OLE DICH
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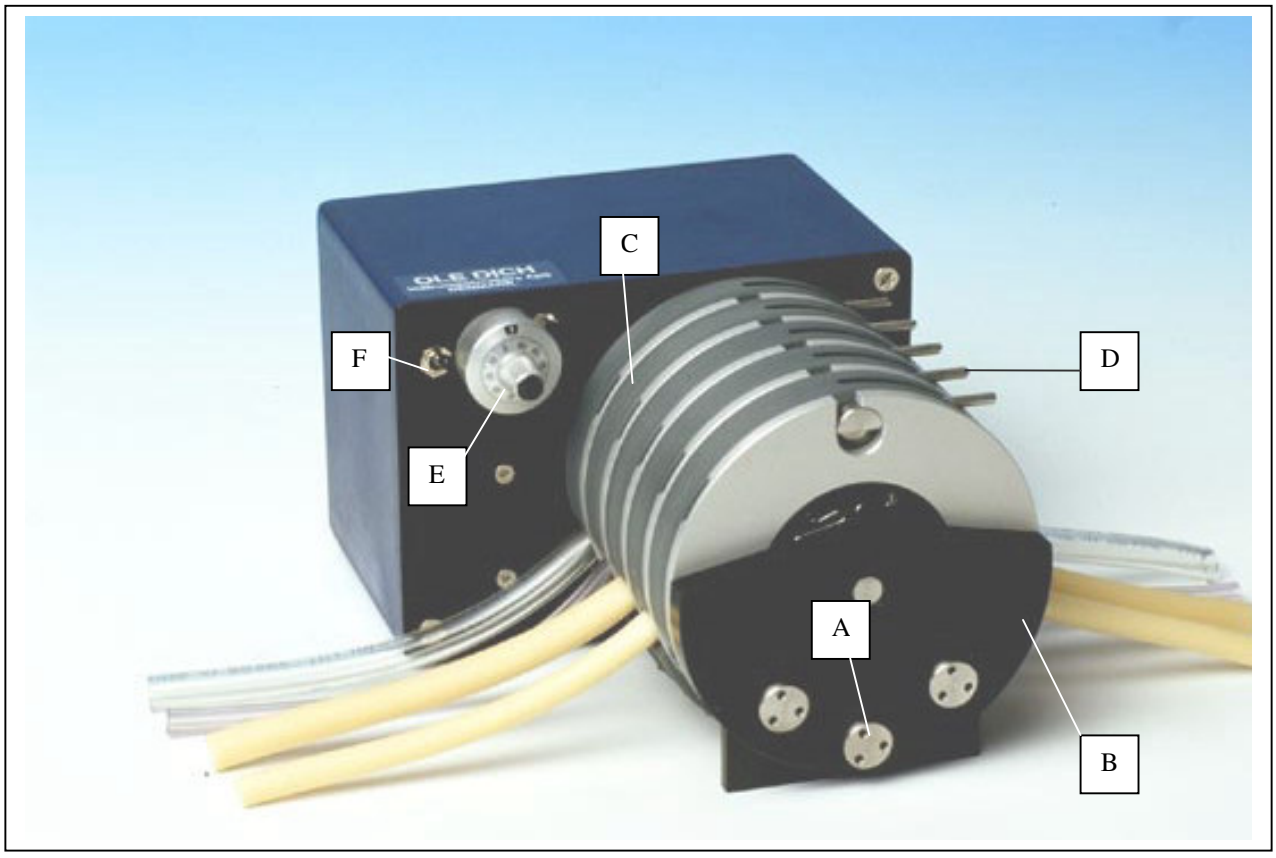
Tårnfalkevej 18, DK-2650 Hvidovre
Tlf: 36 78 41 85 Fax: 36 78 64 65

OPERATOR MANUAL

PERISTALTIC PUMP

Type: 115



A - Cap nut
B - Front bearing plate
C - Roller track
D - Lock for the roller track
E - 10 turns decimalknop for adjusting the speed
F - Knop for start /stop and pumpdirection

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GENERAL

Important!

For proper use of the pump please read the following very carefully.

If the pump does not function properly after having adhered to the procedures described in the trouble shooting section please contact the supplier

Please note that the pump is not intended for and must not be used for infusion or other means of direct contact with patients.

Installation

Upon receipt check the pump possible transport damages and check that the specs for current and power comply with local settings.

Press the Mascot power supply cable into the pumps 24 volt socket.

Temperature around the unit must meet the required (0 - 40°C).

Connections

None of the signal leads for remote control must be more than 1 metre.

Operation

The flowdirection of the pump wheels is changed by means of the switch (F). Center position stops the pump.

The flow can be adjusted with the decimalknop (E). (See flow rates page 9).

Tubes

The pump tubing must be of good elastic quality. For roller tracks type B1 and A1, we recommend the use of a silicone rubber tube with a wall thickness of 0.8 -1.0 mm and a max. outside diameter of 6 mm. For roller tracks type L1, a wall thickness of 1.5 – 1.6 mm and a max. outside diameter of 9 mm are recommended.

Calibrated pump tubes specially produced for roller pumps can be used with advantage in the pump.

Mounting of pump tubes

Turn the rollertrack lock (D) upwards and draw the roller track (C) out of the module by means of the rollertrack handle. Place the pump tube down in position and then press the roller track (C) down in the module and lock it by means of the rollertrack lock (D).

IMPORTANT! For tubes with less than 1.0 mm inside diameter, pull the tube approx. 5 mm out at the tube holder. This ensures that the tube lying correctly in the roller track.

The correct roller pressure and retention is established automatically.

The pump can operate with just as many different tube dimensions (flow) as the number of channels.

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Specifications

Regulation: 1:144
Flows: According to gearbox, flow scheme and channels.
Temperature: 0 - 40 °C
Powersupply: 230 V AC, 150 mA.
Powersupply pump: 24 volt DC, 0,6 amp. Short circuit proof.
Dimensions: H 105 x B 140 x D 120. (without channel).
Weight: 1.7 kgs without powersupply.

Specifications for pumpchannels:

Outside diameter: Ø 96 mm
Rollertrack diameter: Ø 60 mm
Max. pumppressure: 1.5 kg/cm2 (15 metre water column).
Max. height of suction: 6 m water column.
Weight per channel type A og B: 150 g
Weight per channel type L: 200 g

Type: 105.A.1

6 pressurerollers. For tubes up to max. ID 4 mm. Wall thickness 0,8 - 1,0 mm.

Tube outer diameter	0.5	1.0	1.5	2.0	2.5	3.0	4.0
ml per revolution	0.030	0.08	0.20	0.30	0.55	0.67	1.15

Type: 105.B.1

2 pressurerollers. For tubes up to max. ID 4 mm. Wall thickness 0,8 - 1,0 mm.

Tube outer diameter	0.5	1.0	1.5	2.0	2.5	3.0	4.0
ml per revolution	0.031	0.111	0.25	0.444	0.70	1.00	1.7

Type: 105.L.1

3 pressurerollers. For tubes up to max. ID 6 mm. Wall thickness 1,5 - 1,6 mm.

Tube outer diameter	3,0	4,0	5,0	6,0
ml per revolution	0.95	1.65	2.31	3.3

POSSIBLE PUMP FAILURES AND CAUSES

Check the following points:

1. Mains voltage according to type label on pump.
2. Power lead must be pressed completely to the bottom of the 24 volt socket at the rear of the pump.
3. Failures in electronics, motor or gearbox.
4. Tube or foreign bodies jammed between pump wheel and pump section (dismantle roller track).

Varying and unstable flow

1. Incorrect quality of tubes.
2. Oval tube cross-section (worn tube).
3. Failure at pump wheel.
4. Pressure rollers are out of adjustment.
5. Pressure rollers and guide rollers are jammed lubricate with thin oil.
6. Pressure roller jammed - cannot be moved forwards by the spring pressure because of impurities.

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The tube "wanders" through the pumpchannel

1. Incorrect quality of tube.
2. Dirt (fluid) between the tube and the tube holder 105.01.03
3. The tube holder is jammed because of impurities.

Tube rupture

1. If a tube rupture results in escape of liquid, the pump channels must be dismantled and cleaned. (See page 12).
2. If a tube rupture results in corroding liquid penetrating pump wheels, tube holders etc., one must immediately limit any damage by thoroughly rinsing with clean water before dismantling.

Maintenance

1. The bearings in the pump, the motor and the gearbox are one-shot lubricated.
2. The tube holders 105.01.03 must be able to move freely forwards and backwards, and must therefore be inspected at regular intervals.
3. Without the tube mounted, the springs 105.01.04 must be able to press the tube holders 105.01.03 into position and flush with the outer diameter of the channel.
4. If the tube holder 105.01.03 gets jammed or it moves sluggishly, the pump channels must be separated and cleaned.

Dismantling the pump channels

1. The pumpchannels are dismantled by removing the cap nuts (A).
2. Remove the front bearing plate (B) and the O-ring placed on the pump wheel shaft.
3. Carefully remove the pumpchannels by pulling in the end of the pumpchannels.
4. Carefully press out the guide bushes 105.04.01. This completes the separation of the modules.
5. The use of metal tools must be avoided.

Checking and cleaning of pump wheels

1. Dry off the pump wheels and check for damage. (Notice that pumpwheel number 1 cannot be removed from the pump
2. Check that pressure rollers and guide rollers rotate very easily.
3. Check that when the pressure roller system is pressed inwards, the spring should very easily be able to press it back again.
4. Lubricate all moving parts of the pump wheel with thin oil. (NOTICE! Do not lubricate other parts).
5. Check and clean the remaining parts of the pump module.
6. All parts (with the exception of pump wheels) can be washed off with lukewarm soapy water.

Assembly of the pump channels

1. When assembling the pump module, the central guide bush 105.04.01 and the spring 105.01.04 should not be fitted.
2. When the module has been built up, press the central guide bush into place while at the same time inserting the springs in their respective grooves.
3. Place the pumpchannels and ensure that the guide bushes enter the holes in the frontplate, while at the same time the pins in the pump wheel enter the holes in the next pumpwheel. Test that the tube holder 105.01.03 can move freely.

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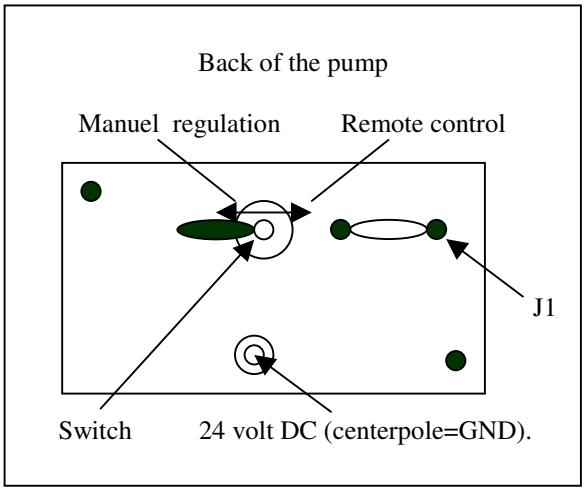
External control (J1): D-Sub 9 pole male

Pin 5 and 4 = speedregulation 0 to 10 volt.
Pin 6, 7 and 8 I/O signal START/STOP and flowdirection.

Pin	Description	Type
1	Speed out (30 pulses per motorrotation).	(OUTPUT)
2	Flowdirection.	(Output).
3	Alarm (H=normal condition L=overload (alarm)).	
4	+ 0 to 10 volt	(INPUT)
5	- gnd. for speedregulation.	
6	- gnd. for I/O signal	
7	Start/stop (H=stop L=rotation).	(INPUT)
8	Forward/reverse.	(INPUT)
9	Brake (H= without brake L=brake)	(INPUT)



OBSERVE: To get the right pumpwheelrotation, the number of read out pulses must be divided with the gear ratio.

Leads for external regulation max. 300 mm without shield and 1 m with shield.
(Connect shield and pin 5).

I/O signal: H: Open collector, L: 0-0.8 volt.

Spareparts

105.A.1 Single channel complete 6 roller.
105.B.1 Single channel complete 2 roller.
105.L.1 Single channel complete 3 roller.

105.00.05 Rollertrack complete type "B".
105.01.02 Distance piece for type "A" and "B".
105.01.03 Tube holders (1 set) for type "A" and "B"
105.01.04 Spring.

105.02.01 Dividing plate.
105.04.01 Guide bush set (3pcs).
105.04.02 Stay bolt for modul set (3pcs).
105.06.01 Front bearing plate.
105.08.01 Cap nut for bearing plate.

105.14.00 Pumpwheel type "A" 6 roller.
105.14.02 Spring for type "A" and "B"
105.14.03 Shaft for pressure roller for type "A" and "B"
105.14.04 Pressure roller for type "A" and "B"
105.14.10 Pumpwheel type "B" 2 roller.

105.15.00 Rollertrack complete type "A".
105.16.00 Pumpwheel type "L" 3 roller.
105.16.02 Pressure roller type "L"
105.16.04 Shaft for pressure roller type "L"
105.16.05 Spring type "L"

105.17.00 Rollertrack complete type "L".
105.17.02 Distance piece type "L"
105.17.03 Tube holders (1 set) type "L"

154.08.20 Key for cap nuts.

DK: EU-OVERENSSTEMMELSESERKLÆRING

CE

UK: EU-DECLARATION OF CONFORMITY

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erklærer på eget ansvar, at følgende produkter:
declare on own responsibility that the following products:

SLANGEPUMPE / PERISTALTIC PUMP: 115…….

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som er omfattet af denne erklæring, er i overensstemmelse med følgende standarder:
covered by this declaration, are in conformity with the following standards:

EN61326-1:1997, EN61010-1:1993, EN61000…., ENV50204:1995

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i.h.t. bestemmelserne i direktiv:
according to conformity in directive:

Maskindirektivet / Mashinery Directive: 89/392/EEC, (91/368/EEC), (93/44/EEC), (93/68/EEC).

Lavspændingsdirektiv / Low voltage Directive: 73/23/EEC, (93/68EEC).

EMC-direktivet / EMC Directive: 89/336/EEC, (92/31/EEC), (93/68EEC).

Adm. Direktør / Managing Director

Leif Magnussen Hvidovre, April 2002.

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WARRANTY

LIMITED WARRANTY

Provided there are errors and/or deficiencies on this unit please make use of the limited warranty included with the unit.

WARRANTY PERIOD

This warranty is valid for 36 months from documented date of purchase.

SCOPE OF WARRANTY

Supplier is responsible for correcting any deficiencies in the unit arising from production and/or from material used in production, provided these deficiencies are detected during normal use of the unit.

The unit must be transferred to the manufacturer or to the supplier stating the date of purchase and the serial number of the unit. It is the customers responsibility that the unit is properly packaged for transportation.

Warranty does NOT cover shipment damages occurring due to inadequate or faulty packaging.

Warranty repair is supplied without any additional cost to the customer. Repair in the period of warranty does NOT invoke extension of the current warranty period or start of a new warranty period.

Following warranty repair the unit is shipped to the customer at the cost of the supplier.

THE WARRANTY DOES NOT COVER:

Faulty equipment or damages having occurred by wrongly handling, misuse, failing to perform preventive maintenance as described in this manual, water leakage, erroneous installation or connection, by fire, accident, lightning, extraordinary variations in power supply or other electrical irregularities as fuses in the supply net as well as repair or other dismantling of the unit performed by other than the manufacturer or the supplier without written permission of either of the two.

DATE OF PURCHASE: **STAMP:**

INVOICE NO:

TYPE/SERIAL NUMBER:

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Flowschemes

FLOW SCHEME FOR CHANNEL TYPE "A"								
			TUBE INSIDE DIAMETER					
		R P M	Ø0.5	Ø1.0	Ø1.5	Ø2.0	Ø2.5	Ø3.0	Ø4.0
MODEL G127									
SETTING	0	1.2	0.0	0.1	0.2	0.4	0.7	0.8	1.4
SETTING	1	13.6	0.4	1.1	2.7	4.1	7.5	9.1	15.6
SETTING	2	26.2	0.8	2.1	5.2	7.9	14.4	17.6	30.1
SETTING	3	38.3	1.1	3.1	7.7	11.5	21.1	25.7	44.1
SETTING	4	50.6	1.5	4.0	10.1	15.2	27.8	33.9	58.1
SETTING	5	62.8	1.9	5.0	12.6	18.8	34.5	42.1	72.2
SETTING	6	75.1	2.3	6.0	15.0	22.5	41.3	50.3	86.3
SETTING	7	87.7	2.6	7.0	17.5	26.3	48.2	58.7	100.8
SETTING	8	100.4	3.0	8.0	20.1	30.1	55.2	67.2	115.4
SETTING	9	113.4	3.4	9.1	22.7	34.0	62.4	76.0	130.5
SETTING	10	127.1	3.8	10.2	25.4	38.1	69.9	85.1	146.1
MODEL G63									
SETTING	0	0.6	0.0	0.0	0.1	0.2	0.3	0.4	0.7
SETTING	1	6.8	0.2	0.5	1.4	2.0	3.8	4.6	7.8
SETTING	2	13.1	0.4	1.0	2.6	3.9	7.2	8.8	15.1
SETTING	3	19.2	0.6	1.5	3.8	5.7	10.5	12.8	22.0
SETTING	4	25.3	0.8	2.0	5.1	7.6	13.9	16.9	29.1
SETTING	5	31.4	0.9	2.5	6.3	9.4	17.3	21.0	36.1
SETTING	6	37.5	1.1	3.0	7.5	11.3	20.6	25.2	43.2
SETTING	7	43.8	1.3	3.5	8.8	13.2	24.1	29.4	50.4
SETTING	8	50.2	1.5	4.0	10.0	15.1	27.6	33.6	57.7
SETTING	9	56.7	1.7	4.5	11.3	17.0	31.2	38.0	65.2
SETTING	10	63.5	1.9	5.1	12.7	19.1	34.9	42.6	73.1
MODEL G42									
SETTING	0	0.4	0.0	0.0	0.1	0.1	0.2	0.3	0.5
SETTING	1	4.5	0.1	0.4	0.9	1.4	2.5	3.0	5.2
SETTING	2	8.7	0.3	0.7	1.7	2.6	4.8	5.9	10.0
SETTING	3	12.8	0.4	1.0	2.6	3.8	7.0	8.6	14.7
SETTING	4	16.9	0.5	1.3	3.4	5.1	9.3	11.3	19.4
SETTING	5	20.9	0.6	1.7	4.2	6.3	11.5	14.0	24.1
SETTING	6	25.0	0.8	2.0	5.0	7.5	13.8	16.8	28.8
SETTING	7	29.2	0.9	2.3	5.8	8.8	16.1	19.6	33.6
SETTING	8	33.5	1.0	2.7	6.7	10.0	18.4	22.4	38.5
SETTING	9	37.8	1.1	3.0	7.6	11.3	20.8	25.3	43.5
SETTING	10	42.4	1.3	3.4	8.5	12.7	23.3	28.4	48.7
MODEL G21									
SETTING	0	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.2
SETTING	1	2.7	0.1	0.2	0.5	0.8	1.5	1.8	3.2
SETTING	2	4.4	0.1	0.3	0.9	1.3	2.4	2.9	5.0
SETTING	3	6.4	0.2	0.5	1.3	1.9	3.5	4.3	7.3
SETTING	4	8.4	0.3	0.7	1.7	2.5	4.6	5.6	9.7
SETTING	5	10.5	0.3	0.8	2.1	3.1	5.8	7.0	12.0
SETTING	6	12.5	0.4	1.0	2.5	3.8	6.9	8.4	14.4
SETTING	7	14.6	0.4	1.2	2.9	4.4	8.0	9.8	16.8
SETTING	8	16.7	0.5	1.3	3.3	5.0	9.2	11.2	19.2
SETTING	9	18.9	0.6	1.5	3.8	5.7	10.4	12.7	21.7
SETTING	10	21.2	0.6	1.7	4.2	6.4	11.6	14.2	24.4

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FLOW SCHEME FOR CHANNEL TYPE "B"								
			TUBE INSIDE DIAMETER					
		R P M	Ø0.5	Ø1.0	Ø1.5	Ø2.0	Ø2.5	Ø3.0	Ø4.0
MODEL G127									
SETTING	0	1.2	0.0	0.1	0.3	0.5	0.8	1.2	2.0
SETTING	1	13.6	0.4	1.5	3.4	6.0	9.5	13.6	23.1
SETTING	2	26.2	0.8	2.9	6.6	11.6	18.3	26.2	44.5
SETTING	3	38.3	1.2	4.3	9.6	17.0	26.8	38.3	65.1
SETTING	4	50.6	1.6	5.6	12.6	22.4	35.4	50.6	86.0
SETTING	5	62.8	1.9	7.0	15.7	27.9	44.0	62.8	106.8
SETTING	6	75.1	2.3	8.3	18.8	33.3	52.6	75.1	127.6
SETTING	7	87.7	2.7	9.7	21.9	38.9	61.4	87.7	149.1
SETTING	8	100.4	3.1	11.1	25.1	44.6	70.3	100.4	170.6
SETTING	9	113.4	3.5	12.6	28.4	50.4	79.4	113.4	192.8
SETTING	10	127.1	3.9	14.1	31.8	56.4	89.0	127.1	216.0
MODEL G63									
SETTING	0	0.6	0.0	0.1	0.2	0.3	0.4	0.6	1.0
SETTING	1	6.8	0.2	0.8	1.7	3.0	4.8	6.8	11.6
SETTING	2	13.1	0.4	1.5	3.3	5.8	9.2	13.1	22.3
SETTING	3	19.2	0.6	2.1	4.8	8.5	13.4	19.2	32.6
SETTING	4	25.3	0.8	2.8	6.3	11.2	17.7	25.3	43.0
SETTING	5	31.4	1.0	3.5	7.9	13.9	22.0	31.4	53.4
SETTING	6	37.5	1.2	4.2	9.4	16.7	26.3	37.5	63.8
SETTING	7	43.8	1.4	4.9	11.0	19.5	30.7	43.8	74.5
SETTING	8	50.2	1.6	5.6	12.5	22.3	35.1	50.2	85.3
SETTING	9	56.7	1.8	6.3	14.2	25.2	39.7	56.7	96.4
SETTING	10	63.5	2.0	7.1	15.9	28.2	44.5	63.5	108.0
MODEL G42									
SETTING	0	0.4	0.0	0.0	0.1	0.2	0.3	0.4	0.7
SETTING	1	4.5	0.1	0.5	1.1	2.0	3.2	4.5	7.7
SETTING	2	8.7	0.3	1.0	2.2	3.9	6.1	8.7	14.8
SETTING	3	12.8	0.4	1.4	3.2	5.7	8.9	12.8	21.7
SETTING	4	16.9	0.5	1.9	4.2	7.5	11.8	16.9	28.7
SETTING	5	20.9	0.6	2.3	5.2	9.3	14.7	20.9	35.6
SETTING	6	25.0	0.8	2.8	6.3	11.1	17.5	25.0	42.5
SETTING	7	29.2	0.9	3.2	7.3	13.0	20.5	29.2	49.7
SETTING	8	33.5	1.0	3.7	8.4	14.9	23.4	33.5	56.9
SETTING	9	37.8	1.2	4.2	9.5	16.8	26.5	37.8	64.3
SETTING	10	42.4	1.3	4.7	10.6	18.8	29.7	42.4	72.0
MODEL G21									
SETTING	0	0.2	0.0	0.0	0.1	0.1	0.1	0.2	0.3
SETTING	1	2.7	0.1	0.3	0.7	1.2	1.9	2.7	4.7
SETTING	2	4.4	0.1	0.5	1.1	1.9	3.1	4.4	7.4
SETTING	3	6.4	0.2	0.7	1.6	2.8	4.5	6.4	10.9
SETTING	4	8.4	0.3	0.9	2.1	3.7	5.9	8.4	14.3
SETTING	5	10.5	0.3	1.2	2.6	4.6	7.3	10.5	17.8
SETTING	6	12.5	0.4	1.4	3.1	5.6	8.8	12.5	21.3
SETTING	7	14.6	0.5	1.6	3.7	6.5	10.2	14.6	24.8
SETTING	8	16.7	0.5	1.9	4.2	7.4	11.7	16.7	28.4
SETTING	9	18.9	0.6	2.1	4.7	8.4	13.2	18.9	32.1
SETTING	10	21.2	0.7	2.4	5.3	9.4	14.8	21.2	36.0

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FLOW SCHEME FOR CHANNEL TYPE "L"						
			TUBE INSIDE DIAMETER			
		R P M	Ø3.0	Ø4.0	Ø5.0	Ø6.0
MODEL G127						
SETTING	0	1.2	1.1	2.0	2.8	4.0
SETTING	1	13.6	12.9	22.4	31.4	44.9
SETTING	2	26.2	24.9	43.2	60.5	86.5
SETTING	3	38.3	36.4	63.2	88.5	126.5
SETTING	4	50.6	48.0	83.4	116.8	166.8
SETTING	5	62.8	59.7	103.6	145.1	207.2
SETTING	6	75.1	71.3	123.9	173.4	247.8
SETTING	7	87.7	83.3	144.7	202.5	289.3
SETTING	8	100.4	95.3	165.6	231.8	331.2
SETTING	9	113.4	107.8	187.2	262.0	374.4
SETTING	10	127.1	120.7	209.7	293.6	419.4
MODEL G63						
SETTING	0	0.6	0.6	1.0	1.4	2.0
SETTING	1	6.8	6.5	11.3	15.8	22.5
SETTING	2	13.1	12.4	21.6	30.3	43.2
SETTING	3	19.2	18.2	31.6	44.3	63.2
SETTING	4	25.3	24.0	41.7	58.4	83.4
SETTING	5	31.4	29.8	51.8	72.5	103.6
SETTING	6	37.5	35.7	61.9	86.7	123.9
SETTING	7	43.8	41.6	72.3	101.3	144.7
SETTING	8	50.2	47.7	82.8	115.9	165.6
SETTING	9	56.7	53.9	93.6	131.0	187.2
SETTING	10	63.5	60.4	104.8	146.8	209.7
MODEL G42						
SETTING	0	0.4	0.4	0.7	0.9	1.3
SETTING	1	4.5	4.3	7.5	10.5	15.0
SETTING	2	8.7	8.3	14.4	20.2	28.8
SETTING	3	12.8	12.1	21.1	29.5	42.2
SETTING	4	16.9	16.0	27.8	38.9	55.6
SETTING	5	20.9	19.9	34.5	48.4	69.1
SETTING	6	25.0	23.8	41.3	57.8	82.6
SETTING	7	29.2	27.8	48.2	67.5	96.4
SETTING	8	33.5	31.8	55.2	77.3	110.4
SETTING	9	37.8	35.9	62.4	87.3	124.8
SETTING	10	42.4	40.2	69.9	97.9	139.8
MODEL G21						
SETTING	0	0.2	0.2	0.3	0.5	0.7
SETTING	1	2.7	2.6	4.5	6.3	9.0
SETTING	2	4.4	4.1	7.2	10.1	14.4
SETTING	3	6.4	6.1	10.5	14.8	21.1
SETTING	4	8.4	8.0	13.9	19.5	27.8
SETTING	5	10.5	9.9	17.3	24.2	34.5
SETTING	6	12.5	11.9	20.6	28.9	41.3
SETTING	7	14.6	13.9	24.1	33.8	48.2
SETTING	8	16.7	15.9	27.6	38.6	55.2
SETTING	9	18.9	18.0	31.2	43.7	62.4
SETTING	10	21.2	20.1	34.9	48.9	69.9

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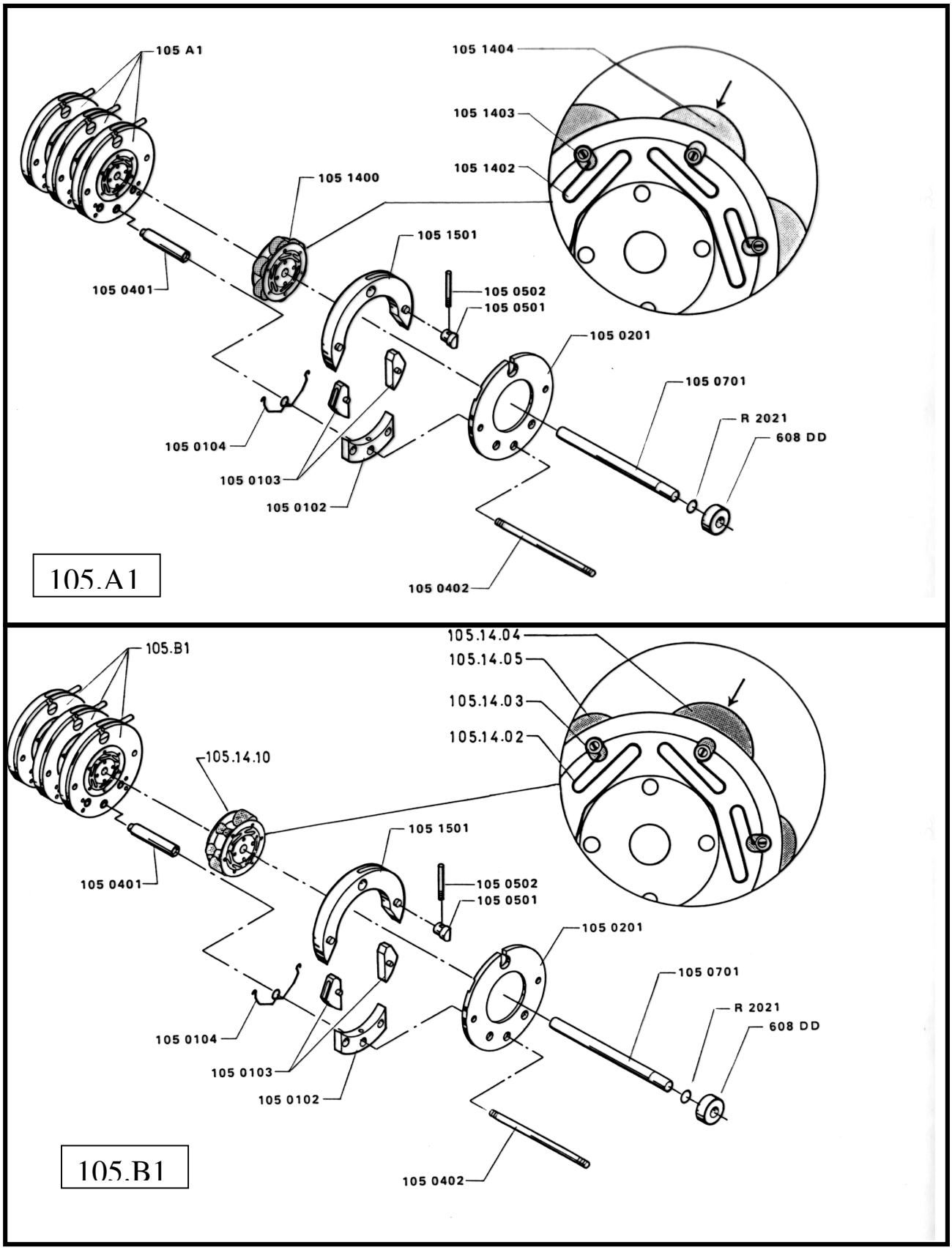
Channel drawings



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