EBARA

Japanese Technology since 1912

CDA

Data Book 60Hz

CONTENTS

60Hz

Rev. G

SPECIFICATION 60Hz

Rev. G

PUMP			
Liquid	Type of liquid		Clean water
Handled	Max temperature	[°C]	min. +5 max. +40 (CDA 076-106) max. +90 (CDA 156-206-306-406-556)
Maximum working pressure		[MPa]	0.6 (CDA 076-106) 1.0 (CDA 156-206-306-406-556)
Construction	Impeller		Twin closed type
	Shaft seal type		Mechanical seal
	Bearing		Sealed ball bearing
Pipe Connection	Suction		G1 (CDA 076-106) G1¼ (CDA 156-206-306) G1½ (CDA 406-556)
	Discharge		G1 (CDA 076-106-156-206-306) G1¼ (CDA 406-556)
Material	Casing		Cast iron
	Impeller		PPE+PS glass fibre reinforced (CDA 076-106) Brass (CDA 156-206-306-406-556)
	Casing cover		AISI 304 (CDA 076-106) Cast iron built-in the motor bracket (CDA 156-206-306-406-556)
	Shaft seal		Ceramic/Carbon/NBR
	Shaft		AISI 303 (CDA 076-106-156-206-306) AISI 304 (CDA 406-556)
	Bracket		Aluminium (CDA 076-106) Cast iron (CDA 156-206-306-406-556)
Applicable standard of test			ISO 9006:2012 - Grade 3B

MOTOR			
Type		Electric - TEFC	
		Single Phase	Three Phase
Efficiency Level (Reg.1781/2019)		-**	IE3
No. of Poles		2	
Rotation speed	[mim^{-1}]	≈ 3450	
Insulation Class		F	
Protection degree (CEI EN 60034-5)		IP 44	
Power rating	[kW]	0.55 ÷ 1.5	0.55 ÷ 4
	[HP]	0.75 ÷ 2	0.75 ÷ 5.5
Frequency	[Hz]	60	
Voltage	[V]	220-230 ±6%	220/380 –6% +10% (0.55 kW) 220/380 ±10% (from 0.75 kW up to 4 kW) 220/380-460 ±10% (IE3* from 0.75 kW up to 4 kW)
Capacitor		Built in	-
Over load protection		Built in	Provided by the user
Casing material		Aluminium	
Base material / Motor support		Cast iron / Plastic foot	
Dimensions of cable entry		PG11 - PG13.5 - G 1/2 - M16x1.5 - M20x1.5 (see page 400)	

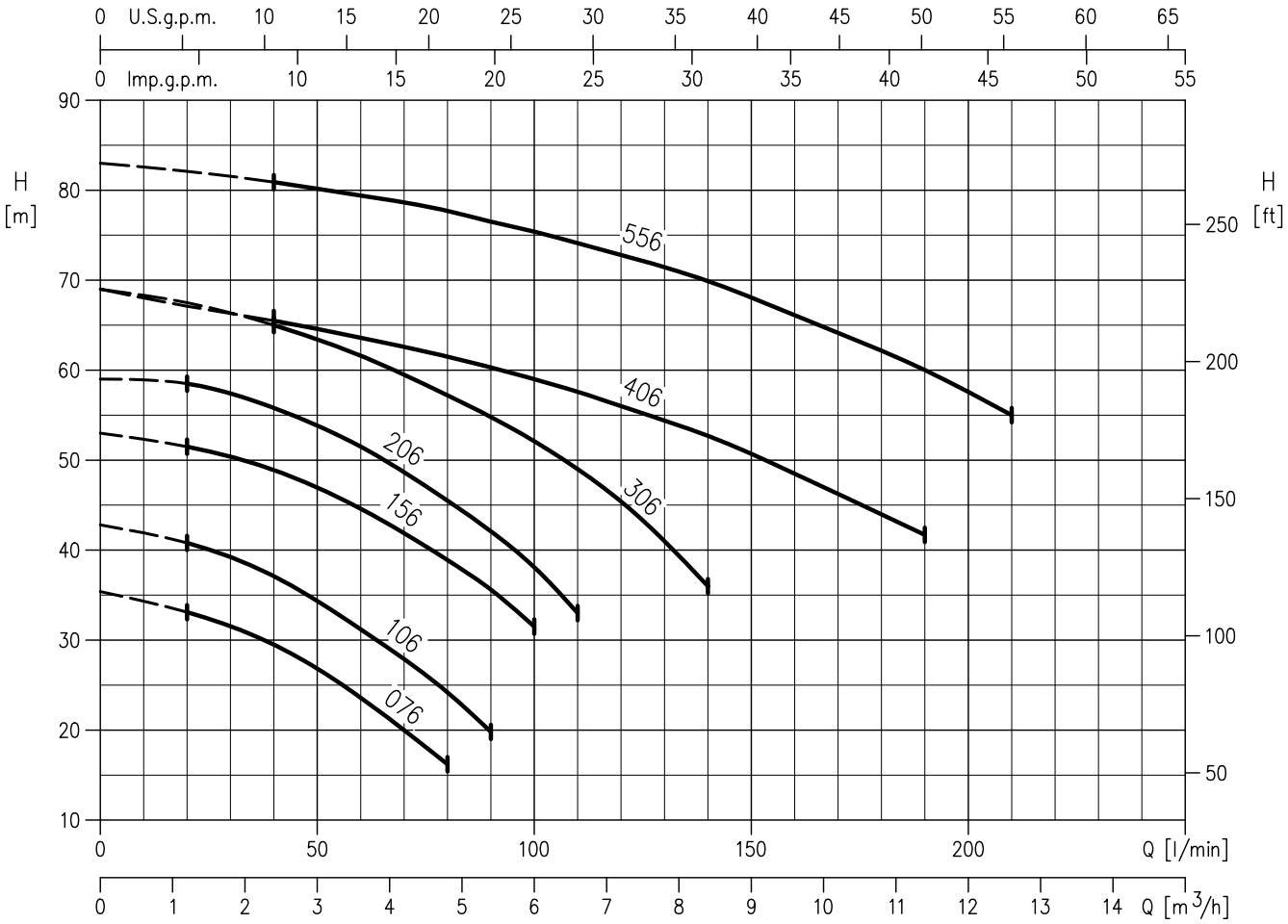
* only for 460 V

**IE2 only for 076M model

PERFORMANCE RANGE and SELECTION CHART 60Hz

Rev. G

PERFORMANCE RANGE



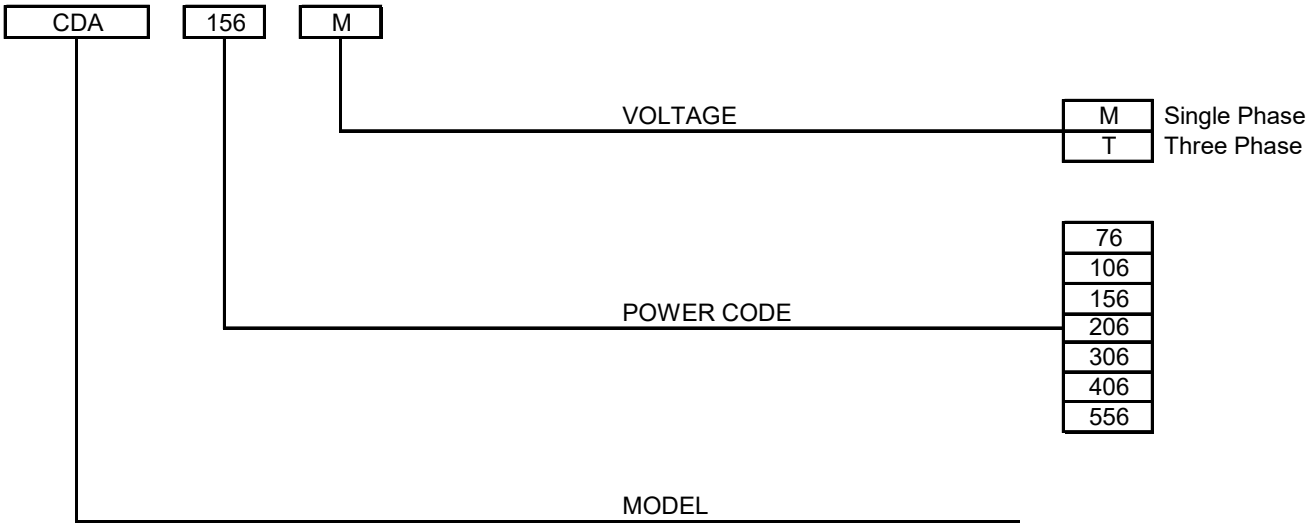
SELECTION CHART

Pump type			Q =Capacity												
		l/min	0	20	40	60	80	90	100	110	120	140	160	190	210
Single Phase	Three Phase	m³/h	0	1,2	2,4	3,6	4,8	5,4	6	6,6	7,2	8,4	9,6	11,4	12,6
			H=Total manometric head in meters												
CDA 076 M	CDA 076 T		35.4	33.1	29.5	23.5	16.2	-	-	-	-	-	-	-	-
-	CDA 106 T		43	41	37	31	24	19.8	-	-	-	-	-	-	-
CDA 156 M	CDA 156 T		53	51.5	49	44.5	39	35.5	31.5	-	-	-	-	-	-
CDA 206 M	CDA 206 T		59	58.5	56	51.5	45.5	42	38	33	-	-	-	-	-
-	CDA 306 T		69	-	65	61.5	57	55	52	49	45.5	36	-	-	-
-	CDA 406 T		69	-	65.5	63.5	61.5	60.5	59	57.5	56	52.5	48.5	41,5	-
-	CDA 556 T		83	-	81	79.5	77.5	76.5	75.5	74	73	70	66	60	55

TYPE KEY and CURVE SPECIFICATIONS 60Hz

Rev. G

TYPE KEY



PERFORMANCE CURVE SPECIFICATIONS

The specifications below qualify the curves shown on the following pages.

Tolerances according to ISO 9006:2012 - Grade 3B
The curves refer to effective speed of asynchronous motors at 60 Hz, 2 poles.
Measurements were carried out with clean water at 20°C of temperature and with a kinematic viscosity of ν = 1 mm^2/s (1 cSt)
The continuous curves indicate the recommended working range. The dotted curve is only a guide.
In order to avoid the risk of over-heating, the pumps should not be used at a flow rate below 10% of best efficiency point.

Symbols explanation:

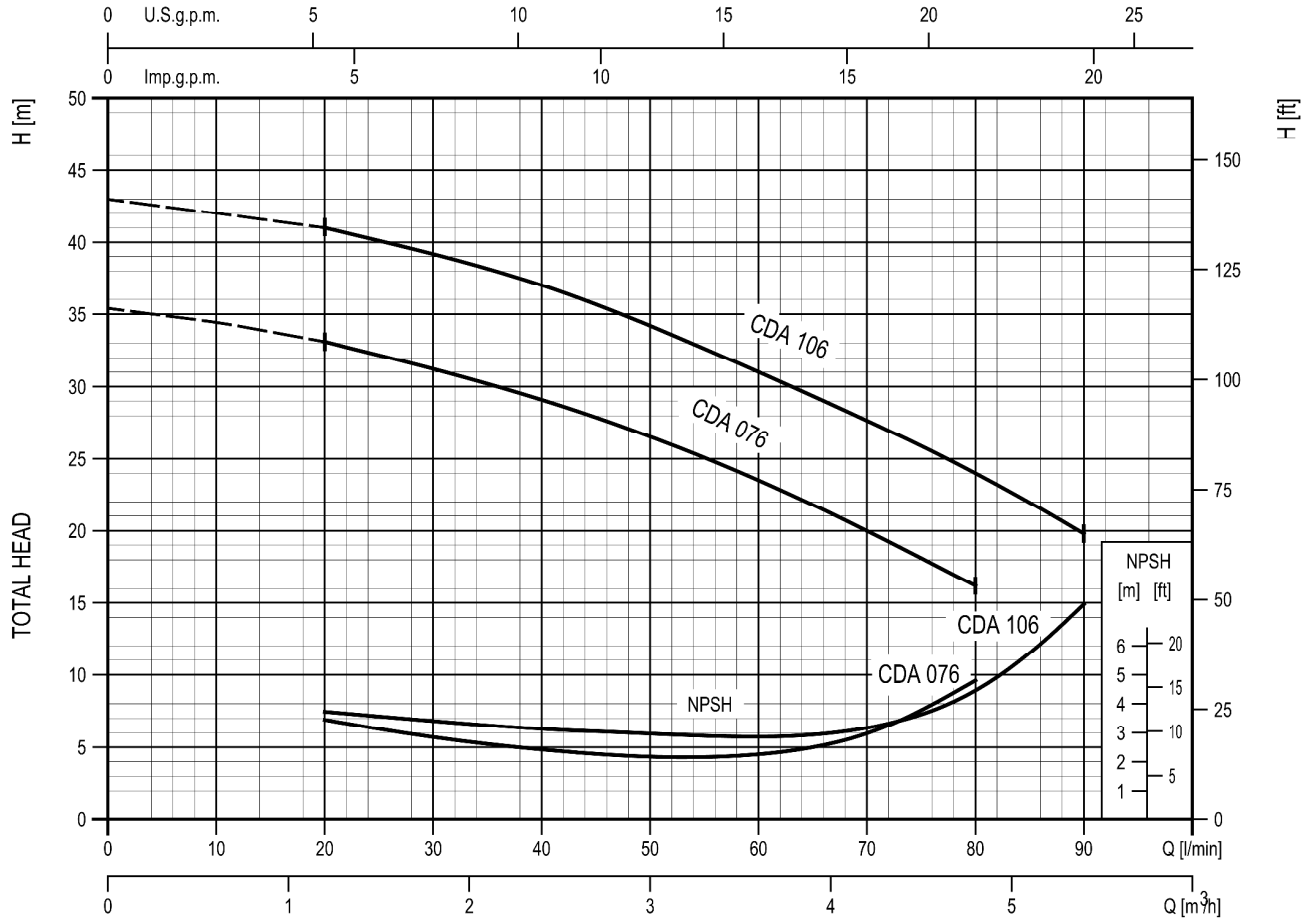
Q = volume flow rate
H = total head

PERFORMANCE CURVE

60Hz

Rev. G

CDA 076 - Impeller diameter = 103 mm
CDA 106 - Impeller diameter = 110 mm



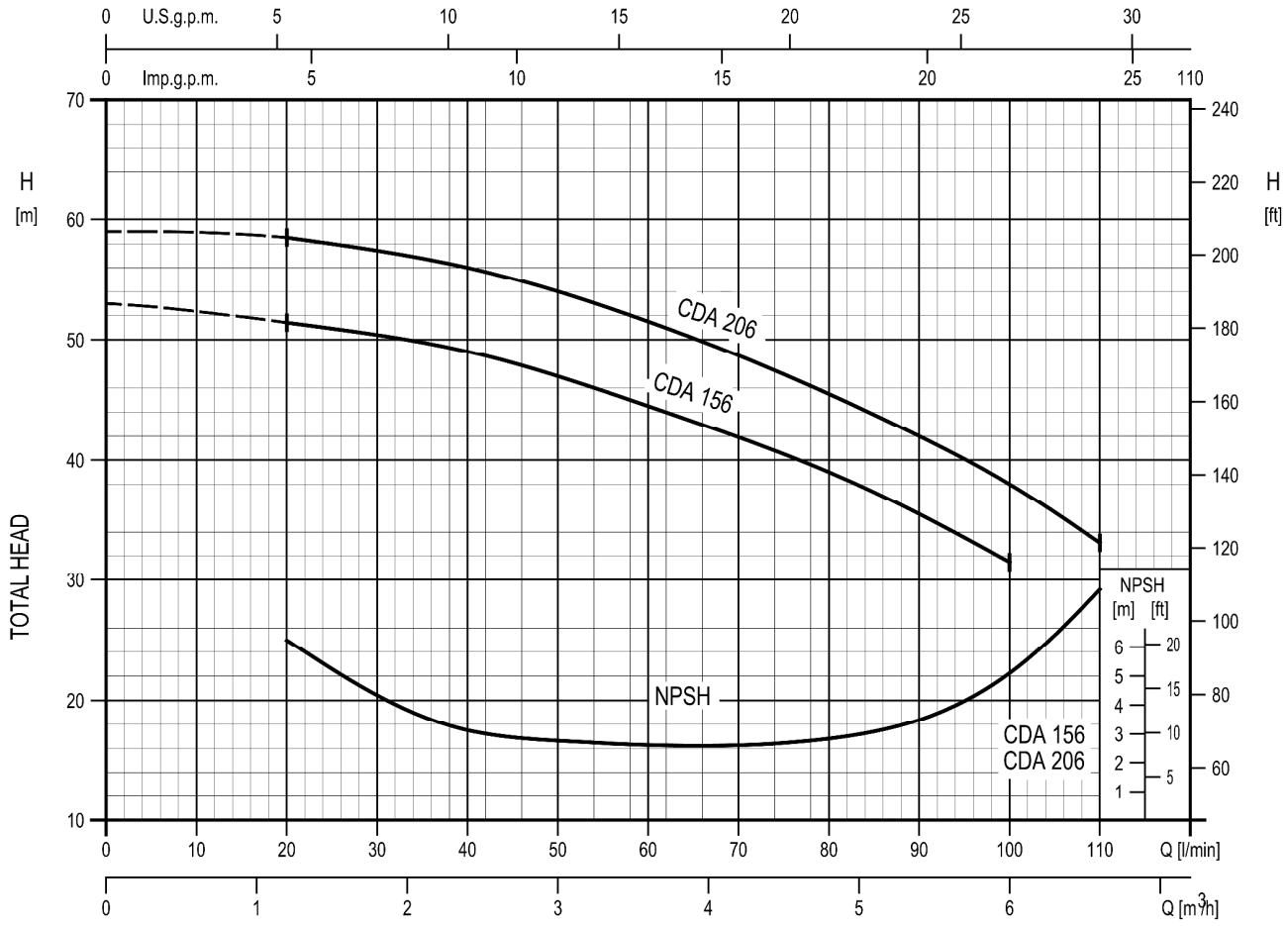
Rotation speed ≈3450min^{-1}
Test standard: ISO 9006:2012 - Grade 3B

PERFORMANCE CURVE

60Hz

Rev. G

CDA 156 - Impeller diameter = 123 mm
CDA 206 - Impeller diameter = 128 mm



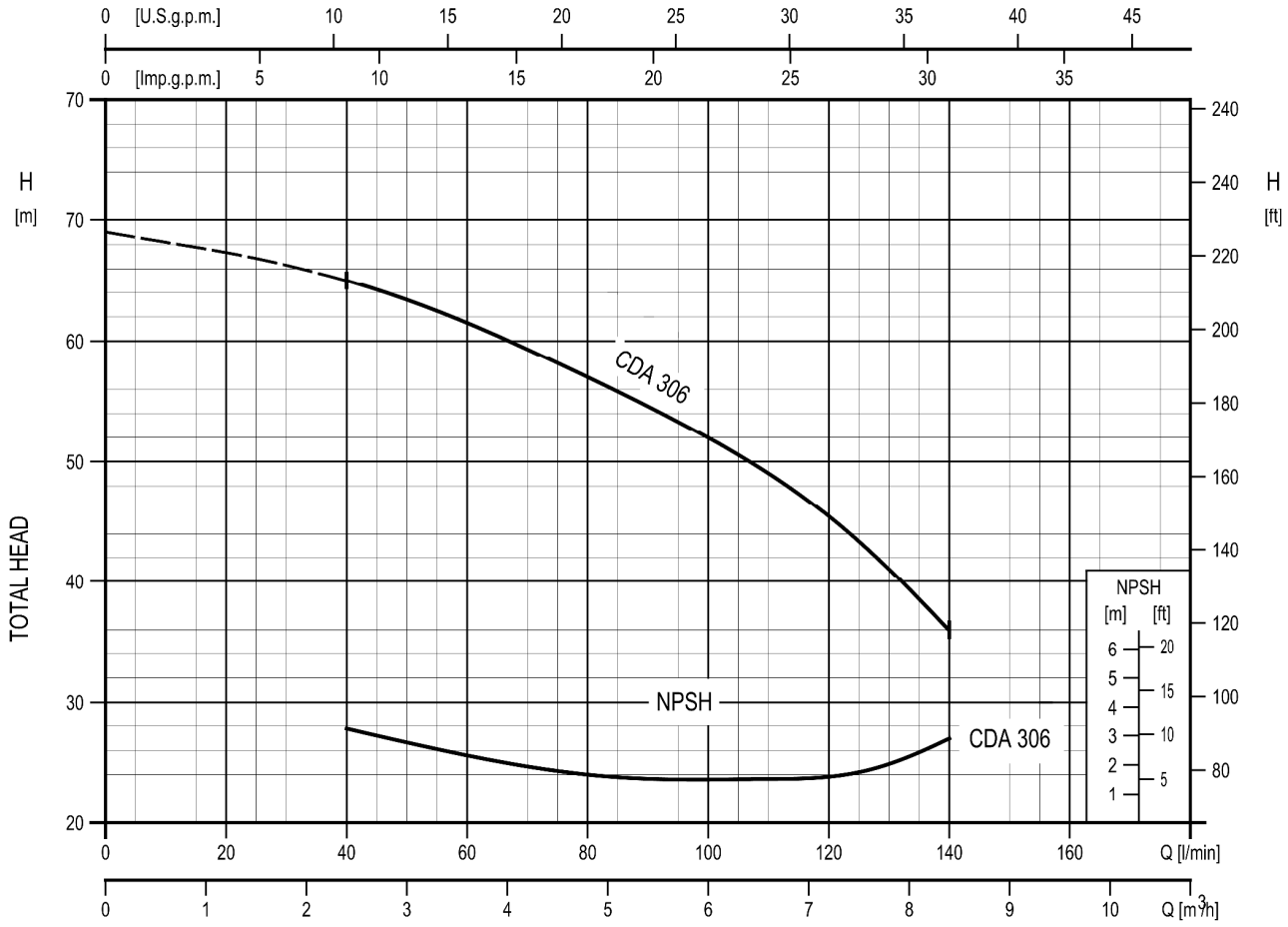
Rotation speed ≈3450min^{-1}
Test standard: ISO 9006:2012 - Grade 3B

PERFORMANCE CURVE

60Hz

Rev. G

CDA 306 - Impeller diameter = 135 mm



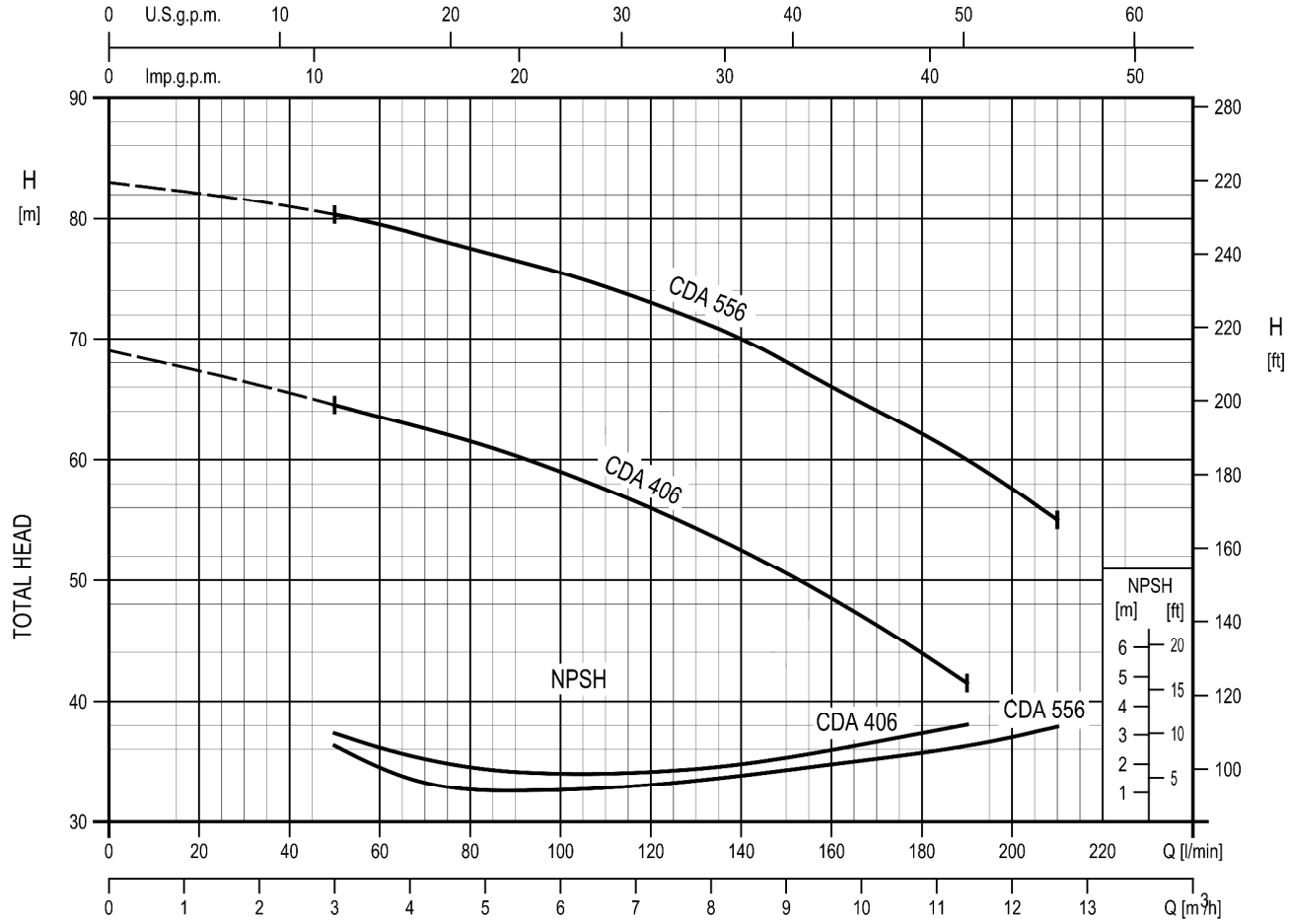
Rotation speed ≈3450min^{-1}
Test standard: ISO 9006:2012 - Grade 3B

PERFORMANCE CURVE

60Hz

Rev. G

CDA 406 - Impeller diameter = 142 mm
CDA 556 - Impeller diameter = 155.5 mm



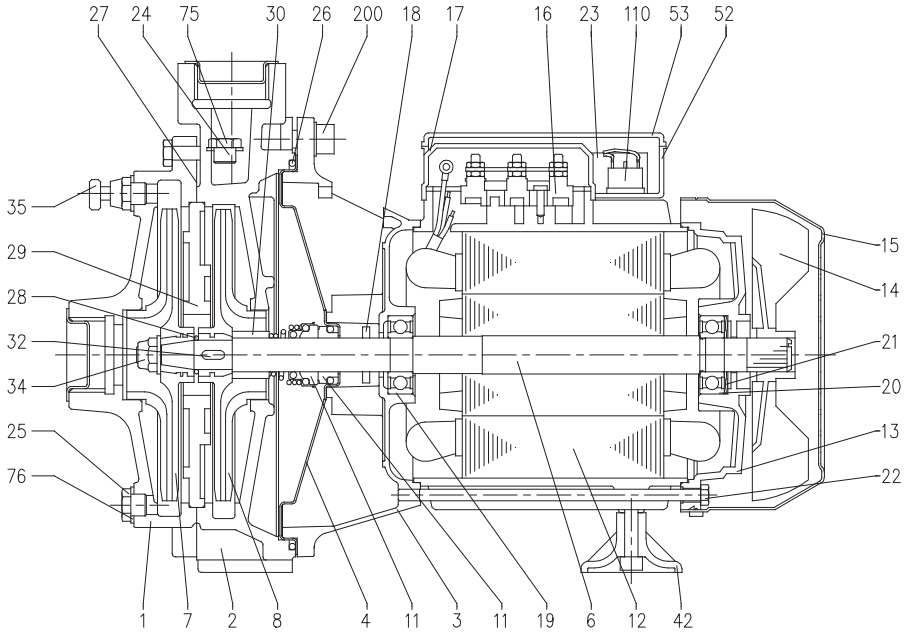
Rotation speed ≈3450min^{-1}
Test standard: ISO 9006:2012 - Grade 3B

CONSTRUCTION

60Hz

Rev. G

SECTIONAL VIEW



N°	PART NAME	MATERIAL	Q. TY
1	Casing	Cast iron	1
2	Casing	Cast iron	1
3	Motor bracket	[8]	1
4	Casing cover	[9]	1
6	Shaft w ith rotor	[6]	1
7	Impeller	[4]	1
8	Impeller	[4]	1
11	Mechanical seal [7]	Carbon/Ceramic/NBR	1
12	Motor frame w ith stator	-	1
13	Motor cover	Aluminium	1
14	Fan	PP	1
15	Fan cover	Fe P04 Zincate	1
16	Terminal box	-	1
17	Terminal box cover [2]	Aluminium	1
18	Splash ring	NBR	1
19	Pump side ball bearing	-	1
20	Fan side ball bearing	-	1
21	Adjusting ring	Steel C70	1
22	Tie rod	Fe 42 Zincate	4

N°	PART NAME	MATERIAL	Q. TY
23	Capacitor [1]	-	1
24	Priming plug	Brass	1
25	Drain plug	Brass	1
26	O-ring	NBR	1
27	Gasket	Compression cellulose fibre	1
28	O-ring	NBR	1
29	Intermediate plate	Cast iron	1
30	Mechanical seal spacer	Brass	1
32	Key	AISI 316	1
34	Impeller nut [3]	AISI 304	1
35	Air breather valve	Brass	1
42	Foot	PP	1
52	Capacitor box [1]	ABS class V-0	1
53	Capacitor box cover [10]	ABS class V-0 [10]	1
75	Washer	Aluminium	1
76	Washer	Aluminium	1
110	Protector [5]	-	1
200	Screw	Zn Steel Cl. 8.8 ISO 898-1	4

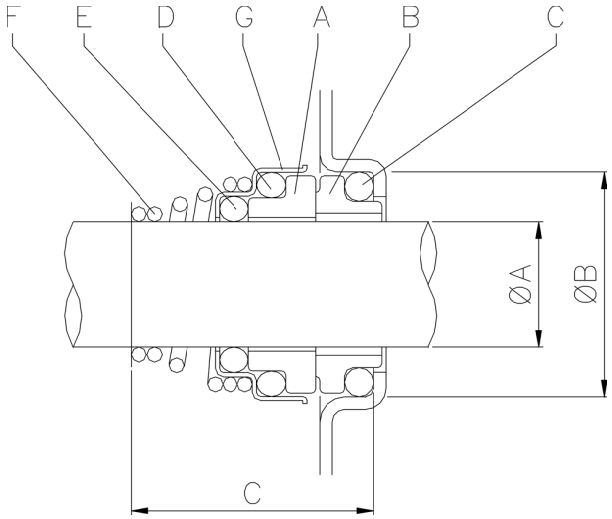
[1] Only for single phase
[2] Only for three phase
[3] Only for version with impeller in Brass
[4] Material : PPE+PS glass fibre reinforced for version CDA 076 - CDA 106
Brass for version CDA 156 - CDA 206 - CDA 306 - CDA 406 - CDA 556
[5] Only for version single phase CDA 156 - CDA 206
[6] Material : AISI 303 (wet extension) for version CDA 076 - CDA 106 - CDA 156 - CDA 206 - CDA 306
AISI 304 (wet extension) for version CDA 406 - CDA 556
[7] See constructions mechanical seal page 301
[8] Material : Aluminium for version CDA 076 - CDA 106
Cast iron for version CDA 156 - CDA 206 - CDA 306 - CDA 406 - CDA 556
[9] Material : AISI 304 for version CDA 076 - CDA 106
Cast iron built-in the motor bracket for version CDA 156.- CDA 206 – CDA 306 - CDA 406 - CDA 556
[10] With gasket in NBR only for version single phase CDA 076 – CDA 106

CONSTRUCTION

60Hz

Rev. G

MECHANICAL SEAL



Single Phase	Three Phase	ØA	ØB	C
CDA 076 M	CDA 076 T	15	26	29
CDA 106 M	CDA 106 T	15	26	29
CDA 156 M	CDA 156 T	18	30,9	32
CDA 206 M	CDA 206 T	18	30,9	32
-	CDA 306 T	18	30,9	32
-	CDA 406 T	20	30,9	33
-	CDA 556 T	20	30,9	33

REF	PART NAME	MATERIAL Standard version CDA
A	Rotary seal ring	ceramic
B	Stationary seal ring	carbon graphite
C	O-Ring	NBR
D	O-Ring	NBR
E	O-Ring	NBR
F	Self driving spring	AISI 316
G	Frame	AISI 304

BEARINGS

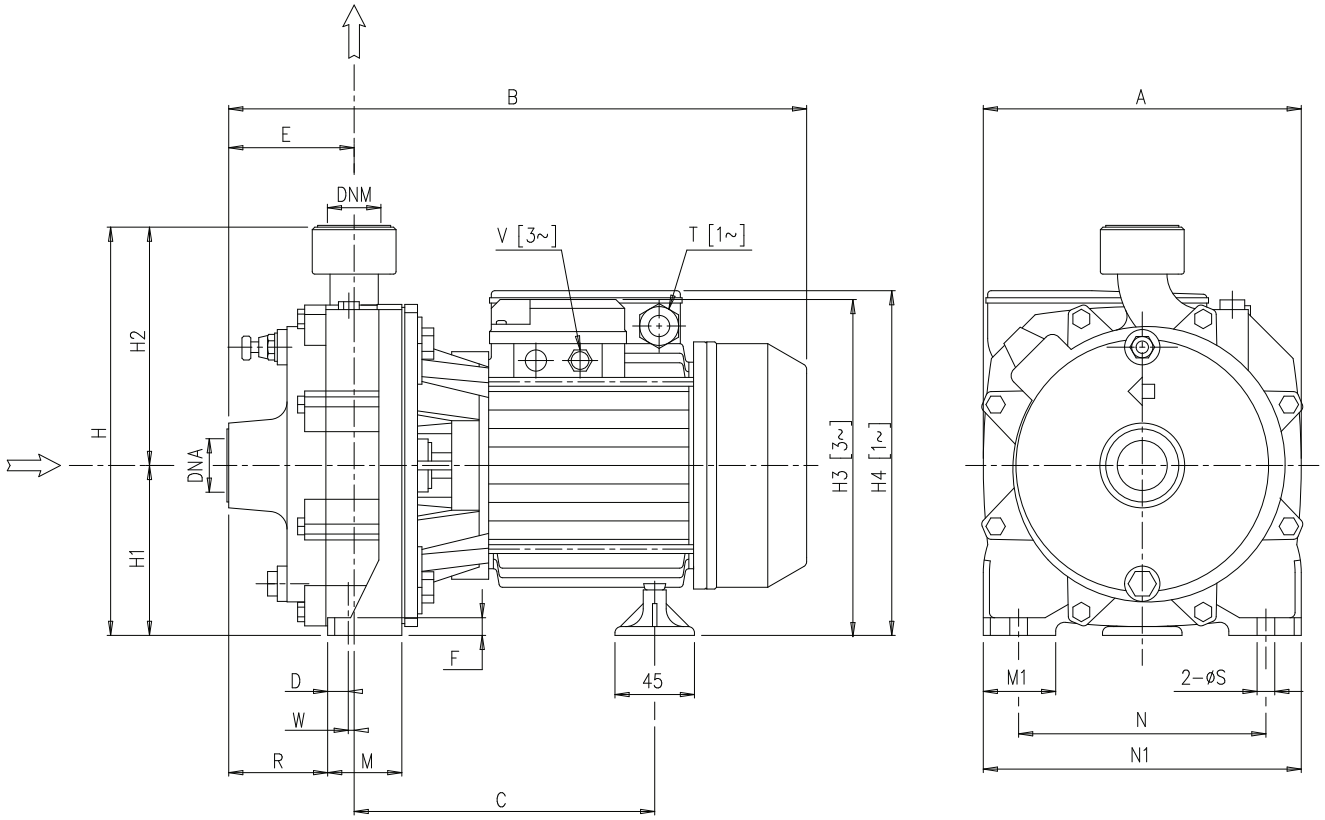
Pump type		Ball Beraing	
Single phase	Three Phase	Pump side	Fan side
CDA 076 M	CDA 076 T	6202	6202
-	CDA 106 T	6202	6202
CDA 156 M	CDA 156 T	6204	6203
CDA 206 M	CDA 206 T	6204	6203
-	CDA 306 T	6204	6203
-	CDA 406 T	6306	6205

DIMENSIONS AND WEIGHT

60Hz

Rev. G

PUMP



Pump type	Dimensions mm																					Weight [kgf]
	A	B	C	D	E	F	H	H1	H2	H3	H4	M	M1	N	N1	R	T	V	W	S	DNA	DNM	
CDA 076 M	183	336	180	8	73	9	227	97	130	-	198	42	40	140	180	58	PG11	-	7	10	G 1	G1	14
CDA 076 T	183	336	180	8	73	9	227	97	130	198	-	42	40	140	180	58	-	PG11	7	10	G 1	G1	14
-	183	336	180	8	73	9	227	97	130	-	198	42	40	140	180	58	PG11	-	7	10	G 1	G1	15
CDA 106 T	183	336	180	8	73	9	227	97	130	198	-	42	40	140	180	58	-	M16x1.5	7	10	G 1	G1	15
CDA 156 M	209	408	218	8	86	9	265	110	155	-	242	48	40	155	195	66	PG13.5	-	12	10	G1 1/4	G1	24
CDA 156 T	194	420	218	8	86	9	265	110	155	224	-	48	40	155	195	66	-	M20x1.5	12	10	G1 1/4	G1	25
CDA 206 M	209	411	218	8	86	9	265	110	155	-	242	48	40	155	195	66	PG13.5	-	12	10	G1 1/4	G1	26
CDA 206 T	194	421	218	8	86	9	265	110	155	224	-	48	40	155	195	66	-	M20x1.5	12	10	G1 1/4	G1	28
CDA 306 T	194	423	218	8	86	9	265	110	155	224	-	48	40	155	195	66	-	M20x1.5	12	10	G1 1/4	G1	27
CDA 406 T	228	495	263	12	96	12	309	134	175	260	-	57	50	180	230	72	-	M20x1.5	12	12	G1 1/2	G1 1/4	47
CDA 556 T	228	508	225	12	96	12	309	134	175	265	-	57	50	180	230	72	-	M20x1.5	12	12	G1 1/2	G1 1/4	52

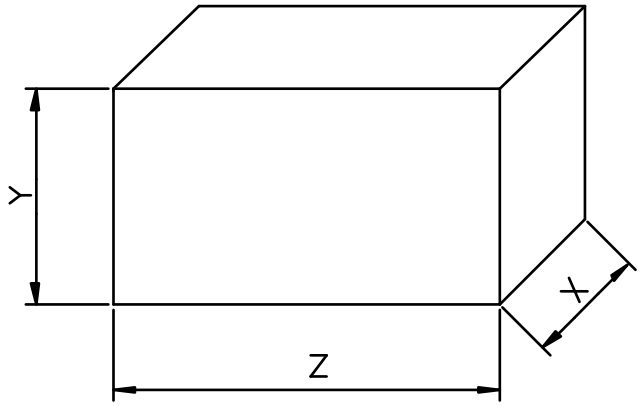
[1~] Single phase
[3~] Three phase

DIMENSIONS AND WEIGHT

60Hz

Rev. G

PACKING



Pump type					Weight [kgf]	
Single phase	Three phase	X	Y	Z	[1~]	[3~]
CDA 076 M	CDA 076 T	210	290	370	14.5	16,5
-	CDA 106 T	240	320	435	16	16
CDA 156 M	CDA 156 T	240	320	435	25	25
CDA 206 M	CDA 206 T	240	320	435	27	29
-	CDA 306 T	237	320	477	-	28
-	CDA 406 T	280	350	520	-	48

[1~] Single phase
[3~] Three phase

TECHNICAL DATA

60Hz

Rev. G

MOTOR DATA

Pump type	Power		Efficiency	Capacitor		Efficiency (% load) and power factor				Input	Full load current		Locked rotor current		Speed	Locked rotor torque	
						η %			cos-φ	[kW]	[A]		[A]			[Nm]	
Single Phase	[kW]	[HP]	[IE2 / IE3]	[μF]	[V]	50%	75%	100%			110 V	220 V	110 V	220 V	[rpm]	110 V	220 V
CDA 076 M	0,75	1,0	IE2	25	450	63,1	69,8	78,3	0,94	0,96	-	4,7	-	32,3	3480	-	0,80
CDA 156 M	1,7	2,3	-	31,5	450	-	-	-	0,97	2,08	-	9,7	-	55,0	3460	-	-
CDA 206 M	1,8	2,4	-	40	450	-	-	-	0,95	2,29	-	10,5	-	69,0	3430	-	-

Pump type	Power		Efficiency	Efficiency (% load) Three phase (380 V)			Efficiency (% load) Three phase (460 V)			Input [kW]	Full load current			Locked rotor current		
				η %			η %				Three Phase			Three Phase		
Three Phase	[kW]	[HP]	Three Phase	50%	75%	100%	50%	75%	100%	Three Phase	220 V	380 V	460 V	220 V	380 V	460 V
CDA 076 T	0,55	0,75	IE3	82,3	83,5	83,2	80,5	83,1	84,6	0,90	2,8	1,6	1,5	17,9	10,3	12,5
CDA 106 T	0,75	1	IE3	80,7	81,9	81,3	78,4	81,6	83,1	0,90	2,8	1,6	1,5	16,9	9,7	11,8
CDA 156 T	1,1	1,5	IE3	84,2	84,7	84,5	83,2	84,7	85,7	1,75	5,3	3,1	2,9	40,2	23,2	28,1
CDA 206 T	1,5	2	IE3	86,5	86,8	86,2	86,9	87,8	87,4	2,48	7,5	4,3	4,1	55,7	32,2	38,9
CDA 306 T	2,2	3	IE3	86,5	86,8	86,2	86,9	87,8	87,4	2,48	7,5	4,3	4,1	55,7	32,2	38,9
CDA 406 T	3	4	IE3	86,8	87,0	87,5	87,0	87,9	88,5	3,42	10,2	5,9	5,6	75,7	43,7	52,8
CDA 556 T	4	5,5	IE3	83,2	85,8	86,1	-	-	-	5,10	14,7	8,5	-	108,8	62,8	-
CDA 556 T	4	5,5	IE3	89,7	89,6	88,6	86,1	88,4	88,5	4,52	13,5	7,8	7,6	107,1	61,8	74,9

NOISE DATA

Pump type		L_{pA} - dB(A) *
Single Phase	Three Phase	
CDA 076 M	CDA 076 T	<70
-	CDA 106 T	
CDA 156 M	CDA 156 T	
CDA 206 M	CDA 206 T	
-	CDA 306 T	
-	CDA 406 T	
-	CDA 556 T	

* Mean value of several measures at 1m distance around
Tollerance ± 2.5 dB.

EBARA Pumps Europe S.p.A. reserves the right to make modifications without prior notice: all specifications could be subject to change

10/23

EBARA Pumps Europe S.p.A.
Via Torri di Confine 2/1 int. C
36053 Gambellara (Vicenza), Italy
Phone +39 0444 706811
ebarapumps.epe@ebara.com
www.ebaraeurope.com

EBARA Pumps Europe S.p.A. GERMANY
Elisabeth-Selbert-Straße 2
63110 Rodgau, Germany
Phone +49 (0) 6106-660 99-0
info.epde@ebara.com

EBARA Pumps South Africa (PTY) LTD
26 Kyalami Boulevard,
Kyalami Business Park, 1684, Midrand,
Gauteng, South Africa
Phone +27 11 466 1844
ebara.epsa@ebara.com

EBARA Pumps Europe S.p.A. UK
Unit A, Park 34
Collett Way - Didcot
Oxfordshire - OX11 7WB, United Kingdom
Phone +44 1895 439027
marketing.epuk@ebara.com

EBARA Pumps Europe S.p.A. FRANCE
122, Rue Pasteur
69780 Toussieu, France
Phone: +33 04 72 76 94 82
mktg.efr@ebara.com

EBARA Pumps East Africa
Delta Corner Tower 2, 13th Floor, Office 1308,
Chiromo Road, Westlands
P.O. Box 13796-00800, Nairobi
Phone: +254(0)722913119
info.epea@ebara.com

EBARA POMPY POLSKA Sp. z o.o.
ul. Działkowa 115 A
02-234 Warszawa, Poland
Phone +48 22 3909920
marketing.epl@ebara.com

EBARA Pumps RUS Ltd.
Prospekt Andropov 18, building 7, floor 11
115432 Moscow
Phone +7 499 6830133
mktg.epr@ebara.com