ENGINEERING TOMORROW

Data Sheet

H1 Bent Axis Variable Displacement Motor
Size 060 cm^3

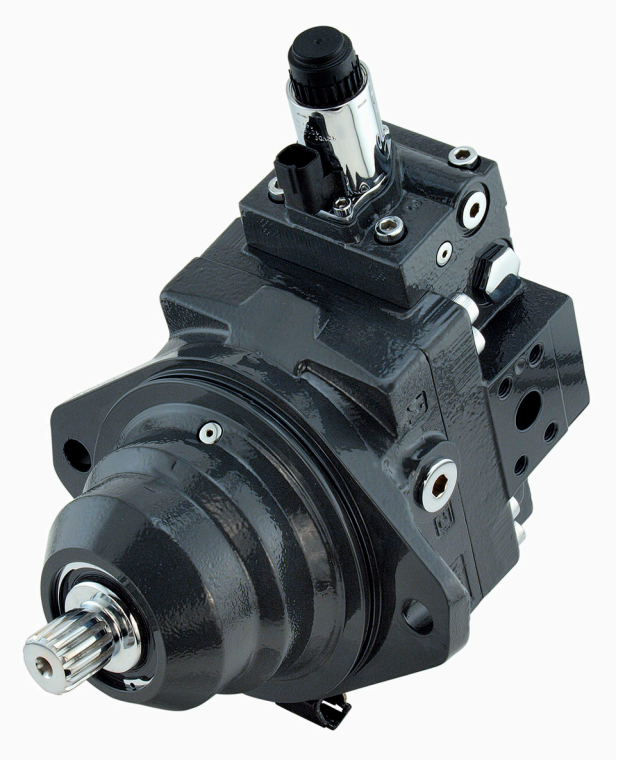
For more than 40 years, Danfoss has been developing state-of-the-art components and systems for mobile machinery used in off-highway operations around the world.

We have become a preferred supplier by offering the best of what really matters: The hardware inside your vehicle application.

H1 servo-controlled hydrostatic pumps and bent axis variable motors are no exception.

The H1 product is built around an advanced control and available in a wide range of displacements. It is designed for quality and reliability and offers expanded functionality, greater total efficiency, and easy installation.

All H1 control and sensor options are PLUS+1® Compliant. PLUS+1® allows you to rapidly develop and customize electronic machine control. It opens up the future by combining machine controls and diagnostics in an integrated operating network.



Features

Designed for quality and reliability

- Proven and optimized 9 piston rotating group
- Single piece housing
- Electric components with IP67 & IP69K rating

Installation and packaging benefits

- Optimized for shortest length
- Standardized connector interface
- Integrated loop flushing device
- Radial or axial high pressure ports

Greater total efficiency

- Minimized losses
- Improved at high flow conditions

Wide range of controls

- Electric Two-position Control
- Electric Proportional Control
- Hydraulic Two-position Control
- Hydraulic Proportional Control
- Pressure Compensator Override
- Proportional Pressure Compensator Override
- Brake Pressure Defeat option
- Common controls across the entire motor family
- PLUS+1® Compliant control and sensor options

Expanded functionality

- Zero degree capability together with a high performance 32 degree maximum angle
- Enhanced control functions with proportional controls de-energized at minimum or maximum displacement
- Optional integrated speed sensor with
  - Dual redundant speed sensing
  - Direction indication
  - Temperature sensing
  - Wire fault detection

Comprehensive technical literature is online at *www.danfoss.com*

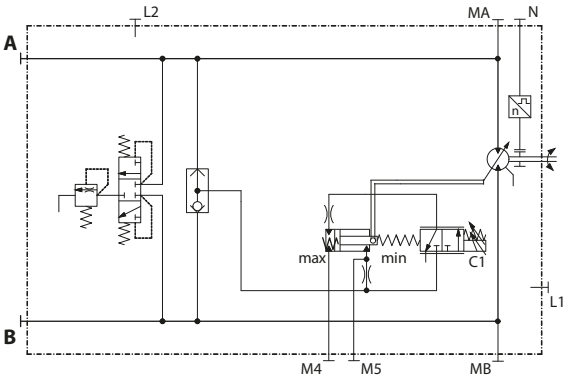
Technical specifications

Weight	SAE ISO 3019/1	29.8 kg [65.7 lb]
	DIN ISO 3019/2	28.3 kg [62.4 lb]
	Cartridge	26.9 kg [59.3 lb]
Output speed rated	Max. displacement	3600 min^{-1} (rpm)
	Min. displacement (6°)	5900 min^{-1} (rpm)
	0° displacement	6600 min^{-1} (rpm)
Max. output speed	Max. displacement	4500 min^{-1} (rpm)
	Min. displacement (6°)	7250 min^{-1} (rpm)
	0° displacement	7950 min^{-1} (rpm)
System pressure	Working	450 bar [6527 psi]
	Maximum	480 bar [6962 psi]
	Min. low loop	7.5 bar [109 psi]
Case pressure	Rated	3 bar [44 psi]
	Max.	5 bar [73 psi]
	Min.	0.3 bar [4 psi]

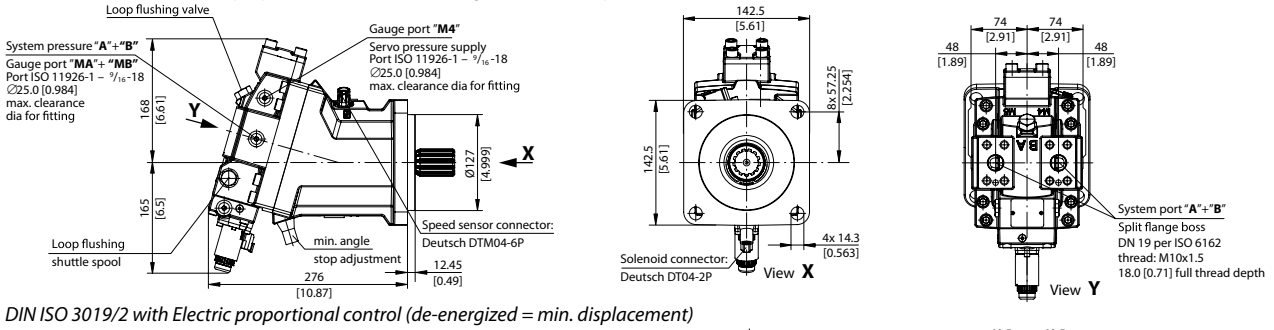
Schematic example

H1 bent axis motor with Electric Proportional Control

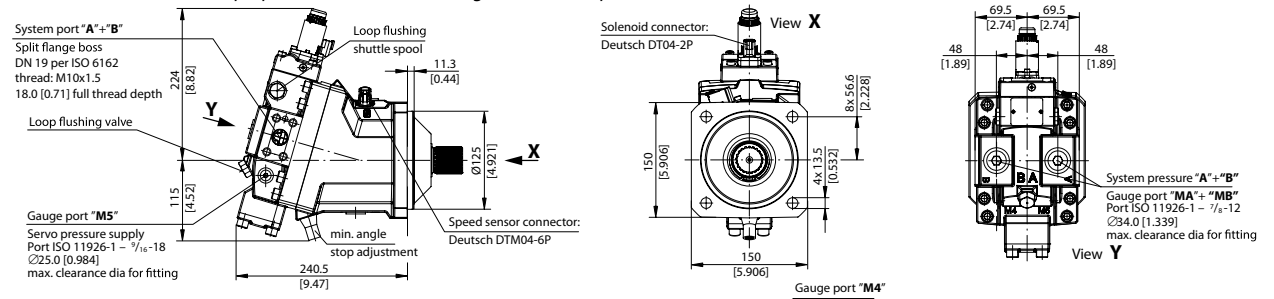
(De-energized = max. displacement)



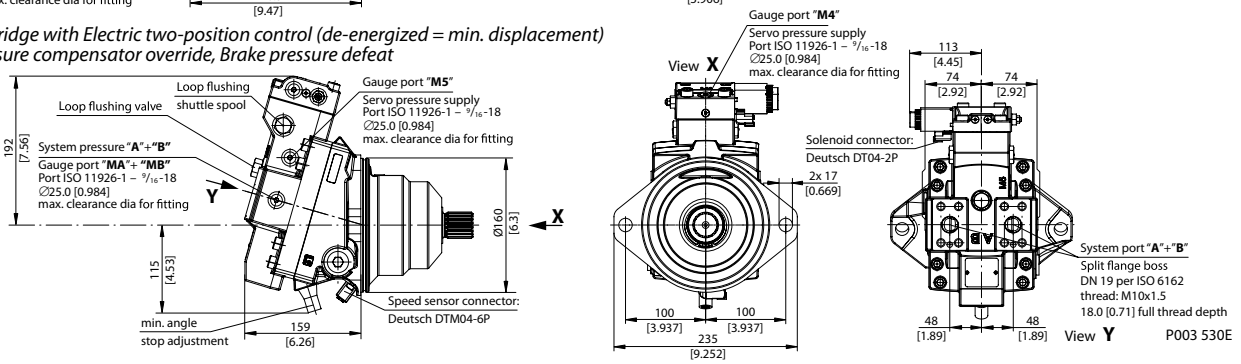
SAE ISO 3019/1 with Electric proportional control (de-energized = max. displacement)



DIN ISO 3019/2 with Electric proportional control (de-energized = min. displacement)



Cartridge with Electric two-position control (de-energized = min. displacement)
Pressure compensator override, Brake pressure defeat



ENGINEERING TOMORROW

Data Sheet

H1 Bent Axis Variable Displacement Motor
Size 080 cm^3

For more than 40 years, Danfoss has been developing state-of-the-art components and systems for mobile machinery used in off-highway operations around the world.

We have become a preferred supplier by offering the best of what really matters: The hardware inside your vehicle application.

H1 servo-controlled hydrostatic pumps and bent axis variable motors are no exception.

The H1 product is built around an advanced control and available in a wide range of displacements. It is designed for quality and reliability and offers expanded functionality, greater total efficiency, and easy installation.

All H1 control and sensor options are PLUS+1® Compliant. PLUS+1® allows you to rapidly develop and customize electronic machine control. It opens up the future by combining machine controls and diagnostics in an integrated operating network.

Features

Designed for quality and reliability

- Proven and optimized 9 piston rotating group
- Single piece housing
- Electric components with IP67 & IP69K rating

Installation and packaging benefits

- Optimized for shortest length
- Standardized connector interface
- Integrated loop flushing device
- Radial or axial high pressure ports

Greater total efficiency

- Minimized losses
- Improved at high flow conditions

Wide range of controls

- Electric Two-position Control
- Electric Proportional Control
- Hydraulic Two-position Control
- Hydraulic Proportional Control
- Pressure Compensator Override
- Proportional Pressure Compensator Override
- Brake Pressure Defeat option
- Common controls across the entire motor family
- PLUS+1® Compliant control and sensor options

Expanded functionality

- Zero degree capability together with a high performance 32 degree maximum angle
- Enhanced control functions with proportional controls de-energized at minimum or maximum displacement
- Optional integrated speed sensor with
  - Dual redundant speed sensing
  - Direction indication
  - Temperature sensing
  - Wire fault detection

Comprehensive technical literature is online at *www.danfoss.com*

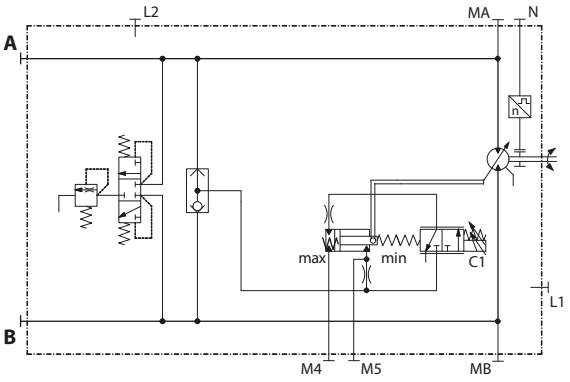
Technical specifications

Weight	SAE ISO 3019/1	34.8 kg [76.7 lb]
	DIN ISO 3019/2	34.4 kg [75.8 lb]
	Cartridge	33.0 kg [72.6 lb]
Output speed rated	Max. displacement	3200 min^{-1} (rpm)
	Min. displacement (6°)	5300 min^{-1} (rpm)
	0° displacement	5950 min^{-1} (rpm)
Max. output speed	Max. displacement	4100 min^{-1} (rpm)
	Min. displacement (6°)	6600 min^{-1} (rpm)
	0° displacement	7200 min^{-1} (rpm)
System pressure	Working	450 bar [6527 psi]
	Maximum	480 bar [6962 psi]
	Min. low loop	7.5 bar [109 psi]
Case pressure	Rated	3 bar [44 psi]
	Max.	5 bar [73 psi]
	Min.	0.3 bar [4 psi]

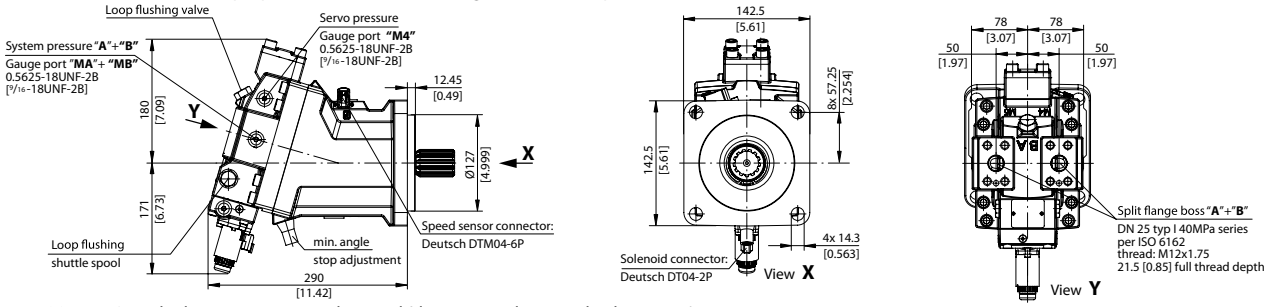
Schematic example

H1 bent axis motor with Electric Proportional Control

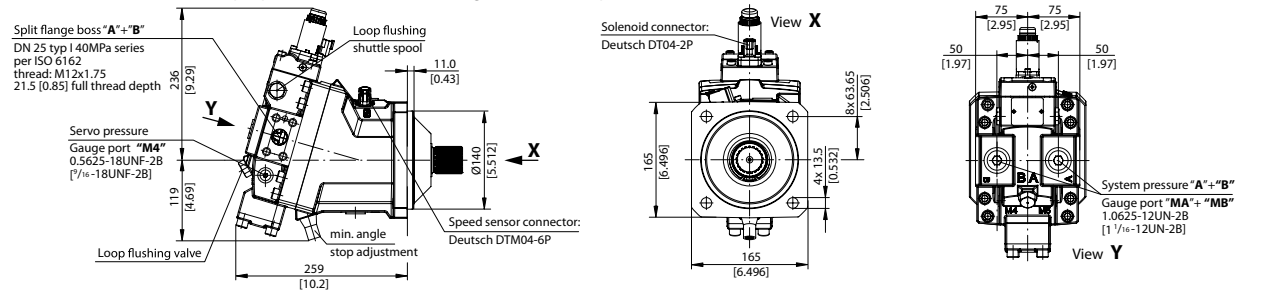
(De-energized = max. displacement)



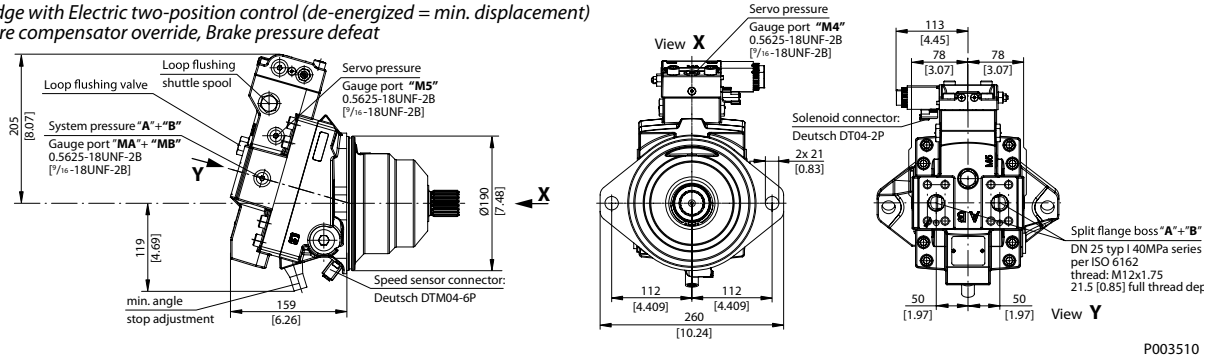
SAE ISO 3019/1 with Electric proportional control (de-energized = max. displacement)



DIN ISO 3019/2 with Electric proportional control (de-energized = min. displacement)



Cartridge with Electric two-position control (de-energized = min. displacement)
Pressure compensator override, Brake pressure defeat



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ENGINEERING TOMORROW

Data Sheet

H1 160cc Bent Axis Variable Motor
with Counterbalance Valve DN32A

For more than 40 years, Danfoss has been developing state-of-the-art components and systems for mobile machinery used in off-highway operations around the world.

The component system of H1 bent axis variable motors with counterbalance valves enables travel drives in open circuit, which are prevented by the valve against overspeeding or cavitation in the driveline.

The H1 motors with valve assemblies bring modular design and enables a smooth and comfortable slow down of the drive shaft independently from the application needs (e.g. in a work function as well as propel drive). Start up testing with approval is necessary before these valves can be used to ensure optimal performance.

The system motor and valve package is designed for quality and reliability, and offers expanded functionality in open circuit and easy installation.

Features

Designed for quality and reliability

- Proven H1B reliability bringing full functionality into open circuit (10 bar min low pressure side)
- Separate brake release port supplies 21 +7 bar brake pressure
- Separate flushing options

Expanded functionality

- Integrated high pressure relief valves for peak reduction
- External feeding port for preventing cavitation

Wide range of controls

- Electric two-position control
- Electric proportional control
- Hydraulic two-position control
- Hydraulic proportional control
- Pressure compensator override

Installation and packaging

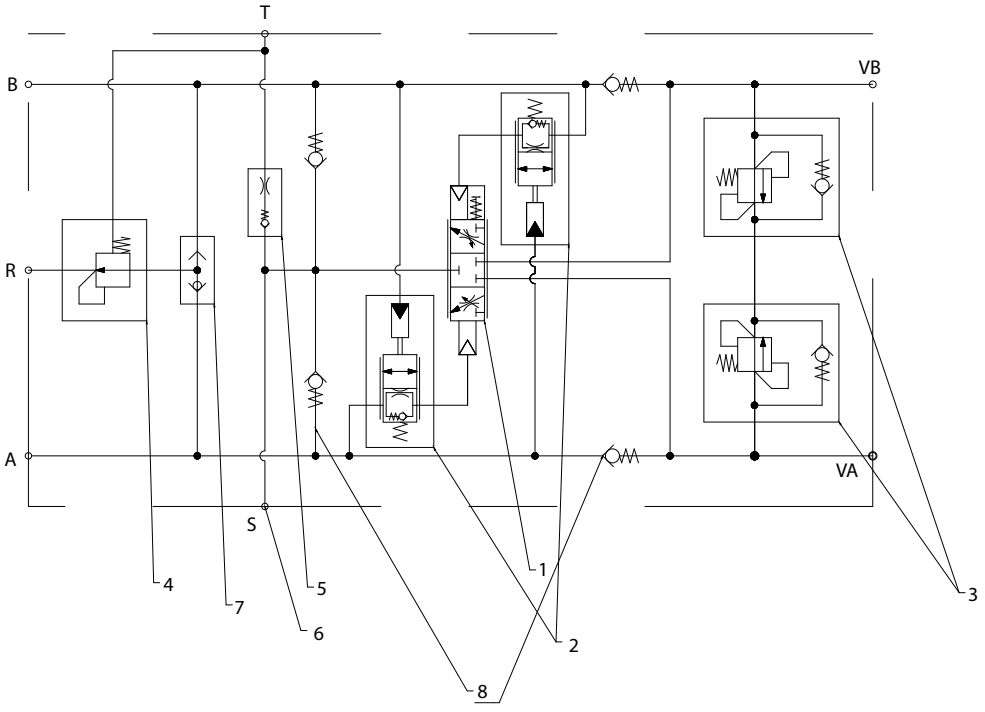
- Component system allows one-piece installation

Comprehensive technical literature is online at *www.danfoss.com*

Technical specifications

Weight	SAE ISO 3019/1	61.9 kg + 15 kg (motor + CBV) [136.5 lbs + 33.1 lbs]
	DIN ISO 3019/2	59.3 kg + 15 kg [130.7 lbs + 33.1 lbs]
	Cartridge	54.7 kg + 15 kg [120.6 lbs + 33.1 lbs]
System	Operating pressure	350 bar [5076 psi]
	Maximum operating pressure	420 bar [6092 psi]
	Nominal flow	400 l/min [106 US gal/min]
Case pressure	Rated	3 bar [44 psi]
	Maximum	5 bar [73 psi]
	Minimum	0.3 bar [4 psi]

Schematic with closed center spool

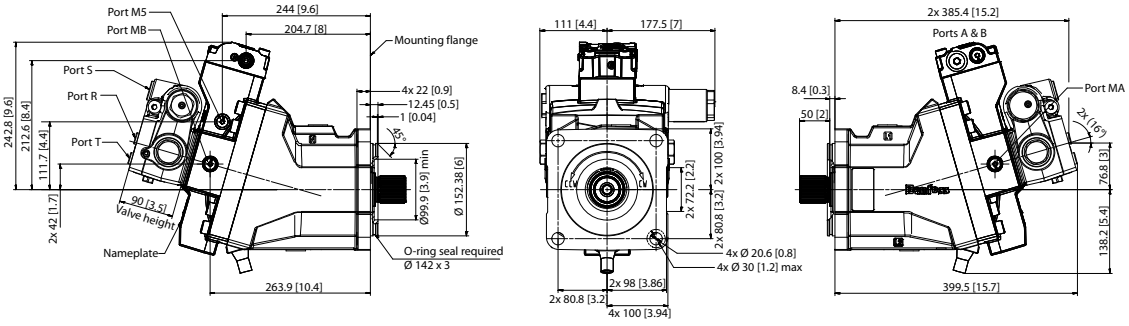


1. Main spool
   (open and closed — in modelcode selectable)
2. Damping
   (damped opening and damped closing with different sizes as options)
3. Relief valves
   (pressure range selectable)
4. Brake release (port R) (optional: system or reduced pressure)
5. Flushing (port T)
6. Prefilling / charge / suction (port S)
7. Double-check valve

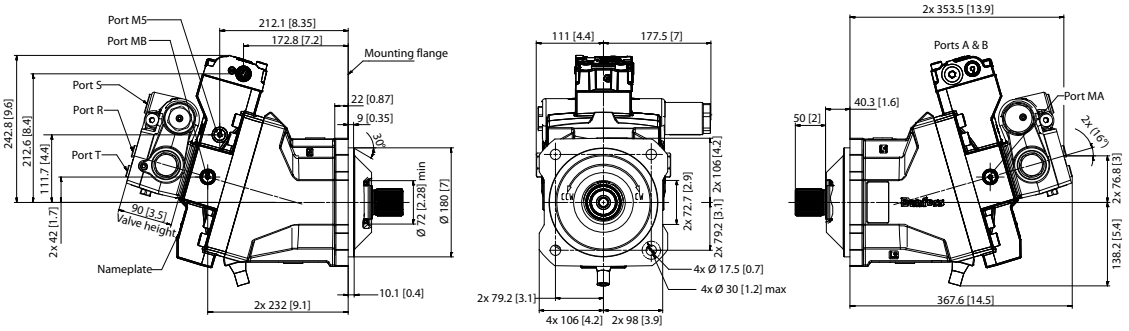
Other configurations are available. Please see the *Counterbalance Valve for Bent Axis Motors Technical Information* document (literature number BC428678672746) for more information.

Dimensions

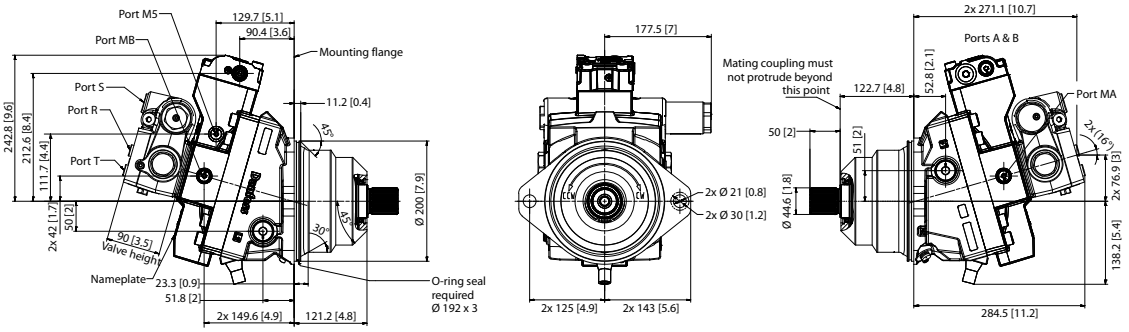
SAE ISO 3019/1 with two-position control (de-energized = max. displacement)



DIN ISO 3019/2 with two-position control (de-energized = max. displacement)



Cartridge with hydraulic two-position Control (de-energized = max. displacement)



Other configurations available upon request.

Port information

Port	Description
A / B	System port
MA	System B gauge port: ISO 6149-1 M14 x 1.5 - 6H
MB	System A gauge port: ISO 6149-1 M14 x 1.5 - 6H
M4 / M5	Servo pressure gauge port: ISO 111926-1, 9/16 - 18 UNF - 2B
T	Flushing port: ISO 9974-1 M14 x 1.5
R	Break release port: ISO 9974-1 M14 x 1.5
S	Suction port: ISO 9974-1 M27 x 1.5
VA / VB	Motor to valve connection

ENGINEERING TOMORROW

Data Sheet

H1 210/250cc Bent Axis Variable Motor
with Counterbalance Valve DN32B

For more than 40 years, Danfoss has been developing state-of-the-art components and systems for mobile machinery used in off-highway operations around the world.

The component system of H1 bent axis variable motors with counterbalance valves enables travel drives in open circuit, which are prevented by the valve against overspeeding or cavitation in the driveline.

The H1 motors with valve assemblies bring modular design and enables a smooth and comfortable slow down of the drive shaft independently from the application needs (e.g. in a work function as well as propel drive). Start up testing with approval is necessary before these valves can be used to ensure optimal performance.

The system motor and valve package is designed for quality and reliability, and offers expanded functionality in open circuit and easy installation.

Features

Designed for quality and reliability

- Proven H1B reliability bringing full functionality into open circuit (10 bar min low pressure side)
- Separate brake release port supplies 21 +7 bar brake pressure
- Separate flushing options

Expanded functionality

- Integrated high pressure relief valves for peak reduction
- External feeding port for preventing cavitation

Wide range of controls

- Electric two-position control
- Electric proportional control
- Hydraulic two-position control
- Hydraulic proportional control
- Pressure compensator override

Installation and packaging

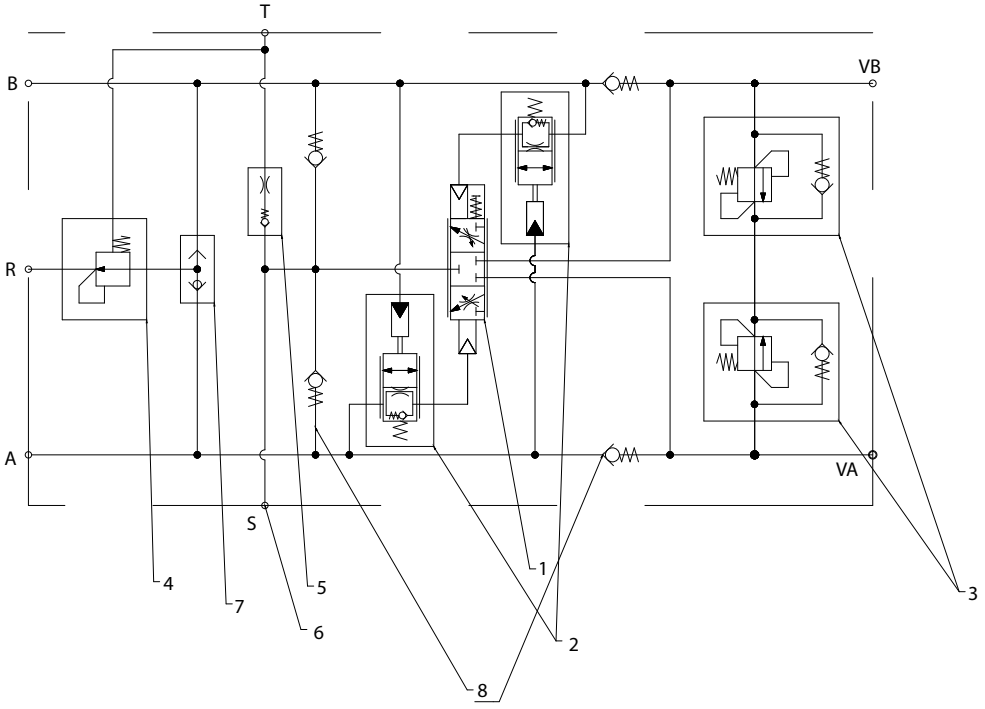
- Component system allows one-piece installation

Comprehensive technical literature is online at *www.danfoss.com*

Technical specifications

Weight	Type	210cc	250cc
	SAE ISO 3019/1	81 kg + 15 kg [178.5 lbs + 33.1 lbs]	87 kg + 15 kg [191.8 lbs + 33.1 lbs]
	DIN ISO 3019/2	75 kg + 15 kg [165.3 lbs + 33.1 lbs]	75 kg + 15 kg [165.3 lbs + 33.1 lbs]
System	Operating pressure	350 bar [5076 psi]	
	Maximum operating pressure	420 bar [6092 psi]	
	Nominal flow	400 l/min [106 US gal/min]	
Case pressure	Rated	3 bar [44 psi]	
	Maximum	5 bar [73 psi]	
	Minimum	0.3 bar [4 psi]	

Schematic with closed center spool

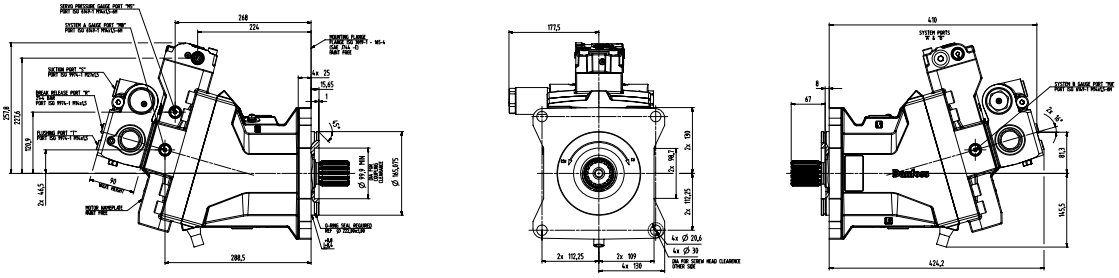


1. Main spool
   (open and closed — in modelcode selectable)
2. Damping
   (damped opening and damped closing with different sizes as options)
3. Relief valves
   (pressure range selectable)
4. Brake release (port R) (optional: system or reduced pressure)
5. Flushing (port T)
6. Prefilling / charge / suction (port S)
7. Double-check valve

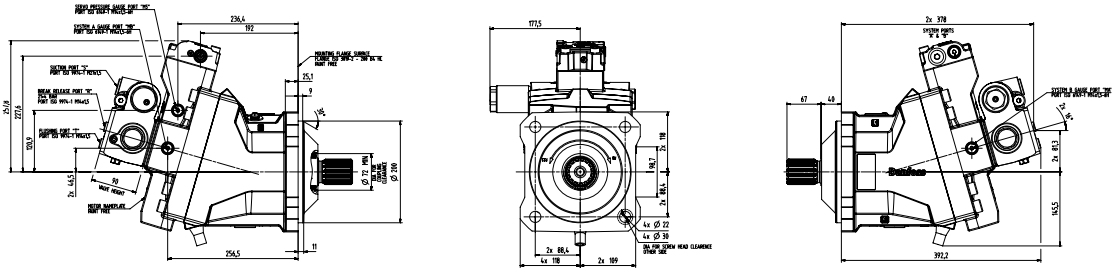
Other configurations are available. Please see the *Counterbalance Valve for Bent Axis Motors Technical Information* document (literature number BC428678672746) for more information.

Dimensions 210cc

SAE ISO 3019/1 with two-position control (de-energized = max. displacement)

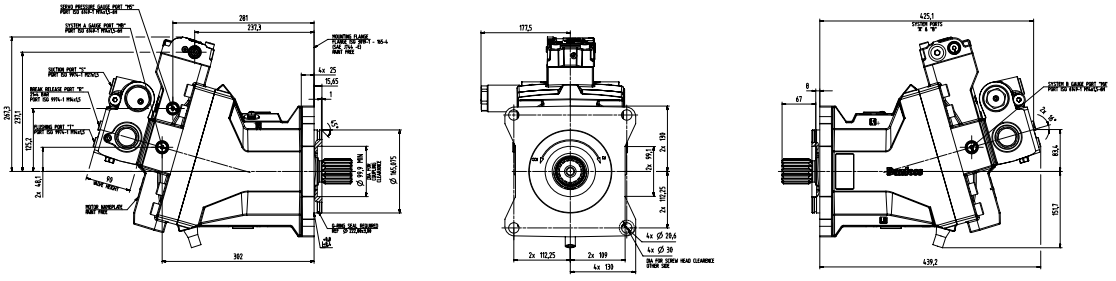


DIN ISO 3019/2 with two-position control (de-energized = max. displacement)

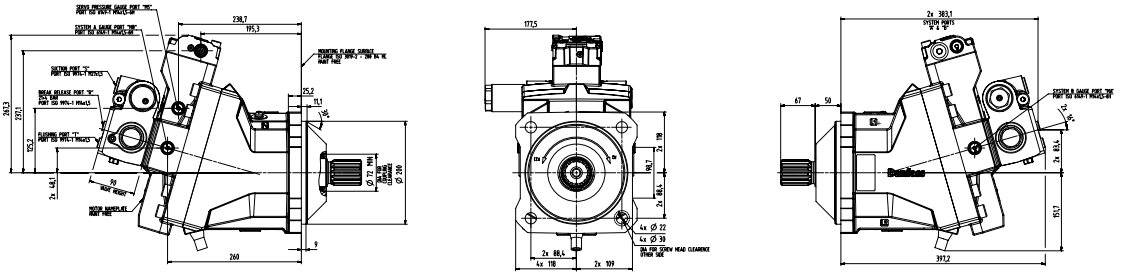


Dimensions 250cc

SAE ISO 3019/1 with two-position control (de-energized = max. displacement)



DIN ISO 3019/2 with two-position control (de-energized = max. displacement)



Other configurations available upon request.

Port information

Port	Description
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MA	System B gauge port: ISO 6149-1 M14 x 1.5 - 6H
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T	Flushing port: ISO 9974-1 M14 x 1.5
R	Break release port: ISO 9974-1 M14 x 1.5
S	Suction port: ISO 9974-1 M27 x 1.5
VA / VB	Motor to valve connection