3 Technical Data

3.1 Characteristic Data of the HZ 125/3,2 SiD

Order Data	
Plant/Password	–
Customer/Purchaser	KMC for Huels America, USA
Centrifuge type	HZ 125/3,2 SiD
Year	1996
Serial No.	11659
Further No.s of the same order	–
Sales Order No.	300 394/2 – 700 228/2
Sectional drawing	43 A 0050-00.757, Page 1 – 2689177-1
Foundation and connection drawing	43 A 0050-00.757, Page 2 – 2689177-2
Basket diameter	1250 mm
Admissible temperature range for the operation of the centrifuge	0 – 50 °C
Admissible density of the mixture [1]	1400 kg/m³
Adm. speed	1220 rpm
Adm. load	557 kg
To be completed by Owner	
Tag No.	
Inspection No.	
Site/building	
.....	
.....	

[1] Highest possible density of the mixture which can be reached by processing the product in the basket. Please note that this mixture of the highest possible density may consist above all of the heavy liquid phase or above all of the compressed solids of highest density with the pore volume filled with liquid.

3.2 Fields of Application and Use as Specified

The centrifuge HZ 125/3,2 SiD under serial No. 11659 is suitable exclusively for the separation of the products which reply to the technical data stated on the type plate. The material of construction of the centrifuge is selected considering the properties of the processed product (in particular corrosion).

Any other use is considered as not as specified. The manufacturer will not accept any liability for damages resulting therefrom but the risk is exclusively at the owner's responsibility.

On the occasion of the commissioning of the centrifuge (by Krauss Maffei or by your personnel), the operating values e.g. density, feed load and speed, are to be compared with the values stated on the type plate.

In case the actual values should be above those stated on the type plate please contact Krauss Maffei with the request to see if these are acceptable; otherwise it will be necessary to adapt the mode of operation accordingly.

3.3 Basket and Filtration

Basket		
Drawing No.	43 A 1750-01.712 D	
Item No.	2693323	
Basket No.	33016	
Inside diameter	1250	mm
Inside length	800	mm
Basket rim diameter	940	mm
Basket shell wall thickness	22	mm
Nominal volume	426.6	dm^3
Gross volume	397.9	dm^3
Weight	1520	kg
Filtering surface	3.2	m^2
Moment of inertia (unloaded basket)	508	kg/m^2
Moment of inertia (loaded basket)	604	kg/m^2
Adm. speed at feed temperature acc. to TD	1220	rpm
Centrifugal force at adm. speed	1000	g
Unbalance load in the basket for limit 1 (alert signal)	3.5	kg
Unbalance load in the basket for limit 2 (shut-down)	5.0	kg
Filter Cloth		
Type	PZ	
Mesh width	40	µm
Air permeability	–	mm

3.4 Drive

Drive motor		
Type	444 T TEFC	
Ex proof.	Class I Gr. D Div. I	
Power P	75	KW
speed	1770	1/min
V-belt drive		
Pulley active diameter d_{a1} (motor end)	275	mm
Pulley active diameter d_{a2} (drive end)	400	mm
Ratio of reduction d_{a1}/d_{a2}	1 : 1.455	
V-belt (see Fig. 4)		
Type	5V	
Number	5	
Active length L_w	2845	mm
Test force f each V-belt	75	N
Pressing in depth E_a	28	mm
when fittimg the first time	22	mm
Axial force S_a	4828	N
Center distance e	925	mm

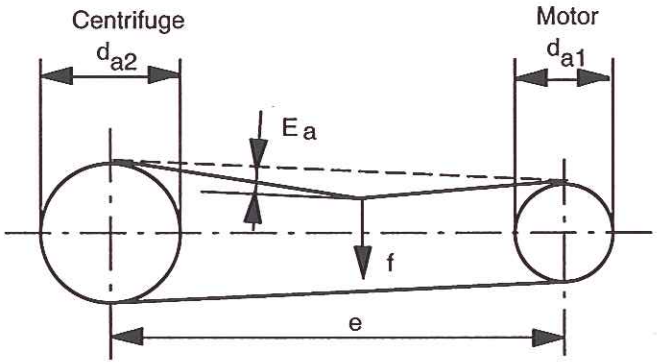


Fig. 4: V-belt drive

3.5 Additional aggregats

Lubricating oil unit	
delivered by KMC	
Hydraulics	
Hydraulik power pack	
delivered by KMC	
Control battery	
Type	pneu.-hydr. way valves DG18V-
Nominal size	NG6
Number of valves	4

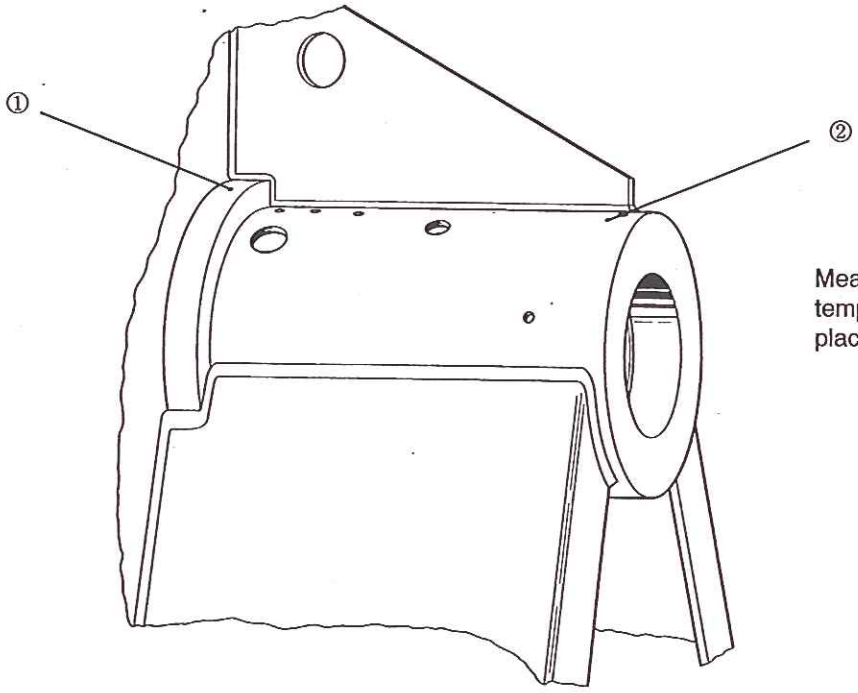
3.6 Materials of construction

Housing	
solid: 1.4539	
Back wall	
solid: 1.4539	
Door	
solid: 1.4539	
Shaft	
25CrMo4V	
Basket	
Basket hub	1.4539
Basket shell	1.4539
Basket rim	1.4539
Rim of the siphon chamber	1.4539
Lining/coating of basket	–
Filtration	
Filter mesh	1.4401
Backup screen	1.4539
Keeper plate	–
Gasket and seals in contact with the product	
Flat seals	PTFE
O-Rings	FPM (Viton)
Preseal/main bearing	PTFE

3.7 General Informations

Equipment		
Machine type	HZ 125/3,2 SiD	
Brake	via motor	
Product feed	Feed pipe	
Product discharge	Screw discharge	
Screw diameter	250	mm
Screw speed	103	1/min
Screw gear motor	4	kW
Screw gear typ	CHF-4135G-17G	
Filtrate discharge	Filtrate outlet	
Vapor return	-	
Door locking	-	
Door clamping	-	
Gas-tight (Over pressure)	0.04	bar
Adm. gas pressure in the process area (overpressure)	0.04	bar
Dipping height of filtrate pipe	600	mm
Gas rate for preseal, approx.	1	m_N^3/h
Idle run power, max. approx.	9	kW
Rotor running down (without braking), ca.	35	min
Ex-proof of all electric utilities	Class I Gr. D Div. I	
Space between knife and filter cloth	12	mm
Discharge speed	1220	1/min
Weights (ca.)		
Shipping weight (centrifuge without inertia block)	7000	kg
Operating weight (shipping weight and max. load)	7557	kg
Weight of centrifuge with inertia block and drive	18875	kg
Weight of inertia block	10875	kg
Basket	1520	kg
Lifting tool	200	kg
Drive, cpl.	1000	kg
Drive motor	620	kg
Swivel arm of large peeler	320	kg
Limit values		
Shipping temperature	> 0	°C
rubber-lined	> 0	°C
Storage temperature	> -5	°C
rubber-lined	> -5	°C
adm. bearing temperature		
Front bearing	80	°C
Rear bearing	80	°C

Air sound levels	
Pressure sound level	< 82 db(A)



Measure bearing temperatur at the places ① and ②

Fig. 5: Measuring of bearing temperature

3.8 Installation Details

Foundation drawing: 43 A 0050-00.757, Page 2

3.8.1 Dimensions

Dimensions of machine, ca.	
Length	3940 mm
Width	1750 mm
Height	1788 mm
Dimensions of steel concrete block, ca.	
Length	2900 mm
Width	2500 mm
Height	600 mm
Required space, ca.	
Length	6320 mm
Width	4500 mm
Height	2800 mm

3.8.2 Rigid foundation

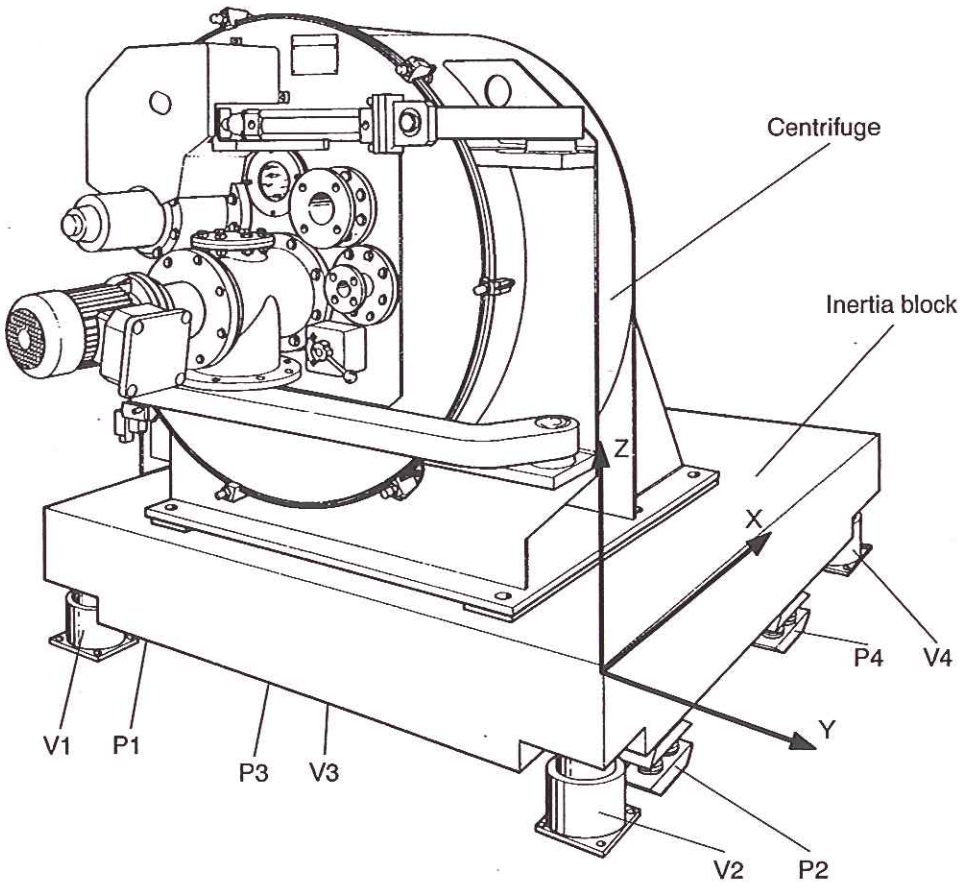


Fig. 6: Position of the Visco dampers and spring elements

Elastic Installation		
Visco damper V1, V2, V3, V4	V2M	
Adm. ambient temperature for Visco material	area temperature	
Visco filling for each damper	6.3	kg
Spring element type, front P1, P2	GS2-657	
Spring element type, rear P3, P4	GS2-557	
Static foundation forces for each spring element, ca.		
vertical Z-direction, front	50 500	N
vertical Z-direction, rear	42 100	N
Proper frequency, ca.		
horizontal X-direction	–	1/min
horizontal Y-direction	–	1/min
vertical Z-direction	123	1/min
Dynamic residual interfering forces, ca.		
at operating speed (n = 1220 1/min)		
horizontal X-direction	± 663	N
horizontal Y-direction	± 663	N
vertical Z-direction	± 5108	N
at resonance passage		
horizontal X-direction	± 995	N
horizontal Y-direction	± 995	N
vertical Z-direction	± 7662	N
Max. vibration strokes at max. unbalance, ca.		
horizontal X-direction	± 5.0	mm
horizontal Y-direction	± 5.0	mm
vertical Z-direction	± 3.0	mm

3.8.3 Inertia block

Loads on the inertia block, approx.		
static load	78 480	N
dynamic load (at normal speed and max. 5% of the load weight as active unbalance)	251 400	N

3.9 Connection list

Pos.	Description	Flowrate	Connecting dimensions	Standards	Assembly
N1	Solids discharge		ANSI 10" 150 lbs RF		3300
N2	CIP, door components and door rinsing ring		ANSI 2" 150 lbs RF		
N3	Feed pipe inlet		ANSI 3" 150 lbs RF		3800
N4	Washpipe inlet		ANSI 1 1/2" 150 lbs RF		4200
N5	Feed controller				5400
N6	Sight glass with rinsing		1/4" NPT		0101
N7	not available				
N8	not available				
N9	not available				
N10	Siphon skimming pipe				5850 (2850)
N11	Siphon priming pipe				5850 (3850)
N12	Inert gas inlet		ANSI 3" 150 lbs RF		0150
N13	Inert gas inlet bearing sealing		1/2" NPT		1304
N14	not connected				
N15	not connected				
N16	not connected				
N17	not connected				
N18	not available				
N19	not available				
N20	Filtrate overflow outlet		ANSI 6" 150 lbs RF		0150

Flanges according to DIN 2501

3.10 Basket Calculation

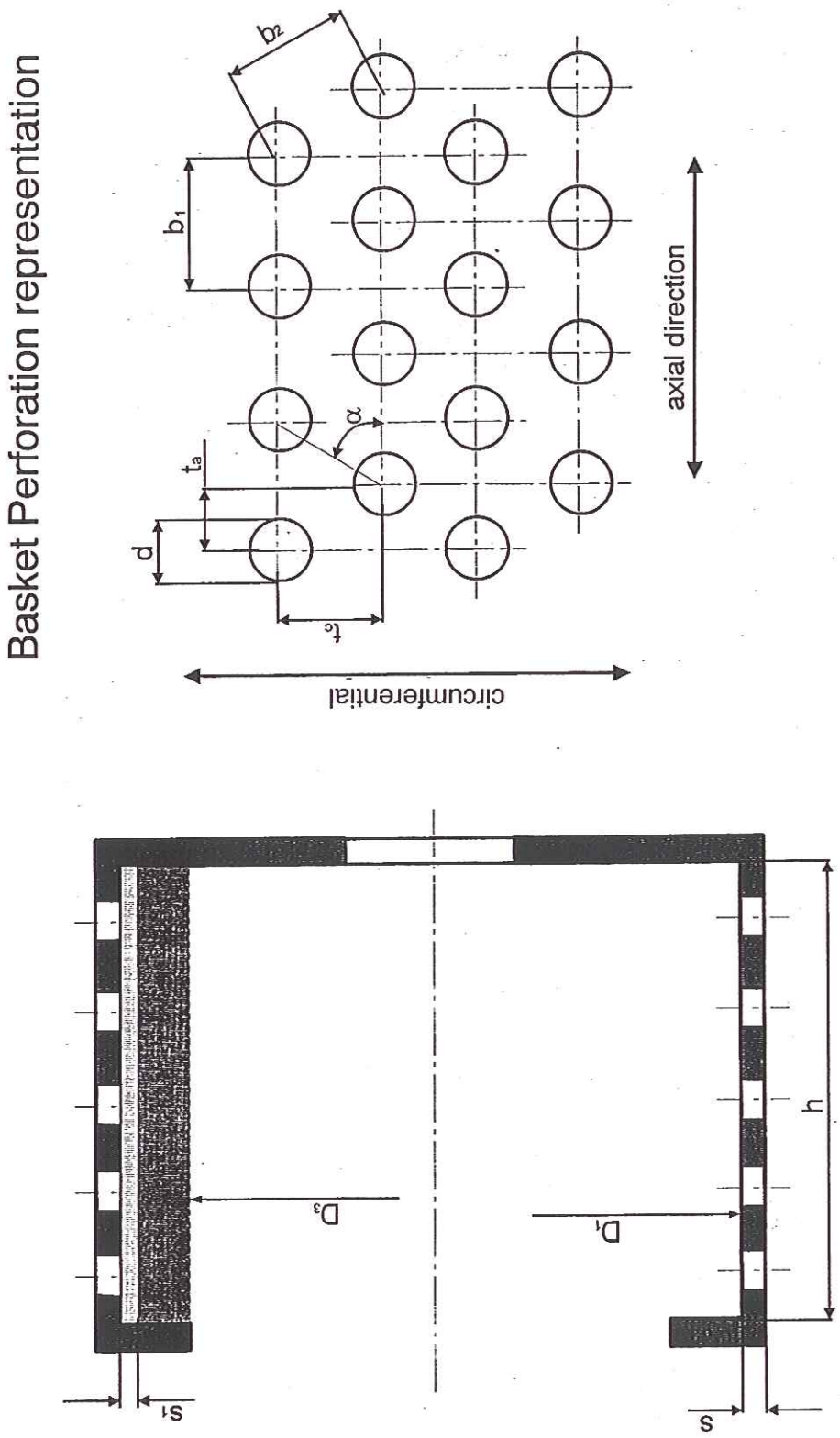


Fig. 7: Dimension Sheet for Basket Calculation

Stress Analysis for Centrifuge Basket according VDMA 24401

Order data			Carried out by: Wüst		
Type:	HZ125/3.2SiD		Order No.: 300394/2		
Drawing No.:	43 A 1750 - 01.712D		Basket No.: 33016		
Item No.:	2693323		Serial No.: 11659		
Basket dimensions					
Inside diameter of basket				D 1 =	1250,0 mm
Thickness of basket shell				S =	22,0 mm
Inside widht of basket (equiv. widht of SZ and KVZ)				H =	800,0 mm
Hole rows			Rectangular hole arrangement		
Number of hole rows in circumferential direction				I 1 =	4
Number of undrilled hole rows in circumferential direction				I 2 =	0
Centre distance of adjacent hole rows in axial direction				B 1 =	400,0 mm
Centre distance of adjacent hole rows in circumferential direction				B 3 =	999,0 mm
Angle between hole row connections				Alpha =	90,0 Grad
Hole diameter				d =	9,0 mm
Basket insert					Yes
Insert thickness	S1 =	9,0 mm	Area weigth	G1 =	19,0 kg/m²
Sleeves					No
Number of sleeves	IT =	0 (-)	Weigth each sleeve	GT =	0,0 kg
Stiffening rings					No
	A =	0,0 mm²	C = 0,0 mm	E =	0,0 mm
Material of basket					14539
Tensile strength	Rm =	520 N/mm²	Density	RhoW =	8000 kg/m³
Yield strength	Rp1,0 =	233 N/mm²	at temperature	T =	50 °C
Coefficients					
Basket shell		welded (in longitudinal direction)		K = KS =	0,95
Welding seam in hole row area					No
Perforated basket	Rectangular hole arrangment			K3 =	0,98
	Staggered hole arrangement			K4 =	1,00
	Single hole row			K5 =	1,00
Coefficient for density revision				Q =	1,00
Coefficient for stiffening rings				Z =	1,00
Product data	Feed homogeneous		Basket speed	n =	1220 1/min
Inside diameter	D3 =	940,0 mm	Density	Rho FH =	1400 kg/m³
Weigth (homog.)	GFH =	557,9 kg	Weigth (inhomog.)	GFI =	0 kg

Tangential stress		
Due to unloaded basket	Sigma 1 =	55,6 N/mm²
Due to insert	Sigma 2 =	5,8 N/mm²
Due to sleeves	Sigma 3 =	0,0 N/mm²
Due to homogeneous feed	Sigma 4 =	53,4 N/mm²
Due to inhomogeneous feed	Sigma 5 =	0,0 N/mm²
Total stress	**Sigma T =**	**114,7 N/mm²**

Conditions to VDMA:	Sigma T < 0,50*Rp =	116,5 N/mm²	= = > within tolerance
	Sigma T < 0,33*Rm =	171,6 N/mm²	= = > within tolerance

München, den 10.06.1996

Krauss Maffei Verfahrenstechnik GmbH