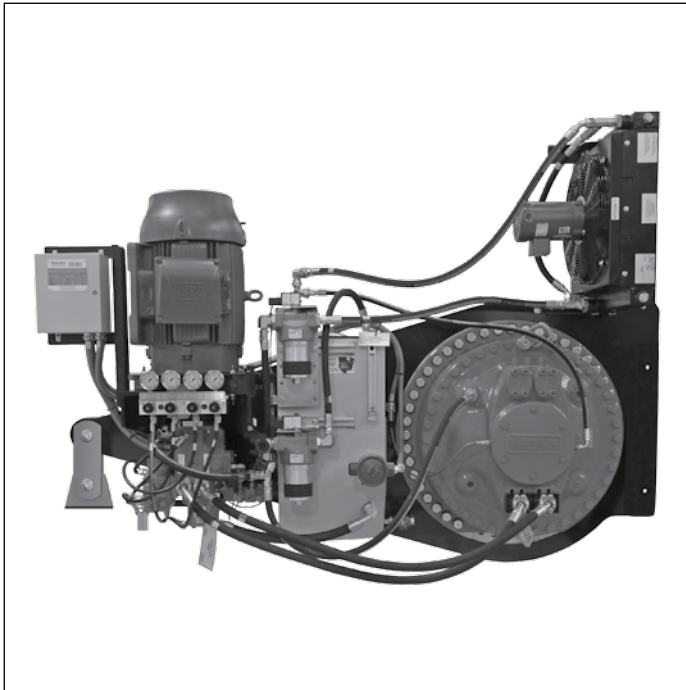


Hydraulic direct drive system

Hägglunds Torque Arm Drive System – TADS

RA 15426

Edition: 07.2017

**General info**

- ▶ Torque: Up to 203,000 ft-lbs
- ▶ Speed: Up to 60 rpm
- ▶ Max. operating pressure: 5076 psi
- ▶ Power: Up to 100 hp
- ▶ Ambient temperature: -40 °F to 105 °F

Features

- ▶ Designed for apron feeders, belt feeders, belt conveyors, and infeed conveyors
- ▶ Small footprint
- ▶ Self-contained drive system
- ▶ Easy installation
- ▶ Maintenance friendly design
- ▶ Spline or Shrink Disc Motor
- ▶ Hägglunds advanced control system
- ▶ No foundation needed
- ▶ Unlimited starts and stops
- ▶ Direct drive

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Ordering code

01	02	03	04	05	06	07	08	09	
TADS	-		-		-		-		-

Hydraulic drive power units

01	TADS
----	------

Hydraulic Motor

02	CA 50	CA 50
	CA 70	CA 70
	CA 100	CA 100
	CA 210	CA 210
	CB 280	CB 280
	CB 400	CB 400
	CB 560	CB 560
	CB 840	CB 840

Pump Capacity

03	28cc	028
	40cc	040
	71cc	071
	125cc	125

Electric Motor Horsepower

04	15HP	015
	20HP	020
	25HP	025
	40HP	040
	50HP	050
	60HP	060
	75HP	075
	100HP	100

Controls

05	No Controls, Junction Box Only	0
	Driver Card	1
	Spider Control	2
	Spider Control w/ Profibus	3
	Spider Control w/ Modbus RTU	4
	Spider Control w/ Modbus TCP	5
	Spider Control w/ ControlNet	6
	Spider Control w/ DeviceNet	7
	Spider Control w/ Ethernet IP	8

NEMA Classification

06	NEMA 4	0
	NEMA 4X	1

Pressure Gauges

07	Yes	0
	No	1

Motor Flushing

08	Yes	0
	No	1

Filter Type

09	Single	0
	Duplex	1

10	11	12		13	14	15		16	17		18		19		20
			-				-			-		-		/	

Torque Arm Orientation (Viewed from motor port side)

10	3 O'Clock	3
	9 O'Clock	9

Hydraulic Motor Direction of Rotation (Viewed from shaft side of hydraulic motor)

11	Clockwise	0
	Counterclockwise	1

Type of Command Signal

12	Uni-directional	0
	Uni-directional with Jog Reverse	1
	Bi-directional	2

Oil Heater

13	None	0
	375W - Recommended when ambient temp is below 40 °F (4 °C) – minimum temp 20 °F	1
	Cold Weather Package #1 - Minimum Temp = -4 °F (-20 °C)	2
	Cold Weather Package #2 - Minimum Temp = -22 °F (-30 °C)	3
	Cold Weather Package #3 - Minimum Temp = -40 °F (-40 °C)	4

Heat Exchanger

14	Air / Oil Cooler (380VAC)	0
	Air / Oil Cooler (460VAC)	1
	Air / Oil Cooler (575VAC)	2
	Water / Oil Cooler	3

Control Box Voltage

15	No Voltage	0
	24 VDC	A
	120 VAC	B
	240 VAC	C

Hydraulic Oil

16	Filled with No Oil	0
	Filled with ISO 68 Synthetic Oil	1
	Filled with ISO 100 Synthetic Oil	2
	Filled with ISO 68 Mineral Oil	3
	Filled with ISO 100 Mineral Oil	4

Encoder Type

17	No Encoder	0
	SPDC CA (1856PPR)	1
	SPDC CB (1856PPR)	2
	SPDC CA (1856PPR) with F/A Converter - Driver Card Only	3
	SPDC CB (1856PPR) with F/A Converter - Driver Card Only	4

Unit Type

18	Standard	S
	Non-Standard	N

Electric Motor Voltage

19	380 VAC	380
	460 VAC	460
	575 VAC	575

Electric Motor Frequency

20	50 Hz	50
	60 Hz	60

Product description

The Hägglunds TADS hydraulic direct drive system is a compact self-contained drive with high reliability and long service life. The TADS delivers high torque throughout speed range with infinite start, stop, and reverse, which will not damage the system. The TADS is rugged and reliable, designed for outdoor use in all weather conditions, used primarily in apron feeders, belt feeders, belt conveyors and infeed conveyors. While designed for the above demanding applications the uses for a TADS are numerous.

The Hägglunds TADS hydraulic direct drive system is an infinitely variable ratio drive, a gear box is not required to adjust ratio affecting speed. This allows for flexibility in speed range to adjust process capacity without varying electric motor frequency or adjusting gear ratios. The system is capable of producing any speed within its specified range. The design is compact and open, affording easy access and maintenance. Installation is easy and comes with either internal splines or hollow shaft with a compression coupling that mounts directly to the machine's drive shaft.

Hägglunds TADS hydraulic direct drive system includes the following standard features:

- ▶ High pressure transducer which allows for monitoring maximum system pressure to ensure no damage to the equipment.
 - ▶ Charge pressure transducer ensures hydraulic motor and pump internal parts are fully engaged and ready to produce torque upon demand.
 - ▶ Torque arm with pivot attachment which can handle load in tension or compression.
 - ▶ Oil level indicator with local temperature indication located on the front of the reservoir for ease of viewing
 - ▶ Reservoir drain valve.
 - ▶ 100 liter stainless steel reservoir to ensure no corrosion in the reservoir that could lead to oil contamination.
 - ▶ Hägglunds drive systems filter all returning oil to keep the reservoir clean.
 - ▶ Filter air breather.
 - ▶ Two position level switch that will send a warning signal when oil level falls below pre-determined value, then an alarm which will shut the drive system down so no permanent damage will occur.
- ▶ Temperature transmitter monitors reservoir temperature to ensure minimum temperature for startup and maximum temperature for interlock to protect equipment
 - ▶ Quick fill connection located on the inlet side of the pump/motor case drain filter that allows the addition of oil straight from a drum into the system. The oil is then immediately filtered before entering the reservoir.
 - ▶ Reverse drive speed is able to be limited mechanically, enabling increased protection from over-speed or unintended directional operation.
 - ▶ Electric motors 15-75 HP have a max altitude of 9842 fasl, electric motors 100 HP have a max altitude of 8202 fasl. Electric motors with higher elevations are available upon request.
 - ▶ Classified environments are available upon request.

The Hägglunds TADS hydraulic direct drive system offers three control configurations.

- ▶ Hägglunds Advanced Control System (Spider)
The Spider allows complete control of the TADS with minimal customer connections. A junction box will be located on the TADS and a control box will be remote mounted.
- ▶ Driver Card Control
The driver card allows control of pump stroke only from customer control system and has connections for customer monitoring. The driver card control box is located on the TADS.
- ▶ No Controls
The TADS will be completely controlled and monitored from the customer control system. A junction box for customer connections is located on the TADS.

Function Häggglunds TADS

The Häggglunds TADS hydraulic direct drive system features an asynchronous electric motor driving a variable stroke axial piston pump. Hydraulic motor speed is controlled by varying the analog signal to the proportional solenoid stroker on the hydraulic pump, which sets the swash plate angle and therefore piston stroke and resultant flow to the hydraulic motor. An optional speed encoder can be supplied to provide full closed loop speed feedback and control. The control system utilizes the speed encoder signal to increase or decrease the flow to the hydraulic motor to maintain speed to accommodate for changes in customer process.

The Häggglunds advanced control system, Spider, is a microcontroller-based system, configurable to suit different application needs. The Spider has a large variety of configurable functions to simplify the control and health monitoring of the TADS.

The Spider is pre-programmed and easy to configure and contains functions such as:

- ▶ Variable speed control
- ▶ Speed feedback
- ▶ Power limitation
- ▶ Industrial fieldbus communication
- ▶ Analog and digital signal monitoring
- ▶ Pressure control (torque control)

Also application specific functions such as:

- ▶ Friction control
- ▶ Shredder control
- ▶ Synchronized control

For detailed functionality and configuration, see data sheet for Häggglunds Spider Control System EN777. The TADS drive system can be delivered without control system if required. All electrical wiring for sensors and pump control will be wired to a junction box assembled on the drive system.

Driver card for pump can be assembled as an alternative in the junction box.

Monitoring of the drive unit sensors must be handled externally according to the *Monitoring logic diagram on page 7*.

Ambient Temperature

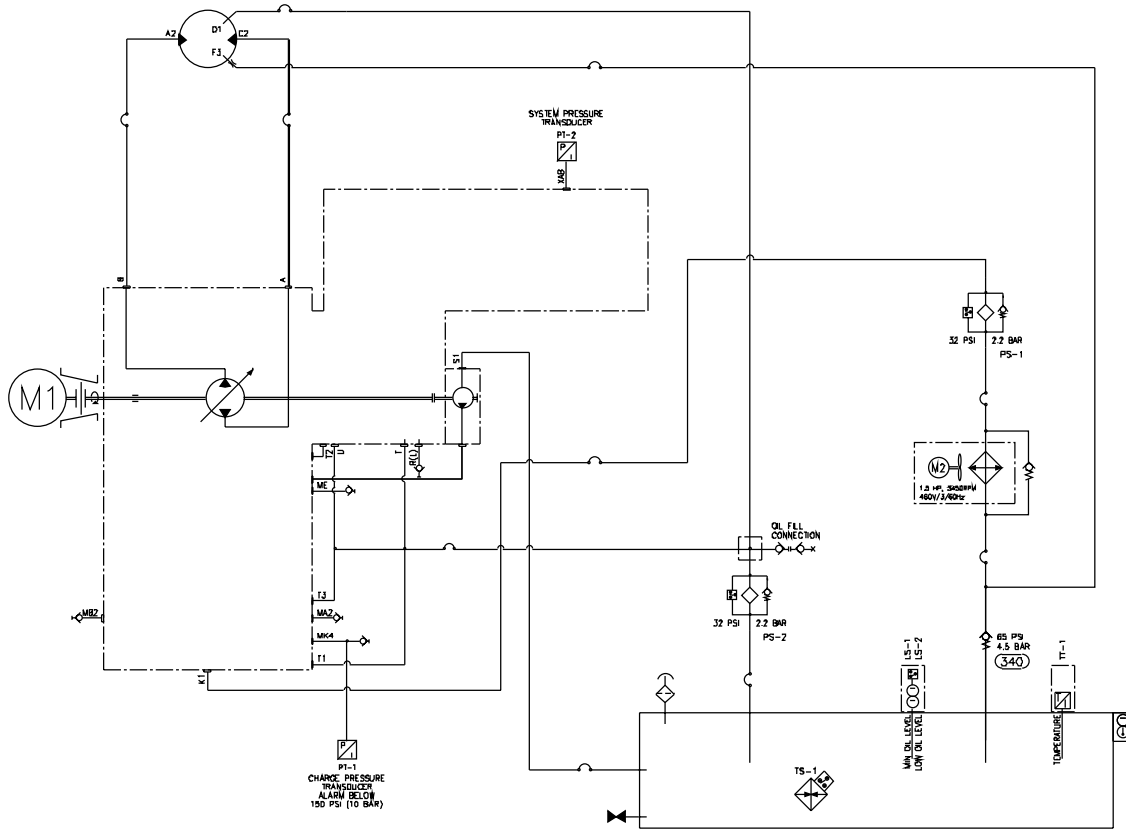
Upper limit

A standard drive system has an upper ambient temperature limit of 105 °F.

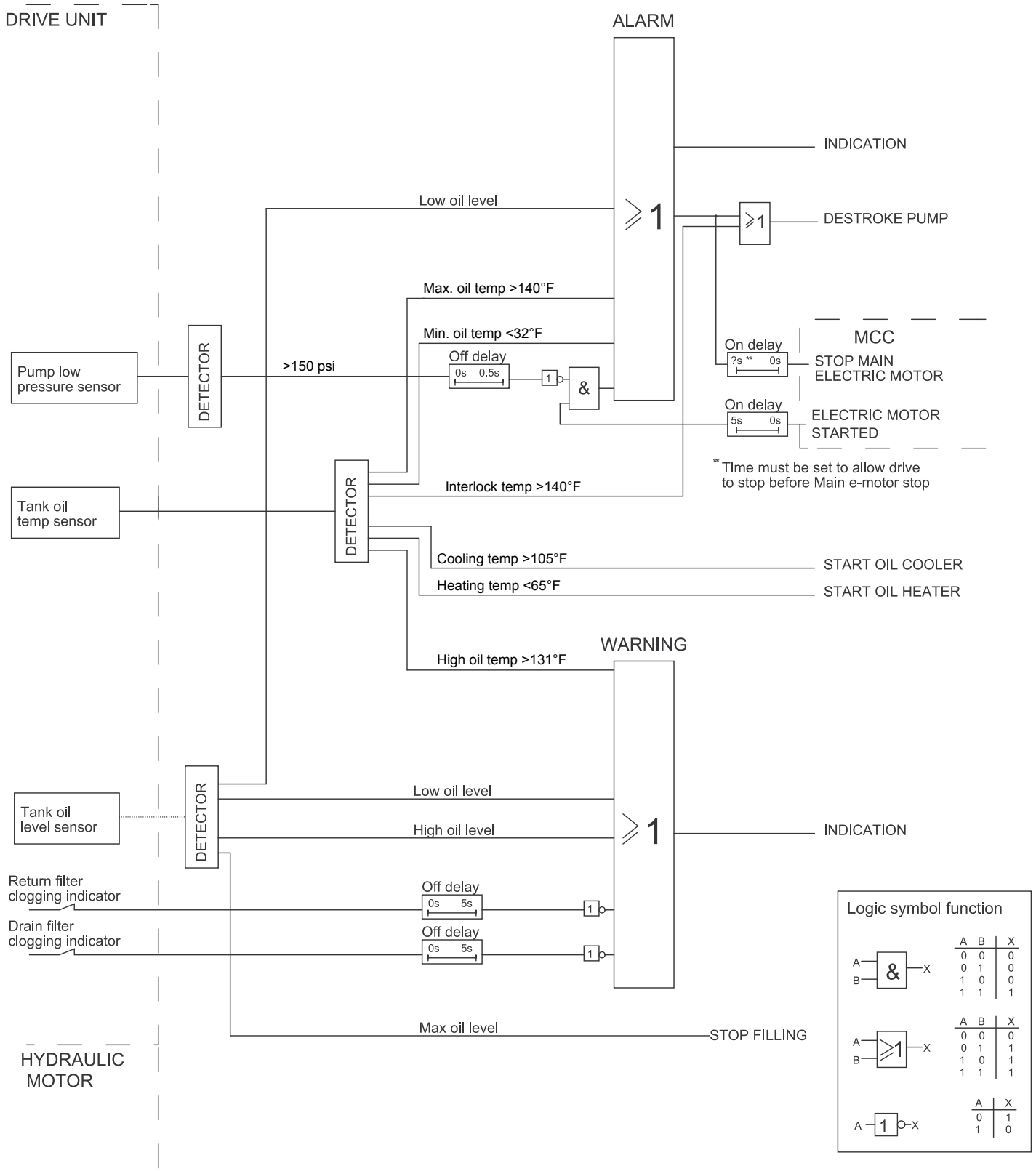
Lower limit

A standard drive system has a lower ambient temperature limit of –40 °F, when proper cold weather package is selected from model code

Circuit diagram



Monitoring logic diagram



Technical data

TADS Size	Max. Installed Power (hp)	Speed Range* (rev/min)	Specific Torque (T_S) (lbf-ft/1000 psi)	Max. Torque** (lbf-ft)
TADS-050	75	0 – 60	2543	12092
TADS-070	75	0 – 43	3560	16928
TADS-100	75	0 – 30	5085	24179
TADS-140	75	0 – 22	7119	33850
TADS-210	75	0 – 14	10678	50774
TADS-280	100	0 – 11	14200	67521
TADS-400	100	0 – 7.5	20300	96527
TADS-560	100	0 – 5	28500	135518
TADS-840	100	0 – 3.5	42700	203039

* For speeds above this range please contact Bosch Rexroth at info@boschrexroth-us.com

** Calculated as $T = T_s \times (5000 - 245)/1000$

Larger sizes available on request.

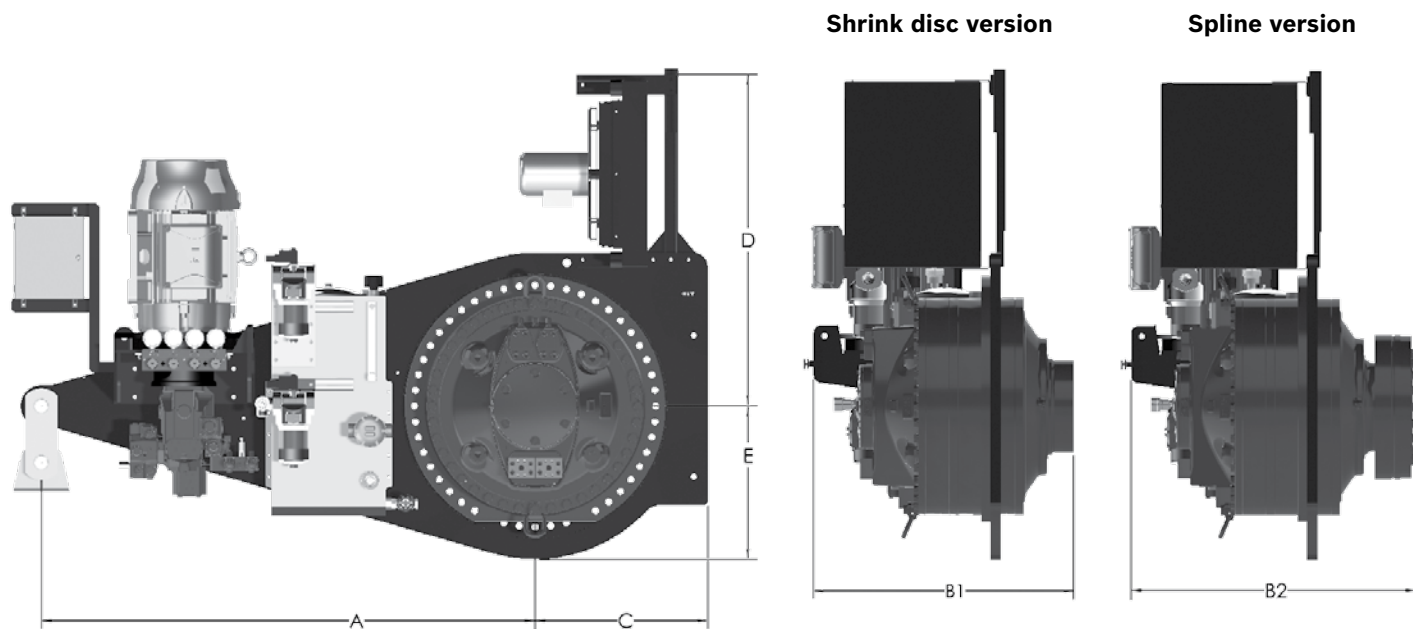
Standard overall dimensions

TADS Size	A (in)	B1* (in)	B2* (in)	C (in)	D** (in)	E (in)	Shrink Disc Shaft Ø (in)	Splines Ø*** (mm)	Weight (lbs)
TADS-050	63	30.75	33.75	16.0	45.5	12.00	4.724	N120x5x30x22x9H	3000
TADS-070	63	30.75	33.75	16.0	45.5	12.00	4.724	N120x5x30x22x9H	3100
TADS-100	63	34.25	37.75	16.0	45.5	13.00	5.512	N140x5x30x26x9H	3200
TADS-140	63	34.25	37.75	16.0	46.5	14.00	5.512	N140x5x30x26x9H	3400
TADS-210	63	35.00	40.00	16.0	46.5	14.00	6.299	N150x5x30x28x9H	3600
TADS-280	70	34.00	37.75	24.5	50.5	19.25	7.087	N200x5x30x38x9H	4200
TADS-400	70	34.00	38.25	24.5	50.5	19.25	7.874	N200x5x30x38x9H	4900
TADS-560	70	40.50	43.75	24.5	53.0	21.75	10.236	N260x5x30x50x9H	5100
TADS-840	70	40.50	43.75	24.5	53.0	21.75	10.236	N260x5x30x50x9H	6100

* Dimension may vary based on e-motor size

** Dimension may vary based on cooler size

*** Shaft adapters available upon request

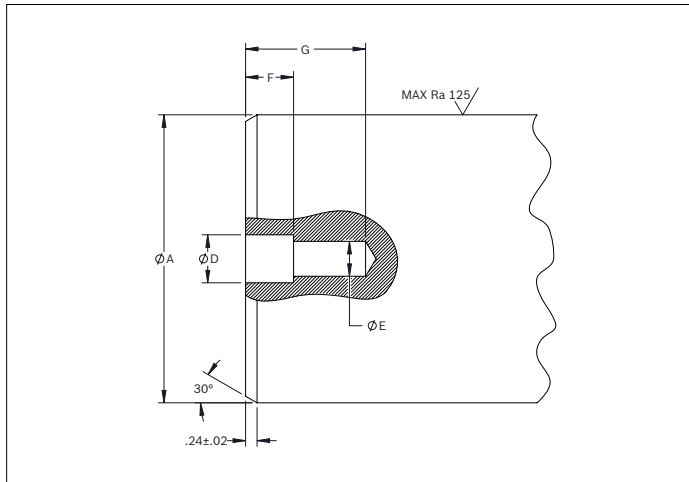


Mounting

Shrink Disc

Normally-loaded shaft

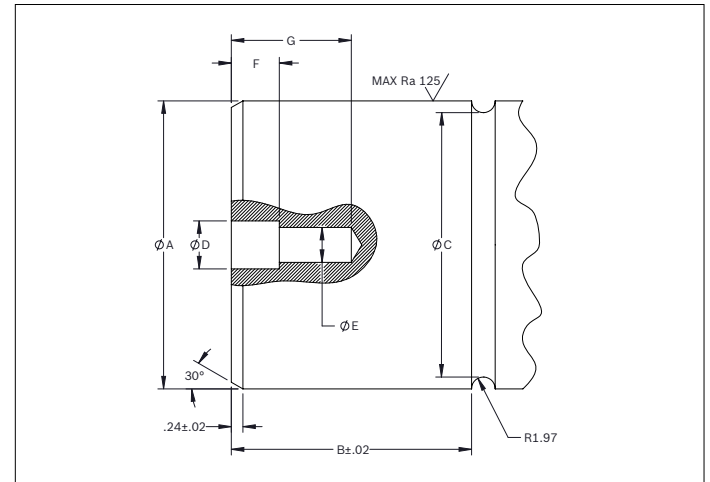
In drives with only one direction of rotation where the stresses in the shaft are moderate, the shaft can be plain, see Figure 1, and Tables 1 and 2.



▲ Figure 1

Design of driven shaft end on heavily-loaded shaft

Where the driven shaft is heavily loaded and is subject to high stresses, for example on changes in the direction of rotation, it is recommended that the driven shaft should have a stress relieving groove; see Figure 2, and Tables 1 and 2.



▲ Figure 2

Unidirectional drives

Steel with yield strength $Rel = 43,500$ psi

Bidirectional drives

Steel with yield strength $Rel = 65,250$ psi

Table 1. Valid for couplings (Figures 1 and 2)

Dim (in.)	CA50/70	CA100/140	CA210	CB280	CB400	CB560/840
A	4.7244 ^{+0/-0.00098}	5.5118 ^{+0/-0.00098}	6.2992 ^{+0/-0.00098}	7.0866 ^{-0.00055/-0.00213}	7.8740 ^{-0.00059/-0.00240}	10.2362 ^{-0.00067/-0.00272}
B	2.81	3.33	4.13	4.17	4.61	6.02
C	4.57	5.24	6.02	6.85	7.64	10

Table 2. Alternative thread (Figures 1 and 2)

Dim (in.)	CA50/70	CA100/140	CA210	CB280	CB400	CB560/840
D	M20	M20	M20	M20	M20	M20
E	>0.67	>0.67	>0.67	>0.67	>0.67	>0.67
F	0.98	0.98	0.98	0.98	0.98	0.98
G	1.97	1.97	1.97	1.97	1.97	1.97

NOTICE! The dimensions are valid for 68 °F.

Spline

To avoid wear in the splines, the installation must be within the specified tolerances in table 3.3. For production of the shaft, see 278 2231, 278 5023, 278 2235, 278 5025 and 278 2238.

Unidirectional drives

Steel with yield strength $Rel_{min} = 63,250$ psi

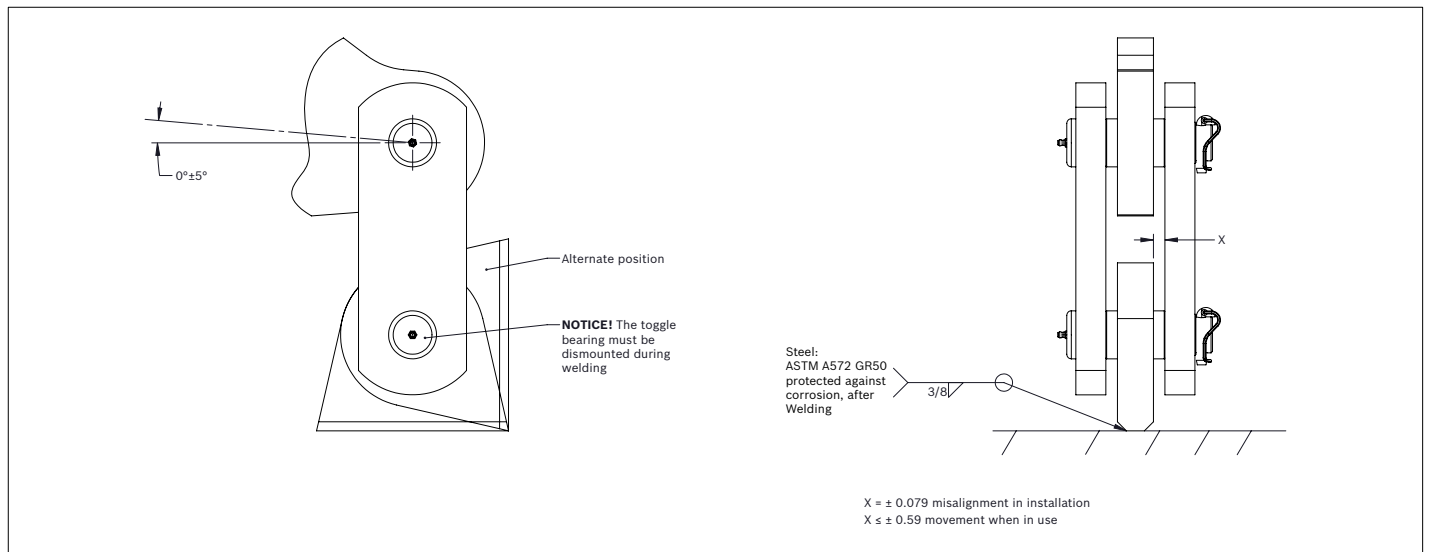
Bidirectional drives

Steel with yield strength $Rel_{min} = 101,500$ psi

Table 3.

Motor	CA50/70	CA100/140	CA210	CB280/400	CB560/840
Tooth profile and bottom Form	DIN5480	DIN5480	DIN5480	DIN5480	DIN5480
Tolerance	8f	8f	8f	8f	8f
Guide	BACK	BACK	BACK	BACK	BACK
Pressure angle	30°	30°	30°	30°	30°
Module	5	5	5	5	5
Number of teeth	22	26	28	38	50
Pitch diameter	Ø110	Ø130	Ø140	Ø190	Ø250
Minor diameter	Ø108 ^{+1/-1.62}	Ø128 ^{+1/-1.62}	Ø138 ^{+1/-1.62}	Ø188 ^{+0/-1.201}	Ø248 ^{+0/-1.201}
Major diameter	Ø119 ^{+0/-0.220}	Ø139 ^{+0/-0.250}	Ø149 ^{+0/-0.250}	Ø199 ^{+0/-0.290}	Ø259 ^{+0/-0.320}
Measure over pins	129.781 ^{-0.083/-0.147}	149.908 ^{-0.085/-0.150}	159.961 ^{-0.085/-0.150}	210.158 ^{-0.088/-0.157}	270.307 ^{-0.103/-0.181}
Diameter of measuring pins	Ø10	Ø10	Ø10	Ø10	Ø10
Addendum modification X M	+2.25	+2.25	+2.25	+2.25	+2.25

Reaction Point



▲ **Figure 3. Mounting of pivoted attachment**

Main components

Main Pump

Features

- ▶ Variable displacement axial piston pump of swashplate design for hydrostatic closed circuit transmissions
- ▶ Flow is proportional to speed and displacement and is infinitely variable through adjustment of the swivel angle
- ▶ Output flow increases with swivel angle from 0 to its maximum value
- ▶ Swivelling the pump over center smoothly changes the direction of flow
- ▶ The pump is equipped with two pressure relief valves on the high pressure ports to protect the hydrostatic transmission (pump and motor) from overloads
- ▶ One common pump for charge and EP displacement control
- ▶ Compact overall design
- ▶ Low noise level
- ▶ Long service life
- ▶ High efficiency

Technical data A4VG28 and SP40-125

Size			28	40	71	125
Displacement						
Variable pump	$V_{g \max}$	cm ³	28	40	71	125
Auxiliary pump	$V_{g H}$	cm ³	28	20	25	38
Speed						
max. speed	n_{\max}	rpm	1800	1800	1800	1800
min. speed	n_{\min}	rpm	1500	1500	1500	1500
Flow						
at nE=1800 rpm		gpm	13.2	18.8	33.4	58.8
at nE=1500 rpm		gpm	10.9	15.6	27.8	48.9
Power, max. at (Dp=350 bar)						
at nE=1800 rpm		hp	50	60	75	100
at nE=1500 rpm		hp	40	50	50	60
Case volume		gal	0.2	0.5	0.7	1.3

Operating pressure range

Depending on the behavior of the transmitted hydraulic energy in the system, charge pressure fluctuations can occur. In order to prevent damage to the system, charge pressure protection, which monitors the static charge pressure portion is necessary. Port MK4 is suitable to monitor the charge pressure. It is recommended to regularly check the charge pressure for the permissible max. and min. spikes with suitable measuring equipment.

Electric Motor

Function

The electric motor is a totally enclosed, fan cooled TEFC squirrel-cage, 4-pole 3-phase motor. The electric motors used as standard in the drive unit are manufactured by WEG. It is possible to select other customer supplied brands of electric motors as long as the limitations in electric motor dimensions and maximum weight are held.

Output power	15-100 hp
Voltage frequency	
380 V 50 Hz	440 V 60 Hz
400 V 50 Hz	460 V 60 Hz
415 V 50 Hz	480 V 60 Hz
Technical data	
Operating Duty:	S1
Method of Mounting:	Vertical, F1 conduit box
Degree of Protection:	IP55
Cooling Form:	Fan
Insulation Class:	F
Greasing:	Zerk style
Heater Elements:	120 V 50/60 Hz
Painting:	ISO12944 "C2"
Sound press. Level Lp:	≤ 70 dB(A)
Standards	
Standard:	NEMA MG1
Efficiency Class:	Premium efficiency (IE3)

Control and Adjustment Devices

EP – Electro-hydraulic control with proportional solenoid

The EP control adjusts the pump displacement proportional to the solenoid current. The pump displacement is therefore infinitely variable. One proportional solenoid is assigned to each direction of flow.

Operating voltage: 24 V

Nominal current: 800 mA

Current range 210...740 mA

Nominal resistance at 68 °F: 19 Ω

Mounted charge pressure and control valves

High pressure relief valves

Two pilot operated relief valves.

The valves prevent pump damage from excessive pressure levels. Each pressure side has its own relief valve, which is vented to the low pressure side of the loop.

Charge pressure relief valve

- ▶ The charge pressure relief valve is direct operated
- ▶ T1 needs external drain
- ▶ Setting range P_c: 174-305 psi
- ▶ Standard setting: 218 psi

Control pressure relief valve

- ▶ Control pressure relief valve is direct operated with unloading function.
- ▶ Setting pressure range: 435-653 psi
- ▶ Normal setting range: 508-610 psi depending on pump size

Pressure Gauges

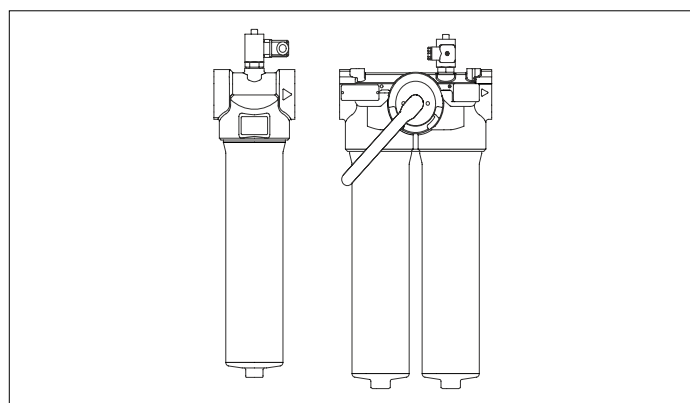
Optional pressure gauges will be located in front of and below the electric motor. It will consist of 4 gauges to show charge, control, pump main pressure A port, and pump main pressure B port. Option also comes with needle valves to shut off pressure to gauge.

Flushing

Flushing is used to cool the hydraulic motor depending on need due to the environmental conditions in which the drive system will be operating.

Cold flushing is done by a check valve directing part of the cooled oil from the oil cooler to the connection port of the motor and back to the tank via the drain line.

Oil Filter



Function

The filters are used in drain and return lines. The filter housing is equipped with a bypass valve and an electrical and visual contamination indicator. Single or duplex filters can be selected. There is a contamination indicator that gives indication if the differential pressure is above 31.9 psi – 10% and the temperature of the oil is above 86 °F.

A single filter has one filter element and a duplex filter has two filter elements but only one filter is used at any one time. On duplex filters the filter elements can easily be replaced without interrupting operation. The filter elements are β-stable (*Separation characteristics, page 14*), have a multi-layered structure and are compatible with HFA, HFB, and HFC fluids. The opening pressure for the by-pass valve $\Delta P = 50.8 \text{ psi} + 10\%$.

Standards – filters

The filter elements are manufactured and tested in accordance with the following international standards:

Item	Standard
Verification of collapse/burst resistance	ISO 2941
Determination of fabrication integrity	ISO 2942
Verification of material compatibility with hydraulic fluids	ISO 2943
Verification of flow fatigue characteristics	ISO 3724
Evaluation of pressure drop versus flow	ISO 3968.2
Test of end cap load	ISO 3723
Test of filter performance	ISO 4572

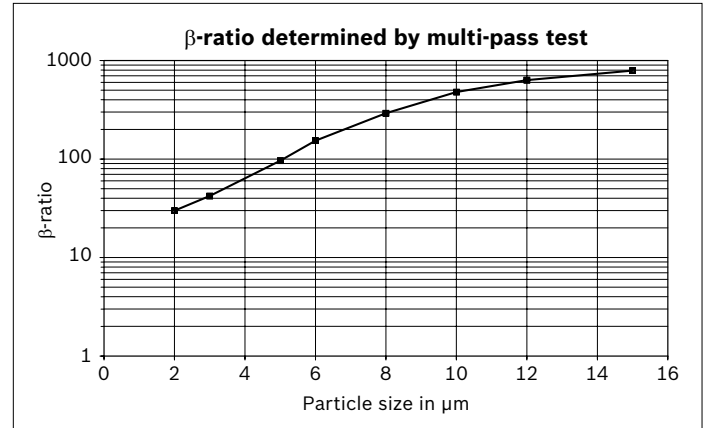
Mechanical data

Material, filters

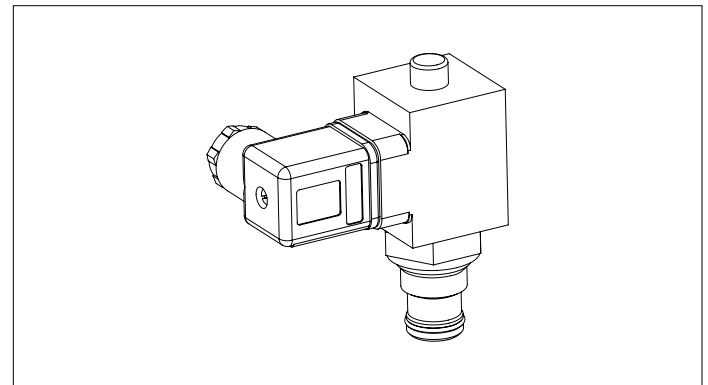
Part	Material	
Filter complete:	Filter head	Aluminum alloy
	Filter bowl	Aluminum
	Seals	Nitrile rubber
	Low pressure type	360 psi
	bypass Δp	50 psi + 10%
	Type	Single Duplex
	Max flow	66 gpm 106 gpm 160 gpm
Filter element:	Filtration grade	10 μm (standard) 3 μm (optional)
	Filter	Inorganic glass fibre material
	End shields	Tin plated
	Inside tube	Tin plated
Filter switch:	Filter switch	See section: "Clogging Indicator"

Separation characteristics

The β -ratio for the particle size 10 (μm) fullfills ISO 4572 ($\beta_{10} \geq 75$).



Clogging Indicator – Oil Filter



Function

A contamination indicator is mounted in the oil filter housing to indicate when the filter element must be changed. Both a visual and an electric indication are obtained. When the level of contamination in the filter element is increased, the pressure drop over the filter will increase. Indication takes place at a differential pressure across the filter of 32 psi for return and drain filters.

The visual indicator is reset automatically. The electrical indication is internally interlocked by a thermo switch below 86 °F rising temperature to avoid indication due to high viscosity. The interlock is activated at 68 °F falling temp.

Protection class

Protection class IP 65 acc. to IEC 529 / DIN 40050

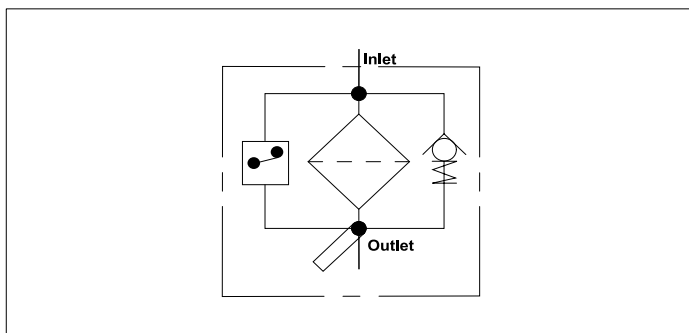
Mechanical data

Material Clogging Indicator

Part	Material
Lower section	Aluminum alloy, Steel
Upper section	Polyamid
Seals	Nitrile rubber

Clogging Indicator

Max. operating pressure	6000 psi
Temperature range	-40 °F...212 °F
Protection class	IP65



▲ Hydraulic symbol (oil filter with indicator)

Electrical data

Clogging Indicator

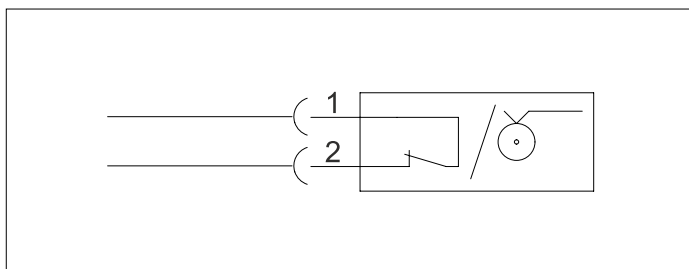
Switch type	normally closed
Switching voltage	24 VDC / 250 VAC
Max. making capacity at resistive load	20 VA/20 W
Cold start suppression	86 °F, rising 68 °F, falling
Min. switching current	1 mA

Electrical connections

Configuration of plug acc. to DIN 43650 / ISO 4400

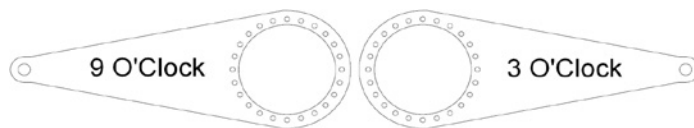
Cable gland: Pg 11

Cable diameter: Ø 6-10 mm



▲ Electrical symbol

Torque Arm Orientation



Viewed from motor port side

Oil Heater

Mechanical Data

Element	Steel Sheath
Probe Length	9"

Electrical Data

Supply Voltage V	120VAC or 240VAC Single Phase
Output W	375 W
Thermostat	Integral SPST Set at 65 °F

Cold Weather Package 1

In addition to an oil heater suction line heat tracing will be used.

Mechanical Data

Temperature Range	-40 °F...150 °F
-------------------	-----------------

Electrical Data

Supply Voltage V	120VAC or 240VAC
Thermostat	Self-regulating
Output Power W	8 Watts/ft

Cold Weather Package 2

In addition to an oil heater and suction line heat tracing a heater in the control box will be provided if a driver card is selected.

Cold Weather Package 3

In addition to an oil heater, suction line heat tracing, and control box heater (if driver card is selected) wire and conduit will be supplied to comply with a low ambient of -40 °F.

Air Cooler

Function

- ▶ The air-oil cooler consists of a fan driven by an electric motor, blowing air through the cooler matrix
- ▶ The cooling matrix is bar and plated brazed aluminum
- ▶ All systems have a 65psi by-pass function to limit the oil pressure in the cooler
- ▶ The electric motor is asynchronous.

Oil

The TADS can either be ordered as filled with mineral oil, filled with synthetic oil, or not filled.¹⁾ In the case of the mineral oil fill option, it can either be delivered filled with Shell Tellus S3 M 68 (ISO VG 68) or Shell Tellus S3 M 100 (ISO VG 100). In the case of synthetic oil fill, it can either be delivered filled with Mobil SHC 526 (ISO VG 68) or Mobil SHC 527 (ISO VG 100).

1) The four available oil fill options do not represent an exhaustive list of what fluids may be used in a TADS. See document RE15414 – Hydraulic fluid quick reference, document RE15302-WA/10.2015 – CB Compact Installation & Maintenance Manual, or document RE15305-WA/10.2015 – CA Compact Installation & Maintenance Manual for details on fluid selection guidelines.

Encoder

The Hägglunds SPDC encoder features a slim fully integrated design with a magnetic sensor. This provides a non-contact wear free sensing system.

Mechanical specification, speed sensor

Axial tolerance	± 2 mm (between sensor and magnetic strip)
Radial tolerance	1 mm nominal 0.1 and 2.0 mm (air gap)
Protection class	IP67 acc. to DIN EN 60529
Operating temperature	–40 °F...+176 °F
Vibration	≤ 100 m/s ² , sine 50 Hz – 2 kHz DIN EN 60068 2-6
Shock	≤ 1000 m/s ² , half sine 11 ms DIN EN 60068 2-7

Electrical specification, speed sensor

Supply voltage +Ub	+ 24 VDC (10–30 VDC)
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Current consumption at no load	≤ 30 mA
Output voltage	low 0...2 V high Ub–2 V
Outputs	Short circuit protected HTL
Cable length max	200 m at 50 kHz
EMC approval	Immunity DIN EN 61000-6-2 Emission DIN EN 61000-6-3

Specification, pin out

Pin 3	Signal	Color (optional cable)
1	0 V	White
2	+Ub	Brown
3	A+	Green
4	A–	Yellow
5	B+	Gray
6	B–	Pink
7	–	Blue
8	–	Red

When driver card option is selected an F/A converter will be provided in the control box mounted on the TADS drive system. The F/A converter converts a single puls train to a 4-20mA output signal.

Technical data – F/A converter

Supply voltage	24 V (12–50 V)
Power consumption	3 W
Operating temperature	–4 °F...+176 °F
Humidity	0–90 % RH, non-condensing
Temperature coefficient	< 0.01 % / °F
Accuracy	better than 0.3 %
Resolution	0.1 %
Mounting	NS35 DIN rail
Size	w45 x d70 x h117

Electrical connections – F/A converter

Pulse input:	
– Input high	V _{in} > 15 V
– Input low	V _{in} < 6 V
4– 20 mA	Max. output load 500 Ω
EMC approval	EN 50081-1, EN 50082-2
Safety	EN 60730

Air Breather

The air breathing of the tank is via an air filter element to prevent contamination of the oil by particles in the air.

The filter element

- ▶ Has a filtration degree of 10um (0.00039 inch)
- ▶ Has a high dirt holding capacity
- ▶ Is resistant against all hydraulic fluids
- ▶ Can easily be replaced
- ▶ Maximal air flow rate 106 gpm

Mechanical data

Part	Material	
Air Breather filter complete	Housing	Glass-fiber reinforced Polyamide
	Seal	NBR
Filter Element	Filter	Foam

Service life

The service life of the filter element depends on the degree of contamination of the air. The filter element shall be changed according to the maintenance chart found in the I&M manual.

Electronic Level Sensor

Function

The tank oil level sensor gives signals for two switch points.

Mechanical data

Sensing method	Reed contacts
Material in contact with media	Brass/Buna N
Probe Length	13"
Medium temperature range	-40 °F...250 °F
Protection Class	IP65

Electrical data

Supply voltage V	10...30 VDC / 120 VAC / 250 VAC
Output signal	switch
Max Load	0.3 A / 0.13 A / 0.08 A
Electrical Connection	DIN 43650
Pin Connection	pin 1 +V
	Pin 2 Min Oil Level
	Pin 3 Low Oil Level

Electronic Temperature Sensor

Function

The tank temperature sensor gives analog output for oil temperature. Sensor readings and threshold levels are set in the control system.

Mechanical data

Sensing Method	Pt 100
Material in contact with media	Stainless steel
Probe Length	20"
Medium temperature range	-40 °F...212 °F
Protection class	IP66

Electrical data

Supply voltage V	10...30 VDC
Output signal	4...20 mA
Max Load	0.023A
Temperature Range	-40 °F...212 °F
Accuracy	±0.1%
Electrical Connection	Screw terminals
Pin Connection	pin 4 +V
	Pin 5 signal output

Pressure Sensor

Function

The pressure sensor gives information about the pressure level in different parts of the hydraulic system. The signal is used for information about the system and/or used to control functions.

Mechanical data

Medium temp range	-40 °F...185 °F
Protection class	IP67

Electrical data

Measuring range	Work pressure	0...5800 psi
	Low pressure	0...725 psi
Supply voltage Ub	16...36 VDC	
Output	4...20 mA	
Max load (ohm)	(Ub-8.5V)/20 mA	
Connector	4 pole M12	
Pin connection	Pin 1	+Ub
	Pin 2	signal output

Environment options

Low Temperature

An oil tank temperature of 32 °F is a standard setting where the power unit must be interlocked to prevent startup.

The heating system consists of an oil heater in the tank and optional heat tracing for the pump suction line.

High temperature

Ambient temperature above 105 °F limits the permitted power for the electric motor. An oil temperature of 140 °F is the standard setting where the drive system must be interlocked to stop because of service life of the drive system.

Painting

The drive system is painted for use in normal industrial environments. All bolts, washers, and nuts are plated.

Accessories

Mounting Tool

The motor can be mounted onto the driven shaft with or without a mounting tool (R939003803), but the use of a mounting tool is recommended as it makes the work easier.

Shaft Adaptor

A shaft adaptor can be provided if necessary to help make the connection between the drive system and driven equipment. Contact Häggglunds Bosch Rexroth.

Axial Locking Set

The axial locking set is used to secure the drive system to the driven shaft. The axial locking set is only required when a spline motor is used.

CA50-210	R939002582
CB280	R939002612
CB400	R939002613
CB560	R939002614
CB840	R939002615

Packing

The drive system is mounted to a shipping stand which is mounted to a wooden pallet. All accessory components are included on the skid such as, mounting tools, axial locking kits, Spider control system, etc. The drive system and accessories will be shrink-wrapped for domestic shipment. Export crating is available upon request.

Additional documents

Title	Document number	Document type
Installation and maintenance manual, Hägglunds TADS	RA 15426-B	Instruction
Engineering manual Hägglunds Spider	EN 777	Engineering manual
Hydraulic fluid quick reference	RE15414	
CA installation and maintenance	RE15305	Instruction
CB installation and maintenance	RE15302	Instruction
Speed sensor Hägglunds SPDC	RE15350	Data sheet
SP variable displacement pumps	EN873-1	Product manual

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