

Universidad Carlos III de Madrid

Escuela Politécnica Superior



Departamento de Ingeniería térmica y de fluidos

Área de Ingeniería térmica

PROYECTO FIN DE CARRERA

ANEXO 1

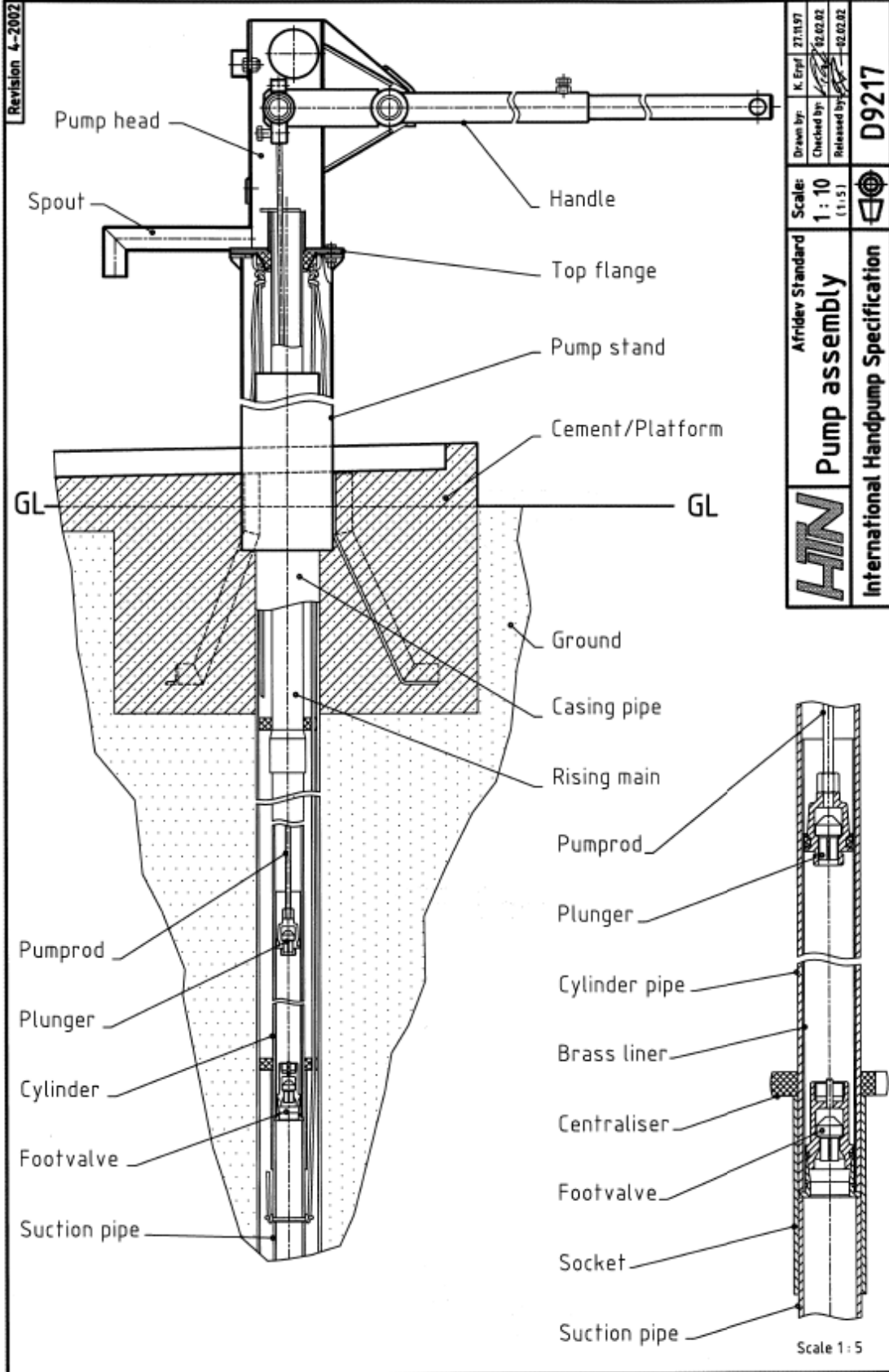
Autor: SERGIO FERRER SAAVEDRA

Director: ULPIANO RUIZ-RIVAS HERNANDO

Ingeniería Técnica Industrial de mecánica.

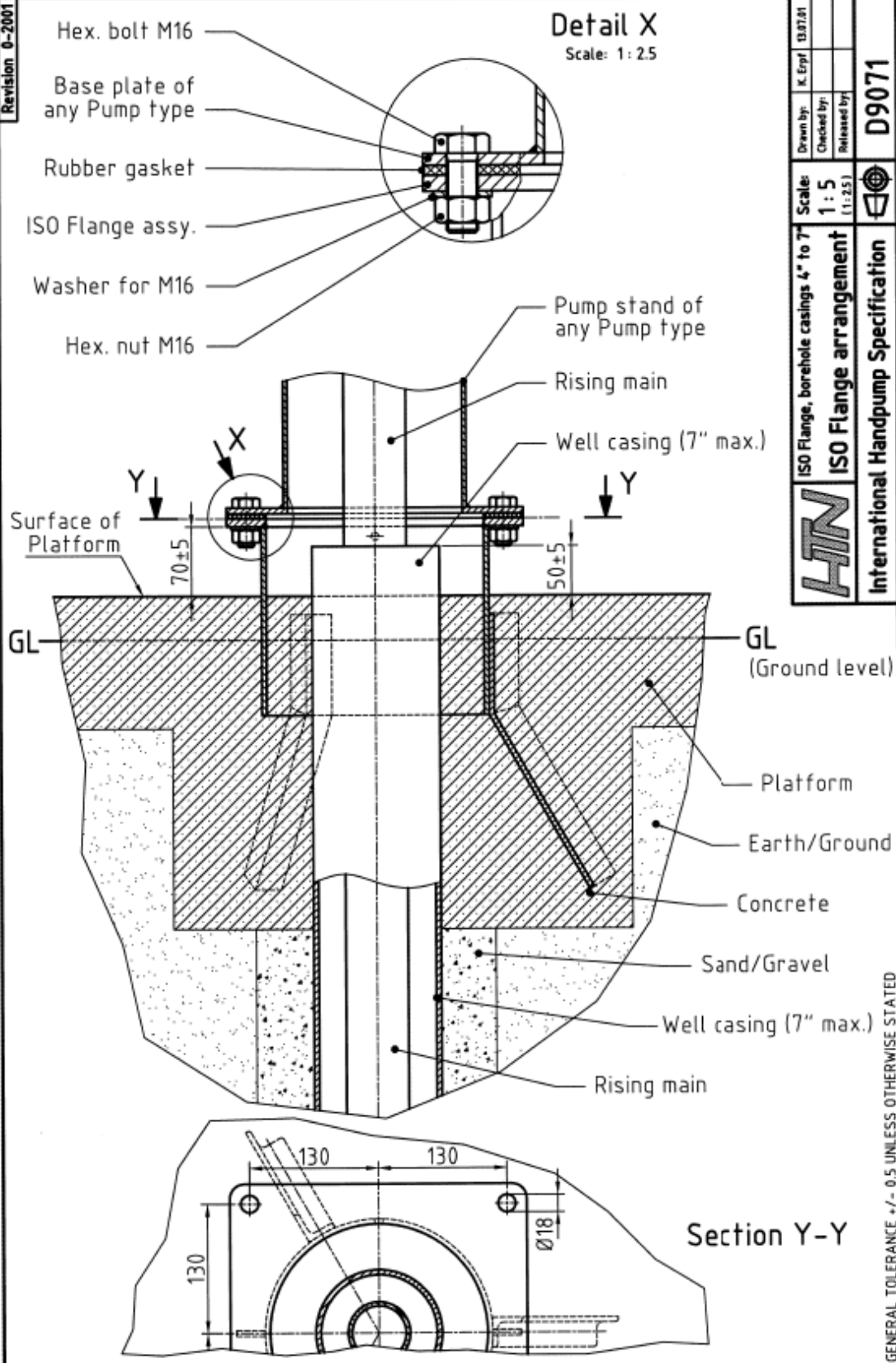
Madrid 28 de Marzo de 2012

Revision 4-2002

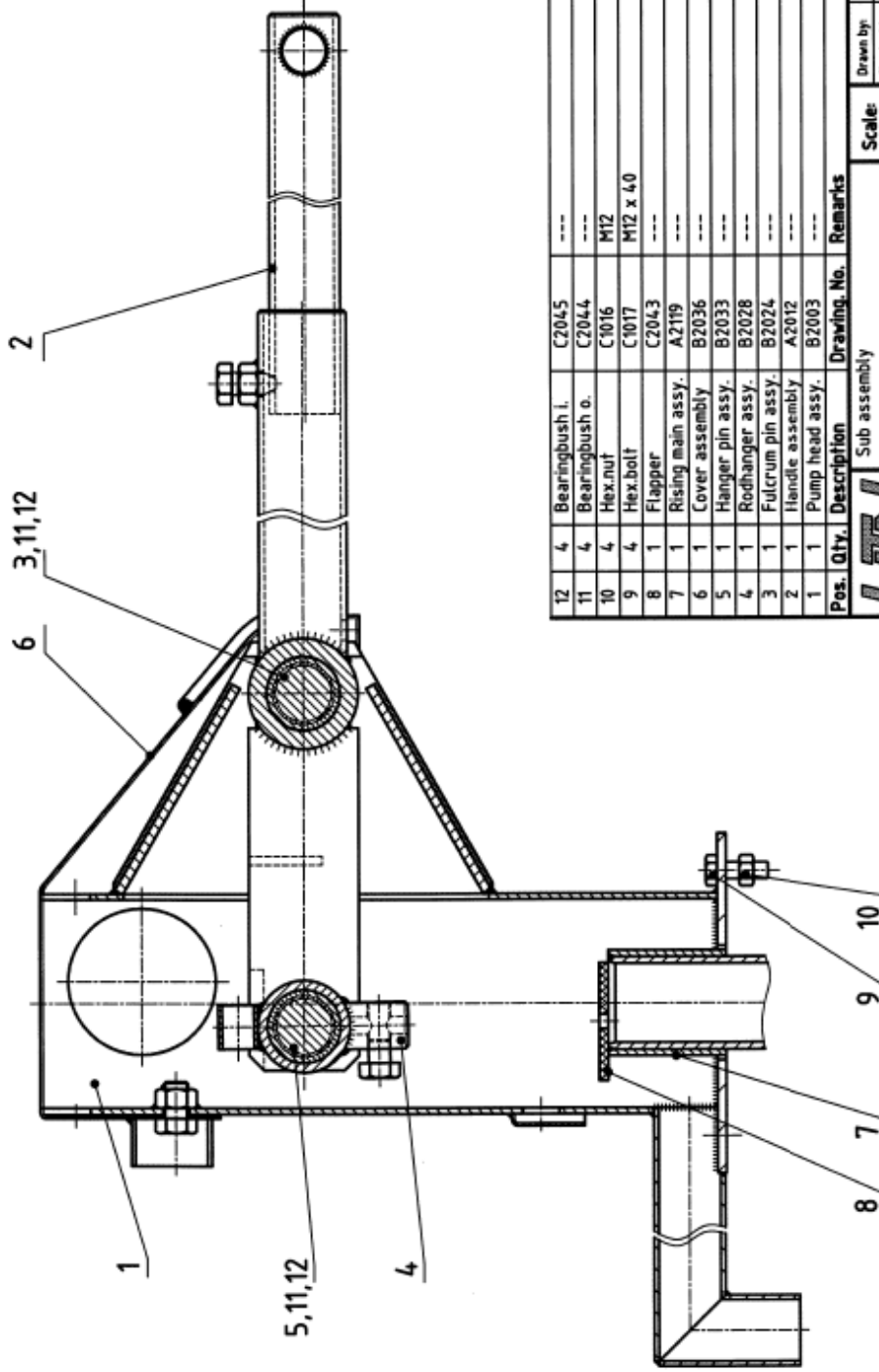


Drawn by: K. Eyal	27.11.97
Checked by: [Signature]	02.02.02
Released by: [Signature]	02.02.02
Scale: 1:10 (1:5)	
Afridev Standard	
Pump assembly	
International Handpump Specification	
D9217	

Revision 0-2001



Drawn by:	K. Eprl	13/7/01
Checked by:		
Released by:		
Scale:	1:5	(1:2.5)
ISO Flange, borehole casings 4" to 7"	D9071	
ISO Flange arrangement		
International Handpump Specification		



Pos.	Qty.	Description	Drawing No.	Remarks
12	4	Bearingbush i.	C2045	---
11	4	Bearingbush o.	C2044	---
10	4	Hex.nut	C1016	M12
9	4	Hex.bolt	C1017	M12 x 4.0
8	1	Flapper	C2043	---
7	1	Rising main assy.	A2119	---
6	1	Cover assembly	B2036	---
5	1	Hanger pin assy.	B2033	---
4	1	Rodhanger assy.	B2028	---
3	1	Fulcrum pin assy.	B2024	---
2	1	Handle assembly	A2012	---
1	1	Pump head assy.	B2003	---

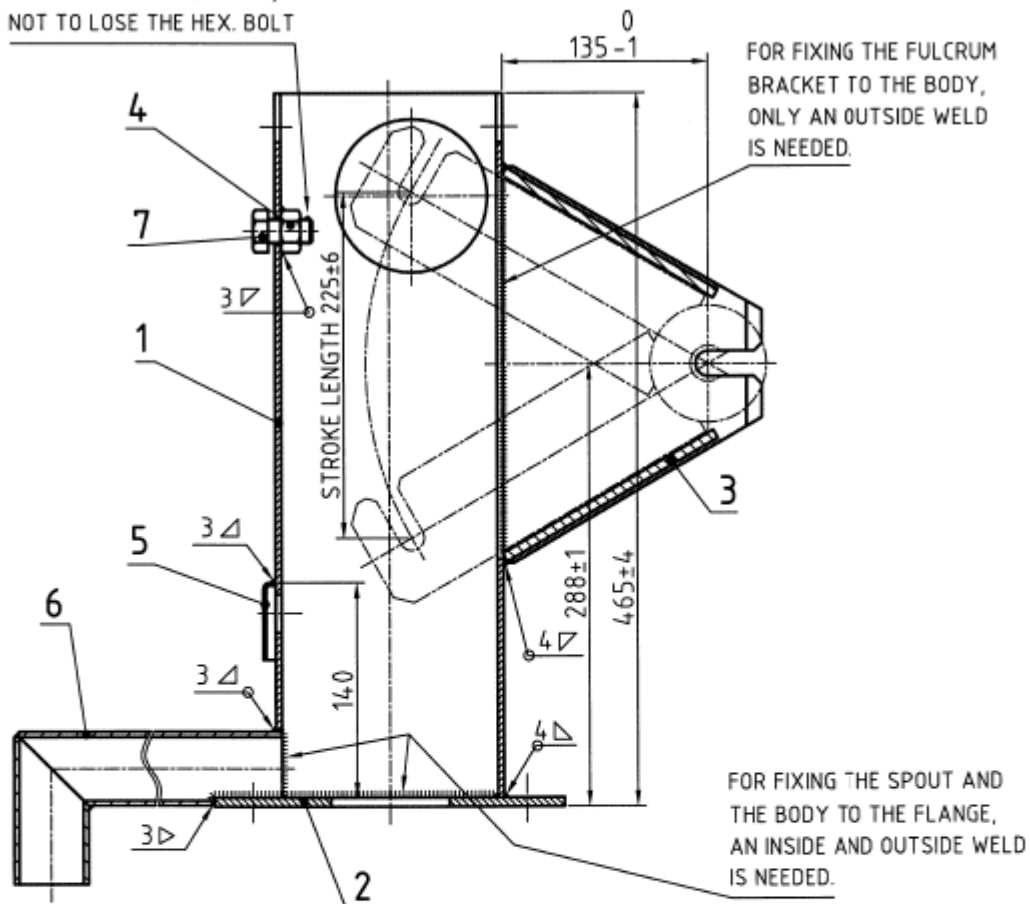
Scale:	1 : 4
Drawn by:	Lieder
Checked by:	
Released by:	

Pos.	Qty.	Description	Drawing No.	Remarks
12	4	Bearingbush i.	C2045	---
11	4	Bearingbush o.	C2044	---
10	4	Hex.nut	C1016	M12
9	4	Hex.bolt	C1017	M12 x 4.0
8	1	Flapper	C2043	---
7	1	Rising main assy.	A2119	---
6	1	Cover assembly	B2036	---
5	1	Hanger pin assy.	B2033	---
4	1	Rodhanger assy.	B2028	---
3	1	Fulcrum pin assy.	B2024	---
2	1	Handle assembly	A2012	---
1	1	Pump head assy.	B2003	---

A2002

International Handpump Specification

TACK WELD AT THE END OF
THE THREAD AS SECURITY,
NOT TO LOSE THE HEX. BOLT



WELDED TO ISO 9692

HOT DIP GALVANIZED TO ISO 1461

GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

7	1	Hex.bolt	C1025	M16 x 25
6	1	Spout assy.	B2047	---
5	1	Overflow cover	C2009	---
4	1	Hex.nut	C1018	M16
3	1	Fulcrum bracket	B2006	---
2	1	Flange	C2005	---
1	1	Body	C2004	---
Pos.	Qty.	Description	Drawing. No.	Remarks

Sub assembly

Pump head assy.

Scale:

1:4

Drawn by: t.leder. 15.03.97

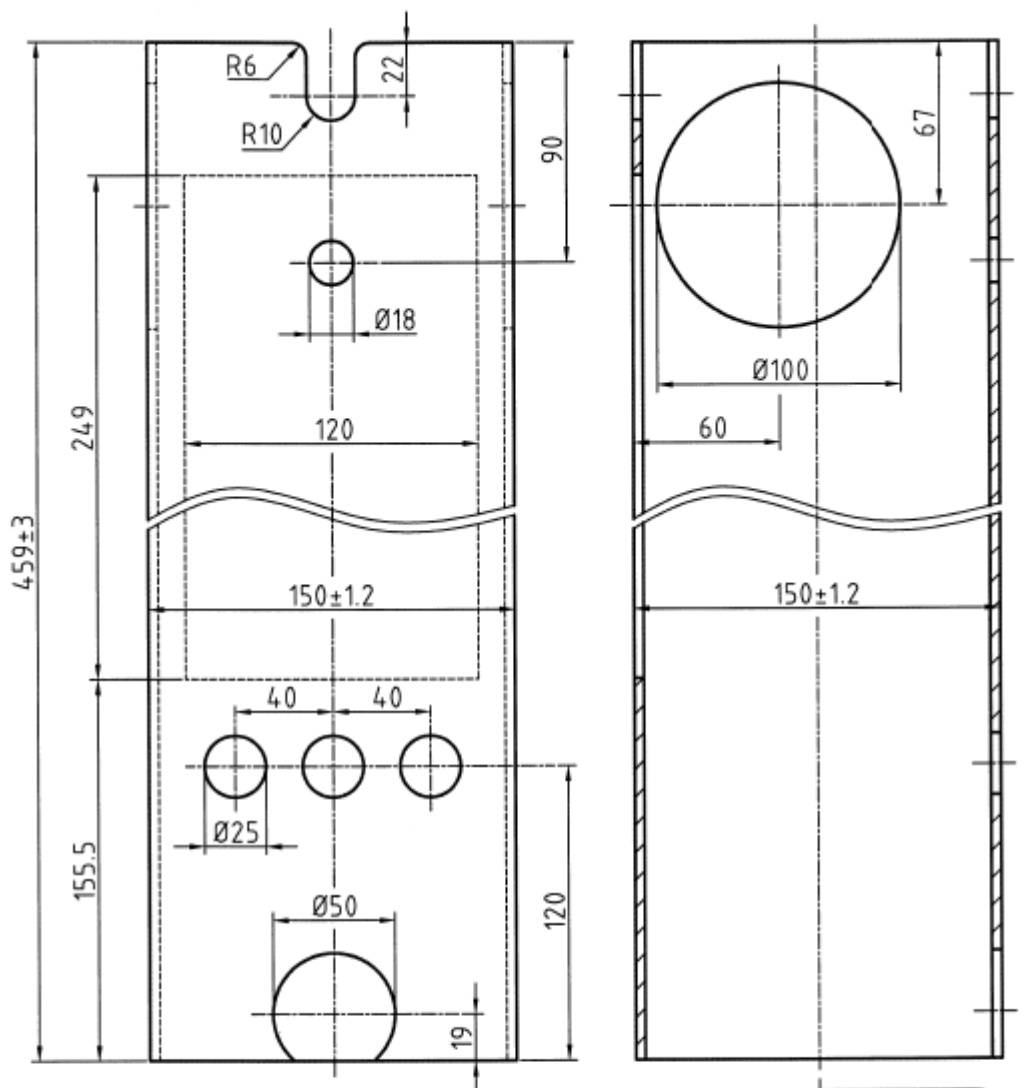
Checked by: 02.02.02

Released by: 02.02.02

International Handpump Specification



B2003



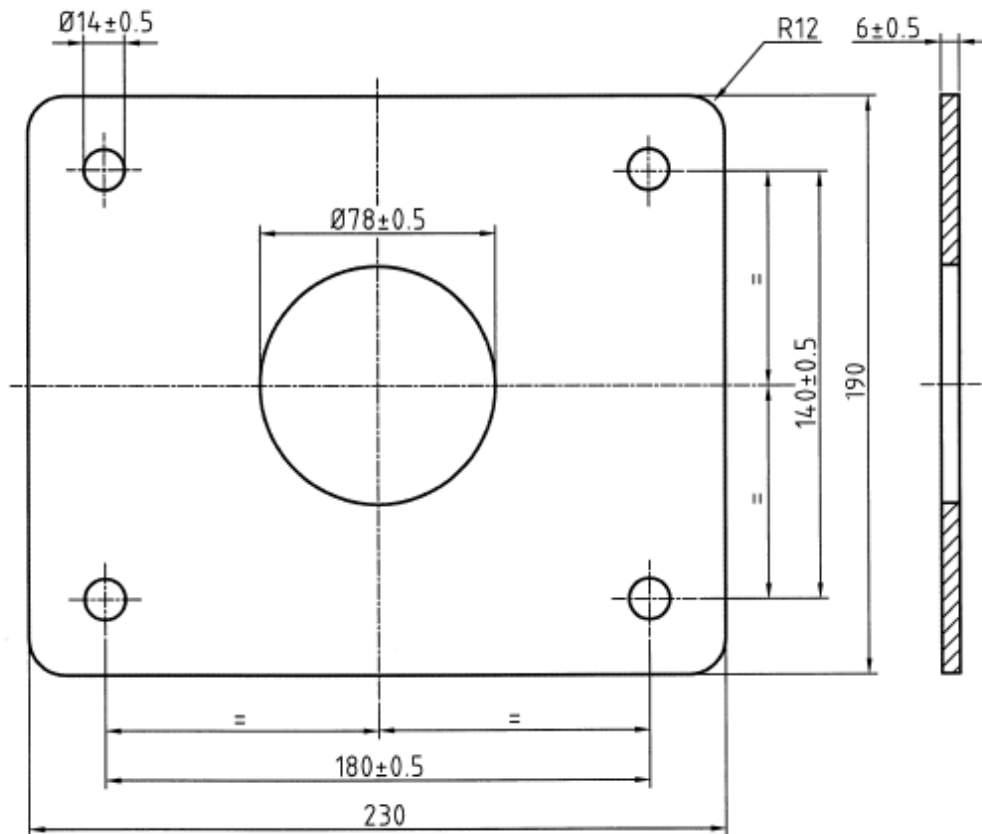
NOTE: RHS 150x150 CAN BE FABRICATED FROM 4mm SHEET.

THE WELDS SHALL BE PLACED SUCH THAT THEY DO NOT IMPEDE THE FUNCTION OF THE PUMPHEAD.
THE WELDS TO BE CONTINUOUS ON INSIDE AND OUTSIDE.
OUTSIDE WELD TO BE GROUND SMOOTH FOR PROPER FITMENT OF COVER ASSEMBLY (B2036)

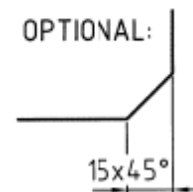
GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Body	150 x 150 x 4	St 37-2	---	bright		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale:	Drawn by:	t.leder.	15.03.97
	Body		1 : 2.5	Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2004		

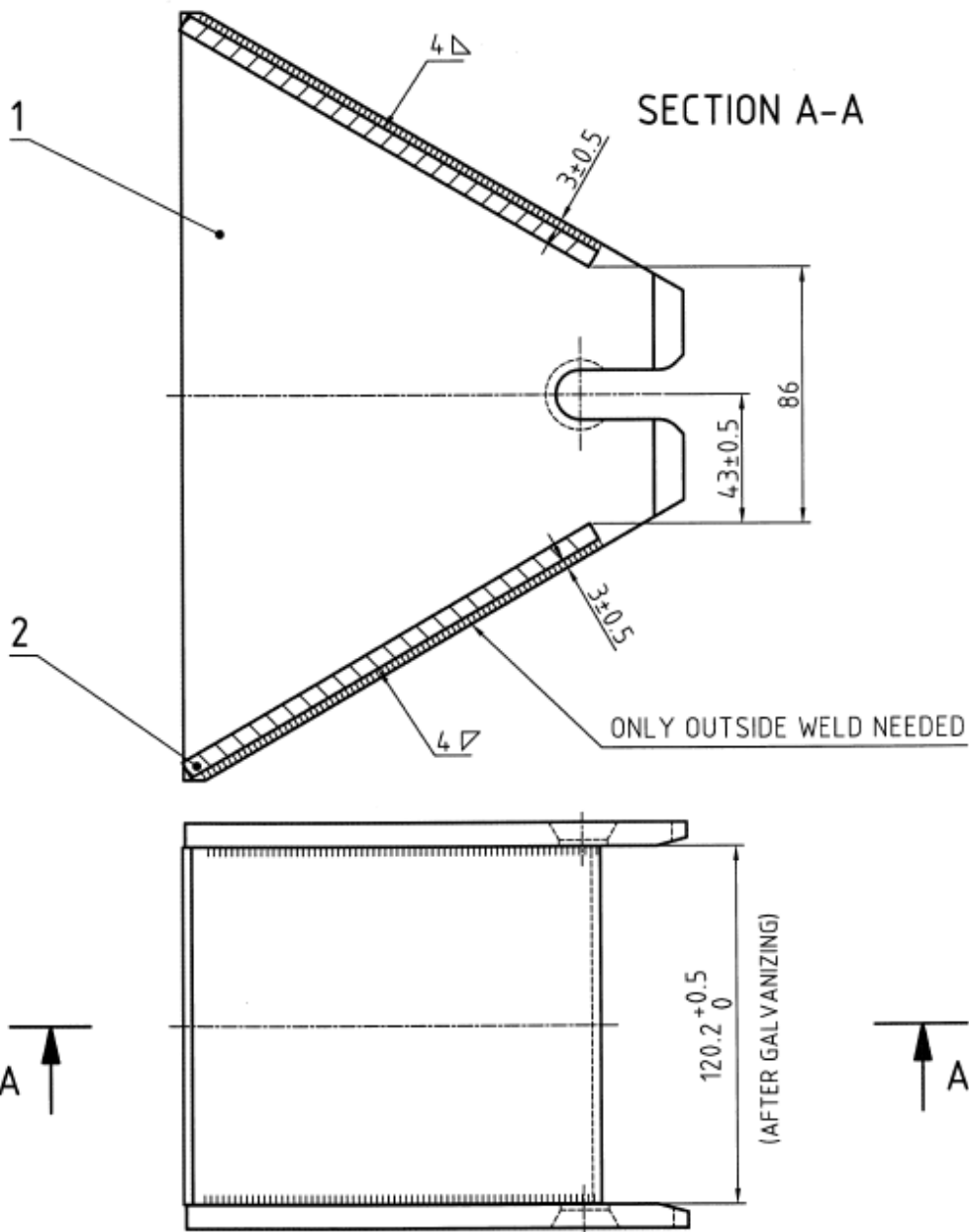


OPTIONAL:

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Flange	6 x 230 x 190	St 37	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2	Drawn by:	t.leder.	15.03.97
	Flange			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2005		



WELDED TO ISO 9692

GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

ALL DIMENSIONS REFER TO AFTER HOT DIP GALVANIZING

2	2	Stopper plate	C2008	---
1	2	Bracket plate	C2007	---
Pos.	Qty.	Description	Drawing. No.	Remarks



Sub assembly

Fulcrum bracket

Scale:

1:2

Drawn by: f.leder. 15.03.97

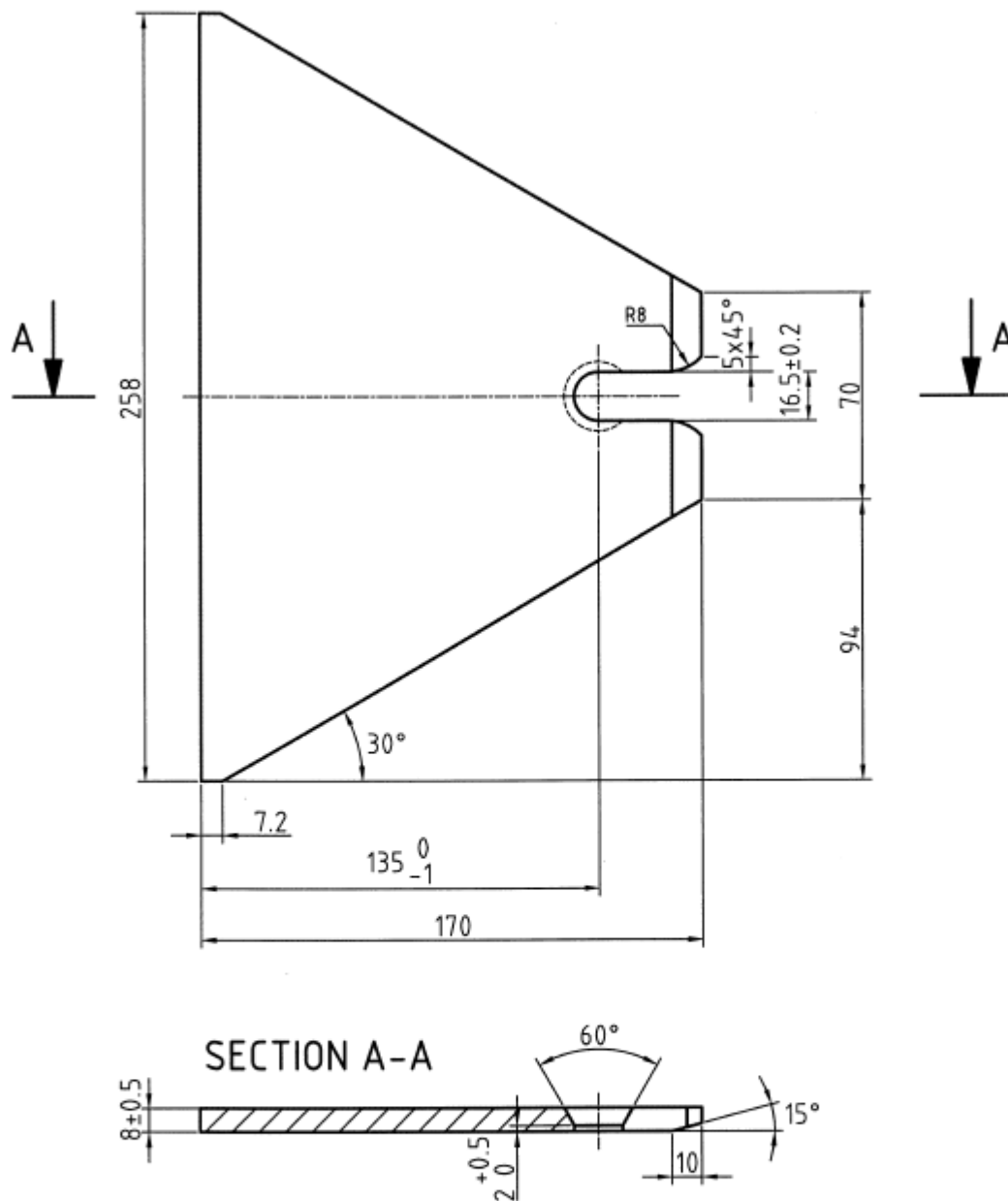
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Released by: [Signature] 02.02.02

International Handpump Specification

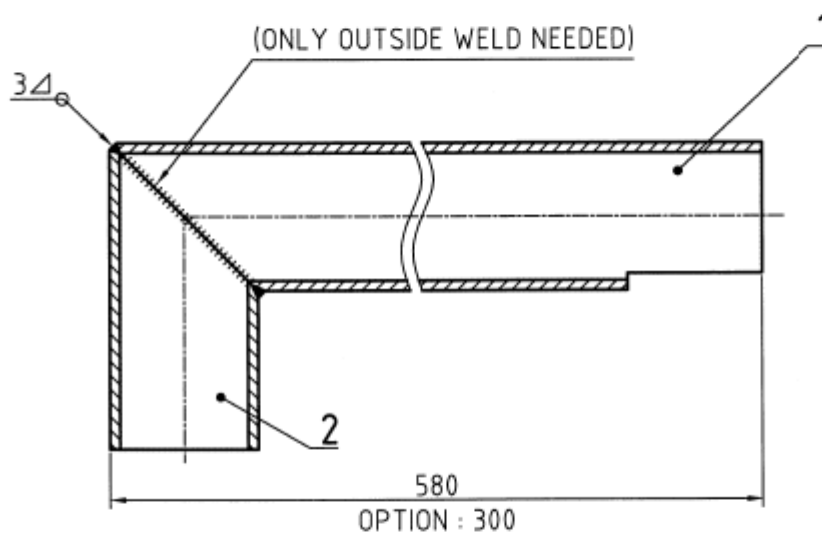


B2006

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

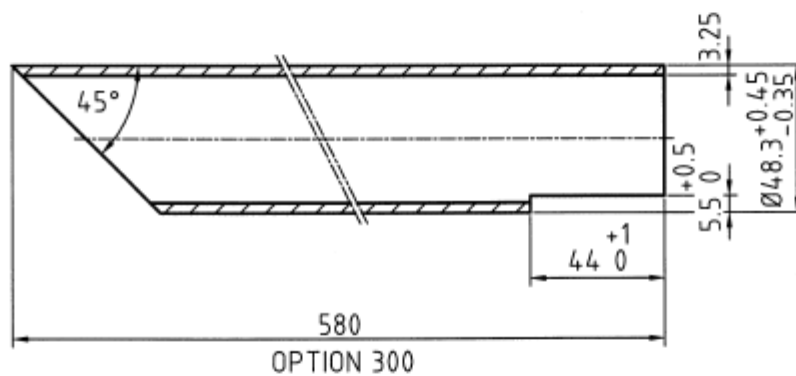
ALL SHARP CORNERS TO BE ROUNDED OFF

Bracket plate	8 x 258 x 170	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 2	Drawn by: f.leder. 15.03.97
	Bracket plate			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2007

GENERAL TOLERANCE ± 5 UNLESS OTHERWISE STATED

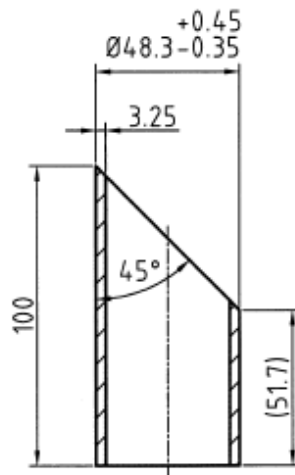
WELDED TO ISO 9692

2	1	Spout end	C2011	---
1	1	Spout	C2010	---
Pos.	Qty.	Description	Drawing. No.	Remarks
		Sub assembly		Scale:
		Spout assembly		1 : 2
				Drawn by: K.Erpf 08.07.98
				Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				 B2047

GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

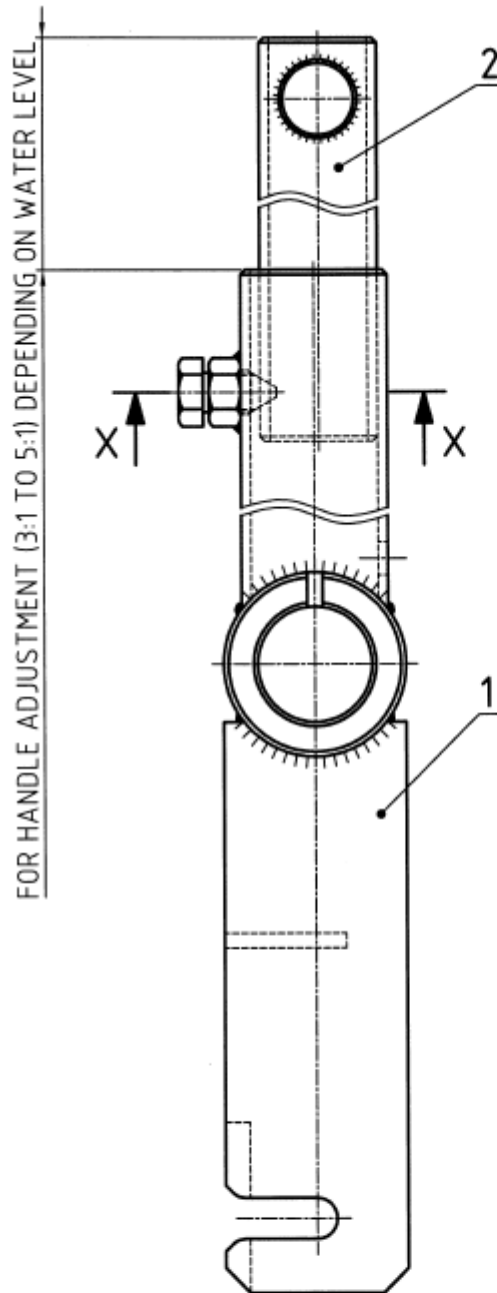
ALL SHARP CORNERS TO BE ROUNDED OFF

Spout	Ø48.3/3.25 x 580 (1 1/2")	St 37-2	medium Series	Class B, bright		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Spout		Scale: 1 : 2	Drawn by:	t.leder.	15.03.97
				Checked by:		02.02.02
				Released by:		02.02.02
				International Handpump Specification		

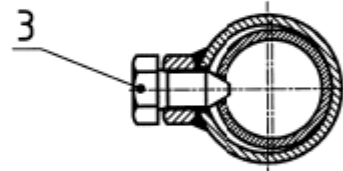
GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Spout end	Ø48.3/3.25 x 100 (1 1/2")	St 37-2	medium Series	Class B, bright		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2	Drawn by:	t.leder.	15.03.97
	Spout end			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2011		



Section X-X

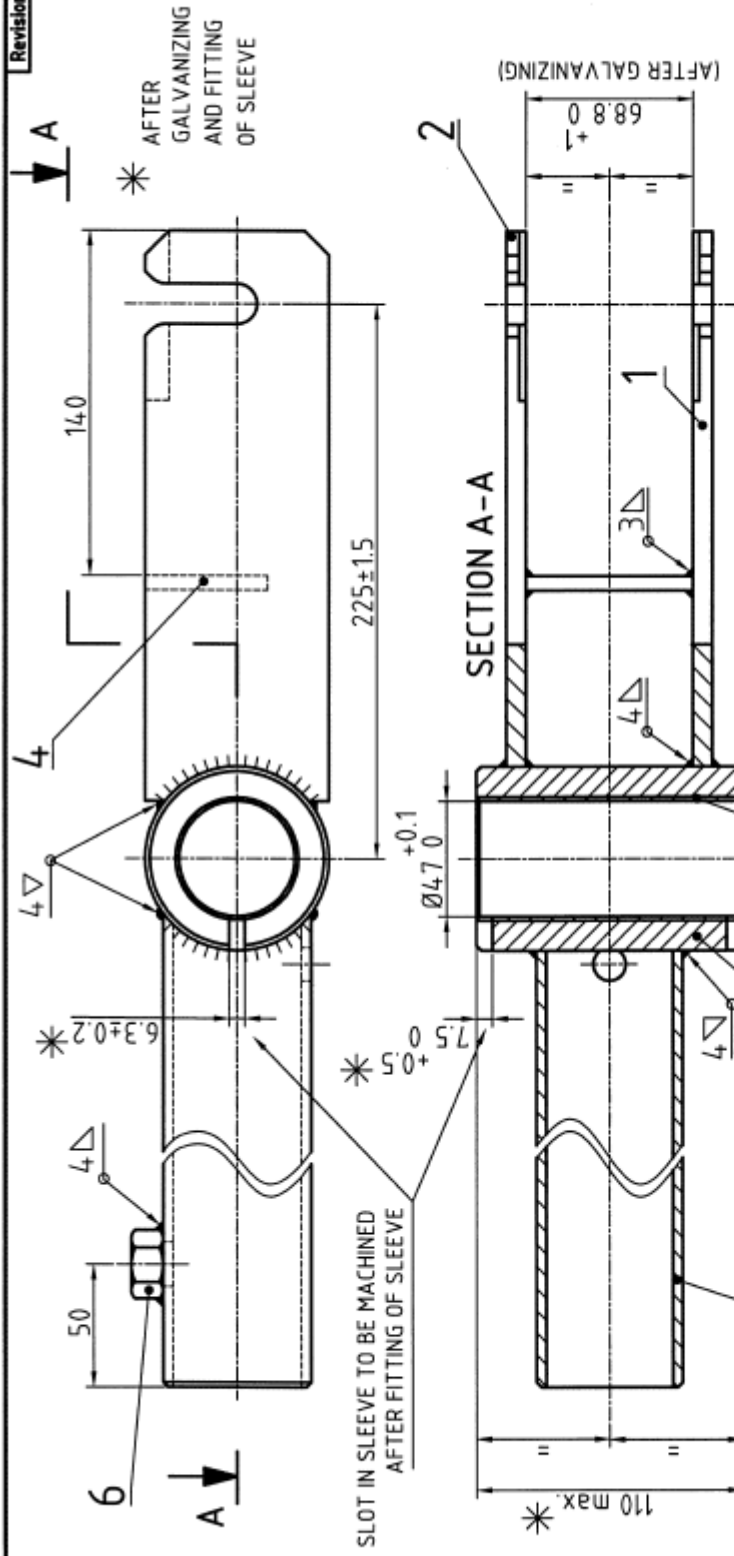


GUIDELINES FOR HANDLE SETTINGS

HANDLE ASSEMBLY SHOULD BE BALANCED AS SUCH THAT IT REMAINS IN A HORIZONTAL POSITION.

FOR BALANCING THE HANDLE, ADJUST THE HANDLE REAR (B2186) AND FIX IT IN THE HOLES PROVIDED.

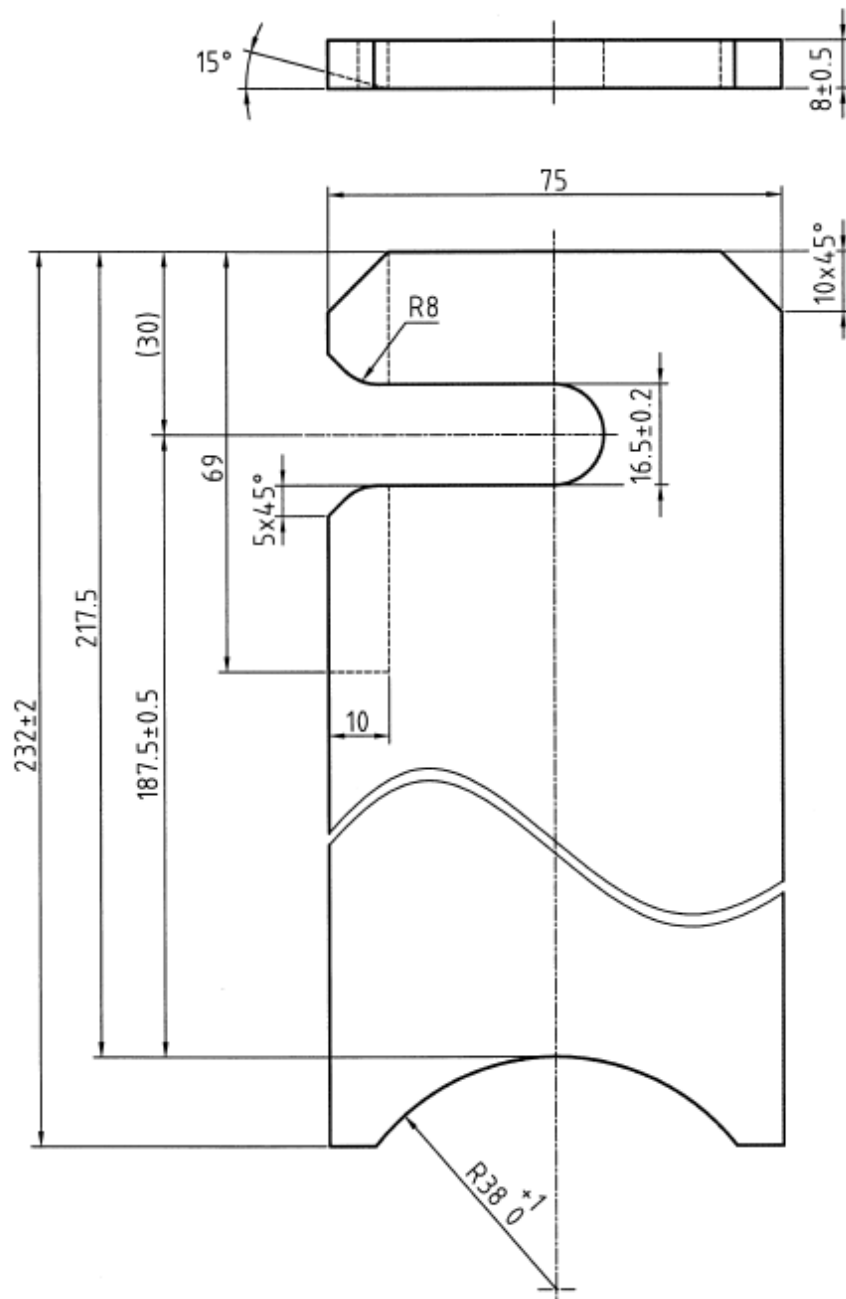
3	1	Hex. bolt special	C2185	---
2	1	Handle rear	B2186	---
1	1	Handle front	B2013	---
Pos.	Qty.	Description	Drawing. No.	Remarks
HTN		Sub assembly		
		Handle assembly		
		Scale: 1 : 2.5		
		Drawn by:	K.Erpf	11.05.01
		Checked by:	<i>[Signature]</i>	02.02.02
		Released by:	<i>[Signature]</i>	02.02.02
		International Handpump Specification		
		A2012		



SLEEVE TO BE FIXED WITH EPOXY ADHESIVE
E.G. ARLDITE "STANDARD"
AFTER HOT DIP GALVANIZING

HOT DIP GALVANIZED TO ISO 1461 (EXCEPT POS. 7)
ALL DIMENSIONS REFER TO AFTER GALVANIZING
GENERAL TOLERANCE ± 2 UNLESS OTHERWISE SPECIFIED

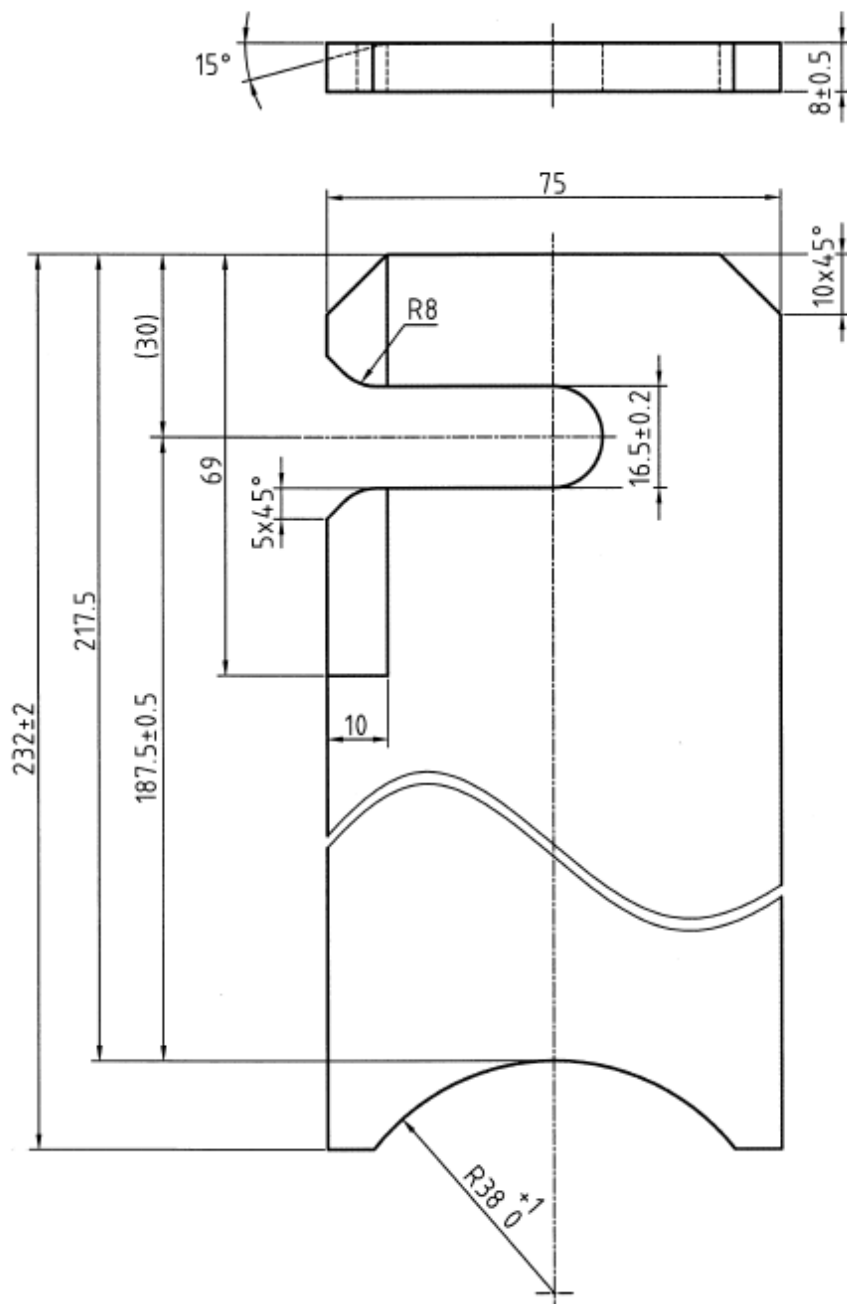
7	1	Sleeve	C2019	100.00.00
6	1	Hex nut	C1018	M16
5	1	Handle pipe	C2018	100.00.00
4	1	Spacer	C2017	100.00.00
3	1	Fulcrum housing	C2016	100.00.00
2	1	Handle fork right	C2015	100.00.00
1	1	Handle fork left	C2014	100.00.00
Pos. Qty.		Description	Drawing No.	Remarks
		Sub assembly		
		Handle front assy.		
		Scale: 1 : 2.5		
International Handpump Specification		 B2013		



GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Handle fork left	8 x 232 x 75	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: t.leder. 15.03.97
	Handle fork left			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2014

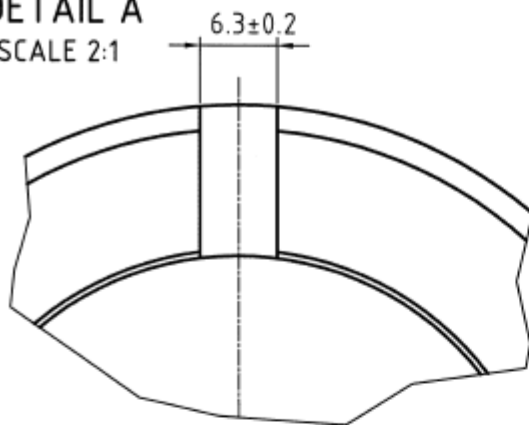
GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Handle fork right	8 x 232 x 75	St 37	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Handle fork right			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2015		

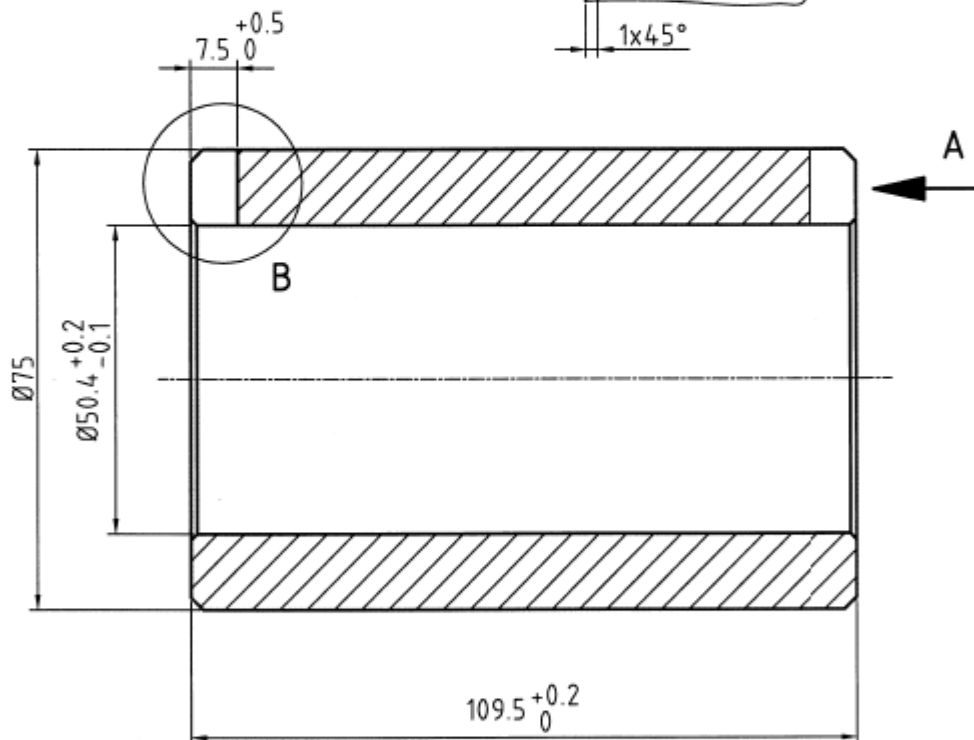
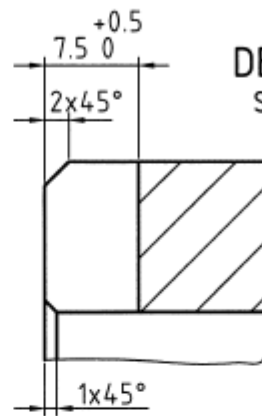
DETAIL A

SCALE 2:1



DETAIL B

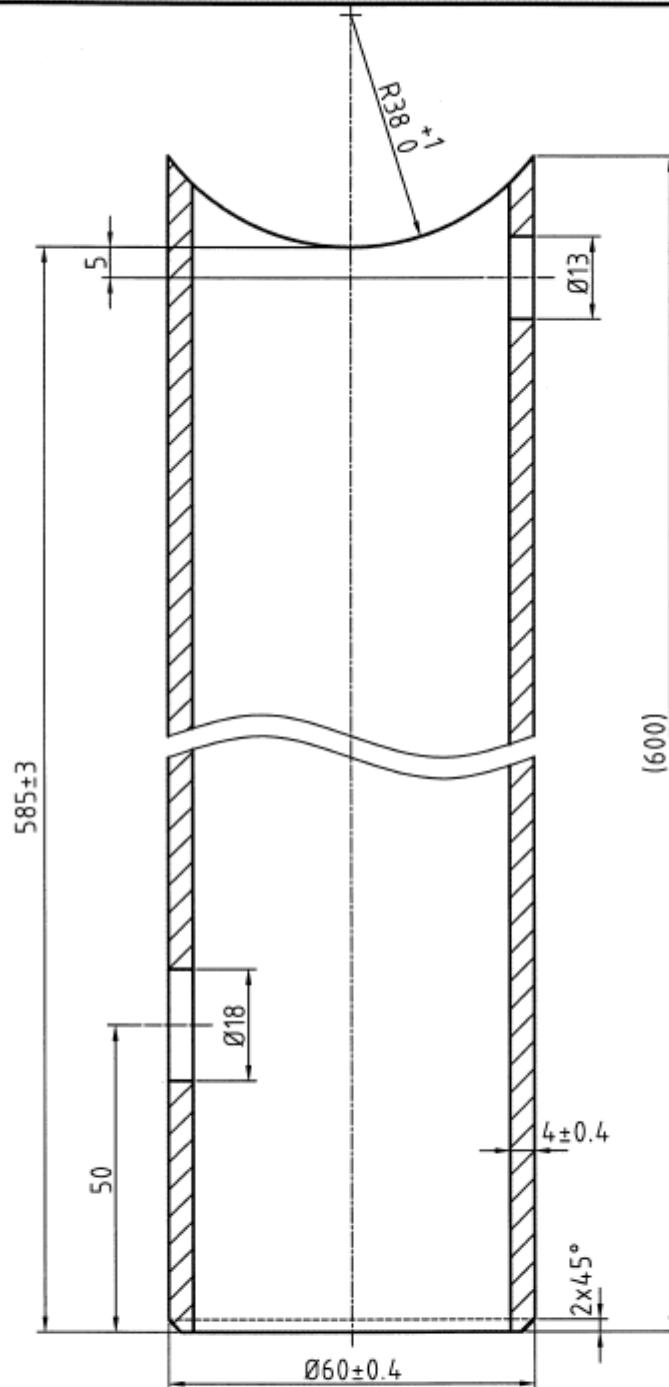
SCALE 2:1

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Fulcrum housing	Ø75 x 109.5	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1 (2 : 1)	Drawn by: t.leder 15.03.97
	Fulcrum housing			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2016

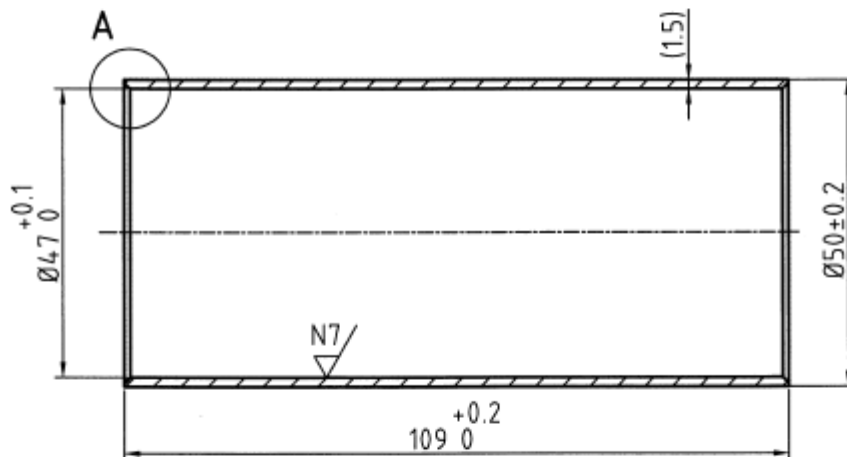
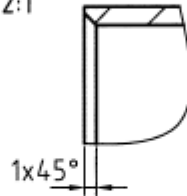
Revision 4-2002

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Handle pipe	Ø60/4 x 600	St 37-2	---	bright
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: f.leder. 15.03.97
	Handle pipe			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2018

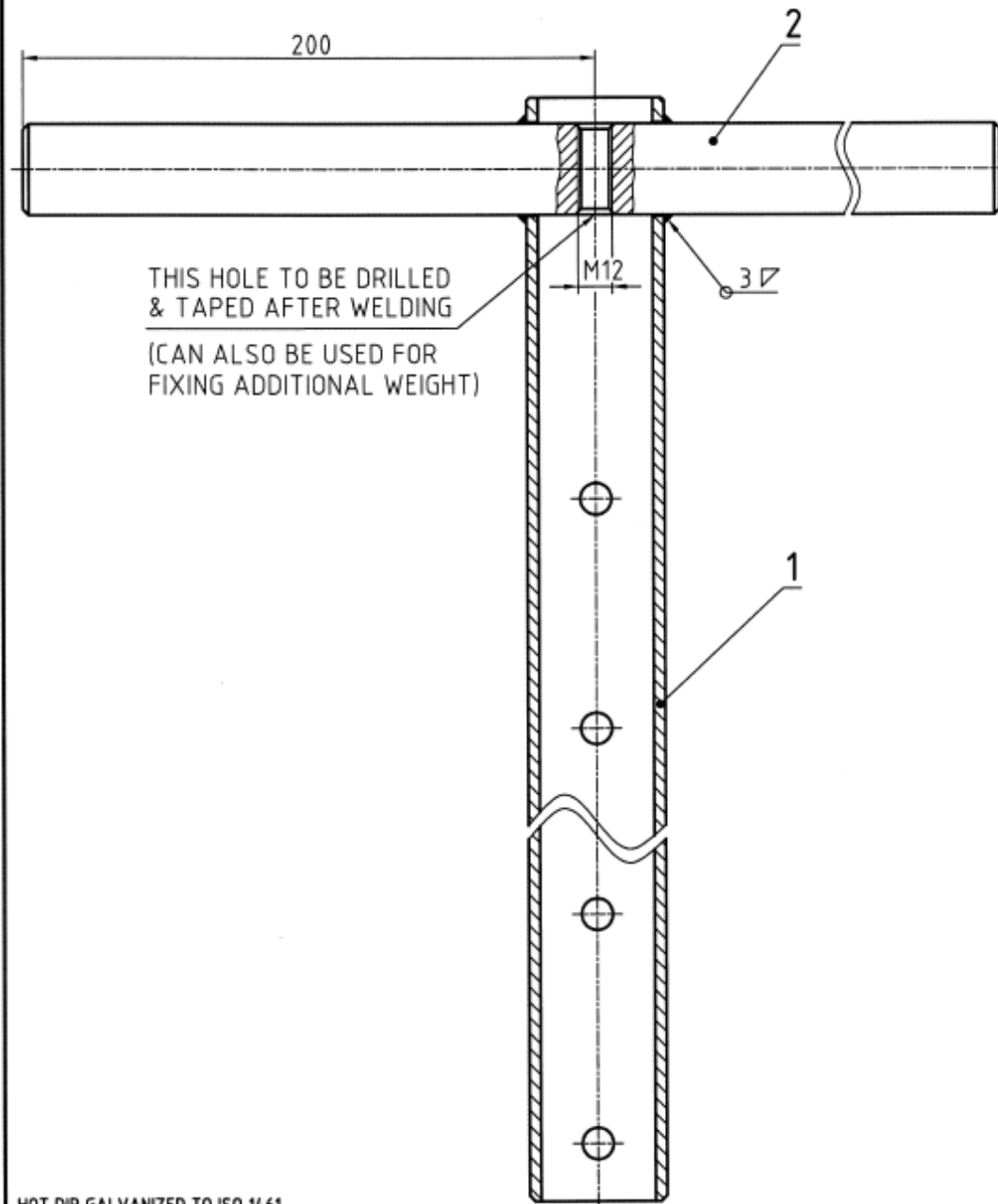
DETAIL A
SCALE 2:1

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Sleeve	Ø50 /1.5 x 109	Stainless Steel	ISO 15510	X5CrNi 18-9		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1 (2 : 1)	Drawn by:	t.leder	15.03.97
	Sleeve			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2019		

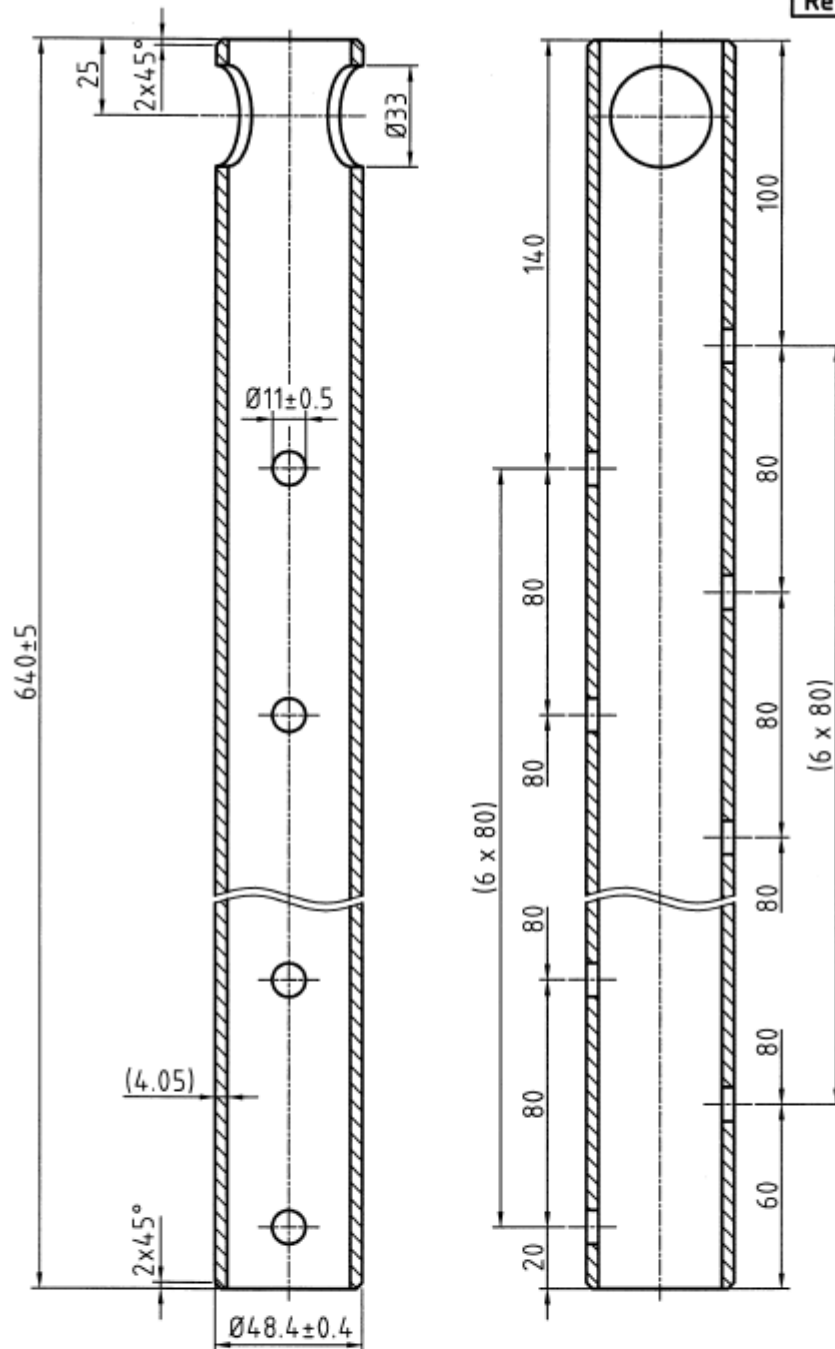
Revision 4-2002



HOT DIP GALVANIZED TO ISO 1461
GENERAL TOLERANCE ± 5 UNLESS OTHERWISE STATED

WELDED TO ISO 9692

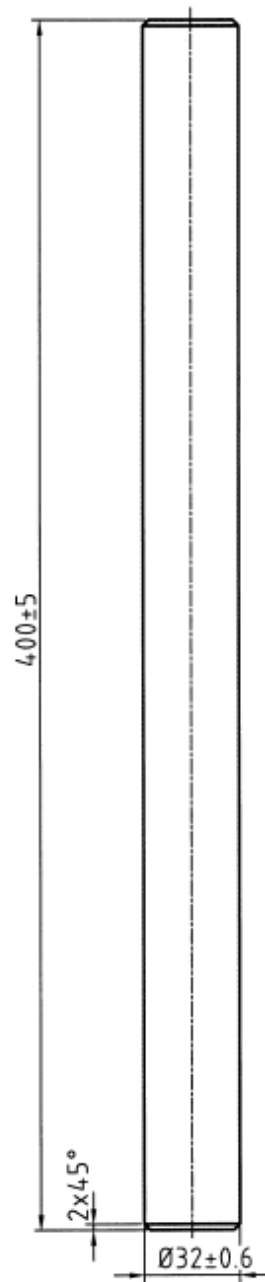
2	1	T-Bar	C2022	---
1	1	Extension pipe	C2187	---
Pos.	Qty.	Description	Drawing. No.	Remarks
HTN		Sub assembly		Scale:
		Handle rear assy.		1 : 2
		International Handpump Specification		Drawn by: Checked by: Released by: K.Erpf 25.11.00 02.02.02 02.02.02
				B2186

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

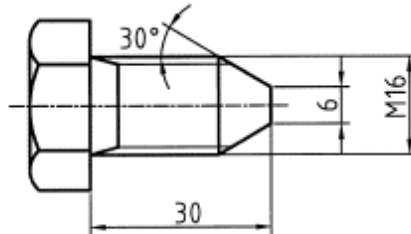
Extension pipe	Ø48.4/4.05 x 640	St 37-2	heavy Series	bright (1 1/2")		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2	Drawn by:	K.Erpf	25.11.00
	Extension pipe			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2187		

Revision 4-2002

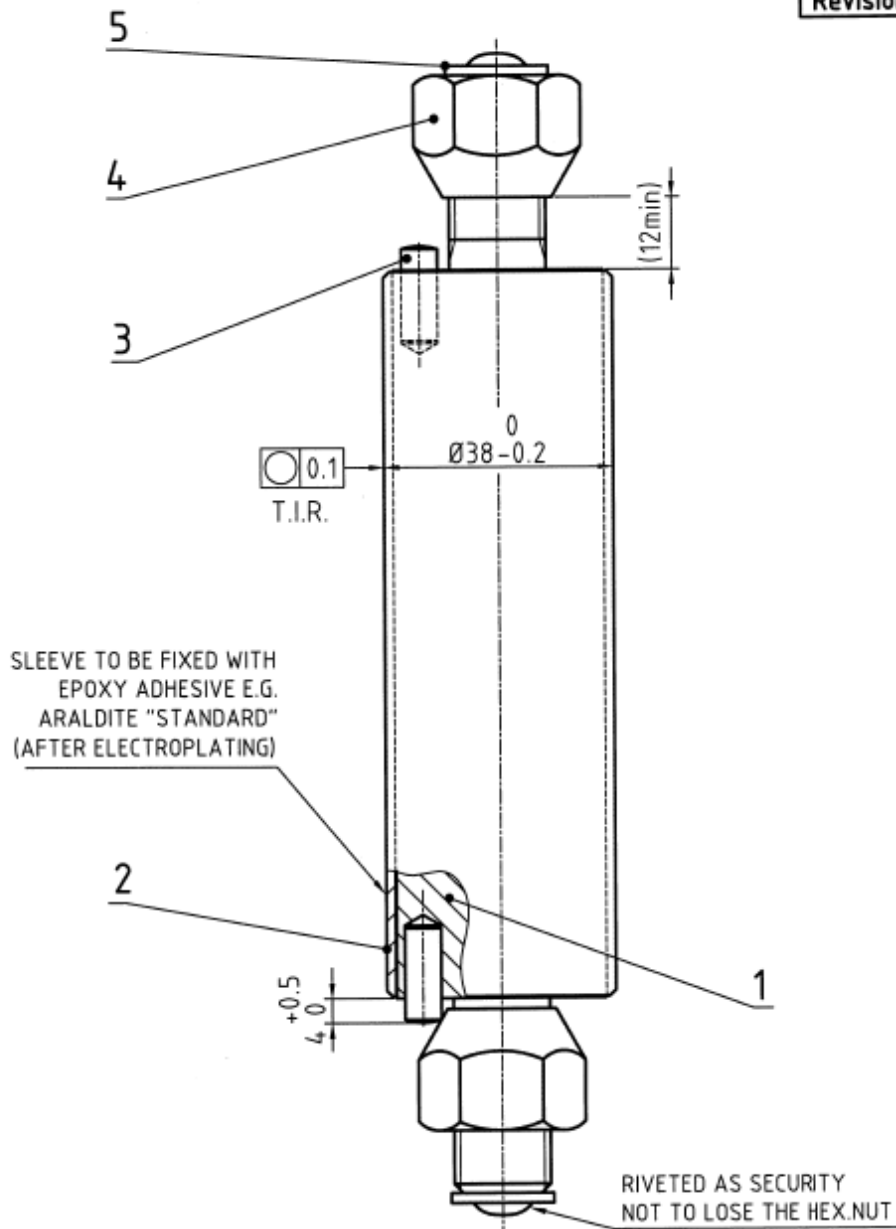
GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

T-Bar	Ø32 x 400	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing T-Bar		Scale: 1 : 2	Drawn by: f.leder. 15.03.97
				Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2022

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATEDELECTROPLATED TO ISO 2081/82
ALL SHARP CORNERS TO BE ROUNDED OFF

Hex.bolt special		M16 x 30	Class 8.8	ISO 4017	made of C1104		
Description		Dimensions	Material	Standards	Remarks		
	Detail drawing			Scale: 1 : 1	Drawn by:	K.Erpf	23.11.00
	Hex.bolt special				Checked by:		02.02.02
					Released by:		02.02.02
International Handpump Specification					C2185		



GENERAL TOLERANCE +/- 1 UNLESS OTHERWISE STATED

5	2	Washer	C1028	M8
4	2	Hex.nut special	C2027	---
3	2	Pin	C1027	---
2	1	Sleeve	C2026	---
1	1	Fulcrum pin	C2025	---

Pos. Qty. Description Drawing. No. Remarks



Sub assembly

Fulcrum pin assy.

Scale:

1:1

Drawn by: t.leder. 15.03.97

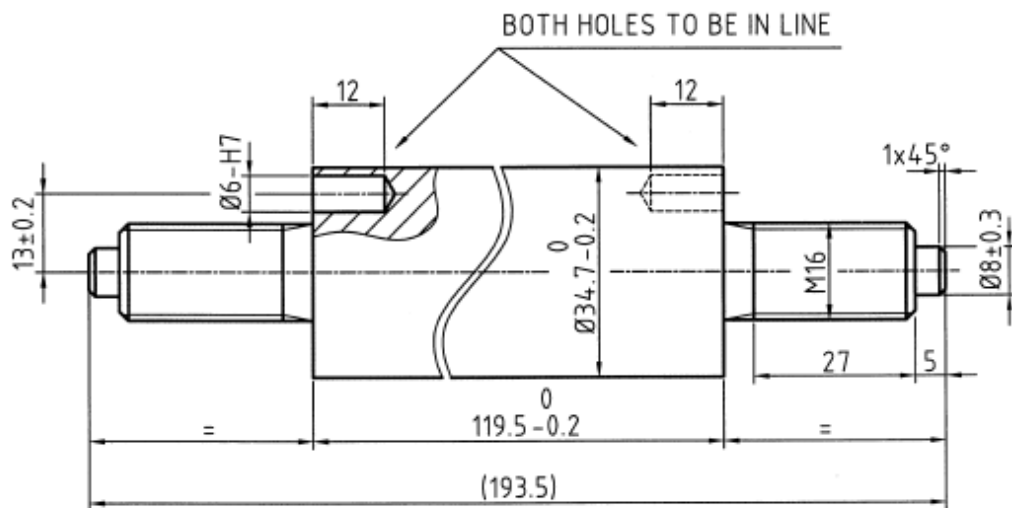
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Released by: 02.02.02

International Handpump Specification



B2024

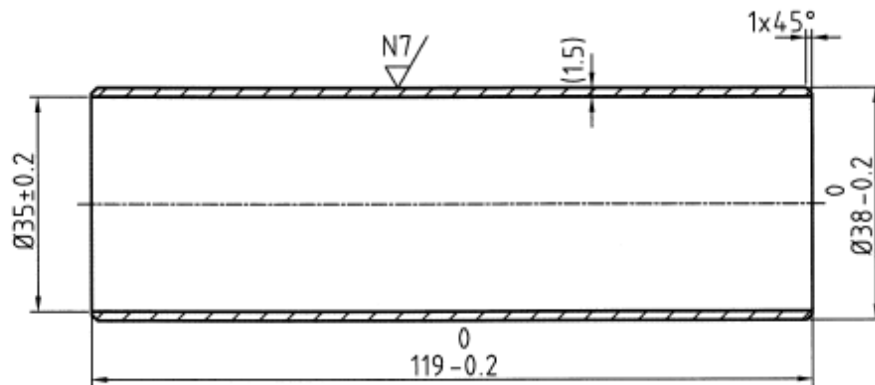


ELECTROPLATED TO ISO 2081/82

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

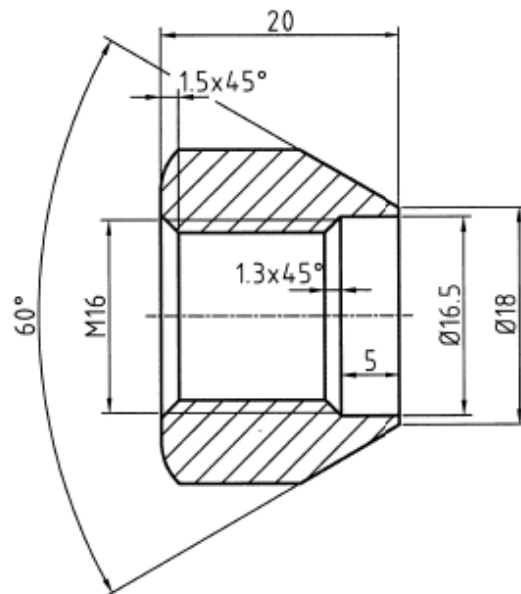
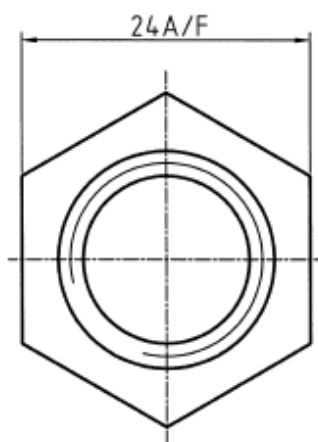
ALL SHARP CORNERS TO BE ROUNDED OFF

Fulcrum pin	Ø34.7 x 193.5	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: f.leder. 15.03.97
	Fulcrum pin			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2025

GENERAL TOLERANCE ± 0.3 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Sleeve	Ø38/1.5 x 119	Stainless Steel	ISO 15510	X5CrNi 18-9		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Sleeve			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2026		



ELECTROPLATED TO ISO 2081/02

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

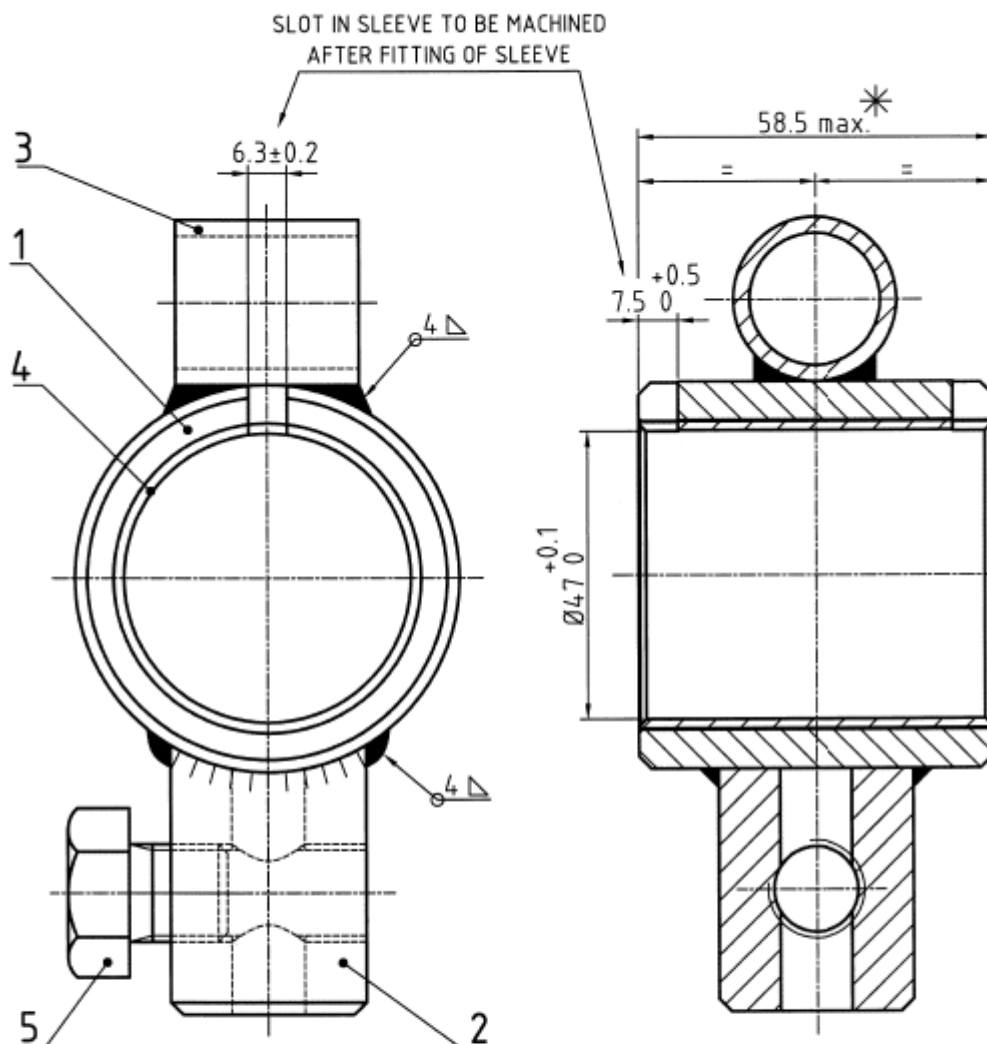
ALL SHARP CORNERS TO BE ROUNDED OFF

Hex. nut special	24A/F x 20	St 42	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 2 : 1	Drawn by:	t.leder.	15.03.97
	Hex. nut special			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2027		

SLEEVE POS.4, TO BE FIXED WITH EPOXY ADHESIVE E.G.
ARALDITE "STANDARD" AFTER HOT DIP GALVANIZING

Revision 4-2002

*
AFTER GALVANIZING
AND FITTING OF SLEEVE



WELDED TO ISO 9692

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

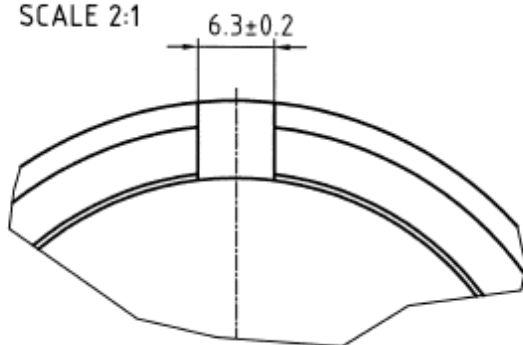
HOT DIP GALVANISING TO ISO 1461 (POS. 1/2/3 ONLY)

5	1	Hex.bolt	C1105	M16 x 16
4	1	Sleeve	C2032	---
3	1	Retainer bush	C2031	---
2	1	Connector	C2030	---
1	1	Hanger bush	C2029	---

Pos.	Qty.	Description	Drawing. No.	Remarks
Sub assembly Rodhanger assy. Scale: 1 : 1 Drawn by: t.leder. 15.03.97 Checked by: 02.02.02 Released by: 02.02.02				
International Handpump Specification				B2028

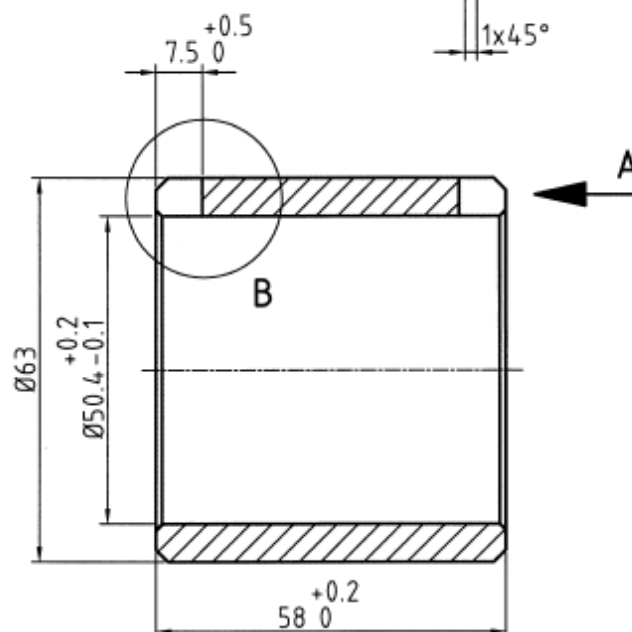
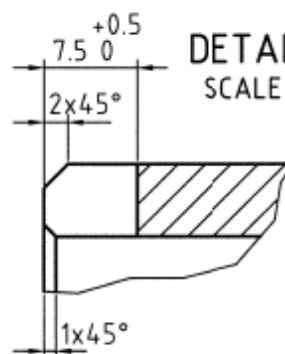
DETAIL A

SCALE 2:1



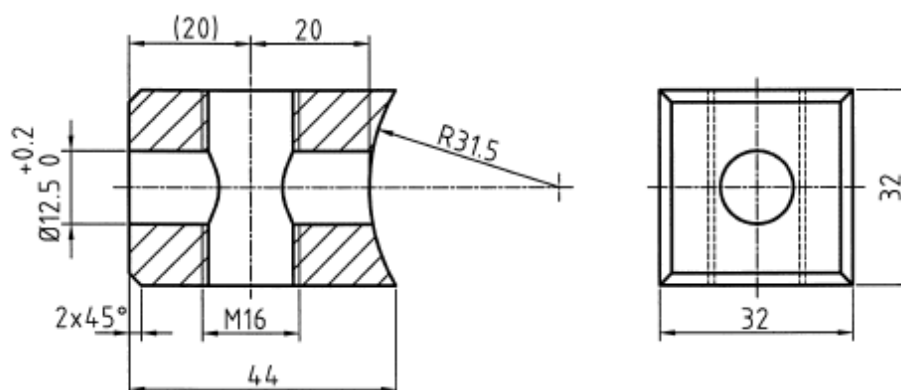
DETAIL B

SCALE 2:1

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

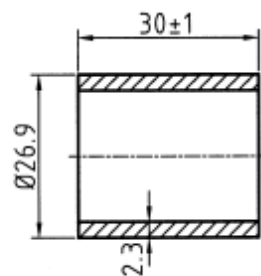
Hanger bush	Ø63 x 58	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1 (2 : 1)	Drawn by: f.leder 15.03.97
	Hanger bush			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2029



GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

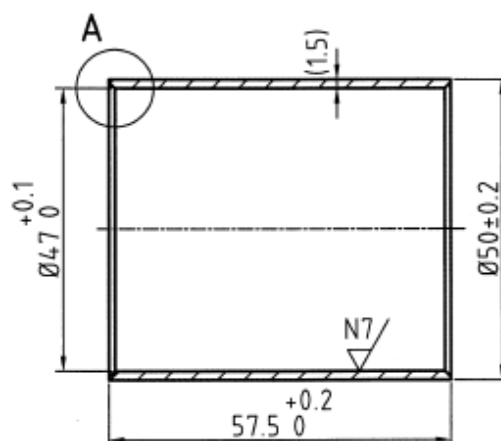
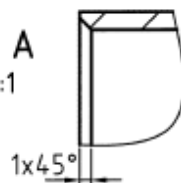
Connector	32/32 x 44	St 37	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Connector			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2030		

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

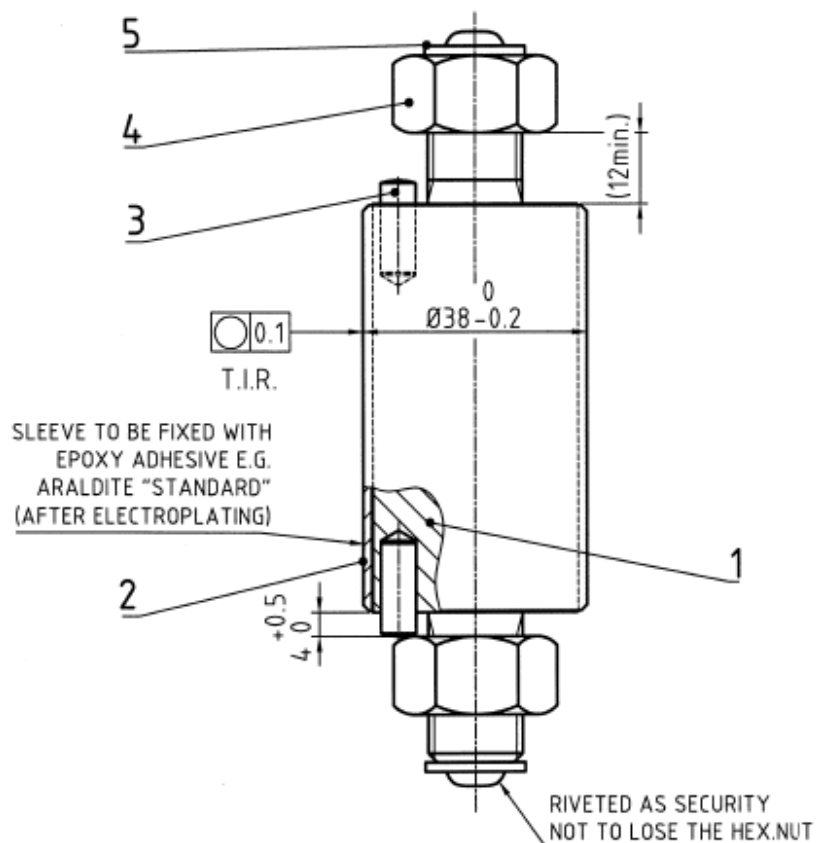
Retainer bush	Ø26.9/2.3x30, 3/4"	St 37	light Series	Class A		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Retainer bush			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2031		

DETAIL A
SCALE 2:1

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Sleeve		Ø50/1.5 x 57.5	Stainless Steel	ISO 15510	X5CrNi 18-9	
Description		Dimensions	Material	Standards	Remarks	
		Detail drawing Sleeve		Scale: 1 : 1 (2 : 1)	Drawn by:	f.leder. 15.03.97
					Checked by:	 02.02.02
					Released by:	 02.02.02
International Handpump Specification					C2032	



GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

5	2	Washer	C1028	M8
4	2	Hex.nut	C1018	M16
3	2	Pin	C1027	---
2	1	Sleeve	C2035	---
1	1	Hanger pin	C2034	---
Pos.	Qty.	Description	Drawing. No.	Remarks



Sub assembly

Hanger pin assy.

Scale:

1:1

Drawn by: t.leder. 15.03.97

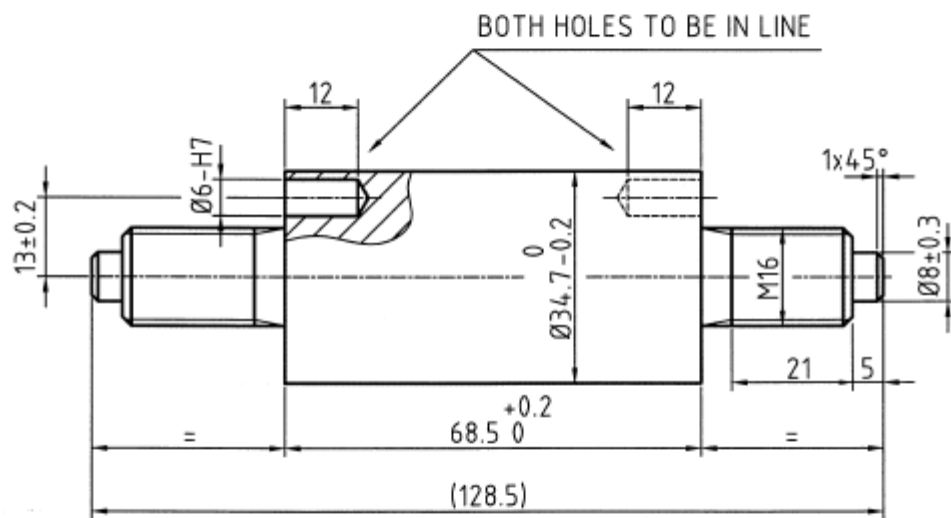
Checked by: [Signature] 02.02.02

Released by: [Signature] 02.02.02

International Handpump Specification



B2033



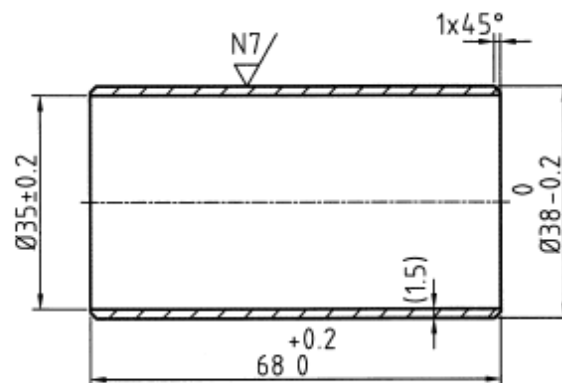
ELECTROPLATED TO ISO 2081/82

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Hanger pin	Ø34.7 x 128.5	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: t.leder. 15.03.97
	Hanger pin			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2034

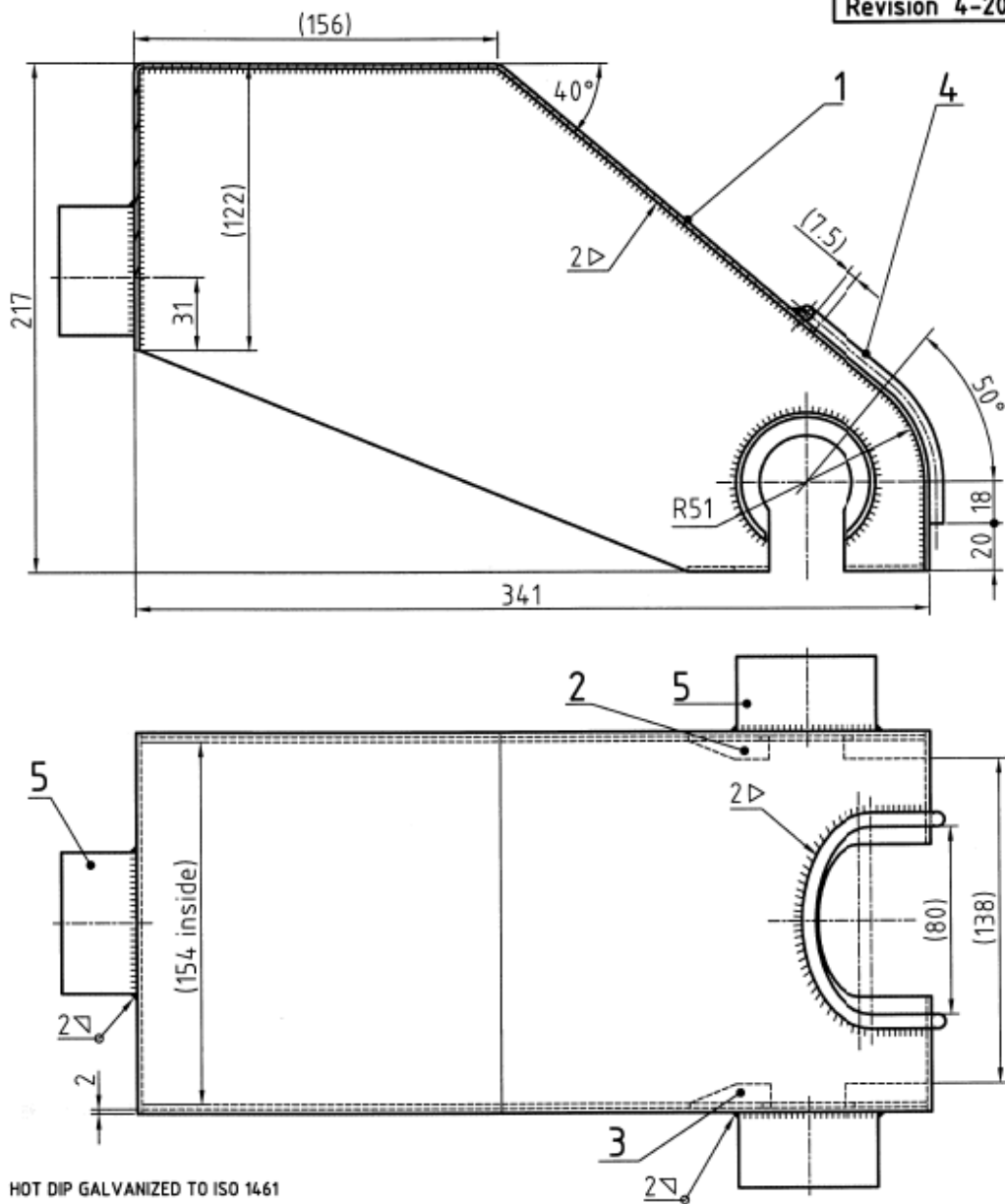
Revision 4-2002

GENERAL TOLERANCE ± 0.3 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Sleeve	Ø38/1.5 x 68	Stainless Steel	ISO 15510	X5CrNi 18-9		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Sleeve			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2035		

Revision 4-2002



HOT DIP GALVANIZED TO ISO 1461

GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

WELDED TO ISO 9692

5	3	Shroud	C2041	---
4	1	Deflector	C2040	---
3	1	Right side plate	C2039	---
2	1	Left side plate	C2038	---
1	1	Cover plate	C2037	---
Pos.	Qty.	Description	Drawing. No.	Remarks

Sub assembly

Cover assembly

Scale:

1 : 2.5

Drawn by: K. Erpf 21.11.97

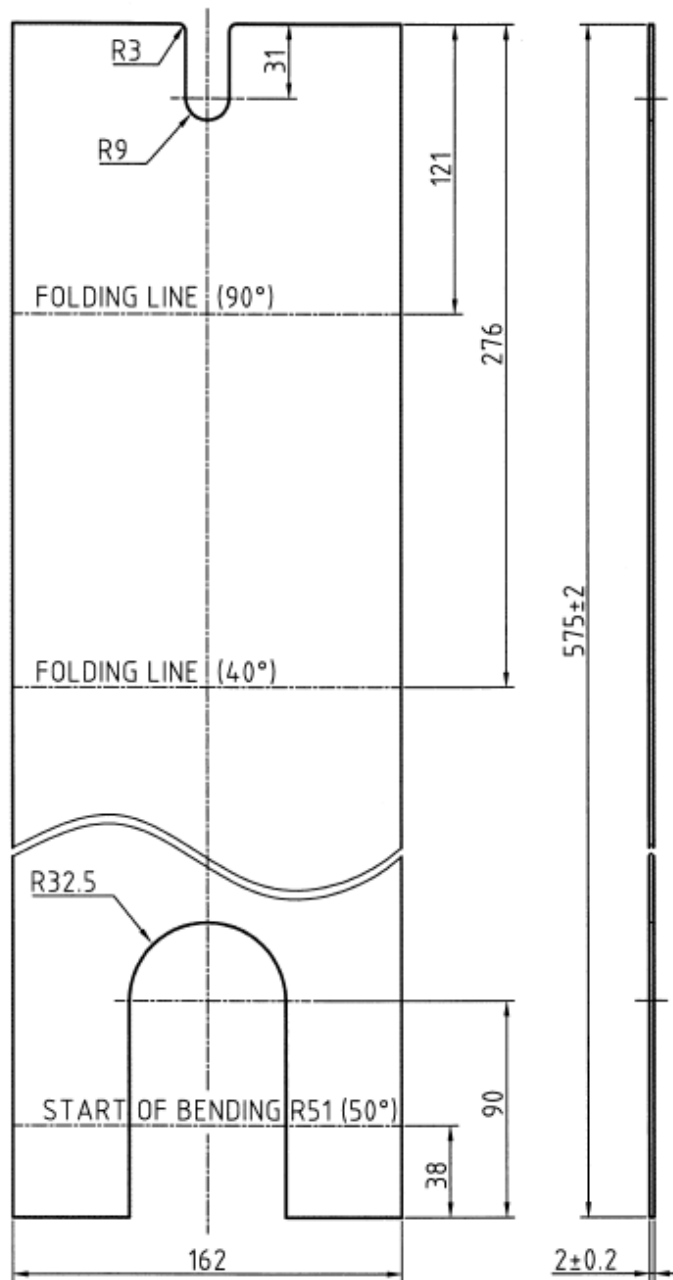
Checked by: 02.02.02

Released by: 02.02.02

International Handpump Specification



B2036



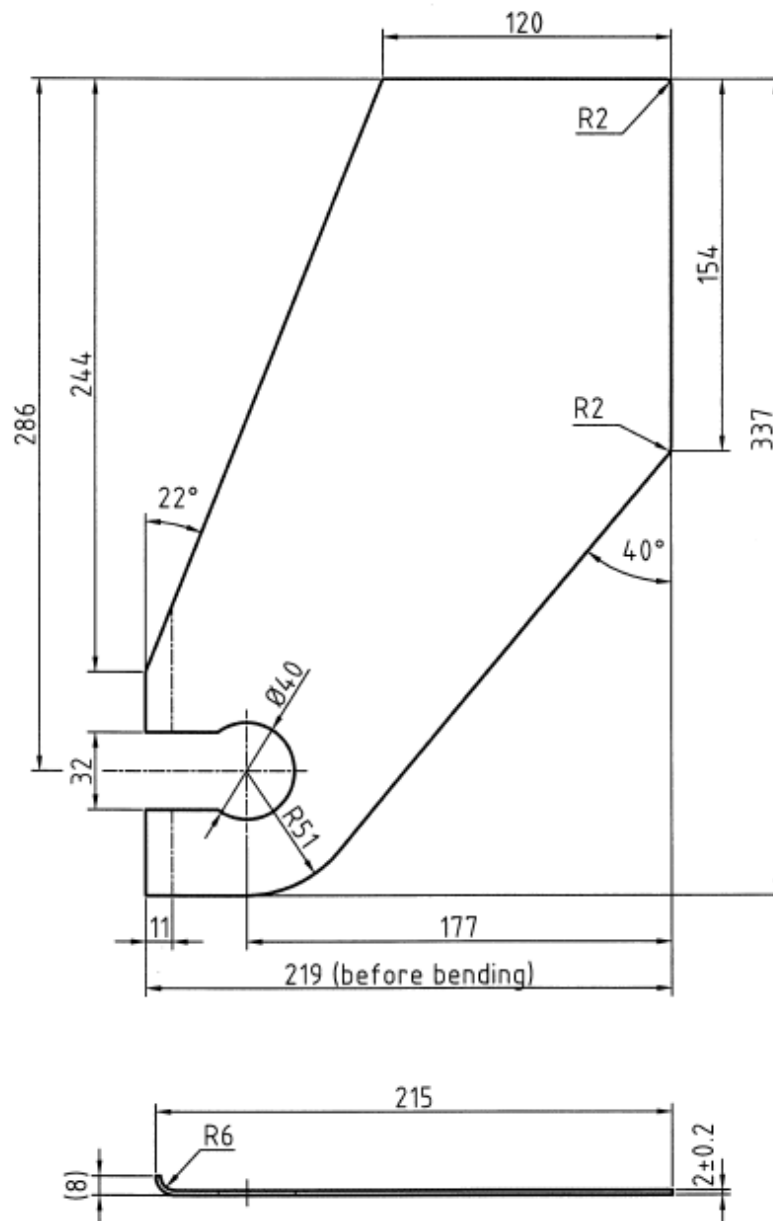
THE EXACT POSITION OF FOLDING- AND BENDING- LINES HAVE TO CORRESPOND WITH THE PROFILE OF THE LEFT- AND RIGHT SIDE PLATE (C2038 / C2039)

GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Cover plate	2 x 575 x 162	St 37	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2.5	Drawn by:	t.loder.	15.03.97
	Cover plate			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2037		

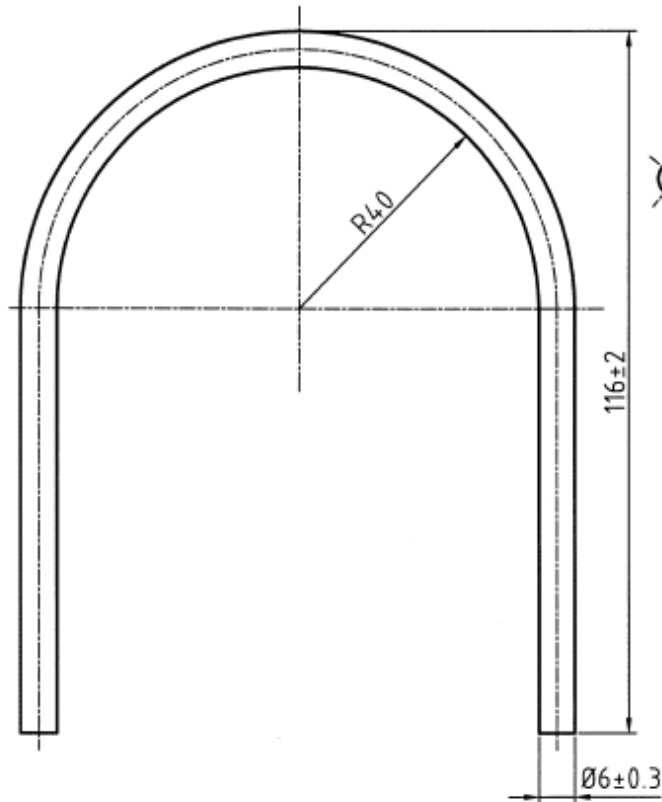
Revision 4-2002

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

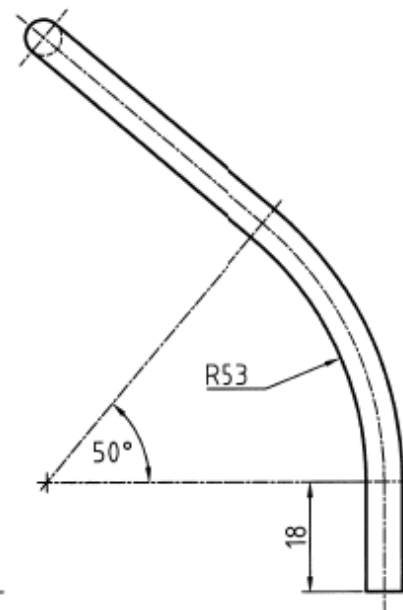
ALL SHARP CORNERS TO BE ROUNDED OFF

Right side plate	2 x 337 x 219	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 2.5	Drawn by: t.leder. 15.03.97
	Right side plate			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2039

FIRST BENDING OPERATION



SECOND BENDING OPERATION



LENGTH PRIOR TO BENDING = 273 MM

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

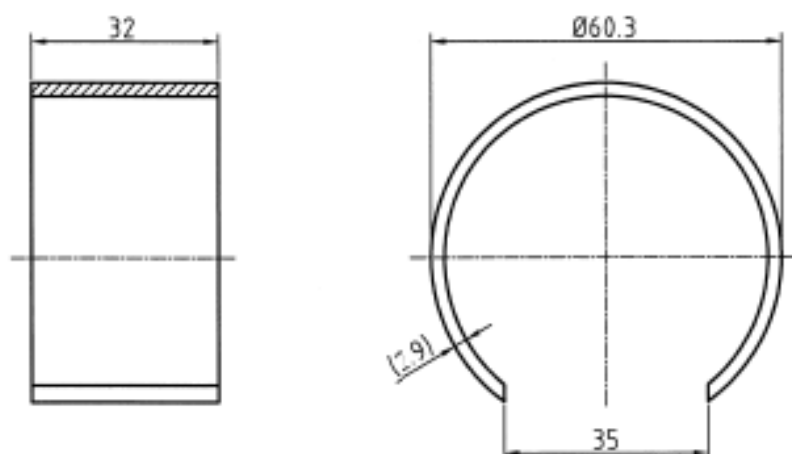
ALL SHARP CORNERS TO BE ROUNDED OFF

Deflector	Ø6 x 273	St 37	---	drawn wire		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Deflector			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2040		

Revision 4-2002

OPTION:

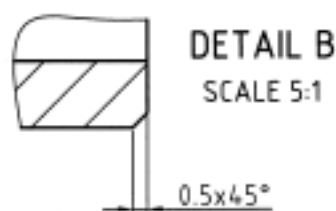
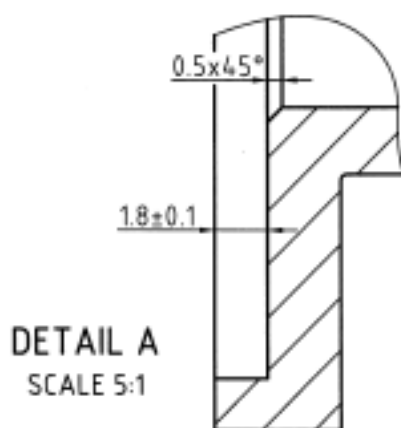
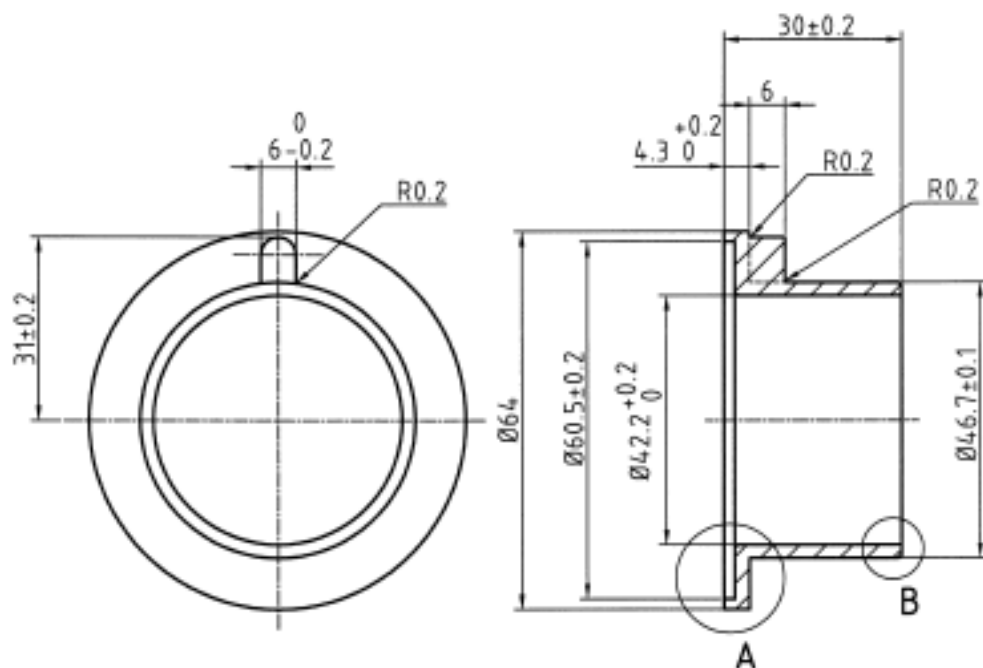
ROLLED FROM 2.0mm STEEL SHEET

GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

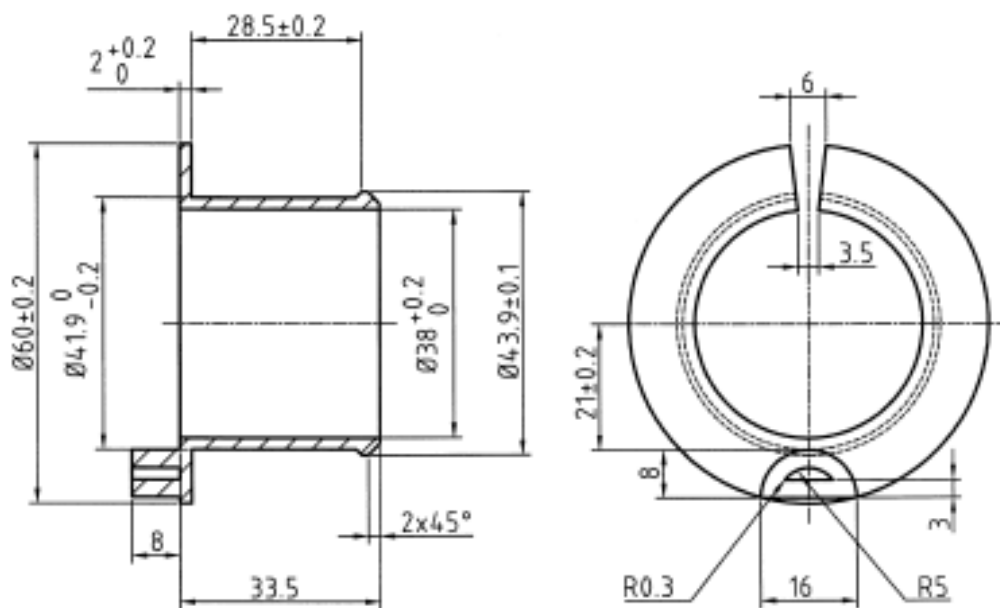
ALL SHARP CORNERS TO BE ROUNDED OFF

GENERAL TOLERANCE 9/2 UNLESS OTHERWISE STATED			ALL SHARP CORNERS TO BE ROUNDED OFF		
Shroud	Ø60.3/2.9 x 32 (2")	St 37-2	light Series	Class A, bright	
Description	Dimensions	Material	Standards	Remarks	
	Detail drawing Shroud		Scale: 1 : 1	Drawn by:	K. Erpf 21.11.97
				Checked by:	 02.02.02
				Released by:	 02.02.02
International Handpump Specification				C2041	

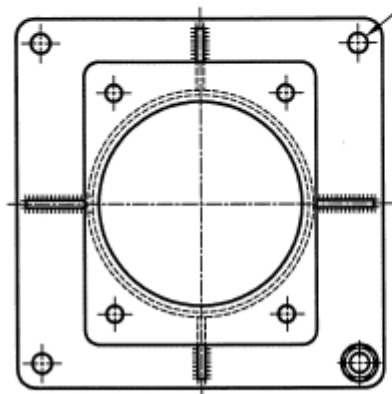
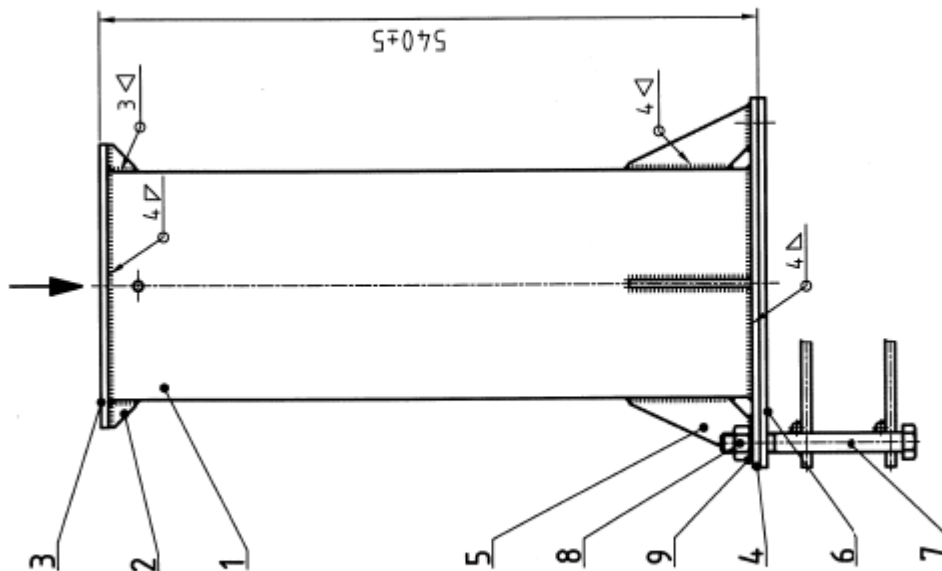
Revision 4-2002

GENERAL TOLERANCE ± 0.3 UNLESS OTHERWISE STATED

Bearingbush outer	Ø64 x 30	POM-K (no filler)	ISO 9988-1	Injection moulded		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1 (5 : 1)	Drawn by:	t.feder	15.03.97
	Bearingbush outer			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2044		

GENERAL TOLERANCE ± 0.3 UNLESS OTHERWISE STATED

Bearingbush inner	Ø60 x 41.5	PA 6.6 (no filler)	ISO 1874-1	Injection moulded		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Bearingbush inner			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2045		



WELDED TO ISO 9692

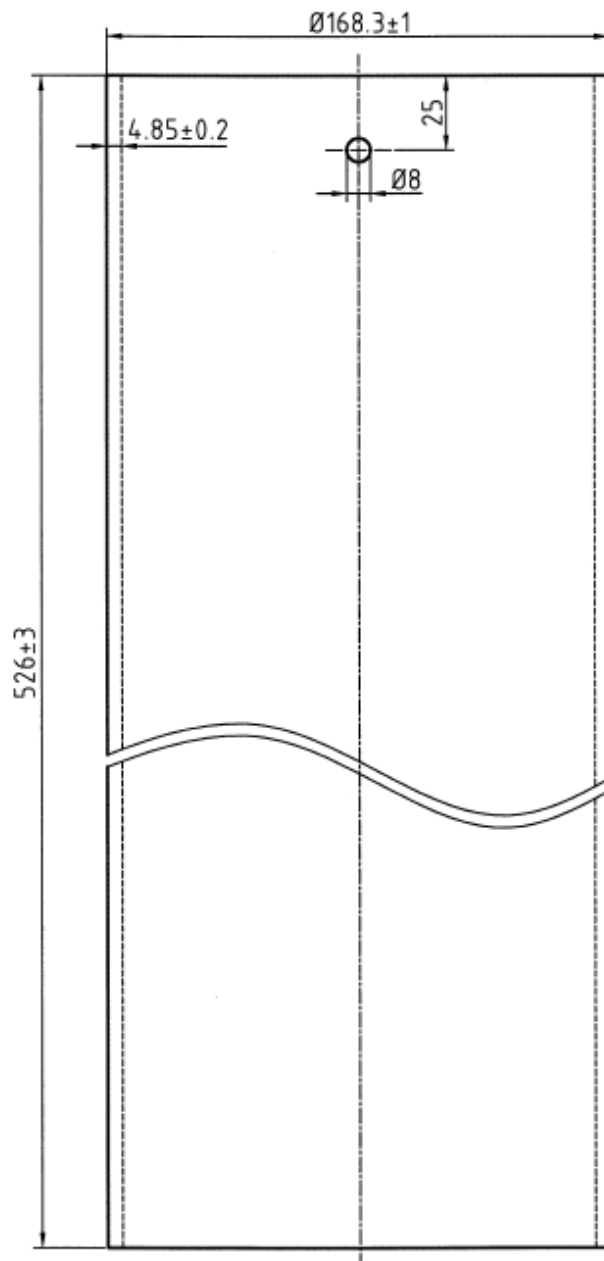
9	4	Washer	C1069	M16
8	4	Hex.nut	C1130	M16
7	1	Anchor assy.	B2083	---
6	1	Gasket	C2059	---
5	4	Gusset	C2058	---
4	1	Bottom flange	C2057	(or C2068)
3	1	Flange	C2053	---
2	2	Gusset	C2052	---
1	1	Stand pipe	C2063	(or C2056)

Pos.	Qty.	Description	Drawing No.	Remarks
Sub assembly				
HTN Stand assembly				
Scale:				1 : 5
Drawn by:				K. Erpf 26.11.97
Checked by:				02.02.02
Released by:				02.02.02

B2055

International Handpump Specification

Revision 4-2002

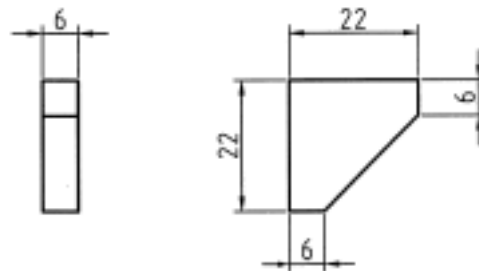
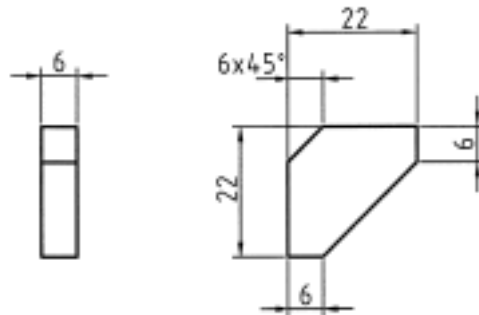


NOTE:
BOTH ENCS TO BE FACED
SQUARE TO THE OUTER PIPE

GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Stand pipe	Ø168.3/4.85 x 526	St 37	NB150, medium	6"		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2	Drawn by:	K.Erpf	09.05.00
	Stand pipe			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2063		



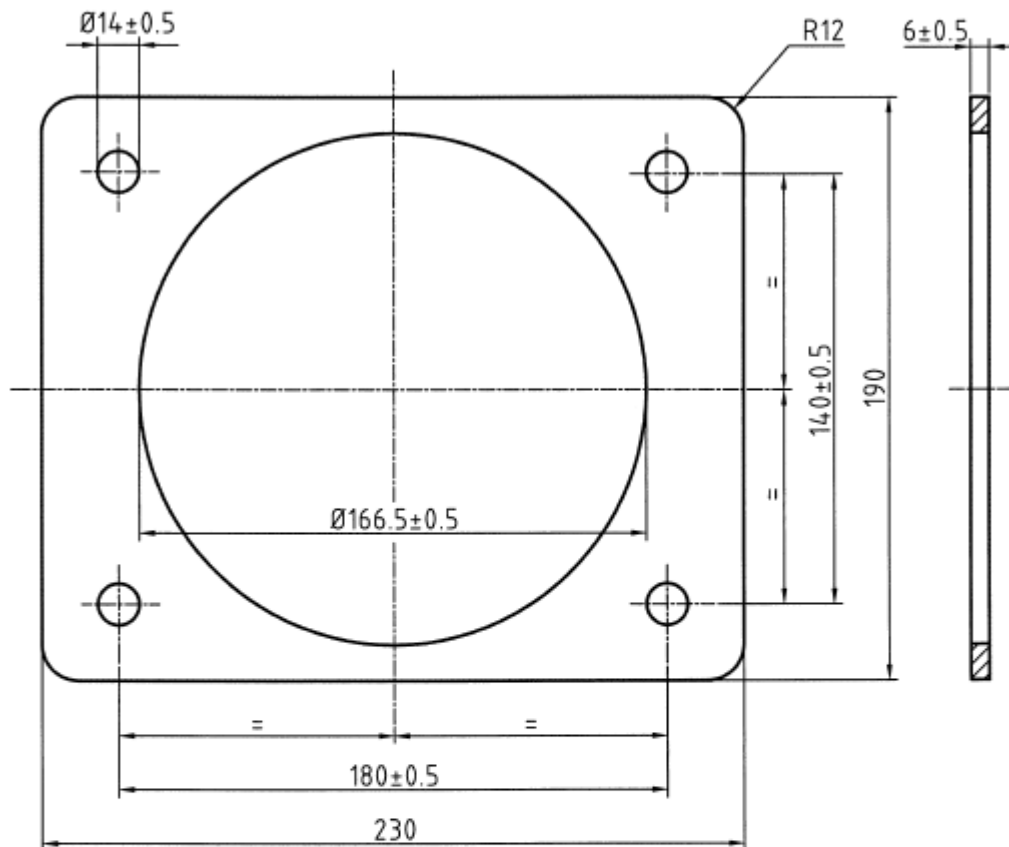
BOTH SHAPES ARE PERMISSIBLE

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Gusset	6 x 22 x 22	St 37	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	20.07.01
	Gusset			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2052		

Revision 4-2002



OPTIONAL:

15x45°

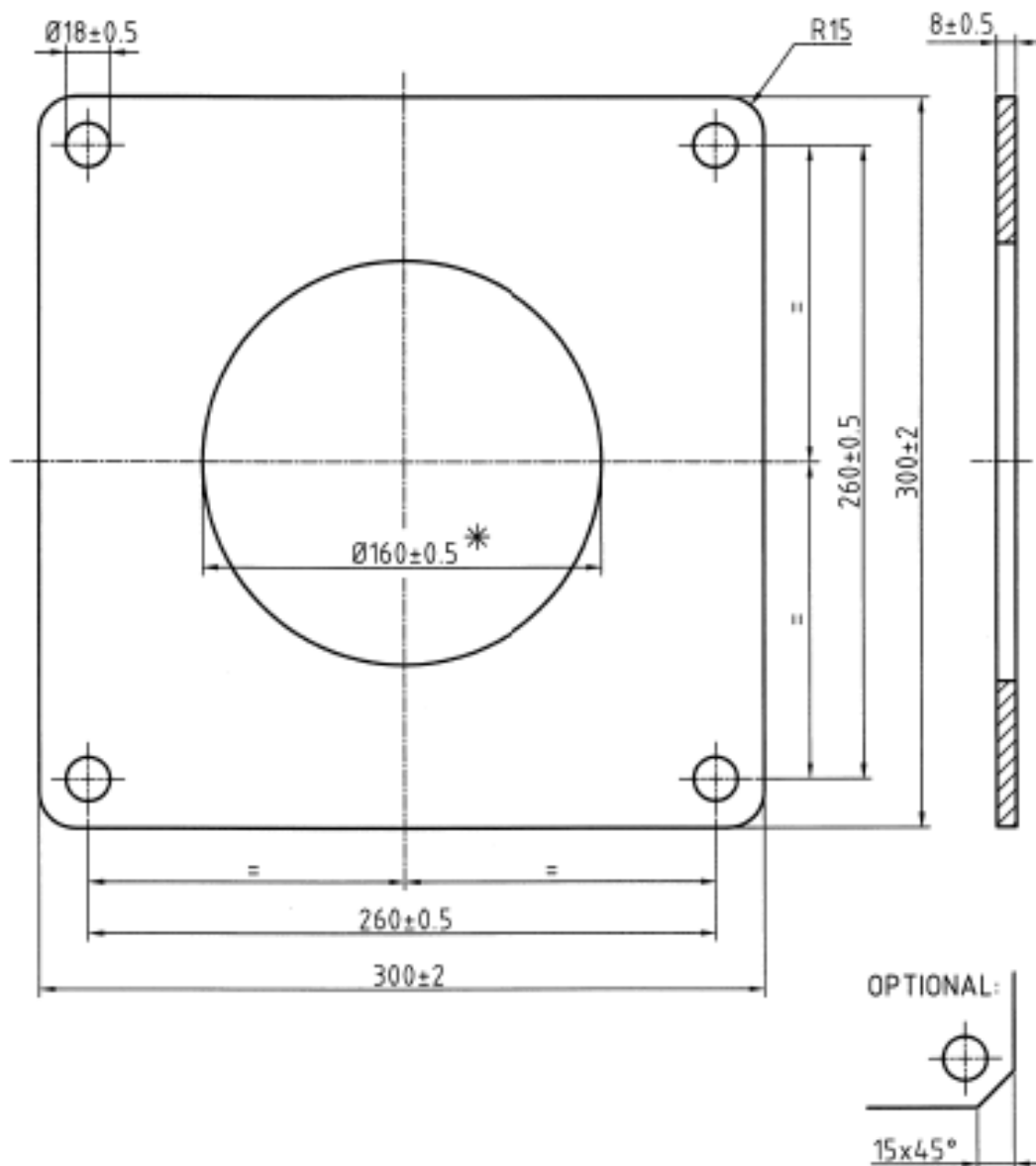
GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Flange	6 x 230 x 190	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 2	Drawn by: t.leder. 15.03.97
	Flange			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2053

* NOTE: FOR ROLLED STAND PIPE C2056
USE BOTTOM FLANGE C2068

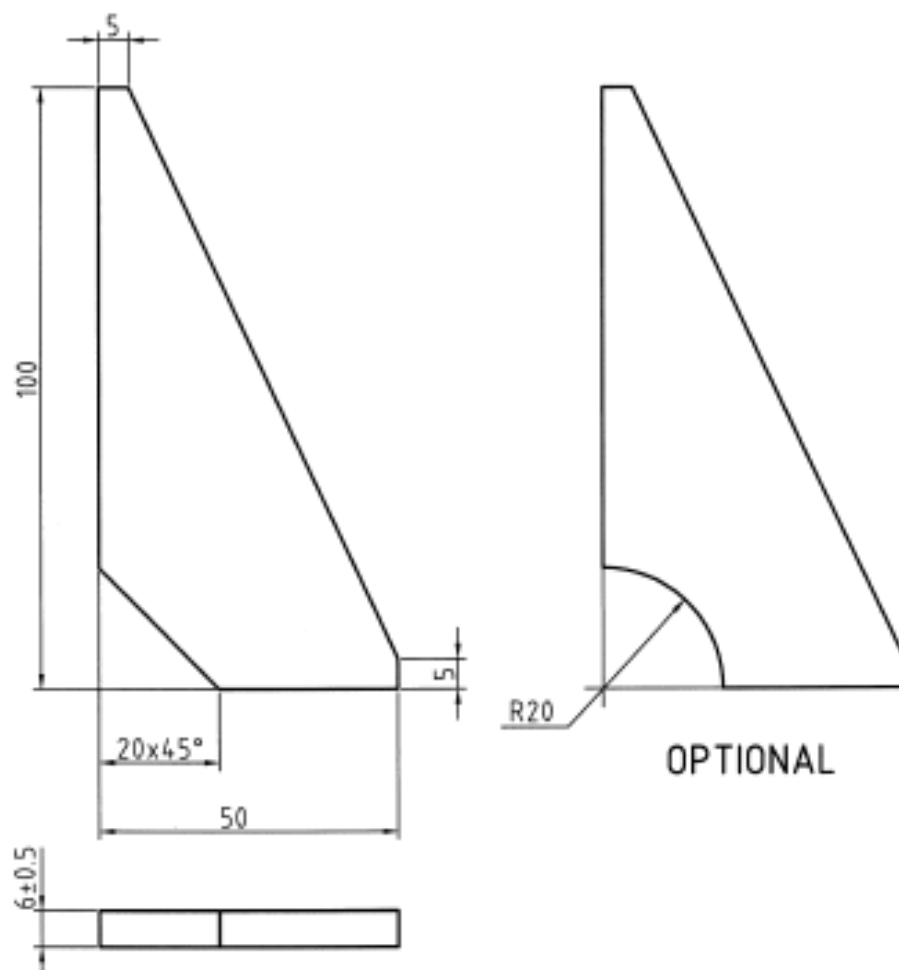
Revision 4-2002



GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Bottom flange	8 x 300 x 300	St 31	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 2.5	Drawn by: K.Erpf 13.03.01
	Bottom flange			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2057

GENERAL TOLERANCE ± 2 UNLESS OTHERWISE STATED

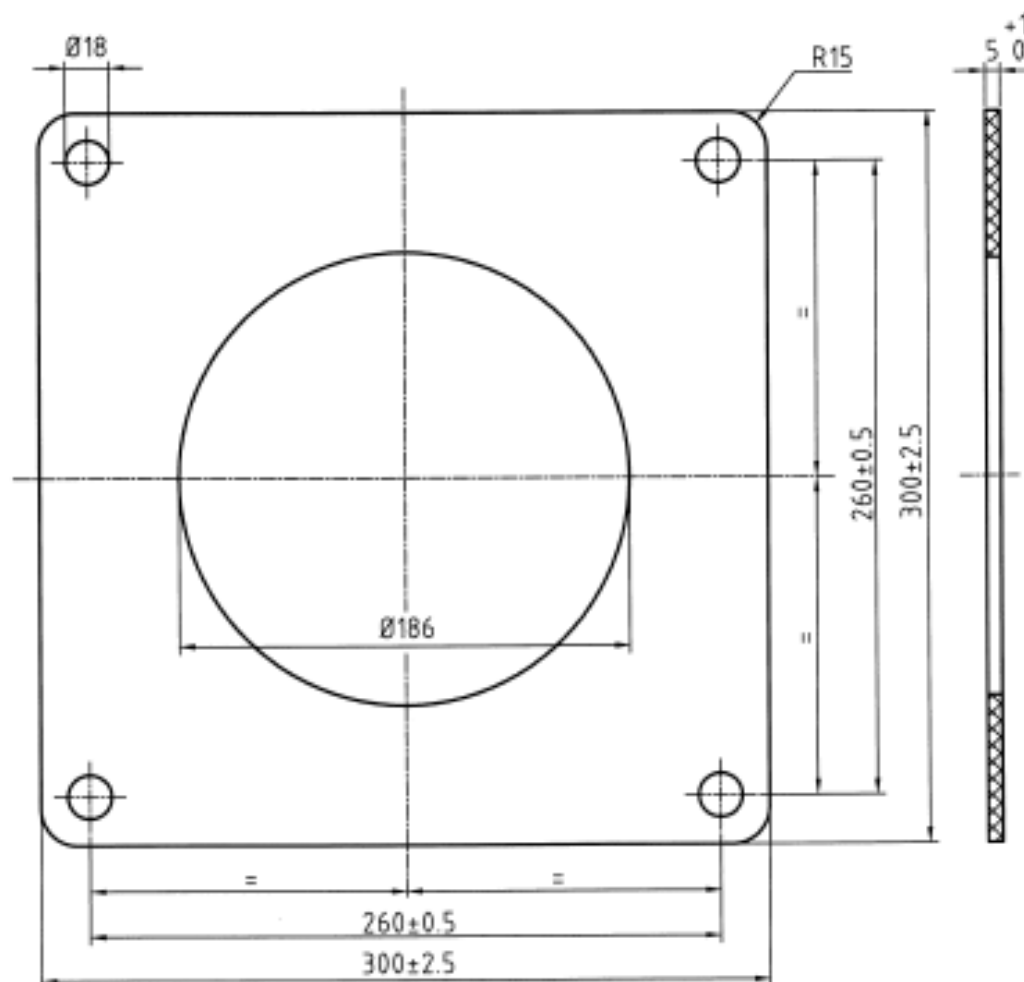
ALL SHARP CORNERS TO BE ROUNDED OFF

Gusset	6 x 100 x 50	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: K.Erpf 13.03.01
	Gusset			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2058

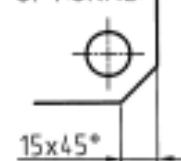
OPTION:

Revision 4-2002

TO BE CUT OF A 5 MM RUBBER SHEET OF ANY COMPOUND TYPE



OPTIONAL:

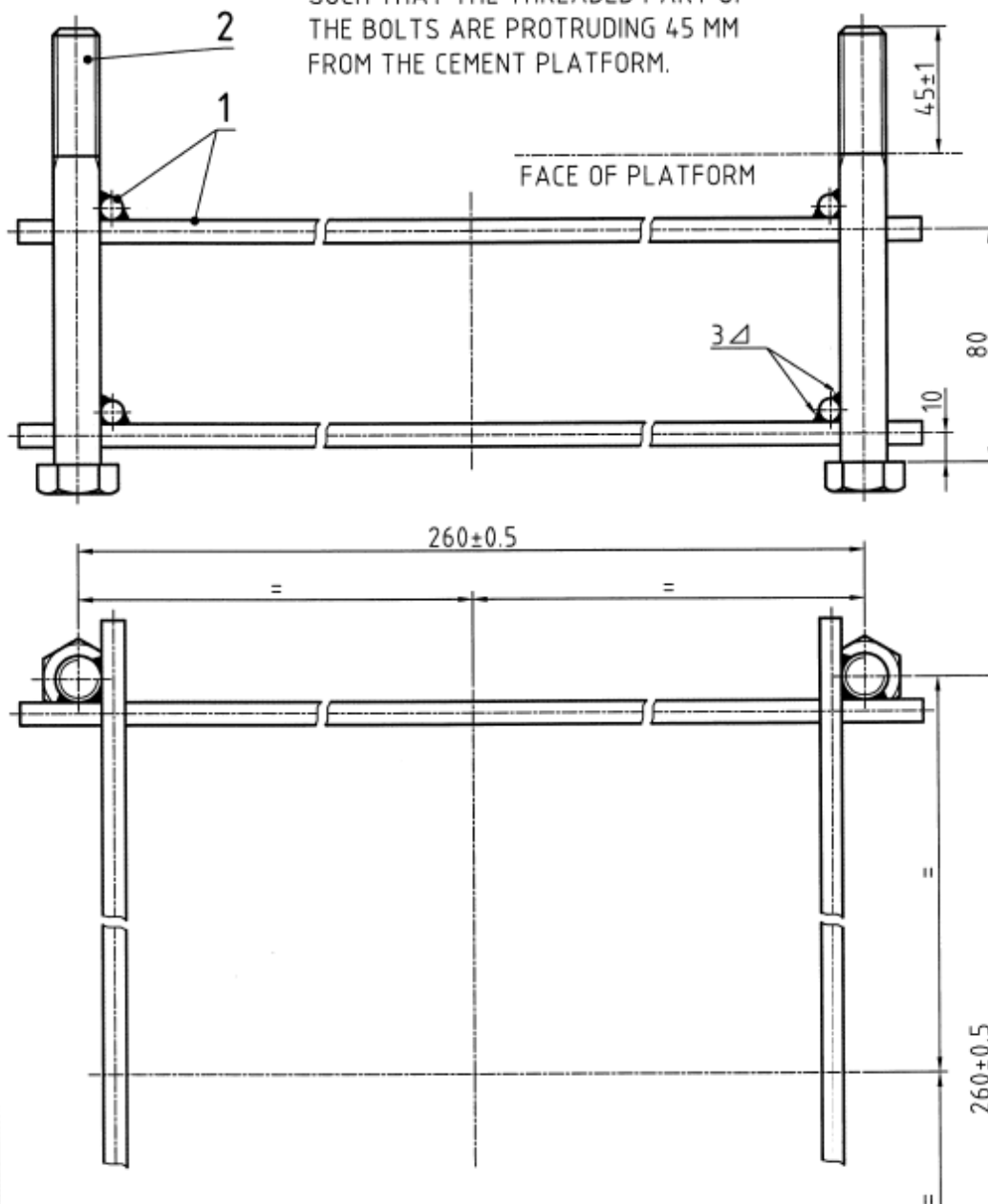


GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

Gasket	5 x 300 x 300	Nitrile/nat. Rubber	ISO 3302-1 (M3)	60-70 Shore A		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2.5	Drawn by:	K.Erpf	13.03.01
	Gasket			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2059		

Revision 4-2002

NOTE: PLACE THE ANCHOR ASSEMBLY AS SUCH THAT THE THREADED PART OF THE BOLTS ARE PROTRUDING 45 MM FROM THE CEMENT PLATFORM.

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

WELDED TO ISO 9692

2	4	Hex. bolt	C1114	M16 x 150 (Bolt C2061 can be used as well)
1	8	Fixing rod	C2084	---
Pos.	Qty.	Description	Drawing. No.	Remarks



Sub assembly

Anchor assembly

Scale:

1 : 2

Drawn by: K.Erpf 14.03.01

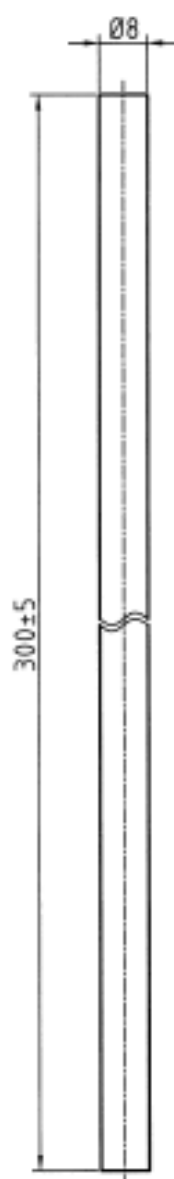
Checked by: [Signature] 02.02.02

Released by: [Signature] 02.02.02

International Handpump Specification

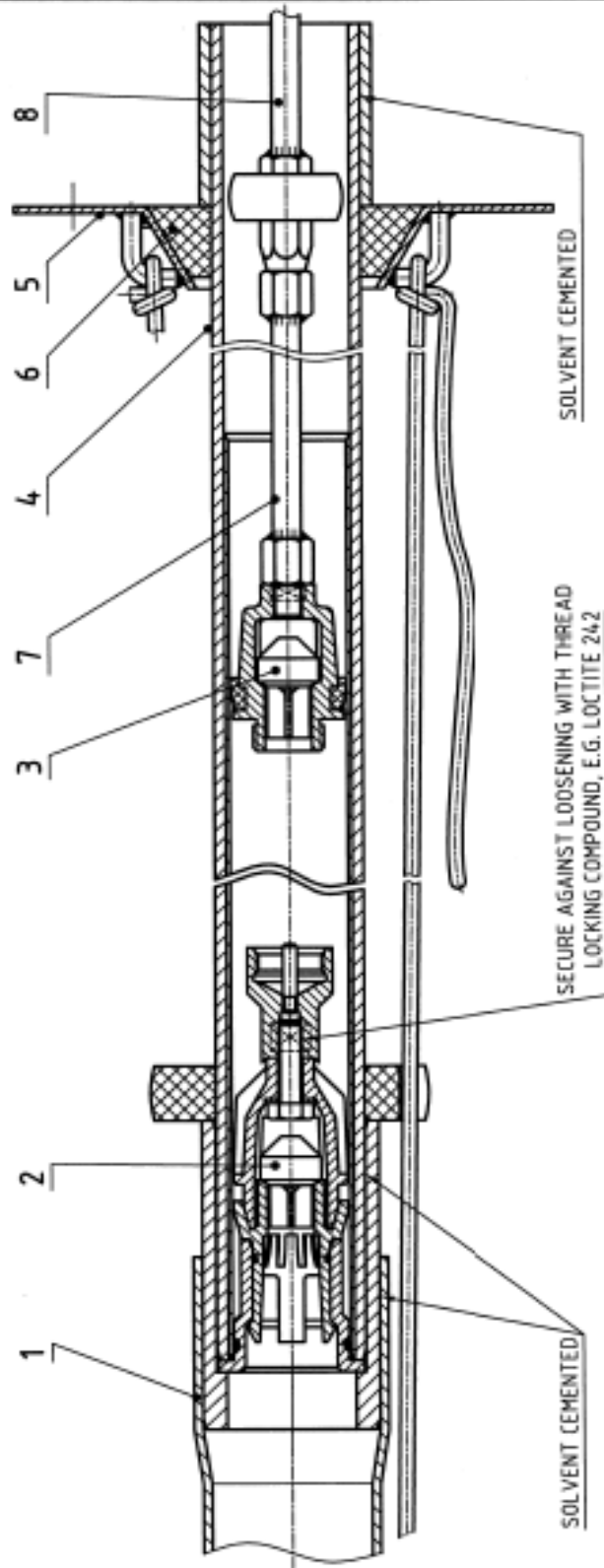


B2083

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

GENERAL TOLERANCE #7 UNLESS OTHERWISE STATED				
Fixing rod	Ø8 x 300	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: K.Erpf 14.03.01
	Fixing rod			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2084

Revision 4-2002



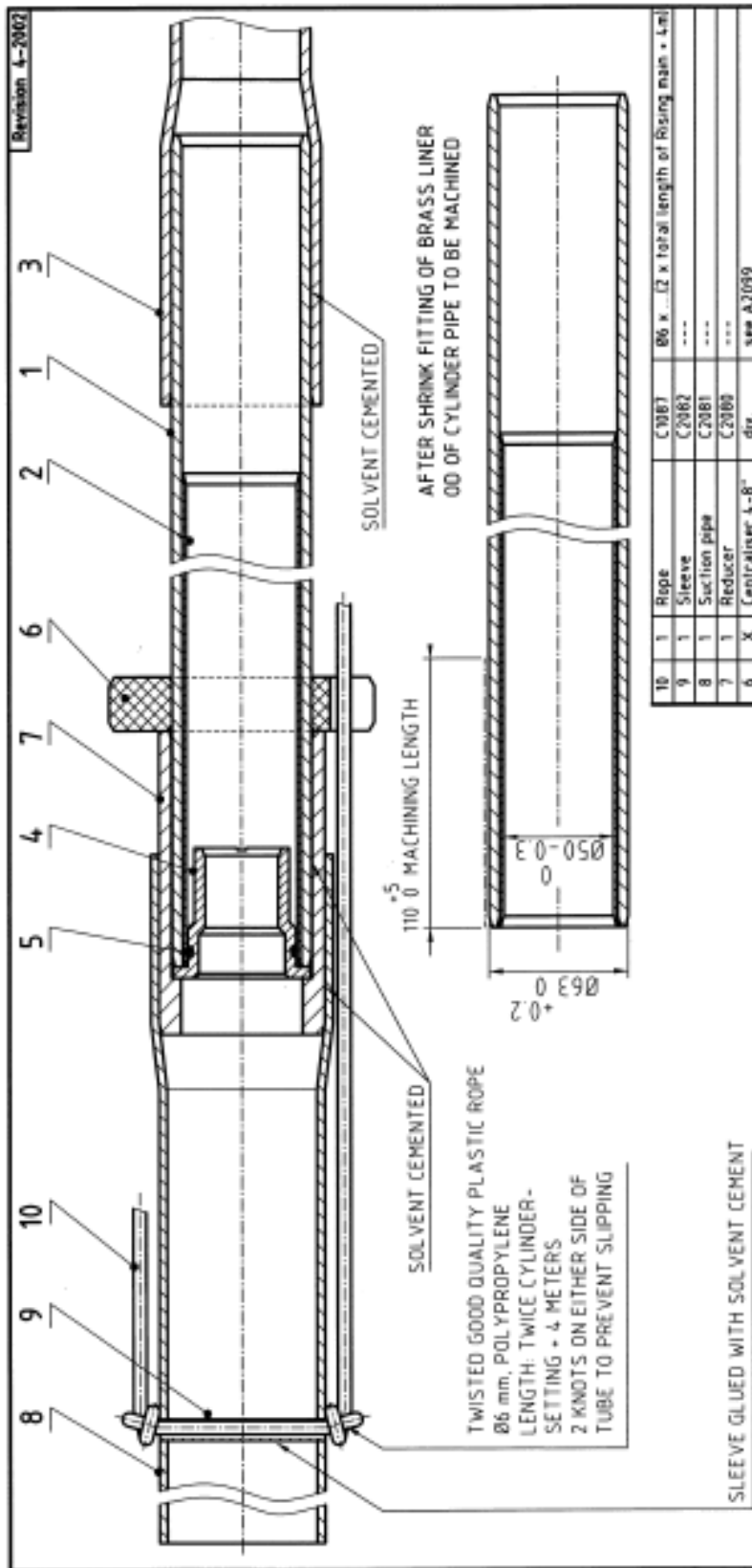
Pos.	Qty.	Description	Drawing No.	Remarks
8	1	Top rod Assy.	B2270	----
7	1	Plunger rod Assy.	B2258	----
6	1	Compression cone	C2095	----
5	1	Steel cone Assy.	B2092	----
4	X	Rising main Assy.	A2099	----
3	1	Plunger Assy.	A2266	----
2	1	Footvalve arrang.	A2265	----
1	1	Cylinder assembly	B2071	----

Sub assembly	
Cylinder arrangement	
Scale:	1 : 2.5
Drawn by:	ELF
Checked by:	ELF
Released by:	ELF

International Handpump Specification



A2257



Pos.	Qty.	Description	Drawing No.	Remarks
10	1	Rope	C1087	Ø6 x ...12 x total length of Rising main + Lin
9	1	Sleeve	C2082	---
8	1	Suction pipe	C2081	---
7	1	Reducer	C2080	---
6	X	Centraliser L-8"	div	see A2099
5	1	O-Ring	C1020	---
4	1	Footvalve receiver	C2074	---
3	X	Rising main assy	A2099	---
2	1	Linear	C2073	---
1	1	Cylinder pipe	C2072	---

AFTER SHRINK FITTING 100% TESTING REQUIRED
AGAINST SLIPPAGE: TESTING LOAD 400N

HTN Sub assembly
Cylinder assembly

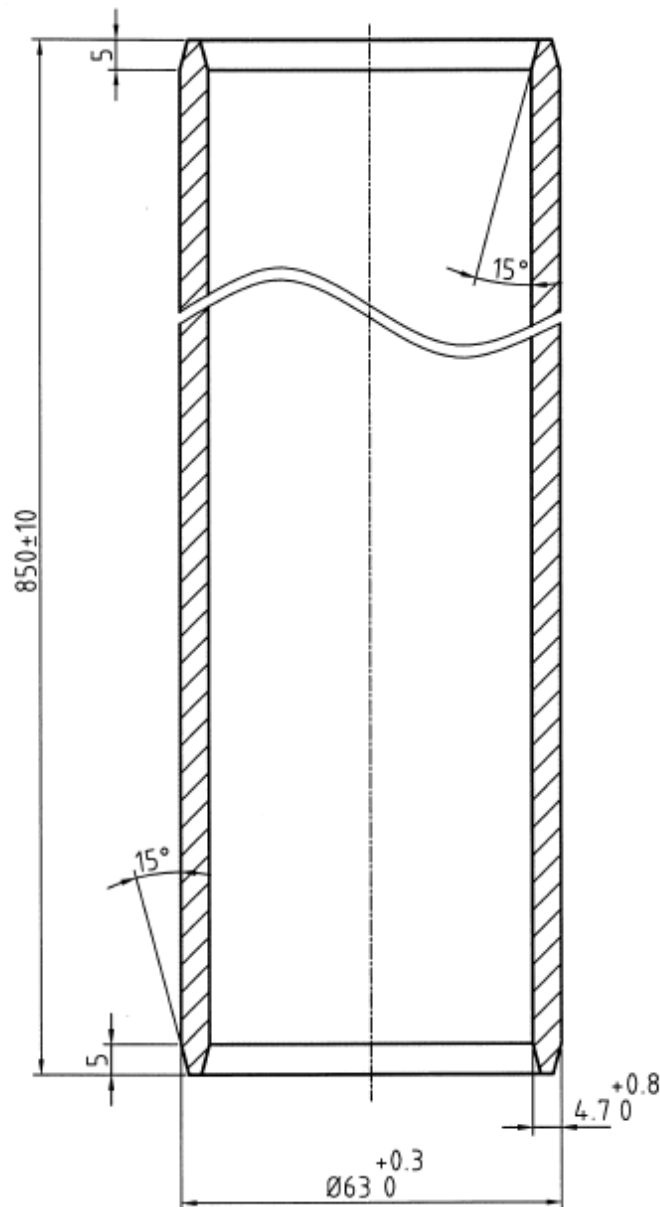
Scale: 1:2.5

Drawn by: K. Ertl
Checked by: J. Ertl
Released by: J. Ertl

International Handpump Specification

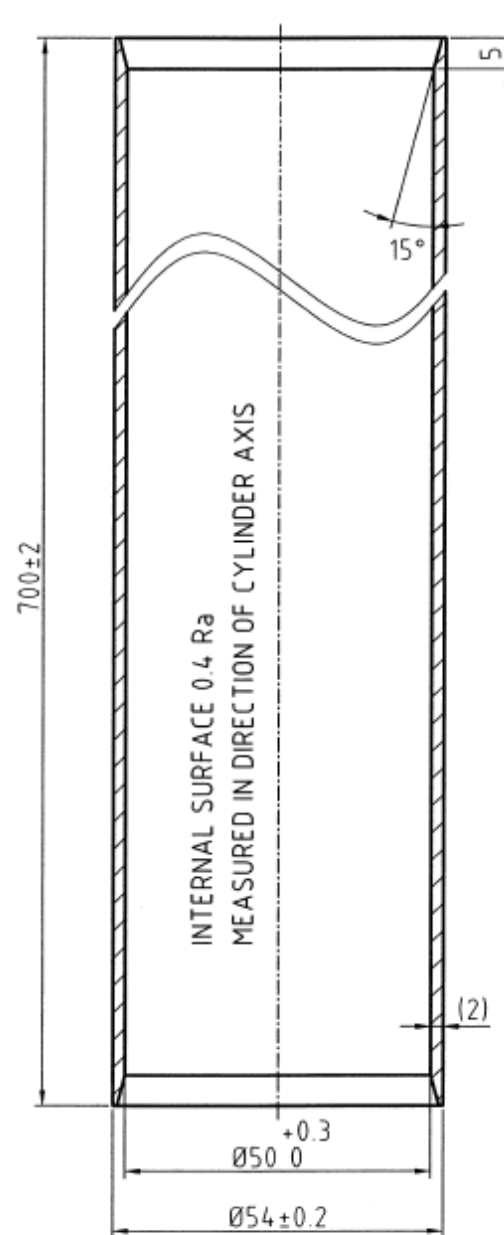
B2071

Revision 4-2002

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Cylinder pipe	Ø63/4.7 x 850	PVC-U	ISO 4422-2/11922-1	Serie 6.3 / PN 16		
Description	Dimensions	Material	Standards		Remarks	
	Detail drawing Cylinder pipe		Scale: 1 : 1		Drawn by:	K.Erpf 25.09.00
					Checked by:	 02.02.02
					Released by:	 02.02.02
International Handpump Specification					C2072	

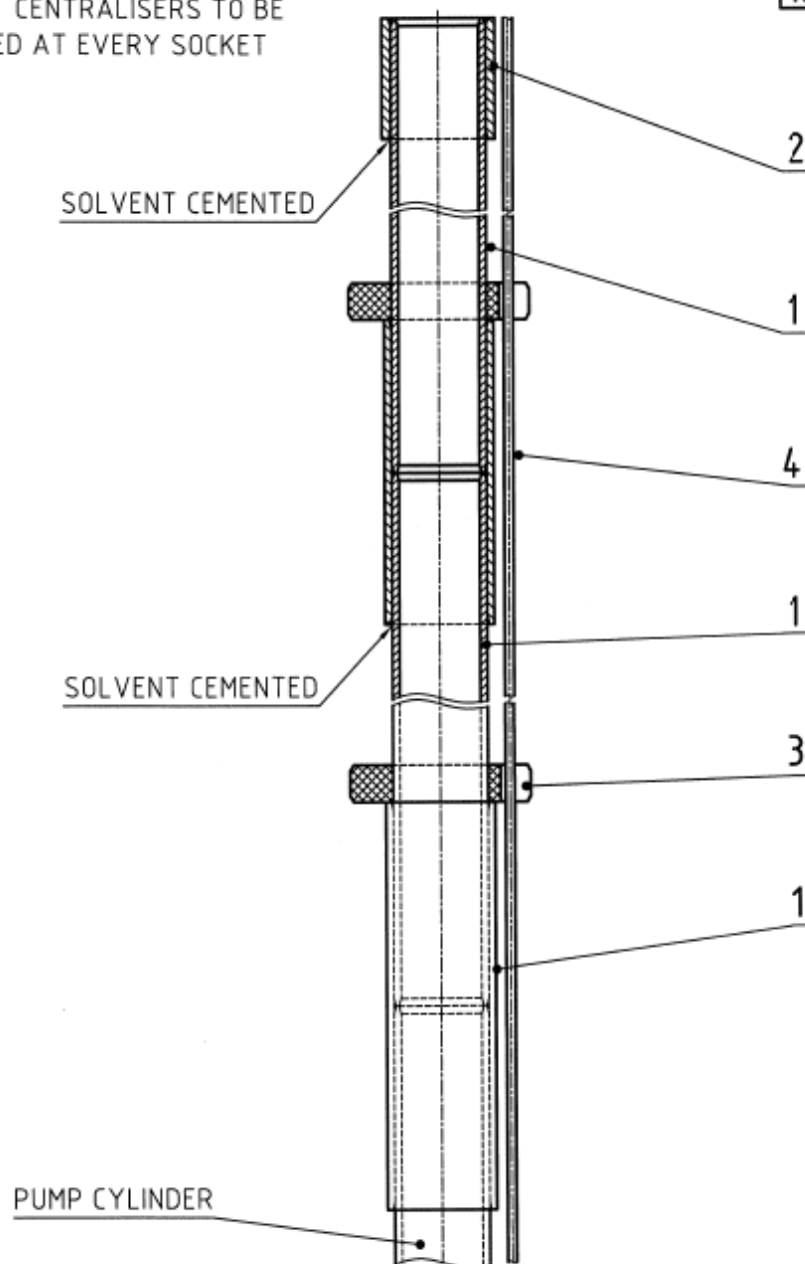
GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

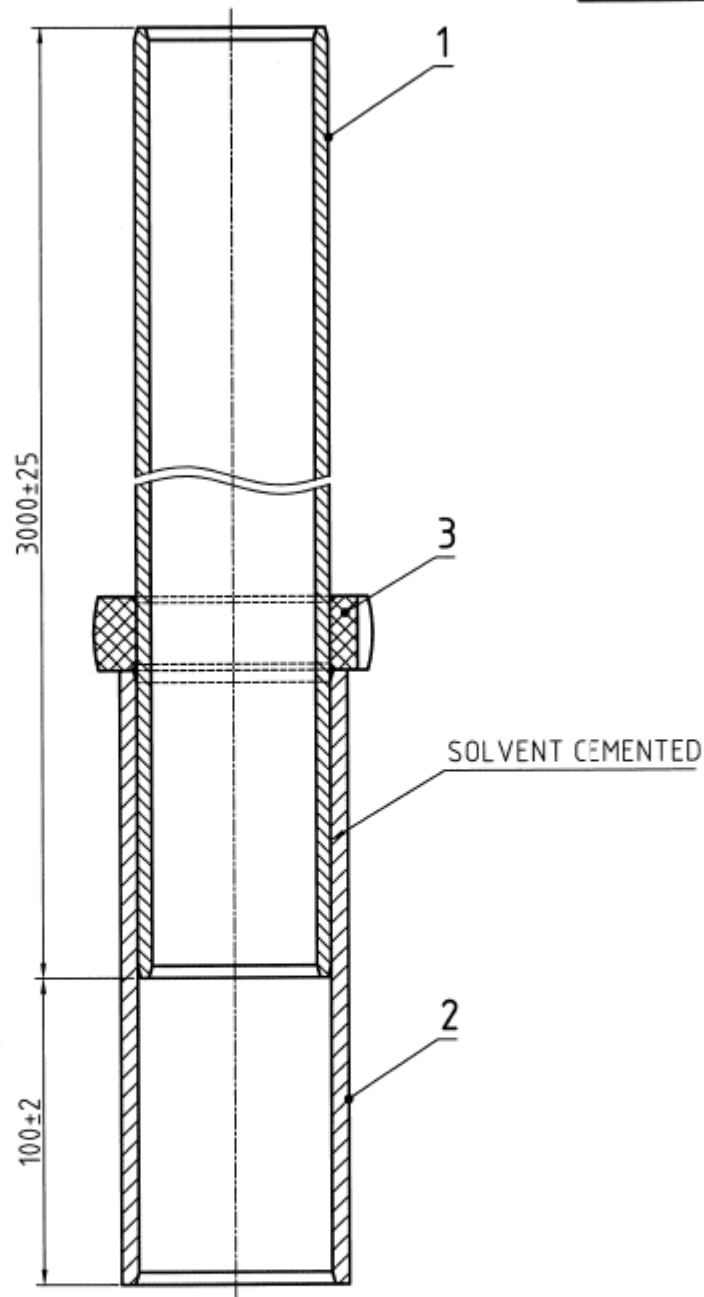
Liner	Ø54/2 x 700	Copper-zinc alloy	ISO 426-1	(CuZn 37)		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale:	Drawn by:	H.eder	15.03.97
	Liner		1 : 1	Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2073		

NOTE: CENTRALISERS TO BE
PLACED AT EVERY SOCKET

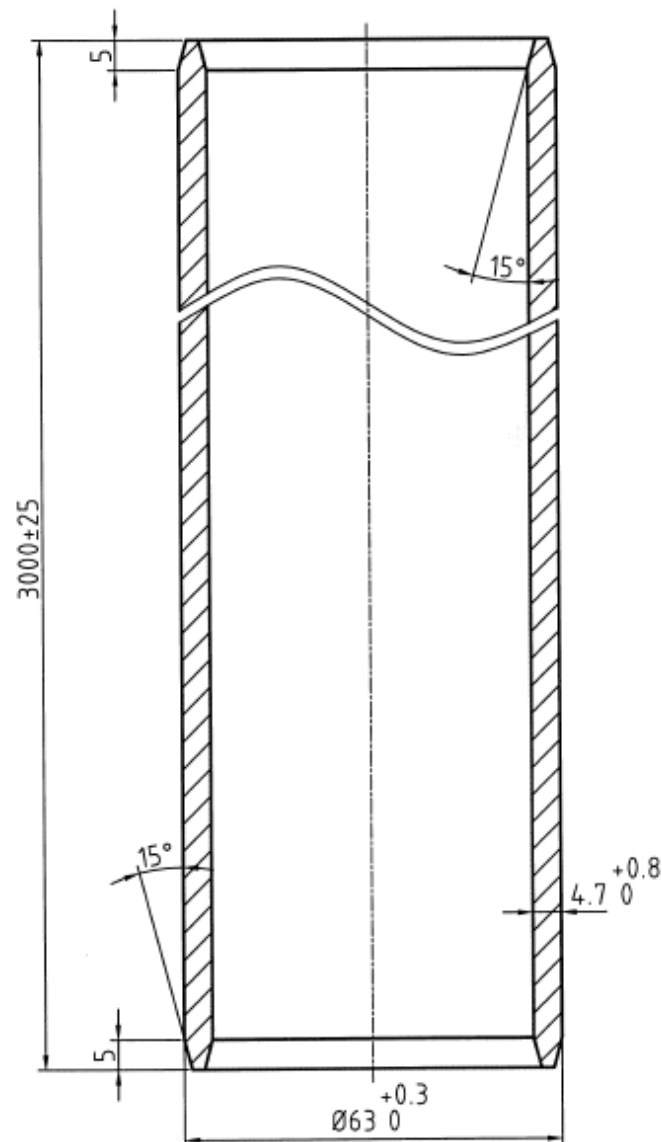
Revision 4-2002



4	X	Rope	C1087	---
3	X	Centraliser	C2075, C2076, C2077, C2078, C2079 or C2217	---
2	1	Top sleeve	C2042	---
1	X	Riser pipe assy.	B2106	---
Pos.	Qty.	Description	Drawing. No.	Remarks
		Sub assembly		
		Rising main assembly		
		Scale: 1 : 4		
		Drawn by: K. Erpf 06.12.01		
		Checked by: [Signature] 02.02.02		
		Released by: [Signature] 02.02.02		
International Handpump Specification			A2119	

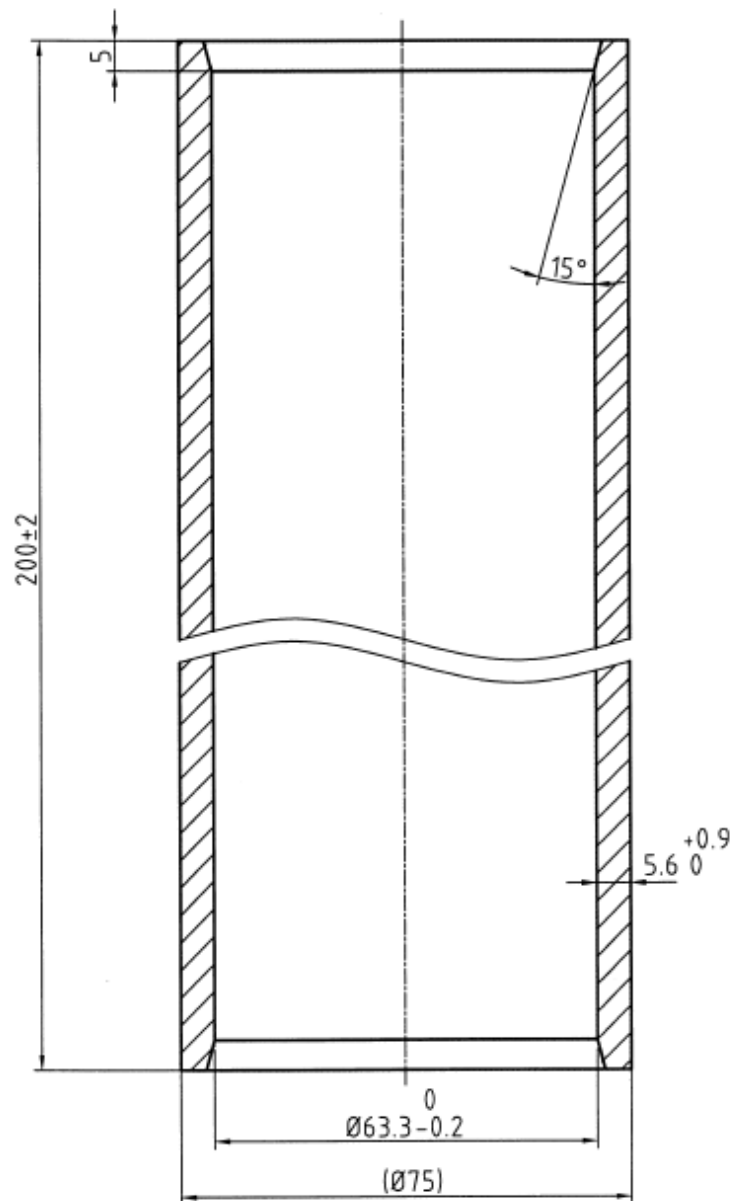


3	1	Centraliser	C2075, C2076, C2077, C2078, C2079 or C2217	
2	1	Socket	C2261	---
1	1	Riser pipe 3 m	C2129	---
Pos.	Qty.	Description	Drawing. No.	Remarks
HTN		Sub assembly	pre-assembled	Scale:
		Riser pipe assy. (3 m)		1 : 2
		Drawn by:	K.Erpf	27.03.01
		Checked by:	<i>[Signature]</i>	02.02.02
		Released by:	<i>[Signature]</i>	02.02.02
International Handpump Specification				 B2106

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

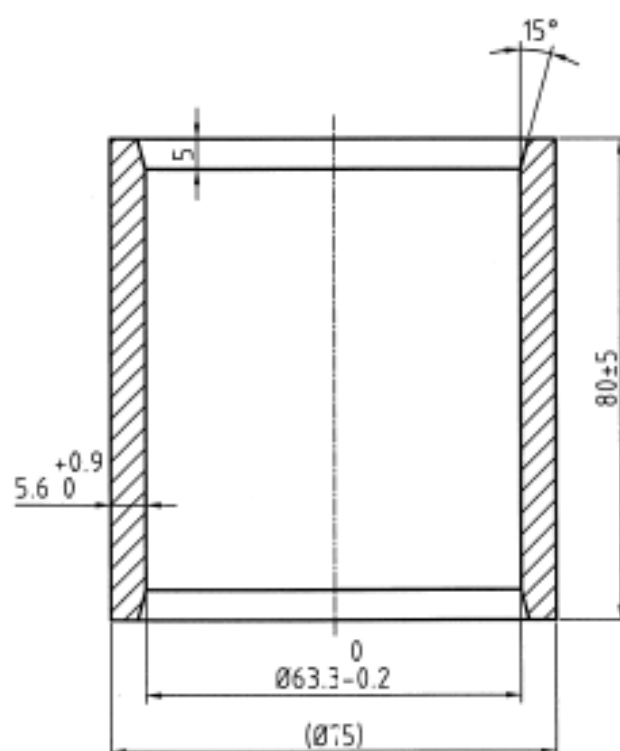
ALL SHARP CORNERS TO BE ROUNDED OFF

Rising main pipe	Ø63/4.7 x 3000	PVC-U	ISO 4422-2/11922-1	Serie 6.3 / PN 16		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	27.03.01
	Rising main pipe			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2129		

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Socket	Ø75/5.6 x 200	PVC-U	ISO 4422-2/11922-1	Serie 6.3 / PN 16		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	13.03.01
	Socket			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2261		

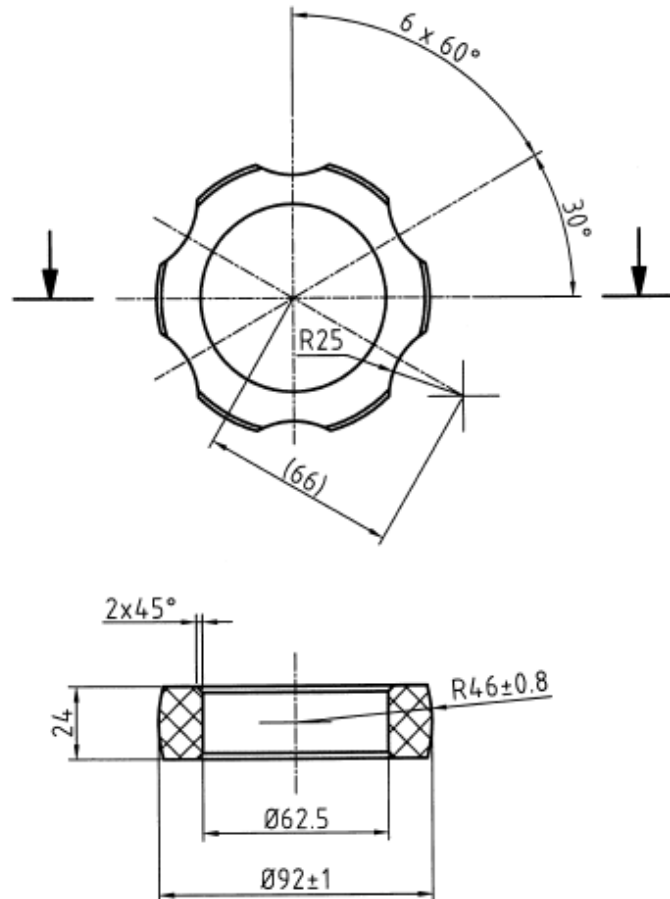


GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Top sleeve	Ø75/5.6 x 80	PVC-U	ISO 4422-2/11922-1	Serie 6.3 / PN 16		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	15.02.00
	Top sleeve			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2042		

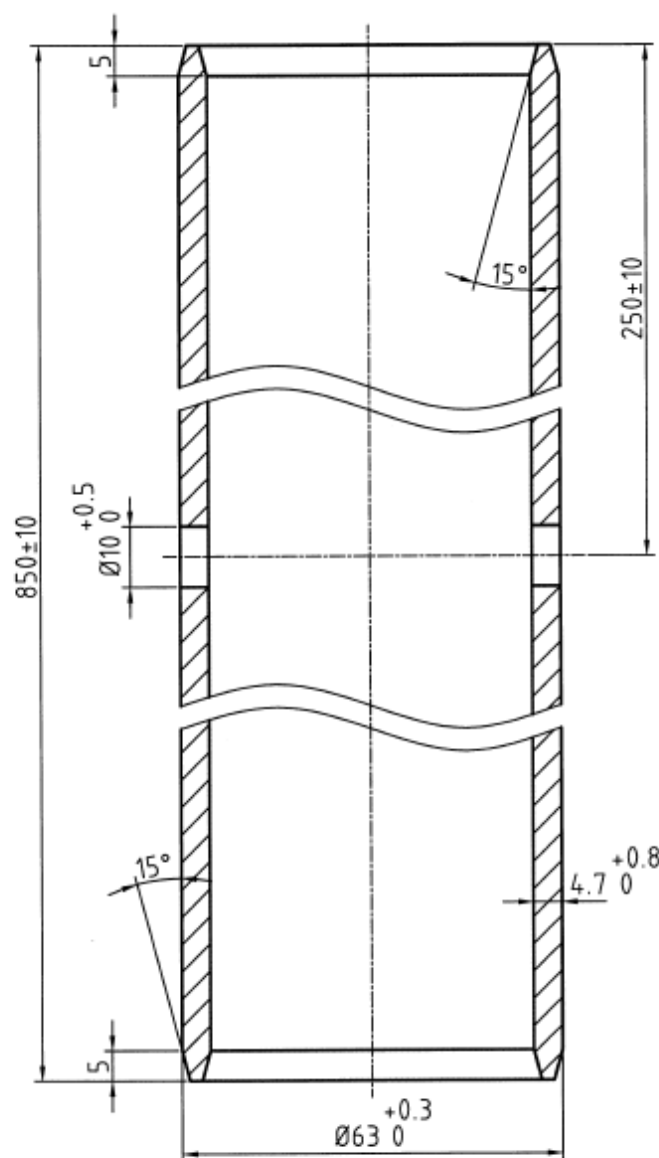
NOTE:
THE OLD VERSION
(WITH Ø8 MM HOLES
AND R30 RELIEVING)
IS STILL ACCEPTABLE

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

FREE OF BURRS ON FLASHLINE

Centraliser 4"	Ø92 x 24	Nitrile/nat. Rubber	ISO 3302-1 (M3)	70-80 Shore A		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Centraliser 4"		Scale: 1 : 2	Drawn by:	K.Erpf	13.03.01
				Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2079		

Revision 4-2002



GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

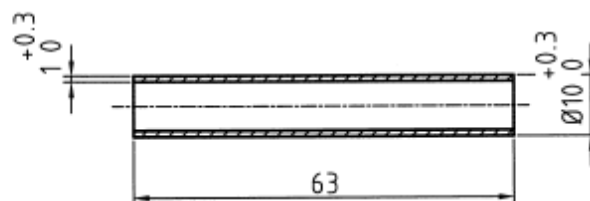
ALL SHARP CORNERS TO BE ROUNDED OFF

Suction pipe	Ø63/4.7 x 850	PVC-U	ISO 4422-2/11922-1	Serie 6.3 / PN 16		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Option	Scale:	Drawn by:	K.Erpf 02.03.99
	Suction pipe			1 : 1	Checked by:	 02.02.02
					Released by:	 02.02.02
International Handpump Specification					C2262	

Revision 4-2002

NOTE:

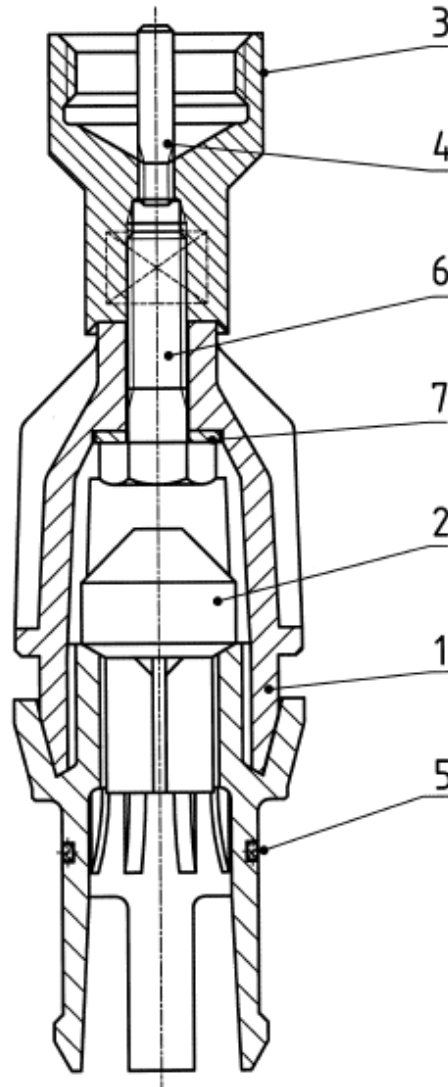
IF SLEEVES OF PA (POLYAMIDE OR "NYLON") ARE USED, "LOCTITE PRISM 406" OR EQUIVALENT HAS TO BE USED FOR JOINTING WITH SUCTION PIPE C2081.

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Sleeve	Ø10/1 x 63	PVC-U	ISO 4422-2/11922-1	extruded		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Sleeve	Option	Scale: 1 : 1	Drawn by:	K.Erpf	02.03.99
				Checked by:		02.02.02
				Released by:		02.02.02
				International Handpump Specification		

Revision 4-2002



7	1	Washer	C1064	M10
6	1	Hex. bolt	C1066	M10 x 35
5	1	O-Ring	C1021	---
4	1	Push rod	C2760	---
3	1	Fishing connector	C2220	---
2	1	Bobbin	C2088	---
1	1	Valve body assy.	B2085	---
Pos.	Qty.	Description	Drawing. No.	Remarks

Sub assembly

Footvalve arrangement

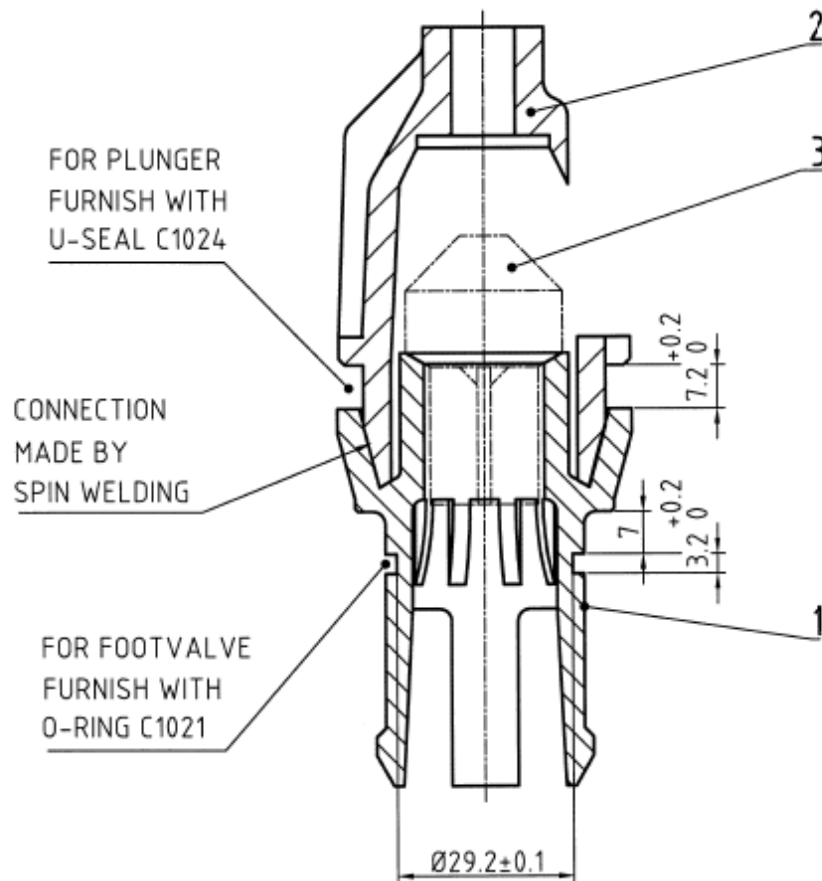
Scale:
1 : 1

Drawn by:	K. Erpf	16.02.00
Checked by:		02.02.02
Released by:		02.02.02

International Handpump Specification



A2265



AFTER SPINWELDING 100% TENSILE TESTING REQUIRED: TEST LOAD 3500 NEWTON

O-RING GROOVE MACHINED AFTER SPINWELDING AND TESTING

GENERAL TOLERANCE ± 0.2 UNLESS OTHERWISE STATED

3	1	Bobbin	C2088	---
2	1	Valve body upper	C2087	---
1	1	Valve body lower	C2086	---
Pos.	Qty.	Description	Drawing. No.	Remarks



Sub assembly

Valve body assy.

Scale:

1 : 1

Drawn by: K. Erpf 15.12.97

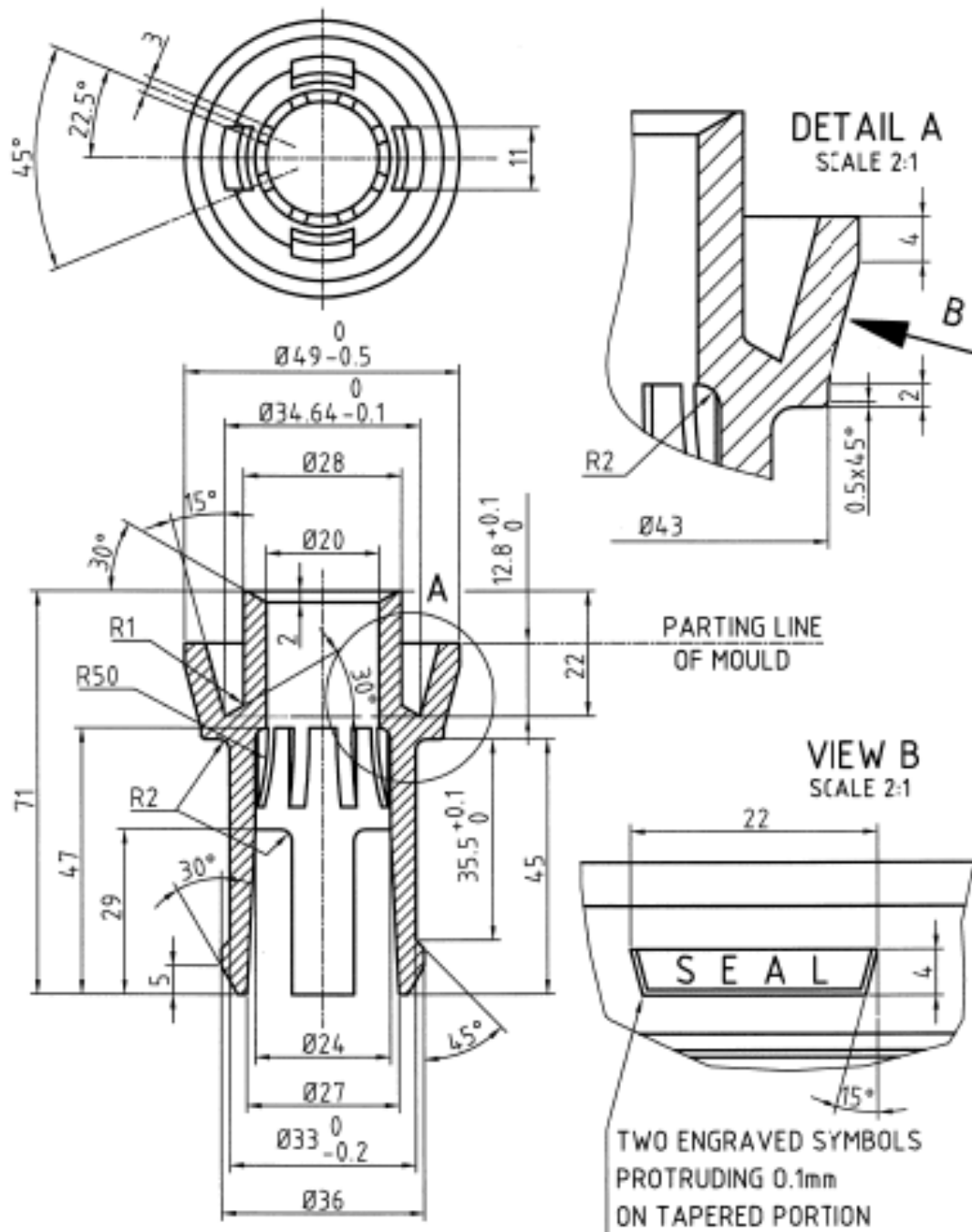
Checked by: [Signature] 02.02.02

Released by: [Signature] 02.02.02

International Handpump Specification

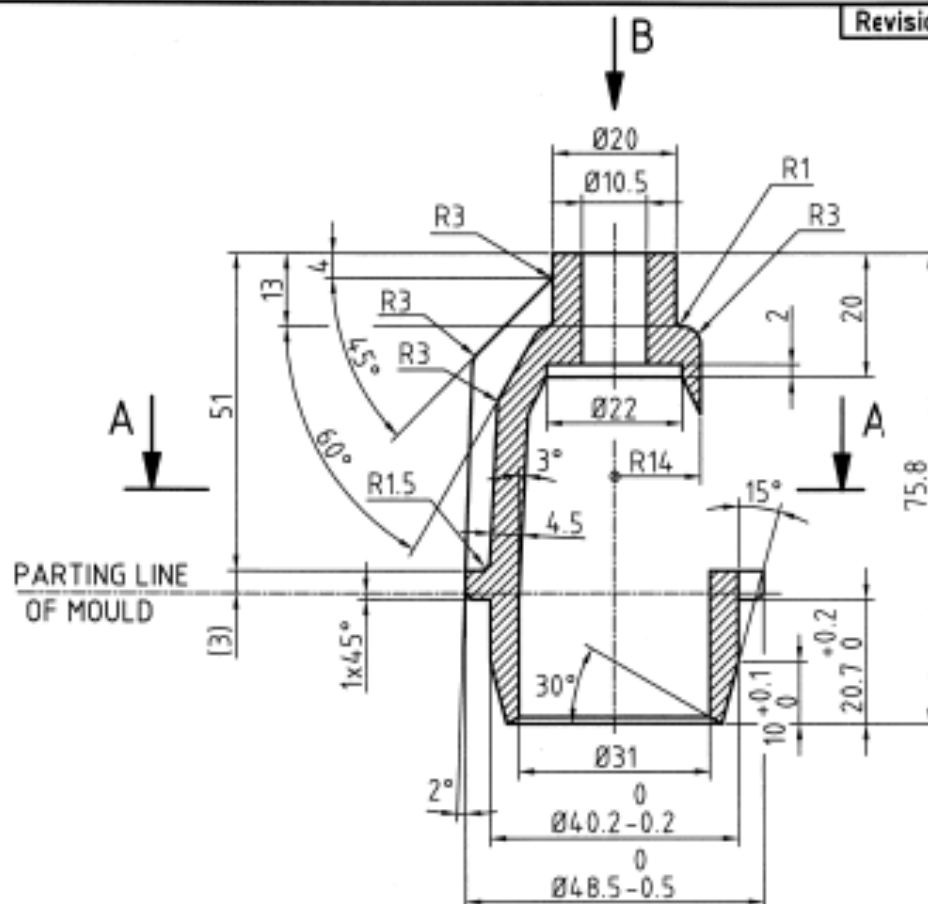


B2085

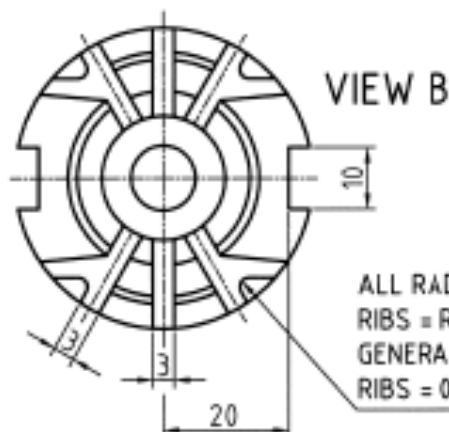
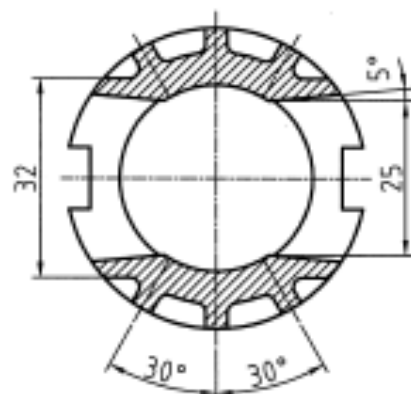
GENERAL TOLERANCE ± 0.3 UNLESS OTHERWISE STATED

Valve body lower	Ø49 x 71	POM-K (no filler)	ISO 9988-1	Injection moulded		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1 (2:1)	Drawn by:	K.Erpf	15.12.97
	Valve body lower			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2086		

Revision 4-2002



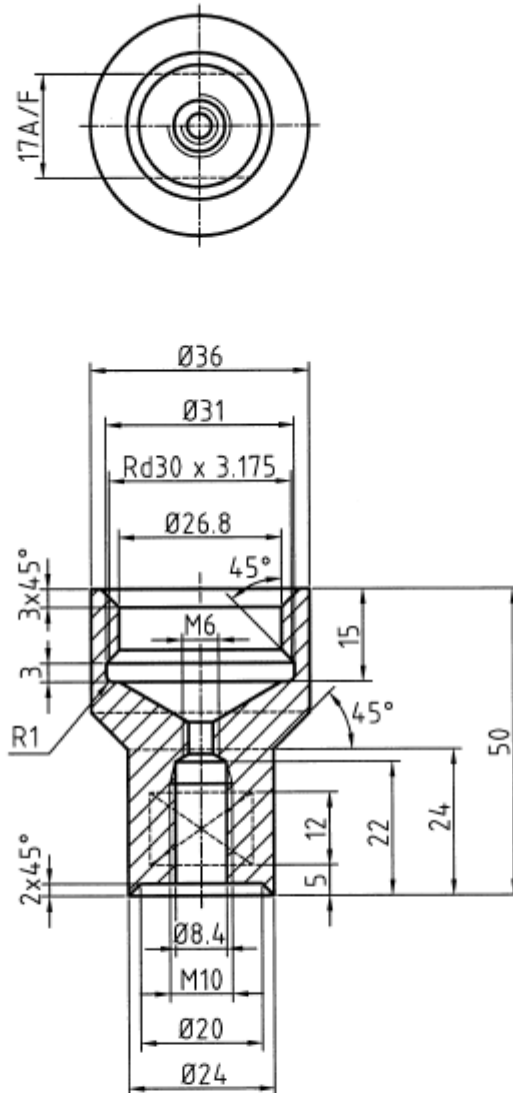
SECTION A-A



ALL RADII BETWEEN
RIBS = R1.5
GENERAL TAPER OF
RIBS = 0.5° / SIDE

GENERAL TOLERANCE ± 0.3 UNLESS OTHERWISE STATED

Valve body upper	Ø48.5 x 75.8	PQM-K (no filler)	ISO 9988-1	Injection moulded	
Description	Dimensions	Material	Standards	Remarks	
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf 10.07.98
	Valve body upper			Checked by:	 02.02.02
				Released by:	 02.02.02
International Handpump Specification				C2087	

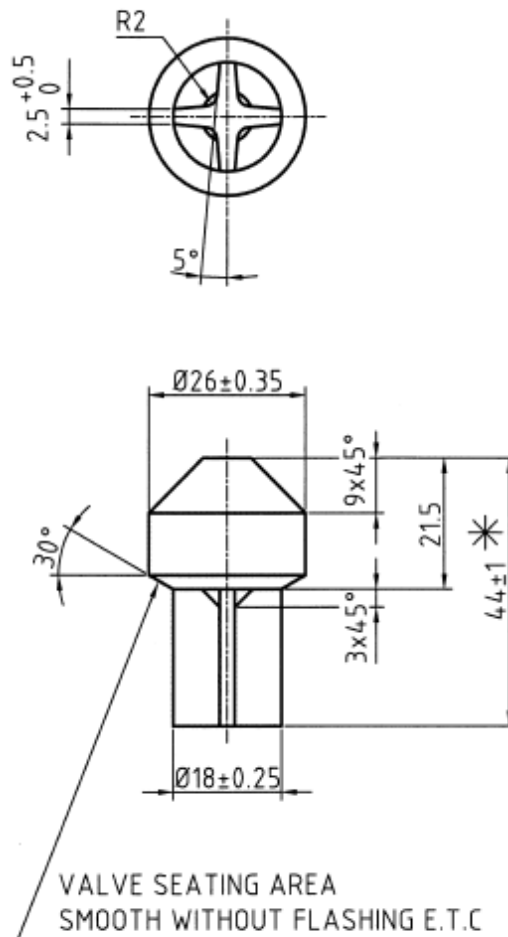


GENERAL TOLERANCES ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

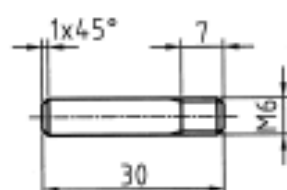
Fishing connector	Ø36 x 50	Copper-zinc alloy	ISO 426-2	CuZn38Pb4		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	16.11.98
	Fishing connector			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2220		

- * IF NEW MOLDS ARE MADE, INCREASE LENGTH OF FINS FOR BETTER GUIDANCE.
EXISTING BOBBIN WITH LENGTH 40mm IS STILL VALID

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

FREE OF BURRS ON FLASHLINE

Bobbin	Ø26 x 44	Nitrile rubber	ISO 3302-1 (M2)	70-80 Shore A		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K. Erpf	21.11.97
	Bobbin			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2088		

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

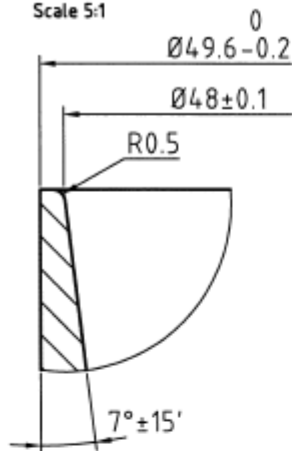
ALL SHARP CORNERS TO BE ROUNDED OFF

Push rod	Ø6 x 30	Stainless Steel	ISO 15510	X5CrNi 18-9		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Push rod		Scale: 1 : 1	Drawn by:	K.Erpf	15.03.99
				Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2760		

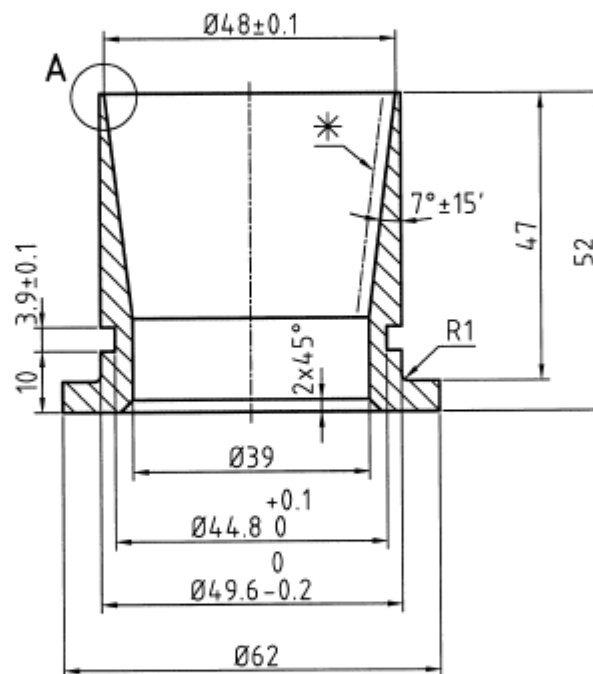
Revision 4-2002

Detail A

Scale 5:1

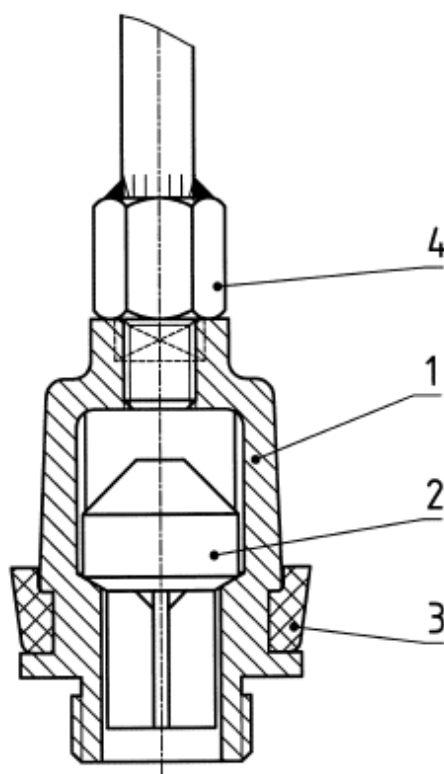


* THIS SURFACE TO BE
MACHINED SMOOTHLY

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

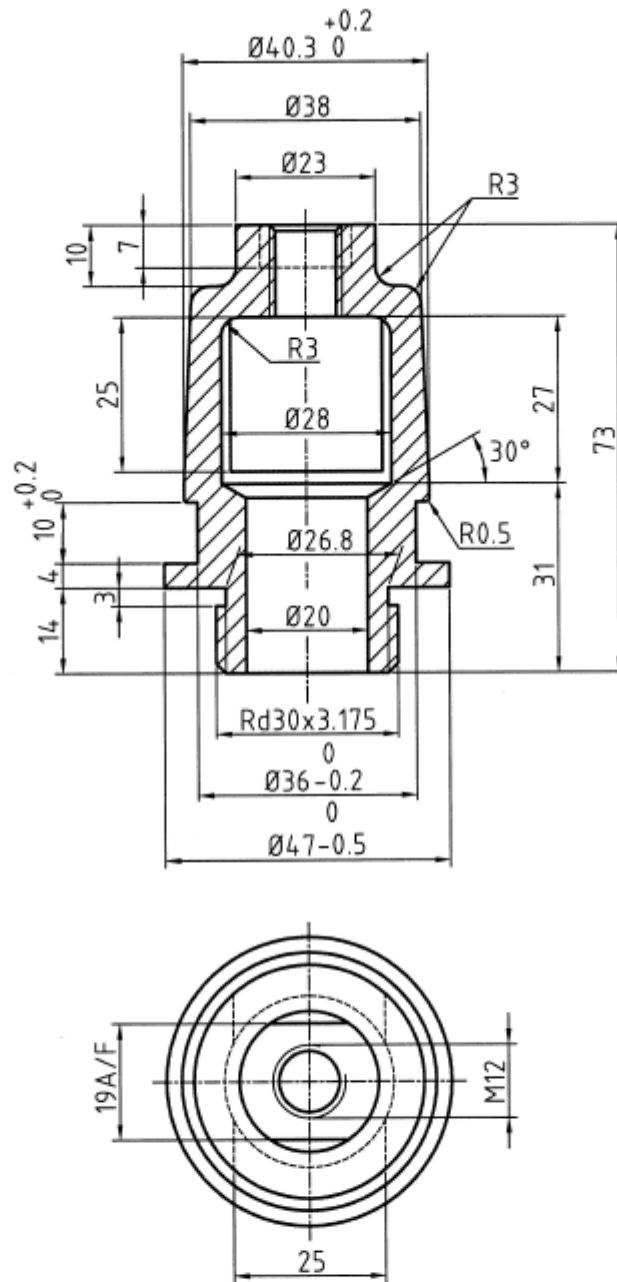
Footvalve receiver	Ø62 x 52	Copper-zinc alloy	ISO 426-2	CuZn38Pb4		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1 (5 : 1)	Drawn by:	K.Erpf	18.04.00
	Footvalve receiver			Checked by:		02.02.02
				Released by:		02.02.02
	International Handpump Specification				C2299	

Revision 4-2002



4	1	Plunger rod assy.	B2258	---
3	1	Cup seal	C2758	---
2	1	Bobbin	C2088	---
1	1	Plunger body	C2757	---
Pos.	Qty.	Description	Drawing. No.	Remarks
		Sub assembly		
		Plunger assembly		
		International Handpump Specification		
		Scale: 1 : 1		Drawn by: K. Erpf 16.02.00
				Checked by:  02.02.02
				Released by:  02.02.02
		A2266		

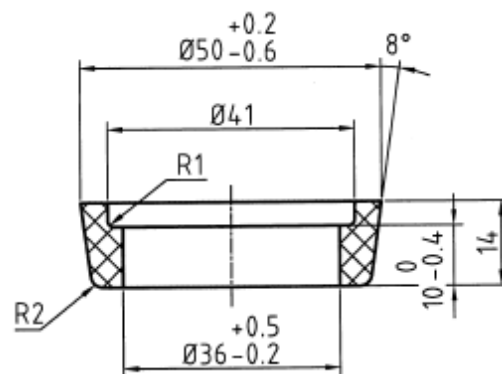
Revision 4-2002

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Plunger body	Ø47 x 73	Copper-zinc alloy	ISO 426-2	CuZn38Pb4		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	15.03.99
	Plunger body			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2757		

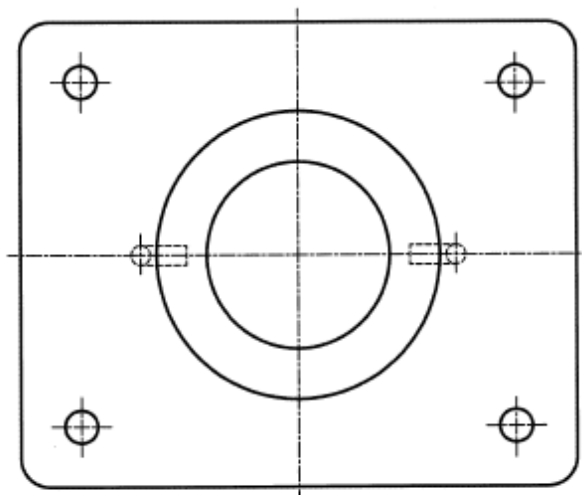
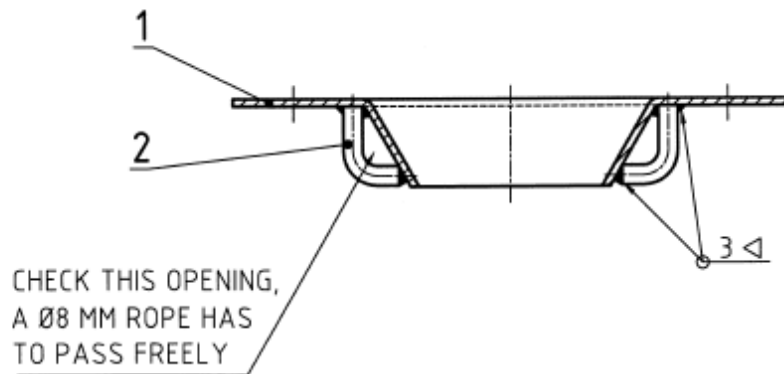
Revision 4-2002



GENERAL TOLERANCE +/-0.5 UNLESS OTHERWISE STATED

Cup seal	Ø50 x 14	Nitrile rubber	ISO 3302-1 (M2)	80-90 Shore A		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	15.03.99
	Cup seal			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2758		

Revision 4-2002



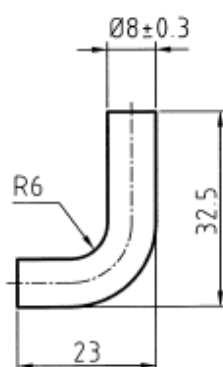
HOT DIP GALVANIZED TO ISO 1461

WELDED TO ISO 9692

2	2	Eye	C2094	---
1	1	Steel cone	C2093	---
Pos.	Qty.	Description	Drawing. No.	Remarks
		Sub assembly		
		Steel cone assy.		
		Scale: 1 : 2.5 Drawn by: t.feder. 15.03.97 Checked by:  02.02.02 Released by:  02.02.02		
International Handpump Specification				B2092

NOTE: THIS COMPONENT CAN ALSO BE
MADE OF Ø6 MM ROD (OPTIONAL)

Revision 4-2002



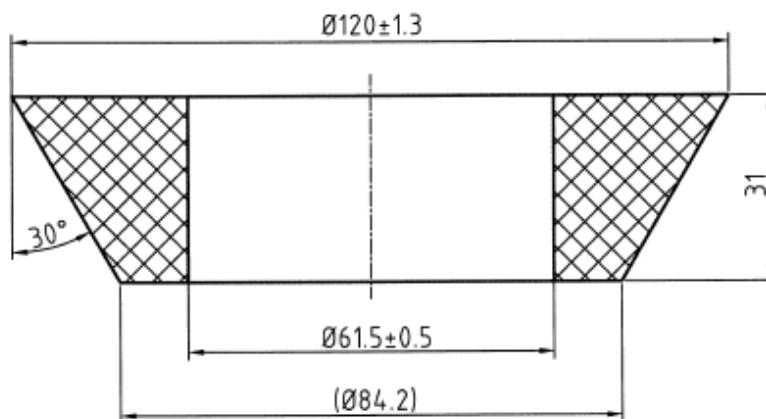
LENGTH PRIOR TO BENDING = 44MM

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Eye	Ø8 x 44	St 37	---	---
Description	Dimensions	Material	Standards	Remarks
	Detail drawing		Scale: 1 : 1	Drawn by: t.leder. 15.03.97
	Eye			Checked by:  02.02.02
				Released by:  02.02.02
International Handpump Specification				C2094

Revision 4-2002

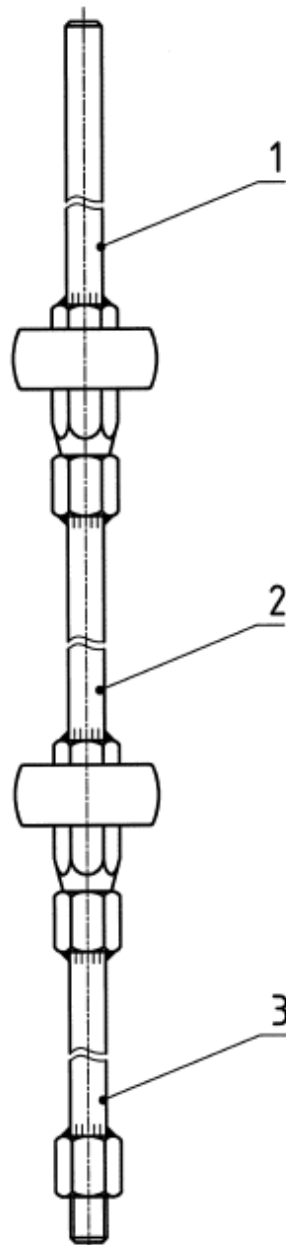


GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

FREE OF BURRS ON FLASHLINE

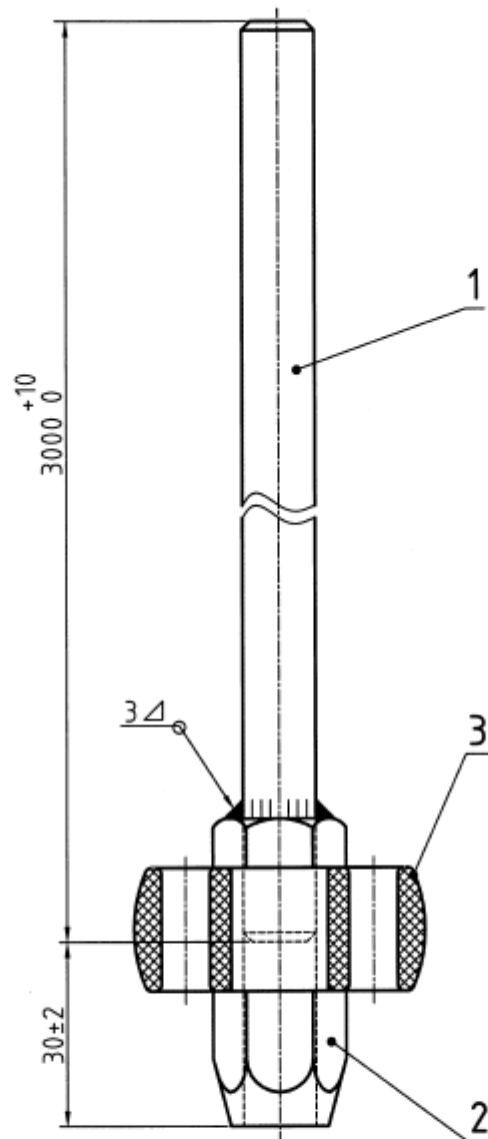
Compression cone		Ø120 x 31	Nitrile/nat. Rubber	ISO 3302-1 (M3)	65-75 Shore A		
Description		Dimensions	Material	Standards		Remarks	
	Detail drawing			Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
	Compression cone				Checked by:		02.02.02
					Released by:		02.02.02
International Handpump Specification					C2095		

Revision 4-2002



3	1	Plunger rod assy.	B2258	Stainless Steel
2	X	Pumprod assy.	B2214	---
1	1	Top rod assembly	B2207	---
Pos.	Qty.	Description	Drawing. No.	Remarks
		Sub assembly Mild Steel		
		Pumprod arrangement		
		Scale: 1 : 2		
International Handpump Specification		Drawn by: K. Erpf		16.11.98
		Checked by: 		02.02.02
		Released by: 		02.02.02
				A2206

Revision 4-2002



GENERAL TOLERANCE +/- 1 UNLESS OTHERWISE STATED

HOT DIP GALVANIZED TO ISO 1461

WELDED TO ISO 9692

3	1	Centraliser	C2212	---
2	1	Coupler	C2213	---
1	1	Rod	C2208	---
Pos.	Qty.	Description	Drawing. No.	Remarks

Sub assembly

Mild Steel

Scale:

Drawn by: K. Erpf 09.08.98

Checked by: 02.02.02

Released by: 02.02.02

Top rod assembly

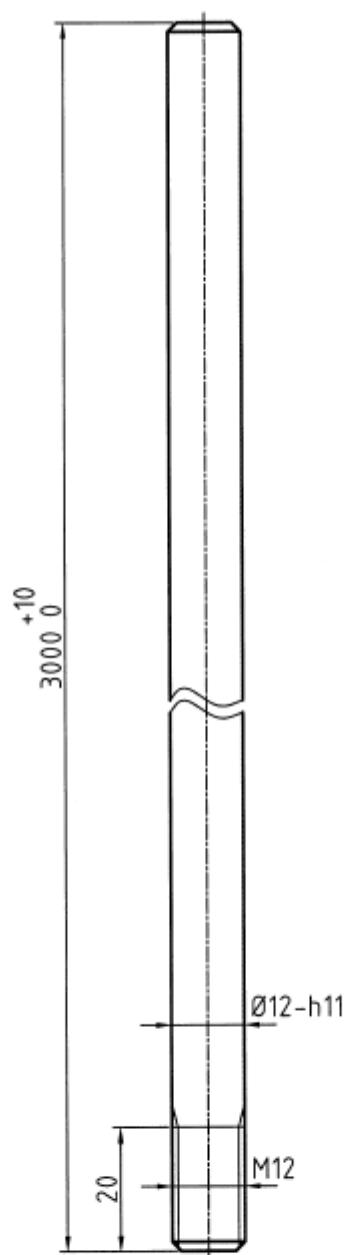
1 : 1

International Handpump Specification



B2207

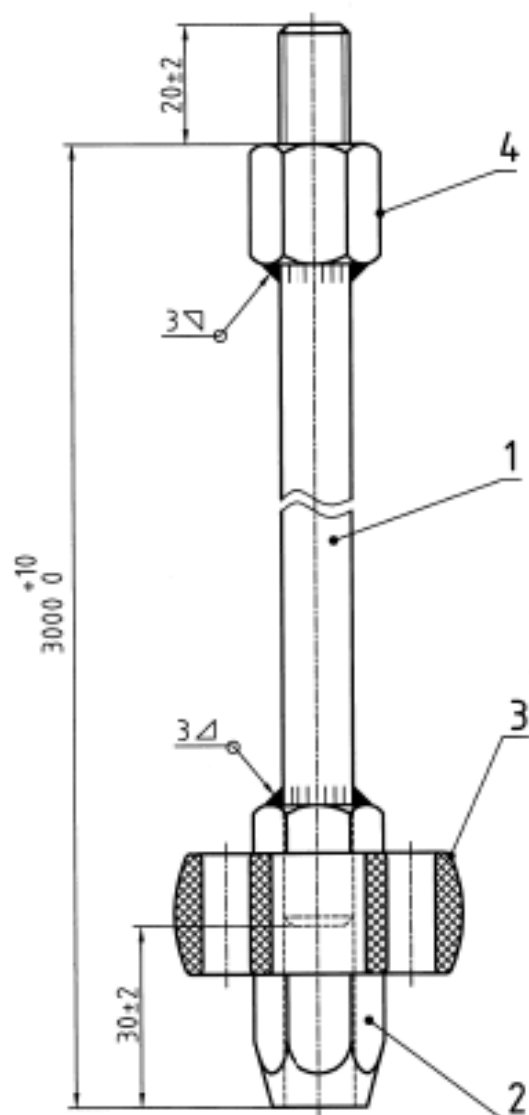
Revision 4-2002



GENERAL TOLERANCE +/-1 UNLESS OTHERWISE STATED

GENERAL TOLERANCE 7 - UNLESS OTHERWISE STATED					
Rod	Ø12 x 3000	St 37-2 K	---	bright	
Description	Dimensions	Material	Standards	Remarks	
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf 03.08.98
	Rod			Checked by:	 02.02.02
				Released by:	 02.02.02
International Handpump Specification				C2208	

Revision 4-2002

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

HOT DIP GALVANISED TO ISO 1461

WELDED TO ISO 9692

4	1	Hex.coupler	C1012	M12 x 20
3	1	Centraliser	C2212	---
2	1	Coupler	C2213	---
1	1	Rod	C2372	---
Pos.	Qty.	Description	Drawing. No.	Remarks

Sub assembly Mild Steel

Pumprod assembly

Scale:

1 : 1

Drawn by: K.Erpf 09.08.98

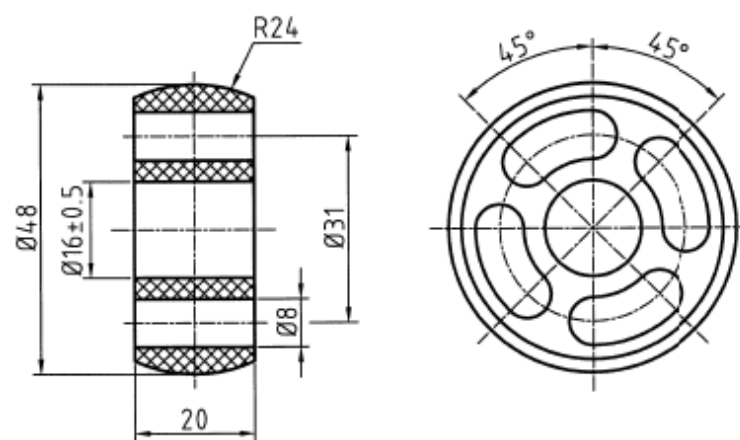
Checked by: [Signature] 02.02.02

Released by: [Signature] 02.02.02

International Handpump Specification

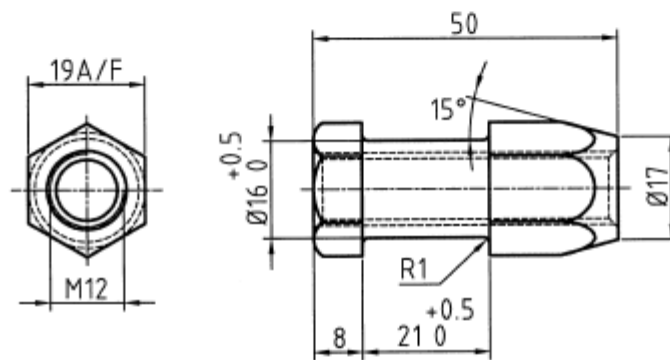


B2214

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATED

FREE OF BURRS ON FLASHLINE

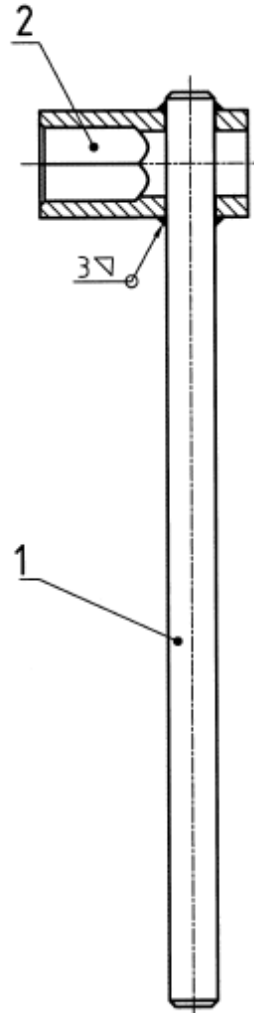
Centraliser	Ø48 x 20	Nitrile rubber	ISO 3302-1 (M2)	70-80 Shore A		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Centraliser		Scale: 1 : 1	Drawn by:	K.Erpf	09.03.98
				Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2212		

GENERAL TOLERANCE ± 0.5 UNLESS OTHERWISE STATEDELECTROPLATED TO ISO 2081/82
ALL SHARP CORNERS TO BE ROUNDED OFF

Coupler	Hex. 19A/F x 50	Class 8.8	---	made of C1015		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	09.08.98
	Coupler			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2213		

Afridev Handpump Specification, Revision 4-2002

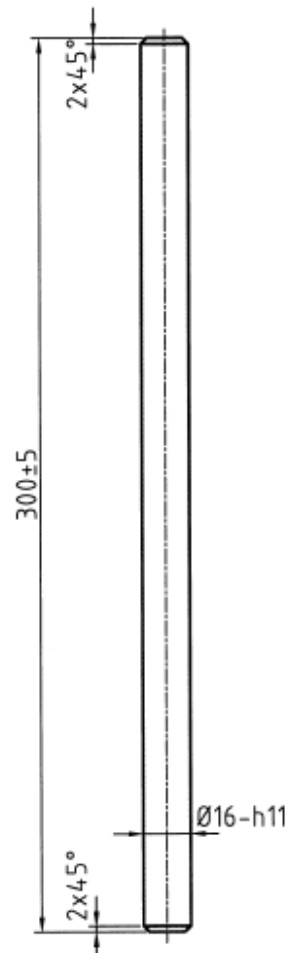
Standard Parts



ELECTROPLATED TO ISO 2081/82

WELDED TO ISO 9692

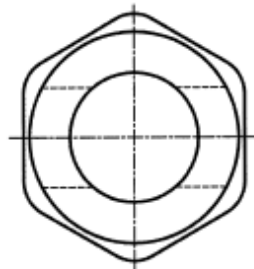
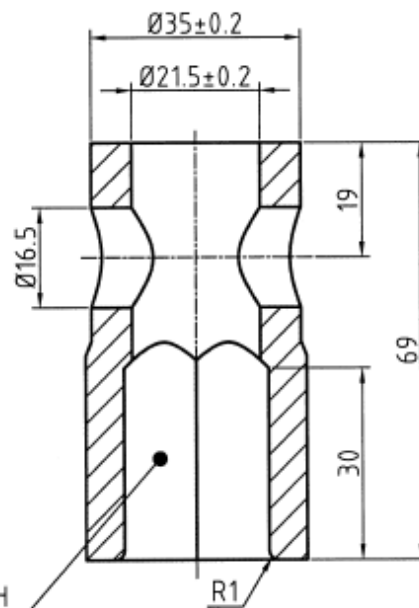
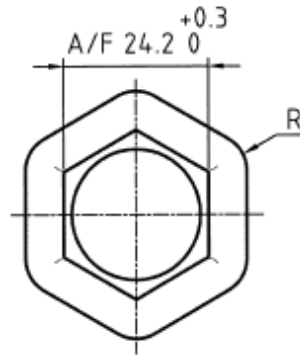
2	1	Socket	C2162	---
1	1	Handle rod	C2161	---
Pos.	Qty.	Description	Drawing. No.	Remarks
HTN		Sub assembly		Scale: 1:2
		Spanner assembly		Drawn by: t.leder. 15.03.97
				Checked by: 02.02.02
				Released by: 02.02.02
International Handpump Specification				B2160

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

ALL SHARP CORNERS TO BE ROUNDED OFF

Handle rod	Ø16 x 300	St 37-2 K	---	bright		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 2	Drawn by:	t.leder.	15.03.97
	Handle rod			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2161		

Revision 4-2002

GENERAL TOLERANCE ± 1 UNLESS OTHERWISE STATED

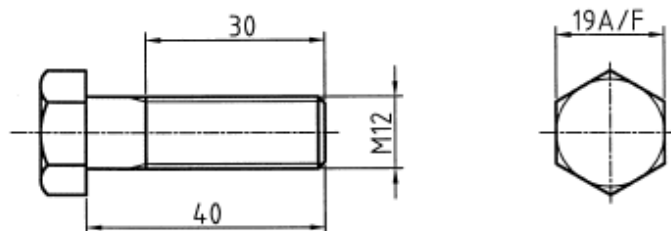
ALL SHARP CORNERS TO BE ROUNDED OFF

Socket	Ø35 x 69	St 42	---	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K.Erpf	22.06.98
	Socket			Checked by:		02.02.02
				Released by:		02.02.02
International Handpump Specification				C2162		



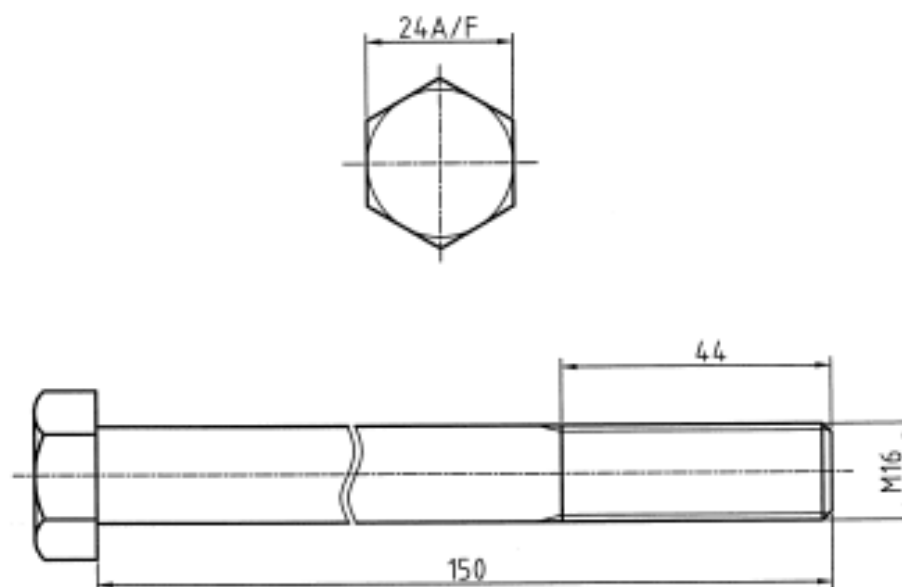
ELECTROPLATED TO ISO 2081/82

Hexagonal nut	M12	Class 8.8	ISO 4032	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Hexagonal nut		Scale: 1 : 1	Drawn by:	t.leder.	15.03.97
				Checked by:		
				Released by:		
International Handpump Specification				C1016		

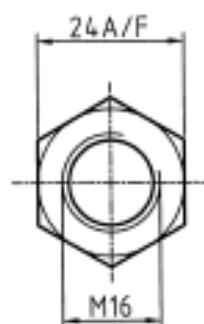


ELECTROPLATED TO ISO 2081/82

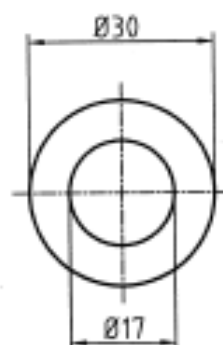
Hexagonal bolt	M12 x 40	Class 8.8	ISO 4014 (4017)	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Hexagonal bolt		Scale: 1 : 1	Drawn by:	f.leder.	15.03.97
				Checked by:		
				Released by:		
International Handpump Specification				C1017		



Hexagonal bolt	M16 x 150	Stainless Steel	ISO 4014	X5CrNi 18-9		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Hexagonal bolt		Scale: 1 : 1	Drawn by:	K.Erpf	14.03.01
				Checked by:		
				Released by:		
International Handpump Specification				C1114		



Hexagonal nut	M16	Brass	ISO 4032	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Hexagonal nut		Scale: 1 : 1	Drawn by:	K.Erpf	19.12.01
				Checked by:		
				Released by:		
International Handpump Specification				C1130		



Washer	Ø30/17 x 3	Brass	ISO 7089	---		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing Washer		Scale: 1 : 1	Drawn by:	K.Erpf	08.07.98
				Checked by:		
				Released by:		
International Handpump Specification				C1069		



TWISTED



WOVEN

TOLERANCE FOR ROPE THICKNESS IS +/- 1mm

Rope 6mm	Ø6 x	PP, PE or PA	---	twisted or woven		
Description	Dimensions	Material	Standards	Remarks		
	Detail drawing		Scale: 1 : 1	Drawn by:	K. Erpf	12.03.00
	Rope 6mm			Checked by:		
				Released by:		
International Handpump Specification				C1087		