VTEC EUROPA

Height Adjustment Elements

Mütsch
FERTIGUNGSTECHNIK

GERMAN ENGINEERING
IN PERFECTION

- Precision Parts Manufacturing
- Machining Technology
- Equipment Construction

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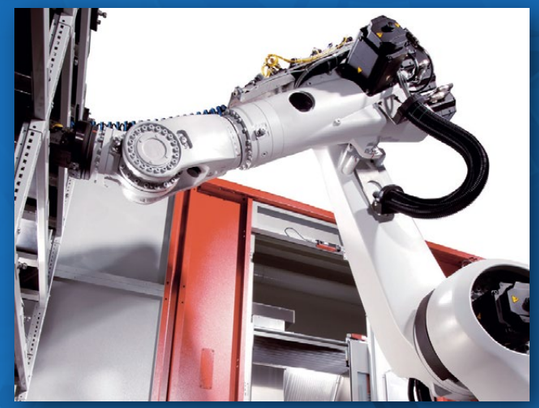

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Our Goal
Delivering ready-to-install solutions at the right time, in the right place, tailored to the customer‘s system.

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Mütsch Fertigungstechnik GmbH
Jäuchernstraße 17
74653 Ingelfingen-Eberstal
GERMANY
T +49 (0) 6294.4213-0
F +49 (0) 6294.4213-23
E info@muetsch.de

V-TEC, your direkt connection to the manufacturer!

without in-between dealerships!

Dear Customer!

Werner Simon and Edwin Hofmann are the investors and developers of Height Adjustment Elements (HVE). With immediate effect, you have the opportunity of obtaining these and related products direct through V-TEC Europa from a German manufacturer, Adolf Mütsch GmbH at Ingelfingen.

Here, at a glance the advantages to you:

- All Adjustment Elements are produced exclusi vely in Germany by Mütsch GmbH – Manufacture is carried out to the highest precision on the latest-generation CNC-automatics lathes.
- Height Adjustments Elements (HVE) are constantly being developed and optimized.
- Customers special requests which differ from the standard versions are promptly evaluated for feasibility and converted.
- Technical queries can be resolved directly with the manufacturer.
- Small quantities can be delivered at short notice.
- Our products are marked Original.
- We can confirm the promised technical parameters only for Original Products produced partners by our Mütsch GmbH. The correct information is of the greatest importance for the maximum load values.
- With our Originals you run no risk !

legal notice:

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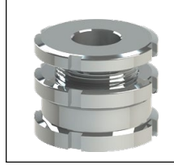
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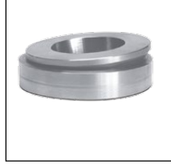
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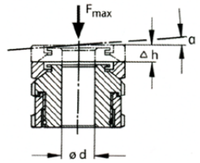
Height Adjustement Elements

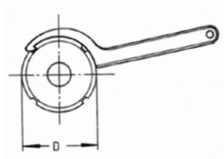
Under the heading Height Adjustment Elements (HVE) are included adjustment elements which allow the user to connect and level machines (motors, units etc.). They are distinguished by their various adjustment-heights, their permitted loads and by their ability to even out inclined surfaces.

All HVEs possess a limit stop screw – this prevents instability due to over-adjustment.



HVE Height Adjustment Element	Adjustment Height Δ h	Diameter-Hole ø d	Adjustment Angle *α*	Permitted Load F max Steel	Permitted Load F max Stainless Steel	Application
KAS Ball Levelling Plate	0 mm	4,5 - 52	bis 4°	35 - 526 kN	20 - 312 kN	Assembly on unparallel surfaces
NAE Level Equalisation Element	4 - 14 mm	4,5 - 52	0°	35 - 526 kN	20 - 261 kN	Assembly and levelling on parallel surfaces
NAEK Level Equalisation Element with Lock-Nut	4 - 14 mm	4,5 - 52	0°	35 - 526 kN	20 - 261 kN	Assembly and levelling on parallel surfaces
KAE Ball Levelling Element	4 - 14 mm	4,5 - 52	bis 4°	35 - 526 kN	20 - 261 kN	Assembly and levelling on unparallel surfaces
KAEK Level Equalisation Element with Lock-Nut	4 - 14 mm	4,5 - 52	bis 4°	35 - 526 kN	20 - 261 kN	Assembly and levelling on unparallel surfaces
HVS Ball Levelling Element	15 - 55 mm	4,5 - 52	0°	35 - 526 kN	20 - 312 kN	Assembly and levelling on parallel surfaces
HVSK Ball Levelling Element with Lock-Nut	10 - 40 mm	4,5 - 52	0°	35 - 526 kN	20 - 312 kN	
KVS Height Adjustment Bolt	15 - 55 mm	4,5 - 52	bis 4°	35 - 526 kN	20 - 312 kN	Assembly and levelling on unparallel surfaces
KVSK Height Adjustment Bolt with Lock-Nut	10 - 40 mm	4,5 - 52	bis 4°	35 - 526 kN	20 - 312 kN	
VF Ball Adjustment Bolt	15 - 55 mm	6,6 - 33	0°	45 - 920 kN	25 - 530 kN	Assembly and levelling on parallel surfaces
KVF Ball Joint Adjustment Foot	15 - 55 mm	6,6 - 33	bis 4°	45 - 920 kN	25 - 530 kN	Assembly and levelling on unparallel surfaces

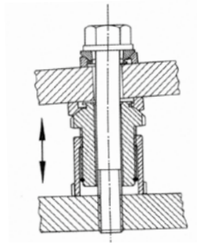
Description



HS

Hook Spanner

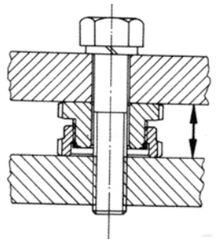
The Hook Spanner (HS) is used to bring the Adjustment Elements to the desired height within (ΔH). It is recommended to use a second HS for gripping and countering.



KVS KVSK KAS

Ball Adjustment Bolt/ Ball Levelling Plate

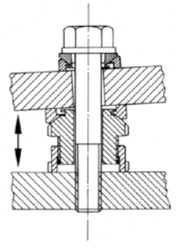
The Ball Adjustment Bolt (KVS) allows exact positioning on unparallel surfaces (up to 4°). In addition, the fixing-bolt maintains exact positioning by means of the Ball Levelling Plate (KAS) placed beneath.



NAE NAEK

Level Equalisation Element/ Spacing Plate

For smaller amounts of adjustment travel (level equalizations), the Level Equalisation Elements (NAEs) are most suitable. The adjustment height (Δh) here is between 4 and 14mm. If the adjustment height (Δh) has been reached and a further adjustment is desired, this through use of the Spacing Plate (DS). It has a thickness of about the adjustment travel of NAE and KAE.

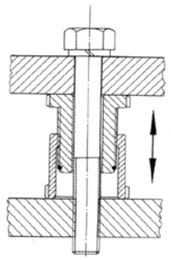


KAE KAEK KAS

KAE/KAS Ball Levelling Element/ Ball Levelling Plate

The Ball Levelling Element KAE allows exact support on unparallel surfaces (up to 4°). In addition, the fixing-bolt maintains exact positioning by means of the Ball Levelling Plate KAS placed beneath.

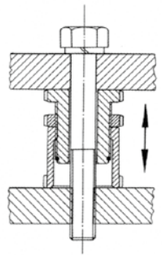
Description



HVS

Height Adjustment Bolt

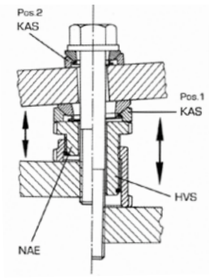
The Height Adjustment Bolt (HVS) is used on any occasion when larger adjustments (ΔH) from 15 to 55 mm are required.



HVSK

Height Adjustment Bolt with Lock-Nut (**HVSK**)

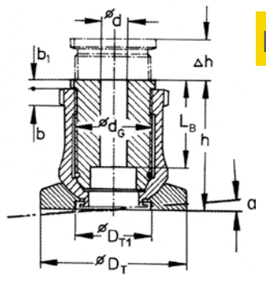
is often used if a default is taken and secured. It is also useful when oscillations occur.



KAS HVS

Ball leveling Plate

in combination with the Height Adjustment Bolt or the Level Equalisation Element. On non-parallel bearing surfaces up to 4°, an exact support can be obtained by using a Ball Levelling Plate (Item 1). The fixing-bolt maintains an exact support by means of a KAS placed under neath. This KAS (Item 2) may be selected as smaller than the one in (Item 1) according to the fixing bolt.

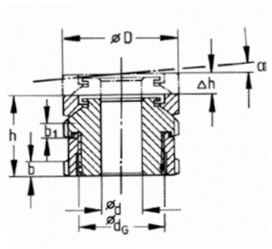


KVF

Ball Joint Adjustment Foot

The KVF is attached to the machine or the unit using a fastening bolt (1 hole for fixing bolt DIN 912). In this way, the upper part (2) is tightly linked to the machine or unit. The height adjustment is reached by turning a hook spanner on the lower part (3). The limit stop crew (4) prevents the upper part from being screwed up excessively high. It also determines the max. adjustment height (Δh). The base-plate (5) is connected to the lower part and hence can even out inclined surfaces up to 4°. Special design features mean that the base plate (5) cannot come away from the lower part (3) and hence that it forms a unit with the lower part.

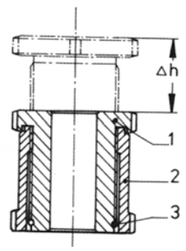
Description



KAE KAEK

KAE/KAS Ball Levelling Element/Ball Levelling Plate

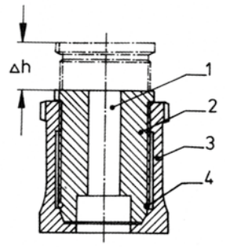
The Ball Levelling Element KAE allows exact support on unparallel surfaces (up to 4°). In addition, the fixing-bolt maintains exact positioning by means of the Ball Levelling Plate KAS placed beneath.



HVE

Height Adjustment Elements

This designation includes all the adjustment elements grouped together. These Height Adjustment Elements (HVE) consist of the Upper Part (1), the Lower Part (2) and a Limit Stop Screw (3). This prevents excessive unscrewing and so limits the adjustment (Δ h). The unscrewing catch is fitted to all HVEs.



VF

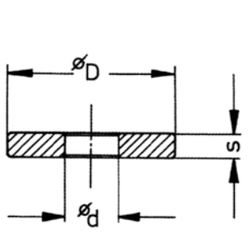
Adjustment Foot

the adjustment foot can fulfil similar functions to the KVF described above. It is not made of articulated base-plates and is therefore intended for level bearing and supporting surfaces. Points 1,2,3 and 4 described for the KVF apply also for the VF.

Material:	Standard-Steel:	42CrMo4V (Mat.-No. 1.7225) Surface zink plated a. blue chromated
	Stainless-Steel:	A1-X8CrNIS18 9 (Mat.-No. 1.4305) A4-X2CrNiMo 17 12 2 (Mat.-No. 1.4404)

Upon request, further dimensions can be delivered/technical changes reserved.

DS, Spacing-Plate



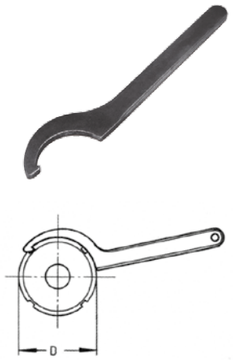
Spacing-Plate				
Typ	combined with	ø D mm	ø d mm	s mm
DS 15	HVE 15	25	4,5 5,5 6,6	4
DS 20	HVE 20	32	6,6 9,0 11,0	5
DS 30	HVE 30	45	11,0 13,5 17,5	6
DS 40	HVE 40	58	17,5 22,0 26,0	8
DS 50	HVE 50	70	22,0 26,0 33,0	10
DS 60	HVE 60	80	26,0 33,0 39,0	12
DS 80	HVE 80	105	39,0 42,0 45,0	16

Upon request, further dimensions can be delivered/technical changes reserved.

Ordering Example:

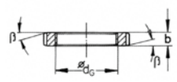
Item –Nr.		Material
DS-20-N	Standard-Steel	42CrMo4V zink plated a. blue chromated
DS-20-A1	Stainless-Steel	X8CrNiS 18 9, 1.4305, AISI305
DS-20-A4	Stainless-Steel	X2CrNiMo 17 12 2, 1.4404, AISI316L

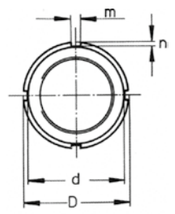
HS, Hook-Spanner



Hook-Spanner		
Typ	for	ø D - Diameter mm
HS 15		
HS 20	HVE 20	32-32
HS 30	HVE 30	45-50
HS 40	HVE 40	58-62
HS 50	HVE 50	68-75
HS 60	HVE 60	80-80
HS 80	HVE 80	110-115 (105)

KM, Lock-Nut



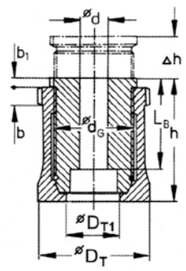


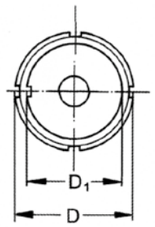
Lock-Nut							
Typ	ø d_G	ø D mm	d mm	b mm	m mm	n mm	ß mm
KM 15	M 15x1	25	21	5	4	2	15°
KM 20	M 20x1	32	28	6	4	2	15°
KM 30	M 30x1,5	45	40	7	5	2	15°
KM 40	M 40x1,5	58	52	9	6	2,5	15°
KM 50	M 50x1,5	70	64	11	6	2,5	15°
KM 60	M 60x2	80	72	11	7	3	15°
KM 80	M 80x2	105	96	15	8	3,5	15°

Ordering Example:

Item –Nr.	Material	
KM-30-N	Standard-Steel	42CrMo4V zink plated a. blue chromated
KM-30-A1	Stainless-Steel	X8CrNiS 18 9, 1.4305, AISI305
KM-30-A4	Stainless-Steel	X2CrNiMo 17 12 2, 1.4404, AISI316L

VF, Adjustment-Foot





Adjustment-Foot													
Typ	ø d_G	Mounting-Screw		ø d	Δh	F max kN	F max kN	D/ø D_T	D_{T1}	b	D_1	b_1	h
		DIN 912	L_B mm	mm	mm	42CrMo4 V	A1 und A4	mm	mm	mm	mm	mm	mm
VF 15	M 15x1	M 6	25	6,6	15	45	25	25	12,5	5	19	4	32
VF 20	M 20x1	M 8	30	9	20	75	40	32	16	6	24	4	40
VF 30	M 30x1,5	M 10	40	11	25	140	80	45	22	7	35	6	52
VF 40	M 40x1,5	M 12	50	13,5	32	210	140	58	26	9	45	6	64
VF 50	M 50x1,5	M 16	60	17,5	40	400	210	70	30	11	55	6	78
VF 60	M 60x2	M 20	70	22	50	520	300	80	36	11	65	6	94
VF 80	M 80x2	M 30	75	33	55	920	530	105	50	15	86	8	110

VF

Ordering example:

Item –Nr.	**Material**
VF-40-13,5-N	Standard-Steel 42CrMo4V zink plated a. blue chromated
VF-40-13,5-A1	Stainless-Steel X8CrNiS 18 9, 1.4305, AISI305
VF-40-13,5-A4	Stainless-Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical anges reserved.

With the solidly-built VF Adjustment Foot even heavy machines can be immediately intact and positioned accurately.

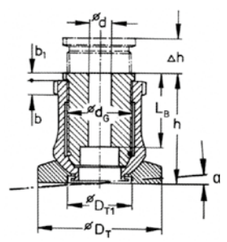
Solidly-built VF adjustment feet possible applications:

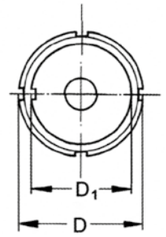
- Mechanical engineering
- Conveyor technology
- Plant construction
- Tank construction

Especially suitable for:

- heavy loads
- secure positioning
- exact location
- exact height adjustment

KVF, Ball Joint Adjustment Foot





Ball Joint Adjustment Foot															
Typ	∅ d_G	Mounting-Screw		∅ d	Δ h	*a*	F max kN	F max kN	D	b	D_1	b_1	h	∅ D_{T1}	∅ D_T
Type		DIN 912	L_B mm	mm	mm	ca.	42CrMo4 V	A1 und A4	mm	mm	mm	mm	mm	mm	mm
KVF 15	M 15x1	M 6	25	6,6	15	4°	45	25	25	5	19	4	36	18	34
KVF 20	M 20x1	M 8	30	9	20	4°	75	40	32	6	24	4	44	21	44
KVF 30	M 30x1,5	M 10	40	11	25	4°	140	80	45	7	35	6	58	30	62
KVF 40	M 40x1,5	M 12	50	13,5	32	4°	210	140	58	9	45	6	76	39	80
KVF 50	M 50x1,5	M 16	60	17,5	40	4°	400	210	70	11	55	6	86	49	95
KVF 60	M 60x2	M 20	70	22	50	4°	520	300	80	11	65	6	104	60	110
KVF 80	M 80x2	M 30	75	33	55	4°	920	530	105	15	86	8	122	78	135

KVF

Ordering example:

Item –Nr.	**Material**
KVF-40-40-N	Standard-Steel 42CrMo4V zink plated a. blue chromated
KVF-40-40-A1	Stainless-Steel X8CrNiS 18 9, 1.4305, AISI305
KVF-40-40-A4	Stainless-Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical anges reserved.

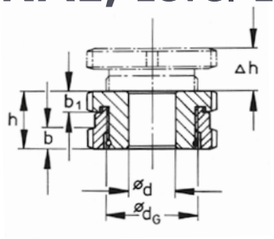
Solidly-built VF adjustment feet possible applications:

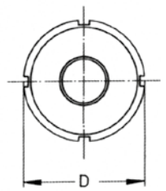
- Mechanical engineering
- Conveyor technology
- Plant construction
- Tank construction

Especially suitable for:

. heavy loads
- secure positioning
- exact location
- exact height adjustment

NAE, Level-Equalisation-Element





Level Equalisation Element										
Typ	ø d_G	Mounting Crew	ø d mm	Δ h mm	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
NAE 15-4,5	M 15x1	M 4	4,5	4	40	24	25	5	5	15
NAE 15-5,5		M 5	5,5		38	22				
NAE 15-6,6		M 6	6,6		35	20				
NAE 20-6,6	M 20x1	M 6	6,6	5	63	36	32	6	5	18
NAE 20-9		M 8	9,0		56	30				
NAE 20-11		M 10	11,0		45	23				
NAE 30-11	M 30x1,5	M 10	11,0	7	110	65	45	7	5	22
NAE 30-13,5		M 12	13,5		98	56				
NAE 30-17,5		M 16	17,5		62	30				
NAE 40-17,5	M 40x1,5	M 16	17,5	9	136	94	58	9	6	28
NAE 40-22		M 20	22,0		90	60				
NAE 40-26		M 24	26,0		37	21				
NAE 50-22	M 50x1,5	M 20	22,0	10	260	136	70	11	8	33
NAE 50-26		M 24	26,0		200	97				
NAE 50-33		M 30	33,0		100	21				
NAE 60-26	M 60x2	M 24	26,0	12	340	195	80	11	8	38
NAE 60-33		M 30	33,0		240	118				
NAE 60-39		M 36	39,0		125	38				
NAE 80-39	M 80x2	M 36	39,0	14	526	261	105	15	11	48
NAE 80-45		M 42	45,0		378	154				
NAE 80-52		M 48	52,0		207	29				

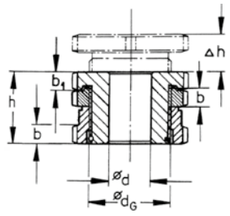
NAE

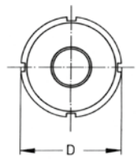
Ordering Example:

Item –Nr.	Material
NAE-40-17,5-N	Standard-Steel 42CrMo4V zink plated a. blue chromated
NAE-40-17,5-A1	Stainless-Steel X8CrNiS 18 9, 1.4305, AISI305
NAE-40-17,5-A4	Stainless-Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

NAEK, Level-Equalisation-Element with Lock-Nut





Level Equalisation Element with Lock-Nut										
Typ	ø d_G	Mounting Screw	ø d mm	Δ h mm	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
NAEK 15-4,5	M 15x1	M 4	4,5	4	40	24	25	5	5	20
NAEK 15-5,5		M 5	5,5		38	22				
NAEK 15-6,6		M 6	6,6		35	20				
NAEK 20-6,6	M 20x1	M 6	6,6	5	63	36	32	6	5	24
NAEK 20-9		M 8	9,0		56	30				
NAEK 20-11		M 10	11,0		45	23				
NAEK 30-11	M 30x1,5	M 10	11,0	7	110	65	45	7	5	29
NAEK 30-13,5		M 12	13,5		98	56				
NAEK 30-17,5		M 16	17,5		62	30				
NAEK 40-17,5	M 40x1,5	M 16	17,5	9	136	94	58	9	6	37
NAEK 40-22		M 20	22,0		90	60				
NAEK 40-26		M 24	26,0		37	21				
NAEK 50-22	M 50x1,5	M 20	22,0	10	260	136	70	11	8	44
NAEK 50-26		M 24	26,0		200	97				
NAEK 50-33		M 30	33,0		100	21				
NAEK 60-26	M 60x2	M 24	26,0	12	340	195	80	11	8	49
NAEK 60-33		M 30	33,0		240	118				
NAEK 60-39		M 36	39,0		125	38				
NAEK 80-39	M 80x2	M 36	39,0	14	526	261	105	15	11	63
NAEK 80-45		M 42	45,0		378	154				
NAEK 80-52		M 48	52,0		207	29				

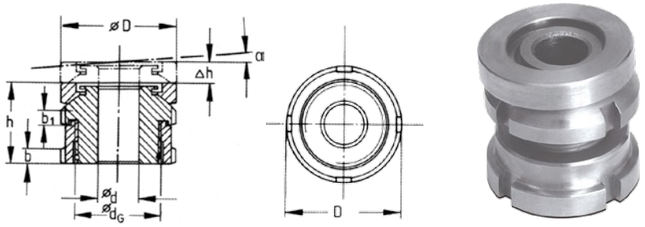
NAEK

Ordering Example:

Item –Nr.	Material
NAEK-40-22-N	Standard-Steel 42CrMo4V zink plated a. blue chromated
NAEK-40-22-A1	Stainless-Steel X8CrNiS 18 9, 1.4305, AISI305
NAEK-40-22-A4	Stainless-Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch Upon request, further dimensions can be delivered/technical changes reserved.

KAE, Ball-Levelling-Element



Ball-Levelling-Element											
Typ	ø d_G	Mounting Screw	ø d mm	ΔΔ h mm	α Δ ca.	F max kN 42CrMo4 V	F max kN A1 und A	D 4mm	b mm	b_1 mm	h mm
KAE 15-4,5	M 15x1	M 4	4,5	4	4°	40	24	25	5	5	22
KAE 15-5,5		M 5	5,5			38	22				
KAE 15-6,6		M 6	6,6			35	20				
KAE 20-6,6	M 20x1	M 6	6,6	5	4°	63	36	32	6	5	26
KAE 20-9		M 8	9,0			56	30				
KAE 20-11		M 10	11,0			45	23				
KAE 30-11	M 30x1,5	M 10	11,0	7	4°	110	65	45	7	5	34
KAE 30-13,5		M 12	13,5			98	56				
KAE 30-17,5		M 16	17,5			62	30				
KAE 40-17,5	M 40x1,5	M 16	17,5	9	4°	136	94	58	9	6	44
KAE 40-22		M 20	22,0			90	60				
KAE 40-26		M 24	26,0			37	21				
KAE 50-22	M 50x1,5	M 20	22,0	10	4°	260	136	70	11	8	52
KAE 50-26		M 24	26,0			200	97				
KAE 50-33		M 30	33,0			100	21				
KAE 60-26	M 60x2	M 24	26,0	12	4°	340	195	80	11	8	56
KAE 60-33		M 30	33,0			240	118				
KAE 60-39		M 36	39,0			125	38				
KAE 80-39	M 80x2	M 36	39,0	14	4°	526	261	105	15	11	72
KAE 80-45		M 42	45,0			378	154				
KAE 80-52		M 48	52,0			207	29				

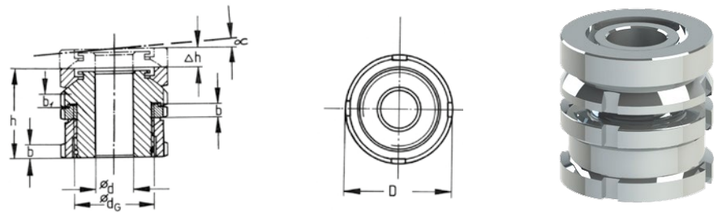
KAE

Ordering Example:

Item –Nr.	Material
KAE-50-26-N	Standard-Steel 42CrMo4V zink plated a. blue chromated
KAE-50-26-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
KAE-50-26-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

KAEK, Ball-Levelling-Element with Lock-Nut



Ball-Levelling-Element with Lock-Nut											
Typ	ø d_G	Mounting Screw	ø d mm	Δ h mm	α ca.	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
KAEK 15-4,5	M 15x1	M 4	4,5	4	4°	40	24	25	5	5	27
KAEK 15-5,5		M 5	5,5			38	22				
KAEK 15-6,6		M 6	6,6			35	20				
KAEK 20-6,6	M 20x1	M 6	6,6	5	4°	63	36	32	6	5	32
KAEK 20-9		M 8	9,0			56	30				
KAEK 20-11		M 10	11,0			45	23				
KAEK 30-11	M 30x1,5	M 10	11,0	7	4°	110	65	45	7	5	41
KAEK 30-13,5		M 12	13,5			98	56				
KAEK 30-17,5		M 16	17,5			62	30				
KAEK 40-17,5	M 40x1,5	M 16	17,5	9	4°	136	94	58	9	6	53
KAEK 40-22		M 20	22,0			90	60				
KAEK 40-26		M 24	26,0			37	21				
KAEK 50-22	M 50x1,5	M 20	22,0	10	4°	260	136	70	11	8	61
KAEK 50-26		M 24	26,0			200	97				
KAEK 50-33		M 30	33,0			100	21				
KAEK 60-26	M 60x2	M 24	26,0	12	4°	340	195	80	11	8	67
KAEK 60-33		M 30	33,0			240	118				
KAEK 60-39		M 36	39,0			125	38				
KAEK 80-39	M 80x2	M 36	39,0	14	4°	526	261	105	15	11	87
KAEK 80-45		M 42	45,0			378	154				
KAEK 80-52		M 48	52,0			207	29				

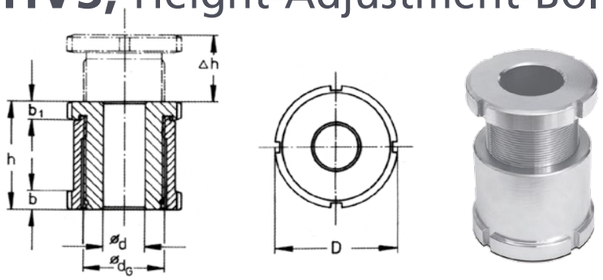
KAEK

Ordering Example:

Item –Nr.	Material
KAEK-30-11-N	Standard-Steel 42CrMo4V zink plated a. blue chromated
KAEK-30-11-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
KAEK-30-11-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

HVS, Height-Adjustment-Bolt



Height-Adjustment-Bolt										
Typ	ø d_G	Mounting Screw	ø d mm	Δh mm	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
HVS 15-4,5	M 15x1	M 4	4,5	15	40	24	25	5	5	28
HVS 15-5,5		M 5	5,5		38	22				
HVS 15-6,6		M 6	6,6		35	20				
HVS 20-6,6	M 20x1	M 6	6,6	20	63	40	32	6	6	35
HVS 20-9		M 8	9,0		56	35				
HVS 20-11		M 10	11,0		45	27				
HVS 30-11	M 30x1,5	M 10	11,0	25	110	70	45	7	6	42
HVS 30-13,5		M 12	13,5		98	60				
HVS 30-17,5		M 16	17,5		62	35				
HVS 40-17,5	M 40x1,5	M 16	17,5	32	136	94	58	9	8	54
HVS 40-22		M 20	22,0		90	60				
HVS 40-26		M 24	26,0		37	21				
HVS 50-22	M 50x1,5	M 20	22,0	40	260	148	70	11	8	66
HVS 50-26		M 24	26,0		200	110				
HVS 50-33		M 30	33,0		100	33				
HVS 60-26	M 60x2	M 24	26,0	50	340	195	80	11	8	76
HVS 60-33		M 30	33,0		240	118				
HVS 60-39		M 36	39,0		125	38				
HVS 80-39	M 80x2	M 36	39,0	55	526	312	105	15	14	95
HVS 80-45		M 42	45,0		378	204				
HVS 80-52		M 48	52,0		207	80				

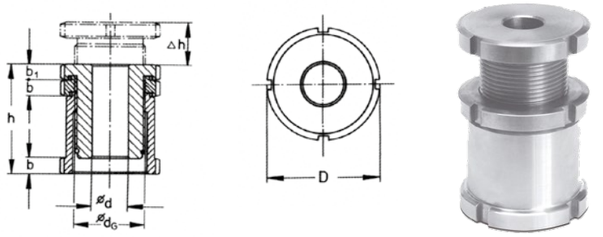
HVS

Ordering Example:

Item –Nr.	Material
HVS-80-39-N	Standard Steel 42CrMo4V zink plated a. blue chromated
HVS-80-39-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
HVS-80-39-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

HVSK, Height-Adjustment-Bolt with Lock-Nut



Height-Adjustment-Bolt with Lock-Nut										
Typ	ø d_G	Mounting Screw	ø d mm	Δ h mm	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
HVSK 15-4,5	M 15x1	M 4	4,5	10	40	24	25	5	5	33
HVSK 15-5,5		M 5	5,5		38	22				
HVSK 15-6,6		M 6	6,6		35	20				
HVSK 20-6,6	M 20x1	M 6	6,6	14	63	40	32	6	6	41
HVSK 20-9		M 8	9,0		56	35				
HVSK 20-11		M 10	11,0		45	27				
HVSK 30-11	M 30x1,5	M 10	11,0	18	110	70	45	7	6	49
HVSK 30-13,5		M 12	13,5		98	60				
HVSK 30-17,5		M 16	17,5		62	35				
HVSK 40-17,5	M 40x1,5	M 16	17,5	23	136	94	58	9	8	63
HVSK 40-22		M 20	22,0		90	60				
HVSK 40-26		M 24	26,0		37	21				
HVSK 50-22	M 50x1,5	M 20	22,0	29	260	148	70	11	8	77
HVSK 50-26		M 24	26,0		200	110				
HVSK 50-33		M 30	33,0		100	33				
HVSK 60-26	M 60x2	M 24	26,0	39	340	195	80	11	8	87
HVSK 60-33		M 30	33,0		240	118				
HVSK 60-39		M 36	39,0		125	38				
HVSK 80-39	M 80x2	M 36	39,0	40	526	312	105	15	14	110
HVSK 80-45		M 42	45,0		378	204				
HVSK 80-52		M 48	52,0		207	80				

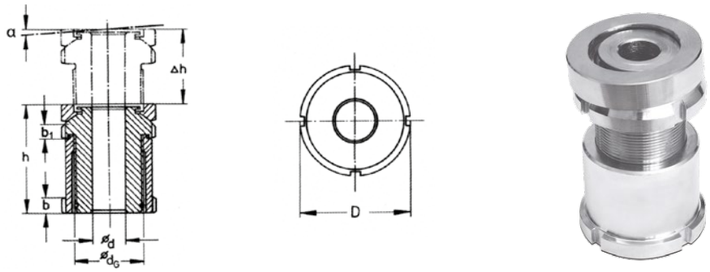
HVSK

Ordering Example:

Item –Nr.	Material
HVSK-20-11-N	Standard Steel 42CrMo4V zink plated a. blue chromated
HVSK-20-11-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
HVSK-20-11-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

KVS, Ball-Adjustment-Bolt



Ball-Adjustment-Bolt											
Typ	ø d_G	Mounting Screw	ø d mm	ΔΔ h mm	α Δ ca.	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
KVS 15-4,5	M 15x1	M 4	4,5	15	4°	40	24	25	5	5	35
KVS 15-5,5		M 5	5,5			38	22				
KVS 15-6,6		M 6	6,6			35	20				
KVS 20-6,6	M 20x1	M 6	6,6	20	4°	63	40	32	6	6	43
KVS 20-9		M 8	9,0			56	35				
KVS 20-11		M 10	11,0			45	27				
KVS 30-11	M 30x1,5	M 10	11,0	25	4°	110	70	45	7	6	54
KVS 30-13,5		M 12	13,5			98	60				
KVS 30-17,5		M 16	17,5			62	35				
KVS 40-17,5	M 40x1,5	M 16	17,5	32	4°	136	94	58	9	8	70
KVS 40-22		M 20	22,0			90	60				
KVS 40-26		M 24	26,0			37	21				
KVS 50-22	M 50x1,5	M 20	22,0	40	4°	260	148	70	11	8	83
KVS 50-26		M 24	26,0			200	110				
KVS 50-33		M 30	33,0			100	33				
KVS 60-26	M 60x2	M 24	26,0	50	4°	340	195	80	11	8	94
KVS 60-33		M 30	33,0			240	118				
KVS 60-39		M 36	39,0			125	38				
KVS 80-39	M 80x2	M 36	39,0	55	4°	526	312	105	15	14	119
KVS 80-45		M 42	45,0			378	204				
KVS 80-52		M 48	52,0			207	80				

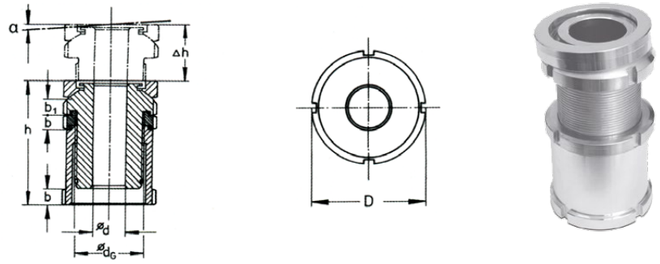
KVS

Ordering Example:

Item –Nr.	Material
KVS-60-39-N	Standard Steel 42CrMo4V zink plated a. blue chromated
KVS-60-39-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
KVS-60-39-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

KVSK, Ball-Adjustment-Bolt with Lock-Nut



Ball-Adjustment-Bolt with Lock-Nut											
Typ	ø d_G	Mounting Screw	ø d mm	Δ h mm	α ca.	F max kN 42CrMo4 V	F max kN A1 und A4	D mm	b mm	b_1 mm	h mm
KVSK 15-4,5	M 15x1	M 4	4,5	10	4°	40	24	25	5	5	40
KVSK 15-5,5		M 5	5,5			38	22				
KVSK 15-6,6		M 6	6,6			35	20				
KVSK 20-6,6	M 20x1	M 6	6,6	14	4°	63	40	32	6	6	49
KVSK 20-9		M 8	9,0			56	35				
KVSK 20-11		M 10	11,0			45	27				
KVSK 30-11	M 30x1,5	M 10	11,0	18	4°	110	70	45	7	6	61
KVSK 30-13,5		M 12	13,5			98	60				
KVSK 30-17,5		M 16	17,5			62	35				
KVSK 40-17,5	M 40x1,5	M 16	17,5	23	4°	136	94	58	9	8	79
KVSK 40-22		M 20	22,0			90	60				
KVSK 40-26		M 24	26,0			37	21				
KVSK 50-22	M 50x1,5	M 20	22,0	29	4°	260	148	70	11	8	94
KVSK 50-26		M 24	26,0			200	110				
KVSK 50-33		M 30	33,0			100	33				
KVSK 60-26	M 60x2	M 24	26,0	39	4°	340	195	80	11	8	105
KVSK 60-33		M 30	33,0			240	118				
KVSK 60-39		M 36	39,0			125	38				
KVSK 80-39	M 80x2	M 36	39,0	40	4°	526	312	105	15	14	134
KVSK 80-45		M 42	45,0			378	204				
KVSK 80-52		M 48	52,0			207	80				

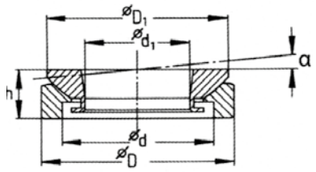
KVSK

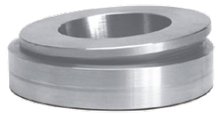
Ordering Example:

Item –Nr.	Material
KVSK-30-13,5-N	Standard Steel 42CrMo4V zink plated a. blue chromated
KVSK-30-13,5-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
KVSK-30-13,5-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.

KAS, Ball Levelling Plate





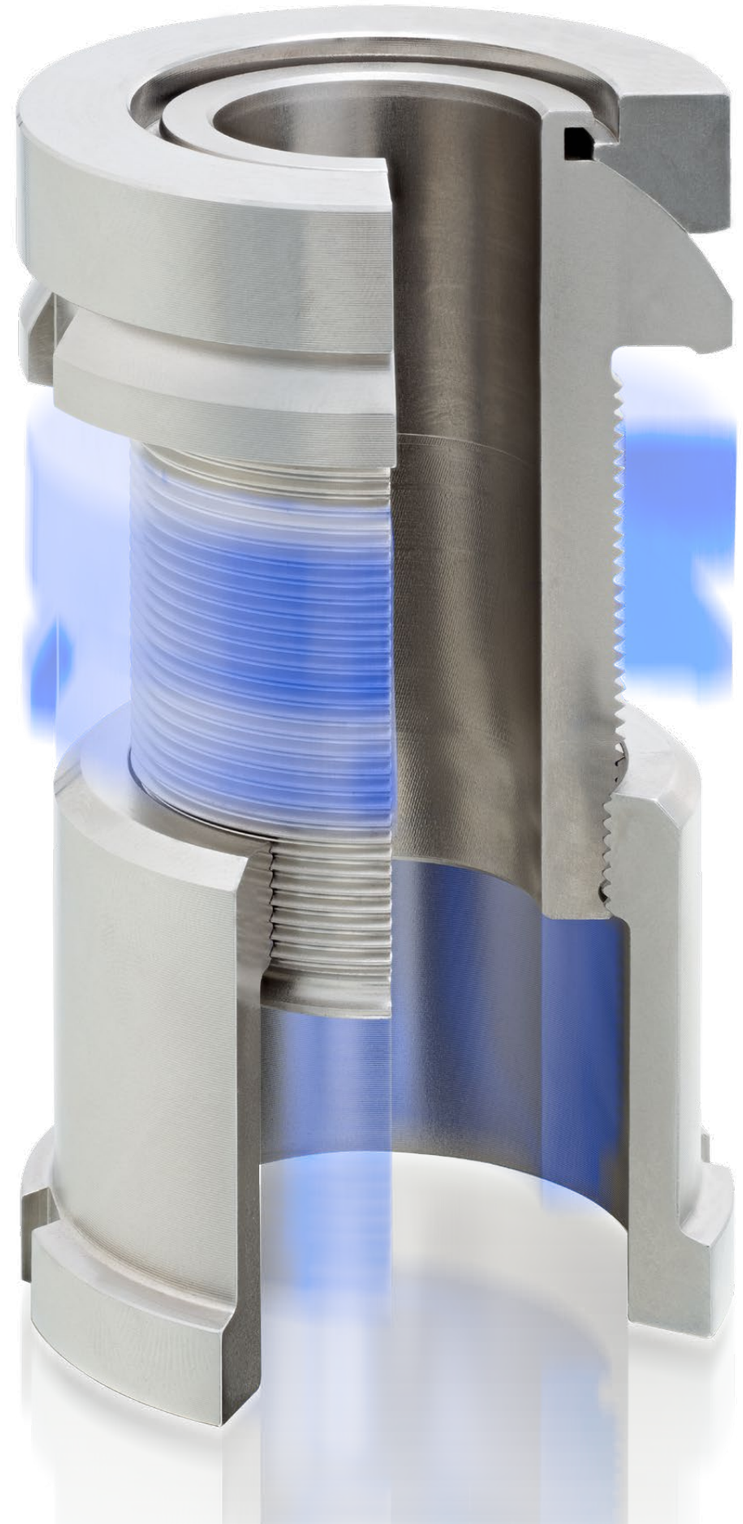
Ball-Levelling-Plate										
Typ	Kombiniert mit	Mounting Screw	*α* ca.	F max kN 42CrMo4 V	F max kN A1 und A4	ø D mm	ø d mm	ø D_1 mm	ø d_1 mm	h mm
KAS 15	HVE 15	M 4	4 °	40	24	25	15	23	8,5	8
		M 5		38	22					
		M 6		35	20					
KAS 20	HVE 20	M 6	4 °	63	40	32	20	30	13	10
		M 8		56	35					
		M 10		45	27					
KAS 30	HVE 30	M 10	4 °	110	70	45	30	40	20	12,5
		M 12		98	60					
		M 16		62	35					
KAS 40	HVE 40	M 16	4 °	136	94	58	38	52	29	16
		M 20		90	60					
		M 24		37	21					
KAS 50	HVE 50	M 20	4 °	260	148	70	48	65	36	20
		M 24		200	110					
		M 30		100	33					
KAS 60	HVE 60	M 24	4 °	340	195	80	61	75	44	20
		M 30		240	118					
		M 36		125	38					
KAS 80	HVE 80	M 36	4 °	526	312	105	78	98	58	25
		M 42		378	204					
		M 48		207	80					

KAS

Ordering Example:

Item –Nr.	**Material**
KAS-40-N	Standard Steel 42CrMo4V zink plated a. blue chromated
KAS-40-A1	Stainless Steel X8CrNiS 18 9, 1.4305, AISI305
KAS-40-A4	Stainless Steel X2CrNiMo 17 12 2, 1.4404, AISI316L

The Fmax loads given in the table above are maximum values at static load. In this case the Fvsch preload of the fixing-bolt has already been taken into consideration. Fmax = Fges - Fvsch. Upon request, further dimensions can be delivered/technical changes reserved.



Application Example

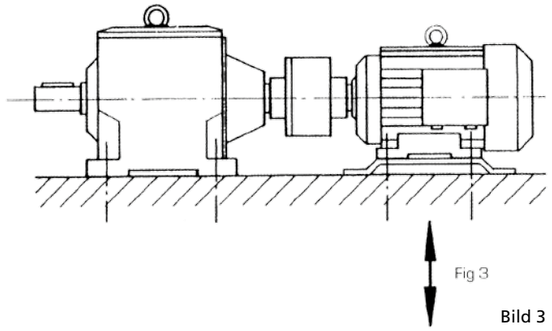


Fig 3
Bild 3

In this arrangement, an electromotor is to be connected with a drive by means of a clutch. However, the axle-height of the drive and the motor are different, so that for the e-motor a console was required between the foundation and the e-motor. Often, for fine adjustment, levelling plates mounted between the console and the foot of the e-motor are still necessary. Hence the result is laborious and costly.

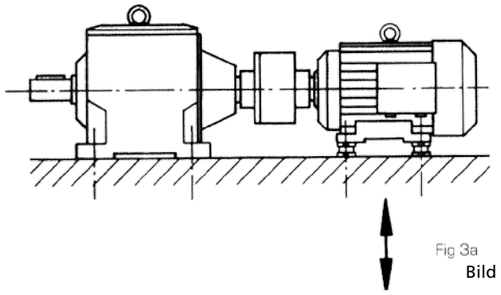


Fig 3a
Bild 3a

Fig 3a shows the same arrangement resolved using NAE or HVS. With this arrangement, it was possible to dispense with the console between the e-motor and the foundation. Exact fine adjustment of the axle-heights is undertaken using NAE or HVS. HVS are intended for situations where the difference in the axle-heights is no longer within the travel range of the NAE.

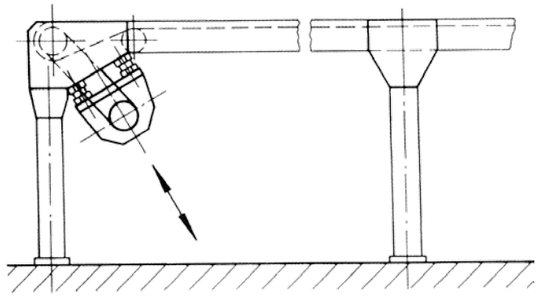


Fig 4 Bild 4

A drive motor is driving a conveyor belt using a belt or chain drive. Instead of the otherwise usual- very costly rocker, HVS Height Adjustment Bolts were used under the drive feet for installation and retensioning. This solution replaces the laborious, costly rocker and achieves a compact, inexpensive solution.

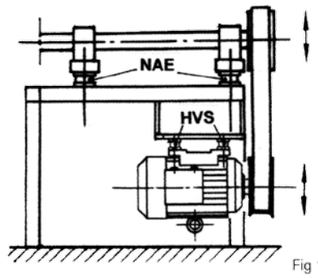


Fig 1
Bild 1

Level Equalisation Element NAE for plummer block housing, best suited above all for multiple-mounted shafts.
Heigth Adjustment Bolt HVS for installation and retensioning of the toothed belt.

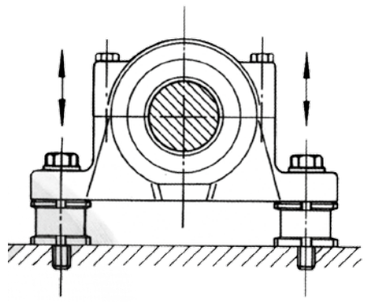


Fig 1a
Bild 1a

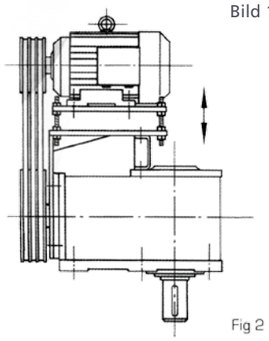


Fig 2
Bild 2

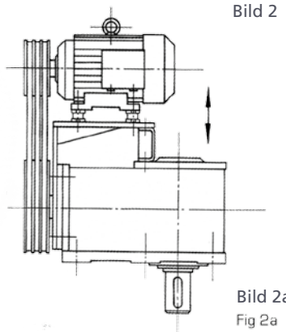


Bild 2a
Fig 2a

Application Examples

Multiple-mounted shafts driven by toothed belts.
The Plummer block housings are placed in position stress-free with NAE Level Equalisation Elements. The toothed belt is installed using HVS Height Adjustment Bolts and can be retensioned as desired at a later date. This is made possible by the greater adjustment travel of the HVS.

In picture 1a, the arrangement of the NAEs is again represented in detail. These NAEs are arranged between the Plummer block housings and the base plate. After orientation, the fixing bolts were tightened.

Fig 2 represents a drive motor unit. The drive is driven by means of a V-belt transmission. The electromotor is on an intermediate plate which is connected to the drive console by means of threaded rods. The installation and retensioning of the V-belt is carried out by means of these threaded rods. This construction is costly and-because of its dependence on the relatively thin threaded rods- prone to vibration.

In Fig 2a electromotor was connected directly to the drive console by means of a HVS Height Adjustment Bolt. The costly intermediate plate was no longer required. The installation and retensioning of the V-belt is carried out by means of the HVS. After the fixing bolts have been tightened, the electromotor rests firmly and safely on the HVS.

Application Example

Fig. 5

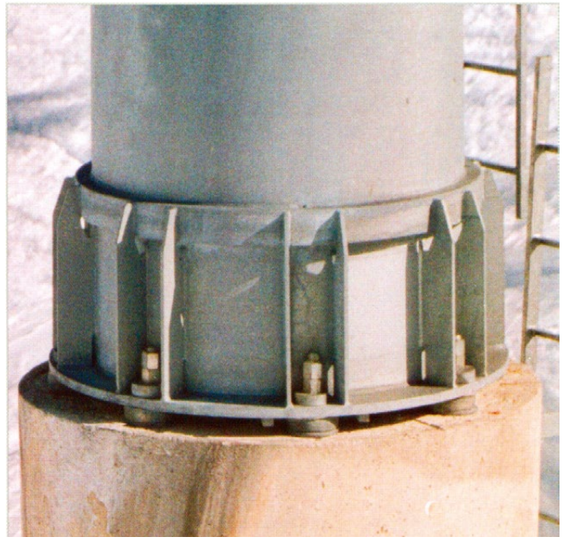


Fig. 5a

This ski-lift mast (Fig. 5) has an additional support mast. Between the foundation and the mast flanges there are inevitably differences that must be evened out before the fixing bolts can be tightened.

For the main mast (Fig. 5a), plates were laid between the concrete foundation and the mast flange. This method is possible, but is very laborious and expensive. The Level Equalisation Element (NAE) would be suggested here. For unparallel surfaces between ant flange and foundation the optimal solution would be the Bell Levelling Element (KAE), because here inclines of up to 4° are being levelled. This enables an exact and extremely fast alignment – above all, one which is still cost-effective.

For the support mast (Fig. 5b), the Ball Levelling Element (KAE) would be the best fit. This would give exact alignment and a perfect flange surface.

Application Example

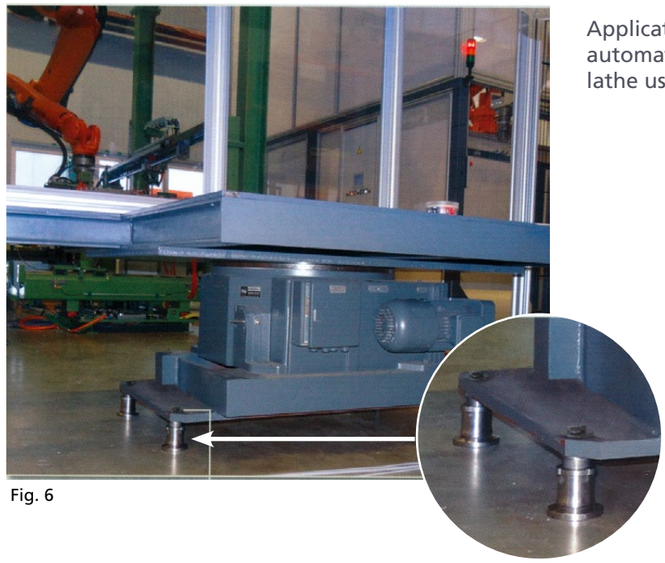


Fig. 6

Application example (Fig. 6) Krüger Industrie-automation GmbH Adjustment and alignment of a lathe using – KVF – Ball Joint Adjustment Feet.

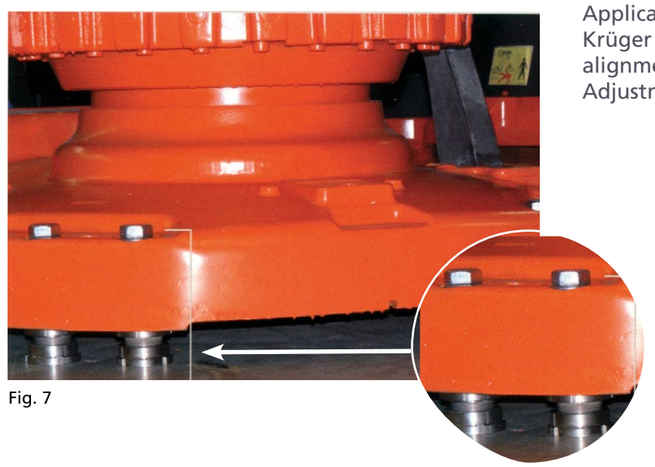


Fig. 7

Application example (Fig. 7):
Krüger Industrieautomation GmbH Adjustment and alignment of an industrial robot using – NAE- Level Adjustment Elements.

V-Tec Europa GmbH
Weidenstraße 5a
58566 Kierspe
Email : info@hve24.de
www.hve24.de
Telefon: +49 (0) 151 – 1660 8166