Technical data sheet

FOR THE ROTARY ACTUATOR

Type: HSH 4 SG
Art. no.: 4816910

Model	Vane-type rotary actuator In principle the actuation has a pressure- and viscosity-dependent internal leak volume flow rate. For example, if an external torque affect the rotary actuator shaft in an idle mode, the rotary actuator shaft shifts slowly from its angle position!
Series	HSH: Rotary actuator without an end position damping, without a internal rotating angle limitation and with a radial and axial hydrostatic supported shaft. The rotary actuator can be equipped with components are adapted to the specific application, such as: - Valve connection plates with differnt hole patterns - Control valves and rotary encoders of all well-known manufacturers - Pulsation accumulators, hubs and shrink discs or clamping sets
Size	4
Mounting style	
- Rotary actuator housing	single-sided face mounting with thread according to DIN 13-1 - M 10 single-sided flange mounting with through holes d = 11 Strength class of the fastening screws ≥ 10.9
- Drive shaft end	cylindrical shaft end for shrink disc or clamping set with d = 40 g6
- Centre hole in the drive shaft end	DIN 332-2 - D M 12
Connection type	flange surface with through holes and whitworth pipe thread according to DIN ISO 228-1; A and B with d=10 in the flange surface of the rear motor cover and L G3/8 radial in the rear motor cover
Installation position	arbitrary; Depending on the position of installation and case of application a load may cause running ahead the rotary actuator drive shaft. In such a case, appropriate countermeasures must be taken!
Installation instructions	see operating instructions
Rotary angle limitation	An external rotary angle limitation is recommended!
Intended use	The rotary actuator is intended for generation an alternating torque in a stationary application.

max. nominal pressure	$p_{N\,max}$	bar	280		[1]
min. minimum pressure	$p_{M\,min}$	bar	50	Required for a proper functioning of the load-free drive.	
max. starting pressure without load	$p_{St\,max}$	bar	4.2	at an output pressure of p = 1 bar	
specific torque	M_{sp}	Nm/bar	4.09	torque constant	[2]
theoretical torque	M_{th}	Nm	1 145	at $\Delta p = p_{N\,max}$	[2]
mechanical efficiency ≈	η_{mec}	-	0.985	at $\Delta p = p_{N\,max}$ and $\omega = \omega_{max}$	[3]
effective torque	M_{eff}	Nm	1 128	at $\Delta p = p_{N\,max}$ and $\omega = \omega_{max}$	[3]
number of working chambers	z	-	4		
nominal angle of rotary	φ_N	grad	125	The internal stop must not be approached!	[2]
max. operating angle of rotary	$\varphi_{A\,max}$	grad	120	This corresponds to a maximum amplitude of ± 60°.	
maximum radial force	$F_{r\,max}$	N	5 000	force acting centered on the journal of the drive shaft	[4]
maximum axial force	$F_{ax\,max}$	N	5 000	force acting centrically on the journal of the drive shaft	[4]
weight ≈	m	kg	37.0	± 10%, incl. oil filling	
mass moment of inertia of drive shaft	J_{W0}	$kgcm^2$	27.60	± 5%, without other attachments such as hub, coupling, rotation encoder, etc.	
max. angular speed	ω_{max}	rad/s	14.0	This corresponds to 802 deg/s or an equivalent rotational speed of n= 134 min^{-1}.	[1]
specific displacement	v_{sp}	cm^3/°	0.71	This results in a theoretical operating volume of V_A= 85.7 cm^3.	[2]
theoretical volume flow rate required	Q_{th}	l/min	34.4	at $\omega = \omega_{max}$	[2]
max. total leakage volume flow rate	$Q_{L\,max}$	l/min	15.00	at $\Delta p = p_{N\,max}$ and ν=50 mm^2/s (internal leakage + leakage at port L)	[3]
effective required volume flow rate	Q_{eff}	l/min	49.4	at $\Delta p = p_{N\,max}$, $\omega = \omega_{max}$ and ν=50 mm^2/s	[3]
leakage fluid pressure	$p_{L\,max}$	bar	0.7		
permissible pressure fluid				HLP mineral oils according to DIN 51524 T2	
temperature range of pressure fluid	$\vartheta_{Öl}$	°C	-20 – +80	The viscosity range set in operation is to be observed.	[1]
range of kinematic viscosity	ν	mm^2/s	20 – 150	short-term, the optimum operating viscosity range is 40 – 50 mm^2/s	
cleanliness class of pressure fluid				Max. permissible degree of pollution according to ISO 4406 class 17/15/12.	
range of ambient temperature	ϑ	°C	0 – +60		
design of component surfaces				metallic bright and wetted with anticorrosion agents	

Subject to technical modifications and error!

[1]) The simultaneous occurrence of two or more maximum values of temperature, pressure and angular speed requires the written consent of the manufacturer!
[2]) Theoretically determined value without manufacturing tolerances and if so an efficiency.
[3]) Median recorded in test series; an inferential variance is possible.
[4]) The data of maximum forces are valid only when the hydrostatic bearing is in operation with p N max!

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