - ceramic, graphite, SiC and o-rings in EPDM, FKM or FEP.



The impeller

The open impeller is insensitive for solids (max 6 mm).
Semi open impeller for heavy duty applications is available as option

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