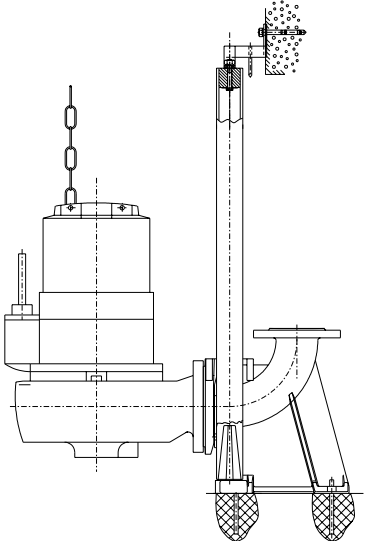


<p>Submersible motor pumps with guide rails</p> 	<table><tr><td>Series</td><td>KRT</td></tr><tr><td>Size</td><td>DN80...DN200 (excludes 200-500,200-501 and 200-631)</td></tr><tr><td>Motor Size</td><td>82...232 (2 pole) 24...1554 (4 pole) 46...1006 (6 pole)</td></tr><tr><td>Material</td><td>G (Cast Iron)</td></tr></table>	Series	KRT	Size	DN80...DN200 (excludes 200-500,200-501 and 200-631)	Motor Size	82...232 (2 pole) 24...1554 (4 pole) 46...1006 (6 pole)	Material	G (Cast Iron)
Series	KRT								
Size	DN80...DN200 (excludes 200-500,200-501 and 200-631)								
Motor Size	82...232 (2 pole) 24...1554 (4 pole) 46...1006 (6 pole)								
Material	G (Cast Iron)								



These operating instructions contain fundamental information and precautionary notes. It is absolutely necessary to read them thoroughly prior to installation and first commissioning. This manual has to be used together with the operating instructions for the pump at all times

Contents		Page
1	Installation / Assembly.....	3
2	Wet-well installation – Guide rails.....	5
3	Outline Drawings.....	6
4	Exploded View.....	18

1 Installation/Assembly

1.1 Safety regulations

Persons are not permitted to enter a confined space without specific precautions taken in accordance with current standards.

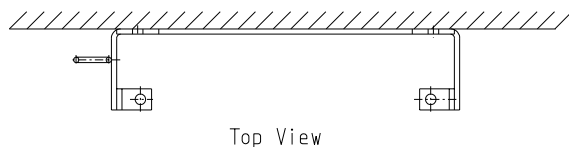
1.2 Checks prior to installation and first commissioning

Construction layout must be in accordance with the measurements set out in the dimensions table. Determine the correct anchorage position of the discharge elbow, 72-1 so the guide rails (not included in the KSB scope of supply) when installed, will run parallel and plumb.

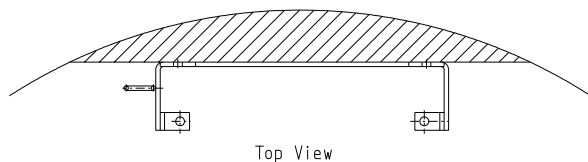
The construction of the concrete should be of sufficient strength to ensure a safe and functional installation. The concrete foundation must have set before installing the discharge elbow, 72-1. The surface must be level and even.

1.2.1 Notes

Also take into account the upper guide rail brackets. Dimensions and space requirements are given in the dimension table. Fix the upper guide rail bracket by means of stainless steel anchor bolts (anchor bolts are not included in the KSB scope of supply) at the edge of the sump opening. Data concerning borehole diameters and depth as well as the hole pattern of the bracket are to be determined by the contractor.



Never fasten the brackets directly to a curved sump wall.



Dimensions for guide rail installations are given in the dimension table. Additional dimensions can be found in the KRT operating manual.

1.3 Installation of the pump/unit

Inspect the pump and power/control cable for transport damages prior to installation. Check it as described in the section “**First Commissioning**” of the operating instructions. A separate data plate for the pump and motor data is included in the KSB scope of supply. The extra data plate should be fixed outside the pump sump (e.g. control cabinet,) so that it is clearly visible.

1.3.1 Assembly of the installation kit

The following installations kits are available for assembly/ installation of the KRT pump unit:

- Stationary wet-well installation with guide cable (see operating instructions of the pump)
- Portable installation (see operating instructions of the pump)
- **Stationary wet-well installation with guide rails** (see present supplementary instructions)

1.4 Stationary wet-well installation with guide rails.

1.4.1 Description

In a stationary wet-well installation, the pump unit can be lowered and lifted out of the pump sump by means of guide rails at any liquid level in the sump. Safely guided by 2 vertical guide rails, the pump slides into the sump or tank and attaches itself automatically to the discharge elbow fixed at the bottom. Sealing between the pump and discharge elbow is achieved by the weight of the pump. A profile gasket between the pump and discharge elbow assures a water tight leak-proof connection. There is no need to enter the sump for maintenance and inspection of the pump.

1.4.2 Installation of the guide claw

Fit the guide claw to the discharge nozzle of the pump. Do not forget to place the washers 550.35 under the hex nuts 920.35. Nuts must be evenly tightened according to instructions:

Tightening torque:

M16 (A4-70) with DN40, 80 and 100 : 111 lbf-ft (150Nm)
M20 (A4-70) with DN 150 and 200 : 214 lbf-ft (290Nm)

Sealing between the guide claw 732 and discharge elbow 72-1 is accomplished by a profile gasket – 410 (DN 80....150) or round cord – 99-6 (DN 200).

The entire assembly has been pre-assembled at the factory.

1.4.3 Installation of mounting bracket / discharge elbow / bottom guide rail bracket

Construction of the concrete foundation has to be of sufficient strength to ensure safe and functional fixing of the guide rail system and the discharge elbow

Level and anchor the discharge elbow 72-1. The guide rails must be installed absolutely parallel and plumb.

KRT 80, 100 and 150's require 2" diameter guide rails, schedule 40 or 80 (supplied by others). KRT 200's require 3" diameter guide rails, schedule 40 or 80 (supplied by others).

Mount the bottom guide rail brackets 718 on the discharge elbow 72-1 according to the outline drawing item 3 in such a way that dimension “G” between the guide rails centerlines and the centerline of the discharge elbow is complied with. Fix each bottom guide rail bracket 718 with:

- Screw 914.1/2 (for DN 80....200)
- Data concerning tightening torques of screw 914.1/2:
M12 (A4-70) for DN80 and DN100: 44 lbf-ft (60Nm)
M16 (A4-70) for DN150 and DN200: 111 lbf-ft (150Nm)

The installation of the bottom guide rails bracket ,718, is completed after tightening the anchor bolts (not in the KSB scope of supply) for the discharge elbow 72-1.

Continue with the installation and fitting of the discharge pipe to the discharge elbow.

Install the guide rails (not included in the KSB scope of supply) onto the bottom guide rails brackets 718 at the discharge elbow 72-1

Cut and fit the guide rails to required lengths.

See the exploded view drawing attached for more details.

CAUTION ! Make sure the guide rails are absolutely plumb; it is important for the suspension and guidance of the pump during installation!

In case of deeper installations the scope of supply may include intermediate brackets that will function as spacers between the guide rails. It depends on the construction whether a support at the discharge pipe or sump wall becomes necessary.

1.4.4 Installation of the Lifting Chain / Lifting Cable or Rope on Motor Housing

The chain of all sizes is attached to the top of the motor casing toward the back and opposite the discharge nozzle using a shackle 59-17. Depending on the motor and hydraulic combination, the pump will be suspended from this point with an inclination of approx. 5-10 degrees. This guarantees a problem – free lowering of the pump, provided that the suspension point of the lifting equipment is directly above the pump.

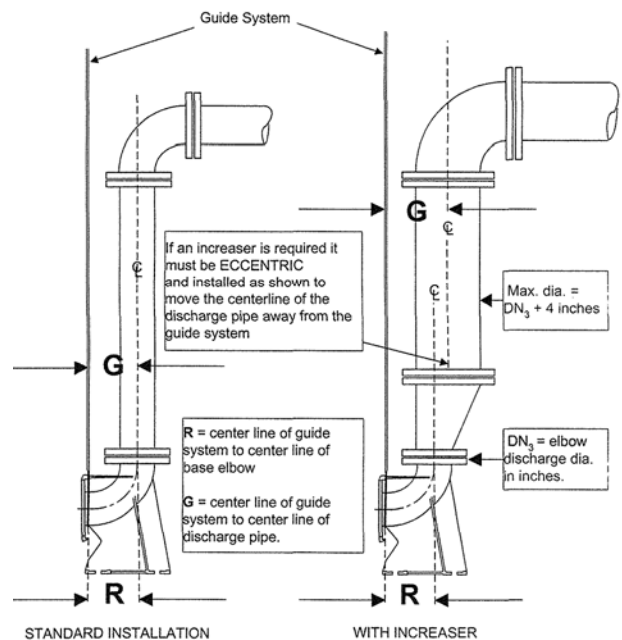
Caution: Skewed lifting is to be avoided as it may cause jamming of the pump guide claw to the guide rails.

1.4.5 Installation of the pump

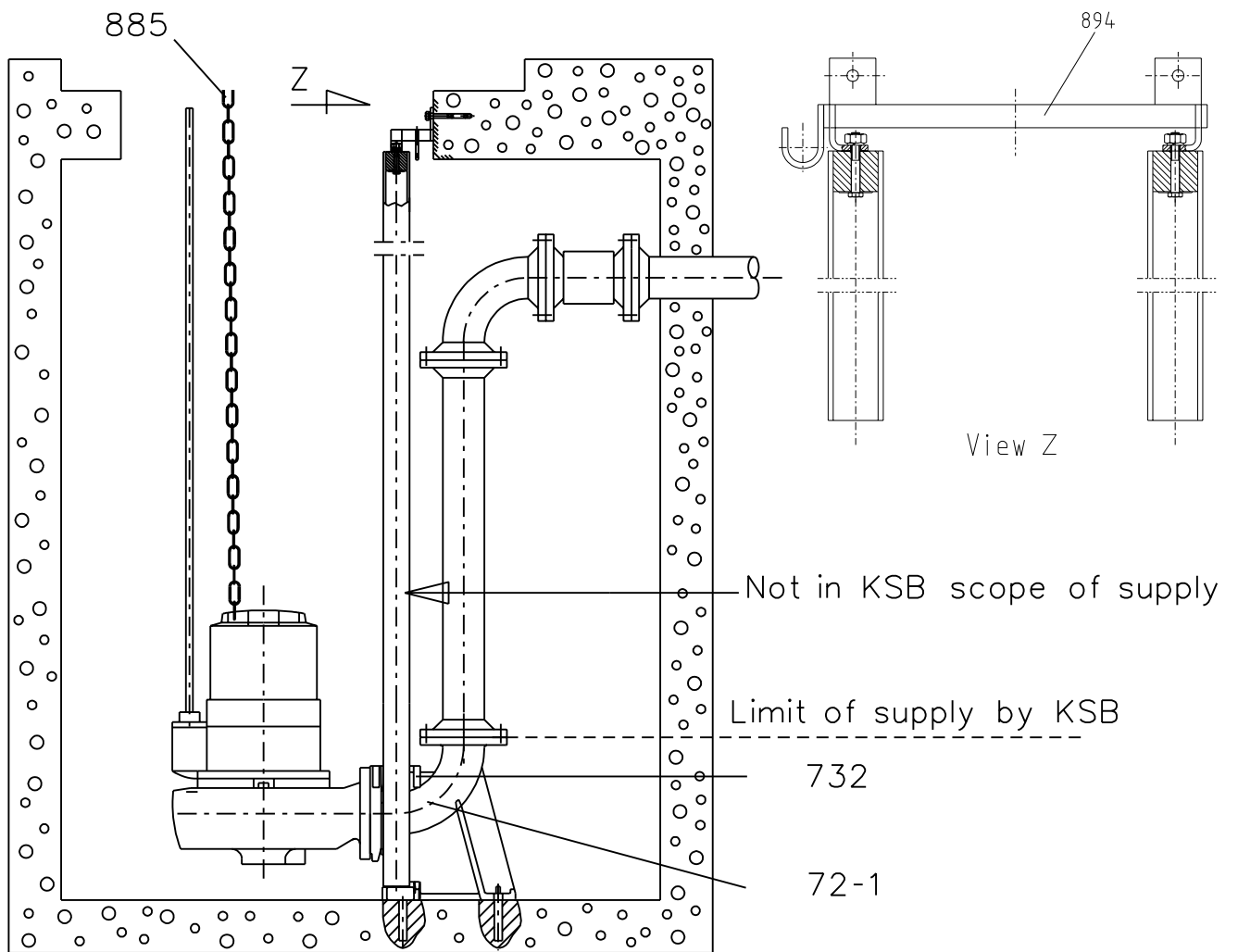
Please check, prior to the installation of the pump, dimension G and S according to the table provided under "3. Outline Drawing". Of utmost importance is the perfectly vertical installation of the guide rails. This work has to be done prior to the introduction of the pumped liquid into the sump to guarantee a smooth lowering and lifting of the pump. Afterwards, correct assembly slips or misalignments if any. Guide the pump from above over the bracket, the pump will attach itself automatically to the discharge elbow 72-1 and will be connected to the discharge pipe and ready for operation. Attach the lifting chain to the hook on the upper guide bar bracket or at the edge of the tank in an appropriate manner.

1.4.6 Increaser Installation

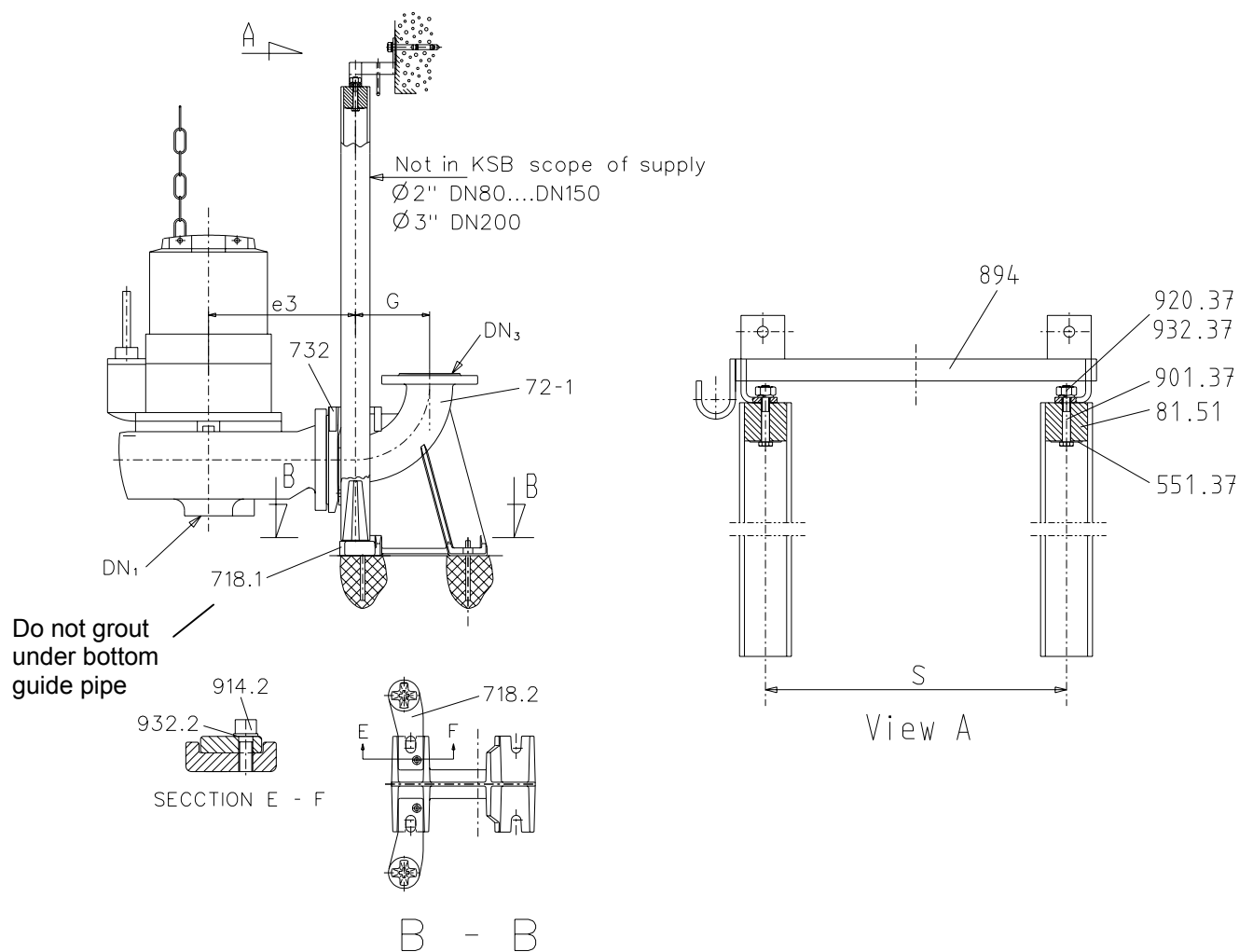
For installation of discharge elbow with increasers see down the drawing for proper dimensioning and placement.



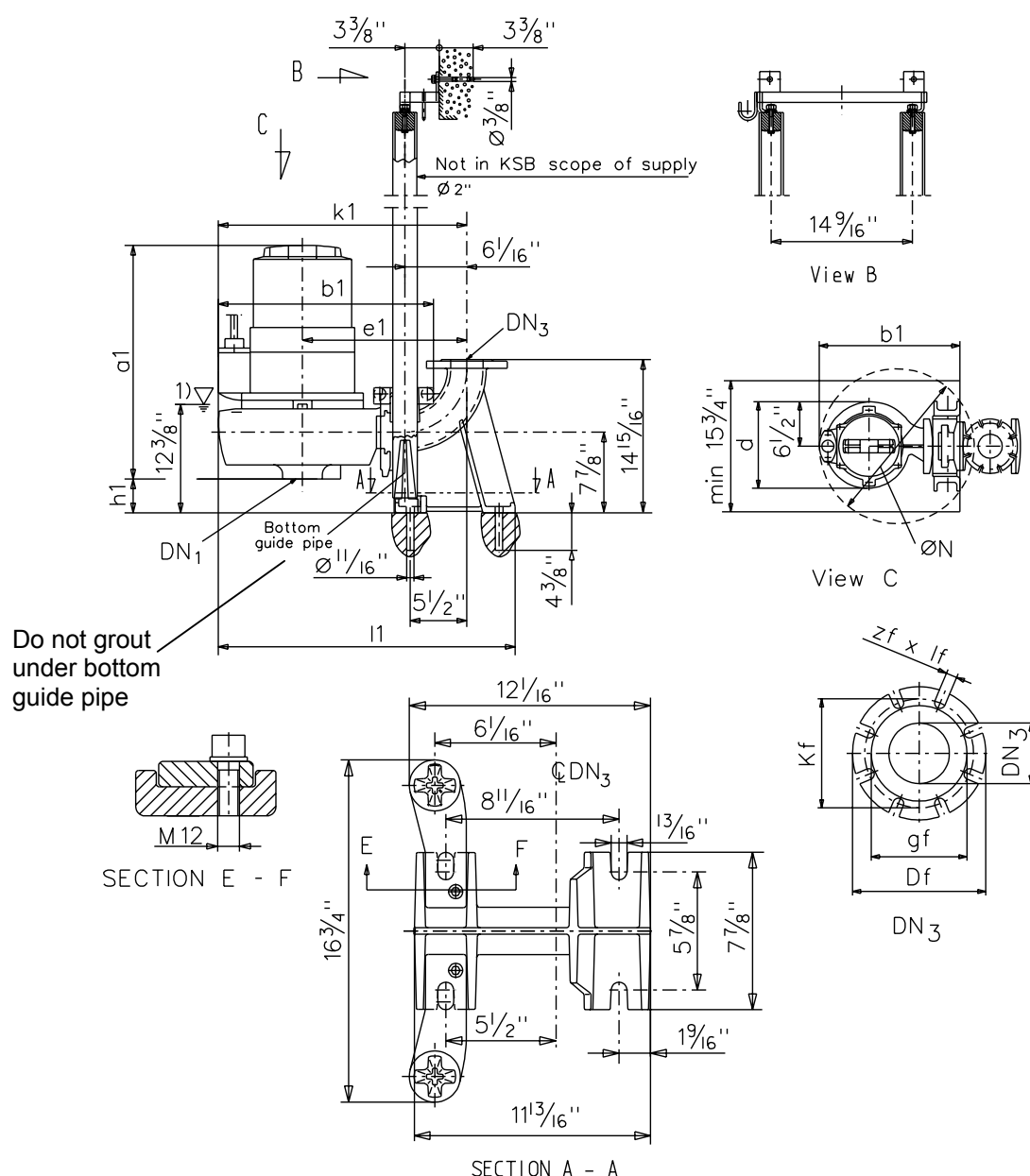
2. Wet-well installation – GUIDE RAILS



3. Outline drawings



Kits Denominations	Part n°	Part Description	Qt
Bottom Guide Rail Bracket Kit	718.1/2	Bottom guide rail bracket	2
	914.1/2	Socket head cap screw	2
	72-1	Discharge Elbow	1
	932.1/2	Circlip	2
Claw Kit	550.35	Washer	8 ⁵⁾
	732	Claw	1
	914.35	Socket head cap screw ¹⁾	4
	902.35	Stud ²⁾	8 ⁵⁾
	920.35	Nut ²⁾	8 ⁵⁾
	99-6	Round cord ³⁾	1
Upper guide rail Bracket Kit	410	Profile Gasket ⁴⁾	1
	894	Upper Guide Rail Bracket	2
	901.37	Hexagon head bolt	2
	920.37	Nut	4
	550.31	Disc	2

3.1 KRT 80-200 – Dimension Table


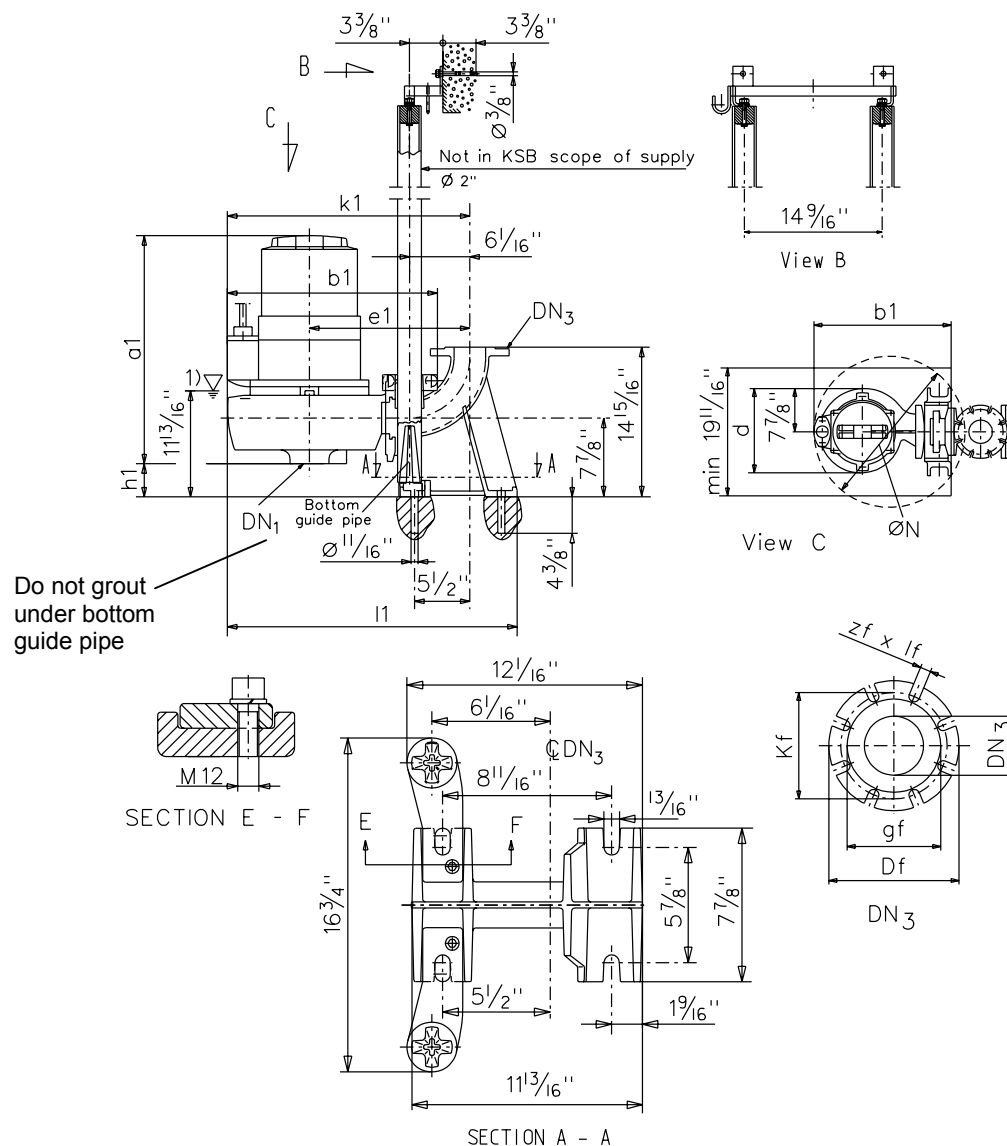
Flange – ANSI B 16.1 Class 125

DN ₃	gf	Kf	Df	zf	lf
4	6 1/4	7 1/2	9	8	13/16

Dimensions in inches

KRT / ...	Dimensions in inches									Weight (lbs) G (material)
	DN ₁	a1	b1	d	e1	h1	k1	l1	N	
80-200/	14	19 1/4	19 13/16	13 5/8	15 3/4	3 7/8	23	27 3/4	23	185
	24	19 7/8								198
	34									209

1) Lowest shut-off point for automatic operation

3.2 KRT 80-250, 80-251, 80-315 – Dimension table


Flange – ANSI B 16.1 Class 125

DN ₃	gf	Kf	Df	zf	lf
4	6 1/4	7 1/2	9	8	13/16

Dimensions in inches

		Dimensions in inches								Weight (lbs) G (material)	
KRT ...-.../...		DN ₁	a1	b1	d	e1	h1	k1	l1	N	
80-250	54	4	23 1/2	23 15/16	15	18 1/2	3	27 1/8	31 7/8	26 3/8	305
	74										335
	114		24 5/8								365
80-250/	164										390
80-251	46		23 1/2								305
	66										330
	96		24 5/8								355
	126										385
	82	3 1/8	24	23 1/2	14	18 1/4	3 7/16	27	31 1/4	26 3/16	335
80-315/	122		25 1/4	23 3/4							340
	172										390
	232		30 3/4	25 1/8							15 3/4

1) Lowest shut-off point for automatic operation

3.3 KRT 100-200 – Dimension table



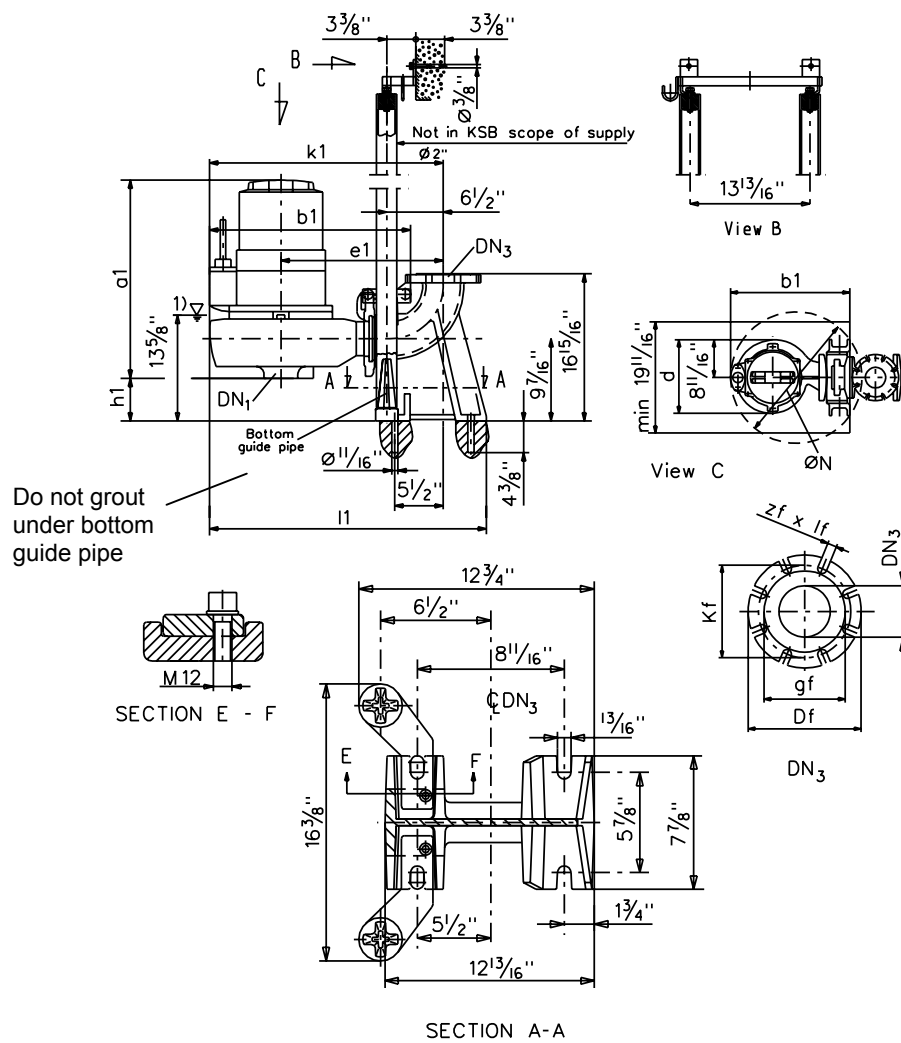
Flange – ANSI B 16.1 Class 125

Dimensions in inches

KRT ...-.../...	Dimensions in inches									Weight (lbs)
	DN ₁	a1	b1	d	e1	h1	k1	l1	N	G (material)
	100-200/— 24 34	4 3/8	20 5/8	19 11/16	12 5/8	16 1/8	4 7/8	23 3/8	28 3/8	22 9/16

- 1) Lowest shut-off point for automatic operation

3.4 KRT 100-250, 100-251 – Dimension table



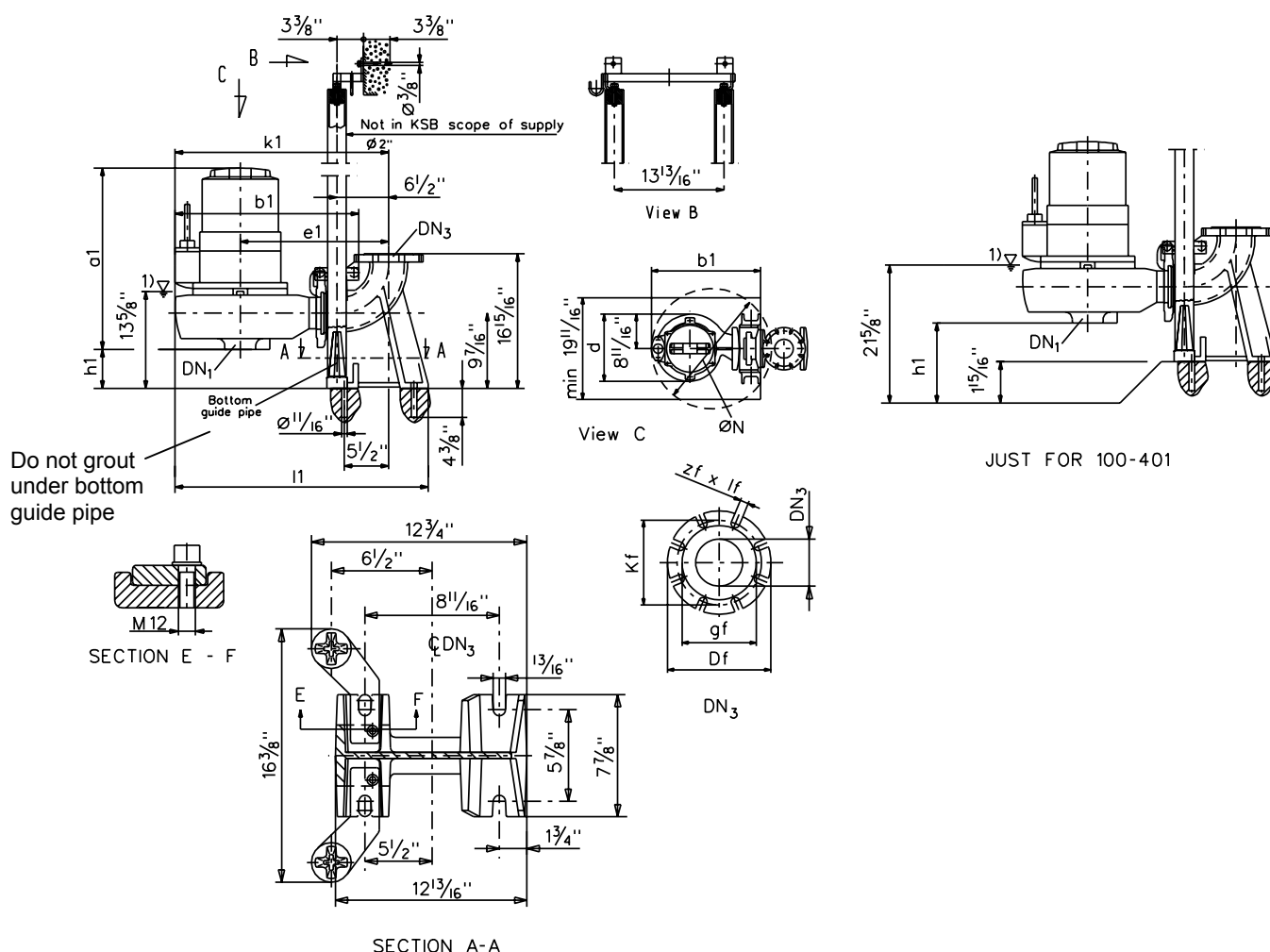
Flange – ANSI B 16.1 Class 125

DN ₃	gf	Kf	Df	zf	lf
4	6 1/4	7 1/2	9	8	13/16

Dimensions in inches

KRT ...-.../...	Dimensions in inches									Weight (lbs) G (material)
	DN ₁	a1	b1	d	e1	h1	k1	l1	N	
100-250/54	4	23 5/8	24	15 1/4	19 1/8	4 7/16	27 3/4	32 11/16	26 7/16	310
100-251/74										345
100-251/114		24 13/16								375
100-251/164										400
100-251/46	4	23 5/8	24	15 1/4	19 1/8	4 7/16	27 3/4	32 11/16	26 7/16	310
100-251/66										345
100-251/96		24 13/16								375
100-251/126										400

- 1) Lowest shut-off point for automatic operation

3.5 KRT 100-316, 100-401 – Dimension table


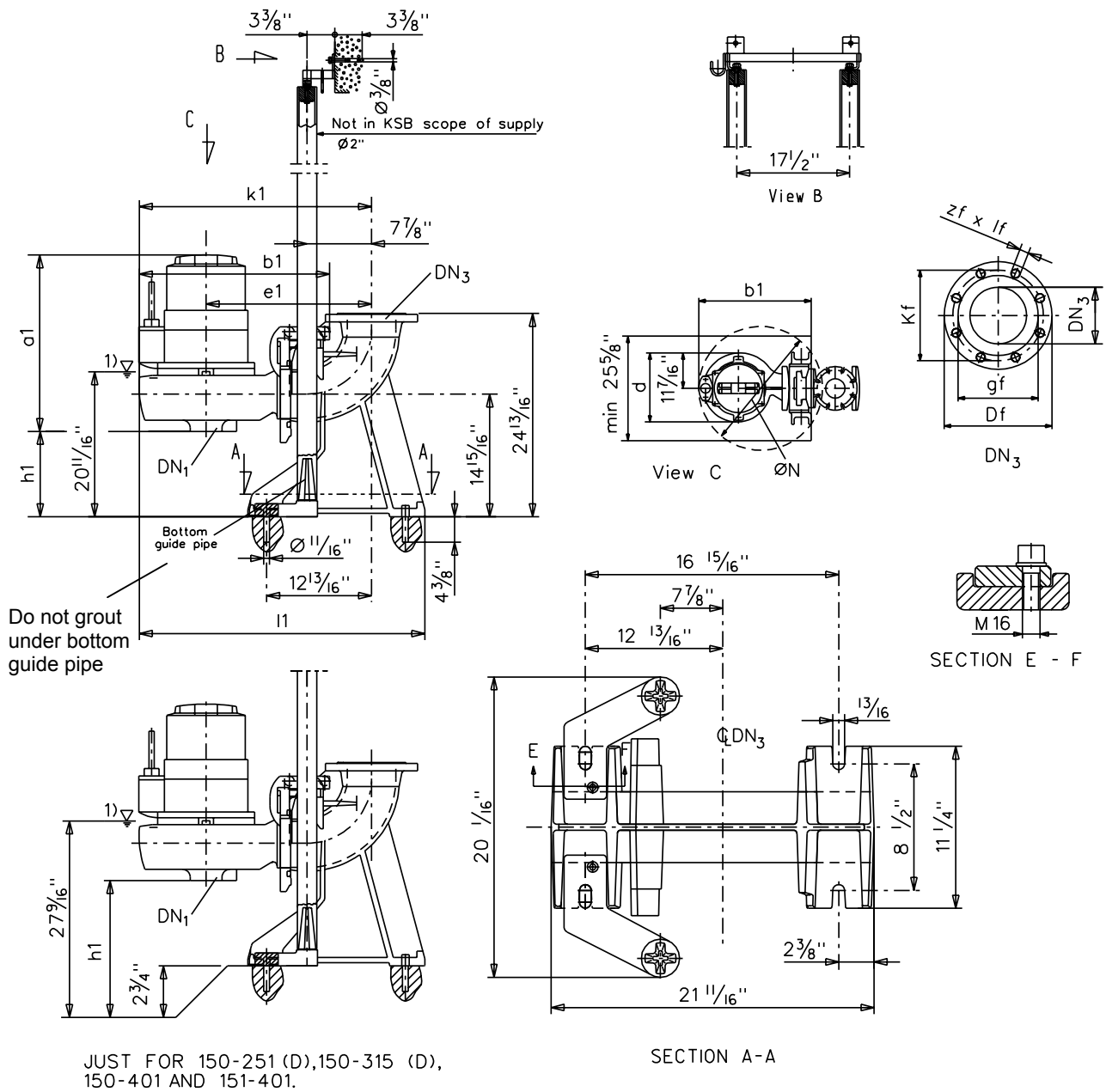
Flange – ANSI B 16.1 Class 125

DN ₃	gf	Kf	Df	zf	lf
4	6 1/4	7 1/2	9	8	13/16

Dimensions in inches

KRT ...-.../...		Dimensions in inches								Weight (lbs) G (material)		
		DN ₁	a1	b1	d	e1	h1	k1	l1	N		
100-316	114	4	25 13/16	26 7/16	16 9/16	21 7/16	4 13/16	30 1/8	35 1/16	28 9/16	440	
	164		31 5/16	27 3/4				31 1/2	36 7/16	29 13/16	460	
	234										610	
	294										30 1/8	650
100-401	234	5	36 1/4	32 5/16	23 1/4	24 3/4	4 15/16	35 3/4	40 3/4	43 5/16	840	
	294		35 1/4					38 3/4	43 11/16		875	
	354		41 3/4								35 1/16	1170
	504			1225								
	654			59 1/4				32 5/16	35 3/4			40 15/16
	804		2065									
	954		2195									
	1104		67 1/8					2285				

1) Lowest shut-off point for automatic operation

3.6 KRT 150-251, 150-315 – Dimension table

Flange – ANSI B 16.1 Class 125

DN ₃	gf	Kf	Df	zf	lf
6	8 1/2	9 1/2	11	8	7/8

Dimensions in inches

		Dimensions in inches								Weight (lbs)	
KRT ...-.../...		DN ₁	a1	b1	d	e1	h1	k1	l1	N	G (material)
150-251 (D)	46	6	26 3/4	30 11/16	20 11/16	25 11/16	8 7/16	35 3/4	42 5/16	33 7/16	430
	66										455
	96		28								500
150-315 (F, E, K)	46	6	28	31 11/16	21 1/8	25 5/8	8 1/2	36 1/4	42 3/4	33 15/16	500
	66										520
	96		29 1/8								545
	126										565
	206		34 5/8								700
	266		33 1/2								755

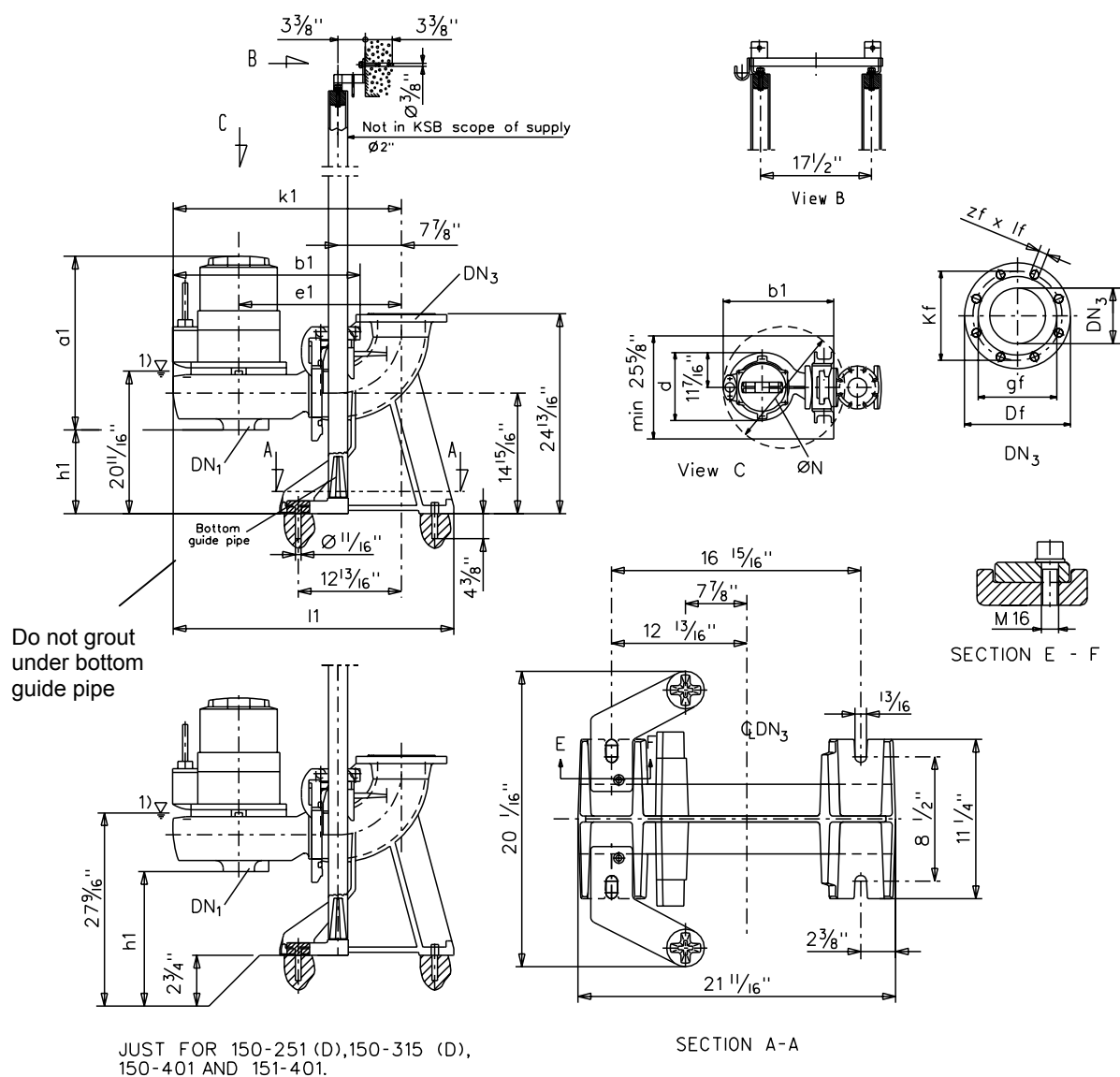
1) Lowest shut-off point for automatic operation

DN ₃	gf	Kf	Df	zf	lf
6	8 1/2	9 1/2	11	8	7/8

KRT ...-.../...	Dimensions in inches								N	Weight (lbs) G (material)		
	DN ₁	a1	b1	d	e1	h1	k1	l1				
150-315 (D)	6	96	30 5/16	33 9/16	23 5/8	26 3/4	6 5/16	38 9/16	42 1/16	37 3/8	695	
		126									720	
		206	35 3/4	860								
150-401 (F, E, K)	6	504	45 1/4	37 11/16	23 3/4	28 15/16	7 13/16	42 15/16	49 7/16	47 1/4	1370	
		654	62 3/4	36 1/2			5 1/8	41 9/16	48 7/16		1445	
		804									2205	
		954									2340	
		1104	70 11/16	34 15/16			7 13/16	41 9/16	48 1/16		2425	
		1304									2980	
		1554									3090	
		206	39 15/16	45 1/4			37 11/16	7 13/16	42 15/16		49 7/16	970
		266	39									1015
		326	62 3/4									36 1/2
		406		1370								
		506		1445								
		606	2985									
		806	2625									
		1006	2780									

13

3.8 KRT 151-401 – Dimension table



Flange – ANSI B 16.1 Class 125

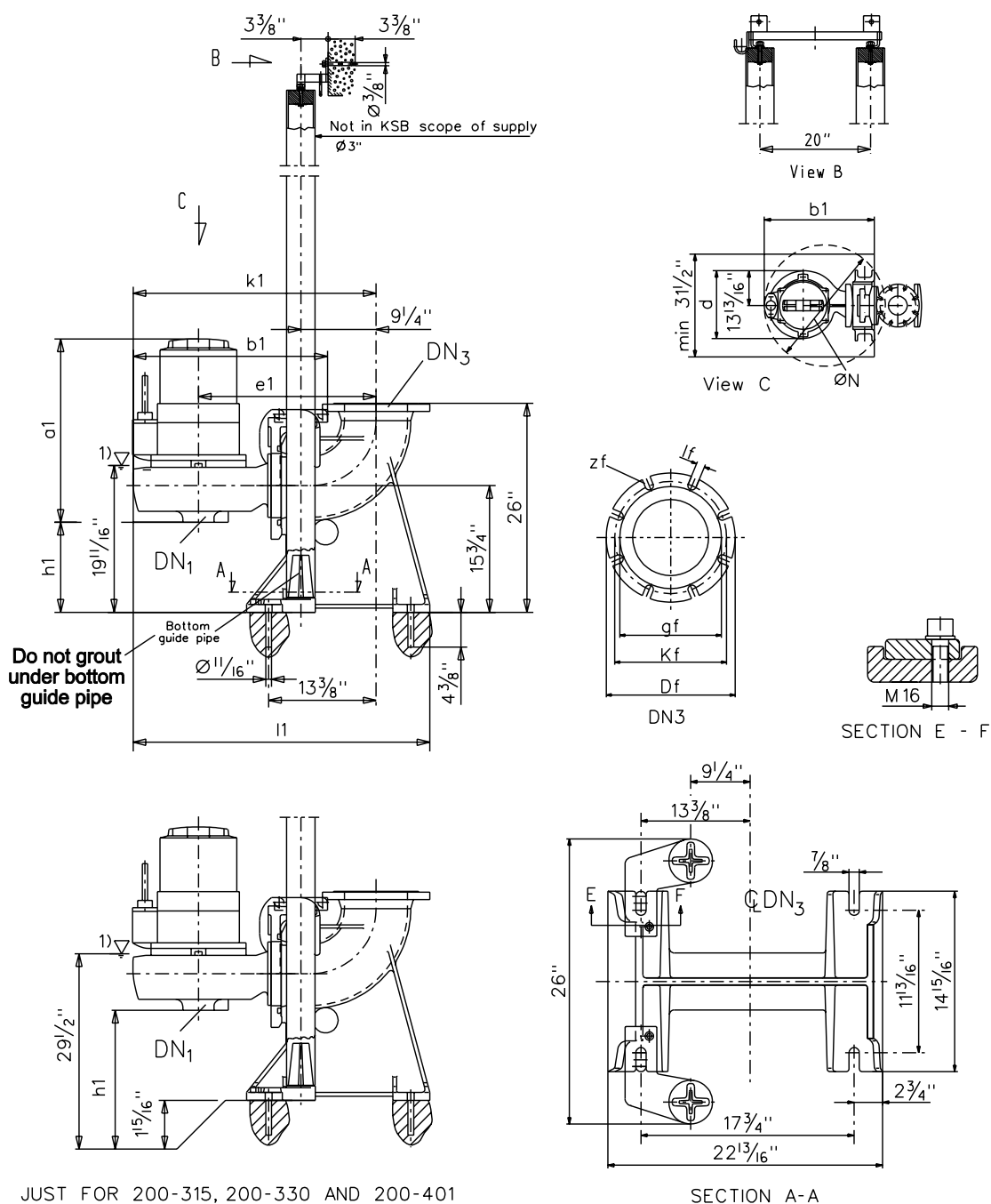
DN ₃	gf	Kf	Df	zf	lf
6	8 1/2	9 1/2	11	8	7/8

Dimensions in inches

KRT ...-.../...		Dimensions in inches								Weight (lbs) G (material)
DN _i		a1	b1	d	e1	h1	k1	l1	N	
151-401 (K)	654	45 1/4	37 11/16	23 3/4	28 15/16	7 13/16	42 15/16	49 7/16	47 1/4	1445
	804	62 3/4	36 1/2			5 1/8	41 9/16	48 7/16	43 5/16	2205
	954	70 11/16								2340
	1104	73 3/4								2425
	1304									2980
	1554	45 1/4	37 11/16			7 13/16	42 15/16	49 7/16	47 1/4	3090
	326									1305
	406									1370
	506									1446
	606	62 3/4	36 1/2			5 1/8	41 9/16	48 7/16	43 5/16	2985
	806	70 11/16								2625
	1006	2780								

1) Lowest shut-off point for automatic operation

3.9 KRT 200-280, 200-281, 200-315 – Dimension table



Flange – ANSI B 16.1 Class 125

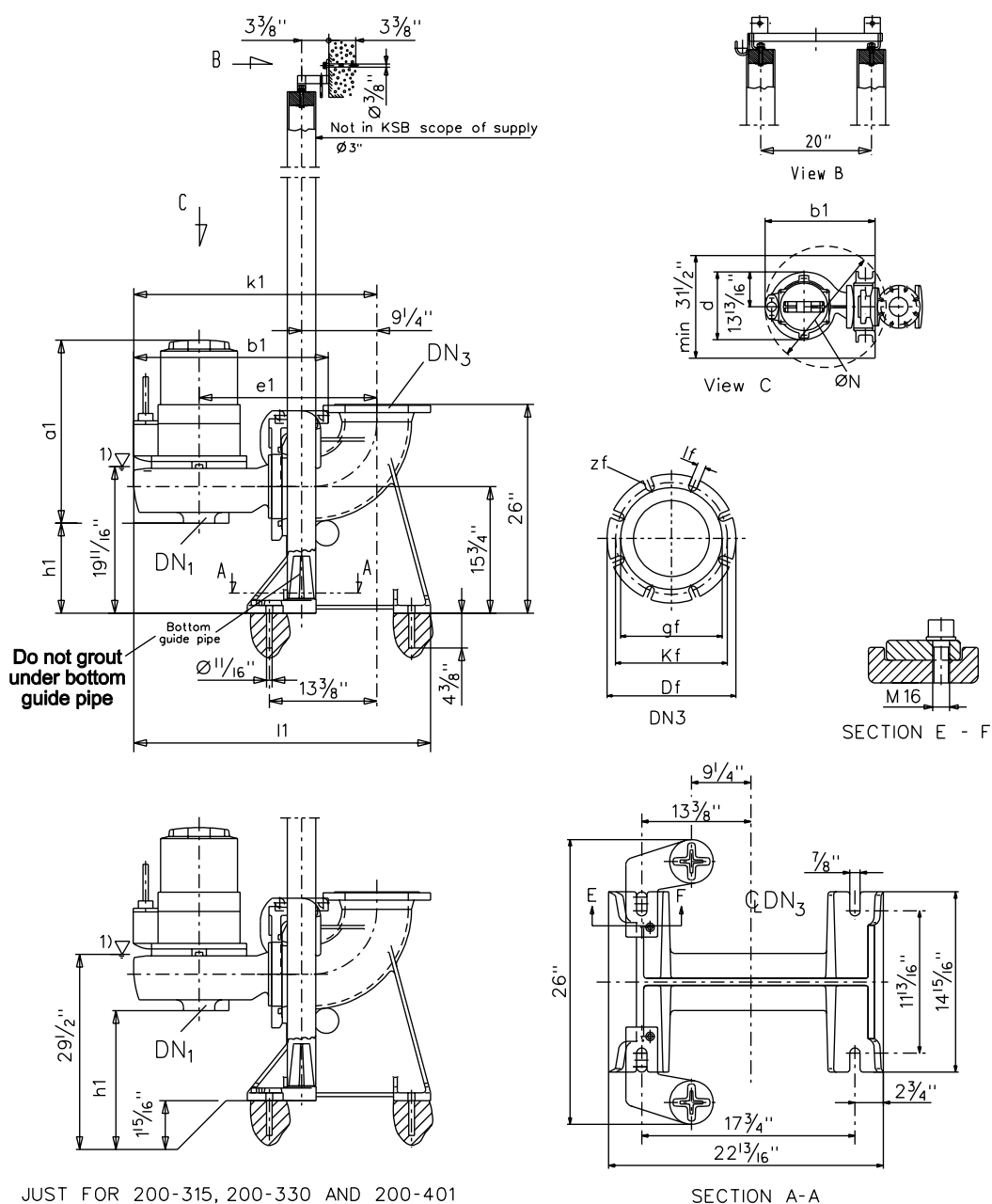
DN ₃	gf	Kf	Df	zf	lf
8	10 9/16	11 5/8	13 3/8	8	1

Dimensions in inches

KRT ...-.../...	Dimensions in inches									Weight (lbs) G (material)
	DN ₁	a1	b1	d	e1	h1	k1	l1	N	
200-280/ 200-281 (K)	66	28 3/4	37 11/16	23 1/2	30 7/8	7 5/8	42 3/8	49	39 5/8	705
	96	29 7/8								730
	126	35 1/2								750
	206	34 1/4								855
200-315 (D)	266	34 1/4	40 13/16	27 9/16	32 13/16	7 1/16	46 5/8	53 3/8	47 1/4	945
	96	32 5/16								830
	126	37 3/4								830
	206									985

1) Lowest shut-off point for automatic operation

3.10 KRT 200-330 – Dimension table



Flange – ANSI B 16.1 Class 125

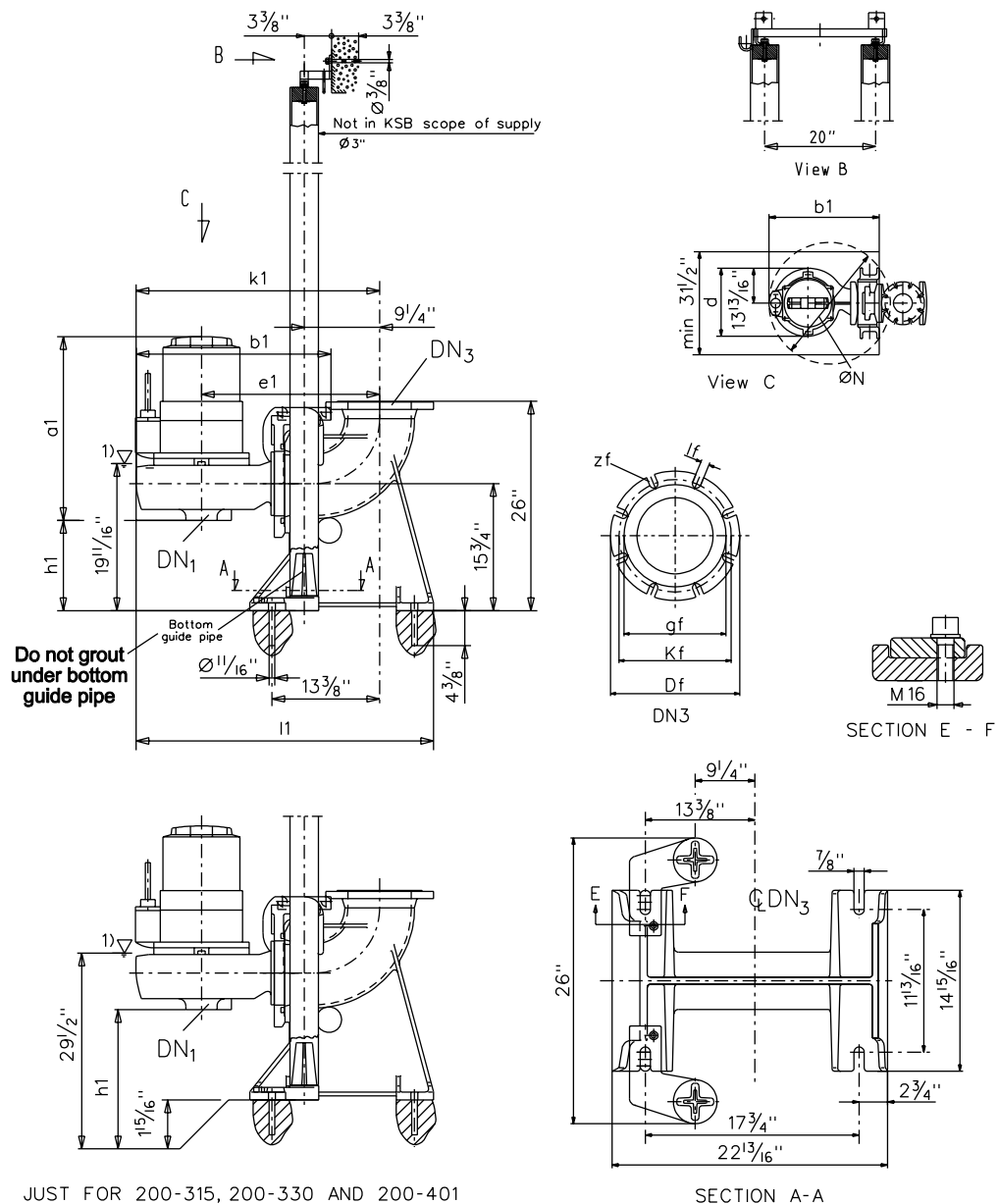
DN ₃	gf	Kf	Df	zf	lf
8	10 9/16	11 5/8	13 3/8	8	1

Dimensions in inches

KRT ...-.../...		Dimensions in inches								Weight (lbs) G (material)		
		DN ₁	a1	b1	d	e1	h1	k1	l1	N		
200-330 (K)	504	10	42 11/16	41	25 3/16	32 13/16	10 5/8	46 13/16	53 9/16	47 1/4	1535	
	654											1610
	804		60 5/8	39 13/16	24 3/4			45 11/16	52 3/8		2470	
	954		68 1/2								2690	
	1104										2890	
	1304		71 5/8								3245	
	1554										3355	
	206		37 3/8	39 5/8	25 3/16			45 1/2	52 3/16		1115	
	266		36 7/16								1170	
	326										1480	
	406		42 11/16	41					46 13/16		53 9/16	1535

- 1) Lowest shut-off point for automatic operation

3.11 KRT 200-401 – Dimension table



Flange – ANSI B 16.1 Class 125

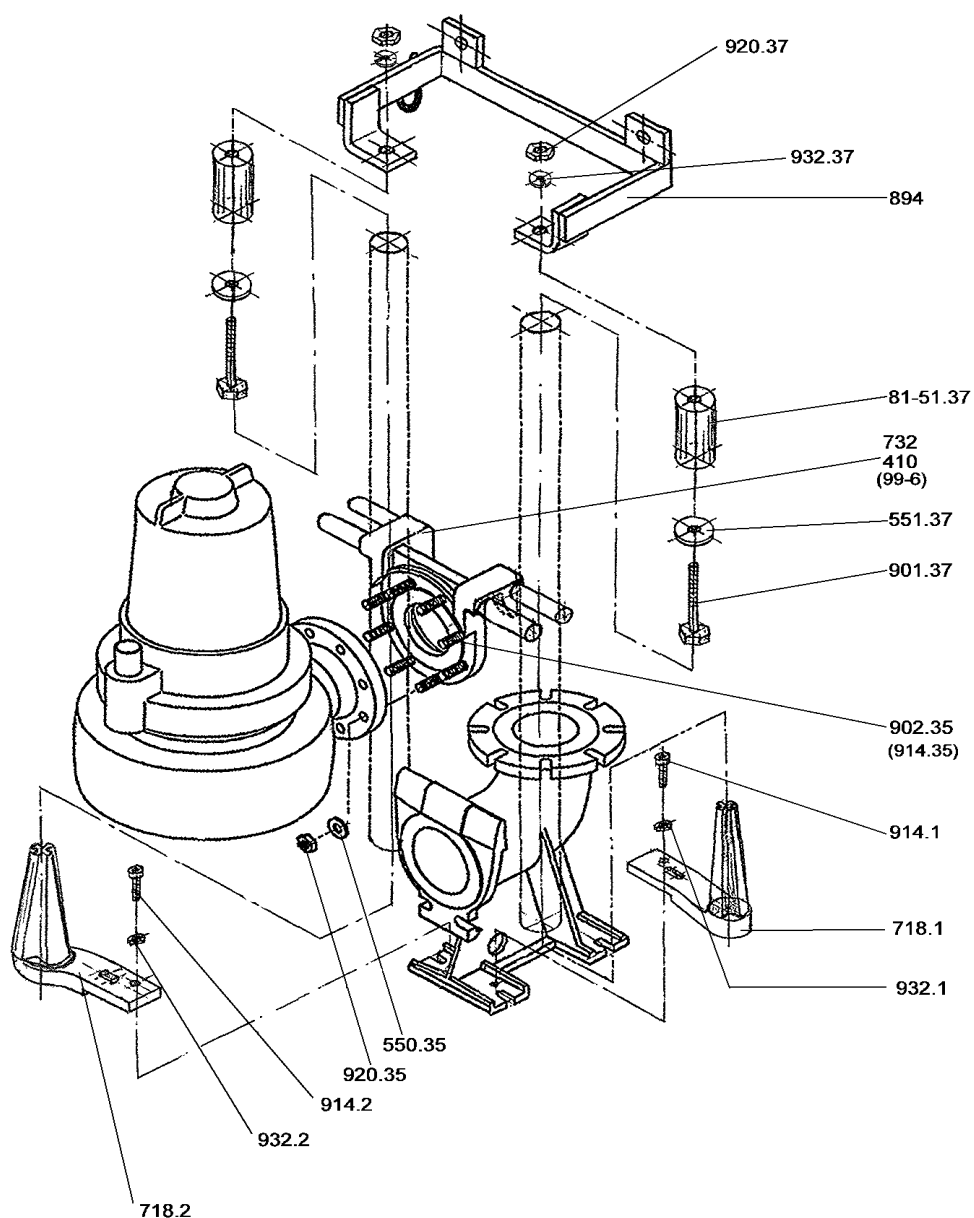
DN ₃	gf	Kf	Df	zf	lf
8	10 9/16	11 5/8	13 3/8	8	1

Dimensions in inches

KRT ...-.../...		Dimensions in inches								Weight (lbs)			
		DN _i	a1	b1	d	e1	h1	k1	l1	N	G (material)		
200-401 (K)	804	8	64 3/16	38	25 3/16	30 13/16	8 11/16	43 11/16	50 3/8	47 1/4	2580		
	954		72 1/16								2800		
	1104										3000		
	1304		75 3/16										3355
	1554												3465
	266		40 3/16	37 11/16					43 1/2		50 3/16	1115	
	326											1400	
	406		46 7/16	39					51 9/16		1470		
	506										1545		
	606		64 3/16								2670		
	806											2890	
	1006		72 1/16	38					50 3/8		3045		

1) Lowest shut-off point for automatic operation

4. Exploded view



Kits Denominations	Part no.	Part Description	Qt
Bottom Guide Rail Bracket Kit	718.1	Right Bottom guide rail bracket	1
	718.2	Left Bottom guide rail bracket	1
	914.1	Socket head cap screw	1
	914.2	Socket head cap screw	1
	72-1	Discharge Elbow	1
	932.1	Circlip	1
	932.2	Circlip	1
Claw Kit	550.35	Washer	8 ⁵⁾
	732	Claw	1
	914.35	Socket head cap screw ¹⁾	4
	902.35	Stud ²⁾	8 ⁵⁾
	920.35	Nut ²⁾	8 ⁵⁾
	99-6	Round cord ³⁾	1
	410	Profile Gasket ⁴⁾	1

Notes

1-) Only applied for sizes 100-200

2-) Except for sizes 100-200

3-) Only applied for size DN 200

4-) Except for size DN 200

5-) For sizes 80-200, 80-251 and 80-315, 4 pieces

6-) Do not grout under part number 718.1 and 718.2

14.08.2006

A2553.8.1E/5

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