

LAMPIRAN A

SPESIFIKASI AKSESORIS DAN PELENGKAP UNIT PENGOLAHAN

Nominal Pipe Size (ins)	125 PSI Cast Iron		175 PSI Cast Iron		250 PSI Cast Iron		Pipe Sizing Criteria		
	Diameter (ins)		Diameter (ins)		Diameter (ins)		Velocity	Loss in	Flow
	Outside	Inside	Outside	Inside	Outside	Inside	Ft/sec	PD'/100'	GPM
3	3.96	3.06	3.96	3.00			3.1	4.5	100
4	5.00	4.04	5.00	3.96			2.8	5.1	200
5									
6	7.10	6.08	7.10	6.00	7.22	6.00	2.9	6.8	600
8	9.30	8.18	9.30	8.10	9.42	8.00	2.6	7.7	1,200
10	11.40	10.16	11.40	10.04	11.60	10.00	2.7	9.0	2,200
12	13.50	12.14	13.50	12.00	13.78	12.00	2.5	9.7	3,400
14	15.65	14.17	15.65	14.01	15.98	14.00	1.9	9.4	4,500
16	17.80	16.20	17.80	16.02	18.16	16.00	1.7	9.6	6,000
18	19.92	18.18	19.92	18.00	20.34	18.00	1.9	10.0	8,000
20	22.06	20.22	22.06	20.00	22.54	20.00	1.2	9.2	9,000
22									
24	26.32	24.22	26.32	24.00	26.90	24.00	1.2	10.0	14,000
30	32.40	30.00	32.74	30.00	33.46	30.00	0.9	10.0	22,000
36	38.70	35.98	39.16	36.00	40.04	36.00	0.7	9.5	30,000
42	45.10	42.02	45.58	42.02			0.5	9.3	40,000
48	51.40	47.98	51.98	48.06			0.5	9.8	55,000



Gambar A. 1 Diameter Pipa Cast Iron

Sumber : [Schedule 40 Cast Iron Pipe weight/ dimensions and price list \(steeltubesindia.net\)](http://steeltubesindia.net)

Parameter teknik					
Model	HLBQ-170	HLBQ-215	HLBQ-270	HLBQ-330	HLBQ-650
Jenis gelembung	Bubble Kasar	Bubble Baik	Bubble Baik	Bubble Baik	Bubble Baik
Ukuran	6 inci	8 inci	9 inci	12 inci	675 * 215mm
MOC	EPDM / Silikon / PTFE - ABS / Penguatan PP-GF				
Penyambung	3/4" utas NPT laki-laki				
Ketebalan membran	2mm	2mm	2mm	2mm	2mm
Ukuran gelembung	4-5mm	1-2mm	1-2mm	1-2mm	1-2mm
Aliran Desain	1-5m ³ /h	1.5-2.5m ³ /h	3-4m ³ /h	5-6m ³ /h	6-14m ³ /h
Rentang aliran	6-9m ³ /h	1-6m ³ /h	1-8m ³ /h	1-12m ³ /h	1-16m ³ /h
SOTE	≥10% (6m terendam)	≥38% (6m terendam)	≥38% (6m terendam)	≥38% (6m terendam)	≥40% (6m terendam)
SOTR	≥0.21kg O ₂ / jam	≥0.31kg O ₂ / jam	≥0.45kg O ₂ / jam	≥0.75kg O ₂ / jam	≥0.99kg O ₂ / jam
SAE	≥7.5kg O ₂ / kw.h	≥8.9kg O ₂ / kw.h	≥8.9kg O ₂ / kw.h	≥8.9kg O ₂ / kw.h	≥9.2kg O ₂ / kw.h
Headloss	2000-3000 Pa	1500-4300Pa	1500-4300Pa	1500-4300Pa	2000-3500Pa
Area Pelayanan	0,5-0,8m ² / pcs	0,2-0,64m ² / pcs	0,25-1,0m ² / pcs	0,4-1,5m ² / pcs	0,5-0,25 m ² / pcs
Kehidupan pelayanan	> 5 tahun				

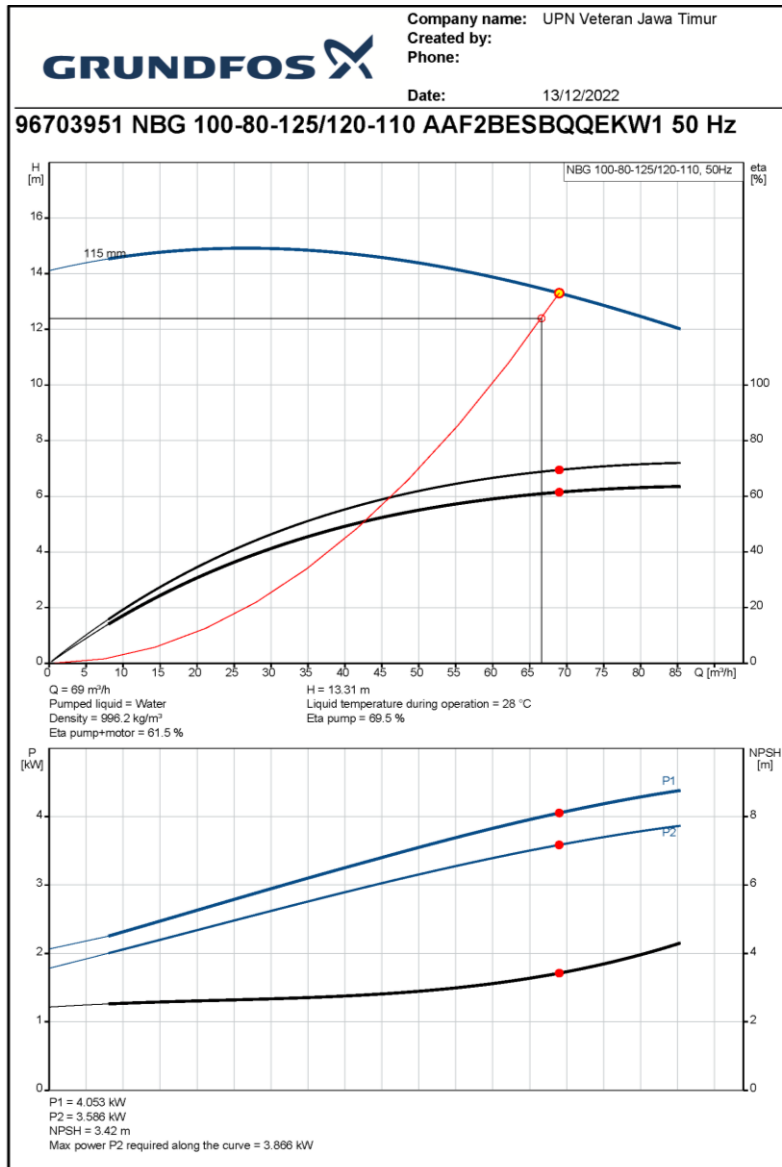
Gambar A. 2 Spesifikasi Diffuser HLBQ-215 untuk DAF

Sumber : <http://id.hollyhbar.com/diffuser/fine-bubble-disc-diffuser-for-wastewater.html>

		Company name: UPN Veteran Jawa Timur
		Created by:
		Phone:
		Date: 13/12/2022
Qty.	Description	
1	NBG 100-80-125/120-110 AAF2BESBQQEKW1	
		
	Note! Product picture may differ from actual product	
	Product No.: 96703951	
	Flanges are PN 16 with dimensions according to EN 1092-2. The pump has an axial suction port, radial discharge port, horizontal shaft and a back pull-out design enabling removal of the motor, motor stool, cover and impeller without disturbing the pump housing or pipework.	
	The unbalanced rubber bellows seal is according to DIN EN 12756.	
	The pump is close-coupled to a fan-cooled asynchronous motor.	
	Controls:	
	Frequency converter:	NONE
	Pressure sensor:	N
	Liquid:	
	Pumped liquid:	Water
	Liquid temperature range:	-25 , 120 °C
	Selected liquid temperature:	28 °C
	Density:	996.2 kg/m³
	Kinematic viscosity:	0.83 mm²/s
	Technical:	
	Pump speed on which pump data are based:	2875 rpm
	Actual calculated flow:	69 m³/h
	Resulting head of the pump:	13.31 m
	Actual impeller diameter:	115 mm
	Nominal impeller diameter:	125
	Type of impeller:	Standard
	Shaft seal arrangement:	Single
	Code for shaft seal:	BQQE
	Curve tolerance:	ISO9906:2012 3B2
	Bearing design:	Standard
	MaxPowerP2AlongTheCurve:	3.866 kW
	Materials:	
	Pump housing:	Cast iron EN-GJL-250
		ASTM class 35
	Wear ring:	Brass
	Impeller:	Brass CuZn37Pb
	Internal pump house coating:	CED
	Shaft:	Stainless steel EN 1.4301 AISI 304
	Installation:	
	Max. ambient temperature:	40 °C
	Maximum operating pressure:	16 bar

Gambar A. 3 Spesifikasi Pompa Grundfos

Sumber : [Pompa Booster Grundfos CMB 5-46 – Toko Pompa Online](#)



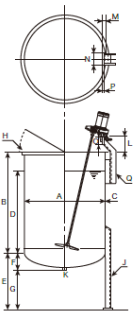
Gambar A.4 Spesifikasi Pompa Grundfos
 Sumber : [Pompa Booster Grundfos CMB 5-46 – Toko Pompa Online](#)

Performance data DMX 221

Pump	V _{stroke} [cm ³]	50 Hz			60 Hz			100 Hz			Motor power	
		Max. flow ¹⁾ [l/h]	Stroke frequency [n/min]	Max. press ²⁾ [bar]	Max. flow ¹⁾ [l/h]	Stroke frequency [n/min]	Max. press ²⁾ [bar]	Max. flow ¹⁾ [l/h]	Stroke frequency [n/min]	Max. press ²⁾ [bar]	Standard [kW]	PTC ³⁾ [kW]
DMX 4-10	2.2	4	29	10	4.8	34.8	10	8	58	10	0.09	0.09
DMX 7-10	3.8	7	29	10	8.4	34.8	10	14	58	10	0.09	0.09
DMX 8-10	2.2	8	63	10	9.6	75.6	10	16	126	10	0.09	0.09
DMX 9-10	4.9	9	29	10	10.8	34.8	10	18	58	10	0.09	0.09
DMX 12-10	6.9	12	29	10	14.4	34.8	10	24	58	10	0.09	0.18
DMX 14-10	3.8	14	63	10	16.8	75.6	10	28	126	10	0.09	0.09
DMX 16-10	2.2	16	120	10	19.2	144	10	-	-	-	0.09	-
DMX 17-4	10.4	17	29	4	20.4	34.8	4	34	58	4	0.09	0.18
DMX 18-10	4.9	18	63	10	21.6	75.6	10	36	126	10	0.09	0.09
DMX 25-3	16	27	29	3	32.4	34.8	3	54	58	3	0.09	0.18
DMX 25-10	6.9	28	63	10	31.2	75.6	10	52	126	10	0.09	0.18
DMX 27-10	3.8	27	120	10	32.4	144	10	-	-	-	0.09	-
DMX 35-10	4.9	35	120	10	42	144	10	-	-	-	0.09	-
DMX 39-4	10.4	39	63	4	46.8	75.6	4	78	126	4	0.09	0.18
DMX 50-10	6.9	50	120	10	60	144	8	-	-	-	0.09	-
DMX 60-3	16	60	63	3	72	75.6	3	120	126	3	0.09	0.18
DMX 75-4	10.4	75	120	4	90	144	3.5	-	-	-	0.09	-
DMX 115-3	16	115	120	3	138	144	2.5	-	-	-	0.09	-

Gambar A.5 Performance data dosing pump Grundfos tipe DMX 221 7-10
Sumber: Grundfos data booklet dosing pump DMX, 2022

Specification of optional tanks



Model	Available capacity	Maximum capacity	Tank dimension (mm)											Weight (kg)
			l	l	A	B	C	D	E	F	G	H(SUS)	J(S)	
ZTF-100	100	130	500	600	3	450	450	134	316	L25x26x3	3-L50x50x6	1/2 B Socket	43	3
ZTF-150	150	182	550	700	3	582	450	144	306	L30x30x3	3-L50x50x6	1/2 B Socket	51	4
ZTF-200	200	260	660	700	3	620	450	163	287	L30x30x3	3-L50x50x6	1/2 B Socket	60	5.5
ZTF-300	300	361	700	860	3	692	600	173	327	L40x40x3	4-L50x50x6	1/2 B Socket	77	6.5
ZTF-400	400	478	800	850	3	695	600	192	308	L40x40x3	4-L50x50x6	1/2 B Socket	88	8
ZTF-500	500	600	850	950	3	770	600	202	298	L40x40x3	4-L65x65x6	1/2 B Socket	106	9
ZTF-800	800	962	1000	1100	3	800	580	240	310	L40x40x5	4-100x50x5	1B Socket	155	12
ZTF-1000	1000	1177	1100	1100	3	910	550	260	290	L40x40x5	4-100x50x5	1B Socket	170	19
ZTF-1500	1500	1721	1250	1245	4	1085	600	290	310	L40x40x5	4-100x50x5	1B Socket	260	24
ZTF-2000	2000	2275	1300	1550	4	1345	600	298	302	L50x50x6	4-125x66x6	1B Socket	335	26
ZTF-2000S	2000	2273	1400	1900	4	1125	600	918	282	L50x50x6	4-125x66x6	1B Socket	325	30
ZTF-2500	2500	3073	1500	1550	4	1290	700	370	330	L50x50x6	4-125x66x6	1B JIS 10KF	400	34
ZTF-3000	3000	3603	1500	1850	4	1510	700	370	330	L50x50x6	4-125x66x6	1B JIS 10KF	448	34
ZTF-3000S	3000	3521	1600	1550	4	1290	750	400	350	L50x50x6	4-125x66x6	1B JIS 10KF	422	38
ZTF-3500	3500	4125	1600	1850	4	1540	700	400	300	L50x50x6	4-150x75x9	1B JIS 10KF	524	38
ZTF-3500S	3500	4004	1700	1550	4	1330	800	430	370	L50x50x6	4-150x75x9	1B JIS 10KF	514	43
ZTF-4000	4000	4695	1700	1850	4	1550	800	430	370	L65x65x6	4-150x75x9	1 1/2 B JIS 10KF	575	45
ZTF-4000S	4000	4520	1800	1500	4	1345	800	450	350	L65x65x6	4-150x75x9	1 1/2 B JIS 10KF	550	50
ZTF-4500	4500	5295	1800	1850	5	1542	800	450	350	L65x65x6	4-200x80x8	1 1/2 B JIS 10KF	750	50
ZTF-5000	5000	5924	1900	1850	5	1530	900	500	400	L65x65x6	4-200x80x8	2B JIS 10KF	800	56

* The lids have a thickness of 1.5 for A dimension up to 1000, and 2.0 for A dimension above that.
* Jacket type is also available.

Gambar A.6 Spesifikasi Tangki Pembubuh Ca(OH)₂ Satake Model ZT-200
Sumber: https://www.satake.co.jp/en/product/catalog/data/02_aseries.pdf

Standard specification

Model	Frame number	Motor			Impeller				Shaft length (mm)
		Power (kW)	Number of poles (P)	Phase and voltage (V)	Frequency (Hz)	Revolution (min ⁻¹)	Diameter (mm)	Stage	
A720-0.065A	1	0.065	4	Single-phase 100	50	300	150	1	600
A720-0.1A		0.1	4	Single-phase 100	50	300	220	1	800
A720-0.1B		0.1	4	Three-phase 200	50	300	220	1	800
A720-0.2A	2	0.2	4	Single-phase 100	50	300	270	1	1000
A720-0.2B		0.2	4	Three-phase 200	50	300	270	1	1000
A720-0.4B	3	0.4	4	Three-phase 200	50	300	310	1	1250
A725-0.4B	4	0.4	6	Three-phase 200	50	200	350	1	1500
A720-0.75B		0.75	4	Three-phase 200	50	300	350	1	1500
A725-0.75B		0.75	6	Three-phase 200	50	200	400	1	2000
A720-1.5B	5	1.5	4	Three-phase 200	50	300	400	1	2000

* The standard materials for the shaft and the impeller are SUS304 or SUS316.
* The A720 and A725 are the replacement for the A520.

Gambar A.7 Spesifikasi motor pendukung tangki pembubuh Satake Model A720-0,1A
Sumber: https://www.satake.co.jp/en/product/catalog/data/02_aseries.pdf