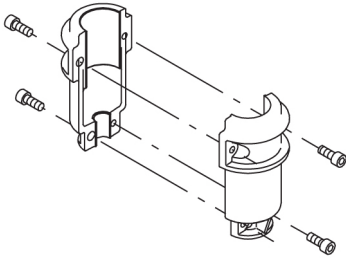


Qty.	Description
1	CR 90-4 A-F-A-E-HQQE  Note! Product picture may differ from actual product Product No.: 96124081 Vertical, multistage centrifugal pump with inlet and outlet ports on same the level (inline). The pump head and base are in cast iron – all other wetted parts are in stainless steel. A cartridge shaft seal ensures high reliability, safe handling, and easy access and service. Power transmission is via a rigid split coupling. Pipe connection is via DIN flanges. The pump is fitted with a 3-phase, fan-cooled asynchronous motor. Further product details Steel, cast iron and aluminium components have an epoxy-based coating made in a cathodic electro-deposition (CED) process. CED is a high-quality dip-painting process where an electrical field around the products ensures deposition of paint particles as a thin, well-controlled layer on the surface. An integral part of the process is a pretreatment. The entire process consists of these elements: 1) Alkaline-based cleaning. 2) Zinc phosphating. 3) Cathodic electro-deposition. 4) Curing to a dry film thickness 18-22 my m. The colour code for the finished product is NCS 9000/RAL 9005. Pump A long split coupling connects the pump and motor shaft. It is enclosed in the motor stool by means of two coupling guards. The long coupling makes it possible to replace the shaft seal without removing the motor from the pump.  The motor stool connects the pump head and motor. The pump head has a combined 1/2" priming plug and vent screw.



The pump is fitted with a balanced O-ring seal unit with a rigid torque-transmission system. This seal type is assembled in a cartridge unit which makes replacement safe and easy. Due to the balancing, this seal type is suitable for high-pressure applications. The cartridge construction also protects the pump shaft from possible wear from a dynamic O-ring between pump shaft and shaft seal.

Primary seal:

- Rotating seal ring material: silicon carbide (SiC)
- Stationary seat material: silicon carbide (SiC)

This material pairing is used where higher corrosion resistance is required. The high hardness of this material pairing offers good resistance against abrasive particles.

Secondary seal material: EPDM (ethylene-propylene rubber)

EPDM has excellent resistance to hot water. EPDM is not suitable for mineral oils.



The shaft seal is retained in the pump head by a cover and screws. It can be replaced without removing the motor.

The chambers and impellers are made of stainless-steel sheet. The chambers are provided with a PTFE neck ring offering improved sealing and high efficiency. The impellers have smooth surfaces, and the shape of the blades ensure a high efficiency.

The base is made of cast iron. Both the inlet and the outlet side of the base have two pressure gauge tapings. The pump is secured to the foundation by four bolts through the base plate. The flanges are fastened to the base by means of locking rings.



Motor

The motor is a totally enclosed, fan-cooled motor with principal dimensions to IEC and DIN standards. The motor is flange-mounted with free-hole flange (FF).

Motor-mounting designation in accordance with IEC 60034-7: IM B 5 (Code I) / IM 3001 (Code II).

Electrical tolerances comply with IEC 60034.

The motor efficiency is classified as IE3 in accordance with IEC 60034-30-1.

The motor has thermistors (PTC sensors) in the windings in accordance with DIN 44081/DIN 44082. The protection reacts to both slow- and quick-rising temperatures, e.g. constant overload and stalled conditions.

Thermal switches must be connected to an external control circuit in a way which ensures that the automatic reset cannot cause accidents. The motors must be connected to a motor-protective circuit breaker according to local regulations.

The motor can be connected to a variable speed drive for adjustment of pump performance to any duty point.

Grundfos CUE offers a range of variable speed drives. Please find more information in Grundfos Product Center.

Qty.	Description
	Technical data Controls: Frequency converter: NONE Liquid: Pumped liquid: Water Liquid temperature range: -30 .. 120 °C Liquid temperature during operation: 20 °C Density: 998.2 kg/m ³ Technical: Pump speed on which pump data are based: 2951 rpm Rated flow: 90 m ³ /h Rated head: 88.7 m Pump orientation: Vertical Shaft seal arrangement: Single Code for shaft seal: HQQE Approvals on nameplate: CE, EAC, ACS Curve tolerance: ISO9906:2012 3B Materials: Base: Cast iron EN 1563 EN-GJS-500-7 ASTM A536 80-55-06 Impeller: Stainless steel EN 1.4301 AISI 304 Bearing: SIC Support bearing: Graflon Installation: Maximum ambient temperature: 55 °C Maximum operating pressure: 16 bar Max pressure at stated temp: 16 bar / 120 °C 16 bar / -30 °C Type of connection: DIN Size of inlet connection: DN 100 Size of outlet connection: DN 100 Pressure rating for pipe connection: PN 16 Flange size for motor: FF350 Electrical data: Motor standard: IEC Motor type: SIEMENS IE Efficiency class: IE3 Rated power - P2: 30 kW Power (P2) required by pump: 30 kW Mains frequency: 50 Hz Rated voltage: 3 x 380-420D/660-725Y V Rated current: 56,0-51,0/32,0-29,5 A Starting current: 660-660 % Cos phi - power factor: 0.87 Rated speed: 2955 rpm Efficiency: IE3 93,3% Motor efficiency at full load: 93.3-93.3 % Motor efficiency at 3/4 load: 93.6-93.6 % Motor efficiency at 1/2 load: 93.4-93.4 % Number of poles: 2



Company name:

Created by:

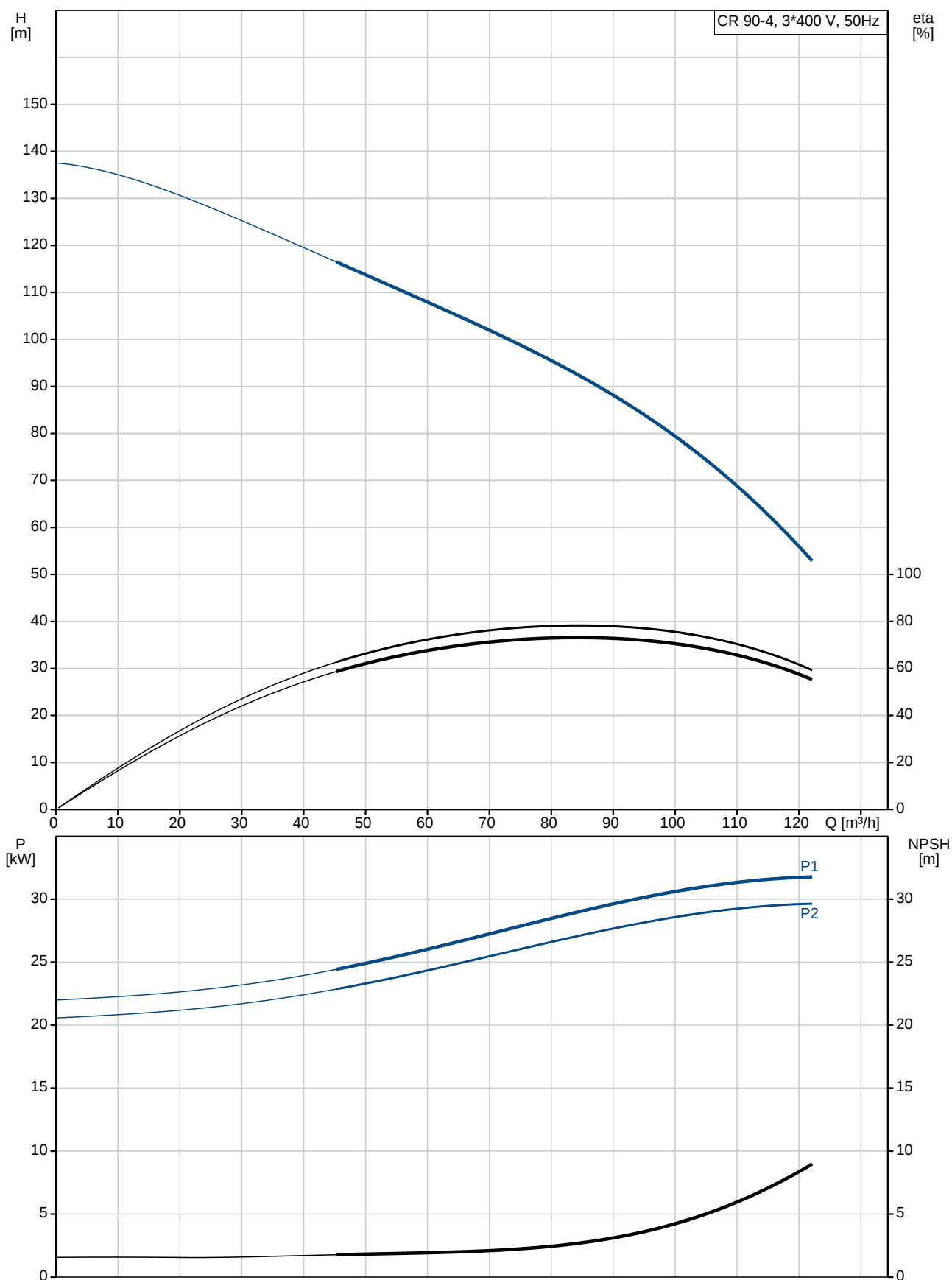
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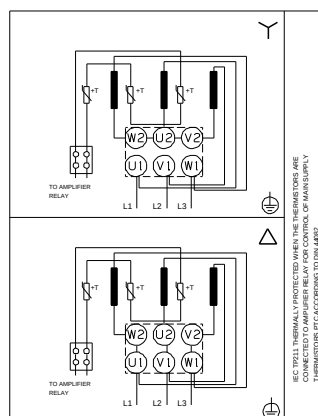
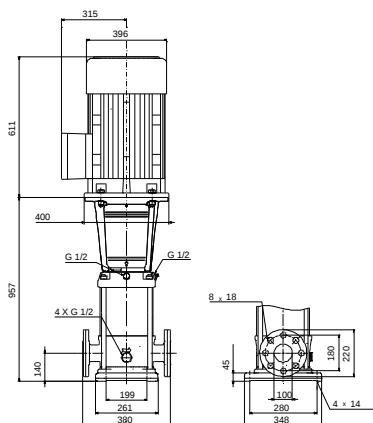
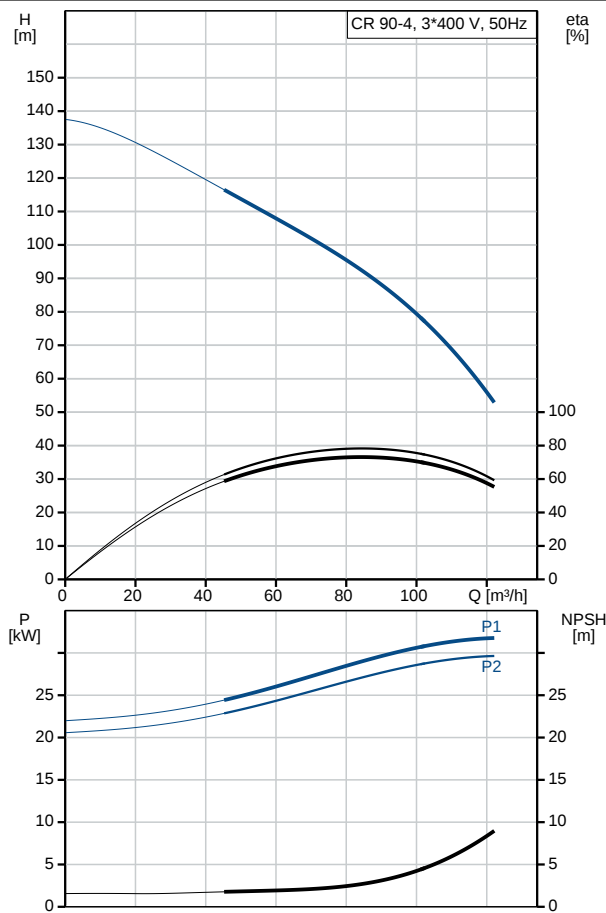
18/02/2019

Qty.	Description
	Enclosure class (IEC 34-5): 55 Dust/Jetting Insulation class (IEC 85): F Others: Minimum efficiency index, MEI η_{MEI} : 0.70 Net weight: 335 kg Gross weight: 385 kg Shipping volume: 0.82 m ³ Danish VVS No.: 385909040

96124081 CR 90-4 A-F-A-E-HQQE 50 Hz



Description	Value
General information:	
Product name:	CR 90-4 A-F-A-E-HQQE
Product No:	96124081
EAN number:	5700396703855
Technical:	
Pump speed on which pump data are based:	2951 rpm
Rated flow:	90 m³/h
Rated head:	88.7 m
Head max:	137 m
Stages:	4
Impellers:	4
Number of reduced-diameter impellers:	0
Low NPSH:	N
Pump orientation:	Vertical
Shaft seal arrangement:	Single
Code for shaft seal:	HQQE
Approvals on nameplate:	CE, EAC, ACS
Curve tolerance:	ISO9906:2012 3B
Pump version:	A
Model:	B
Materials:	
Base:	Cast iron EN 1563 EN-GJS-500-7
Impeller:	ASTM A536 80-55-06 Stainless steel EN 1.4301 AISI 304
Material code:	A
Code for rubber:	E
Bearing:	SIC
Support bearing:	Graflon
Installation:	
Maximum ambient temperature:	55 °C
Maximum operating pressure:	16 bar
Max pressure at stated temp:	16 bar / 120 °C 16 bar / -30 °C
Type of connection:	DIN
Size of inlet connection:	DN 100
Size of outlet connection:	DN 100
Pressure rating for pipe connection:	PN 16
Flange size for motor:	FF350
Connect code:	F
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-30 .. 120 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Motor standard:	IEC
Motor type:	SIEMENS
IE Efficiency class:	IE3
Rated power - P2:	30 kW
Power (P2) required by pump:	30 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 380-420D/660-725Y V





Company name:

Created by:

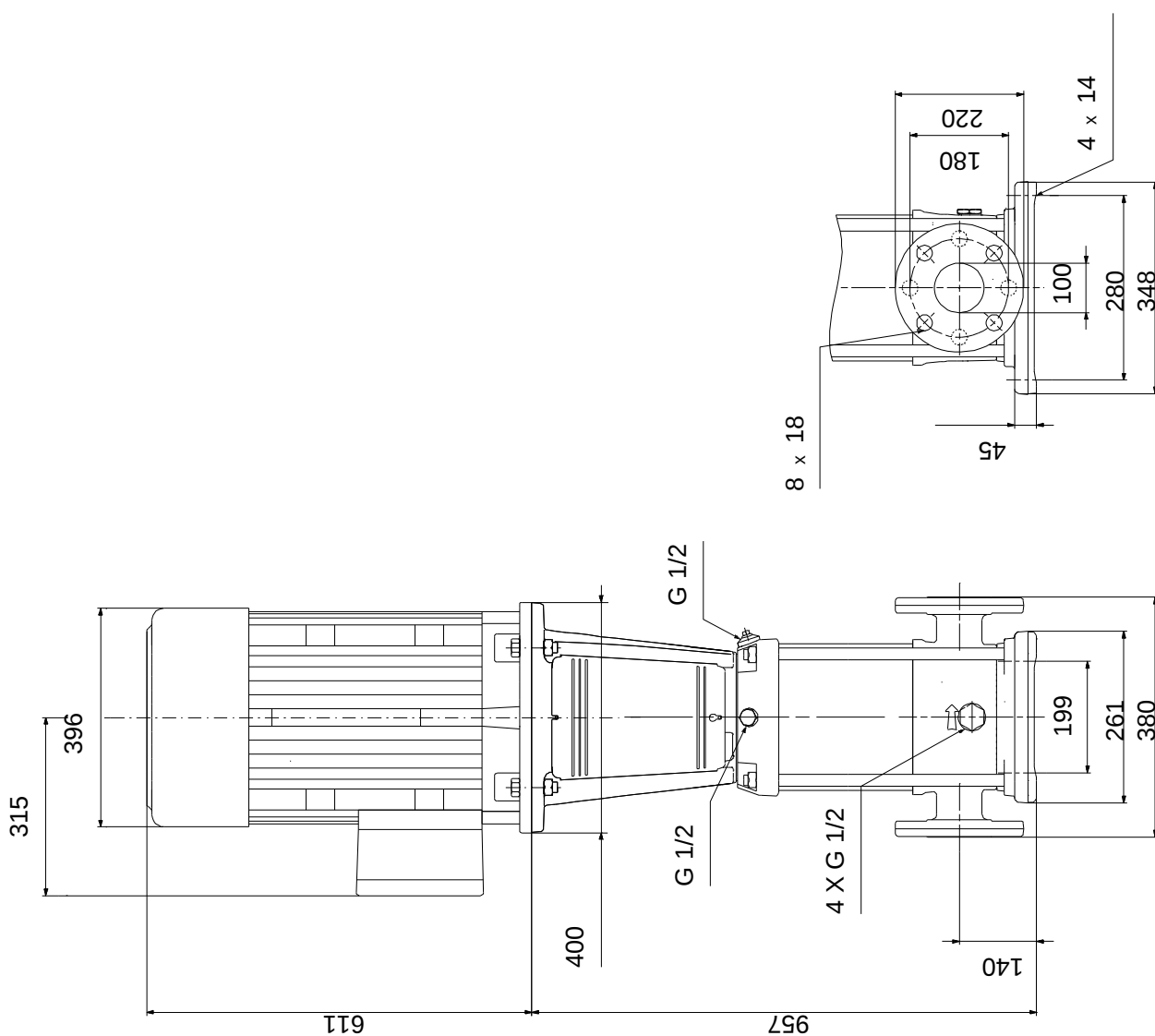
Phone:

Date:

18/02/2019

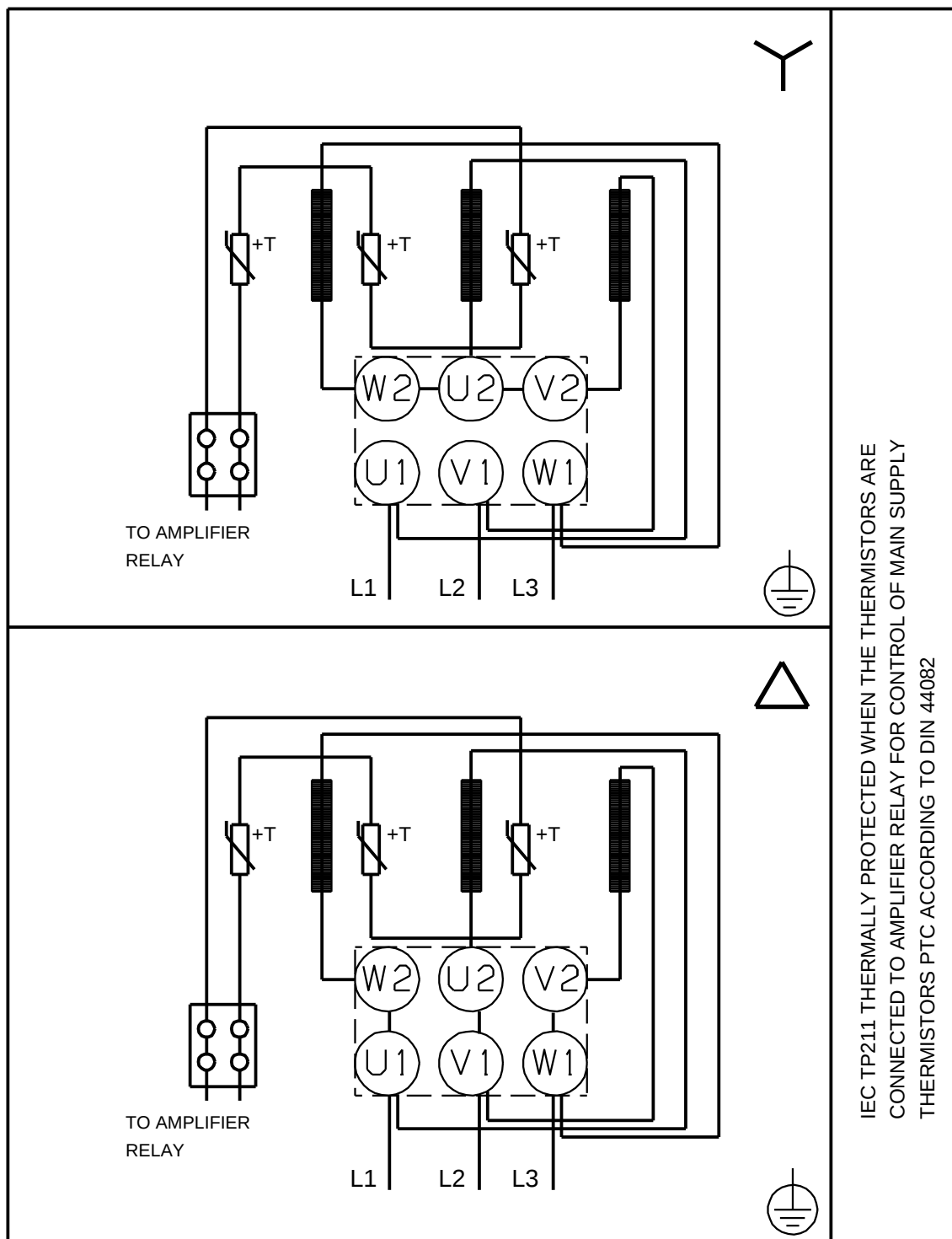
Description	Value
Rated current:	56,0-51,0/32,0-29,5 A
Starting current:	660-660 %
Cos phi - power factor:	0.87
Rated speed:	2955 rpm
Efficiency:	IE3 93,3%
Motor efficiency at full load:	93.3-93.3 %
Motor efficiency at 3/4 load:	93.6-93.6 %
Motor efficiency at 1/2 load:	93.4-93.4 %
Number of poles:	2
Enclosure class (IEC 34-5):	55 Dust/Jetting
Insulation class (IEC 85):	F
Motor protec:	PTC
Motor No:	81U15332
Controls:	
Frequency converter:	NONE
Others:	
Minimum efficiency index, MEI $\eta_{\%}$:	0.70
Net weight:	335 kg
Gross weight:	385 kg
Shipping volume:	0.82 m ³
Danish VVS No.:	385909040

96124081 CR 90-4 A-F-A-E-HQQE 50 Hz



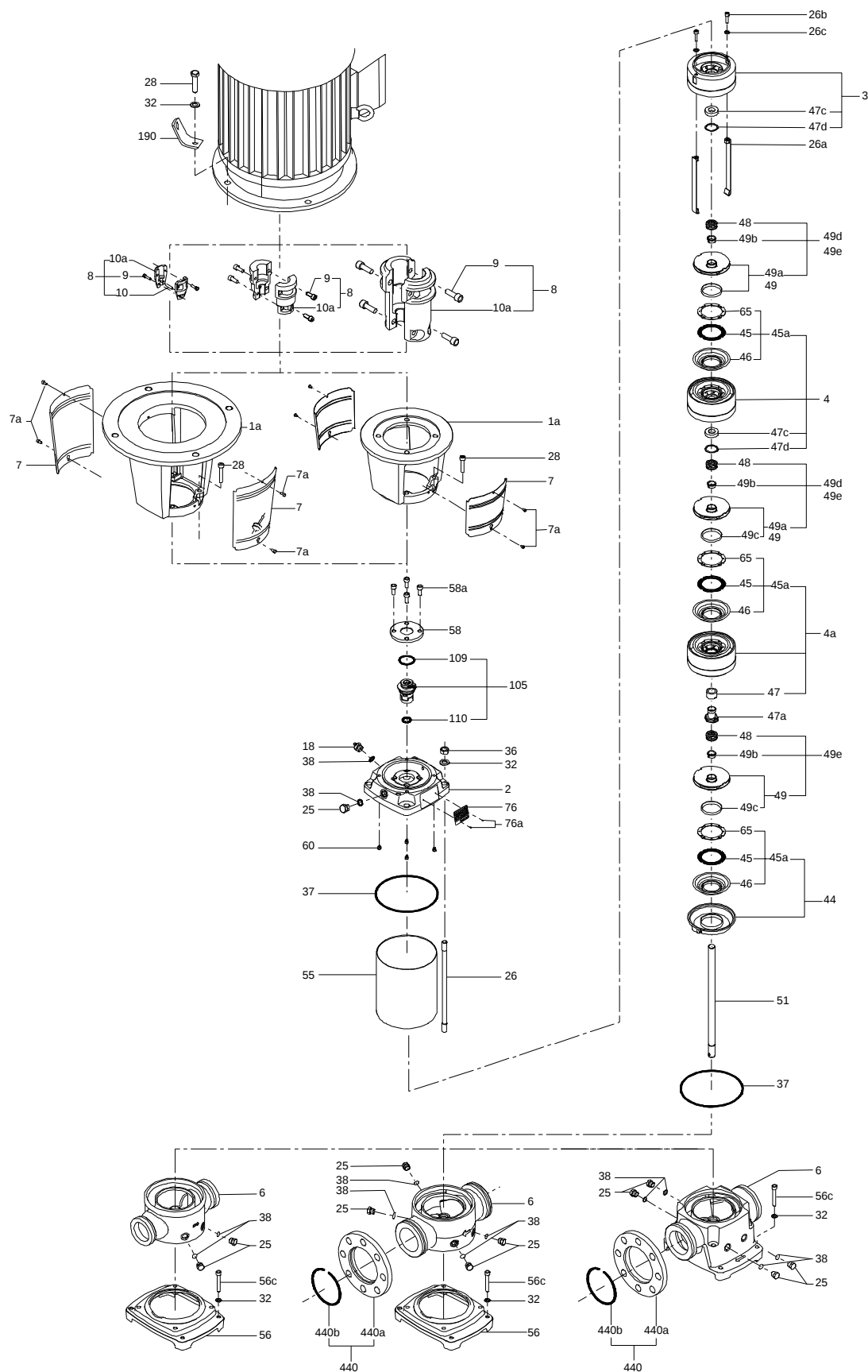
Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

96124081 CR 90-4 A-F-A-E-HQQE 50 Hz

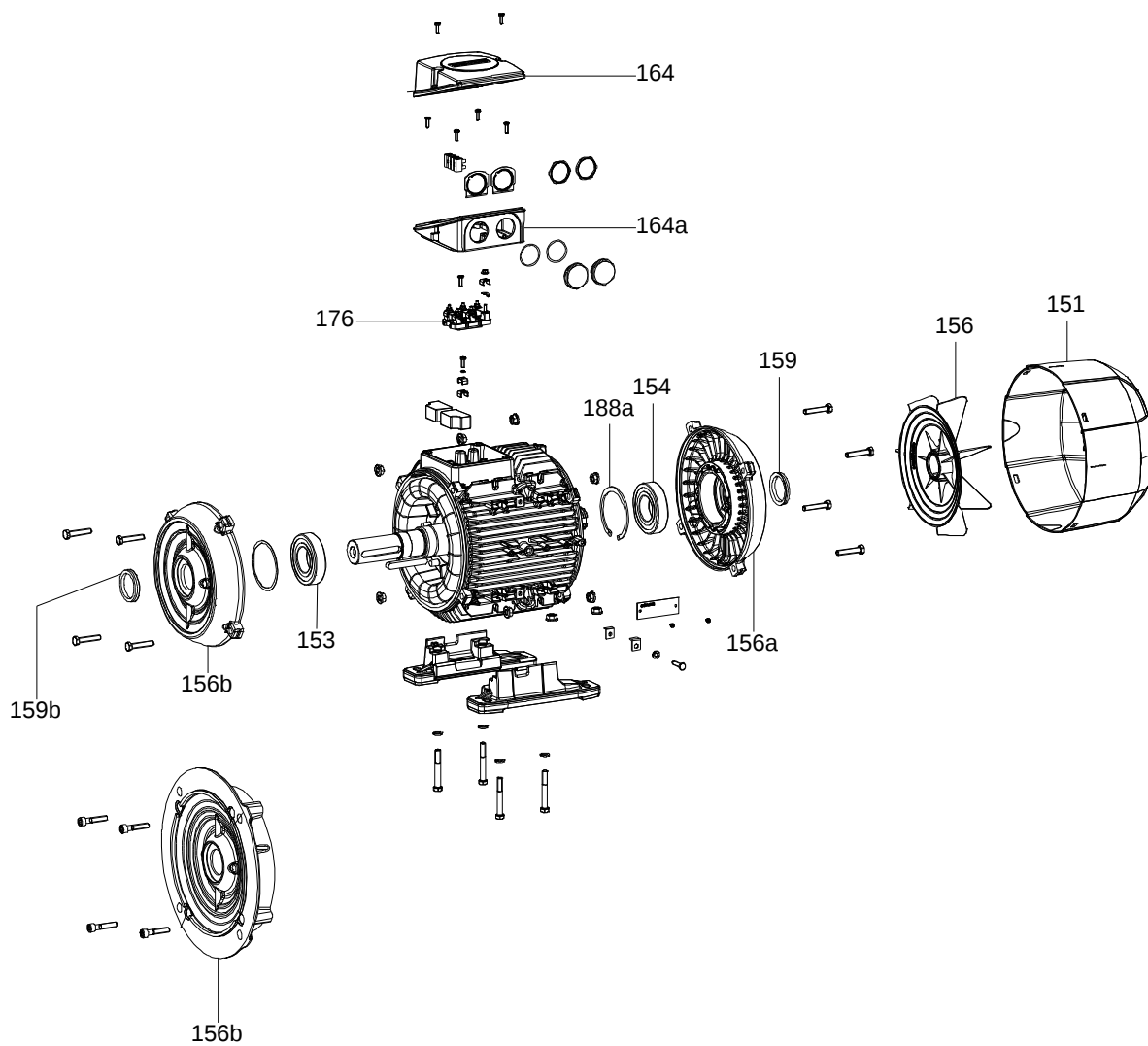


Note! All units are in [mm] unless others are stated.

(tm069487 for LACR model B standard)



(TM058162)



Spare parts CR 90-4, Product No. 96124081

Valid from 3.3.2014 (1410)

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
-	Base			98807603	1	pcs
6	Base				1	
- 80	Kit, chamber stack			96416266	1	pcs
- 80	Chamber stack				1	
- 3	Upper chamber cpl.					
	Guide cup					
	Guide cup					
	Cone					
	Guide vane					
	Chamber					
	Chamber					
47d	Lock ring					
47c	Bush					
- 4a	Intermediate chamber cpl.					
	Guide cup					
	Guide cup					
	Cone					
	Guide vane					
	Chamber					
	Chamber					
45a	Neck ring cpl.					
47	Bearing					
- 4	Intermediate chamber cpl.					
	Guide cup					
	Guide cup					
	Cone					
	Guide vane					
	Chamber					
	Chamber					
45a	Neck ring cpl.					
47d	Lock ring					
47c	Bush					
26c	Washer		Designation: DIN 125A			
			Thickness: 1,6			
26b	Hex socket head cap screw					
26a	Strap cpl.		Length (mm): 377			
			Thread: M8			
- 44	Suction interconnector cpl.					
	Suction interconnector					
45a	Neck ring cpl.					
- 47a	Bearing					
	Driver					
	Holder					
	Disc spring					
	Bearing ring					
- 49e	Impeller cpl.					
48	Nut					
49b	Split cone					
49	Impeller					
- 49e	Impeller cpl.					
48	Nut					
49b	Split cone					
- 49	Impeller					

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
	Impeller hub					
49c	Wear ring					
51	Shaft					
-	Kit, chambers			98497515	1	pcs
- 4a	Intermediate chamber cpl.				1	
	Guide cup					
	Guide cup					
	Cone					
	Guide vane					
	Chamber					
	Chamber					
45a	Neck ring cpl.					
47	Bearing					
- 47a	Bearing				1	
	Driver					
	Holder					
	Disc spring					
	Bearing ring					
-	Kit, coupling			96416594	1	pcs
	Adjusting fork				1	
- 8	Coupling cpl.		Dimension: 22/55		1	
9	Hex socket head cap screw		Designation: DIN 912			
			Length (mm): 25			
			Thread: M10			
10a	Coupling half					
-	Kit, coupling guard			96505135	1	pcs
7a	Socket button head screw				4	
7	Coupling guard				2	
-	Kit, cover			98832448	1	pcs
58a	Hex socket head cap screw		Designation: DIN 912		4	
			Length (mm): 25			
			Thread: M10			
58	Cover				1	
-	Kit, impeller			98593752	1	pcs
- 44	Suction interconnector cpl.				1	
	Suction interconnector					
45a	Neck ring cpl.					
48	Nut				1	
- 49e	Impeller cpl.				1	
48	Nut					
49b	Split cone					
49	Impeller					
-	Kit, impeller			98497518	1	pcs
48	Nut				1	
48	Nut				1	
49b	Split cone				1	
- 49	Impeller				1	
	Impeller hub					
49c	Wear ring					
-	Kit, plug			96505136	1	pcs
- 18	Air vent screw				1	
	Spindle					
	Plug					
25	Plug				4	
25	Plug				1	
38	O-ring		Diameter: 16,3		2	
			Material type: FKM			
			Thickness: 2,4			

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
38	O-ring		Diameter: 16,3		4	
			Material type: FKM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		6	
			Material type: FKM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		2	
			Material type: EPDM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		4	
			Material type: EPDM			
			Thickness: 2,4			
-	Kit, seals			96416601	1	pcs
	Adjusting fork				1	
37	O-ring				2	
38	O-ring		Diameter: 16,3		2	
			Material type: EPDM			
			Thickness: 2,4			
38	O-ring		Diameter: 16,3		4	
			Material type: EPDM			
			Thickness: 2,4			
60	Spring				4	
109	O-ring				1	
110	O-ring		Diameter: 21,2		1	
			Material type: EPDM			
			Thickness: 3,55			
-	Kit, shaft seal HQQE			96525458	1	pcs
	Grinding device				1	
-	105 Shaft seal		Material type: HQQE		1	
	Adjusting fork					
109	O-ring					
110	O-ring		Diameter: 21,5			
			Material type: EPDM			
			Thickness: 4,25			
-	Kit, wear parts			98497510	1	pcs
45	Seal ring				1	
45	Neck ring				6	
47d	Lock ring				6	
47c	Bush				4	
49c	Wear ring				1	
49c	Wear ring				6	
65	Top f/neck ring				1	
65	Top f/neck ring				6	
-	Motor				1	pcs
156	Kit, fan			98062265	1	
151	Kit, fan cover			98062275	1	
156b	Kit, flange			98062279	1	
	Kit, lubrication nipple			98062531	1	
156a	Kit, ND-end shield cpl.			98062517	1	
159b	Kit, seal ring			98062551	1	
176	Kit, terminal board			98062236	1	
164a	Kit, terminal box			98062262	1	
1a	Motor stool			98967671	1	pcs
2	Pump head			98593647	1	pcs
-	3 Upper chamber cpl.			98635130	1	pcs
47c	Bulk, Bush (10 pcs)			99321194	1	
+ 4	Bulk, Intermediate chamber cpl. (3 pcs)			99481466	2	pcs
+ 4a	Bulk, Intermediate chamber cpl. (5 pcs)			99262903	1	pcs

Pos	Description	Annotation	Classification Data	Part no.	Qty.	Unit
- 4	Bulk, Intermediate chamber cpl. (10 pcs)			99481467	2	pcs
45a	Bulk, Neck ring cpl. (10 pcs)			96547446	1	
6	Base			99321771	1	pcs
7a	Bulk, Socket button head screw (10 pcs)			96549696	4	pcs
7	Bulk, Coupling guard (10 pcs)			96603279	2	pcs
+ 18	Bulk, Air vent screw (5 pcs)			96547461	1	pcs
+ 18	Air vent screw			95061351	1	pcs
25	Bulk, Plug (10 pcs)			96536013	1	pcs
26c	Bulk, Washer (4 pcs)		Designation: DIN 125A Thickness: 1,6	99262704	2	pcs
26c	Washer		Designation: DIN 125A Thickness: 1,6	96586880	2	pcs
26b	Bulk, Hex socket head cap screw (10 pcs)			98931380	2	pcs
26a	Strap cpl.		Length (mm): 377 Thread: M8	98983908	2	pcs
26	Staybolt		Length (mm): 536 Thread: M16	98976753	4	pcs
28	Bulk, Hex socket head cap screw (10 pcs)		Designation: DIN 912 Length (mm): 50 Thread: M10	96536147	4	pcs
28	Bulk, Hex head screw (20 pcs)		Length (mm): 60 Thread: M16	97506949	4	pcs
32	Bulk, Washer (100 pcs)		Designation: DIN 125 A Internal diameter: 17 Outer diameter: 30 Thickness: 3	98923051	4	pcs
36	Bulk, Hex nut (20 pcs)		Thread: M16	96620480	4	pcs
38	Bulk, O-ring (10 pcs)		Diameter: 16,3 Material type: EPDM Thickness: 2,4	99198815	2	pcs
38	Bulk, O-ring (50 pcs)		Diameter: 16,3 Material type: EPDM Thickness: 2,4	99412727	2	pcs
+ 47a	Bulk, Bearing (5 pcs)			99270663	1	pcs
- 49e	Bulk, Impeller cpl. (3 pcs)			98394373	3	pcs
48	Bulk, Nut (3 pcs)			99262680	1	
48	Bulk, Nut (10 pcs)			99262683	1	
48	Bulk, Nut (10 pcs)			96536016	1	
49b	Bulk, Split cone (10 pcs)			96536010	1	
+ 49e	Bulk, Impeller cpl. (5 pcs)			96536041	3	pcs
+ 49e	Bulk, Impeller cpl. (10 pcs)			99557799	1	pcs
55	Outer sleeve		Outer diameter: 225,0 Length (mm): 391,5	98820403	1	pcs
58	Cover			98893158	1	pcs
60	Bulk, Spring (20 pcs)			96536032	4	pcs
- 105	Bulk, Shaft seal (12 pcs)		Material type: HQQE	96984086	1	pcs
	Adjusting fork			96587896	1	
109	Bulk, O-ring (10 pcs)			96547586	1	
+ 105	Bulk, Shaft seal (12 pcs)		Material type: HQQE	96984070	1	pcs
440b	Bulk, Lock ring (4 pcs)			96547435	1	pcs