

# HDV – Reliably Clean



HDV

Aseptic, highly dynamic and outstanding positioning accuracy – the HDV was developed in accordance with EHEDG guidelines and meets the strict hygiene requirements of production and packaging facilities. The gearbox in hygienic design not only offers you maximum safety against contamination-related product and process risks, but also guarantees maximum plant availability and productivity of the equipment.

## PRODUCT HIGHLIGHTS



### New design freedom

Direct process integration opens up new design options.



### Resistance

Resistant against chemical cleaning agents and disinfectants.



### Cleaning

Fast, efficient, and safe cleaning, also suitable for CIP processes.



### Max. achievable impermeability

IP69K (max. 30 bar).  
Relating to DIN 60529:2014-09



Pharmaceuticals – bottling plant for liquid pharmaceutical products



Cosmetics – bottling plant for creams



More information about the HDV: simply scan the QR code using your smartphone.  
[www.wittenstein.de/en-en/hygienic-design](http://www.wittenstein.de/en-en/hygienic-design)



- A Certification**
- FDA certified
  - NSF certified

- B Surface texture**
- Smooth-rolled surface made of hygienic steel 1.4404
  - Electropolished surface also optionally possible

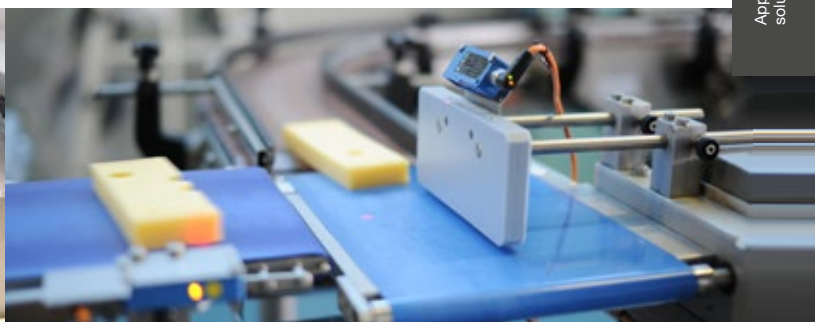
- C Cavity-free housing design**
- No undercuts
  - Large radii
  - No horizontal surfaces

- D Maximum safety**
- Triple sealing concept
  - Seals resistant to cleaning agents
  - IP69K (max. 30 bar)

- E Available output types**
- Smooth shaft
  - Shaft with key



Sweet goods – packaging plant for cookies



Milk products – cheese processing plant

# HDV 015 MF 1-/2-stage

				1-stage				2-stage						
Ratio	i		4	5	7	10	16	20	25	35	50	70	100	
Max. torque <sup>a) b) e)</sup>	$T_{2a}$	Nm	51	51	51	46	51	51	51	51	51	51	46	
		in.lb	451	451	451	407	451	451	451	451	451	451	407	
Max. acceleration torque <sup>e)</sup> (max. 1000 cycles per hour)	$T_{2B}$	Nm	32	32	32	29	32	32	32	32	32	32	29	
		in.lb	283	283	283	257	283	283	283	283	283	283	257	
Emergency stop torque <sup>a) b) e)</sup> (permitted 1000 times during the service life of the gearbox)	$T_{2Not}$	Nm	75	75	75	75	75	75	75	75	75	75	75	
		in.lb	664	664	664	664	664	664	664	664	664	664	664	
Permitted average input speed <sup>d)</sup> (at $T_{2N}$ and 20 °C ambient temperature)	$n_{1N}$	rpm	3000	3000	3000	3000	3700	3700	3700	3700	3700	3700	3700	
Max. input speed	$n_{1Max}$	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque <sup>b)</sup> (at $n_1$ =3000 rpm and 20 °C gearbox temperature)	$T_{012}$	Nm	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
		in.lb	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	
Max. backlash	$j_t$	arcmin	≤ 10				≤ 15							
Torsional rigidity <sup>b)</sup>	$C_{t21}$	Nm/arcmin	2.3	2.3	2.3	2	2.3	2.3	2.3	2.3	2.3	2.3	2	
		in.lb/arcmin	20	20	20	18	20	20	20	20	20	20	18	
Max. axial force <sup>c)</sup> (Standard / HIGH FORCES)	$F_{2AMax}$	N	500 / 1000				500 / 1000							
		lb <sub>f</sub>	113 / 225				113 / 225							
Max. lateral force <sup>c)</sup> (Standard / HIGH FORCES)	$F_{2QMax}$	N	350 / 1600				350 / 1600							
		lb <sub>f</sub>	79 / 360				79 / 360							
Max. tilting moment (Standard / HIGH FORCES)	$M_{2KMax}$	Nm	20 / 105				20 / 105							
		in.lb	177 / 929				177 / 929							
Efficiency at full load	$\eta$	%	97				95							
Service life	$L_h$	h	> 20000				> 20000							
Weight (incl. standard adapter plate)	$m$	kg	3.2				3.8							
		lb <sub>m</sub>	7.1				8.4							
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)	$L_{PA}$	dB(A)	≤ 60				≤ 60							
Max. permitted housing temperature		°C	+90				+90							
		°F	+194				+194							
Ambient temperature		°C	–25 to +40				–25 to +40							
		°F	–13 to +104				–13 to +104							
Lubrication			Lubricated for life											
Direction of rotation			In- and output same direction											
Protection class <sup>g)</sup>			IP69K (max. 30 bar)											
Elastomer coupling (recommended product type – validate sizing with cymex®)			-											
Bore diameter of coupling on the application side		mm	-											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	C 14	$J_i$	kgcm <sup>2</sup>	0.18	0.17	0.15	0.15	0.17	0.16	0.16	0.15	0.15	0.15	0.15
			10 <sup>-3</sup> in.lb.s <sup>2</sup>	0.16	0.15	0.13	0.13	0.15	0.14	0.14	0.13	0.13	0.13	0.13

Please use our sizing software cymex® for a detailed sizing – [www.wittenstein-cymex.com](http://www.wittenstein-cymex.com)

<sup>a)</sup> Valid for torque transmission only

<sup>b)</sup> Valid for standard clamping hub diameter

<sup>c)</sup> Refers to center of the output shaft or flange

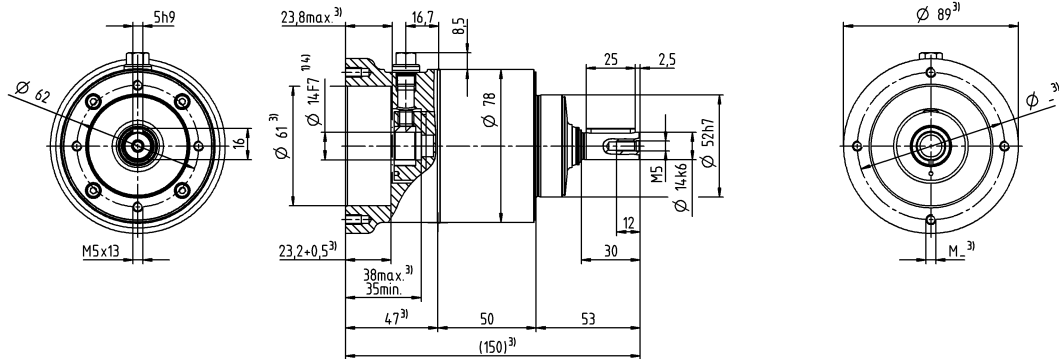
<sup>d)</sup> Please reduce input speed at higher ambient temperatures

<sup>e)</sup> Valid for: Smooth shaft

<sup>g)</sup> Applies at standstill, for details see operating instructions

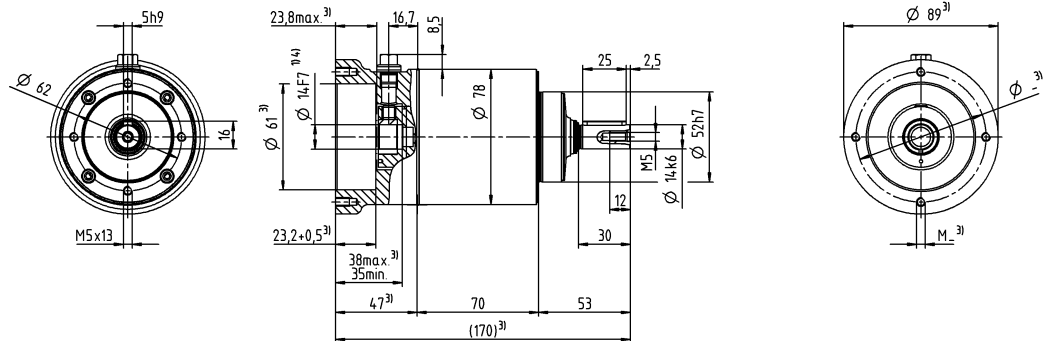
# 1-stage

up to 14<sup>4)</sup> (C)<sup>5)</sup>  
clamping hub  
diameter



# 2-stage

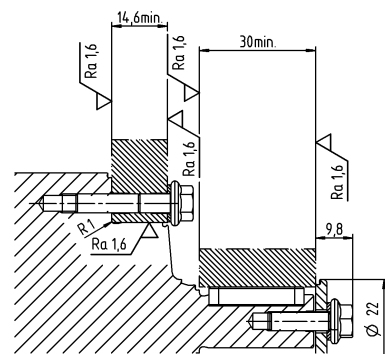
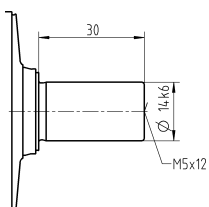
up to 14<sup>4)</sup> (C)<sup>5)</sup>  
clamping hub  
diameter



Motor shaft diameter [mm]

## Other output variants

Smooth shaft



Mounting accessories:  
Mounting kit comprising stainless steel screws, washers,  
seals and O-rings available as an option.

Non-tolerated dimensions are nominal dimensions

<sup>1)</sup> Check motor shaft fit

<sup>2)</sup> Min. / Max. permissible motor shaft length

Longer motor shafts are possible, please contact alpha

<sup>3)</sup> The dimensions depend on the motor

<sup>4)</sup> Smaller motor shaft diameter is compensated  
by a bushing with a minimum wall thickness of 1 mm

<sup>5)</sup> Standard clamping hub diameter

# HDV 025 MF 1-/2-stage

				1-stage				2-stage							
Ratio		i		4	5	7	10	16	20	25	35	50	70	100	
Max. torque <sup>a) b) e)</sup>		$T_{2a}$	Nm	128	128	128	115	128	128	128	128	128	128	115	
			in.lb	1133	1133	1133	1018	1133	1133	1133	1133	1133	1133	1018	
Max. acceleration torque <sup>e)</sup> (max. 1000 cycles per hour)		$T_{2B}$	Nm	80	80	80	72	80	80	80	80	80	80	72	
			in.lb	708	708	708	637	708	708	708	708	708	708	637	
Emergency stop torque <sup>a) b) e)</sup> (permitted 1000 times during the service life of the gearbox)		$T_{2Not}$	Nm	190	190	190	190	190	190	190	190	190	190	190	
			in.lb	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	1682	
Permitted average input speed <sup>d)</sup> (at $T_{2N}$ and 20 °C ambient temperature)		$n_{1N}$	rpm	2700	2700	2700	2700	3400	3400	3400	3400	3400	3400	3400	
Max. input speed		$n_{1Max}$	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	
Mean no load running torque <sup>b)</sup> (at $n_1$ =3000 rpm and 20 °C gearbox temperature)		$T_{012}$	Nm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
			in.lb	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	
Max. backlash		$j_t$	arcmin	≤ 10				≤ 15							
Torsional rigidity <sup>b)</sup>		$C_{t21}$	Nm/arcmin	7.5	7.5	7.5	5.5	7.5	7.5	7.5	7.5	7.5	7.5	5.5	
			in.lb/arcmin	66	66	66	49	66	66	66	66	66	66	49	
Max. axial force <sup>c)</sup> (Standard / HIGH FORCES)		$F_{2AMax}$	N	500 / 1500				500 / 1500							
			lb <sub>f</sub>	113 / 338				113 / 338							
Max. lateral force <sup>c)</sup> (Standard / HIGH FORCES)		$F_{2QMMax}$	N	500 / 2500				500 / 2500							
			lb <sub>f</sub>	113 / 563				113 / 563							
Max. tilting moment (Standard / HIGH FORCES)		$M_{2KMax}$	Nm	31 / 185				31 / 185							
			in.lb	274 / 1637				274 / 1637							
Efficiency at full load		$\eta$	%	97				95							
Service life		$L_h$	h	> 20000				> 20000							
Weight (incl. standard adapter plate)		$m$	kg	5.2				6.5							
			lb <sub>m</sub>	11				14							
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)		$L_{PA}$	dB(A)	≤ 63				≤ 63							
Max. permitted housing temperature			°C	+90				+90							
			°F	+194				+194							
Ambient temperature			°C	–25 to +40				–25 to +40							
			°F	–13 to +104				–13 to +104							
Lubrication				Lubricated for life											
Direction of rotation				In- and output same direction											
Protection class <sup>g)</sup>				IP69K (max. 30 bar)											
Elastomer coupling (recommended product type – validate sizing with cymex®)				-											
Bore diameter of coupling on the application side			mm	-											
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	E	19	$J_i$	kgcm <sup>2</sup>	0.63	0.54	0.52	0.46	0.6	0.52	0.54	0.5	0.52	0.52	0.46
				10 <sup>-3</sup> in.lb.s <sup>2</sup>	0.56	0.48	0.46	0.41	0.53	0.46	0.48	0.44	0.46	0.46	0.41

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<sup>a)</sup> Valid for torque transmission only

<sup>b)</sup> Valid for standard clamping hub diameter

<sup>c)</sup> Refers to center of the output shaft or flange

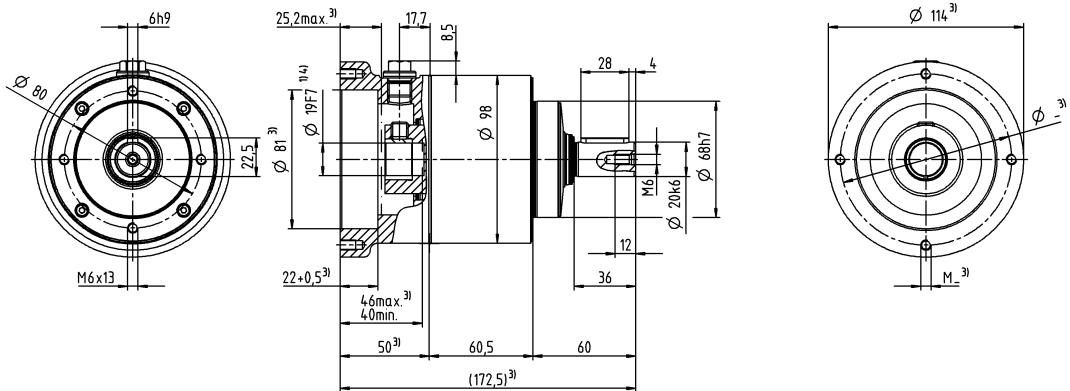
<sup>d)</sup> Please reduce input speed at higher ambient temperatures

<sup>e)</sup> Valid for: Smooth shaft

<sup>g)</sup> Applies at standstill, for details see operating instructions

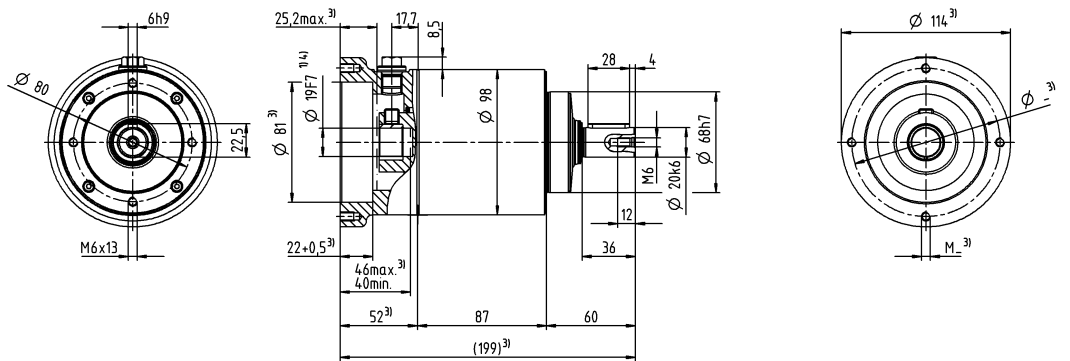
# 1-stage

up to 19<sup>4)</sup> (E)<sup>5)</sup>  
clamping hub  
diameter



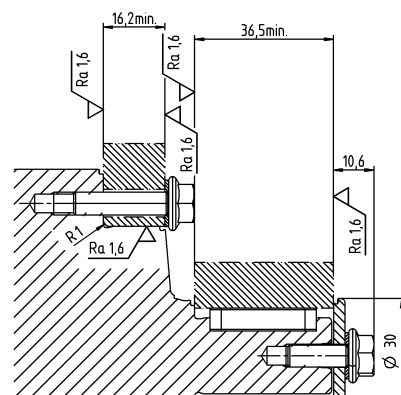
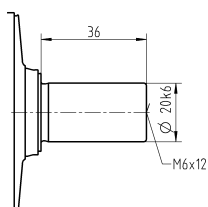
# 2-stage

up to 19<sup>4)</sup> (E)<sup>5)</sup>  
clamping hub  
diameter



## Other output variants

Smooth shaft



### Mounting accessories:

Mounting kit comprising stainless steel screws, washers, seals and O-rings available as an option.

Non-tolerated dimensions are nominal dimensions

<sup>1)</sup> Check motor shaft fit

<sup>2)</sup> Min. / Max. permissible motor shaft length

Longer motor shafts are possible, please contact alpha

<sup>3)</sup> The dimensions depend on the motor

<sup>4)</sup> Smaller motor shaft diameter is compensated by a bushing with a minimum wall thickness of 1 mm

<sup>5)</sup> Standard clamping hub diameter

# HDV 035 MF 1-/2-stage

				1-stage				2-stage							
Ratio			i		4	5	7	10	16	20	25	35	50	70	100
Max. torque <sup>a) b) e)</sup>			$T_{2a}$	Nm	320	320	320	288	320	320	320	320	320	320	288
				in.lb	2832	2832	2832	2549	2832	2832	2832	2832	2832	2832	2549
Max. acceleration torque <sup>e)</sup> (max. 1000 cycles per hour)			$T_{2B}$	Nm	200	200	200	180	200	200	200	200	200	200	180
				in.lb	1770	1770	1770	1593	1770	1770	1770	1770	1770	1770	1593
Emergency stop torque <sup>a) b) e)</sup> (permitted 1000 times during the service life of the gearbox)			$T_{2Not}$	Nm	480	480	480	480	480	480	480	480	480	480	480
				in.lb	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248	4248
Permitted average input speed <sup>d)</sup> (at $T_{2N}$ and 20 °C ambient temperature)			$n_{1N}$	rpm	2000	2000	2000	2000	2600	2600	2600	2600	2600	2600	2600
Max. input speed			$n_{1Max}$	rpm	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800	4800
Mean no load running torque <sup>b)</sup> (at $n_1$ =3000 rpm and 20 °C gearbox temperature)			$T_{012}$	Nm	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
				in.lb	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Max. backlash			$j_t$	arcmin	≤ 10				≤ 15						
Torsional rigidity <sup>b)</sup>			$C_{z1}$	Nm/arcmin	24	24	24	22	24	24	24	24	24	24	22
				in.lb/arcmin	212	212	212	195	212	212	212	212	212	212	195
Max. axial force <sup>c)</sup> (Standard / HIGH FORCES)			$F_{2AMax}$	N	1700 / 3000				1700 / 3000						
				lb <sub>f</sub>	383 / 675				383 / 675						
Max. lateral force <sup>c)</sup> (Standard / HIGH FORCES)			$F_{2QMMax}$	N	1200 / 4250				1200 / 4250						
				lb <sub>f</sub>	270 / 956				270 / 956						
Max. tilting moment (Standard / HIGH FORCES)			$M_{2KMax}$	Nm	95 / 407				95 / 407						
				in.lb	841 / 3602				841 / 3602						
Efficiency at full load			$\eta$	%	97				95						
Service life			$L_h$	h	> 20000				> 20000						
Weight (incl. standard adapter plate)			$m$	kg	13.6				16.6						
				lb <sub>m</sub>	30				37						
Operating noise (at reference ratio and reference speed – ratio-specific values available in cymex®)			$L_{PA}$	dB(A)	≤ 68				≤ 68						
Max. permitted housing temperature				°C	+90				+90						
				°F	+194				+194						
Ambient temperature				°C	–25 to +40				–25 to +40						
				°F	–13 to +104				–13 to +104						
Lubrication					Lubricated for life										
Direction of rotation					In- and output same direction										
Protection class <sup>g)</sup>					IP69K (max. 30 bar)										
Elastomer coupling (recommended product type – validate sizing with cymex®)					-										
Bore diameter of coupling on the application side				mm	-										
Mass moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	$J_i$	kgcm <sup>2</sup>	2.6	2.3	2	1.8	2.3	2.1	2.1	1.9	1.8	1.8	1.8
				10 <sup>-3</sup> in.lb.s <sup>2</sup>	2.3	2	1.8	1.6	2	1.9	1.9	1.7	1.6	1.6	1.6

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<sup>e)</sup> Valid for: Smooth shaft

<sup>g)</sup> Applies at standstill, for details see operating instructions



