

# Hydratech Industries

Fluid Power

# CM250-CM315

Offshore and Marine Cylinder Program

# Hydratech Industries

## Fluid Power



## Global specialists in fluid power

### From massive scale to critical detail

Hydratech Industries Fluid Power is a market leader in hydraulic cylinder design and manufacturing with more than 35 years' experience designing and building cylinders for offshore, marine, mining and industrial applications.

Hydratech Industries Fluid Power is a part of Hydratech Industries. Based in Denmark, Hydratech Industries specializes in developing, designing and manufacturing hydraulics and cooling solutions for the wind turbine industry, and hydraulic cylinders for offshore, marine and industrial applications. In addition, we provide service and repair for these industries.

Hydratech Industries has production facilities and service workshops in Denmark, USA, China and India, and additional service centers in Norway, Dubai and Brazil. We also have a sales office in Singapore.

We employ approximately 600 people at our locations worldwide.

## Hydratech Industries Global Network

### Denmark

#### Hydratech Industries Fluid Power Manufacturing

Sigencevej 2  
9760 Vraa  
E-mail: [fluiddenmark@hydratech-industries.com](mailto:fluiddenmark@hydratech-industries.com)  
Tel: +45 98 98 02 00

#### Hydratech Industries Fluid Power Service and Repair Center

Sigencevej 4  
9760 Vraa  
E-mail: [fluiddenmark@hydratech-industries.com](mailto:fluiddenmark@hydratech-industries.com)  
Tel: +45 88 24 62 50

### USA

#### Hydratech Industries Fluid Power Manufacturing, Service and Repair

P.O. Box 2618  
22955 McAuliffe Dr.  
Robertsdale, AL 36567  
E-mail: [usa@hydratech-industries.com](mailto:usa@hydratech-industries.com)  
Tel: +1 251-947-5300

### China

#### Hydratech Industries Fluid Power Manufacturing, Service and Repair

No. 53 Jiepu Rd.  
Shengpu Development Zone  
Suzhou SIP 215 126  
E-mail: [china@hydratech-industries.com](mailto:china@hydratech-industries.com)  
Tel: +86 512 6282 3668

### Singapore

#### Hydratech Industries Fluid Power Sales Office, Service and Repair Center

No. 104, Westpoint Bizhub, Tuas South Avenue 2  
Singapore 637157  
Tel: +65 6271 8018

### Norway

#### Hydratech Industries Fluid Power Service and Repair

Dalegata 135  
N/6518 Kristiansund  
Tel: +47 99 36 48 95

### South Korea

#### Hydratech Industries Fluid Power Service and Repair Partner Location

891 Tamnip-dong, Yueseong-gu,  
305-510 Daejeon  
Tel: +45 88 24 62 50

# Standard Program CM250 and CM315

## Flexible standard cylinders adapted to your specific needs

Hydratech Industries' standard hydraulic cylinder solutions for marine and offshore applications provide added value by reducing the engineering and lead times required for a custom cylinder.

### Use for a wide range of applications

Our standard cylinder designs are available with several different piston rod sizes and materials, as well as a number of flange and yoke solutions, depending on the end use of the cylinders. These cylinders are the perfect solution for a wide variety of applications in marine and offshore environments.

Working with all classification societies, we have teamed with DNV for our standard program cylinders. Having inventory on the shelf and pre-approval from DNV results in faster delivery, and best of all, a product with a proven track record.

The following pages describe in detail our CM250 and CM315 standard cylinders. Contact us today to let us help you find the hydraulic cylinder solutions you have been seeking.

**Besides our standard range of cylinders, we can design and manufacture completely customized cylinders and accumulators for large or small projects.**

**Double piston high and low pressure accumulator**



*For heave compensated cranes and winches.*

**Twin, triple or telescopic cylinder**



*Short built-in length and cost effective for long strokes.*

**Motion compensation cylinder assemblies**



*Wire line riser tensioners.  
Production riser tensioners.  
Drill string compensators.*

**Configure your own cylinder in our web based Design Online tool on our website:  
[www.hydratech-industries.com](http://www.hydratech-industries.com)**



# CM250

## Offshore and Marine applications

CM250 is a double-acting cylinder designed to withstand the environmental and uptime demands in offshore and marine applications.



- 250 bar working pressure
- Piston dia 25 to 400 mm and stroke 8000 mm
- DNV type approved design
- Multiple mountings and options
- Length transducer ATEX or IP class- all signals
- 3D models through web based Design Online tool
- Proven, robust and reliable design and built quality

*Used typically on drilling equipment, cranes, lifting equipment, LARS, davits, pipe laying, chain jack, etc.*



# CM315

## Offshore and Marine applications

CM315 is a double-acting cylinder designed for demanding offshore and marine heavy duty applications.



- 315 bar working pressure
- Piston dia 200 mm to 750 mm and stroke 8000 mm
- Fork or ear mounting
- Advanced seal solutions
- 3D models through web based Design Online tool
- Proven, robust and reliable design and built quality

*Used typically on knuckle boom cranes, jack-up, A-frames, dredges, etc.*

# CM250

Configure your own cylinder in our web based Design Online tool on our website:  
[www.hydratech-industries.com](http://www.hydratech-industries.com)

## At work every day around the world

More than 150,000 cylinders working in daily operation around the world in demanding applications provides proof that our cylinders are tough, and repeat orders tell us that our customers are happy with our product.

While any major classification company can be accommodated, CM250 has DNV type approval.

This approval results in more efficient production, and ultimately, faster delivery. Our Denmark plant has a Manufacturing Survey Arrangement (MSA) with DNV to provide faster and lower cost for certification. Our Design Online tool, available on the Hydratech Industries' website, generates 3D-models, 2D drawings and buckling calculations.

Our products are manufactured with full traceability on materials, and complete documentation on processes, certificates, pressure testing and paint work.

All welds are 100% NDT with ultra sound. All cylinders are 100% tested before delivery.

### General technical information

- Design pressure: 250 bar
- Test pressure: 375 bar
- Design temperature: -20 C to + 80 C (for higher or lower temperatures– please contact Hydratech Industries)
- Max speed: 0.5 m/s (for higher speed - please contact Hydratech Industries)
- Pressure media: Mineral based hydraulic oil (for other media - please contact Hydratech Industries)
- Seals: Very robust and well proven selection of seals provides the best balance of long life and low leakage.

### Rod materials and coatings

Our selection of rod material and coatings are based on our long experience, our customers' input and from field data.

**Stainless 1.4418 with hard chrome** provides excellent mechanical properties as well corrosion resistance. The chrome layer is used as a wear band and provides good lubrication for the seals.

**Carbon steel rods** with NiCr layers have a very well proven track record within the offshore industry. For larger rods, it can be more cost effective than solid 1.4418. For applications in milder environments carbon steel with 2x40µ hard chrome can be sufficient.

**Ceramic**, HVOF and Laser Cladding with several powder options (Ultimet, Stellite, Inconel 625), solid stainless steel alloys such as 1.4462, Super Duplex, Inconel 625, etc., are available on request.

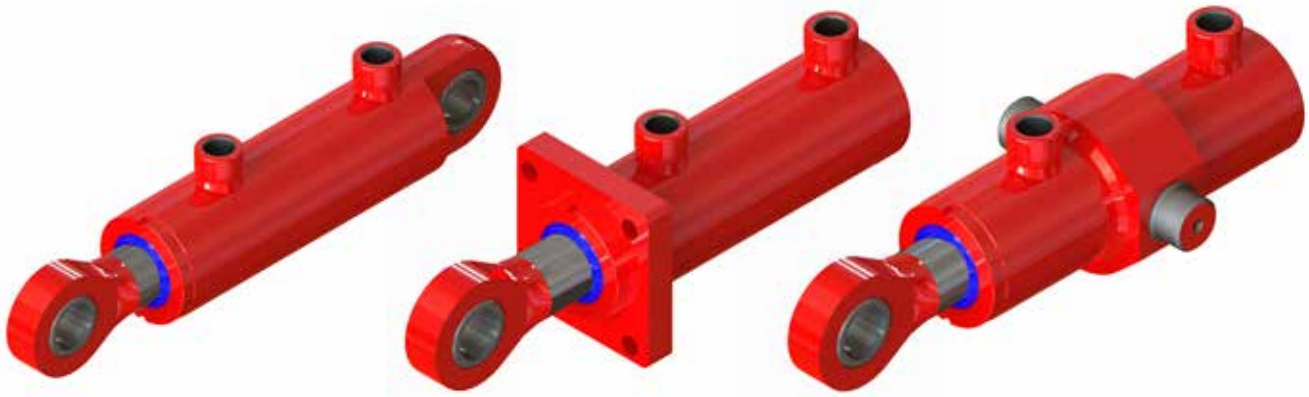
Please tell us about your application so we can advise the best suitable base material and coating.

		Rod																
		25	32	40	50	63	70	80	90	100	110	125	140	160	180	200	220	250
Piston	50	x	x															
	63	x	x	x														
	80			x	x	x												
	100				x	x	x	x										
	125				x	x	x	x	x	x								
	140					x	x	x	x	x		x						
	160						x	x	x	x	x	x	x					
	180							x	x	x	x	x	x					
	200								x	x	x	x	x					
	220										x	x	x	x				
	250										x	x	x	x	x	x		
	280											x	x	x	x	x		
	300											x	x	x	x	x	x	
	320													x	x	x	x	
	360														x	x	x	x
	380															x	x	x
	400																x	x

Besides the above options, we also offer other piston/rod combinations. Please contact us for further information.

# CM250 Ordering Code

Mountings can be adapted to your specific needs



CHCH. Ear-Ear

FCH. Flange-Ear

OCH. Yoke-Ear

Cylinder type	Cyl side	Rod side	Piston	Rod	Stroke	Rod mtrl	Rod Eye	Surface	Port angle	Seals	Options
CM250	CH	CH	180 /	125 x	2500	RH	B	X	0	S	N
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>Mounting</b> ◀</p> <p>CH: Composite O: yoke F: Flange</p> <p><b>Mounting (rod)</b> ◀</p> <p>CH: Composite T: Thread</p> <p><b>Piston size</b> ◀</p> <p>See table on page 6</p> <p><b>Rod size</b> ◀</p> <p>See table on page 6</p> <p><b>Stroke</b> ◀</p> <p>In mm</p> <p><b>Rod material and coating</b> ◀</p> <p>RH: 1.4418 with hard chrome NI: Carbon steel with nickel chrome HC: Carbon steel with hard chrome 2x40µ RF: Stainless (specify alloy in clear text after ordering code) CER: Carbon steel with ceramic coating 300µ</p> </div> <div style="width: 50%;"> <p>▶ <b>Options.</b> (see page 10 for more information)</p> <p>N: No option P: Proximity switches, inductive POS: Positioning sensor, touch free D: End stroke dampening</p> <p>▶ <b>Seals</b></p> <p>S: Standard W: Other project special - low friction, water glycol etc</p> <p>▶ <b>Port angle (from rear view)</b></p> <p>0: In line with ears 90: 90 degrees clock wise 180: 180 degrees clock wise 270: 270 degrees clock wise</p> <p>▶ <b>Surface treatment</b></p> <p>X: Grit blasted and zinc primed Y: Grit blasted, metalized and zinc primed Z: Customer specified surface treatment NOR1: NORSOK M501, system 1, RAL to be specified</p> <p>▶ <b>Rod eye</b></p> <p>A: Adjustable +/- 10mm B: Fixed</p> </div> </div>											

## Can't find exactly what you where looking for?

We can use the standard program to match your specific need to provide a robust, cost effective and short lead time product. We can increase the pressure, shorten the c/c, combine mountings, provide other port options, find specific rod material or coatings, develop new seal solutions, etc.

Our experienced engineering team will work with you to understand your precise need in order to optimize the design.

# CM315

Configure your own cylinder in our web based Design Online tool on our website:  
[www.hydratech-industries.com](http://www.hydratech-industries.com)

## Lifting your capacity

Often used for cranes and A-frames, our CM315 is a perfect solution for heavy duty applications. The CM315 offshore/marine crane cylinder is built to ensure pressures of 315 bar and DNV rules for certification of lifting appliances at design temp = -20 degrees. Other classification rules are possible as well.

More than 4000 cylinders delivered in the last two decades provides a good track record of design and built quality.

CM315 design is based on calculations according to DNV but matches all other classification bodies such as ABS, GL, LR, etc. Our Design Online tool, available on the Hydratech Industries' web site, generates 3D-models, 2D drawings and buckling calculations.

Our products are manufactured with full traceability on materials, and complete documentation on processes, certificates, pressure testing and paint work.

All welds are 100% NDT with ultra sound. All cylinders are 100% tested before delivery.

### General technical information

- Design pressure: 315 bar (can be adapted to your specific application needs – please contact Hydratech Industries)
- Test pressure: 1.5 x design pressure
- Design temperature: -20 C to + 80 C (for higher or lower temperatures – please contact Hydratech Industries)
- Max speed: 0.5 m/s (for higher speed - please contact Hydratech Industries)
- Pressure media: mineral based hydraulic oil (for other media - please contact Hydratech Industries)
- Cylinder tube, piston, forks and ears: S355J2
- Seals: Advanced redundant seal solutions

### Rod materials and coatings

Our selection of rod material and coatings are based on our long experience, our customers' input and from cylinders in action.

**Carbon steel rods** with NiCr (60µ Ni and 40µ Chrome) which has a very well proven track record within the offshore industry.

Another option is welding a **stainless sleeve** to the carbon steel rod and cover with 2x40µ hard chrome. This is very well proven and probably the most cost effective solution if rod is parked in retracted position under no operation.

**Stainless 1.4418 with hard chrome** provides excellent mechanical properties as well as corrosion resistance. The chrome layer is used as a wear band and provides good lubrication for the seals.

**Ceramic, HVOF and Laser cladding** with several powder options (Ultimet, Stellite, Inconel 625), solid stainless steel alloys such as 1.4462, Super Duplex, Inconel 625, etc. are available on request.

**Please tell us about your application so we can advise most suitable base material and coating.**

		Rod									
		200	220	250	280	300	320	340	400	420	480
Piston	250	x	x								
	280		x								
	300		x	x							
	320			x							
	350			x	x	x					
	380			x	x	x					
	400					x					
	420						x	x			
	450						x	x			
	460						x	x			
	500							x			
	550								x	x	
	580									x	
600										x	

Besides the above options, we also offer other piston/rod combinations. Please contact us for further information.



# CM315 Ordering Code

Mountings can be adapted to your specific need



CHCH. Ear-Ear



GG. Fork-Fork

Cylinder type	Cyl side	Rod side	Piston	Rod	Stroke	Rod mtrl	Surface	Port angle	Seals	Options
CM315	CH	CH	420 /	320 x	2500	RH	X	0	S	N
<p>Mounting</p> <p>CH: Composite G: Fork S: Special</p> <p>Mounting (rod)</p> <p>G: Fork CH: Composite S: Special</p> <p>Piston size</p> <p>See table on page 8</p> <p>Rod size</p> <p>See table on page 8</p> <p>Stroke</p> <p>In mm</p> <p>Rod material and coating</p> <p>NI: Carbon steel with nickel chrome SS: Carbon steel with stainless sleeve welded and 2x40µ hard chrome RH: 1.4418 with hard chrome RF: Stainless (specify alloy in clear text end of ordering code) CER: Carbon steel with ceramic coating 300µ</p>										
<p>Options. (see page 10 for more information)</p> <p>N: No option P: Proximity switches, inductive POS: Positioning sensor, touch free D: End stroke dampening SPEC: according to specific requirement.</p> <p>Seals</p> <p>S: Standard W: Other project special - low friction, water glycol, etc.</p> <p>Port angle (from rear view)</p> <p>0: in line with ears 90: 90 degrees clock wise 180: 180 degrees clock wise 270: 270 degrees clock wise</p> <p>Surface treatment</p> <p>X: Grit blasted and zinc primed Y: Grit blasted, metalized and zinc primed Z: Customer specified surface treatment NOR1: NORSOK M501, system 1, RAL to be specified</p>										

## Use our experienced team!

For cranes we will optimize tube and rod diameter towards load curve securing correct safety margins according to DNV or other classification societies. This will enable using correct wall thickness of tube and smaller rod diameter, providing a lighter and more tailored design.

Under all circumstances and for all applications we want to know as much as possible about your project so we can tailor the design to your specific need.

Please contact our sales engineers for solutions and proposals.

# CM250 / CM315 options

**Mountings for cylinder with positioning sensor.  
Many standard and special options are available  
for CM250 and CM315**

**P** = Proximity switches in one or both ends of the cylinder. Please specify in clear text.

**POS** = Touch free position system. Please specify interface (4-20 mA, 0-10 V, Profibus, etc.).

**POSX** = Touch free position system in ATEX house. Please specify interface (4-20 mA, 0-10 V, Profibus, etc.).

**D** = End stroke dampening in one or both ends of the cylinder. Please specify in clear text.

**SPEC** = Please state in clear text what option is required, for example valves and piping.

*We use only high quality suppliers and products on all options such as Temposonic, Balluf, SUN Hydraulics, etc.*



**CHCH.** Ear-Ear



**FCH.** Flange-Ear



**OCH.** Yoke-Ear



# Design Online

## Interactive cylinder designer

Our web site, [www.Hydratech-industries.com](http://www.Hydratech-industries.com), allows you to navigate to our web based design tool, enabling you to generate 3D models in many different file formats such as IGES, STEP, etc.; or 2D drawings in DWG or DXF; or general technical information in a simple PDF format.

Design Online is very user friendly and provides you with basic force and buckling calculations. It is easy to create your own login.

If you need guidance please contact us for help.

## Hydratech Industries

Fluid Power

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### Hydraulic Cylinders CM 250 Sensor CHCH

Configurator | CAD-Format

Type:

Fixing cylinder:

Fixing rod:

Piston rod eye:

Pressure Push (bar)	<input type="text" value="250"/>	Min - Max	<input type="text" value="1 - 250"/>
Pressure Pull (bar)	<input type="text" value="250"/>	Min - Max	<input type="text" value="1 - 250"/>
Bore	<input type="text" value="50"/>	Push force (kN)	<input type="text" value="49.1"/>
Rod	<input type="text" value="32"/>	Pull force (kN)	<input type="text" value="29.0"/>
Stroke	<input type="text" value="10"/>	Min - Max *	<input type="text" value="10 - 420"/>
		(* Max stroke acc. to buckling SF 4 Euler)	
Length mounted min (A)	<input type="text" value="410"/>	Min - Max	<input type="text" value="410 - 2545"/>
Position	<input type="text" value="0"/>	Min - Max	<input type="text" value="0 - 10"/>

Material rod:

Treatment:

# From Massive Scale to Critical Detail

## Hydratech Industries cylinder program



Hydratech Industries Fluid Power is a world class designer and manufacturer of hydraulic cylinders. Whether custom cylinders, those from our standard program or semi-standard, our cylinders are used the world over in critical applications for marine, offshore and industrial applications.

Our customers have come to expect our attention to detail and focus on quality. They know it results in heavy-duty, reliable cylinders for their equipment.

### **Our global capacity and expertise mean efficiencies for your company**

Hydratech Industries' balance of engineering, design, quality control and ongoing service is delivered by a true global network of experts. This gives us the flexibility to work with you in the perfect location and with the perfect team to not only deliver the best product, but at a competitive price.

Our expertise and ability to scan the globe for the right materials, our state-of-the-art machining capacities in all of our locations, and a clean room for assembly, enable us to get it right, every time.

## Confidence in product and delivery

### **Calculations**

For each project and order where a new drawing is produced, our engineers review and verify all data to make sure the cylinder is fit for purpose and if needed, meets DNV or other classification society specifications.

### **Manufacturing**

High precision CNC machines, 3D measurement systems, 100% NDT on all welds, certified welders, 100% test 1.5x design pressure, full material traceability, material certificates, operators certificates, STD ITP with full process description, in-house blasting and paint shop.

### **Documentation**

A full line of documentation can be offered from Hydratech Industries to match your specific project requirements.

### **Classification**

Hydratech Industries Fluid Power works with all major classification societies such as DNV, ABS, GL, LRS, etc. Hydratech Industries Denmark has DNV MSA (Manufacturing Survey Arrangement) as well as ABS PDA (Product Design Approval), which ensures full control of processes and delivery.

### **Project management**

For each larger or specific project an individual ITP will be released to give full project control of all milestones and processes. Combined with project GANT chart and project- management supervision, a successful execution and delivery of project is secured.

### **Service and repair**

From Europe, USA, China and Singapore we cover your products for service and repair to ensure original parts and work knowledge depending on where your need is at the moment.

From Denmark we have service engineers working globally with full safety training to enter offshore rigs and ships.