KSB KRT

**Submersible motor pumps 2” to 4”
for wet well installation**

**60 Hz
standard range**

**Stationary installation
Transportable installation**

Other versions on request

1. Aplications

KRT submersible motor pumps are used for pumping all types of sewage and effluent in water treatment and industry, especially untreated sewage with long fibrous and solid substances , liquids containing air and gas as well as raw, activated and digested sludge.

2. Operating data

Capacity	Q up to 600 USgpm (140 m^3/h)
Head	H up to 110 ft (33 m)
Motor Power	P_2 up to 5 HP (3,6 Kw)
Temperature of pumped liquid	t up to 140º F (60ºC)

3. Drive

Three-phase asynchronous motor
200 V, 220 V, 230 V, 380 V, 440 V, 460 V, 575 V
Single-phase asynchronous motor
115 V, 230 V (Motor 02UG only)

4. Material

Standard version in cast iron.

5. Shaft sealing

Mechanical seals being independent of the direction of rotation lubricated with non-toxic oil

6. Bearings

Grease lubricated ball bearings

7. Designation

Example

KSB KRT F 100-200 / 3 4 X G S

- Pump type
- Impeller type
  S, F,E
- Hydraulic dimension
- Motor size
- Number of polos
- Motor version
  U, X, W
- Material version / variant
  G (Complete pump in cast iron)
- Installation type
  S =Stationary wet-well installation without cooling jacket
  P= Transportable wet-well installation without cooling jacket

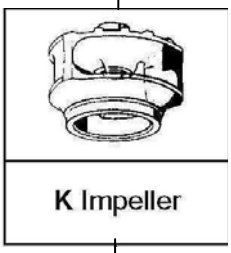
8. Pump hydraulics

Since no one type of impeller is best suited for all applications, KSB has developed numerous impeller types, casing shapes, and pumps sizes so as to best meet any specific requirement.

KSB's extensive range of recessed, single vane and multivane impellers allows for the selection of an optimum impeller / casing / motor combination that best satisfies the full range of operation requirements of flow, head efficiency, solid size passage, wear resistance, and gas content. KSB offers the right impeller for cost effective and reliable operation.

Closed, non-clogging 2 or 3 vane (K) impeller for highest efficiencies pumping all types of industrial and municipal wastewater.

- Raw sewage
- Activated & return sludge
- Industrial wastewater
- Process media
- Abrasive laden media
- Chemically aggressive media
- Stormwater



Pump Model: KRT K 40 TO 700
2" to 30"

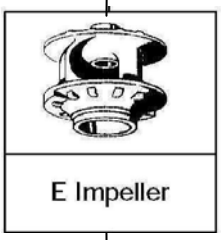
- Capacities to 39,000 GPM (8,860 m^3/h)
- Heads to 350 Ft. (107 m)
- **Free passage to 7. ½ in (190mm)**

KRT K 600 and 700 / 24" to 26"
consult factory

all sizes KRT K
see type series booklet 2553.523-14

Closed, non-clogging single vane (E) impeller for fluids containing large solids and long fibrous material

- Raw sewage
- Digested sludge
- Return sludge



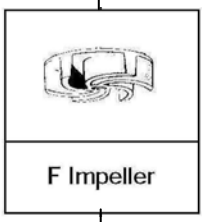
Pump Model: KRT E 80 to 200
3" to 8"

- Capacities to 4,300 GPM (980 m^3/h)
- Heads to 120 Ft. (36 m)
- **Free passage to 5. ½ in (120mm)**

KRT E 80-251…E 200-401
See type series booklet 2553.523-14

Recessed, non-clogging torque-flow (F) Impeller for fluids containing large solids, long fibrous admixtures, and entrained or dissolved gasses.

- Raw sewage
- Activated & return sludge
- Abrasive laden media
- Industrial wastewater



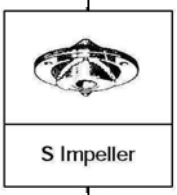
Pump Model: KRT F 40 to 150
2" to 6"

- Capacities to 2,600 GPM (590 m^3/h)
- Heads to 260 Ft. (80 m)
- **Free passage to 5.5½ in (135mm)**

KRT F 100, 150 > 5 hp (>4 kW)
See type series booklet 2553.523-14

Cutting and grinding (S) impeller for high Pressure domestic sewage systems Containing long fibrous admixtures.

- Effluents
- Domestic sewage



Pump Model: KRT S 40
1 ½"

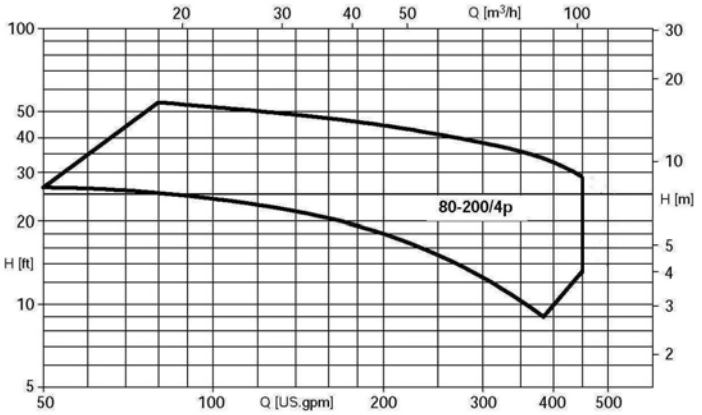
- Capacities to 115 GPM (25 m^3/h)
- Heads to 260 Ft. (80 m)
- **Free passage to 9/32 in (7mm)**

KRT S40-250
See type series booklet 2553.523-14

8. Material version G – KRT < 5 hp (< 4 kW)

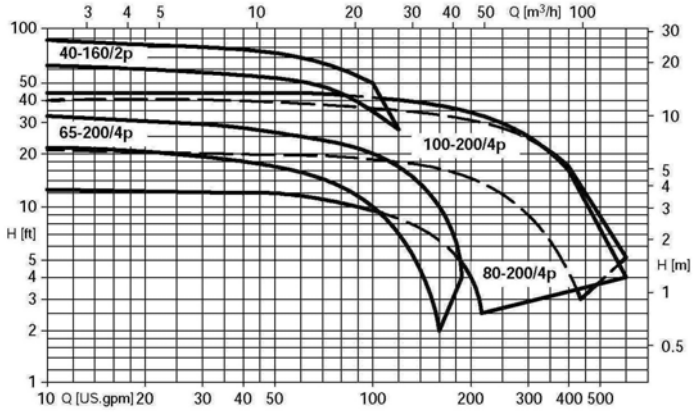
KRT 80
With E-Impeller
4-pole (1750 rpm)

Single-vane impellers
3” Discharge



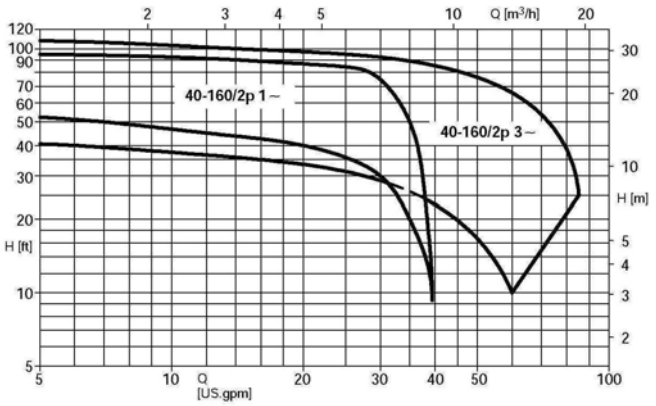
KRT 40, 65, 80, 100
With F-Impeller
2-pole (3500 rpm)
4-pole (1750 rpm)

Vortex impellers
1 ½” , 2 ½” , 3” & 4” Discharge



KRT 40
With S-Impeller
2-pole (3500 rpm)

Grinder pumps
1 ½” Discharge



For additional hydraulic selections and material combinations see type series booklet 2553.523-14, 2” up to 30”.

Fig. 01

9.1 Standard program – KRT < 5 hp (< kW)

Size	Material G S,F,E = Impeller types
40-160	F, S
65-200	F
80-200	F, E
100-200	F

Other sizes out of Standard program upon request

S-F and E- impellers are only available in the diameters shown in the QH curves. K-impellers will be trimmed to meet the exact duty point.

Cast iron
Laminate graphite cast iron
(ASTM A 48 Class 35B)

This graphited cast iron is mostly used in the pumping of municipal sewage, sludges and rain-or surface water.
Suitable for neutral, slighty aggressive media and media unlikely to cause excessive wear.
The pH value of the pumped medium should be 5 to 13

Material comparison

ASTM material	Acc. to DIN
A 48 Class 35 B	GG -2 5
A743 CA6NM	1.4405
A 276 Type 420	1.4021
A 276 Type 316	1.4401
A 276 Type 316 Ti	1.4571
A 576 Gr. 1045	C 45 N
Gav. Steel	ST TZN
NBR (nitrile rubber)	NBR

9.2 Material combination standard program < 5 hp (< 4 Kw)

The main parts used in KSB submersible pumps are constructed in:
-Cast iron ASTM A 48 Class 35 B (GG-25)

Pump set

Part-No.	Sizes	40-160	65-200	80-200	100-200
	Parts description	Material variant G			
100	Pump-/Motor casing	A 48 Class 35 B		--	
102	Pump casing	--		A 48 Class 35 B	
80-1	Motor casing (part motor)	--		A 48 Class 35 B	
812	Motor casing cover	A 48 Class 35 B		--	
834	Power cable	Neoprene			
163	Discharge cover	--	A 48 Class 35 B	--	
330	Bearing housing	A 48 Class 35 B	--	A 48 Class 35 B	
230	Impeller	A 48 Class 35 B			
500.02 23-7	Cutter (KRT S 40)	A743 CA6NM	--		
818	Pump shaft	A 276 Type 420			
524	Shaft protection sleeve	--		A 276 Type 420	
162	Wear plate	A 48 Class 35 B	Steel	A 48 Class 35 B	
412	O-rings	NBR			
410	Profile ring	NBR	--	NBR	
div.	Bolts (wetted)	A 276 Type 316 Ti			
421	Shaft seal motor end	NBR	--		
433.01[1)]	Mechanical seal motor end	Carbon/Si - Carbide			
433.02	Mechanical seal pump end	Si-Carbide/Si -Carbide			

[1)] Not applied for motor 22, KRT 40-160

Installation parts

894	Bracket	A 48 Class 35 B
572/553	Cable clamp/Thrust insert	A 48 Class 35 B
904/920	Spindle bolt/Nut	A 276 Type 316 Ti
72-1	Discharge elbow	A 48 Class 35 B
59-24	Guide cable	A 276 Type 316
732	Claw	A 48 Class 35 B
892	Stand	Steel
885	Lifting chain	galv. steel

9. General arrangement drawing

Motors: 0 2...2 2 40-160

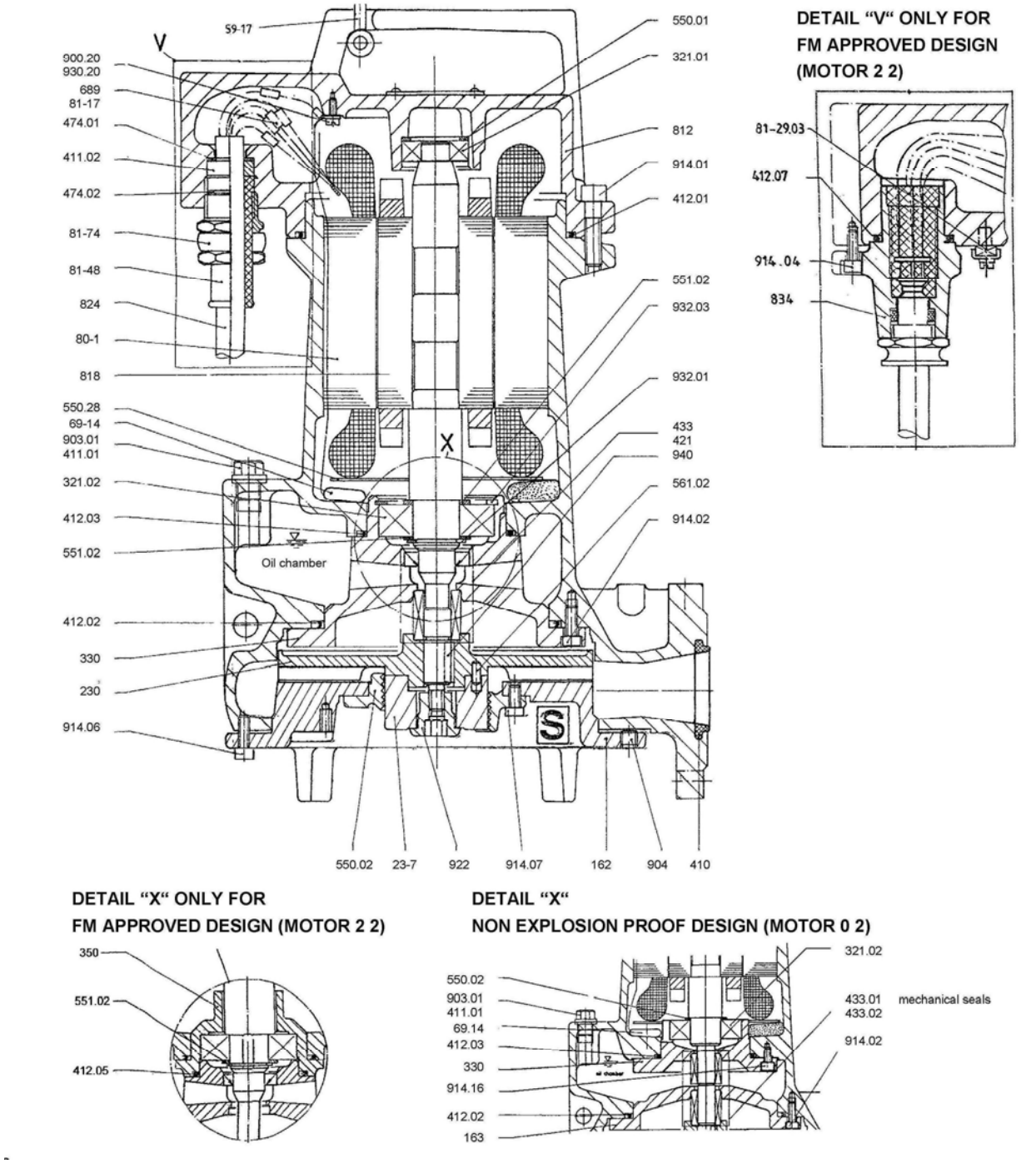


Fig. 02

10.1 General arrangement drawing

Motors: 1 4 65-200

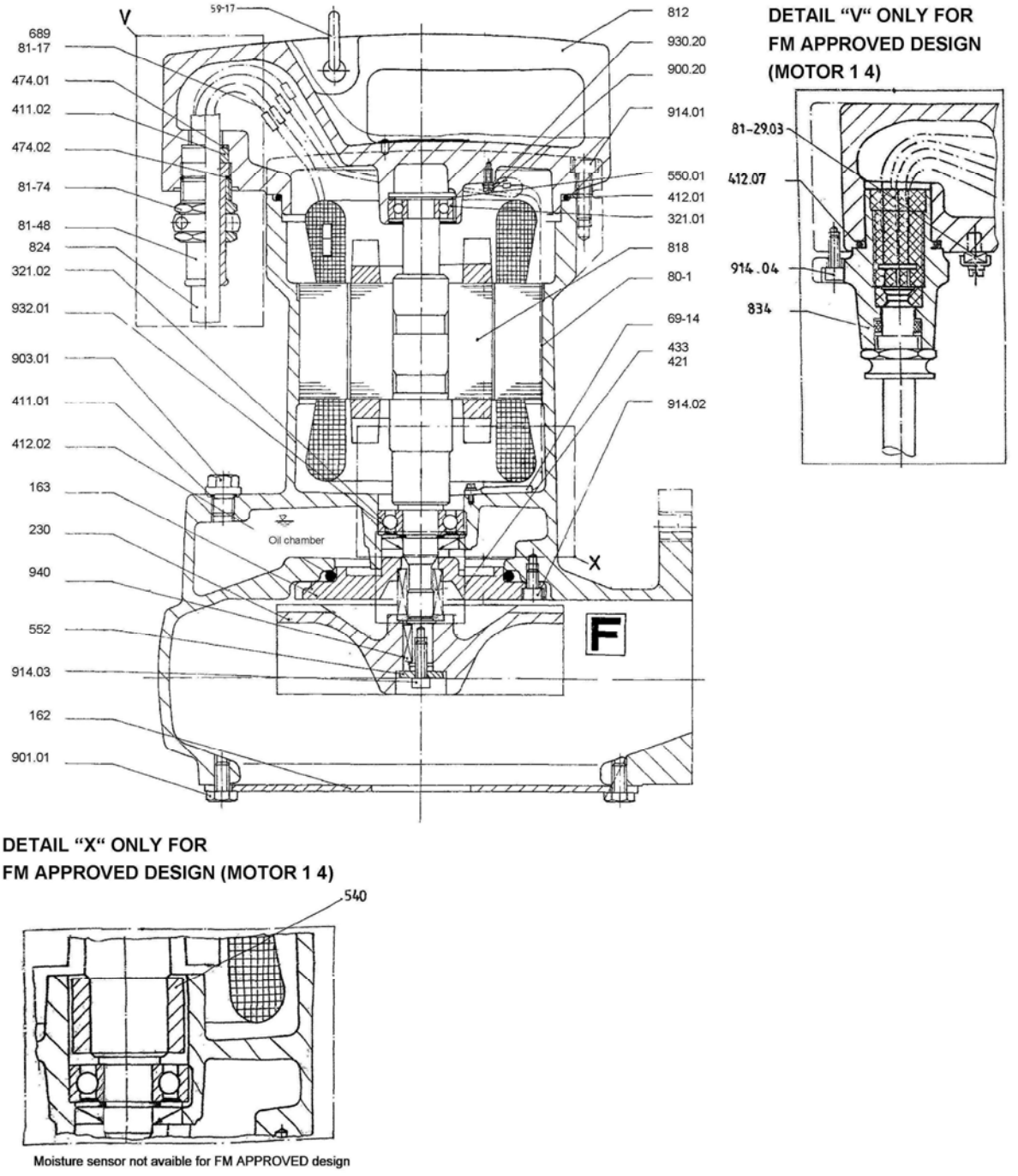


Fig. 03

10.2 General arrangement drawing

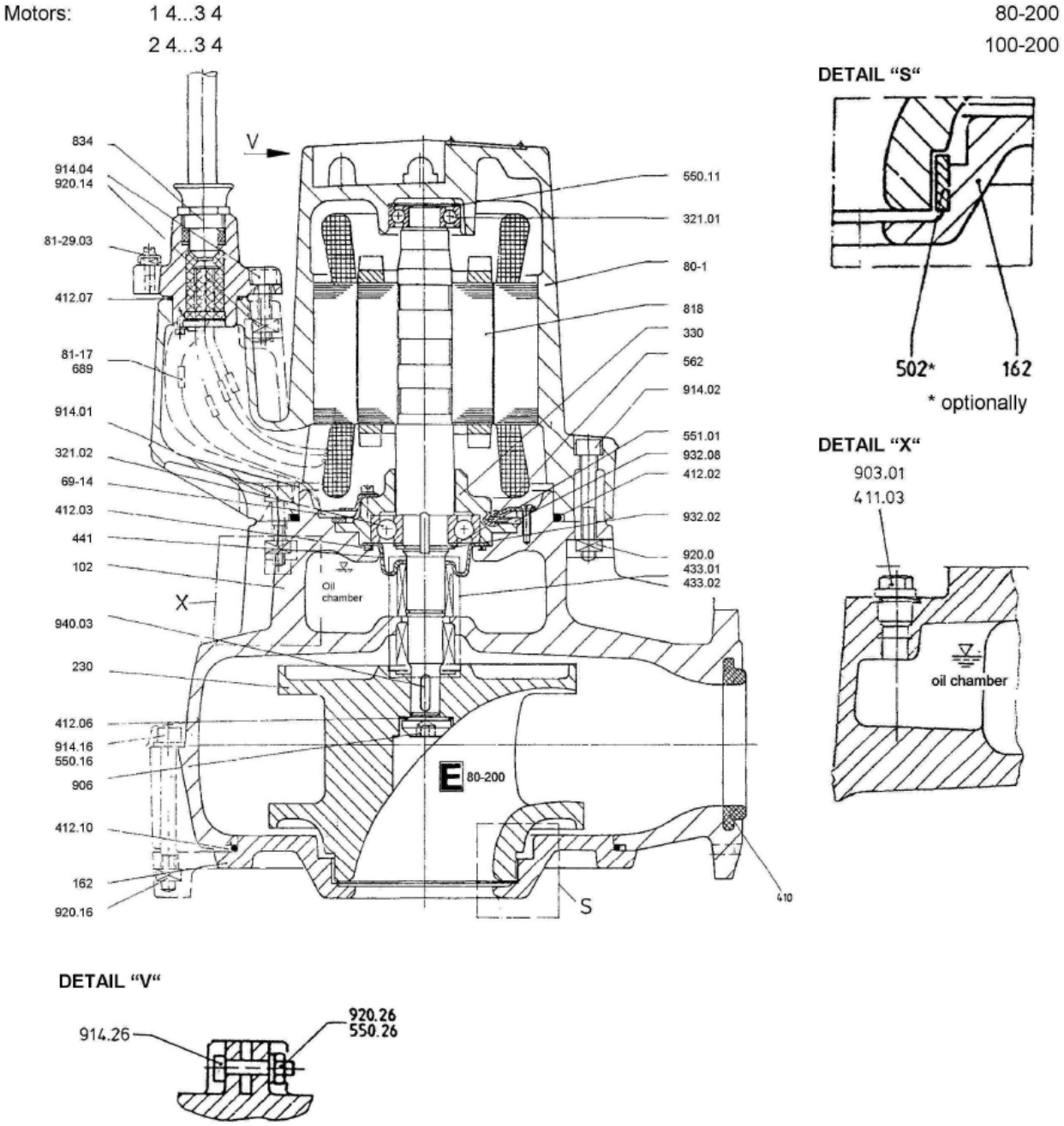


Fig. 04

10.3 General arrangement drawing

Alternative design F 40-160

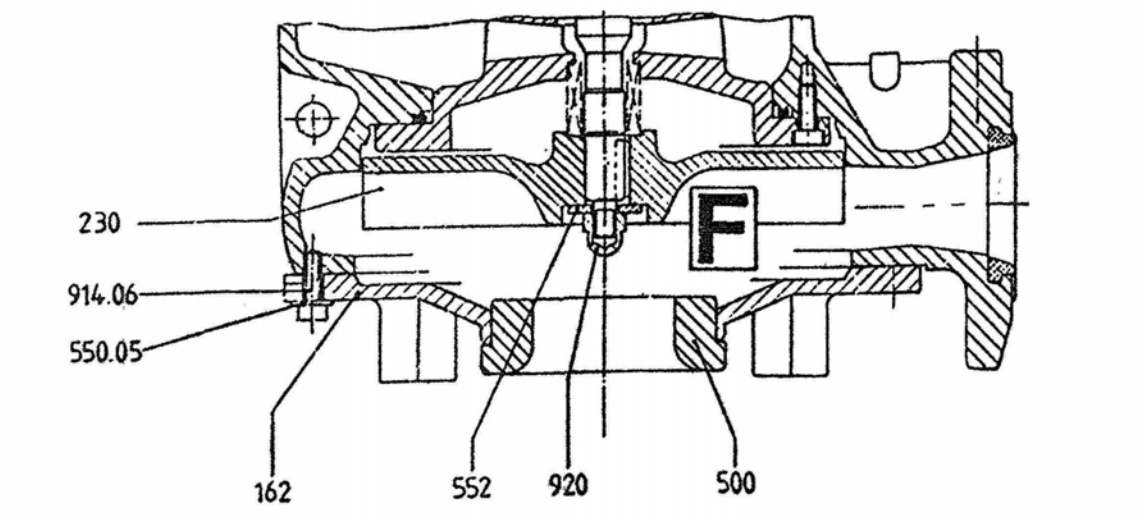


Fig. 05

Alternative design E 80-200 with impeller wear ring / casing wear ring

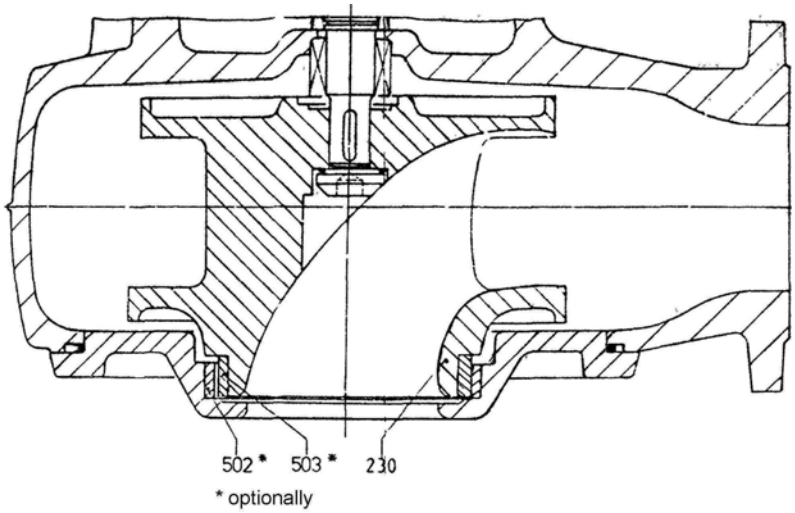


Fig. 06

Alternative design F 80/100-200

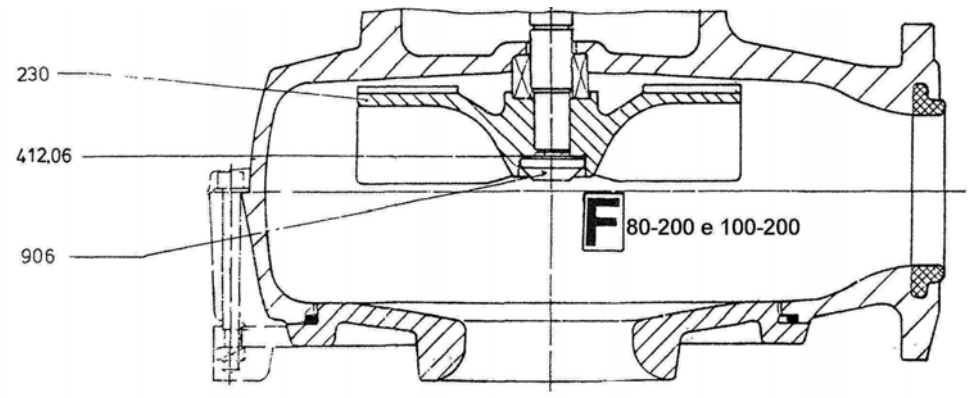


Fig. 07

10.4 General arrangement drawing

Detail leakage detection

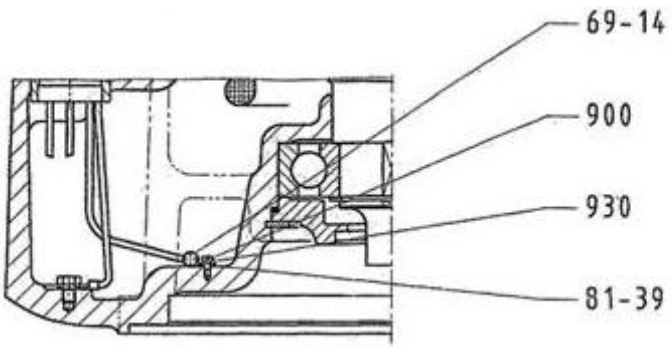


Fig. 08

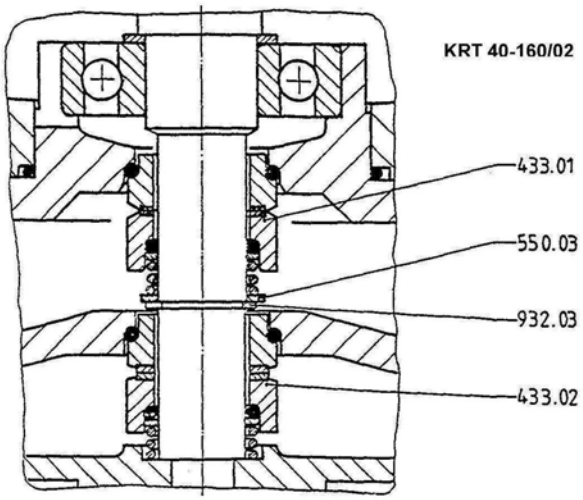
Part No.	Part description
23-7	Impeller body
59-17	Schackle
80-1	Submersible motor
80-3	Bushing
81-17	Butt joint
81-29	Clamp
81-48	Insulation funnel
69-14	Moisture protection of motor
81-74	Pressure screw
102	Volute casing
162	Suction cover
163	Discharge cover
230	Impeller
321	Radial ball bearing
330	Bearing bracket
350	Bearing housing
410	Profile joint
411	Gasket
412	O-ring
421	Rotary shaft seal
441	Seal casing
433	Mechanical seal
474	Thrust ring
500	Ring
502	Casing wear ring

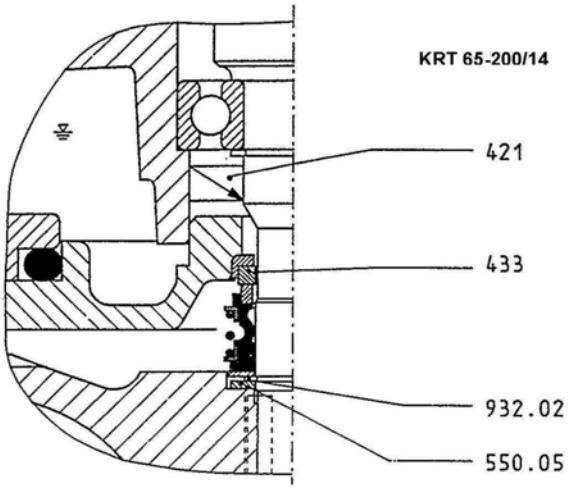
Part No.	Part description
503	Impeller wear ring
524	Shaft protecting sleeve
540	Bush
550	Disc
551	Spacer disc
552	Locking disc
561	Grooved pin
562	Cylindrical pin
689	Isolation
812	Motor casing
818	Rotor
824	Cable
834	Cable duct
900	Screw
901	Hexagon head bolt
903	Screwed plug
904	Screwed pin
906	Impeller screw
914	Socket head cap screw
920	Nut
922	Impeller nut
930	Safety device
931	Safety sheet
932	Circlip
940	Key

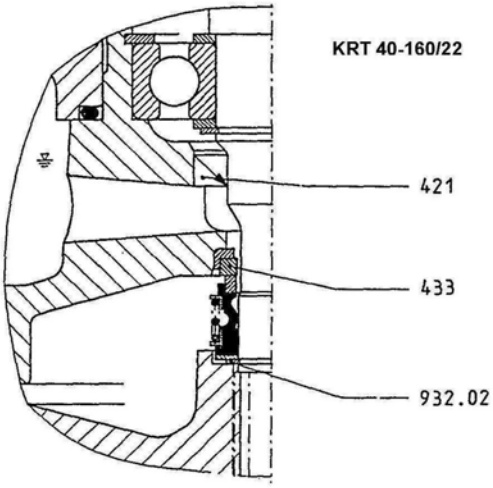
10.5 Installation plan – mechanical seal

Motors: **0 2 ...2 2**
1 4

40-160
65-200







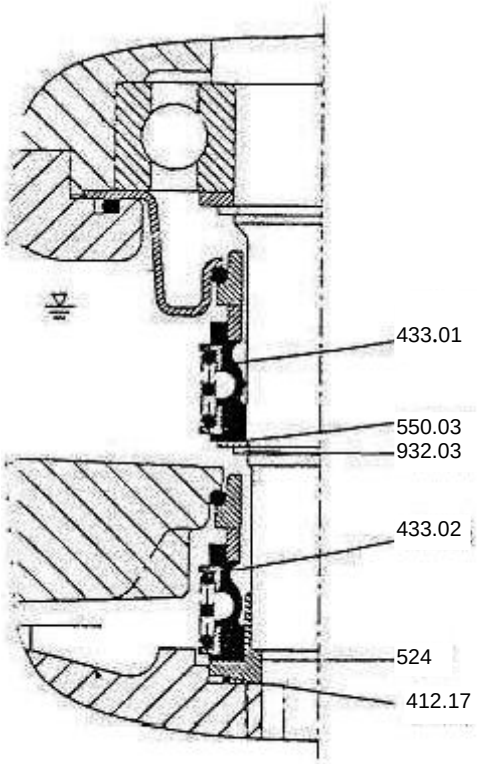
Part No.	Part description
421	Rotary shaft seal
433	Mechanical seal
433.01	Mechanical seal
433.02	Mechanical seal
550	Disc
932	Circlip

Fig. 09

10.6 Installation plan – mechanical seal

Motors: **1 4 …3 4**

80-200
100-200



Part No.	Part description
412	O-Ring
433.01	Mechanical seal
433.02	Mechanical seal
524	Shaft protecting sleeve
550	Disc
932	Circlip

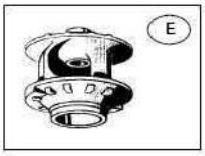
Fig. 10

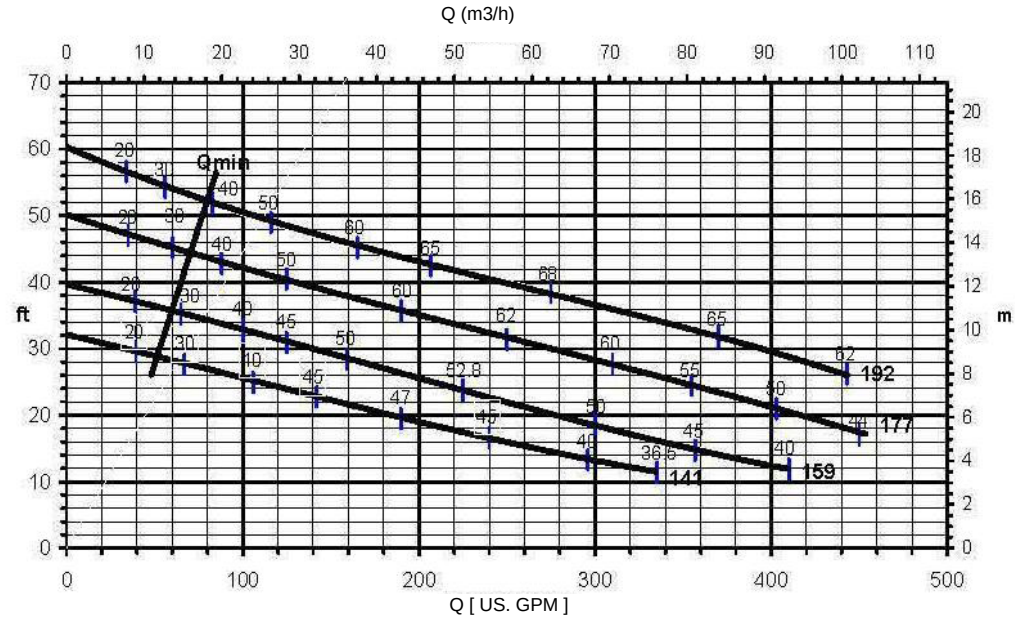
10. Characteristic curves

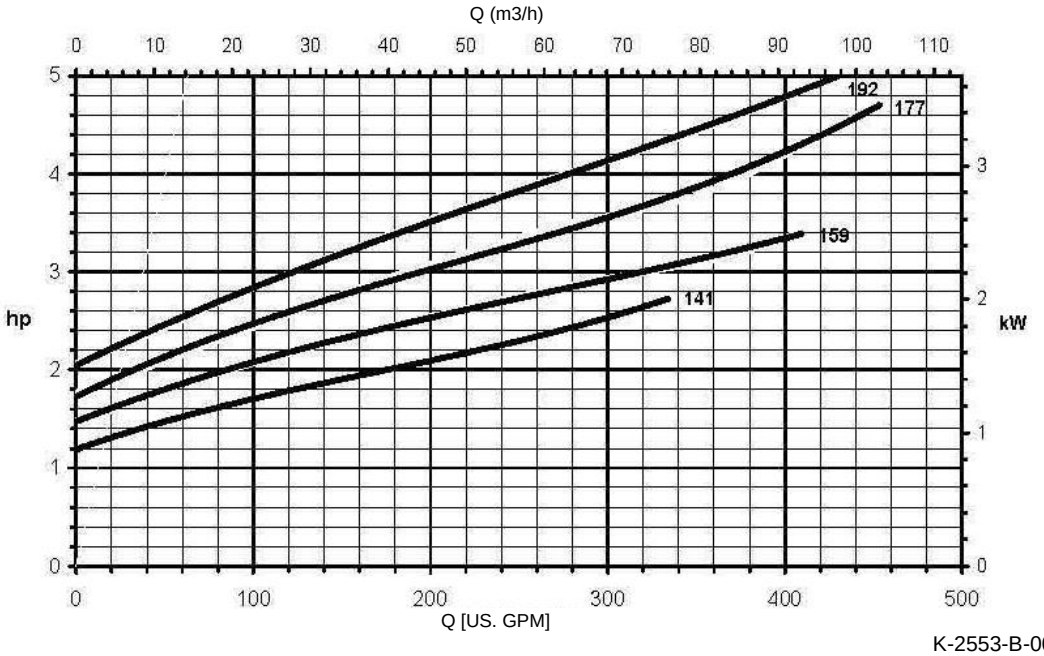
Hydraulic tests
According to KSB Standard (Opt: Impeller S, E, F to Hydraulic Institute, level B).

General accep. Test
According to KSB Standard.

KRT E 80-200 **1750 rpm** **3 inch**







K-2553-B-005

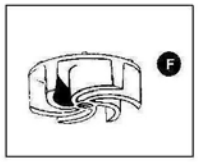
Free passage $3\,^{1}/_{8}$" (80mm)

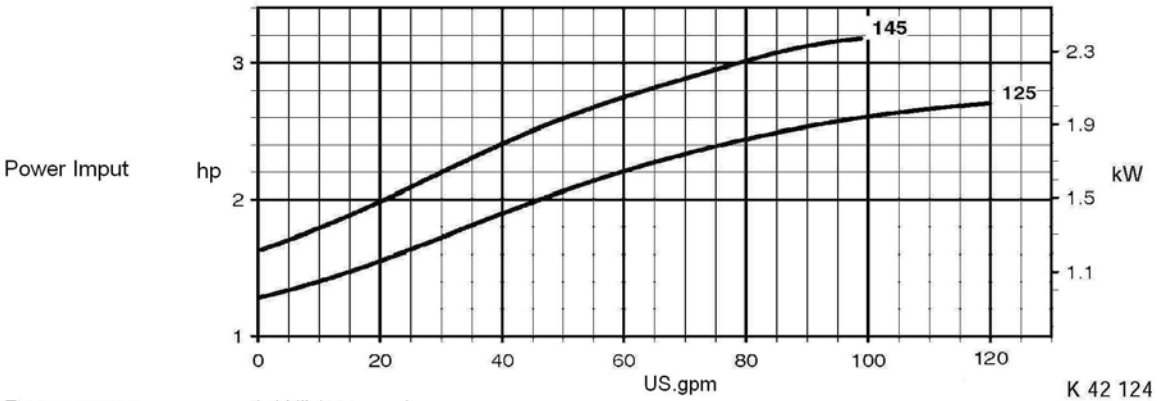
MOTOR RATING Material G Hp	(kW)	MAX.LIQUID TEMP. ºF	(ºC)	MOTOR CODE	
1.1	**(0.8)**	104	(40)	14 U2G 14 X2G	(FM, CSA)
		140	(60)	14 W2G	
1.75	**(1.3)**	104	(40)	14 U2G 14 X2G	(FM, CSA)
2.4	**(1.8)**	104	(40)	24 UG 24 XG	(FM, CSA)
		140	(60)	24 WG	

MOTOR RATING Material G Hp	(kW)	MAX.LIQUID TEMP. ºF	(ºC)	MOTOR CODE	
3.4	**(2.5)**	104	(40)	24 UG 24 XG	(FM, CSA)
		140	(60)	34 WG	(FM, CSA)
5.0	**(3.7)**	104	(40)	34 UG 34 XG	(FM, CSA)

(FM, CSA) = Explosionproof to Class I, Division 1, Groups C&D.

KRT F 40-160 **3500 rpm** **1.1/2 inch**



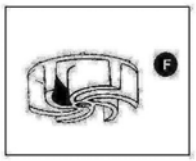


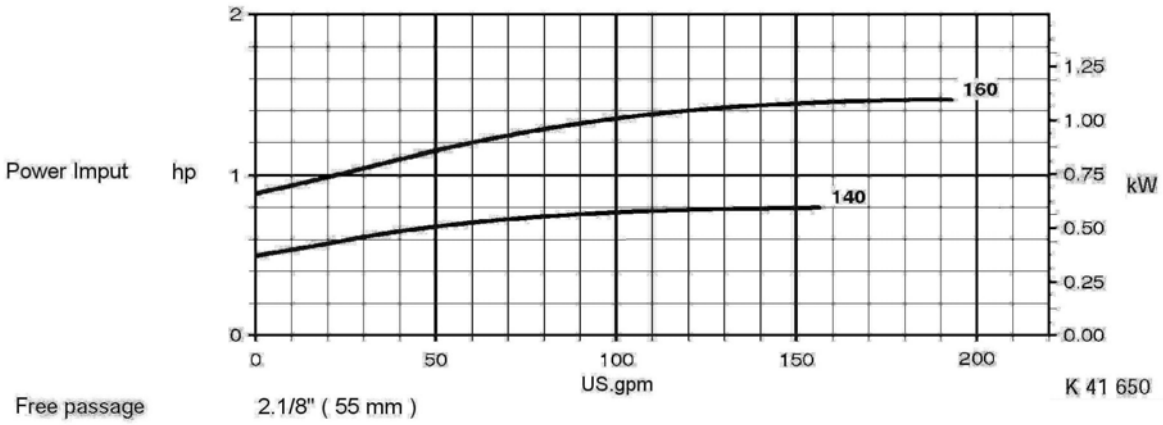
Free passage 1.1/4" (32 mm)

MOTOR RATING Material G Hp (kW)	MAX. LIQUID TEMP. °F (°C)	MOTOR CODE
2.0 (1.5)	131 (55)	2 2 UG
3.0 (2.2)	104 (40)	2 2 XG (FM)
3.5 (2.6)	131 (55)	2 2 UG

(FM) = Explosionproof to Class I, Division 1, Groups C & D

KRT F 65-200 **1750 rpm** **2.1/2 inch**





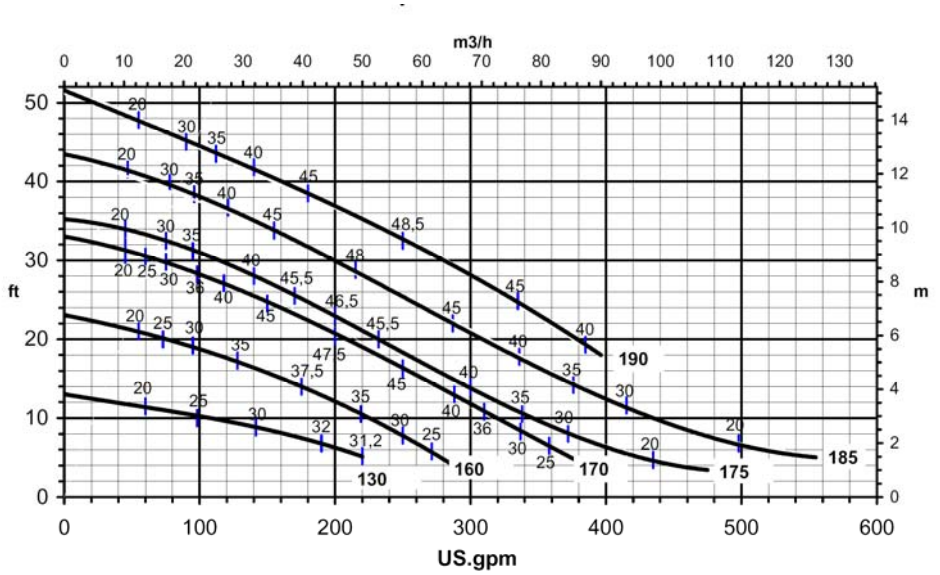
Free passage 2.1/8" (55 mm)

MOTOR RATING Material G Hp (kW)	MAX. LIQUID TEMP. °F (°C)	MOTOR CODE
1.1 (0.8)	131 (55)	1 4 U1G
	104 (40)	1 4 X1G (FM)
1.75 (1.3)	131 (55)	1 4 U1G
	104 (40)	1 4 X1G (FM)

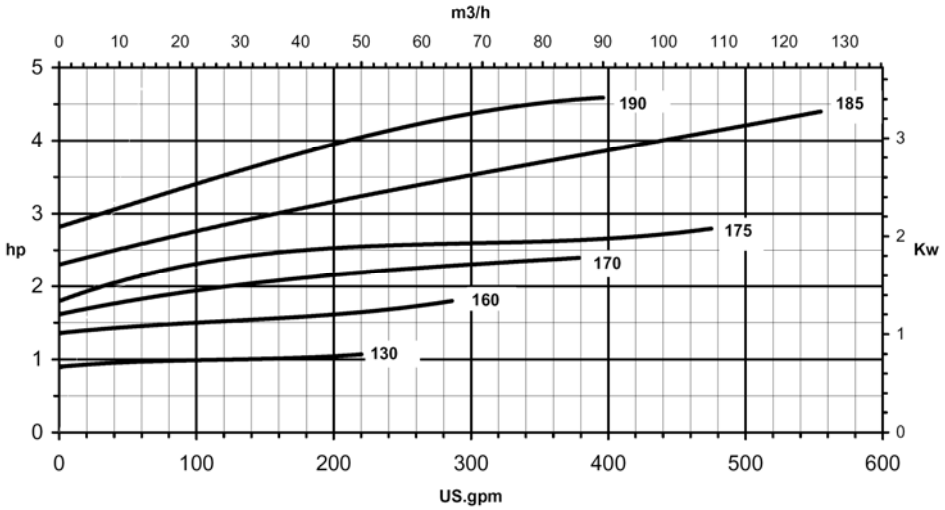
(FM) = Explosionproof to Class I, Division 1, Groups C & D

KRT F 80-200 **1750 rpm** **3 inch**

TDH



Power Imput



Free passage 3. 1/8" (80 mm) K-2553-B- 003

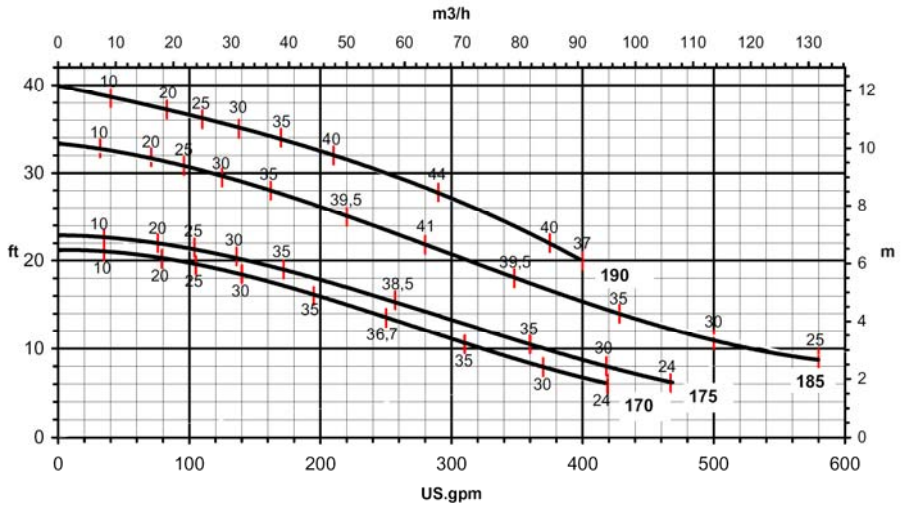
MOTOR RATING Material G Hp	(kW)	MAX. LIQUID TEMP. °F	(°C)	MOTOR CODE
1.1	(0,8)	104	(40)	14 U2G 14 X2G (FM, CSA)
		140	(60)	14 W2G
1.75	(1,3)	104	(40)	14 U2G 14 X2G (FM,CSA)
2.4	(1,8)	104	(40)	24 UG 24 XG (FM,CSA)
		140	(60)	24 WG

MOTOR RATING Material G Hp	(kW)	MAX. LIQUID TEMP. °F	(°C)	MOTOR CODE
3.4	(2,5)	104	(40)	24 UG 24 XG (FM,CSA)
		140	(60)	34 WG
5	(3,7)	104	(40)	34 UG 34 XG (FM,CSA)

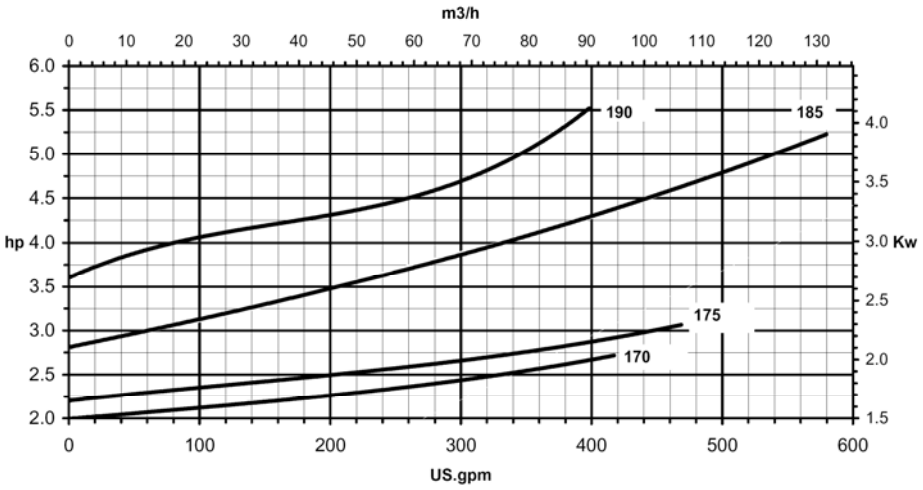
(FM, CSA) = Explosionproof to Class I, Division 1, Groups C & D

KRT F 100-200 **1750 rpm** **4 inch**

TDH



Power Imput



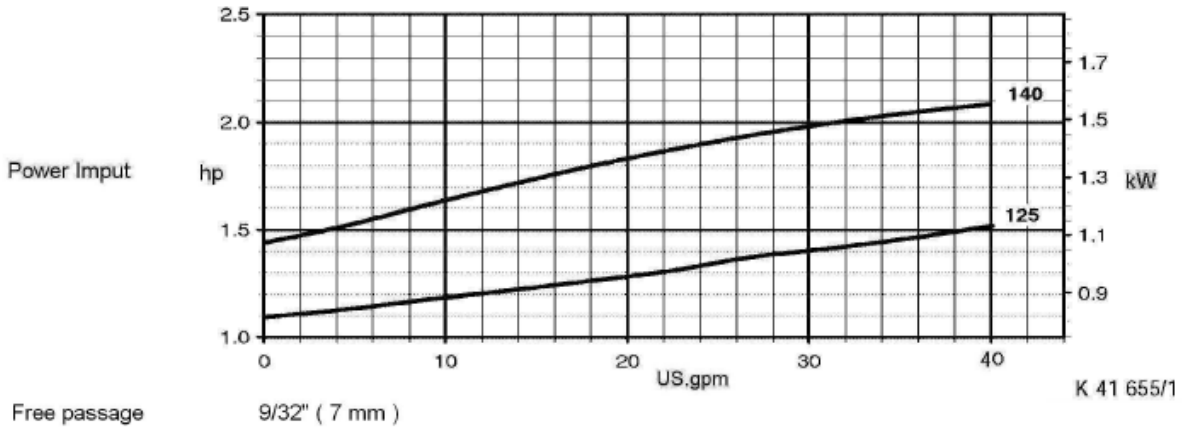
Free passage 4" (100 mm)

K-2553-B- 004

MOTOR RATING Material G Hp	(kW)	MAX. LIQUID TEMP. °F	(°C)	MOTOR CODE
2.4	(1,8)	104	(40)	24 UG 24 XG (FM, CSA)
		140	(60)	24 WG
3.4	(2,5)	104	(40)	24 UG 24 XG (FM,CSA)
		140	(60)	34 WG
5.0	(3,7)	104	(40)	34 UG 34 XG (FM,CSA)

(FM, CSA) = Explosionproof to Class I, Division 1, Groups C & D

KRT S 40-160 **(Single-Phase 1~)** **3500 rpm** **1.1/2 inch**

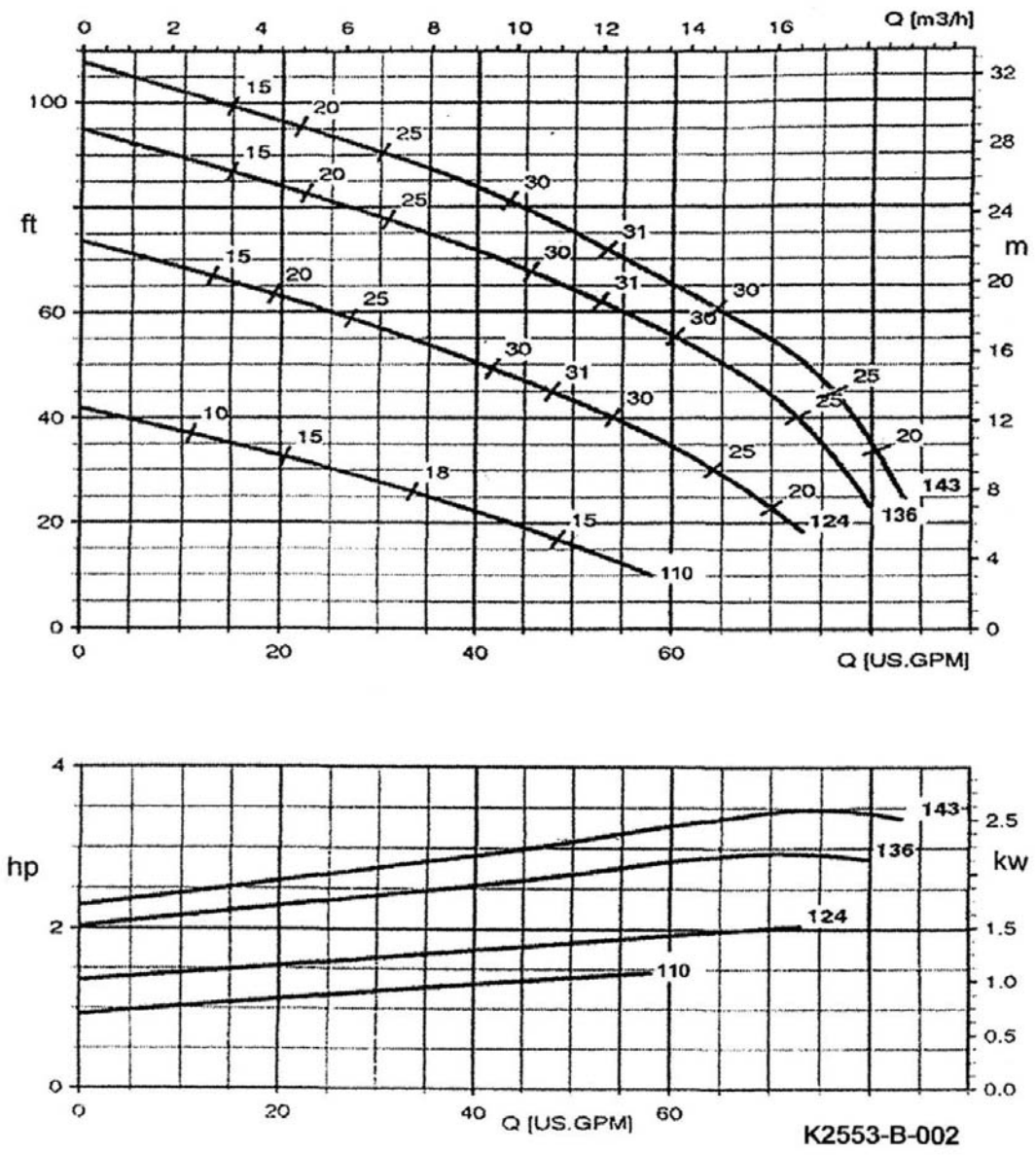


Free passage 9/32" (7 mm)

MOTOR RATING Material G Hp	(kW)	MAX. LIQUID TEMP. °F	(°C)	MOTOR CODE
1.5	(1.1)	86	(30)	0 2 UG
2	(1.5)	86	(30)	0 2 UG

(FM) = Explosionproof to Class I, Division 1, Groups C & D

KRT S 40-160 **3500 rpm** **1.1/2 inch**



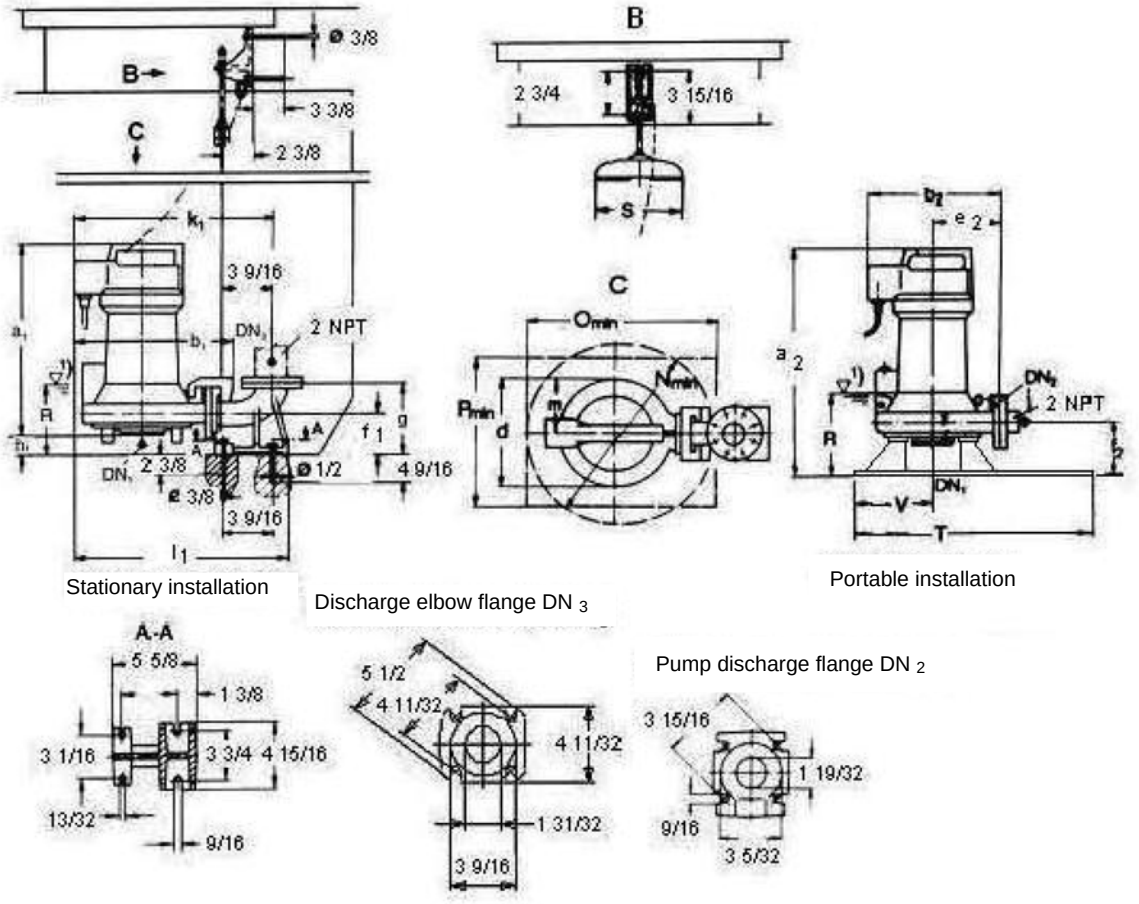
Free passage $^{9}/_{32}$" (7mm)

MOTOR RATING Material G Hp	(kW)	MAX.LIQUID TEMP. ºF	(ºC)	MOTOR CODE	
1.5	**(1.1)**	104	(40)	2 2 XG	(FM, CSA)
2.0	**(1.5)**	131	(55)	2 2 UG	
3.0	**(2.2)**	104	(40)	2 2 XG	(FM, CSA)
3.5	**(2.6)**	131	(55)	2 2 UG	

(FM, CSA) = Explosionproof to Class I, Division 1, Groups C&D;

11. Dimension table

12.1 KRT 40-160



KRT... U,X	DN_1	DN_2	DN_3	MOTOR PUMP DIMENSIONS												
				a_1	a_2	b_1	b_2	d	e_2	f_1	f_2	g	h_1	k_1	l	m
F 40-160/22	2 3/16	2 NPT	2NPT	16 3/8	18	12 7/8	11	8 15/16	5 11/16	3 7/16	4	5 7/8	1 9/16	15 5/8	17 1/8	4 9/16
S 40-160/22	-												2 3/16			
S 40-160/02	-															

Dimensions in inches

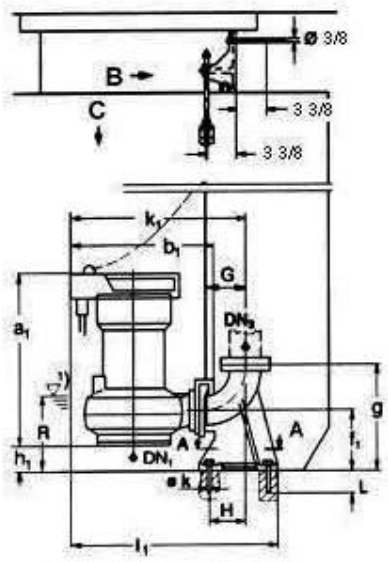
KRT... U,X	INSTALLATION PUMP DIMENSIONS							Motor pump weight (lbs) G (material)
	N	O	P	R	S	T	V	
F 40-160/22	14 31/32	14 31/32	11 13/16	4 11/32	3 1/8	13 3/16	5 17/32	88
F 40-160/22								91
S 40-160/02								91

Dimensions in inches

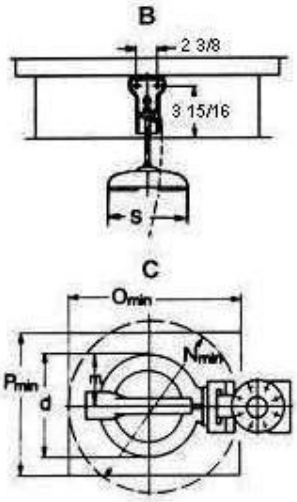
1) Lowest shut-off point for automatic operation

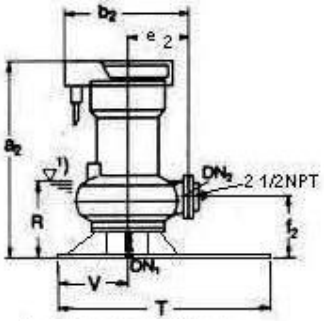
Fig. 11

12.2 KRT 65-200



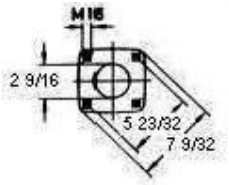
Stationary installation



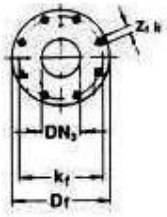


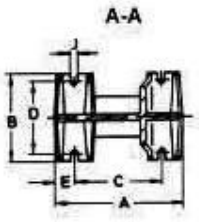
Portable installation

Pump discharge flange DN 2



Discharge elbow flange DN 3





DISCHARGE ELBOW FOUNTATION DIMENSIONS										
DN_3	A	B	C	D	E	G	H	J	ØK	L
3	9 27/32	7 7/8	7 3/32	5 59/32	1 3/8	5 5/16	4 15/16	9/16	1/2	4 17/32

Dimensions in inches

DISCHARGE ELBOW FLANGE DN_3					
DN_3	kf	Df	zf	∅ If	STANDARD
3	6	7 17/32	4	23/32	ANSI B16.1 125#FF

Dimensions in inches

KRT... U,X	DN1	DN2	MOTOR PUMP DIMENSIONS												
			a_1	a_2	b_1	b_2	d	e_2	f_1	f_2	g	h_1	k_1	l	m
F 65-200/14	2 3/16	2 9/16	17 1/8	20 9/32	16 5/32	11 5/8	11 7/16	5 29/32	6 1/8	6 1/2	12 7/32	2 25/32	20 1/2	24 1/32	5 29/32

Dimensions in inches

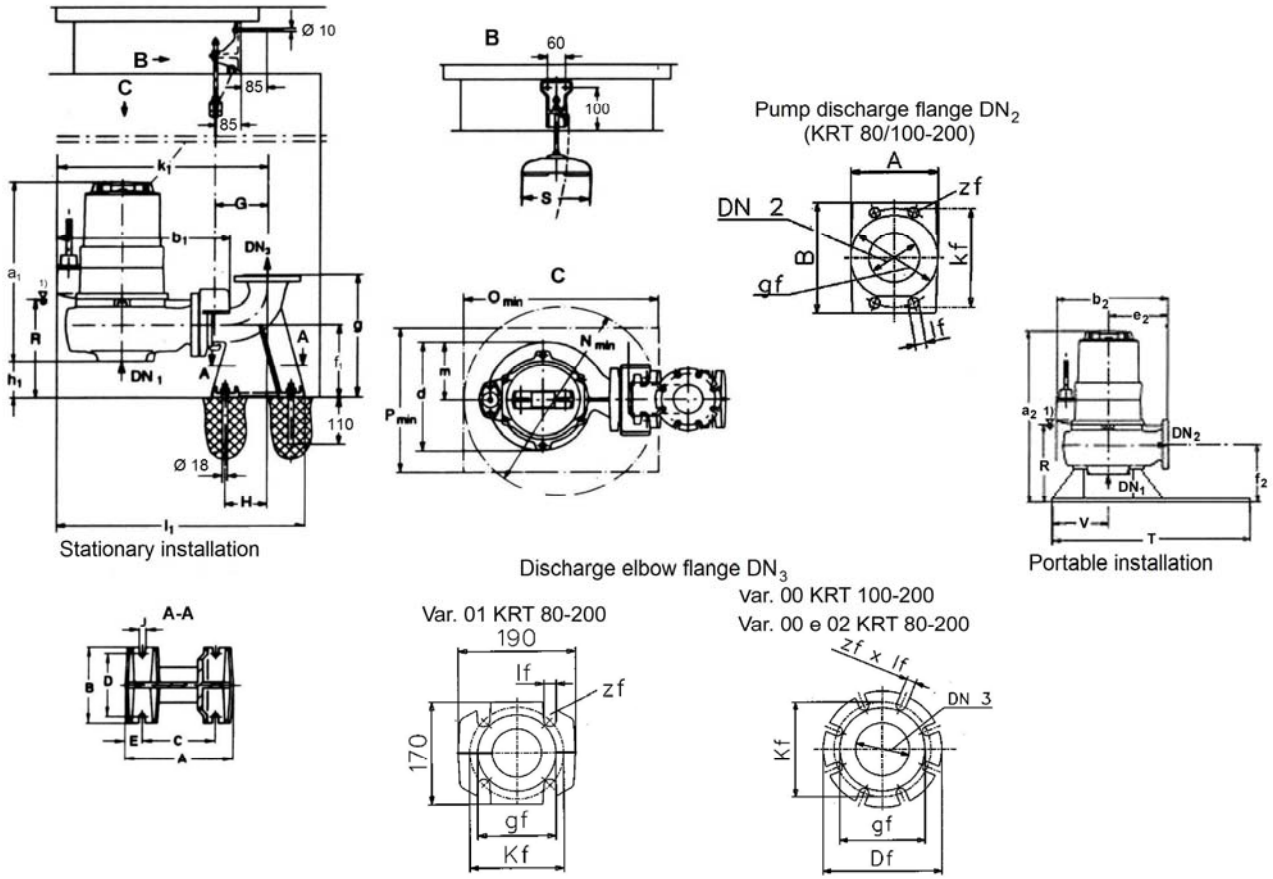
F KRT... U,X	INSTALLATION PUMP DIMENSIONS							Motor pump weight (lbs) G (material
	N	O	P	R	S	T	V	
65-200/14	20 3/32	20 3/32	15 3/4	8 9/32	6 1/2	13 3/16	5 17/32	88

Dimensions in inches

1) Lowest shut-off point for automatic operation

Fig. 12

12.3 KRT 80-200/100-200



Discharge elbow foundation (Dimension in inches)

Pump size	A	B	C	D	E	G	H	J
80-200	11 13/16	7 7/8	8 11/16	5 29/32	1 19/32	6 1/32	5 17/32	25/32
100-200	12 7/32	7 7/8	8 11/16	5 29/32	1 25/32	6 1/2	5 17/32	25/32

Discharge elbow flange DN_3 (Dimensions in mm)									
Application	Var	DN_2	DN_3	g_f	k_f	D_f	z_f	$\varnothing l_f$	Standard
80-200	02	3	4	5	7 3/32	8 11/16	8	23/32	* ANSI B16.1 125# / DIN EN1092-2 type 21 form B PN16
100-200	00	4	4	6 3/16	7 3/32	8 11/16	8	23/32	* ANSI B16.1 125# / DIN EN1092-2 type 21 form B PN16
80-200	01	3	3	5	6	8 3/8	4	13/16	* ANSI B16.1 125#

* Only with reference to flange hole

Dimensions in inches

Hydraulic	KRT... U,X	DN_1	DN_2	PUMP												
				a_1	a_2	b_1	b_2	d	e_2	f_1	f_2	g	h_1	k_1	l	m
F/E	80-200/14	3	3	19 5/16	24 5/8	18 23/32	15 9/16	12 5/8	8 9/32	7 7/8	9 1/4	14 31/32	3 15/16	23 1/32	27 25/32	6 1/2
	80-200/24			19 29/32	25 7/32											
	80-200/34															
F	100-200/24	4 11/32	4	20 11/16	25 31/32	18 23/32	15 9/16	12 5/8	8 9/32	9 15/32	9 27/32	16 15/16	4 15/16	23 7/32	28 3/8	6 1/2
	100-200/34															

Dimensions in inches

Hydraulic	KRT... U,X	FOUNDATION							WEIGHT (lbs)
		N	O	P	R	S	T	V	
F/E	80-200/14	21 21/32	21 21/32	15 3/4	12 13/16	6 1/2	17 23/32	7 7/8	185
	80-200/24								199
	80-200/34								210
F	100-200/24	21 21/32	21 21/32	15 3/4	12 13/16	6 1/2	17 23/32	7 7/8	197
	100-200/34								205

Dimensions in inches

Flange						
DN_2	A	B	g_f	k_f	$\varnothing l_f$	z_f
3	5 7/16	7 7/32	5 7/16	6 5/16	11/16	4
4	6 7/32	8 9/32	6 7/32	7 3/32	23/32	4

1) Lowest shut-off point for automatic operation

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