

**Assembly manual
with operating instructions**

**Chain feeding system for
floor management (MPF)**

Code No. 99 97 0717

Edition 06/2005

M 0717 GB

Thank you very much for your confidence !

You are now the proud owner of a new **Big Dutchman**

Chain feeding system for floor management

(MPF).

We are convinced that you will be extremely satisfied with it.



EC Declaration of Conformity

We declare that the design and model of the machine described above, marketed by ourselves, fully complies with the health and safety requirements of the relevant EC Directive.

Guarantee Declaration

This machine is guaranteed in accordance with the **Big Dutchman** International GmbH General Conditions of Sale for customers in Germany and the **Big Dutchman** International GmbH International Conditions of Sale for customers not resident in Germany.

Note

To ensure that your new equipment will always function properly and efficiently and to ensure your personal safety, would you be kind enough to:

Study this manual thoroughly and take particular note of the warning and safety instructions before starting up the machine for the first time.

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1 Introduction

1.1 Symbols

Upon reading this manual you will come across the following symbols, warnings and safety instructions:




	Warning against general dangers
	Warning against dangerous electric tension

1.2 Special safety instructions

	Warning	This sign indicates risks possibly leading to severe injuries or death.
	Caution	This sign indicates risks or insecure procedures possibly leading to injuries or material damage.
	Note	This sign indicates notes leading to an effective, economic and environmentally-conscious handling of the installation.

1.3 Warnings and safety instructions

On your installations you will find the following pictographs. They indicate **technically remaining dangers** when handling the system and give information on how to avoid these dangers.

Pictograph ISO 11684	Meaning:
	<p>General danger ! Installation automatically starts working. Before starting repair, maintenance or cleaning work, put main switch to "OFF".</p>
	<p>Danger due to rotating machine parts ! Close protective devices before taking the system into operation.</p>
	<p>Danger due to operating auger, chain or rope sheaves! Never grasp or climb into the feed hopper while the motor is running.</p>

1.4 General safety instructions

The **Big Dutchman** installation may only be used according to its designated use. Every other use is considered as nondesignated use. The manufacturer does not accept liability for damages resulting from other uses, the user alone has to bear the risk.

The designated use also includes the exact following of the operation, maintenance and repair conditions as prescribed by the manufacturer.

All established safety precautions and other generally accepted safety regulations and medical references have to be followed.

Please check safety and function control devices to ensure safe and accurate operation:

- before putting into operation
- at adequate time intervals
- after modifications or repairs.

Follow the directions of the power and water supply companies.

1.5 Electrical installations

All kind of work going beyond the maintenance scope of the equipment are to be carried out only by a specialist.

Carry out all kinds of work at the device with disconnected electric power supply cable.

Check the electrical wiring and cables for recognisable damage before putting the device into operation.

Replace damaged wiring and cables, before that, do not take the device into operation again.

Let damaged or broken plugs be replaced by an electrician.

Do not pull the plug from a socket at the flexible cable.

Covering electrical motors can cause high temperatures so that fire results and the working means can break down.

1.6 Maintenance



Before working on the electrical installation always disconnect power supply!

The assembly may only be carried out by persons who are competent and can guarantee a proper repair because of special training or their knowledge and practical experiences with the unit.

Repair, maintenance and cleaning operations as well as the removal of functional disorders may generally only be carried out when the drive is turned off and the motor is in a standstill.

Only work with appropriate tools; in case of possible danger to hands, use protective gloves.

After any repair works, the user has to check the proper functioning of the unit or machine. He may only take the device into operation, when all protective systems have been put into place again.

Spare parts have at least to correspond to the technical requirements fixed by the producer of the device. This requirement can be met for example by original spare parts.

1.7 Ordering spare parts



You can find the exact description of the parts for ordering spare parts by means of the pos. no. in the spare parts list.

Indicate the following for ordering spare parts:

- Code No. and description of the spare part or
- Pos. No. with description and manual no. in case of parts that are not encoded
- Invoice No. of original invoice
- Current supply, e.g. 220/380V - 3 Ph. - 50 Hz.

1.8 Liability

The manufacturer is not responsible for any damages of the machine resulting from unauthorised changes done by the user.

1.9 Disorders due to power failure

We recommend the installation of warning systems for a better control of your production units. By this, you protect the birds and thus your own economical health. In case of power failure, an emergency power-generating set should automatically supply the system with power.

Emergency power units with universal transmission for connection to a tractor are also suitable. For further information please contact your property insurance.

1.10 First aid

For the case of an accident, unless specified otherwise, a first-aid kit must always be available at the place of work. Material taken out and used is to be replaced immediately.

If you need help, describe the accident as follows:

- where it happened
- what happened
- the number of persons injured
- what danger of injury
- who is passing the message ! (your data)

1.11 Copyright

This manual is subject to copyright. The information and drawings included in this manual shall not be copied without the manufacturer's consent, nor shall it be used for anything other than the designated use. It shall also not be given to third parties.

The contents of this manual can be altered without prior notice.

If you find mistakes or unclear information in this manual, please do not hesitate to let us know.

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1.12 Waste disposal

After finishing the assembly of this installation, dispose of the packing material and remains which do not need to be further used according to the legal provisions for recycling.

After putting out of action of the installation, dispose of the component parts according to the legal provisions for recycling.

2 Technical data


2.1 Feed hopper MPF and extension

No.	Code No.	Description	A	B	C	D	E	F	G	H	I
1	10 93 3200	Hopper MPF 1l 1w	■	■	⊗	110	⊗	-	-	260	-
2	10 93 3210	Hopper MPF 2l 1w	■	■	⊗	150	⊗	-	-	310	-
3	10 93 3220	Hopper MPF 2l 2w	■	■	⊗	150	⊗	-	-	310	-
4	10 93 3230	Hopper MPF 3l 2w	■	■	⊗	190	⊗	-	-	360	-
5	10 93 3240	Hopper MPF 3l 3w	■	■	⊗	190	⊗	-	-	360	-
6	10 93 3910	Hopper MPF 1l 1w/wheel f/return and legs	-	⊗	-	110	⊗	-	-	260	⊗
7	10 93 3920	Hopper MPF 2l 1 w/wheel f/return and legs	-	⊗	-	150	⊗	-	-	310	⊗
8	10 93 3930	Hopper MPF 3l 2 w/wheel f/return and legs	-	⊗	-	150	⊗	-	-	310	⊗
9	10 93 3940	Hopper MPF 3l 2 w/wheel f/return and legs	-	⊗	-	190	⊗	-	-	360	⊗
10	10 93 3960	Hopper MPF 3l 3 w/wheel f/return and legs	-	⊗	-	190	⊗	-	-	360	⊗
11	10 93 3501	Hopper MPF Mini 1l 1w	■	⊗	-	50	-	⊗	⊗	240	-
12	10 93 3511	Hopper MPF Mini 2l 1w	■	⊗	-	70	-	⊗	⊗	240	-
13	10 93 3521	Hopper MPF Mini 2l 2w	■	⊗	-	70	-	⊗	⊗	240	-
14	10 93 3531	Hopper MPF Mini 3l 2w	■	⊗	-	90	-	⊗	⊗	240	-
15	10 93 3541	Hopper MPF Mini 3l 3w	■	⊗	-	90	-	⊗	⊗	240	-
16	10 93 3551	Hopper MPF Mini 4l 4w	■	⊗	-	110	-	⊗	⊗	240	-
17	10 93 3661	Hopper Maxi 280l 1l 1w	■	■	⊗	280	-	-	-	-	-
18	10 93 3651	Hopper Maxi 280l 1l 1w 36m/min with gear motor 1.1 kW up to 150 m	■	■	⊗	280	-	-	-	-	-
19	10 93 3652	Hopper Maxi 280l 1l 1w 36m/min with gear motor 1.5 kW up to 220 m	■	■	⊗	280	-	-	-	-	-
20	10 93 3653	Hopper Maxi 280l 1l 1w 36m/min with gear motor 2.2 kW up to 300 m	■	■	⊗	280	-	-	-	-	-
21	10 93 3650 90 00 3859	Hopper Maxi 280l 1l 1w 36m/min with V-belt for electric motor 2.2 kW up to 300 m with Electric motor 2.2 kW 230/400V 50Hz 1400 rpm B3	■	■	⊗	280	-	-	-	-	-
22	10 21 1471	CH-machine 12m/min 0.75 kW up to 150 m	■	-	-	38	⊗	-	-	115	-
23	10 21 1421	CH-machine 18m/min 1.10 kW up to 225 m	■	-	-	38	⊗	-	-	115	-
24	10 21 1431	CH-machine 6-12m/min 0.5/0.7kW up to 150 m	■	-	-	38	⊗	-	-	115	-

Key: ■ = Standard equipment, ⊗ = Optional, * = 100 ltr = approx. 65 kg feed

No.	Pos.	Code No.	Description
1	A	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
2	B	10 93 3581	Leg set cpl. for hopper MPF Mini
3	C	10 93 3280	Agitator MPF cpl.
4	D		Volume of feed hoppers in ltr.
5	E	10 93 3470 10 21 1050	Extension for hopper MPF 260 -360 ltr. 1 - 3 lines Extension for hopper CH
6	F	10 93 3502 10 93 3522 10 93 3542 10 93 3552	Extension column for hopper MPF Mini 1 line - 240 ltr. Extension column for hopper MPF Mini 2 lines - 240 ltr. Extension column for hopper MPF Mini 3 lines - 240 ltr. Extension column for hopper MPF Mini 4 lines - 240 ltr.
7	G	10 93 3503	Covering cap cpl. f/extension column MPF Mini 1 - 4 lines
8	H		Volume of extensions in ltr.
9	I	10 93 3911 10 93 3921 10 93 3931 10 93 3941 10 93 3961	Retrofit kit f/returning feed intake f/hopper 1line-1way Retrofit kit f/returning feed intake f/hopper 2line-1way Retrofit kit f/returning feed intake f/hopper 2line-2ways Retrofit kit f/returning feed intake f/hopper 3line-2ways Retrofit kit f/returning feed intake f/hopper 3line-3ways

2.2 MPF drives

	<p>All gear motors for MPF drives can be applied with 50 or 60 Hz. If you want to install frequency control devices, please check back with us.</p> <p>Since gear motors are operating 20 % faster with 60 Hz than with 50 Hz and the turning moment is 20 % lower, this has been taken into consideration for the MPF drives and CH machines. The gear motors therefore bring about the indicated performance at 60 Hz.</p>
---	--

For ordering spare parts in case of gear motors that are **not encoded**, please see the type plate for the following information:

Power in kW, voltage in V, frequency in Hz, starting speed n₂ in 1/ min.

MPF drives with ccw rolling direction

No.	Code No.	Description	Max. chain length (m)
1	10-93-2210	Drive MPF 2 L 12m 0,75KW ccw240V1PH 50Hz	2x100
2	10-93-3110	Drive MPF 2 L 12m 0,75KW ccw400V 3PH 50Hz	2x125
3	10-93-3130	Drive MPF 2 L 18m 1,10KW ccw400V 3PH 50Hz	2x125
4	10-93-5000	Drive MPF 1 L 12m 0,37KW ccw400V 3PH 50Hz	180
5	10-93-5001	Drive MPF 1 L 18m 0,55KW ccw400V 3PH 50Hz	200
6	10-93-5010	Drive MPF 1 L 12m 0,75KW ccw400V 3PH 50Hz	300
7	10-93-5021	Drive MPF 1 L 18m 1,10KW ccw400V 3PH 50Hz	300
8	10-93-5022	Drive MPF 1 L 36m 1,10KW ccw400V 3PH 50Hz	180
9	10-93-5032	Drive MPF 1 L 36m 1,50KW ccw400V 3PH 50Hz	200
10	10-93-5042	Drive MPF 1 L 36m 2,20KW ccw400V 3PH 50Hz	300
11	10-93-5052	Drive MPF 1 L 18/36m ccw 1,10/1,40KW 400V 3PH 50Hz	180
12	10-93-5100	Drive MPF 1 L 12m 0,37KW ccw400V 3PH 60Hz	180
13	10-93-5110	Drive MPF 1 L 12m 0,75KW ccw400V 3PH 60Hz	300
14	10-93-5132	Drive MPF 1 L 36m 1,50KW ccw400V 3PH 60Hz	200
15	10-93-5142	Drive MPF 1 L 36m 2,20KW ccw400V 3PH 60Hz	300
16	10-93-5210	Drive MPF 1 L 12m 0,75KW ccw240V 1PH 50Hz	200
17	10-93-5231	Drive MPF 1 L 18m 1,50KW ccw240V 1PH 50Hz	260
18	10-93-5232	Drive MPF 1 L 36m 1,50KW ccw240V 1PH 50Hz	140
19	10-93-5242	Drive MPF 1 L 36m 2,20KW ccw240V 1PH 50Hz	200
20	10-93-5310	Drive MPF 1 L 12m 0,75KW ccw200V 3PH 50Hz	300
21	10-93-5400	Drive MPF 1 L 12m 0,37KW ccw230V 1PH 60Hz	180
22	10-93-5410	Drive MPF 1 L 12m 0,75KW ccw230V1PH 60Hz	200
23	10-93-5500	Drive MPF 1 L 12m 0,37KW ccw230/460V 3PH 60Hz	180
24	10-93-5510	Drive MPF 1 L 12m 0,75KW ccw230/460V 3PH 60Hz	300
25	10-93-5610	Drive MPF 1 L 12m 0,75KW ccw200V 3PH 60Hz	300

Drive without ccw rolling direction

No.	Code No.	Description	Max. chain length (m)
26	10-93-2100	Drive MPF 1 L 12m 0,75KW 200V 3PH 60Hz	300
27	10-93-3100	Drive MPF 1 L 12m 0,75KW 400V 3PH 50Hz	300
28	10-93-3101	Drive MPF 1 L 12m 0,37KW 400V 3PH 50Hz	180

The indicated length of feed chain comprises four corners 90° BD 2000.

For each additional 90° corner BD 2000, the max. feed chain length has to be reduced by 12.5 m. See also point 4.8.

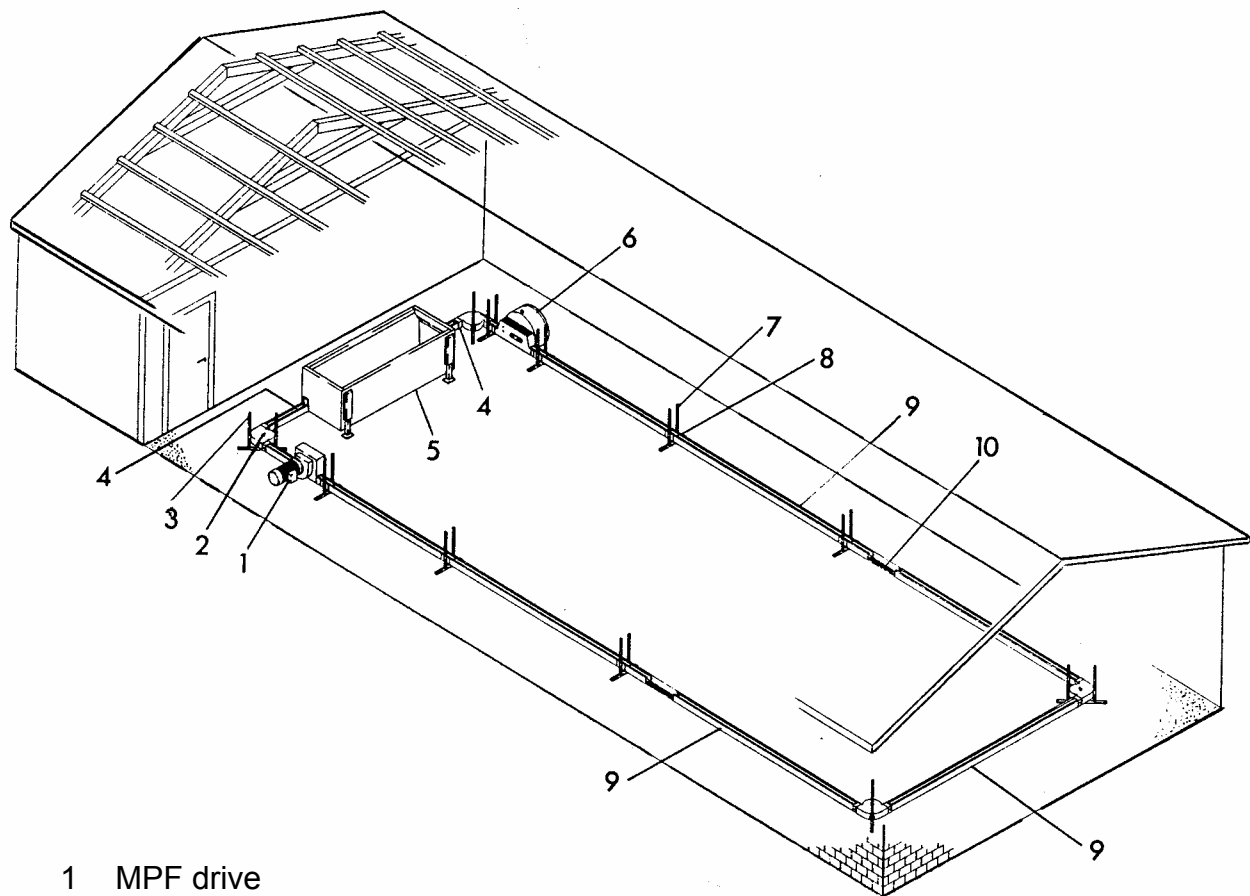
2.3 Gear motors for MPF drive and CH-machine

No.	Code No.	Power kW	Voltage (V)	Frequency (Hz)	Channels	Speed n2 (rpm)	Drive shaft d x l (mm)	Usage in Code No.
1	90 00 3951	0,37	230-400	50	8	665/7,1	35x56	4 m
2	90 00 3951	0,37	230-400	60	8	798/8,5	35x56	4 m
3	90 00 3961	0,37	230/400	50	8	665/10,7	35x56	10 93 5003
4		0,37	230/400	50	8	665/10,7	35x142	10 93 3142
5	90 00 3823	0,37	230/400	50	4	1375/20	35x56	10 93 5000 10 21 1472
6	90 00 3823	0,37	230/400	60	4	1650/24	35x56	10 93 5100
7		0,5/0,7	200	50	8/4	670/10,8 1375/22,2	35x56	10 93 2050
8		0,3/0,4	200	60	8/4	670/10,8 1375/22,2	35x56	10 93 2151
9	90 00 3953	0,5/0,75	200	60	8/4	670/10,8 1375/22,2	35x56	10 93 2150
10	90 00 3833	0,5/0,7	380-415	50	8/4	670/10,8 1375/22,2	35x56	10 93 5050 10 21 1431
11		0,5/0,7	380-415	50	8/4	670/10,8 1375/22,2	35x142	10 93 3160
12	90 00 3831	0,75	230-400	50	4	1395/22,5	35x56	10 93 5010 10 21 1471
13	90 00 3921	0,75	380-415	60	4	1395/22,3	35x142	10 93 5110
14		0,75	200	60	4	1395/22,3	35x56	10 93 5610
15	90 00 3821	0,75	230-400	50	4	1395/22,5	35x142	10 93 5060
16		0,55	200-240	50	4	1400/33	35x56	10 93 3121
17	90 00 3832	1,1	200-240	50	4	1410/33	35x56	10 93 5021 10 21 1421
18	90 00 3822	1,1	380-415	50	4	1410/33	35x142	10 93 3130
19	90 00 3912	1,1	230/400	50	4	1415/63	35x56	10 93 5022
20		1,1	400	60	4	1415/63	35x56	10 93 5122
21	90 00 3901	1,5	230/400	50	4	1415/63	35x56	10 93 5032
22	90 00 3901	1,5	400	60	4	1415/63	35x56	10 93 5132
23	90 00 3902	2,2	230/400	50	4	1415/63	35x56	10 93 5042
24		2,2	230/400	60	4	1415/63	35x56	10 93 5142
25		0,37	240	50	4	1410/20	35x56	10 93 2201
26	90 00 3941	0,75	240	50	4	1410/22,5	35x56	10 93.5210
27		0,75	240	50	4	1410/22,5	35x142	10 93 2210
28		0,75	240	50	4	1410/33	35x142	10 93 5211
29		1,5	240	50	4	1410/33	35x56	10 93 5231
30		1,5	240	50	4	1410/63	35x56	10 93 5232

3 Construction examples

3.1 Construction MPF chain feeding standing

Figure 1
Drawing No. 15-1-A001
08.97



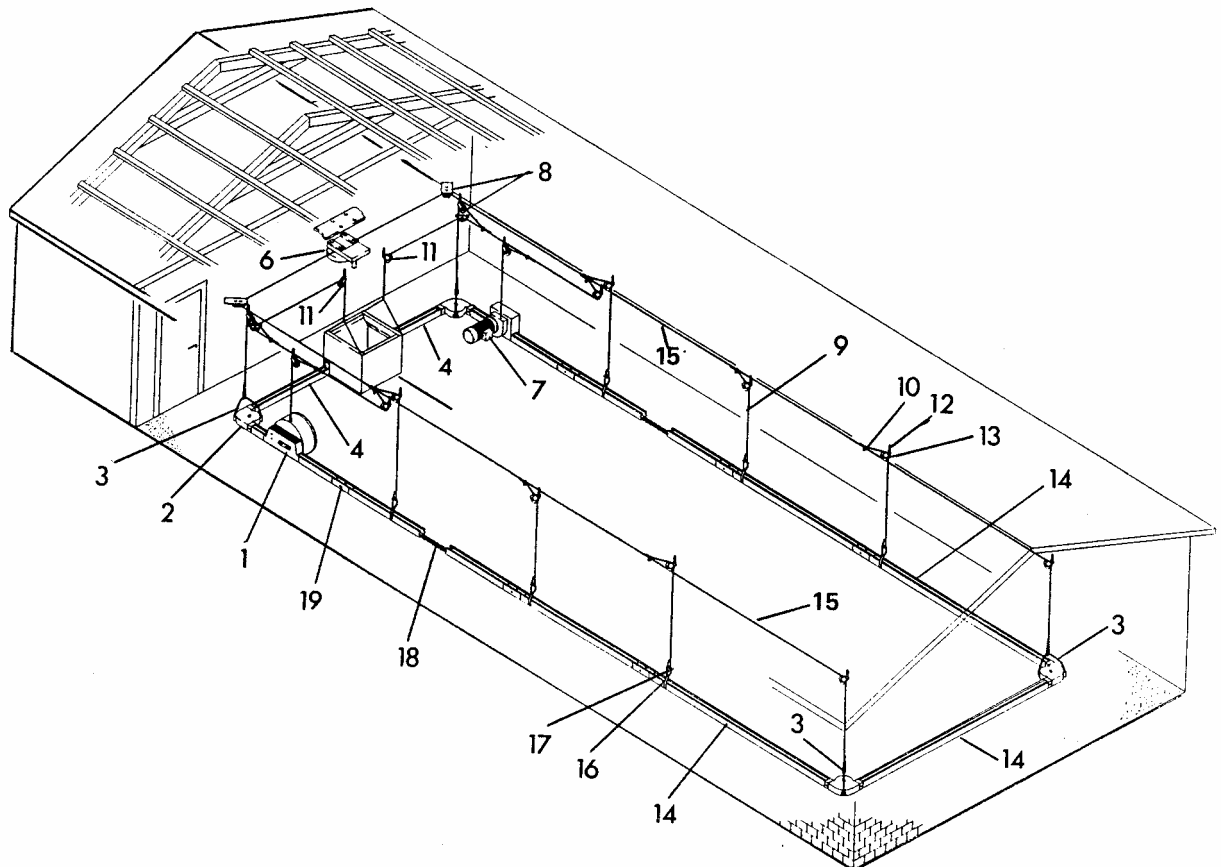
- 1 MPF drive
- 2 90° corner BD 2000
- 3 Post for corner 90/135°
- 4 Regular feed trough
- 5 MPF feed hopper
- 6 Rotating feed cleaner BD 88
- 7 Post for coupler 1 line
- 8 Trough coupler 1-line without post
- 9 Medium feed trough
- 10 Champion feed chain

3.2 Construction MPF chain feeding suspended

Figure 2

Drawing No. 15-1-A002

08.97



- | | | | |
|----|------------------------------------|----|---|
| 1 | Rotating feed cleaner BD 88 | 12 | Cup hook |
| 2 | 90° corner BD 2000 | 13 | Pulley 1 7/8" CH |
| 3 | Suspension bow for corner 90°/135° | 14 | Medium feed trough |
| 4 | Regular feed trough | 15 | Cable wire 5 mm galv. 7x19 |
| 5 | Feed hopper MPF Mini | 16 | Suspens. bow f/feed trough 3000 medium model 1.2 mm |
| 6 | Cable winch | 17 | Cable lock AM |
| 7 | MPF drive | 18 | Feed chain |
| 8 | Support T4 with 1 rope pulley | 19 | Tr. coupler wo/suspension eye for suspended feed chain trough |
| 9 | Cable wire 3 mm galv. 6x7FE | | |
| 10 | Cable clamp 3 mm 1/8" DIN 741 | | |
| 11 | Pulley plastic 105 mm | | |



4 Assembly of groups of components

4.1 MPF feed hopper

The MPF feed hopper is used for supplying feed out of sacks (manual filling). As standard features it has feet adjustable in height.

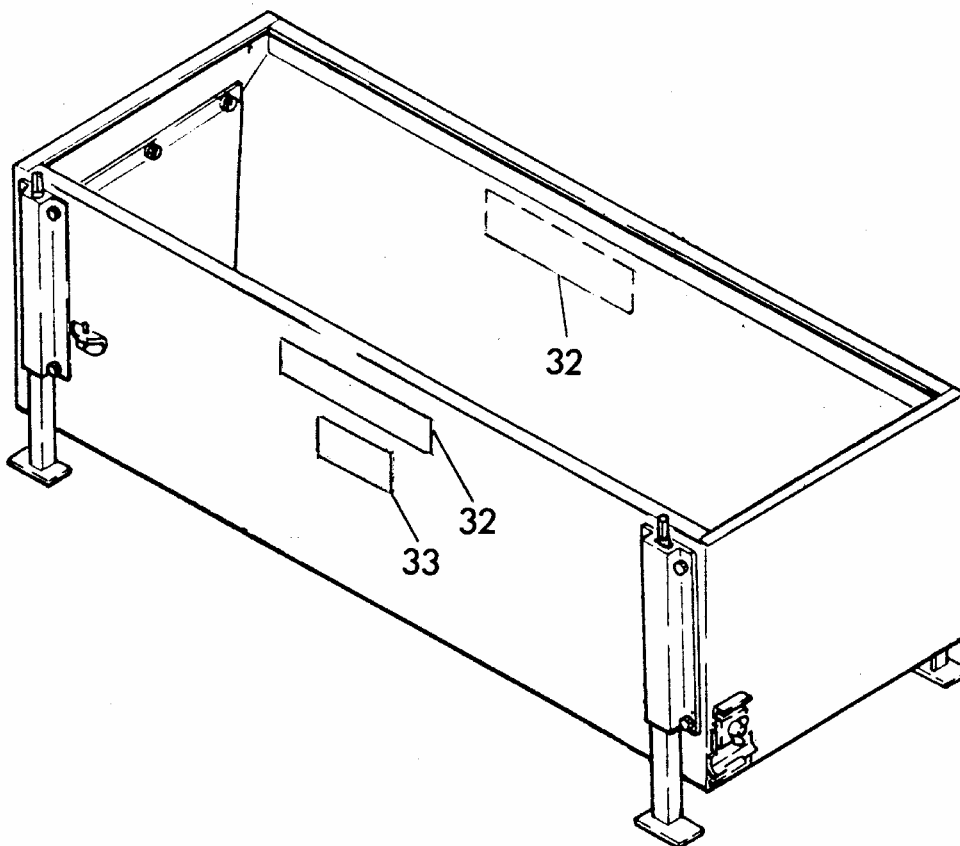
Optionally available is an agitator (Code No. 10 93 3280). For the assembly, a hole pattern is marked in the feed hopper by means of small bead points for the holes to be drilled.

Depending on the requirements, the volume of the feed hoppers can be adapted to the required daily ration by means of hopper extensions. These extensions (Code No. 10 93 3470) can be adapted for 1, 2 and 3-line feed hoppers and, if required, placed on top of each other.

Figure 3

Drawing No. 15-1-A003

08.97



4.2 Feed hopper MPF Mini

The MPF feed hopper Mini is used for automatic filling via auger or spiral. It does not have an agitator and can be equipped with adjustable legs as an option.

Moreover, it is used with a weighed container in connection with the Auto-Limit scale.

The following hoppers are available for the Auto-Limit scale:

Code No. 10 00 1260 Hopper 1250 l cpl. for Auto-Limit scale

Code No. 10 93 3412 Hopper 1850 l cpl. for Auto-Limit scale

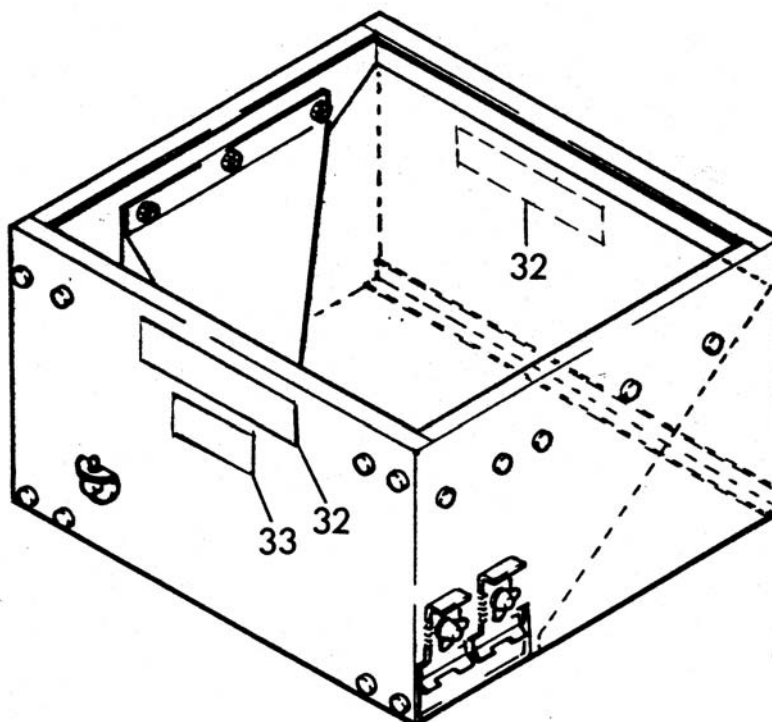
When the conveying capacity of the supply auger / spiral is smaller than the withdrawal capacity of the feed chain, an extension column can be used as a buffer.

The extension column for MPF hopper Mini 1-4 can be closed with a covering cap cpl. for extension column MPF Mini 1-4 lines (optional).

Figure 4

Drawing No. 15-1-A004

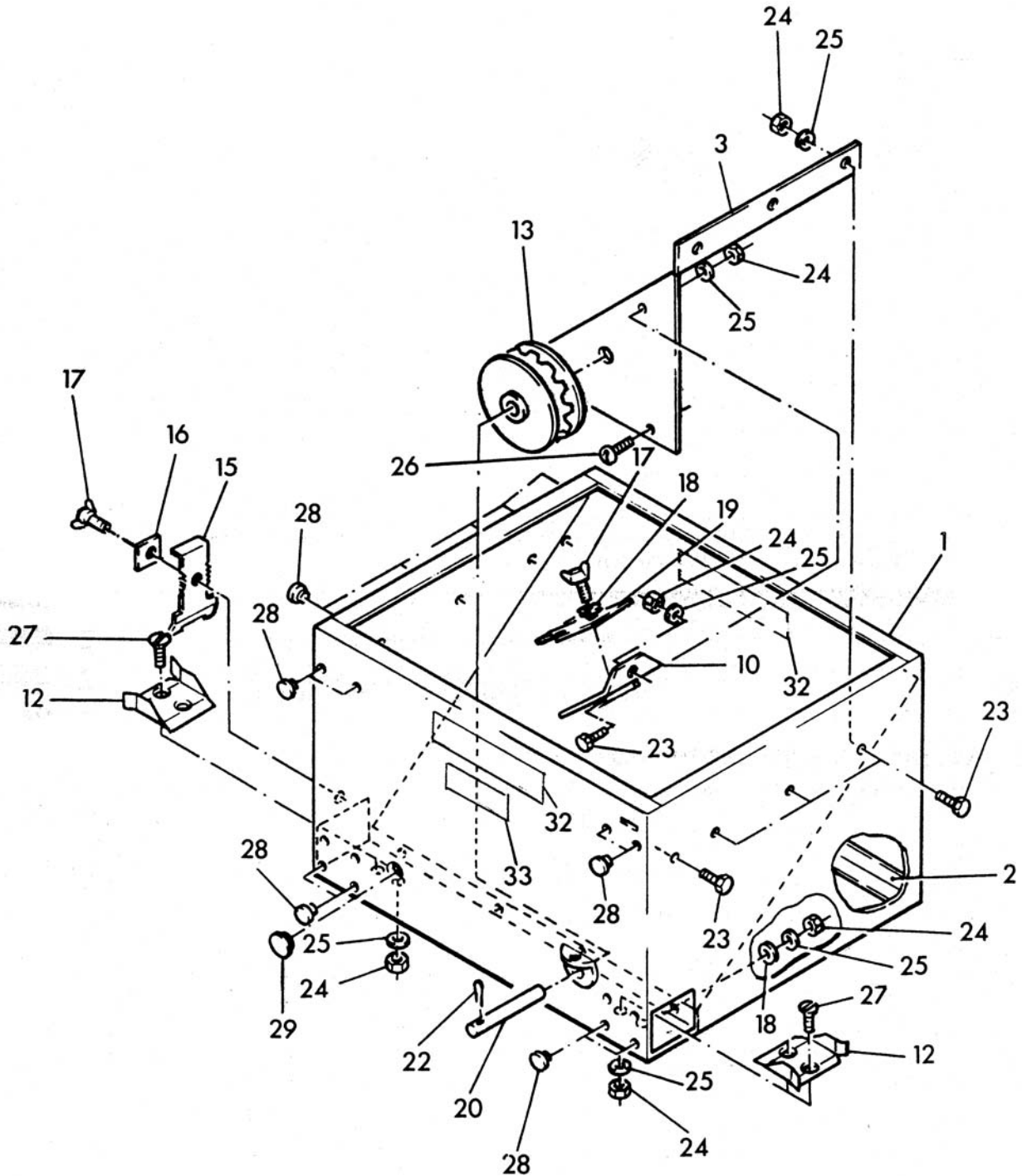
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4.2.1 Feed hopper MPF Mini, 1 line 1 way

Pos.	Code No. Draw. No.	Description
	10 93 3501	Hopper MPF 50 l mini 1 line 1 way without leg
1	32 1 0147	Housing 1-line cpl. MPF-Mini
2	32 1 0171	Connection rail
3	32 1 0165	Slanted sheet left
10	32 1 0166	Support sheet left
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316-GT-C
18	99 20 1026	Washer A8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 1
Drawing No. 15-1-A005
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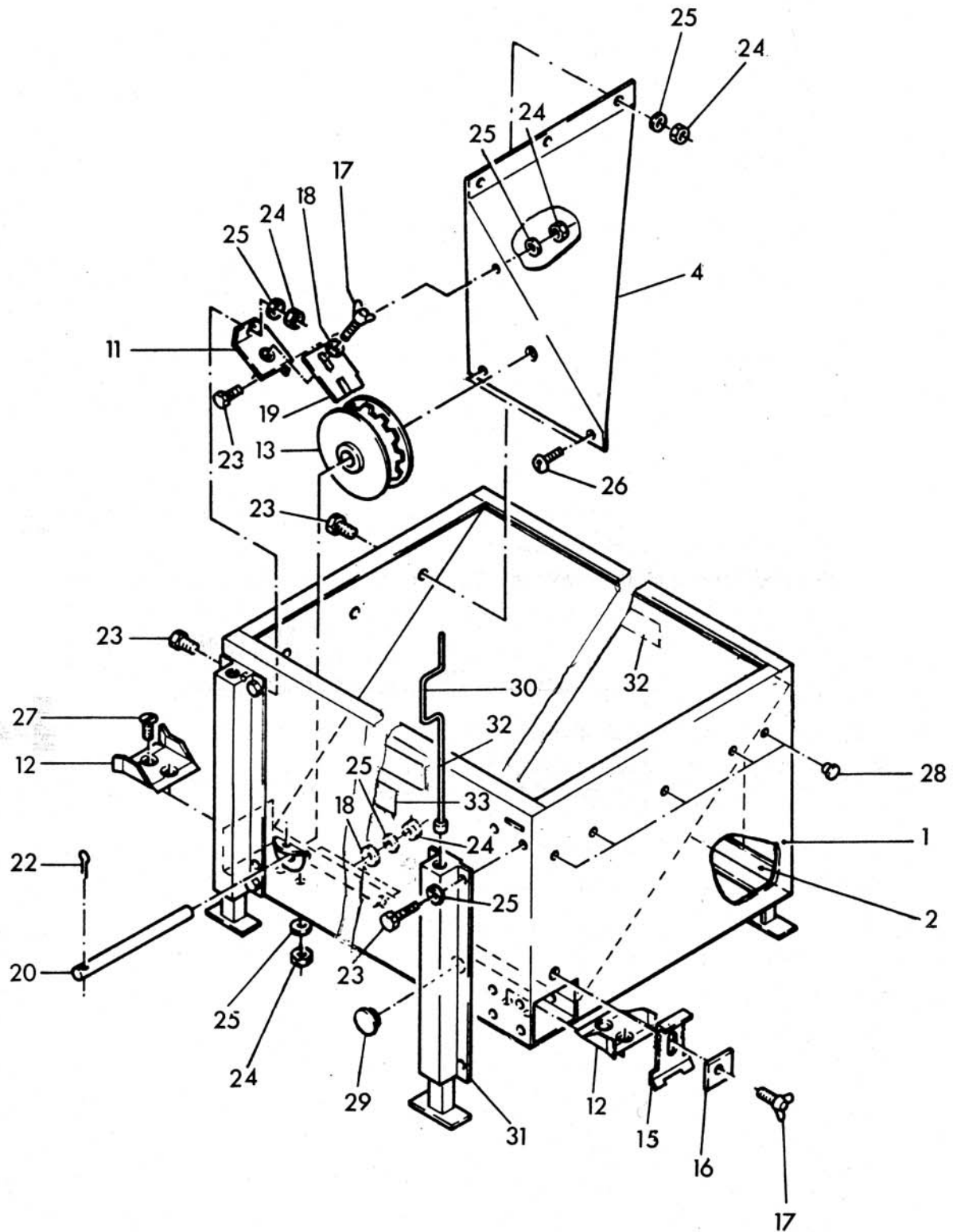
4.2.2 Feed hopper MPF, 1 line 1 way

Pos.	Code No. Drawing No.	Description
	10 93 3200	Hopper MPF 110 I, 1 line 1 way
1	32 1 0179	Housing 1-line cpl. MPF
2	32 1 0198	Connection rail
4	32 1 0165	Slanted sheet right
11	32 1 0166	Support sheet right
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316-GT-C
18	99 20 1026	Washer A8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965-5.8
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	10 00 1021	Crank 790mm height adjustment Corner Hopper
31	10 93 1090	Post hopper MPF
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 2

Drawing No. 15-1-A006

08.97



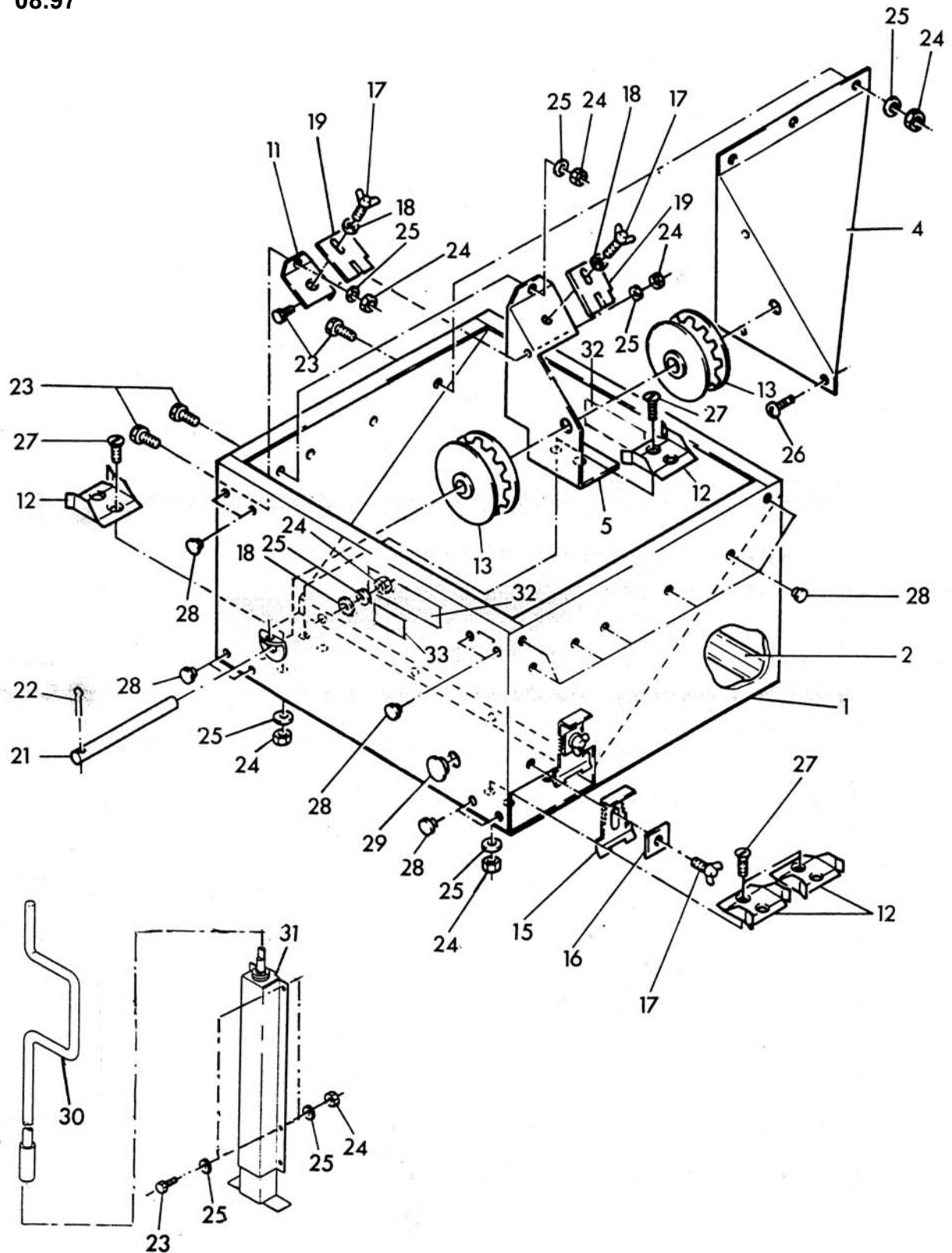
4.2.3 Feed hopper MPF and MPF Mini, 2 line 1 way

Pos.	Code No. Drawing No.	Description
	10 93 3210	Hopper MPF 150 2 line 1 way
	10 93 3511	Hopper MPF 70 mini 2 line 1 way for return feed intake
1	32 1 0195	Housing 2 line cpl. MPF
	32 1 0148	Housing 2 line cpl. MPF-Mini
2	32 1 0198	Connection rail MPF
	32 1 0171	Connection rail MPF-Mini
4	32 1 0165	Slanted sheet right
5	32 1 0172	Bearing sheet left cpl. type 1
11	32 1 0166	Support sheet right
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
21	10 32 0006	Shaft 19x203 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	10 00 1021	Crank 790 mm height adjustment Corner Hopper
31	10 93 1090	Post hopper MPF
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 3

Drawing No. 15-1-A007

08.97



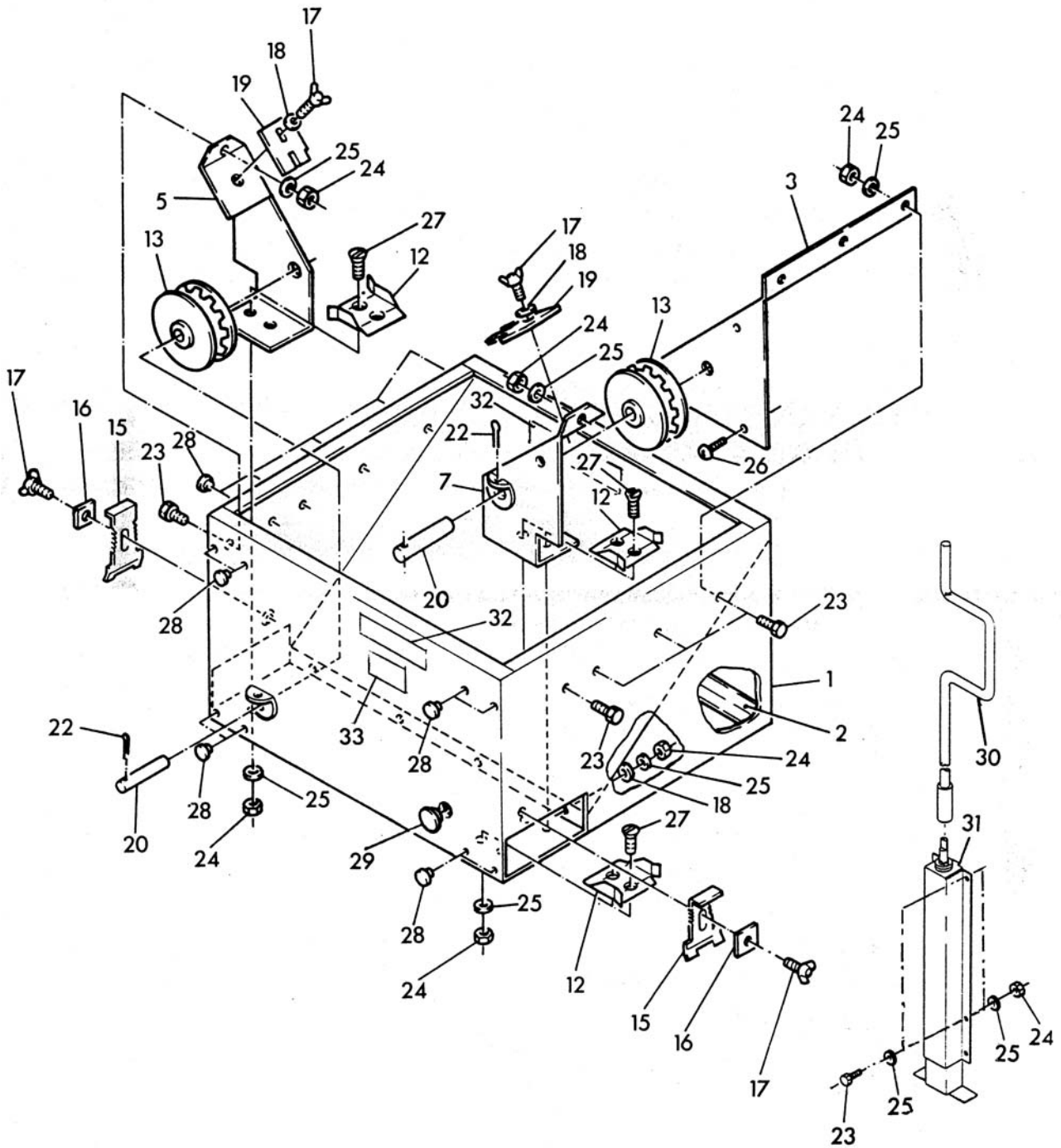
4.2.4 Feed hopper MPF and MPF Mini, 2 line 2 way

Pos.	Code No. Drawing No.	Description
	10 93 3220	Hopper MPF 150 I, 2 line 2 way
	10 93 3521	Hopper MPF 70 I Mini 2 line 2 way for return feed intake
1	32 1 0195	Housing 2 line cpl. MPF
	32 1 0148	Housing 2 line cpl. MPF-Mini
2	32 1 0198	Connection rail MPF
	32 1 0171	Connection rail MPF-Mini
3	32 1 0165	Slanted sheet left
5	32 1 0172	Bearing sheet left cpl. type 1
7	32 1 0172	Bearing sheet left cpl. type 3
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	10 00 1021	Crank 790 mm height adjustment Corner Hopper
31	10 93 1090	Post hopper MPF
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 4

Drawing No. 15-1-A008

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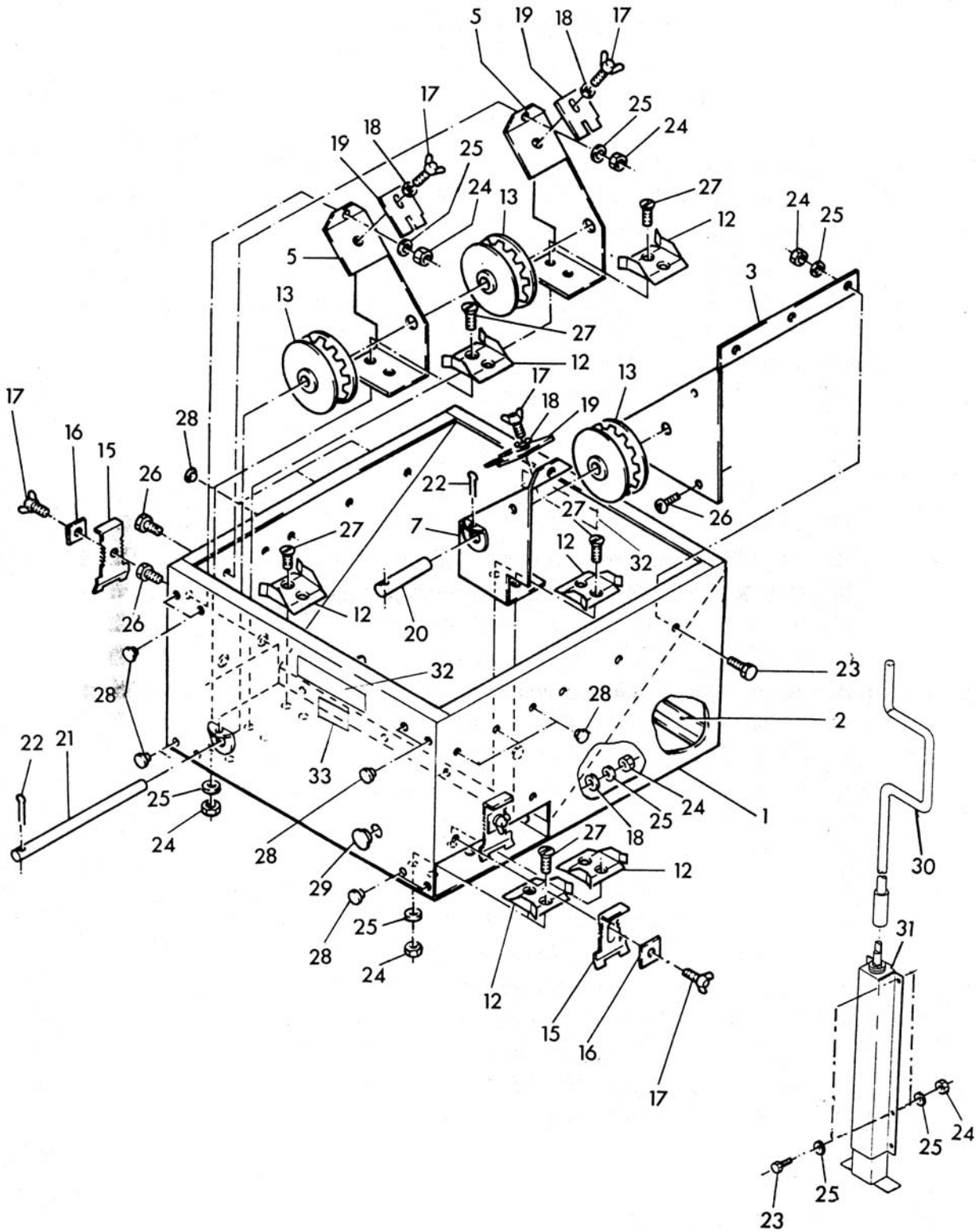
4.2.5 Feed hopper MPF and MPF Mini, 3 line 2 way

Pos.	Code No. Drawing No.	Description
	10 93 3230	Hopper MPF 190 I, 3 line 2 way
	10 93 3531	Hopper MPF 90 I mini 3 line 2 way for return feed intake
1	32 1 0197	Housing 3 line cpl. MPF
	32 1 0150	Housing 3 line cpl. MPF-Mini
2	32 1 0198	Connection rail MPF
	32 1 0171	Connection rail MPF-Mini
3	32 1 0165	Slanted sheet left
5	32 1 0172	Bearing sheet left cpl. type 1
7	32 1 0172	Bearing sheet left cpl. type 3
12	10-00-0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38-91-3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
21	10 32 0006	Shaft 19X203 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	10 00 1021	Crank 790 mm height adjustment Corner Hopper
31	10 93 1090	Post hopper MPF
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 5

Drawing No. 15-1-A009

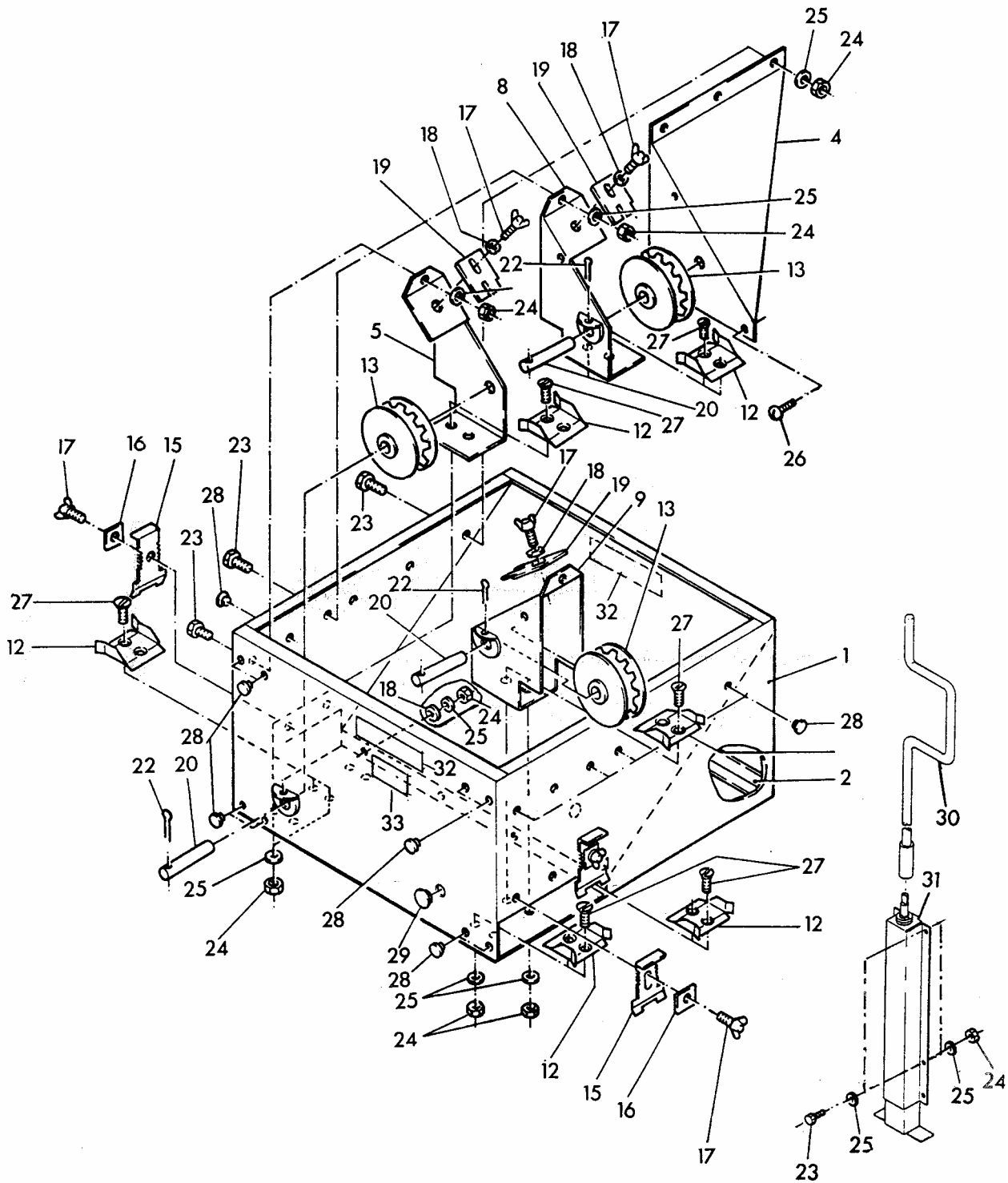
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4.2.6 Feed hopper MPF and MPF Mini, 3 line 3 way

Pos.	Code No. Drawing No.	Description
	10 93 3240	Hopper MPF 190 I, 3 line 3 way
	10 93 3541	Hopper MPF 90 I Mini 3 line 3 way for return feed intake
1	32 1 0197	Housing 3 line cpl. MPF
	32 1 0150	Housing 3 line cpl. MPF-Mini
2	32 1 0198	Connection rail MPF
	32 1 0171	Connection rail MPF-Mini
4	32 1 0165	Slanted sheet right
5	32 1 0172	Bearing sheet left cpl. type 1
8	32 1 0172	Bearing sheet right cpl. type 4
9	32 1 0172	Bearing sheet double cpl. type 5
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M 8x12 DIN 316
18	99 20 1026	Washer A 8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	10 00 1021	Crank 790 mm height adjustment Corner Hopper
31	10 93 1090	Post hopper MPF
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 6
Drawing No. 15-1-A010
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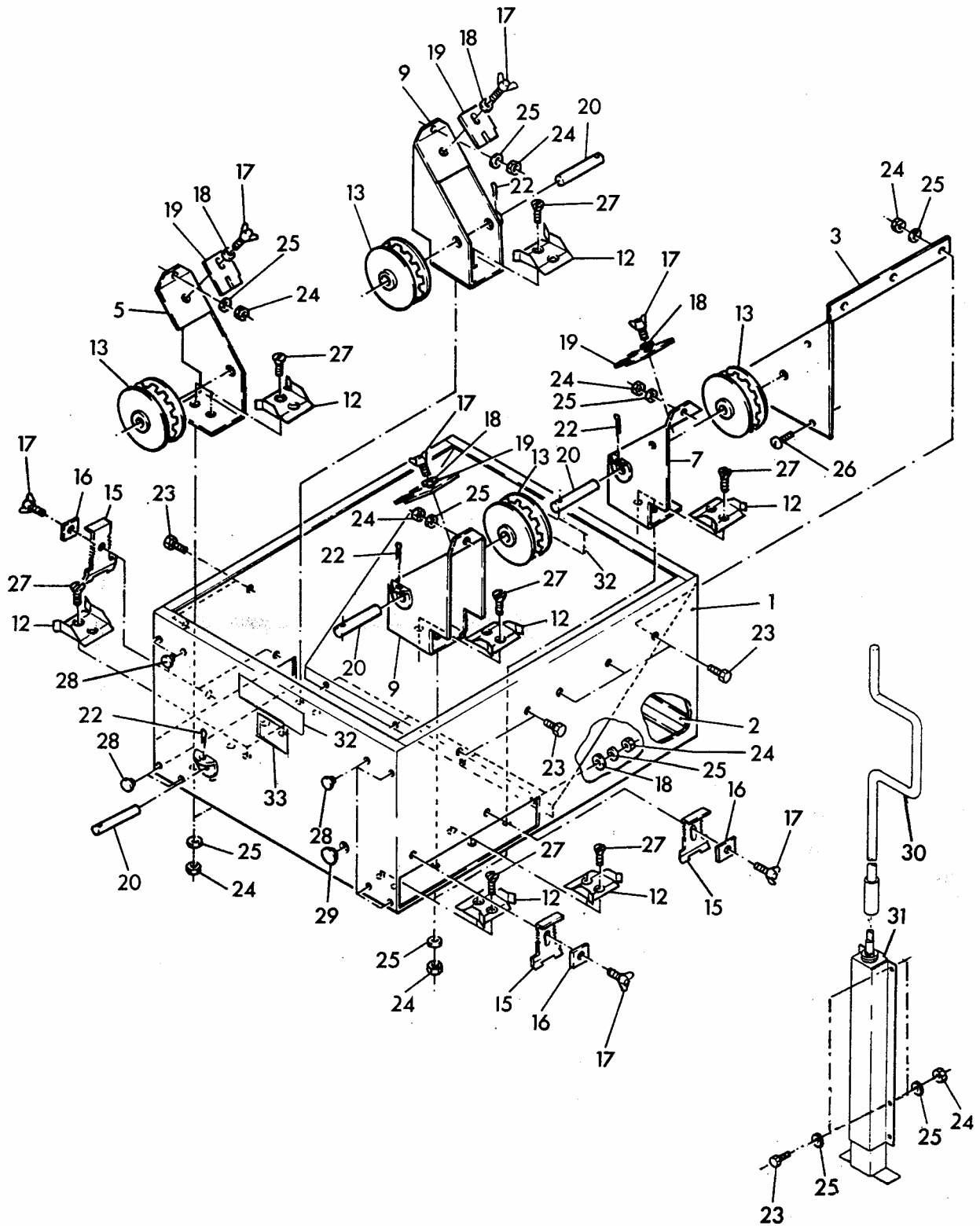
4.2.7 Feed hopper MPF Mini, 4 line 4 way

Pos.	Code No. Drawing No.	Description
	10 93 3551	Hopper MPF 110 I Mini 4 line 4 way for return feed intake
1	32 1 0251	Housing 4 line cpl. MPF-Mini
2	32 1 0171	Connection rail MPF-Mini
3	32 1 0165	Slanted sheet left
5	32 1 0172	Bearing plate left cpl. type 1
7	32 1 0172	Bearing sheet left cpl. type 3
9	32 1 0172	Bearing sheet double cpl. type 5
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M 6x 16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	99 50 3913	Shear pin 8x1,5x30 steel tubular rivet B DIN 734
32	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
33	00 00 1188	Pictograph: Hopper

Exploded view 7

Drawing No. 15-1-A011

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4.3 Extension for hopper MPF and MPF Mini

The hopper extension MPF or the extension column for feed hopper MPF-Mini are required;

- when a larger feed volume is required for controlled feeding,
- or when feed supply to the feed hopper is not carried out automatically.

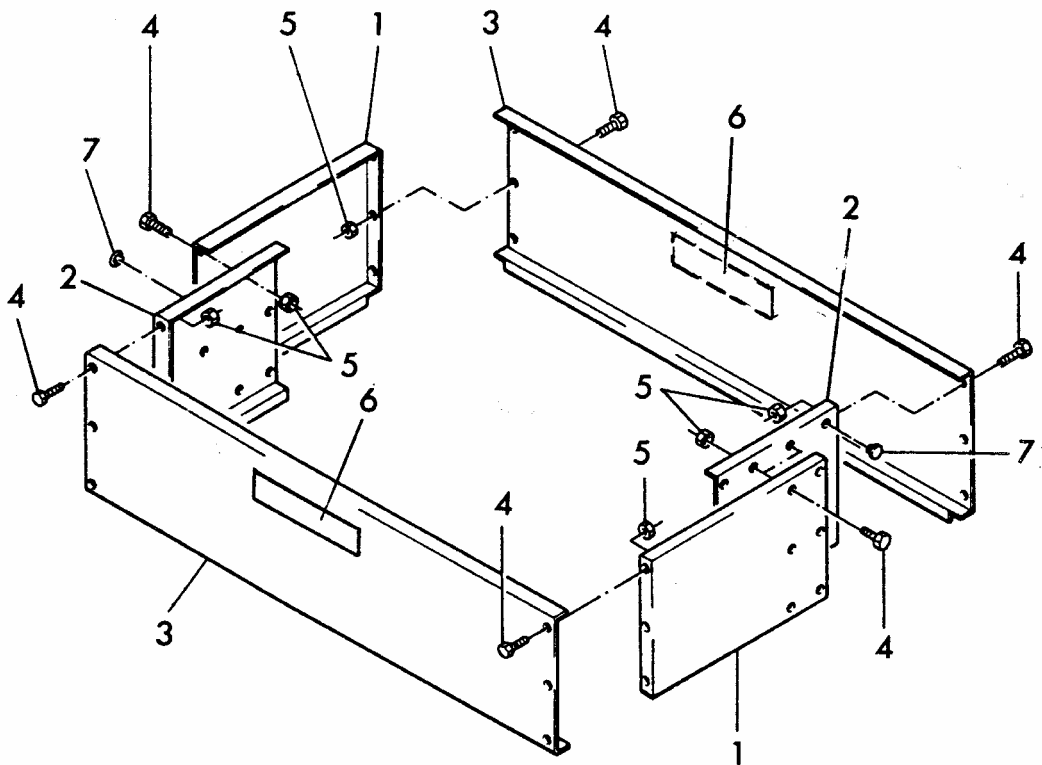
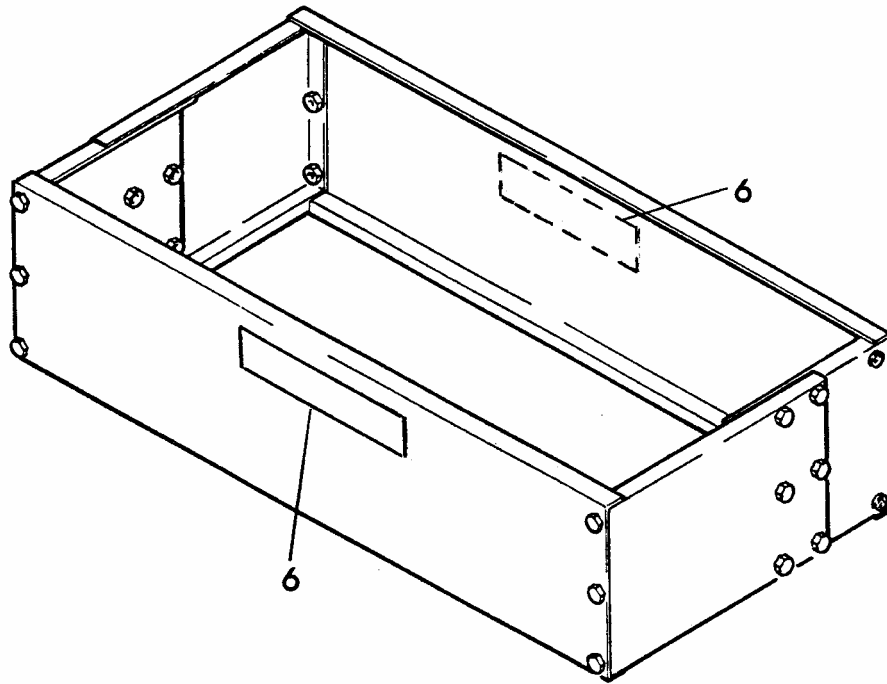
4.3.1 Extension for hopper MPF 260-360 I 1 - 3 lines

Pos.	Code No. Drawing No.	Description
	10 93 3470	Extension for hopper MPF 260-360 I 1-3 lines
1	32 1 0191	Long end wall for hopper extension MPF 1-3 lines
2	32 1 0190	Short end wall for hopper extension MPF 1-3 lines
3	32 1 0192	Side wall for hopper extension MPF 1-3 lines
4	99-10-1100	Hexagon head screw M6x12 DIN 558
5	99-20-1043	Self-locking counter nut M6 DIN 985-6
6	00-00-1173	Type plate: Big Dutchman 265mm x 50mm
7		Plug plastic \varnothing 6.5 mm

Exploded view 8

Drawing No. 15-1-A012

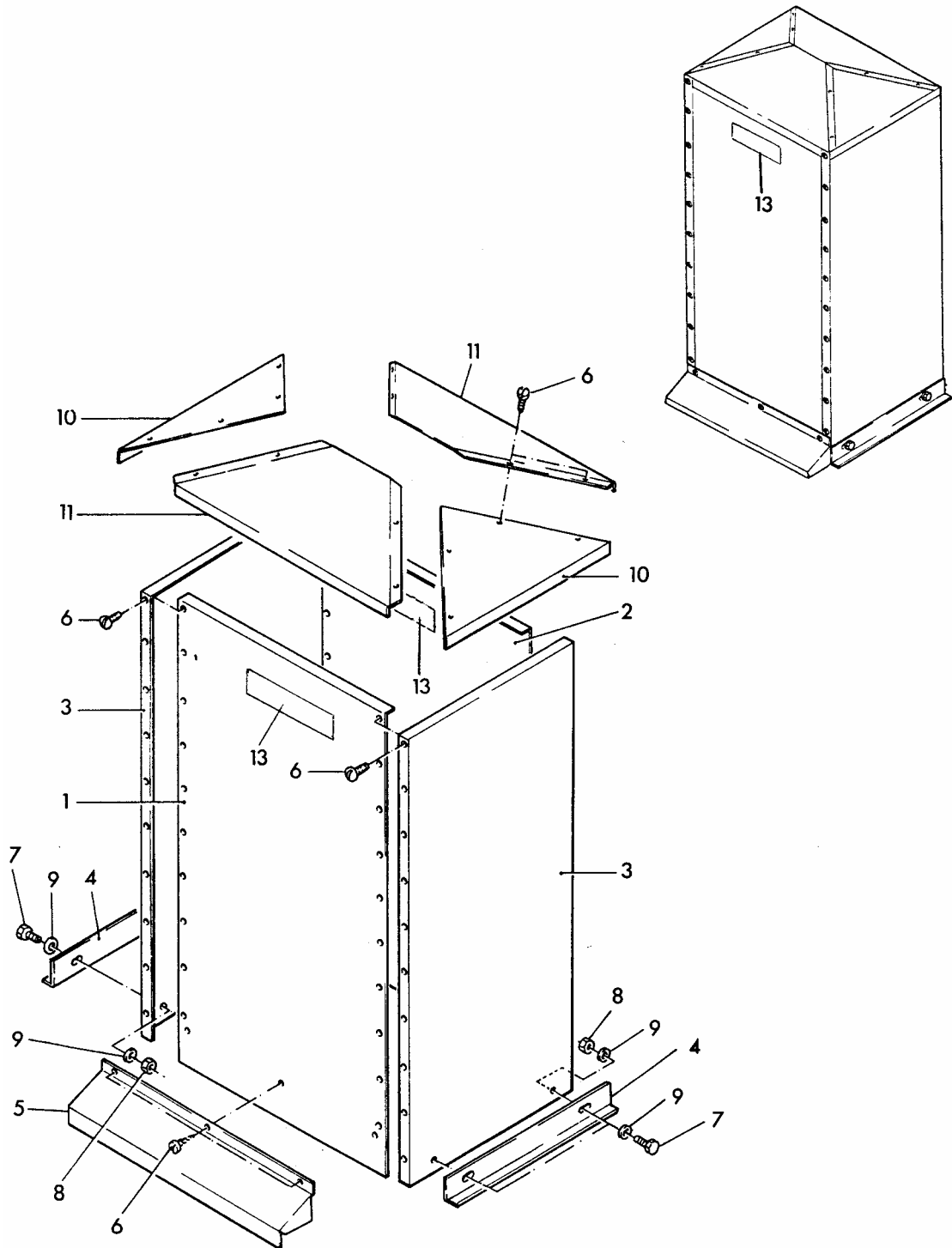
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4.3.2 Extension column and covering cap for feed hopper MPF Mini

Pos.	Code No.	Description
A	10-93-3502	Extension column 240 l for hopper MPF mini 1 line
	10-93-3522	Extension column 240 l for hopper MPF mini 2 line
	10-93-3542	Extension column 240 l for hopper MPF mini 3 line
	10-93-3552	Extension column 240 l for hopper MPF mini 4 line
B	10-93-3503	Covering cap cpl. for extension column MPF
1	32 1 0142	Front wall Pos. 1 for extension column MPF Mini
2	32 1 0142	Front wall Pos. 2 for extension column MPF Mini
3	32 1 0142	Side wall Pos. 3 for hopper extension MPF Mini
4	30 1 0144	Support angle for extension column
5	30 1 0144	Covering sheet for extension column 2 line
	30 1 0144	Covering sheet for extension column 3 line
	30 1 0144	Covering sheet for extension column 4 line
6	99-10-3916	Tapping screw F4,2x9,5 DIN 7981
7	99-10-1046	Hexagon head screw M8x16 DIN 558
8	99-10-1040	Hexagon nut M8 galv. DIN 934
9	99-20-1026	Washer A 8,4 DIN 125
10	32 1 0143	Covering sheet 434x255 (triangle)
11	32 1 0134	Covering sheet 572x255 (trapezoid)
12	99-20-1114	Lifting eye nut M8 DIN 582
13	00-00-1173	Type plate: Big Dutchman 265mm x 50mm

Exploded view 9
Drawing No. 15-1-A013
08.97



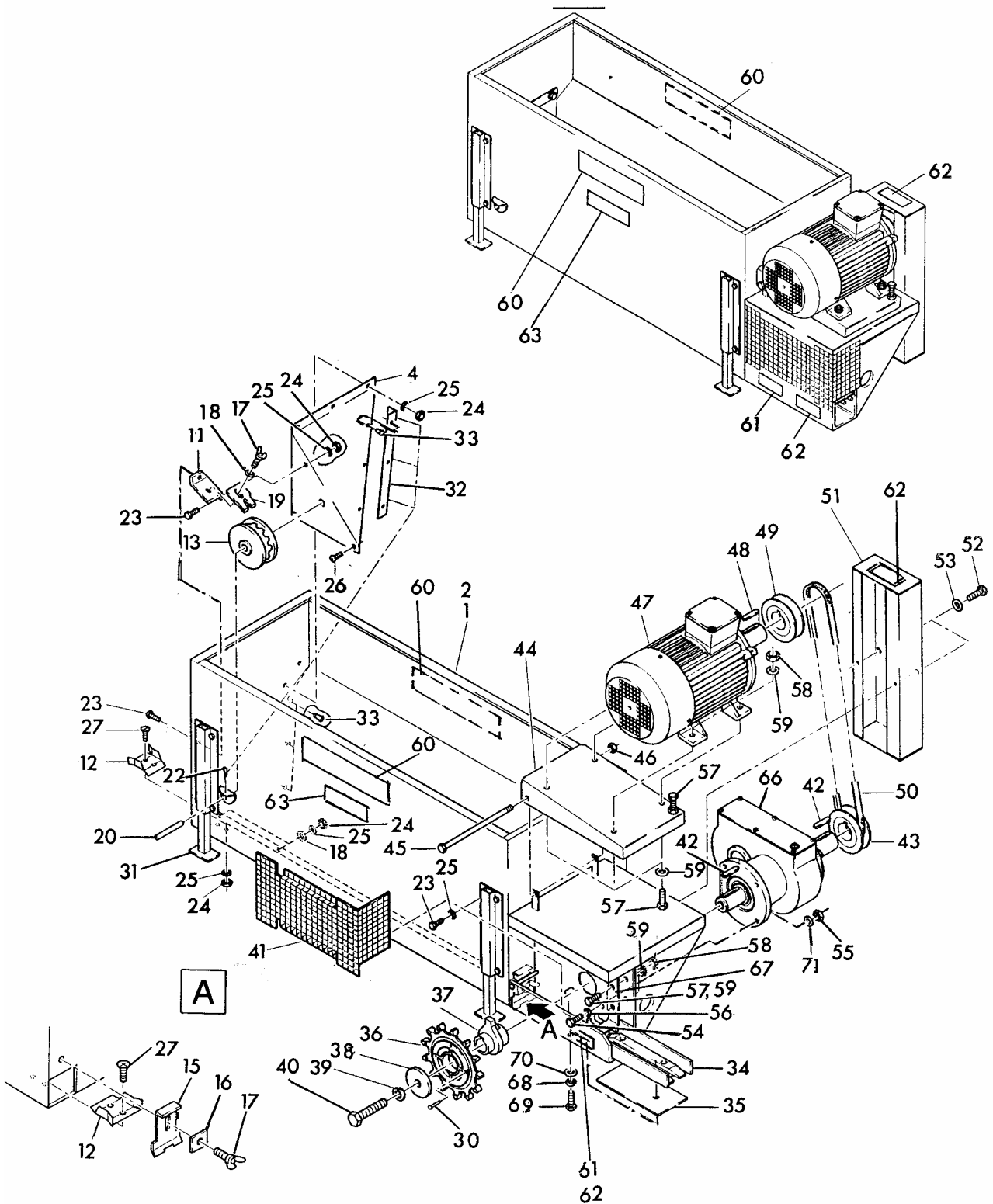
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4.4 Hopper Maxi 280 I, 1 line with V-belt drive

Pos.	Code No. Drawing No.	Description
	10 93 3650	Hopper Maxi 280 I 1 line 36m/min, with V-belt for 2.20 kW
1		Housing 1 line cpl. hopper Maxi for V-belt
2	32 1 0198	Connection rail
4		Slanted sheet right with rivet drill holes
11	32 1 0166	Support sheet right
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A 8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic Ø 6.5 mm
29		Plug plastic Ø 19.5 mm
30	99-50-3913	Shear pin 8x1,5x30 steel tubular rivet DIN 7340
31	10-93-1090	Post hopper MPF
32		Reinforcement for feed hopper Maxi
33		Rivet Ø 4,8x8 Alu/St
34	10 00 0337	Guide shoe W 3/8" f/HS-feeder/Corner Hopper
35		Washer
36	10 00 9543	Drive-gear reversible
37	10 93 3104	Pusher bo 35x57 MPF/CH
38	10 93 1109	Disk APF/MPF 13x72-8
39	99 50 1205	Spring washer A 12 DIN 127-A2E
40	99 10 1274	Hexagon head screw M12x30 DIN 558 galv.
41	10 21 1404	Guard wire mesh for hopper CH
42	99 50 1116	Key 6x6x40 DIN 6885
43		V-belt pulley GG 1 groove for SPA Dw 90mm Bo 20

Pos.	Code No. Drawing No.	Description
44		Support for electric motor
45		Hexagon head screw M12x190
46	99-20-1082	Self-locking counter nut M12 DIN 980-8
47	90-00-3859	Electric motor 2.2 kW 230/400V 50Hz 1400rpm
48	99-50-1264	Key 8x7x40 DIN 6885
49		V-belt pulley GG 1 groove for SPA Dw 90mm Bo 28
50		V-belt SPAx882 LW DIN 2215
51		Protection cap
52	99-10-1241	Hexagon head screw M5x12 DIN 558
53	99-50-1146	Washer flat 5,3 DIN 433-ST
54	99-10-1058	Hexagon head screw M8x30 DIN 558
55	99-10-1040	Hexagon nut M8 DIN 934
56	99-20-1026	Washer A8,4 DIN 125
57	99-10-1103	Hexagon head screw M12x50 DIN 558
58	99 20 1032	Hexagon head screw M12 DIN 555
59	99 50 1076	Washer B 13 DIN 125
60	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
61	00 00 1186	Pictograph: Before maintenance work main switch "OFF"
62	00 00 1187	Pictograph: Protective device
63	00 00 1188	Pictograph: Hopper
66		Gearbox (Esta) for feed hopper Maxi
67	10 00 0267	Blank holder for chain S-machine
68	99 20 1055	Spring washer A 10 DIN 127-A2E
69	99 10 1330	Hexagon head screw M10x16 DIN 558
70	99 50 1090	Washer B 10 DIN 125
71	99 50 1063	Spring washer A 8 DIN 127

Exploded view 10
 Drawing No. 15-1-A014
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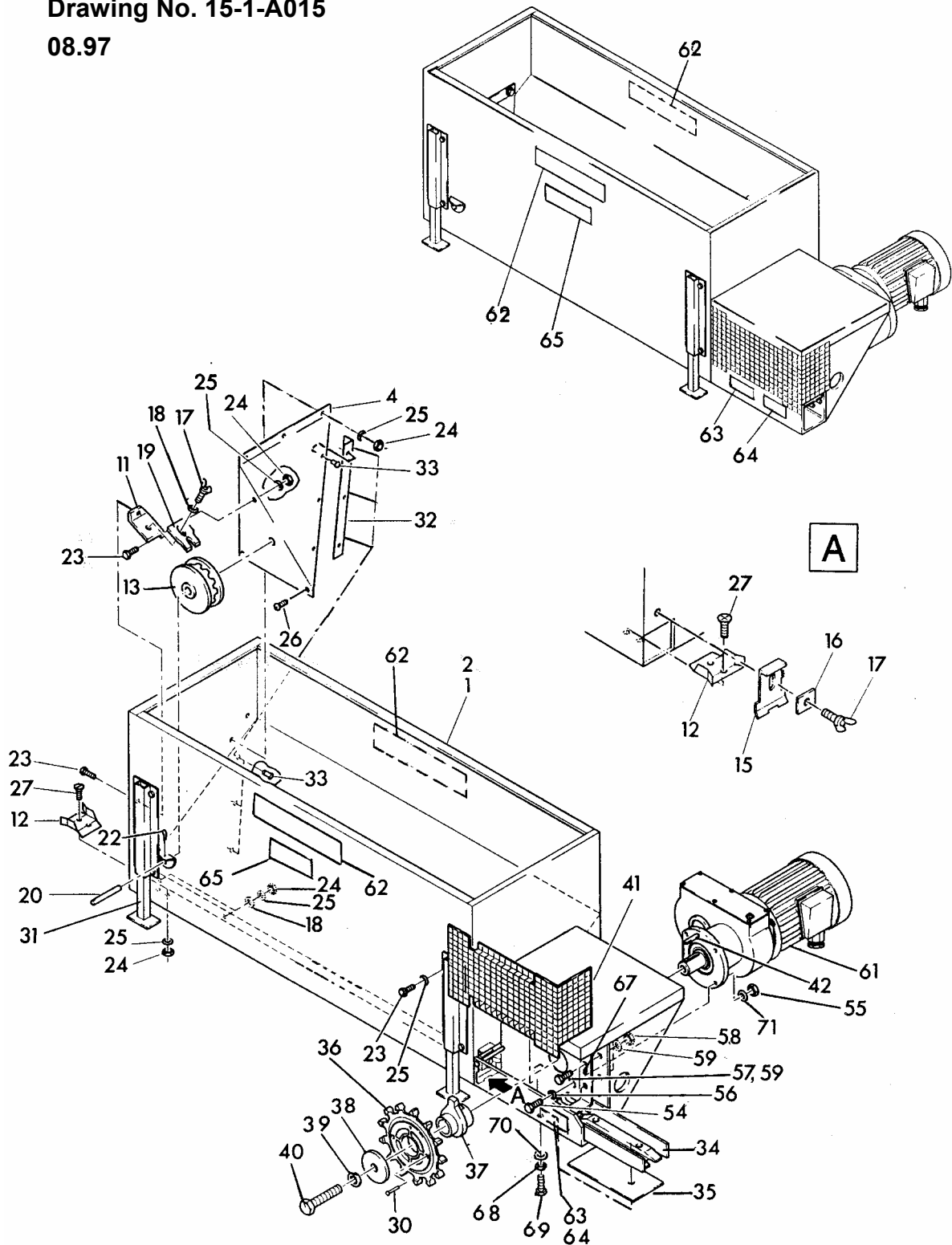
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4.5 Feed hopper Maxi 280 I, 1 line with gear motor

Pos.	Code No. Drawing No.	Description
	10-93-3651	Hopper Maxi 280 I 1 line 36 m with gear-motor 1.1 kW up to 150 m
	10-93-3652	Hopper Maxi 280 I 1 line 36 m with gear-motor 1.5 kW up to 220 m
	10-93-3653	Hopper Maxi 280 I 1 line 36 m with gear-motor 2,20KW up to 300 m
1		Housing 1 line cpl. for feed hopper Maxi with gear motor
2	32 1 0198	Connection rail
4		Slanted sheet right with rivet drill holes
11	32 1 0166	Support sheet right
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A 8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
28		Plug plastic \varnothing 6.5 mm
29		Plug plastic \varnothing 19.5 mm
30	99 50 3913	Shear pin 8x1,5x30 steel tubular rivet DIN 7340
31	10 93 1090	Post hopper MPF
32		Reinforcement for feed hopper Maxi
33		Rivet \varnothing 4,8x8 Alu/St
34	10 00 0337	Guide shoe W 3/8" f/HS-feeder/Corner Hopper
35		Spacer

Pos.	Code No. Drawing No.	Description
36	10 00 9543	Drive-gear reversible
37	10 93 3104	Pusher bo 35x57 MPF/CH
38	10 93 1109	Disk APF/MPF 13x72-8
39	99 50 1205	Spring washer A 12 DIN 127-A2E
40	99 10 1274	Hexagon head screw M12x30 DIN 558 galv.
41	10 21 1404	Guard wire mesh for hopper CH
42	99 50 1116	Key 6x6x40 DIN 6885
54	99 10 1100	Hexagon head screw M6x 12 DIN 558
55	99 10 1040	Hexagon nut M8 DIN 934-8
56	99 20 1026	Washer A 8,4 DIN 125
57	99-10-1103	Hexagon head screw M12x50 DIN 558
58	99 20 1032	Hexagon head screw M12 DIN 555
59	99 50 1076	Washer B 13 DIN 125
61	90 00 3912	Gear motor 1.1 kW 230/400 V 50 Hz 63 rpm Shaft \varnothing 35x56
	90 00 3901	Gear motor 1.5 kW 230/400 V 50 Hz 63 rpm Shaft \varnothing 35x56
	90 00 3902	Gear motor 2.2 kW 230/400 V 50 Hz 63 rpm Shaft \varnothing 35x56
62	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
63	00 00 1186	Pictograph: Before maintenance work main switch "OFF"
64	00 00 1187	Pictograph: Protective devices
65	00 00 1188	Pictograph: Hopper
67	10 00 0267	Blank holder for chain S-machine
68	99 20 1055	Spring washer A 10 DIN 127-A2E
69	99 10 1330	Hexagon head screw M10x16 DIN 558
70	99 50 1090	Washer B 10 DIN 125
71	99 50 1063	Spring washer A 8 DIN 127

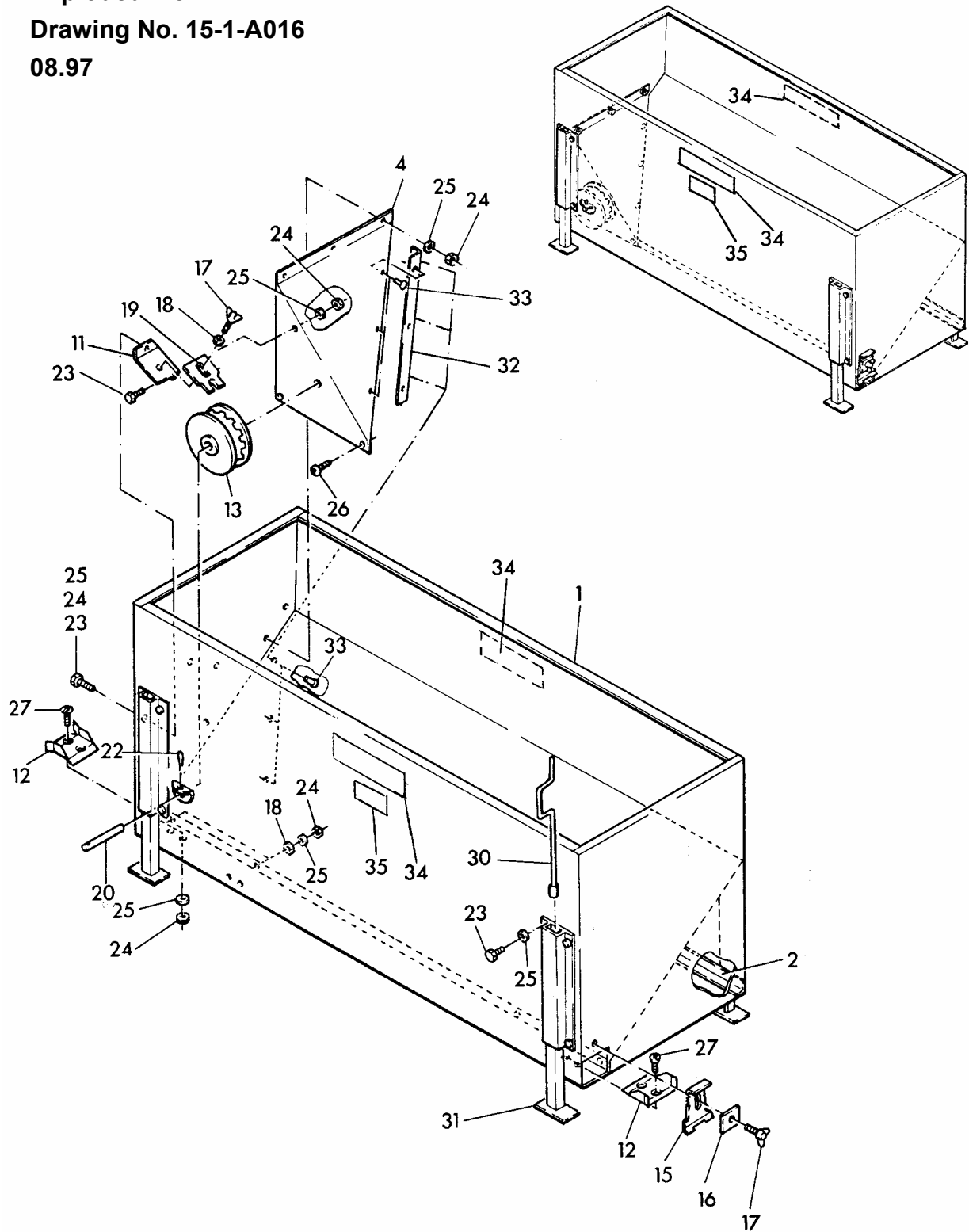
Exploded view 11
 Drawing No. 15-1-A015
 08.97



4.6 Feed hopper MPF 280 I Maxi, 1 line 1 way

Pos.	Code No. Drawing No.	Description
	10 93 3661	Hopper MPF 280 I Maxi, 1 line 1 way
1		Housing 1 line cpl. hopper Maxi
2	32 1 0198	Connection rail
4		Slanted sheet right with rivet drill holes
11	32 1 0166	Support sheet right
12	10 00 0135	Chain guide for return feed intake hopper HS
13	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
15	38 91 3692	Plate adjustable for feed column + corner hopper
16	38 91 3693	Pressure plate for feed level slide
17	99 10 3918	Wing screw M8x12 DIN 316
18	99 20 1026	Washer A 8,4 DIN 125
19	11 31 3799	Feed level slide f/feed return intake wheel 11-31-3798
20	10 22 0006	Shaft 19X120 for return feed intake
22	99 50 3739	Splint pin 3x40
23	99 10 1100	Hexagon head screw M6x12 DIN 558
24	99 10 1045	Hexagon nut M6 DIN 934-8
25	99 50 1147	Washer B 6,4 DIN 125
26	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
27	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
30	10 00 1021	Crank 790mm height adjustment Corner Hopper
31	10 93 1090	Post hopper MPF
32		Reinforcement for feed hopper Maxi
33		Rivet \varnothing 4,8x8 Alu/St
34	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
35	00 00 1188	Pictograph: Hopper

Exploded view 12
Drawing No. 15-1-A016
08.97



4.7 Post for hopper MPF

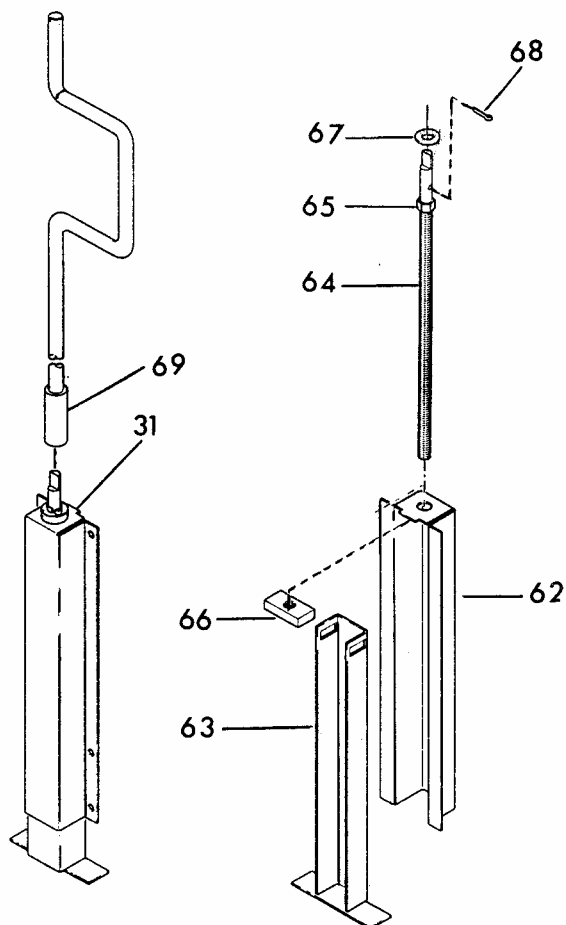
Pos.	Code No.	Description
		Drawing No.
31	10 93 1090	Post hopper MPF
62	10 93 1092	Post outer 354x132x2 mm Hopper APF/MPF and drive APF
63	10 93 1091	Post inner 318x90x2 mm Hopper APF/MPF and drive APF
64	10 93 1005	Adjusting rod for post hopper Hopper APF/MPF and drive APF
65	99 20 1032	Hexagon nut M12 DIN 555
66	10 93 1093	Nut rectangular M12
67	99 50 1076	Washer B 13 DIN 125
68	99 50 1043	Splint pin 3x25
*69	10 00 1021	Crank 790 mm height adjustment Corner Hopper

* does not belong to the post for feed hopper MPF

Exploded view 13

Drawing No. 15-1-A017

08.97



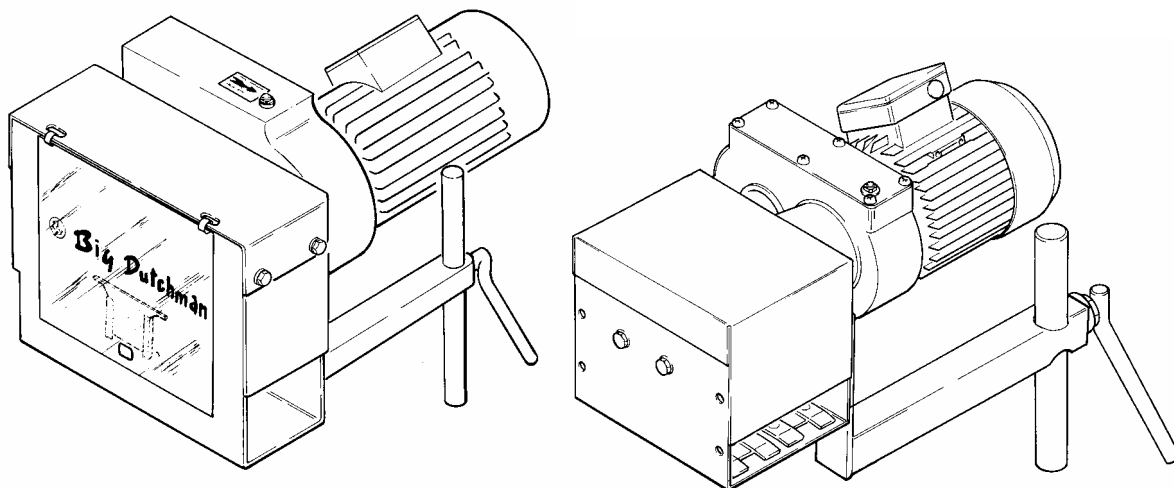
4.8 MPF drive

- The MPF drive as 1 or 2-line design is available with simple height adjustment for all feed line circuits. See point 2.1.1.
Code No. 10 93 3199 Foot for MPF drive.
- The indicated length of feed chain comprises four 90° corners BD2000.
For each additional 90° corner BD2000, the max. feed chain length has to be reduced by 12.5 m.
- If the feed chain is operating in the litter area, the max. feed chain length has to be reduced by 30%.
- For feed distribution, the feed chain speed and the circuit length should be set so that 1 circuit does not take longer than 3, max. 5 minutes, if possible.
- For MPF drives 36 m/min we recommend a time switch with second program for controlling the operating time of a feed chain circuit.

Figure 5

Drawing No. 15-1-A018

08.97



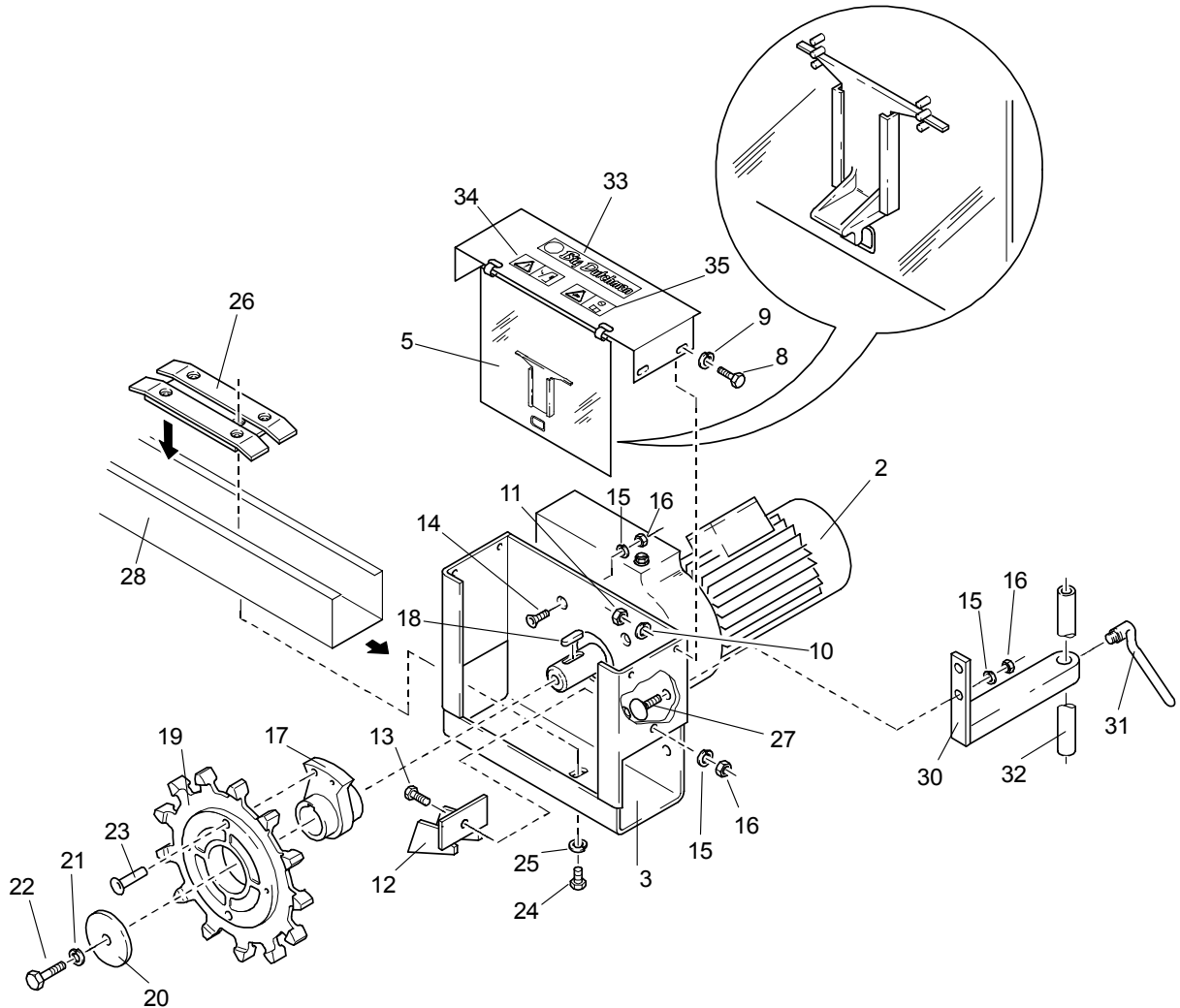
MPF drive 1-line

MPF drive 2-line

4.8.1 MPF drive 1 line

Pos.	Code No.	Description
1		Drive MPF 1line-
2		Mot-g, Welle Ø 35x56
3	10 93 3152	Bracket MPF 0498
	83 00 4647	Bracket ccw MPF
4	10 93 3192	Cover f/drive gear MPF
5	10 93 3173	Protecting cover MPF 1line cpl collapsible
8	99 10 1067	Hexagon head screw M 6x16 DIN 558 galv.
9	99 50 1147	Washer B 6,4 DIN 125 galv
10	99 20 1070	Spring washer A 6 DIN 127-A2E
11	99 10 1045	Hexagon nut M 6 galv. DIN 934-8
12	10 93 3153	Blank holder f/chain 0498 MPF
13	99 10 1038	Hexagon head screw M 8x20 DIN 558
14	99 10 3877	Hexagon socket countersunk head srew M 8x25 DIN7991
15	99 50 1063	Spring washer A 8 DIN 127-A2E
16	99 10 1040	Hexagon nut M 8 galv DIN 934-8
17	10 93 3104	Pusher bo 35x57 MPF/CH
18	99 50 1149	Key 10x8x50 DIN 6885
19	10 00 9543	Drive-gear reversible
20	10 93 1109	Disk APF/MPF 13x72-8
21	99 50 1205	Spring washer A 12 DIN 127-A2E
22	99 10 1274	Hexagon head screw M 12x30 DIN 558 galv
23	99 50 3913	Shear pin 8x1,5x30 steel tubular rivet DIN 7340
24	99 10 1068	Hexagon head screw M 10x20 DIN 558 galv
25	99 20 1055	Spring washer A 10 DIN 127-A2E
26	38 91 3014	Guide shoe SF/MPF
27	99 10 3812	Mushroom head square neck bolt M 8x25 DIN 603 galv
28	15 20 1001	Feedtrough 3000 regular 1,2mm
29	10 93 3199	Foot f/MPF-drive
30	10 93 3184	Holder for support pipe
31	10 93 3197	Fixing screw for support pipe
32	10 93 3189	Support pipe
33	00 00 1172	Type plate: Big Dutchman 135mmx25mm
34	00 00 1186	Pictograph: Before maintenance mainswith "OFF"
35	00 00 1187	Pictograph: shielding

Exploded view 14
 Drawing No. 335.3



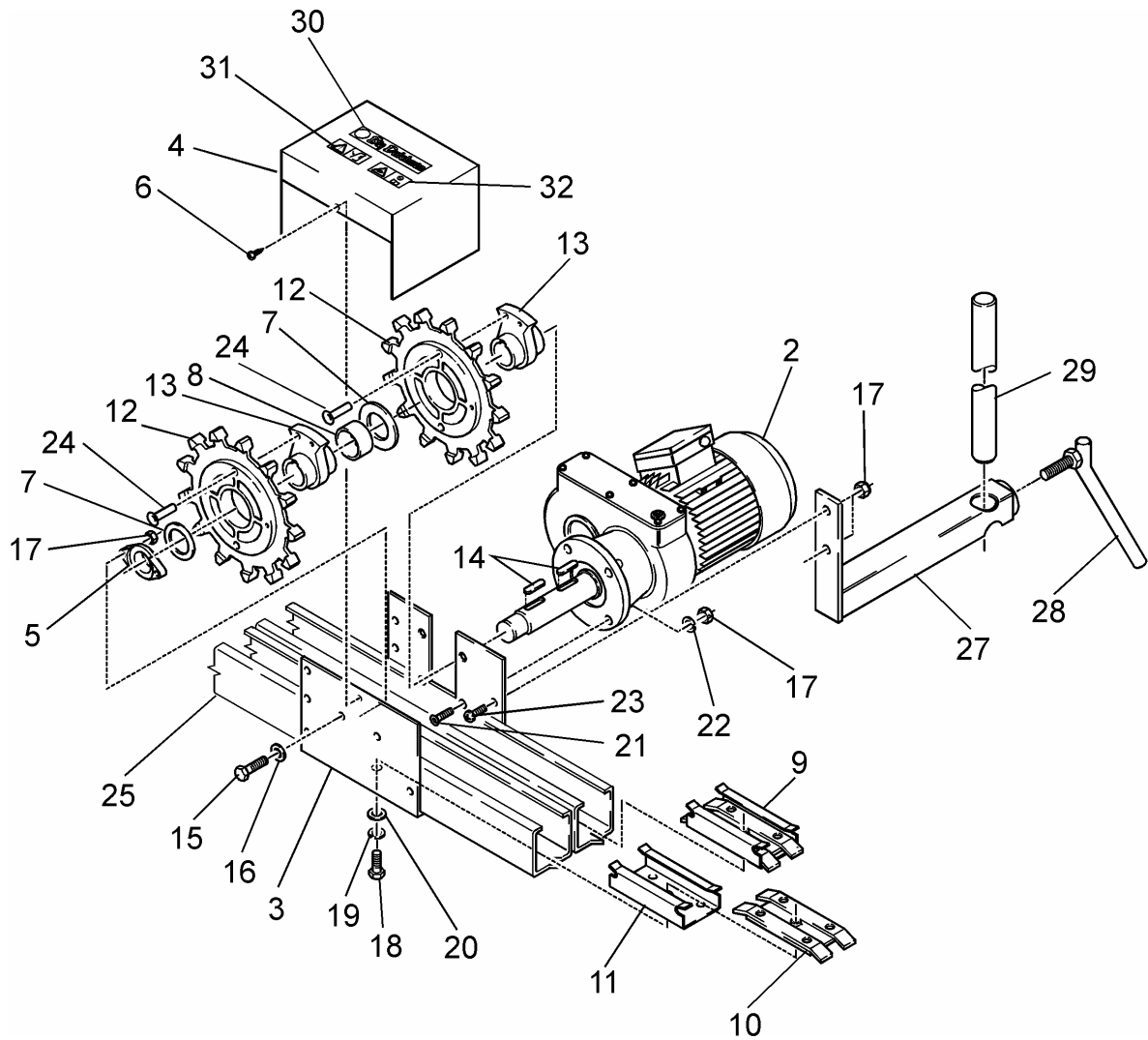
4.8.2 MPF drive 2 lines

Pos.	Code No.	Description
1		MPF drive 1 line 12 m
2		Gear motor, 220/380V, 50Hz, Shaft \varnothing 35x142
3	10 93 3183	Bracket MPF 2 lines
4	10 93 3182	Protective device MPF 2 lines
5	99 98 4701	Flange bearing cast iron dia25 2hole
6	99 50 3903	Tapping screw B 3,5x13 DIN 7971
7	10 93 3181	Washer 72x35-4
8	10 93 3179	Spacer tube 42,4x3-25-26
9	10 93 3185	Guide shoe cpl. for drive
10	10 93 3186	Guide shoe
11	10 93 3187	C-profile
12	10 00 9543	Drive-gear reversible
13	10 93 3104	Pusher bo 35x57 MPF/CH
14	99 50 1149	Key 10x8x50 DIN 6885 Shape A
15	99 10 1038	Hexagon head screw M8x20 DIN 558
16	99 20 1026	Washer A 8,4 DIN 125
17	99 10 1040	Hexagon nut M8 galv. DIN 934
18	99 10 1068	Hexagon head screw M10x20 DIN 558
19	99 20 1055	Spring washer A 10 DIN 127
20	99 50 1090	Washer B 10,4 DIN 125
21	99 10 3877	Hexagon socket countersunk head screw M8x25 DIN 7991
22	99 50 1063	Spring washer A 8 DIN 127
23	99 10 3812	Mushroom head square neck bolt M8x25 DIN 603
24	99 50 3913	Shear pin 8x1,5x30 steel tubular rivet
25	15 20 1001	Feed trough 3000 regular 1.2 mm
26	10 93 3199	Foot for MPF-drive
27	10 93 3184	Holder for support pipe
28	10 93 3197	Fixing screw for support pipe
29	10 93 3189	Support pipe
30	00 00 1172	Type plate: Big Dutchman 135mm x 25mm
31	00 00 1186	Pictograph: Before maintenance work main switch "OFF"
32	00 00 1187	Pictograph: Protective devices

Exploded view 15

Drawing No. 15-1-A020

08.97



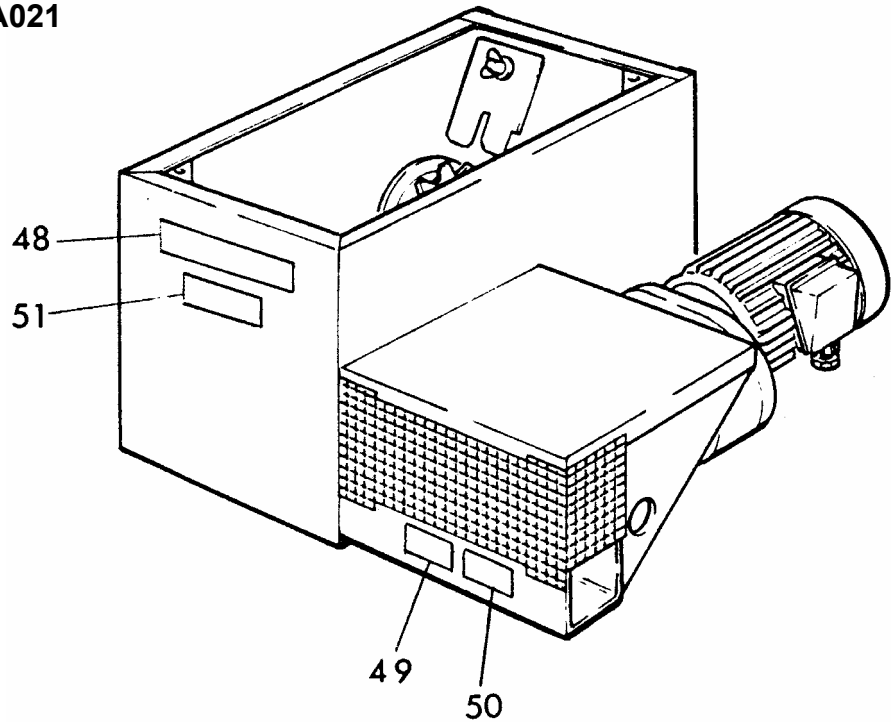
4.9 CH-machine

The CH-machine is used for automatic filling and replaces one 90° corner. It can be equipped with a hopper extension for CH-machine.

Figure 6

Drawing No. 15-1-A021

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- 10 21 1471 CH-machine 12m/min 0.75 kW, 230-400V, 50Hz
with motor 90 00 3831
- 10 21 1421 CH-machine 18m/min 1.1 kW, 230-400V, 50Hz
with motor 90 00 3832
- 10 21 1431 CH-machine 6-12m/min 0.5/0.7 kW, 400V, 50Hz
with motor 90 00 3833
- 10 21 1050 Extension for hopper CH

Technical data of CH-machine

	Dimensions in cm			Capacity in kg
	Length	Width	Height	
CH-machine	61	45	41	25
Extension for hopper	76	45	85	75

CH-machine

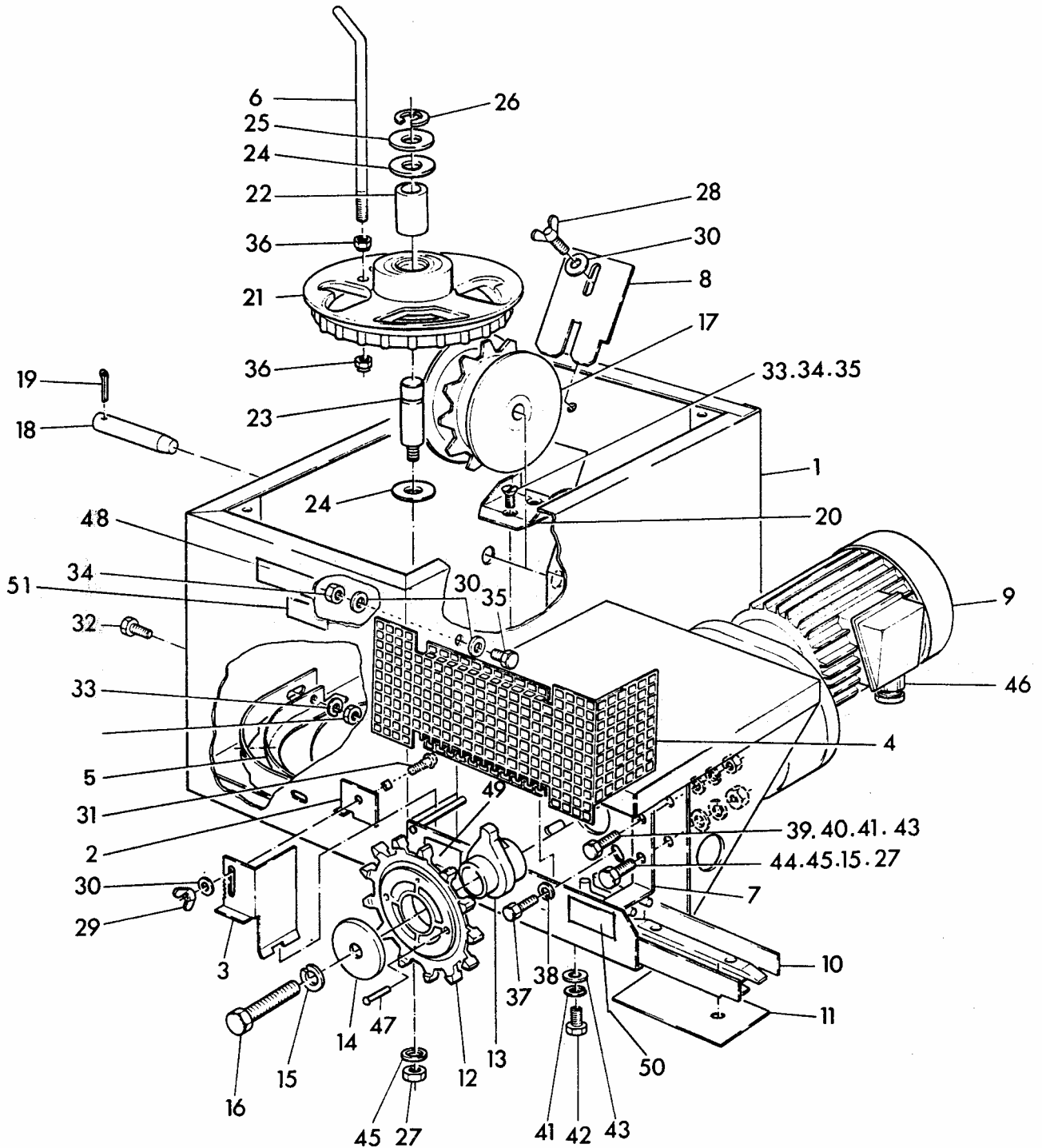
Pos.	Code No.	Description
1	10 21 1401	Container Corner Hopper
2	10 21 1402	Mounting plate for feed level slide CH-machine
3	10 21 1403	Feed slide CH
4	10 21 1404	Guard wire-mesh for hopper-CH
5	10 21 1405	Chain guide rail CH
6	10 21 1406	Rod agitator for CH-machine
7	10 00 0267	Blank holder for chain S-machine
8	10 21 1410	Deflecting plate CH SF
9	90 00 3831	Mot-g 0.75 kW 230/400 V 50 Hz 22.5 rpm Shaft \varnothing 35x56 for chain speed 12m/min
	90 00 3832	Mot-g 1.1 kW 230/400 V 50 Hz 33 rpm Shaft \varnothing 35x56 for chain speed 18m/min
	90 00 3833	Mot-g 0.5/0.7 kW 400 V 50 Hz 11/22 rpm Shaft \varnothing 35x56 for chain speed 6-12m/min
10	10 00 0337	Guide shoe W 3/8" for HS-feeder/Corner Hopper
11	10 00 1035	Levelling plate for level guide shoe
12	10 00 9543	Drive-gear reversible
13	10 93 3104	Pusher bo 35x57 MPF/CH
14	10 93 1109	Disk APF/MPF 13x72-8
15	99 50 1205	Spring washer A 12 DIN 127
16	99 10 1274	Hexagon head screw M12x30 DIN 558
17	11 31 3798	Wheel f/return feed intake BR cpl for hopper MPF
18	10 22 0006	Shaft 19X120 for return feed intake
19	99 50 3739	Splint pin 3x40
20	10 00 0135	Chain guide for return feed intake hopper HS
21	15 00 1000	Corner wheel wo bush POM-CH
22	10 93 3218	Bush POM 90
23	10 21 1407	Axle for corner CH-machine
24	99 20 1012	Distance washer 40x19,5-3 PA6
25	15 10 9073	Distance-washer corner axle
26	15 00 9004	Retaining washer 15 mm DIN 6799
27	99 20 1032	Hexagon nut M12 DIN 555
28	99 10 1084	Wing screw M6x12 DIN 316

Pos.	Code No.	Description
29	99 20 1017	Wing nut M6 DIN 315
30	99 50 1147	Washer B 6,4 DIN 125
31	99 10 1602	Mushroom head square neck bolt M6x16 DIN 603
32	99 10 1088	Hexagon head screw M6x20 DIN 558
33	99 20 1070	Spring washer A6 DIN 127
34	99 10 1045	Hexagon nut M6 DIN 934
35	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
36	99 20 1064	Self-locking counter nut M8 DIN 985
37	99 10 1058	Hexagon head screw M8x30 DIN 933
38	99 50 1063	Spring washer A8 DIN 127
39	99 10 1144	Hexagon head screw M10x25 DIN 558
40	99 20 1029	Hexagon nut M10 galv. DIN 555
41	99 20 1055	Spring washer A10 DIN 127
42	99 10 1287	Hexagon head screw M10x16 DIN 933
43	99 50 1090	Washer B 10,4 DIN 125
44	99 10 1191	Hexagon head screw M12x 40 DIN 558
45	99 50 1134	Washer B 13 DIN 433
46	91 00 1072	Screw union PG 13,5
47	99 50 3913	Shear pin 8x1,5x30 steel tubular rivet
48	00 00 1173	Type plate: Big Dutchman 265mm x 50mm
49	00 00 1186	Pictograph: Before maintenance work main switch "OFF"
50	00 00 1187	Pictograph: Protective devices
51	00 00 1188	Pictograph: Hopper

Exploded view 16

Drawing No. 15-1-A022

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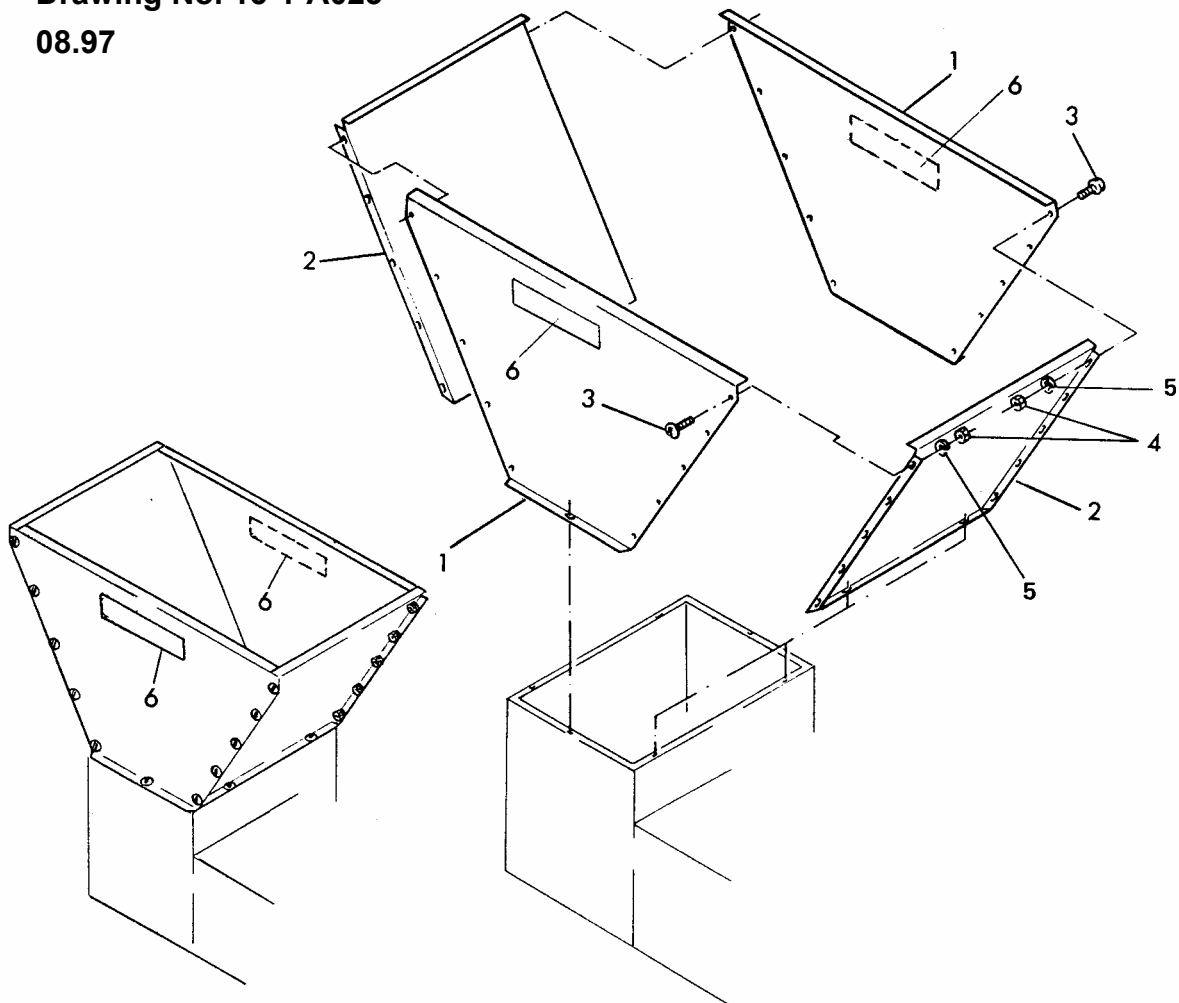
4.10 Hopper extension for CH-machine

Pos.	Code No.	Description
	10-21-1050	Extension for hopper CH
1	10-21-1051	Side plate trapezoid CH
2	10-21-1052	Side plate rectangular CH
3	99-10-1220	Slotted cheese head screw M6x12 DIN 84
4	99-10-1045	Hexagon nut M6 DIN 934-8
5	99-20-1070	Spring washer A6 DIN 127
6	00-00-1173	Type plate: Big Dutchman 265mm x 50mm

Exploded view 17

Drawing No. 15-1-A023

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4.11 Feed column CAS for A-rack

The CAS feed columns 1t and 2t for A-rack are used when feed supply to laying hens takes place on different levels. This is the case when A-racks are placed on the manure pit.

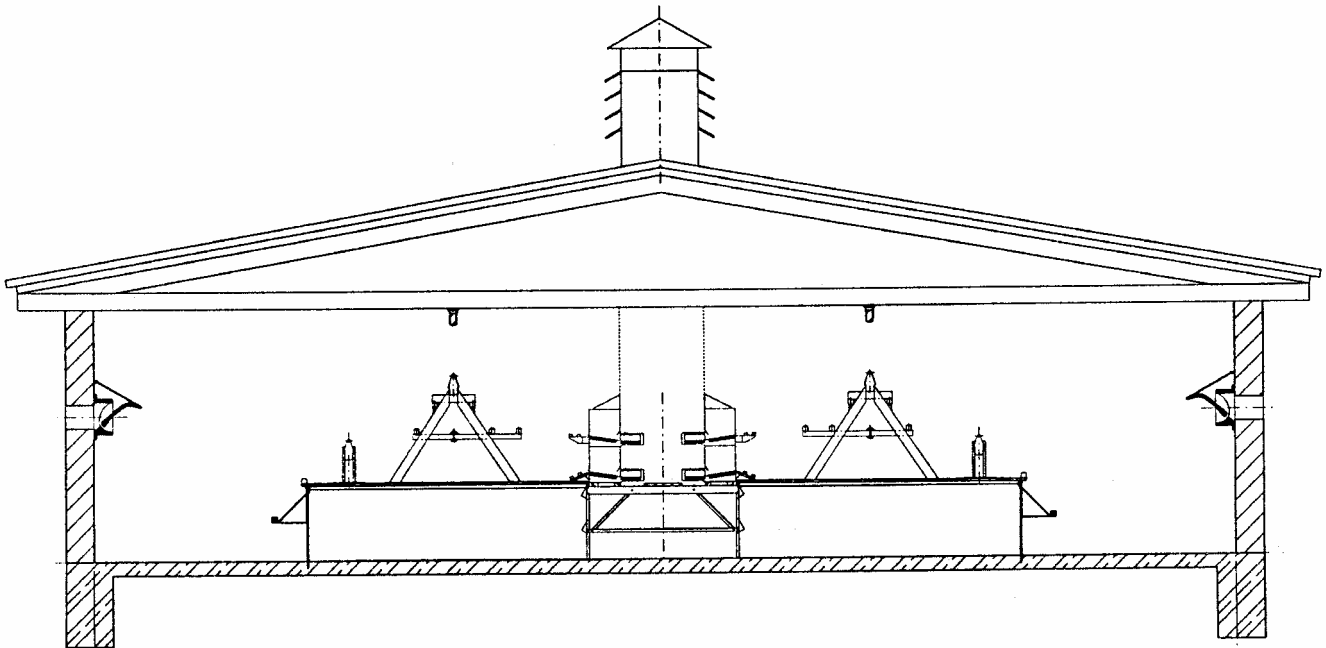
In case of the feed columns 2t, one feed chain circuit in the A-rack is always combined with one standing on the manure pit.

Supply is carried out by means of an auger / spiral.

Figure 13

Drawing No. 15-1-A050

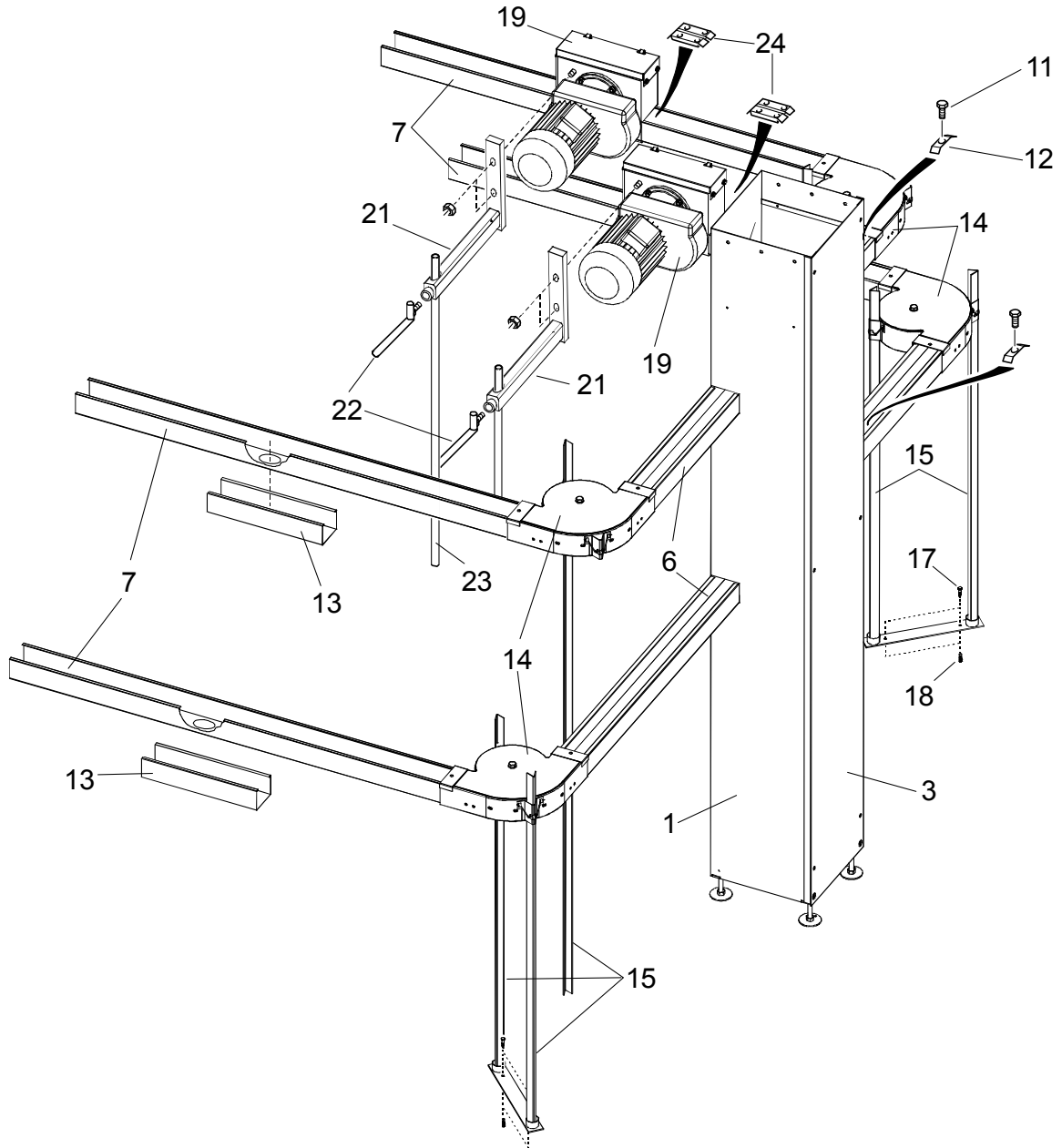
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Pos.	Code No.	Description
1	36 00 3402	Feed column CAS 2t for A-rack
2		Feed column CAS 1t for A-rack
3		Front wall for feed column CAS for A-rack
4	99 20 1026	Washer A 8,4 DIN 125
5	99 10 1143	Hexagon head screw M8x10 DIN 558
6	38 90 3081	Feed trough 620/110 notched Uni 209/178
7	15 20 1001	Feed trough 3000 regular 1.2 mm
8	99 10 1047	Mushroom head screw M5x10 slotted
9	99 10 1023	Hexagon nut M5 DIN 934
10	99 10 1241	Hexagon head screw M5x12 DIN 558
11	99 10 1698	Cross recessed countersunk head screw M5x12 DIN 965
12	39 00 3599	Guide shoe 2mm for feed-column
13	10 00 1020	Feed outlet slide for trough
14	15 10 5063	Corner 90 deg BD 2000
15	37 80 1010	Leg for corner 3t CB980/CB630R
16	15 22 5017	Foot plat for corner leg G3
17	99 10 3719	Hexagon wood screw 6x 60
18	99 98 3781	Dowel S8
19		MPF drive 1 line
21	10 93 3184	Holder for support pipe
22	10 93 3197	Fixing screw for support pipe
23	65 02 3631	Tube 3/4"x1540

Exploded view 36

Drawing No. 5009



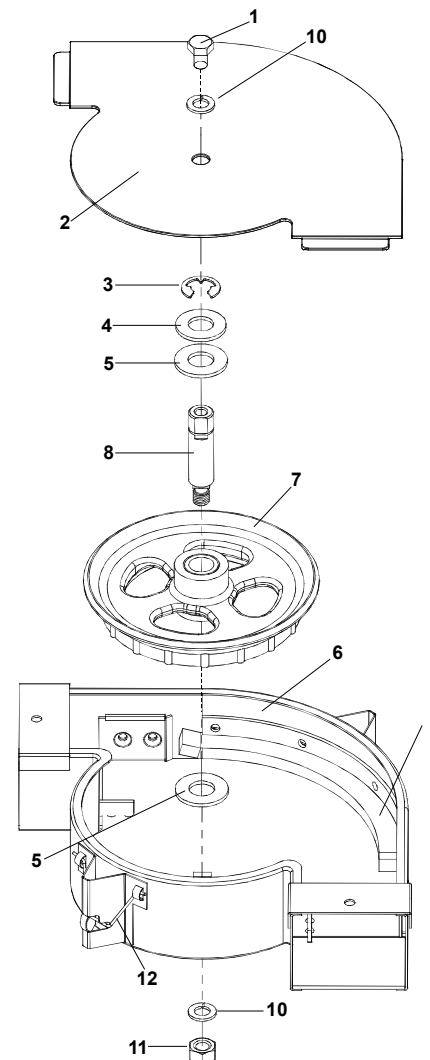
4.12 Corner 90° BD 2000

The prerequisite for a trouble-free operation of the feed chain is the operative corner 90° BD 2000.

The following components ensure a long service life, minimum wear and maintenance-free operation:

- corner wheel with grease-free bearing bush,
- use of an especially hardened guiding rail,
- rugged housing with cover,
- enamelled plastic coating.

Pos.	Code No.	Description
	83-00-5966	Corner 90 deg BD2000 consists of:
1	99 10 1287	Hexagon head screw M10x16 DIN 558
2	83-00-4430	Cover for corner 90deg BD 2000
3	15 00 9004	Retaining washer 15mm DIN 6799
4	15 10 9073	Distance washer/corner axle
5	99 20 1012	Distance washer 40x19,5-3 PA6
6	83-00-6017	Body for corner BD 2000 incl chain guide rail HD
7	15 00 1001	Corner wheel with bush POM f/ corner BD88
8	15 10 9070	Axle f/corner BD88 dia 19mm w/ thread M 12
9	15 10 9080	Chain guide rail HD cpl
10	99 50 1205	Spring washer A 12 DIN 127-A2E
11	99 10 1126	Hexagon nut M12 DIN 934
12	15 00 0040	Spring f/corner 90deg



Exploded view 18
Drawing No. 5000

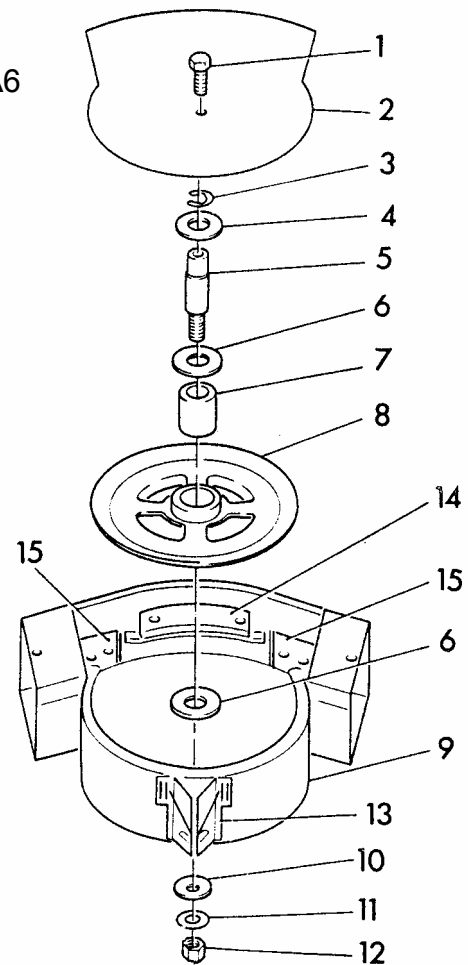
4.13 Corner 135° without post



In EC member states, the cover for corner 135° has to be fixed with a hexagon head screw !

The existing wing screw W 3/8"x16 has to be replaced by a hexagon head screw W 3/8"x16 UNC.

Pos.	Code No.	Description
	15-10-8002	Corner 135 deg without leg consists of:
1	99 10 1157	Hexagon head screw 3/8x 16 UNC
2	15 10 0051	Cover for corner 135° reg
3	15 00 9004	Retaining washer DIN 6799
4	15 00 9010	Distance-washer
5	15 00 9011	Axle for corner with thread
6	99 20 0093	Distance washer 40x19,5-3 PA6
7	15 00 3750	Bush f/corner wheel-USA brs Dia 19.1x28.6-38long
8	15 00 1001	Corner wheel with bush 90°
9	15 10 9105	Housing for corner 135°
10	99 20 0128	Distance-washer for corner
11	99 20 0234	Spring washer galv. W 1/2"
12	99 20 0105	Hexagon nut W 1/2 Corner USA model
13	15 00 2040	Support for post
14	15 00 0052	Chain guide rail Corner 135deg regular
15	15 00 0026	Guide chain corner



Exploded view 19

Drawing No. 15-1-A025

08.97

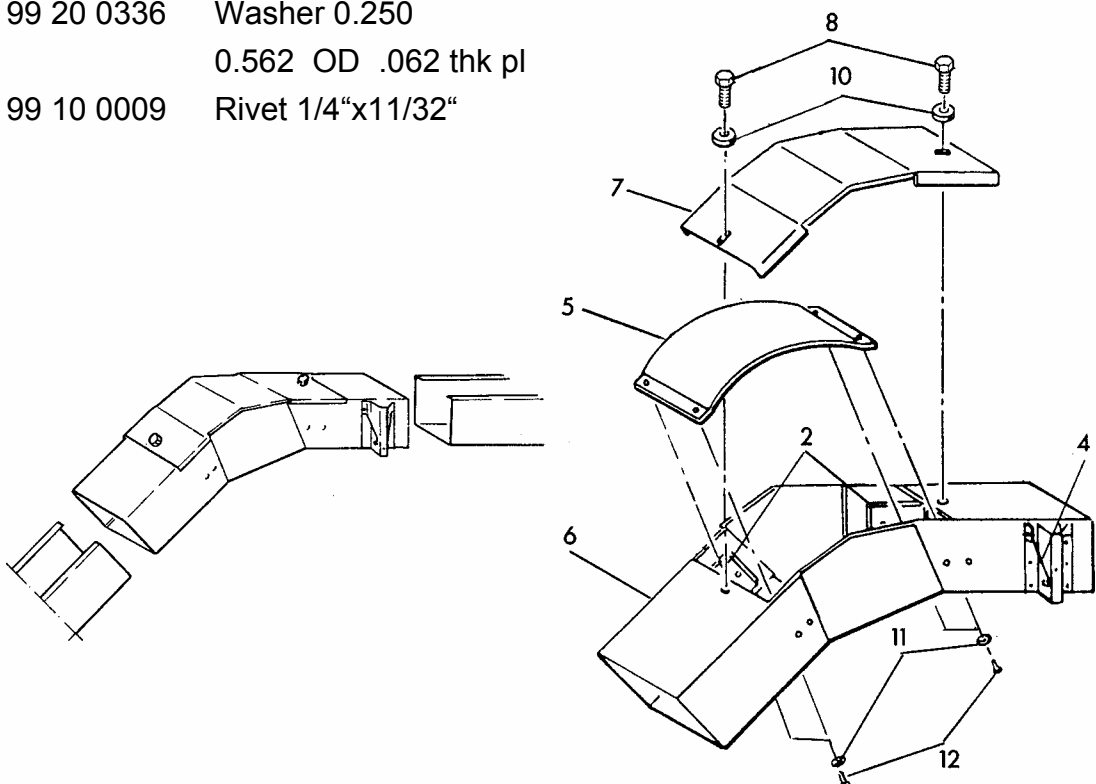
4.14 Riser upper 45°



In EC-member states, the protective cover for riser upper 45° has to be fixed by means of hexagon head screws.

The wing screws W 1/4"x1/2" have to be replaced by hexagon head screws W 1/4"x25I UNC and shortened, if required.

Pos.	Code No.	Description
	15 11 8003	Riser upper 45° without leg consists of:
2	15 00 0026	Guide chain corner
4	15 00 0204	Spring for corner
5	15 00 0055	Guide shoe for riser upper 45°
6	15 11 9004	Housing for riser upper 45°
7	15 11 9005	Protective cover for riser upper 45°
8	99 10 1032	Hexagon head screw W 1/4"x25I
10	99 20 0029	Washer 1/4"
11	99 20 0336	Washer 0.250 0.562 OD .062 thk pl
12	99 10 0009	Rivet 1/4"x11/32"



Exploded view 20

Drawing No. 15-1-A026

08.97



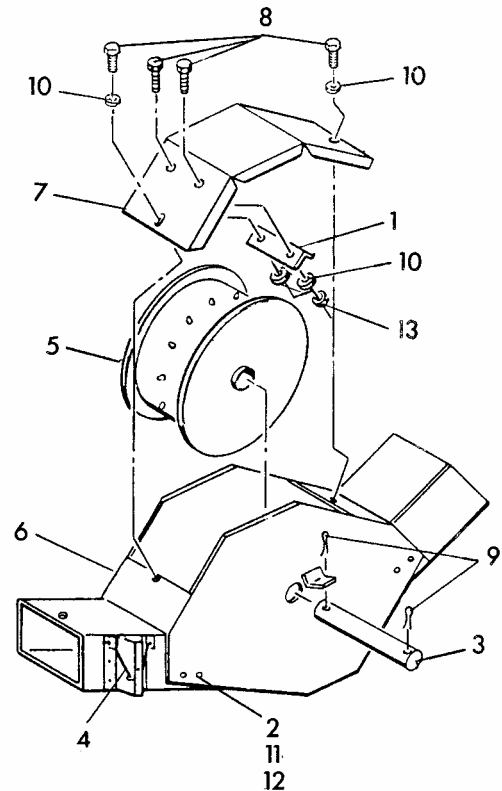
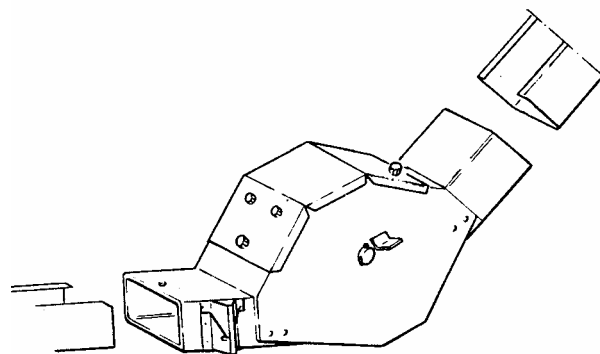
4.15 Riser lower 45°



In EC-member states, the protective cover for riser lower 45° has to be fixed by means of hexagon head screws.

The wing screws W 1/4"x1/2" pl have to be replaced by hexagon head screws W 1/4"x25I UNC and shortened, if required.

Pos.	Code No.	Description
	15 11 8004	Riser lower 45° without leg consists of:
1	15 00 0014	Scraper for riser lower
2	15 00 0026	Guide chain corner
3	15 00 0037	Axle 3/4"x5" riser corner
4	15 00 0204	Spring for corner
5	15 00 0180	Wheel for riser 45°
6	15 11 9006	Housing for riser lower 45°
7	15 11 9007	Protective cover for riser lower 45°
8	99 10 0374	Hexagon head screw W 1/4 "X1/2" zp
9	99 50 0186	Splint pin 0.188x1.500" ZP
10	99 20 0029	Washer 1/4"
11	99 20 0336	Washer 0.250 0.562 OD .062 thk pl
12	99 10 0009	Rivet 1 / 4"x11/32"
13	99 20 0134	Hexagon nut 1/4"-20



Exploded view 21

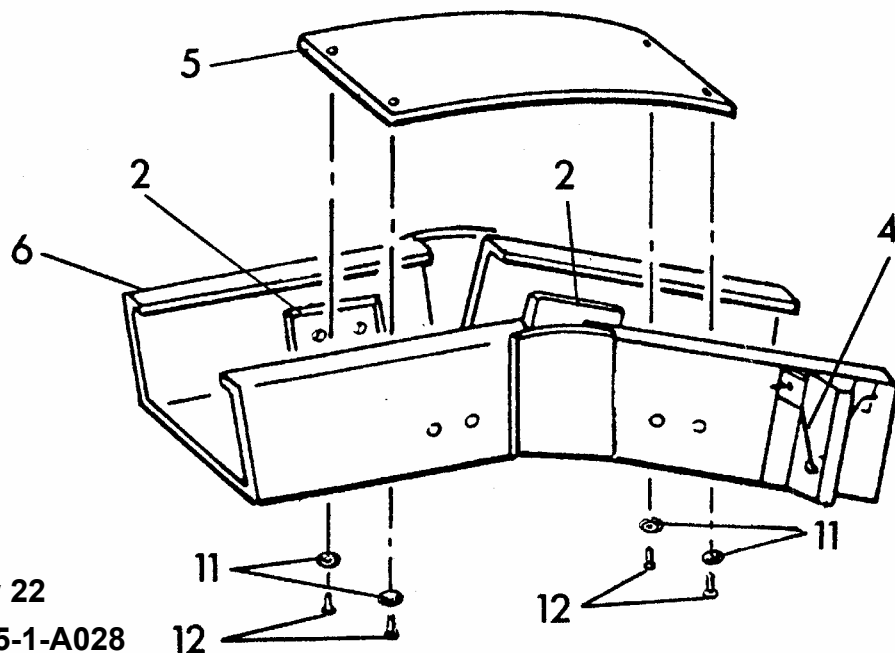
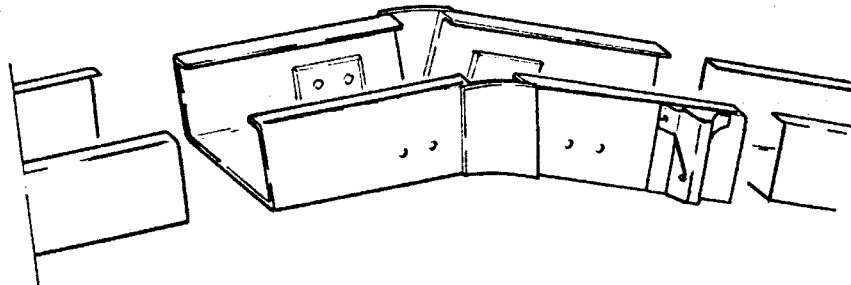
Drawing No. 15-1-A027

08.97



4.16 Riser upper 20°

Pos.	Code No.	Description
	15 11 8005	Riser upper 20° without leg consists of:
2	15 00 0026	Guide chain corner
4	15 00 0204	Spring for corner
5	15 00 0149	Guide shoe for riser upper 20°
6	15 11 9008	Housing for riser upper 20°
11	99 20 0336	Washer 0.250 0.562 OD .062 thk pl
12	99 10 0009	Rivet 1 / 4"x11/32"



Exploded view 22

Drawing No. 15-1-A028

08.97

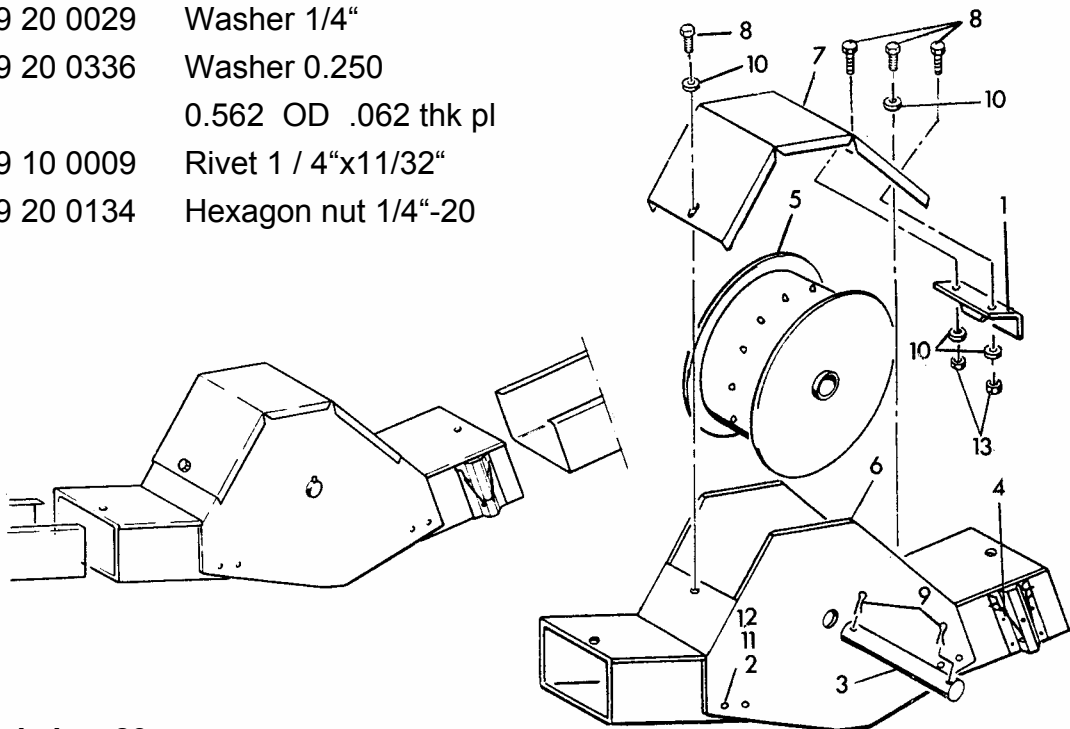
4.17 Riser lower 20°



In EC-member states, the protective cover for riser lower 20° has to be fixed by means of hexagon head screws.

The wing screws W 1/4"x1/2" pl have to be replaced by hexagon head screws W 1/4"x25I UNC and shortened, if required.

Pos.	Code No.	Description
	15 11 8006	Riser lower 20° without leg consists of:
1	15 00 0014	Scraper for riser lower
2	15 00 0026	Guide chain corner
3	15 00 0037	Axle 3/4"x5" for riser
4	15 00 0204	Spring for corner
5	15 00 0180	Wheel for riser 45°
6	15 11 9009	Housing for riser lower 20°
7	15 11 9010	Cover for riser lower 20°
8	99 10 0374	Hexagon head screw W 1/4 "X1/2" zp
9	99 50 0186	Splint pin 0.188x1.500" ZP
10	99 20 0029	Washer 1/4"
11	99 20 0336	Washer 0.250 0.562 OD .062 thk pl
12	99 10 0009	Rivet 1 / 4"x11/32"
13	99 20 0134	Hexagon nut 1/4"-20



Exploded view 23

Drawing No. 15-1-A029

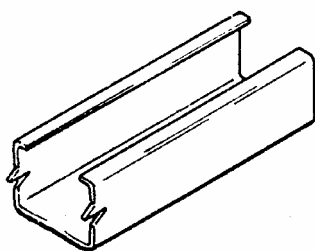
08.97



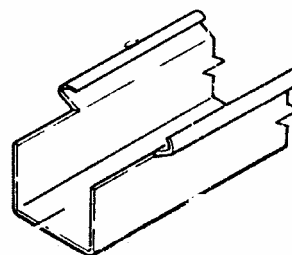
4.18 Feed trough regular, feed trough medium

The width and shape of the regular feed trough or the feed trough medium model ensure that the birds do not hinder each other during feeding and that feed losses are reduced to a minimum.

The **regular feed trough** is only used for broilers and rearing pullets (layers, layer breeders, broiler breeders), and the **medium feed trough** for laying hens and breeders.



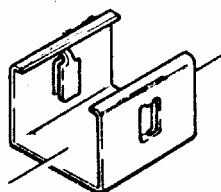
Code No. 15 20 1001
Feed trough 3000 regular 1.2 mm



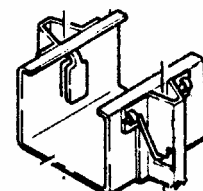
Code No. 15 20 5002
Feed trough 3000 medium 1.2 mm

4.19 Trough coupler

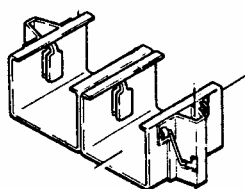
Trough couplers are required for connecting feed troughs, both suspended and standing versions.



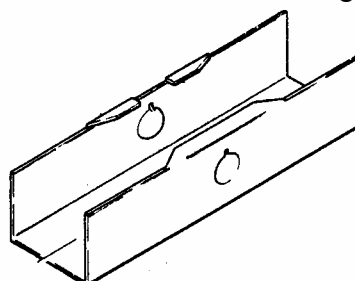
Code No. 15 22 3701
Feed trough coupler
without tappet



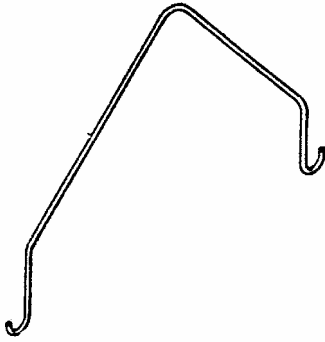
Code No. 15 22 5008
Coupler for trough 1-line
without leg



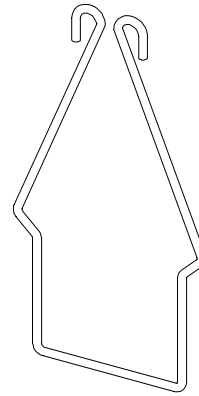
Code No. 15 22 5016
Coupler for trough 2-lines
without leg



Code No. 15 22 1006
Coupler without suspension eye
for suspended trough



Code No. 15 00 1005
Hanger for
corner 90/135°



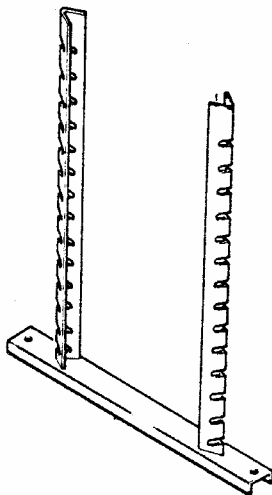
Code No. 10 93 3856
Hanger
for feed trough 3000
regular/ medium 1.2 mm

4.20 Legs

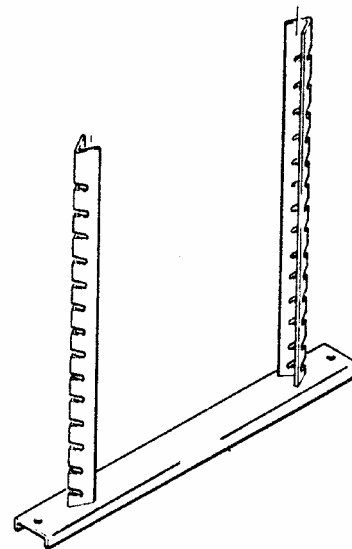
Legs are required for fixing and height adjustment of the chain feeding system at the trough couplers and corners.



If the chain feeding system in floor management houses is placed into litter, only legs made of stainless steel or plastic PA may be used.

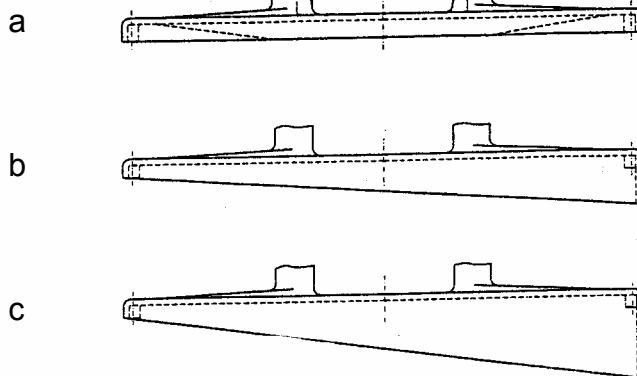
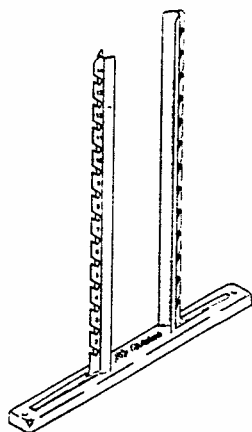


Code No. 15 21 1010
Leg SST
for coupler 2-lines




Code No. 15 10 1008
Leg SST
for corner 90/135°





- Code No. 15 21 9015 Leg PA for coupler 1-line 0° (a)
- Code No. 15 21 9016 Leg PA for coupler 1-line 4° (b)
- Code No. 15 21 9017 Leg PA for coupler 1-line 8° (c)

	<p>The feed chain lines can be placed horizontally even on slanted manure pits by means of the legs PA for couplers 1-line with 4° and 8° slanted bottom plates.</p> <p>The legs are fixed on an even or slanted manure pit by means of cable clamps to be supplied by the customer.</p>
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4.21 Feed chain and chain breaker

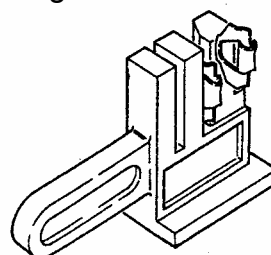
The feed chain distributes feed quickly, uniformly and reliably. Due to the feed chain carrying the feed to the birds, feed separation is prevented.

A conveying performance of 0.7 to 1.5 kg feed/m feed chain can be adjusted at the feed hopper. The high feed chain speed of 36 m/min prevents the birds from feeding selectively during the feeding circuit.

The chain breaker is used for connecting and detaching the feed chain links.



Code No. 15 15 5001
Feed chain Champion



Code No. 10 00 0025
Breaker for feed chain

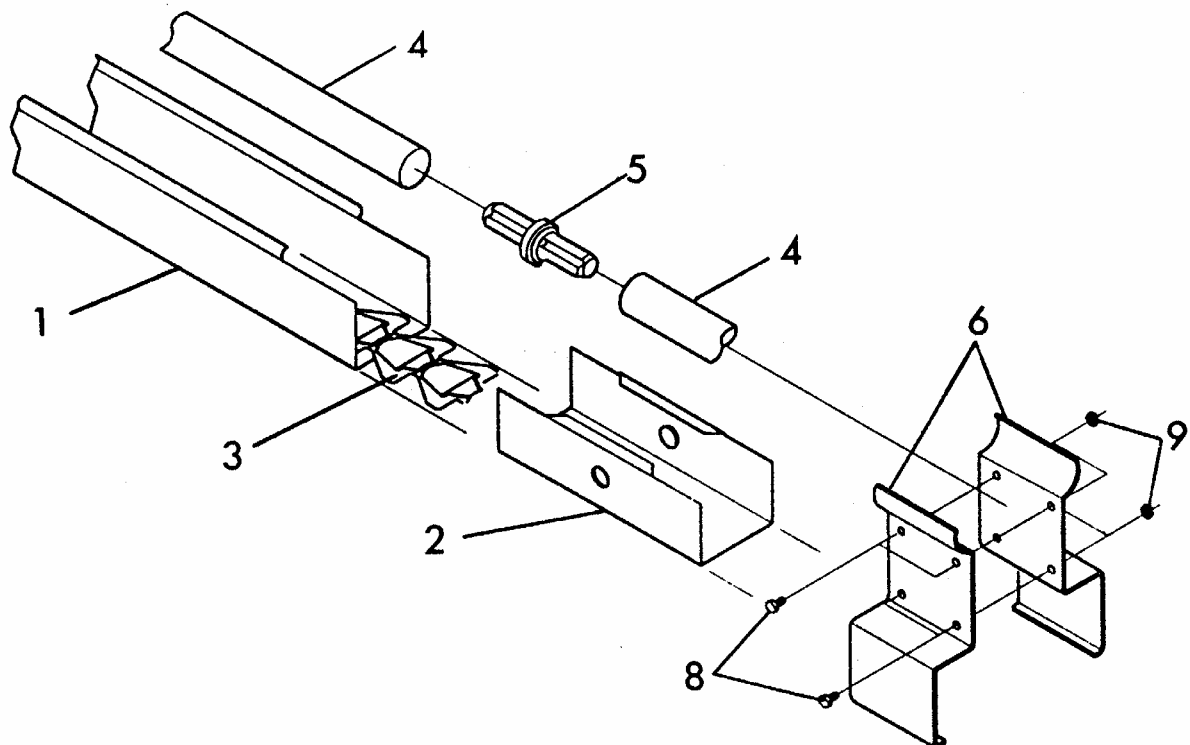
4.22 Feed trough 3000 medium with roost tube

Pos.	Code No.	Description
	15 22 5011	Feed trough 3000 medium cpl. f/rack assembly with roost tube
1	15 20 5002	Feed trough 3000 medium 1.2 mm
2	15 22 1006	Coupler without suspension eye for suspended trough
3	15 15 5001	Feed chain Champion
4	99 40 3813	Pipe 1"x6000 galv. DIN 2440
5	15 22 5028	Coupler slotted PA6 f/perch 1"
6	15 22 5036	Bracket single for 1" tube on trough coupler suspended
7	15 22 5035	Bracket cpl. for 1" tube on trough coupler suspended
8	99 10 1067	Hexagon head screw M6x16 DIN 558
9	99 10 1045	Hexagon nut M6 DIN 934

Exploded view 24

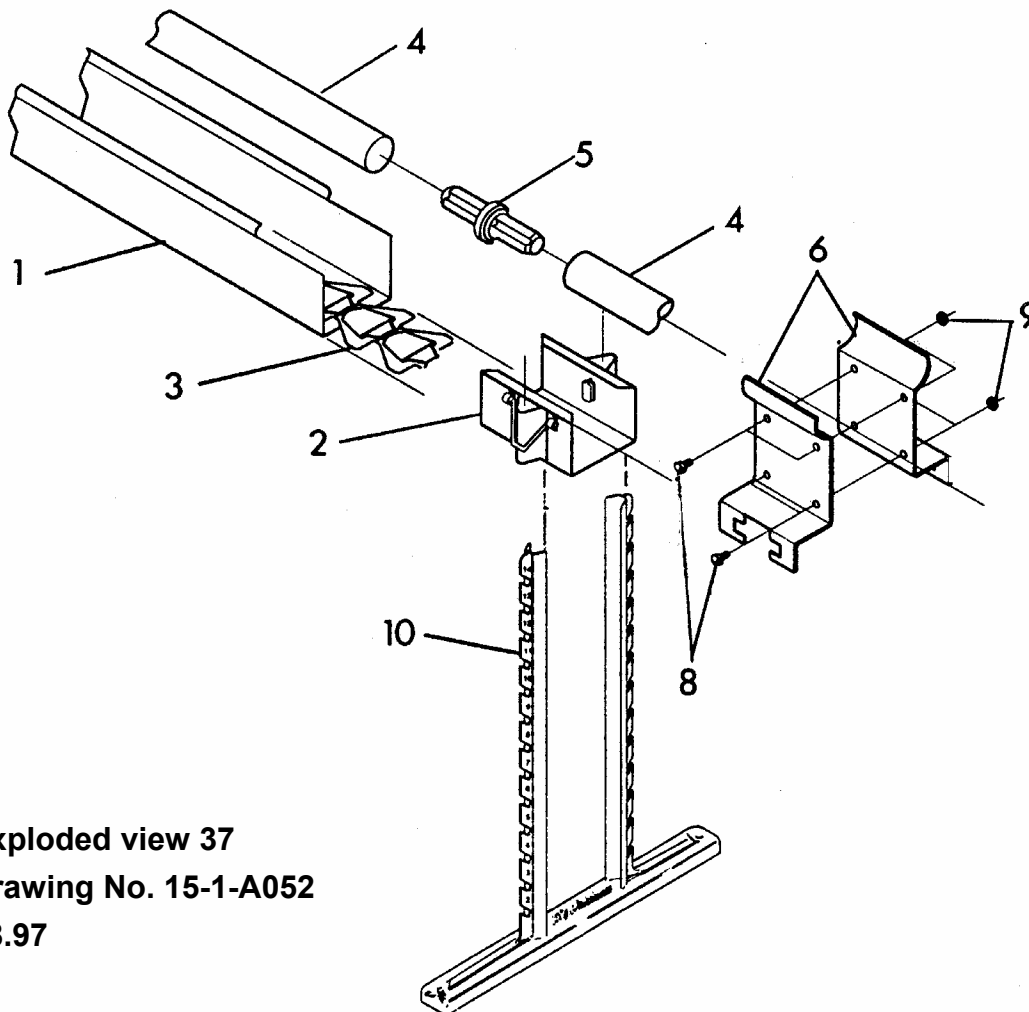
Drawing No. 15-1-A030

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4.23 Feed trough 3000 medium standing with roost tube

Pos.	Code No.	Description
	15 22 5010	Feed trough 3000 medium cpl. standing with roost tube
1	15 20 5002	Feed trough 3000 medium 1.2 mm
2	15 22 5008	Trough coupler 1-line without leg
3	15 15 5001	Feed chain Champion
4	99 40 3813	Pipe 1"x6000 galv. DIN 2440
5	15 22 5028	Coupler slotted PA6 f/perch 1"
6	15 22 5027	Bracket single for 1" tube on trough coupler standing
7	15 22 5025	Bracket cpl. for 1" tube on trough coupler standing (6+8+9)
8	99 10 1067	Hexagon head screw M6x16 DIN 558
9	99 10 1045	Hexagon nut M6 DIN 934
10	15 21 9015	Leg PA for coupler 1-line 0 degrees




Exploded view 37

Drawing No. 15-1-A052

08.97

4.24 Rotating feed cleaner BD 88

	Caution	The rotating feed cleaner BD 88 is not suited for a feed chain speed of 36 m/min.
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The rotating feed cleaner BD 88 strains all foreign matter as manure, litter, paper and wooden pieces as well as little stones out of the feed, before the latter returns into the feed hopper. The feed chain speed is 12 or 18 m/min.


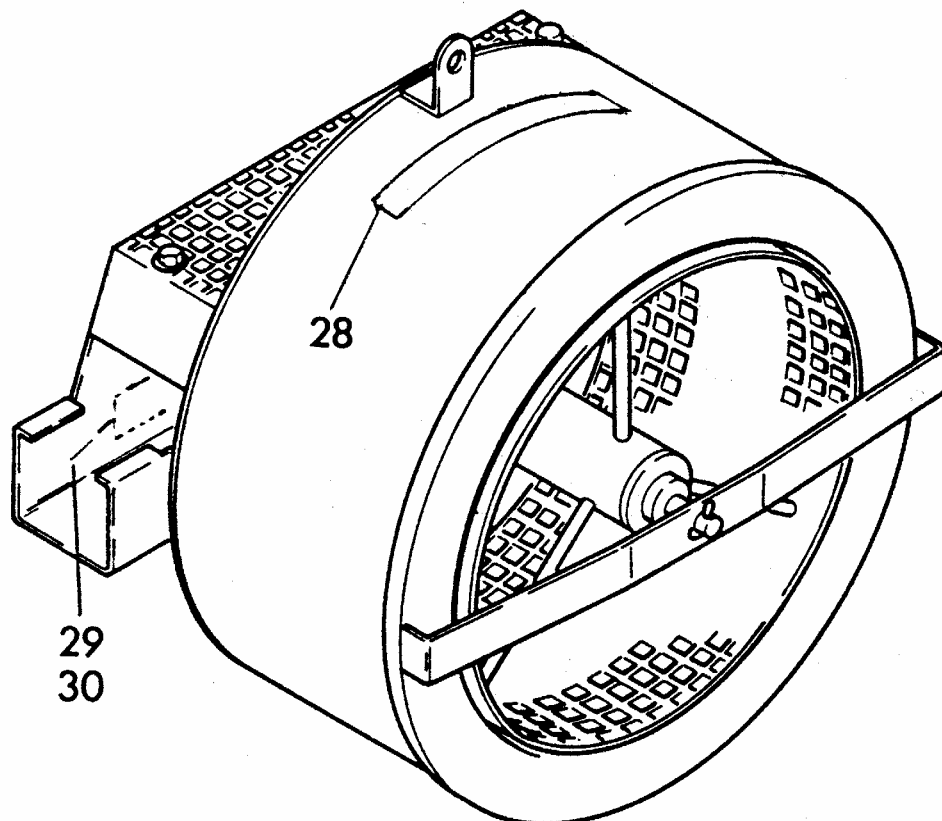
	The rotating feed cleaner BD 88 is driven by the feed chain. The assembly is carried out in the return circuit of the chain, the closest possible to the entry of the feed chain into the feed hopper.
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Figure 7

Drawing No. 15-1-A031

08.97



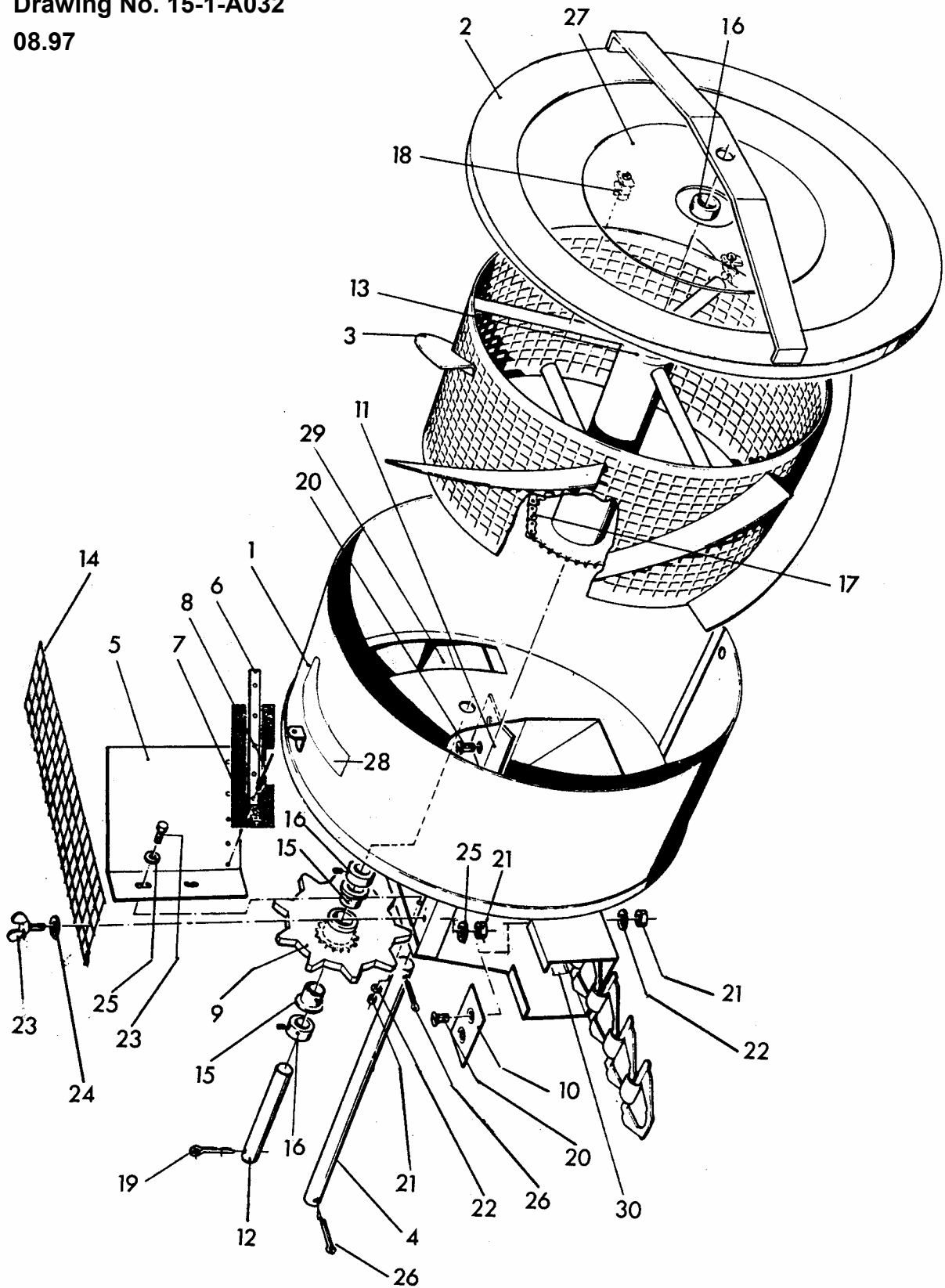
Code No. 10 93 3040

Feed cleaner rotary screen BD 88


Pos.	Code No.	Description
	10 93 3040	Feed cleaner rotary screen BD 88 consists of:
1	10 93 3041	Housing
2	15 40 1402	Cover for feed cleaner
3	10 93 3043	Screen for drum feed cleaner BD 88
4	10 93 3044	Shaft for screen feedcleaner BD 88
5	15-40-1405	Plate for deflector Roroscreen
6	15-40-1406	Mounting for rubber strip Feed cleaner
7	15-40-1410	Rubber strip
8	99-10-1516	Blind rivet TSP/D450 3,2x 9,7
9	15-40-1407	Chain wheel for feed cleaner
10	15-40-9003	Chain guide shoe - way in Rotoscreen
11	15 40 9004	Chain guide shoe - way out Rotoscreen
12	15 40 1408	Shaft drive gear rotoscreen
13	15-40-1304	Bearing bush 16x50-20 for sieve
14	15-40-1409	Guard wire-mesh for feed-cleaner
15	15-40-1411	Bearing bush 16x24-15 for drive-gear
16	15-40-1310	Adjusting ring A 16 DIN 705
17	15-40-1412	Roller chain 3/8" 46 links
18	38-94-3544	Chain joint 3/8"x7/32"
19	99 50 3921	Splint pin 5x35 DIN 94
20	99-10-1302	Cross recessed countersunk head screw M6x10 DIN 965
21	99-10-1045	Hexagon nut M6 DIN 934-8
22	99-20-1139	Fan type lock washer A 6.4 DIN 6798
23	99-10-1100	Hexagon head screw M6x 12 DIN 558
24	99-20-1170	Washer flat A 6,4 DIN 9021
25	99-50-1147	Washer B 6,4 DIN 125
26	99 50 1088	Splint pin 5x50 DIN 94
*27	15-40-1420	Guard disc with mounting Rotoscreen
28	00-00-1173	Type plate: Big Dutchman 265mm x 50mm
29	00-00-1186	Pictograph: Before maintenance work main switch "OFF"
30	00-00-1187	Pictograph: Protective devices

* available as an option

Exploded view 25
 Drawing No. 15-1-A032
 08.97



4.25 Auto-Limit scale

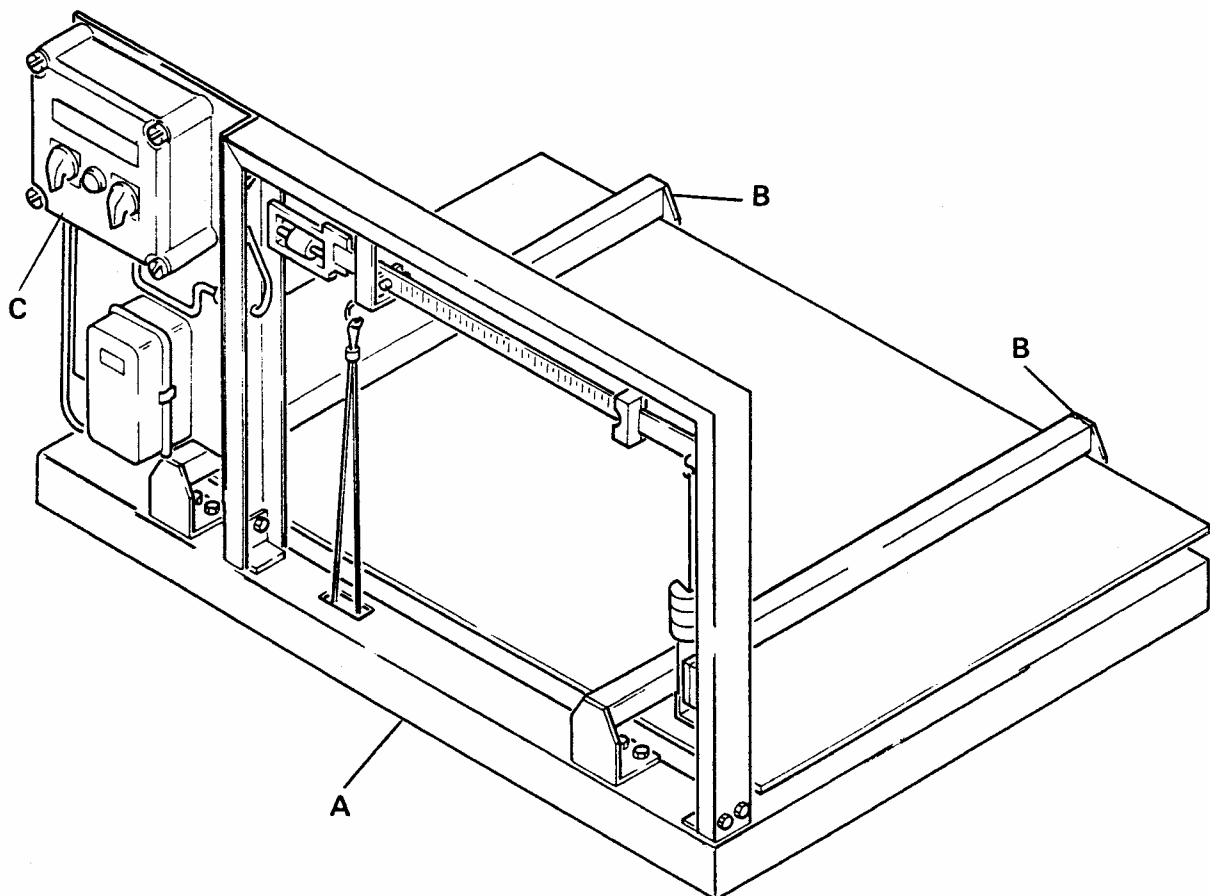
	<p>Caution</p>	<p>The Auto-Limit scale is not calibrated and may not be used for business transactions.</p> <p>The feed weight and the hopper's own weight together must not exceed 1500 kg.</p>
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For the assembly and operation of the Auto-Limit scale please refer to the respective manual.

Figure 8

Drawing No. 15-1-A033

08.97



Code No. 20 44 1000

A = Auto-Limit scale

C = Control unit optional

Code No. 10 93 3450

B = Bridge cpl. for feed hopper

4.26 Feed hopper for Auto-Limit scale

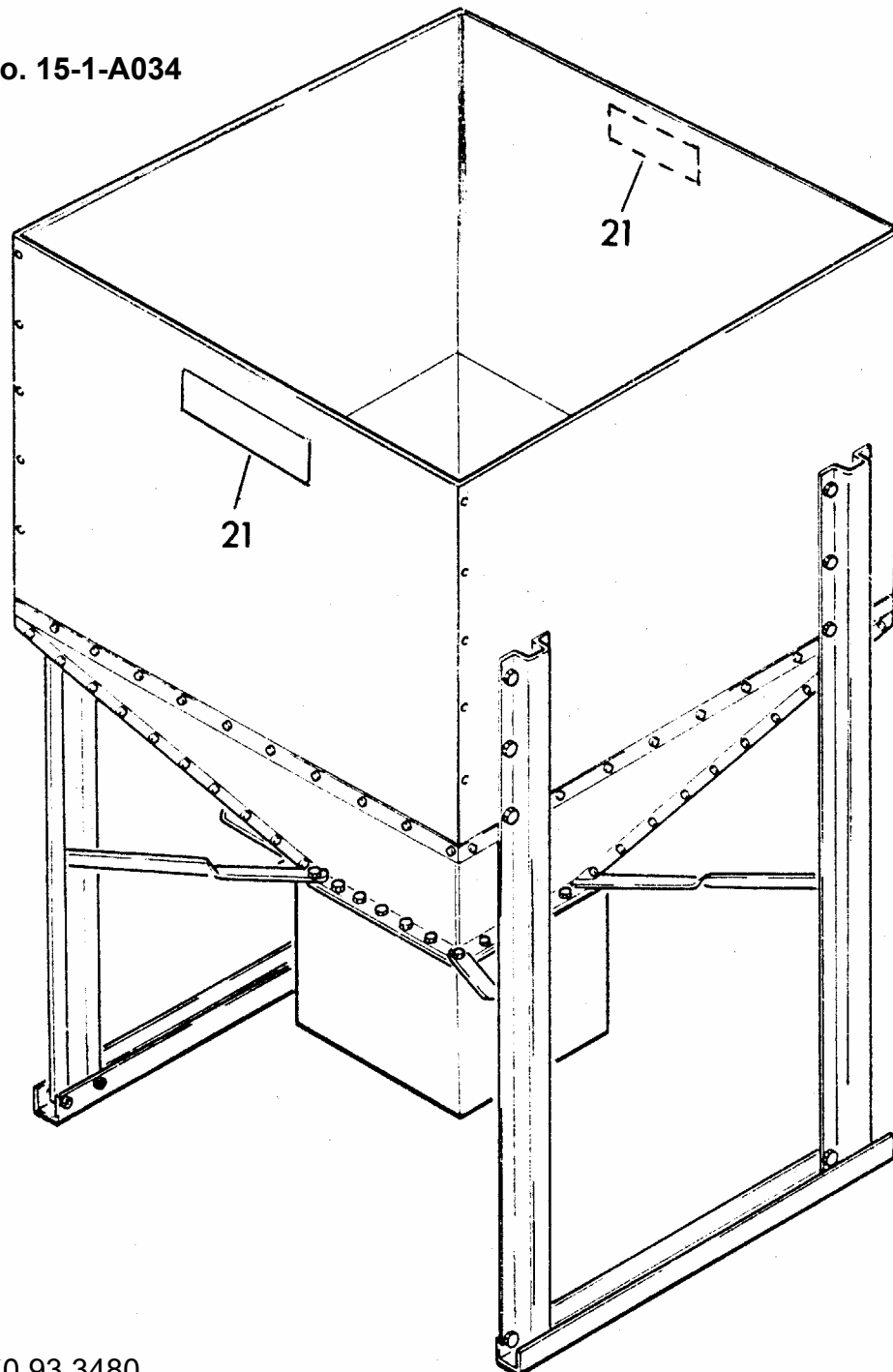
The feed hopper for Auto-Limit scale is placed on the platform of the Auto-Limit scale and fixed to it.

4.26.1 Feed hopper 1250 l cpl. for Auto-Limit scale

Figure 9

Drawing No. 15-1-A034

08.97

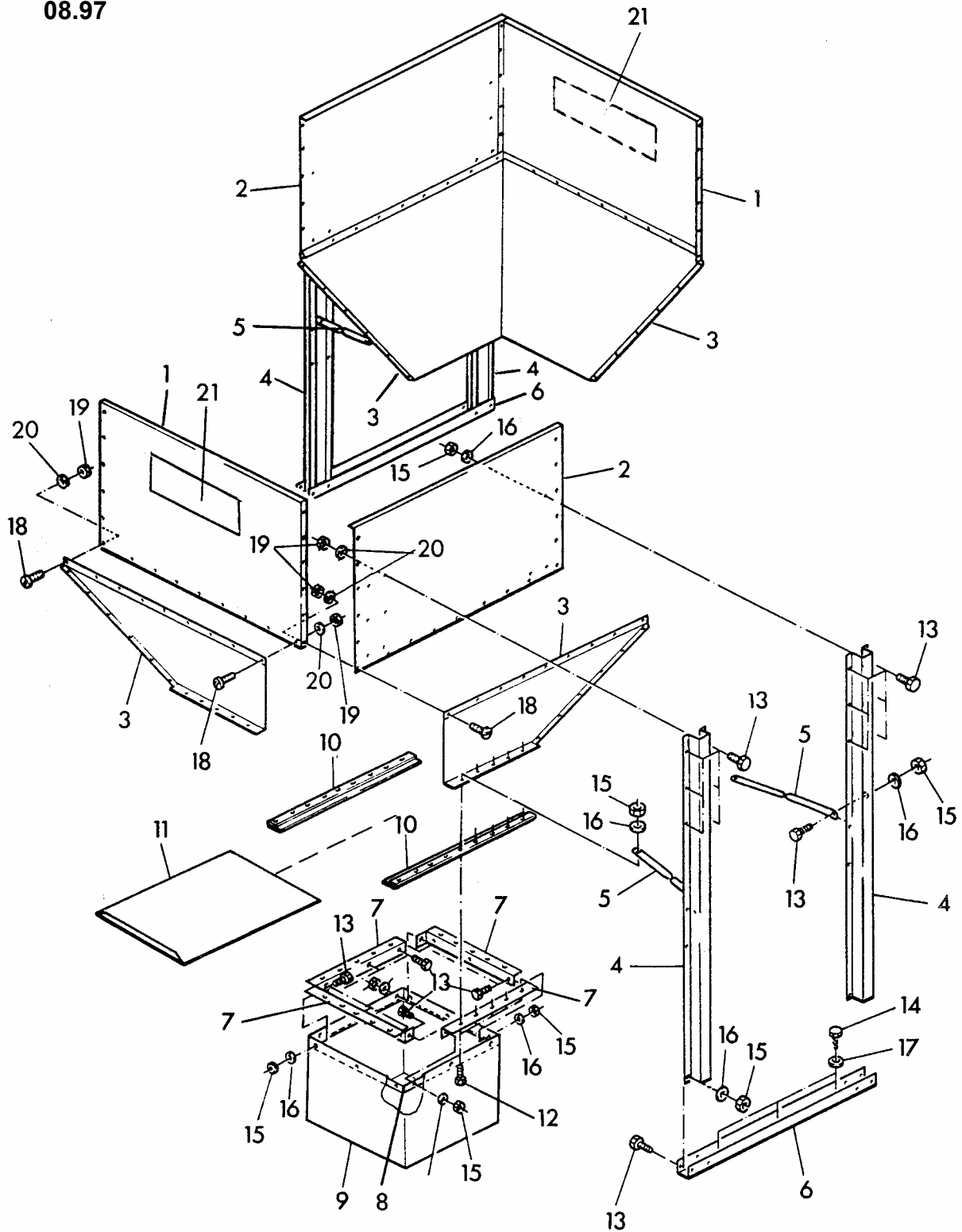


Code No. 10 93 3480

Pos.	Code No.	Description
	10 93 3480	Hopper 1250 l cpl. for Auto-Limit-scale 1500kg
1	10 00 1231	Side wall upper
2	10 00 1237	Side wall upper with drill hole for post
3	10 00 1232	Side wall slanted lower
4	10 93 3482	Leg 1220mm galv for hopper 1250l
5	10 00 1234	Corner support
6	10 00 1235	Floor profile
7	10 00 1251	Angle container outlet
8	10 00 1252	Stripe for feed discharge
9	10 00 1253	Feed discharge with seam
10	35 03 1021	Guidance for slide
11	10 00 1436	Slide for feed outlet
12	99 10 1046	Hexagon head screw M8x16 DIN 558
13	99 10 1038	Hexagon head screw M8x20 DIN 558
14	99 10 3749	Hexagon wood screw 8x40 DIN 571-ST
15	99 10 1040	Hexagon nut M8 DIN 934
16	99 20 1026	Washer A8,4 DIN 125
17	37 80 2011	Washer flat A8,4 DIN 9021
18	99 10 3933	Cr. recessed raised cheese head screw M6x12 DIN7985
19	99 10 1045	Hexagon nut M6 DIN 934-8
20	99 50 1147	Washer B 6,4 DIN 125
21	00 00 1174	Type plate: Big Dutchman 100mm x 500mm



Exploded view 26
Drawing No. 15-1-A035
08.97



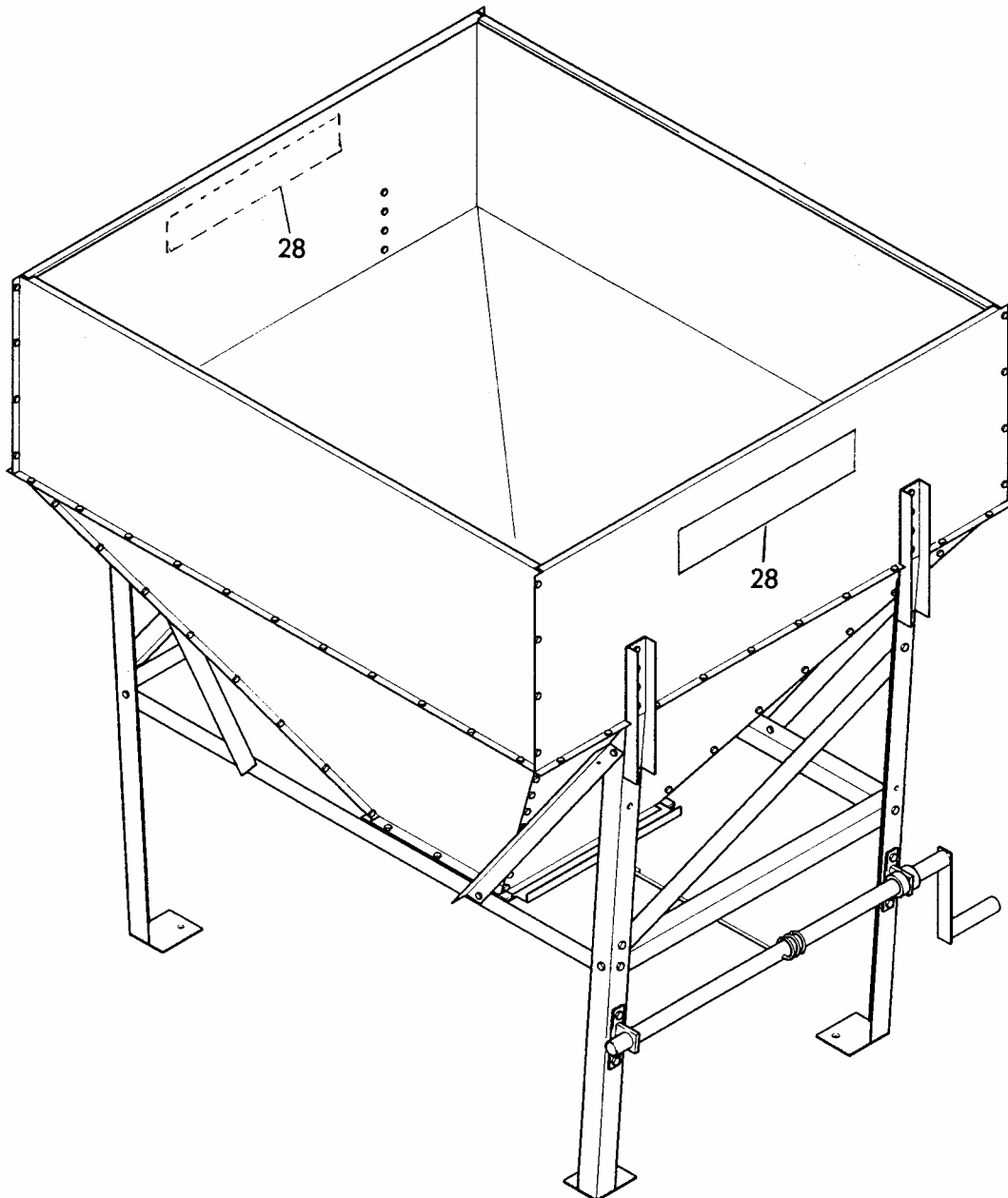
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4.26.2 Hopper 1850 l cpl. for Auto-Limit-scale

Figure 10

Drawing No. 15-1-A036

08.97



Code No. 10 93 3490

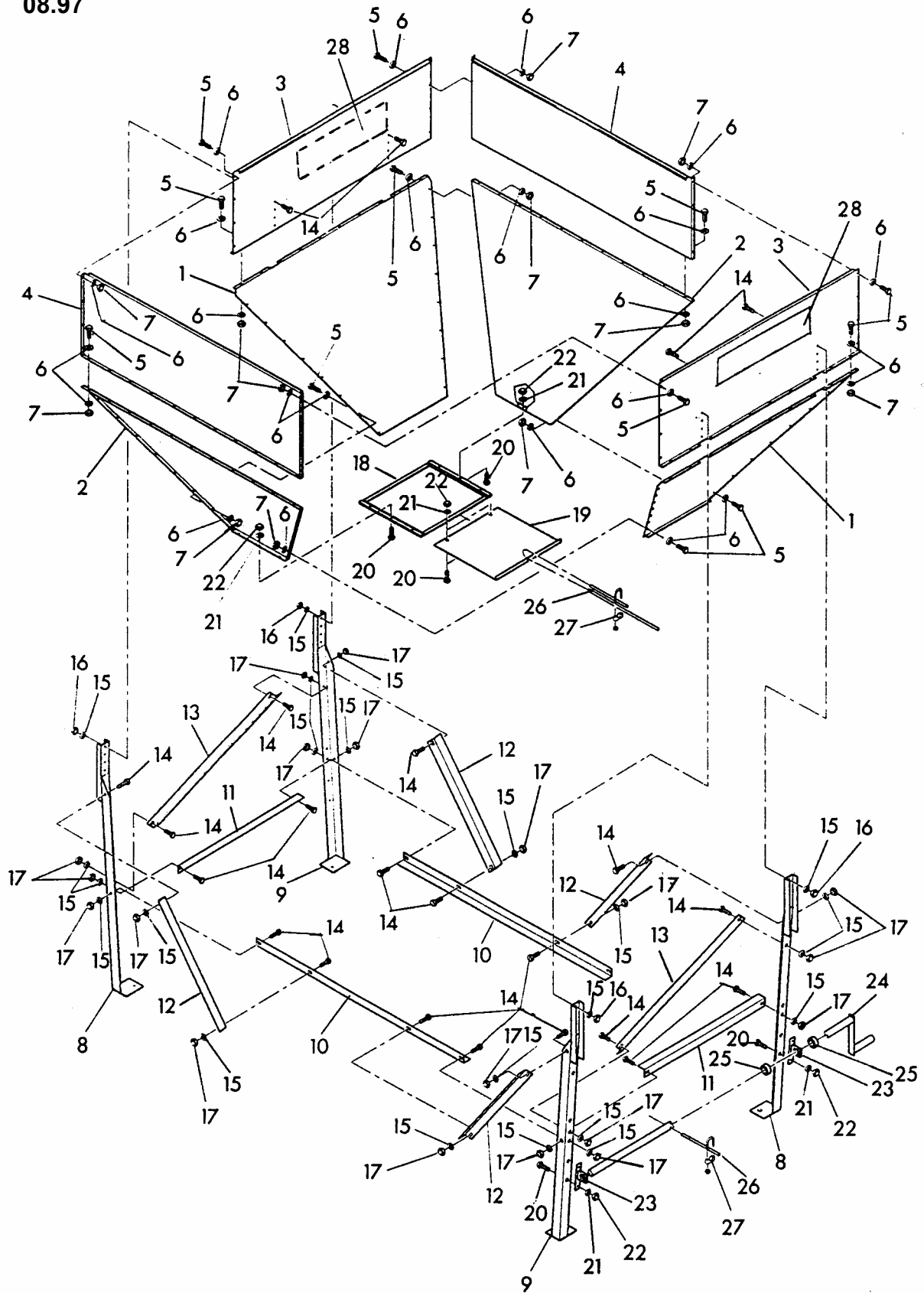
Pos.	Code No. Drawing No.	Description
	10 93 3490	Hopper 1850 l cpl. for Auto-Limit-scale 1500kg
1	30 1 0033 1	Funnel side wall
2	30 1 0033 2	Funnel side wall
3	30 1 0033 3	Extension side wall
4	30 1 0033 4	Extension side wall
5	99 10 1100	Hexagon head screw M6x12 DIN 558
6	99 50 1147	Washer B6,4 DIN 125
7	99 10 1045	Hexagon nut M6 DIN 934
8	10 93 3494	Leg 1540mm rh galv for hopper 1850l
9	10 93 3495	Leg 1540mm lh galv for hopper 1850l
10	30 1 0033 6	Bracing 1500 mm
11	30 1 0033 7	Bracing 860 mm
12	30 1 0033 8	Bracing 760 mm
13	30 1 0033 9	Bracing 940 mm
14	99 10 1068	Hexagon head screw M10x20 DIN 558
15	99 50 1090	Washer B10,4 DIN 125
16	99 20 1029	Hexagon nut M10 DIN 555
17	99 20 1065	Self-locking counter nut M10 DIN 980
18	30 1 0034	Scraper frame cpl.
19	30 1 0035	Scraper
20	99 10 1038	Hexagon head screw M8x20 DIN 558
21	99 20 1026	Washer A8,4 DIN 125
22	99 10 1040	Hexagon nut M8 DIN 934-8
23	30 1 0028	Support clips cpl.
24	30 1 0028	Cable winch cpl.
25	37 80 2050	Adjusting ring A35 DIN 705
26	99 50 0013	Rope-wire- 3 m galv. 6x7
27	99 50 0014	Cable clamp 3 m 1/8" galv. DIN 741
28	00 00 1174	Type plate: Big Dutchman 100mm x 500mm



Exploded view 27

Drawing No. 15-1-A037

08.97




4.27 Grills

Big Dutchman offers different kinds of grills in order to meet the varying requirements of modern poultry management.

There are basically two different kinds

- Anti-roost grill,
- FO-grill (female-only).

	<p>In case of a suspended chain feeding system, an anti-roost device has to be used.</p> <p>Please take into consideration that for a feed trough of 3 m, 2 feeding grills of 1.5 m length are required.</p>
---	--

Description of the grills

- **Grill FO for medium trough model as high profile**

The text, e.g. „FO-43x79-1502“ means:

first number 43: distance of vertical grill bars from each other in mm,

second number 79: height of feeding aperture, i.e. distance between longitudinal wires in mm,

third number 1502: total length of the grill in mm.

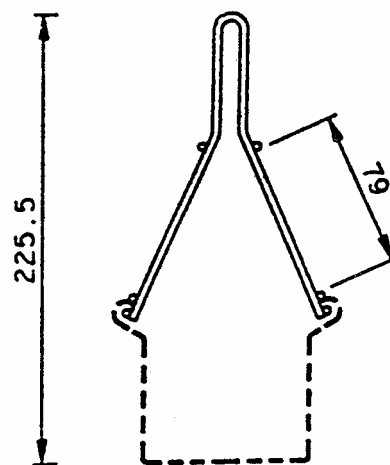
The high profile serves as anti-roost device at the same time.

Code No. 15 35 1070

Grill FO-43x79-1502 high profile for medium trough

Code No. 15 35 1073

Grill FO-44x79-1500 high profile for medium trough



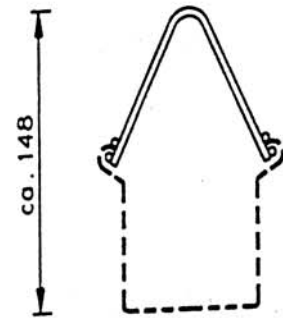
- **Grill FO without longitudinal wire for medium trough**

This grill can also be used in a breeder house with single-phase management (rearing + production).

The grill bars have a wire diameter of 4.1 mm.

Code No. 15 35 1080

Grill FO-42 HD-1479 without longitudinal wire for medium trough



Code No. 15 35 1079

Grill FO-43 HD-1488 without longitudinal wire for medium trough

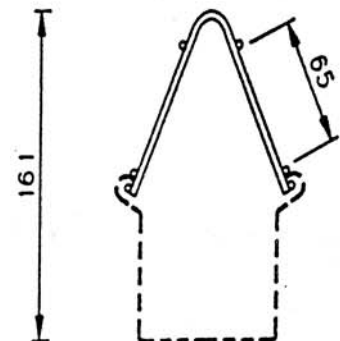
Code No. 15 35 1076

Grill FO-44 HD-1500 without longitudinal wire for medium trough

• **Grill FO w/2 longitudinal wires for medium trough**

Code No. 15 35 1077

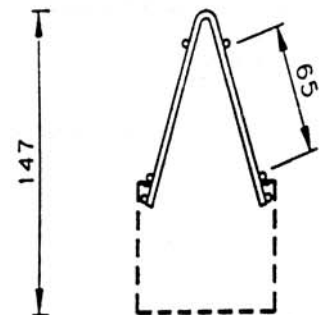
Grill FO-44x65-1487 with 2 longitudinal wires for medium trough



• **Grill FO w/2 longitudinal wires for regular trough**

Code No. 15 35 1081

Grill FO-44x65-1487 with 2 longitudinal wires for regular trough



• **Grill FO with 1 longitudinal wire for medium trough with additional clamp for fixing**

Code No. 15 35 3050

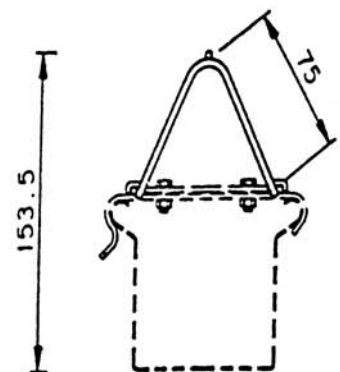
Grill FO cpl. 43x75-1502 for medium trough

Code No. 15 35 3056

Grill FO cpl. 44x75-1500 for medium trough

Code No. 15 35 3051

Grill FO cpl. 45x75-1517 for medium trough



These grills consist of:

Pos.	Code No.	Description
1	15-35-3070	Grill FO 43x75-1502
	15-35-3076	Grill FO 44x75-1500
	15-35-1078	Grill FO 45x75-1517
2	15-35-3071	Clamp upper for grill FO
3	15-35-3073	Clamp lower for grill FO 110 mm
4	99-10-1241	Hexagon head screw M5x12 DIN 558
5	99-20-1033	Self-locking counter nut M5 DIN 985-6
*6	15-35-0046	End cap grill FO

* does not belong to grill FO, is however available as an option.

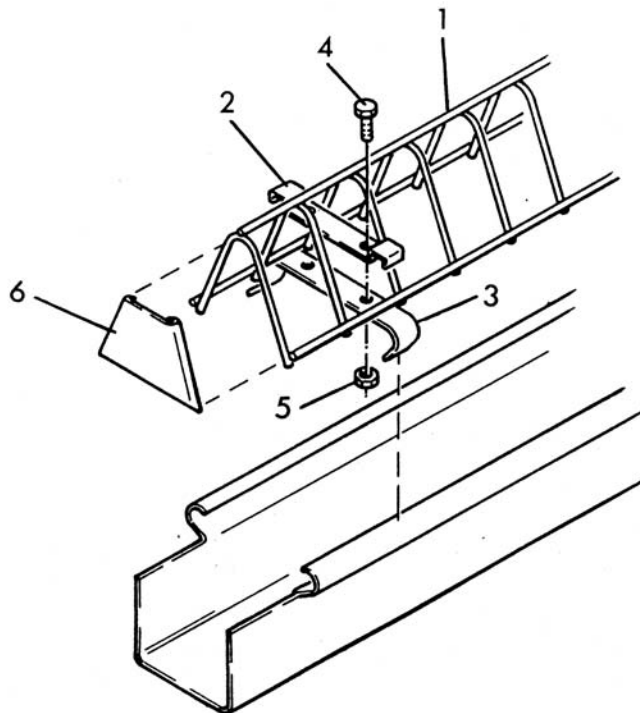


Grills FO for medium trough high profile have to be covered with an end cap grill FO in front of the corners 90° BD 2000.

Exploded view 28

Drawing No. 15-1-A038

08.97

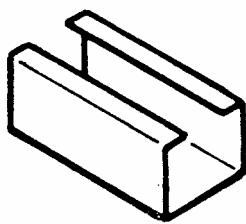


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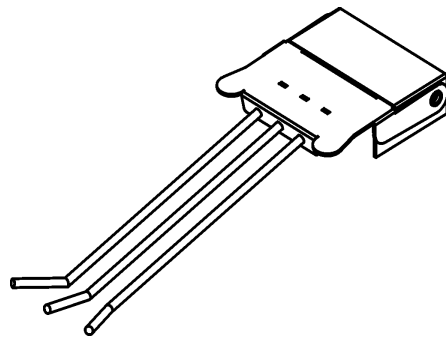
4.28 Feed outlet slide for trough and chick guard

The feed outlet slide for trough is used for removing feed remains from the feeding line at the end of a laying or growing period.

The chick guard is installed in the house area in the operating direction of the feed chain in front of a 90° corner BD 2000 or the feed hopper on the feed trough. This is meant to prevent small chicks being pulled into the corners 90° BD 2000 or through the feed hopper when the chain is in operation.



Code No. 10 00 1020
Feed outlet slide for trough



Code No. 83-01-4168
Chick guard 2003

4.29 Agitator MPF for feed hopper MPF

When viscous feed is used, we recommend to equip the MPF feed hopper with an MPF agitator. This agitator is driven by the feed chain when feeding is started.

For the assembly of the MPF agitator, drill marks have been made in the MPF feed hopper.

The agitator cpl. can be delivered with Code No. 10 93 3280.

Side view of the MPF feed hopper with drill marks.

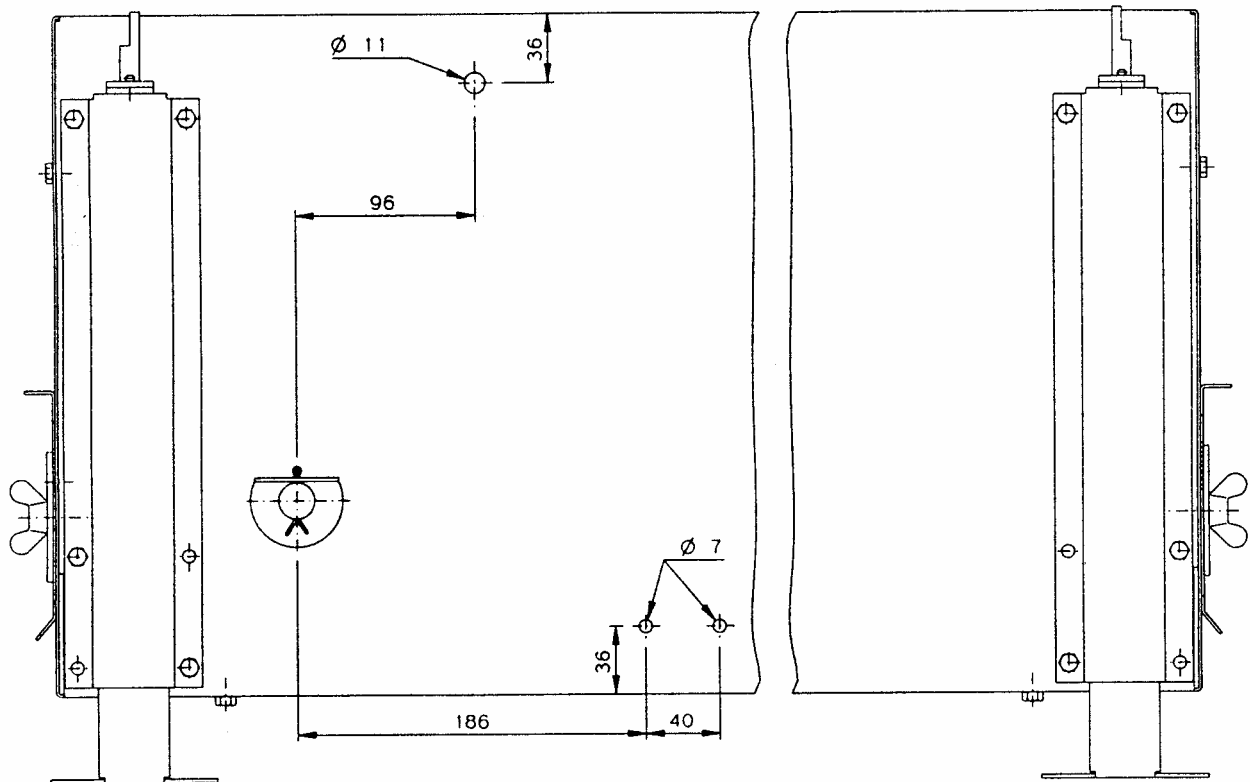


Figure 11

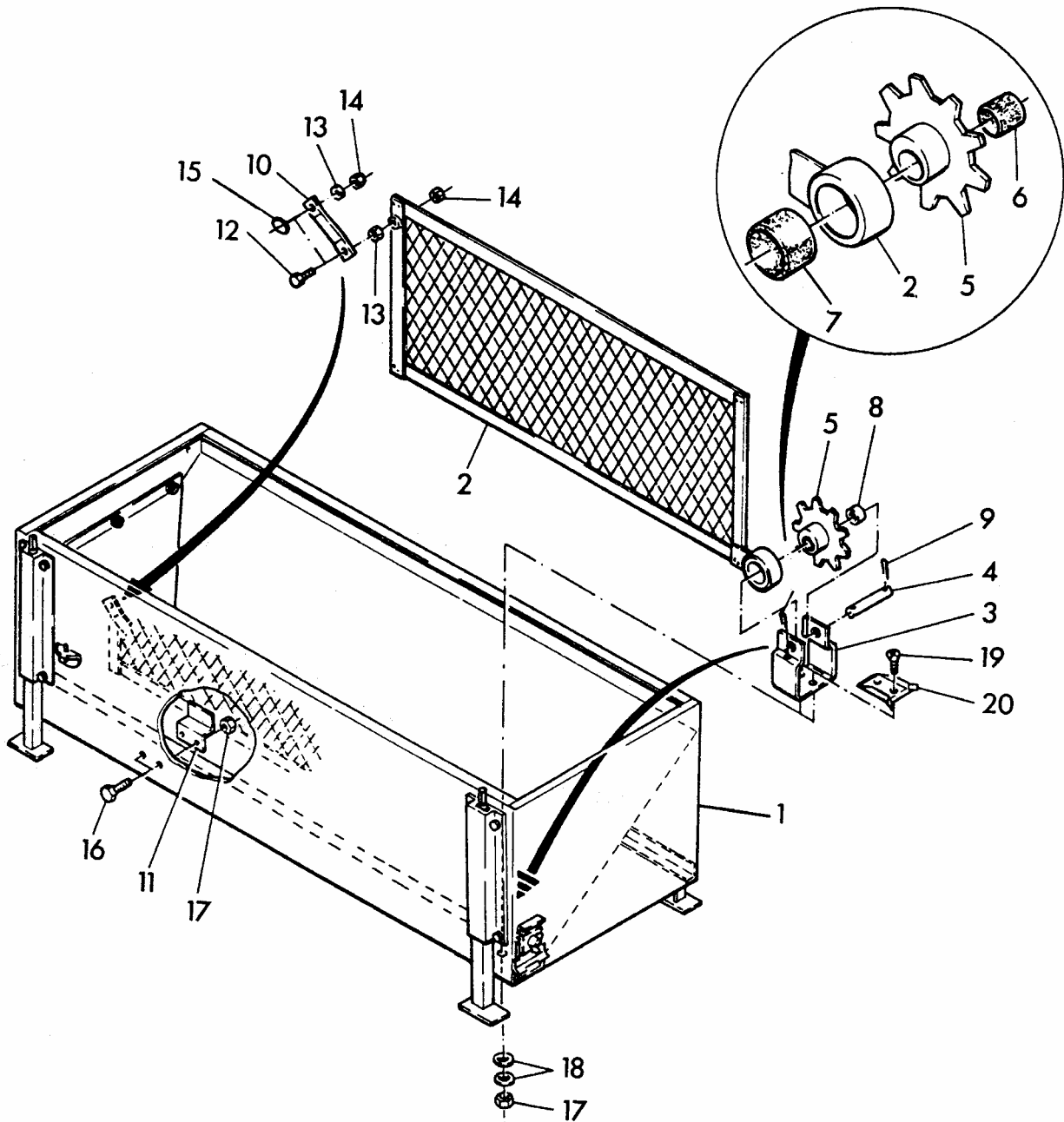
Drawing No. 15-1-A039

08.97


Pos.	Code No.	Description
	10 93 3280	Agitator MPF cpl.
1		Feed hopper MPF cpl.
2	10 93 3291	Feed rack anti-bridging MPF
3	10 93 3294	Strap for agitator
4	10 93 1013	Axle 19x 82 for agitator APF
5	10 93 1012	Chain wheel f/agit. hopper APF
6	10 93 3292	Bush POM \varnothing 25/19-30 for agitator
7	10 93 3293	Bush PA \varnothing 51/45-24 for agitator
8	10 93 1011	Spacer tube for sprocket hopper APF
9	99 50 1384	Splint pin 4x56 DIN 94
10	10 00 0008	Hanger for agitator feeder APF
11	10 93 3295	Guiding rail for agitator
12	99 10 1094	Hexagon head screw M10x35 DIN 558
13	99 20 1029	Hexagon nut M10 DIN 555
14	99 20 1065	Self-locking counter nut M10 DIN 980-8
15	99 50 1090	Washer B 10,4 DIN 125
16	99 10 1100	Hexagon head screw M6x12 DIN 558
17	99 10 1045	Hexagon nut M6 DIN 934
18	99 50 1147	Washer B 6,4 DIN 125
19	99 10 1368	Cross recessed countersunk head screw M6x16 DIN 965
20	10 00 0135	Chain guide for return feed intake hopper HS



Exploded view 29
 Drawing No. 15-1-A040
 08.97



4.30 Assembly of feeding lines

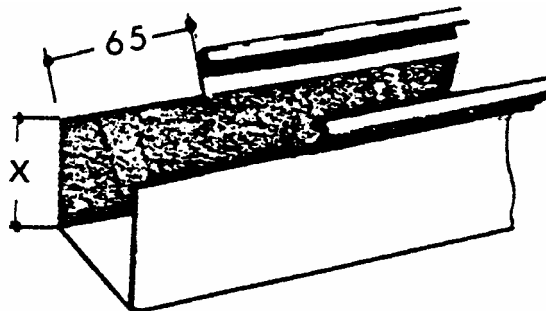
	<p>The feed line is positioned according to the installation drawing.</p> <p>The feed circuit through the house should be designed so that there is enough distance (approx. 1.5 m) between the outer feed lines and the house walls. The distance between the feed lines should be approx. 3 m.</p> <p>See to it that all parts of the equipment are easily accessible for maintenance and for replacing shear pins.</p>
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- Place the individual parts of equipment in the place where they are supposed to be mounted. Start with the feed hopper. See figure 1 or 2 , page 14 or 15.
In case of installations with several feeding lines, see to it that the feed chain has the right direction of operation and check the position of the MPF drives and the rotating BD 88 feed cleaners.
- Position the MPF or MPF Mini feed hopper so that the minimum distance between the feed hopper and the first corner 90° is 60 cm.
- If existing, wind the posts of the feed hopper up to the required height of the feeding line by means of the crank.
- In case of a standing feeding line, insert a post for corner 90/135° into all corners 90°. See to it that the corners are at the same height of post as the feed hoppers.
- In case of a standing feeding line, insert a post for couplers 1 or two-line in all trough couplers 1 or two-line. See to it that the trough couplers are at the same height of post as the feed hoppers.
- Cut a feed discharge opening \varnothing 60 mm by means of a punching machine into the cut-to-size regular feed trough 1.2 mm, which is supposed to be inserted into the feed hopper in the return circuit.
The feed discharge opening is supposed to be located with a distance of approx. 100 mm from the feed hopper.
- Push a feed slide over the punched regular feed trough 1.2 mm and insert it in the feed hopper below the chain guiding return circuit.

- Place a corner 90° on the other end of the punched regular feed trough 3000 1.2 mm.
- Place a cut-to-size regular feed trough 3000 1.2 mm into the outlet of the feed hopper and the first corner 90°.
- Install an MPF drive behind the first corner 90° in the operating direction of the chain. For this, cut a piece of 1 m length off the regular feed trough 3000 1.2 mm.
- Drill a hole \varnothing 12 mm into the regular feed trough 3000 1.2 mm for the guide shoe SF/MPF at the place measured before.
- Push the drilled regular feed trough 3000 1.2 mm through the MPF bracket.
- Place the guide shoe SF/MPF into the regular feed trough 3000 1.2 mm inside the MPF bracket and screw it down by means of the hexagon head screw M 10x20, the spring washer A 10 and the washer B 10.
- Screw down the MPF drive with a leg for MPF drive (floor management) by means of mushroom head square neck bolts M8x25 and hexagon nuts M8 to the MPF bracket.
- Insert the regular feed trough 3000 1.2 mm with the MPF drive into the first corner 90° with the post for corner 90/135°.
- Insert the other end of the regular feed trough 3000 1.2 mm into a trough coupler with post for coupler.



If a medium feed trough 3000 1.2 mm has to be shortened, notch the rounding at the cut by 65 mm. The height (X) of the notch has to be adapted to the branch piece to be connected.



- Now mount all other medium feed troughs 3000 1.2 mm up to the last corner 90° at the return circuit.



If a rotating feed cleaner BD 88 is used, it has to be installed in front of the last corner 90° in the return circuit.

- Shorten the last medium feed trough 3000 1.2 mm by 1 m and notch the cut-off end.



See to a correct assembly of the rotating feed cleaner BD 88. For checking this, place yourself so that you look in the direction of operation of the feed chain. The open side of the rotating feed cleaner BD 88 has to be on the right side of the feed trough.

- Place a trough coupler with or without carrier and post on each end of the feed trough of the rotating feed cleaner BD 88.
- Insert the shortened medium feed trough 3000 1.2 mm in the last corner 90° and into the trough coupler with or without carrier and post of the rotating feed cleaner BD 88.
- Cut a piece of 0.5 m in length off the 2 m long medium feed trough 3000 1.2 mm and notch the cut-off end. Insert the shortened medium feed trough 3000 1.2 mm into the trough coupler with or without carrier and post of the rotating feed cleaner BD 88 and the medium feed trough 3000 1.2 mm.



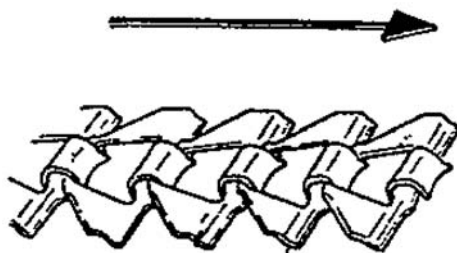
See to it that the entire feeding line is assembled in a straight line, horizontal and at a right angle. This leads to less wear and a better operation of the feed chain.

4.31 Threading the feed chain into the unit



Before placing the feed chain into the feed troughs EV, remove all loose incidentals (bolts, nuts, wire brackets etc.) from the feed troughs and the feed hoppers to avoid damage to the feeding system.

- Unroll the feed chain (1) in the corridors and start at the MPF drive. Consider the travel direction of the feed chain. See arrow.



Never try to bend open the hook of the feed chain or to close it with a hammer. This makes the material brittle and the hooks can break upon putting the feed chain into operation.

- Connect the ends of the feed chain lying in the corridors by using the chain breaker (2).
- Hook the head end of the feed chain on the first corner 90° and place about one section length of feed chain into the feed trough.
- Put a short pipe between chain and the inner rim of the feed troughs, and move it along the installation. The chain will then slip easily into the troughs.
- At the end of the installation, guide the chain through the corners 90° and the feed hopper.



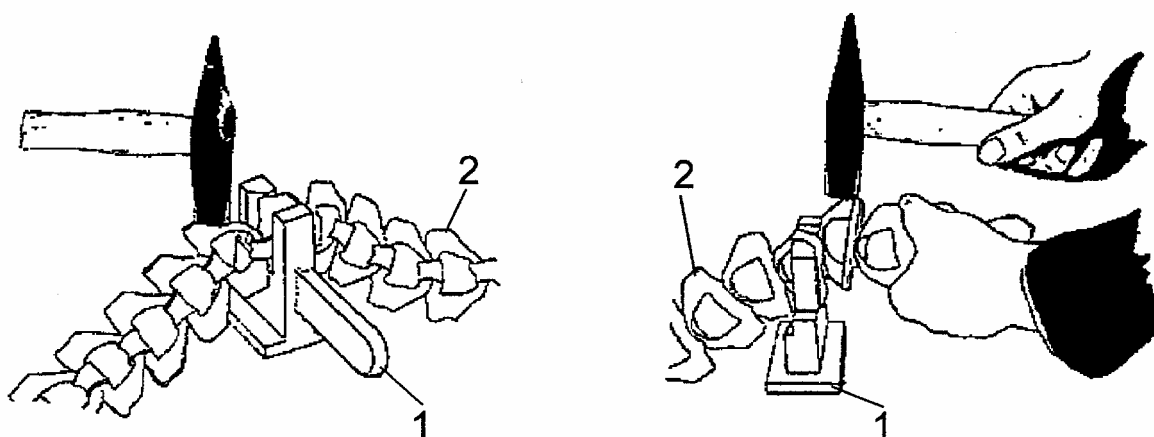
The feed chain has to be placed underneath the exterior flange of the corner 90°.

- Pull the feed chain back until you reach the MPF drive.

Taking out and adding chain links

The tension of the feed chain can be changed by taking out or adding chain links. Each link can easily be separated from the adjacent one and connected again to another one.

The feed chain can be separated and connected by means of the breaker for feed chain.



- For separating the feed chain, place the chain link into the seat of the breaker for feed chain and separate it by hitting it with a hammer.
- For connecting, place the first link into the breaker for feed chain and push the last link of the feed chain to be connected through the hook by means of hammer beats.

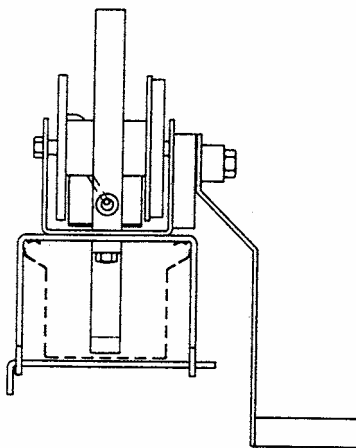
Space for your notes:

4.32 Tensioning the feed chain with the chain tensioner

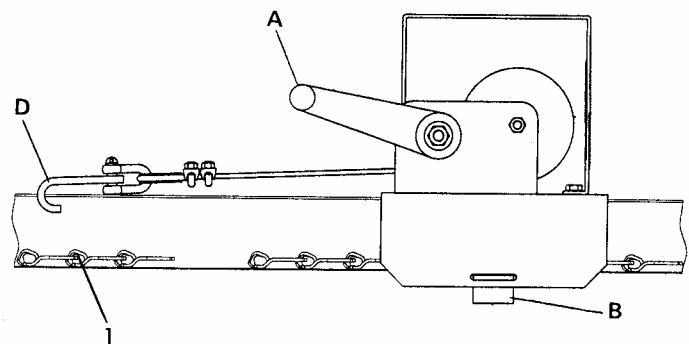
The chain tensioner simplifies tensioning the feed chain.

It becomes thus possible to choose the optimum pretension for each chain circuit length of the feed chain.

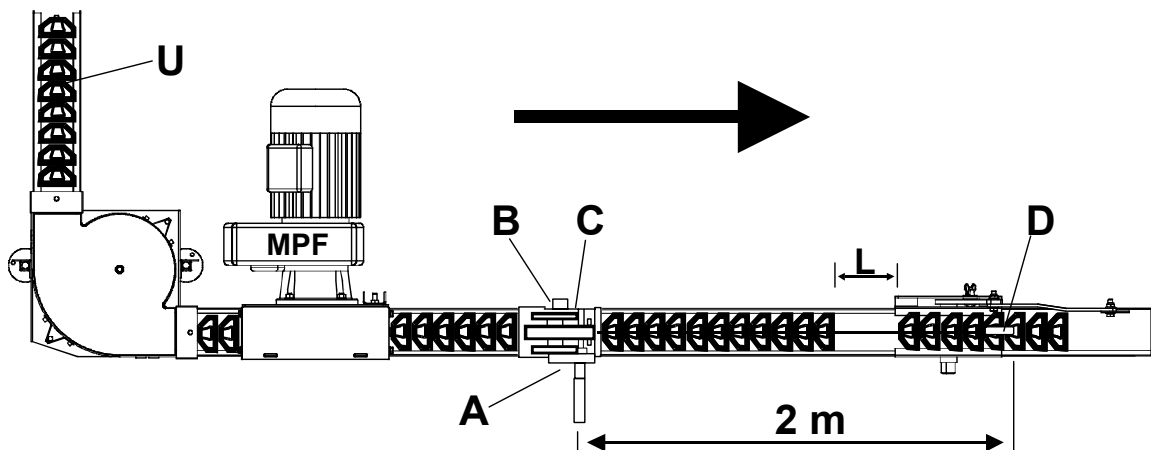
Tensioning the feed chain by means of the feed chain tensioner for medium feed trough, Code No. 15 15 5099.



Chain tensioner on medium feed trough (front view)



Chain tensioner on feed trough (side view)



Chain tensioner in the drive area (top view)

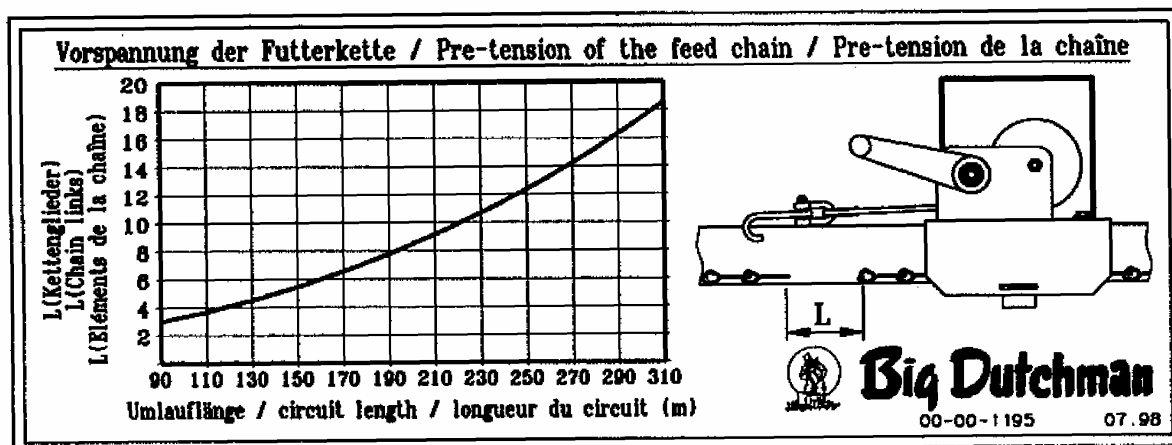



Diagram-Pretension of the feed chain

	<p>The circuit length includes 4 corners 90°. For circuits with more corners 90°, 12.5 m/corner are added. These values are approximate values. They are influenced by different factors such as humidity, structure and fat content of the feed.</p>
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- Put the chain tensioner (A) on the medium feed trough (Y) behind the MPF drive (X) and bolt it from below (B). When doing this, a hook (C) grips into the right feed chain end (1) underneath the winch (A).
- Pull the other hook (D) out of the winch (A) and hook it with a distance of approx. 2 m into the feed chain from above.
- Pull the feed chain shortly by means of the winch in order to see if the complete chain circuit is tightly tensioned.
- Find out from the diagram - pretension of the feed chain how large the gap (L) between the two chain ends has to be, so that the feed chain has the appropriate pretension for this installation length or this chain circuit (U).
- Bring the feed chain to the correct length by means of the chain breaker for feed chain.
- Pretension the feed chain by means of the chain tensioner so that the ends of the feed chain can be closed.

- Join the feed chain ends by means of a hammer and the breaker for feed chain.
- Release the chain tensioner and remove it from the medium feed trough.

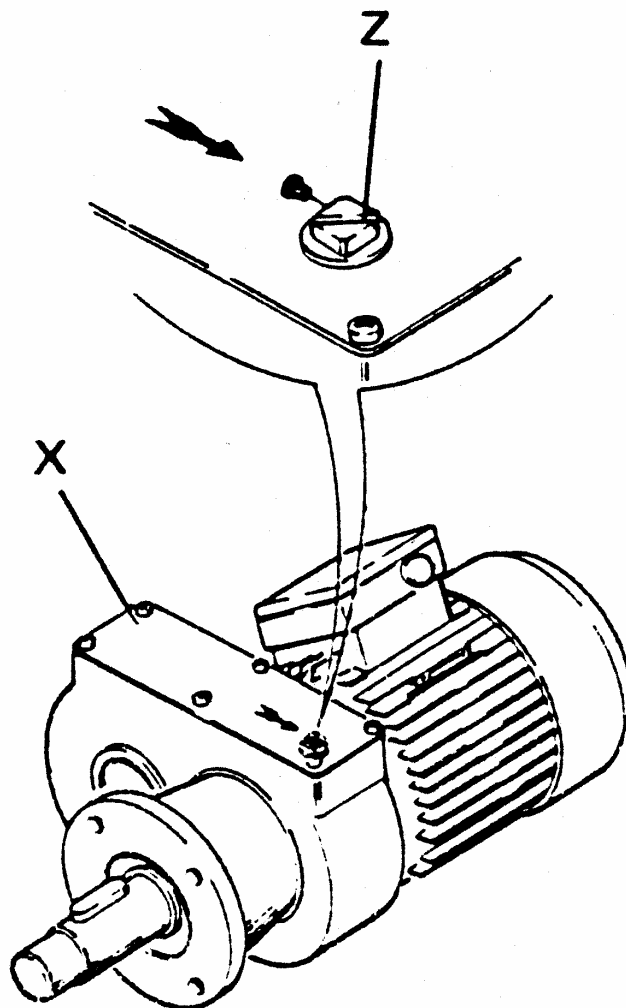


The chain tension of the feed chain is correct, if the chain links of the feed chain can be pushed slightly, but not lifted more than 10 mm at the exit of the MPF drive while the system is running.

- After a starting period (abrasion of the colour of the links) of 2 to 6 weeks, the feed chain has to be tensioned again.



Before putting the MPF drive (X) into operation, pull the plug out of the vent screw of the gear motor (Z).



Tensioning the feed chain with the chain tensioner cpl.,

Code No. 38 91 3098.

For handling the chain tensioner please see enclosed operating instructions.

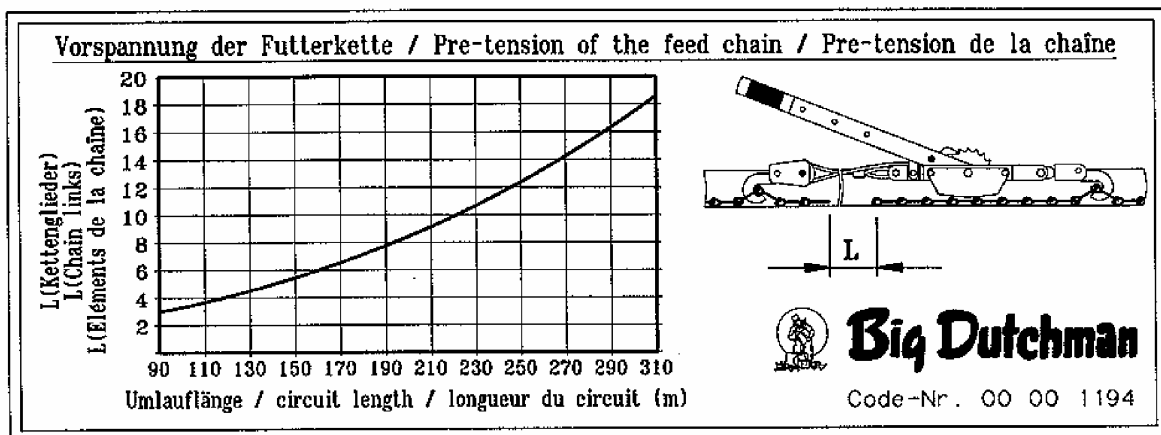
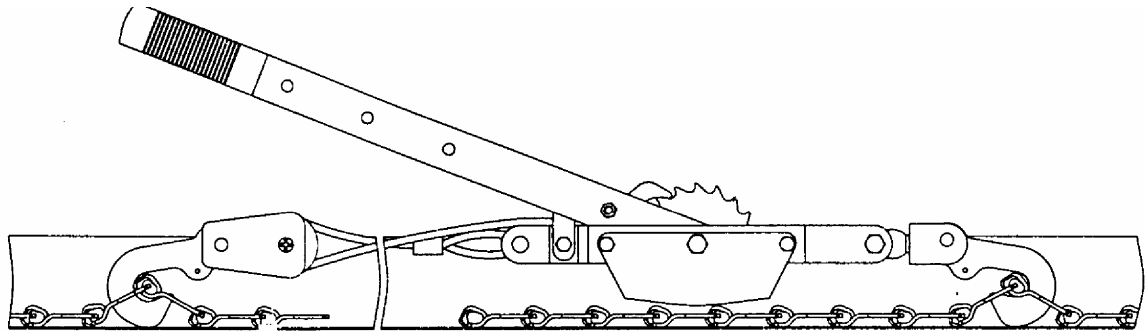


Diagram-Pretension of the feed chain

	<p>The circuit length includes 4 corners 90°. For circuits with more corners 90°, 12.5 m/corner are added. These values are approximate values. They are influenced by different factors such as humidity, structure and fat content of the feed.</p>
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4.33 Time switch

Time switches are used for starting and controlling the feeding system.



Please refer to the enclosed operating instructions for the installation and operation of the time switches.

4.33.1 Time switch SF + TD

Code No. 91 40 1320 Time switch SF 50 Hz

Code No. 91 40 3710 Time switch SF 60 Hz

Several starting signs can be entered.

The distance is 15 minutes.

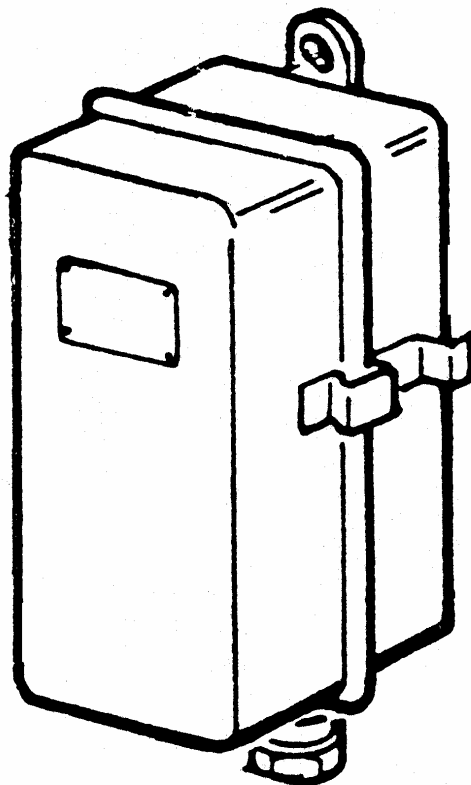
After each start, a programmed minute time switch is running down.

Code No. 91 40 1000 Time switch TD-700-E 50 Hz


Code No. 91 40 3700 Time switch TD-700-E 60 Hz

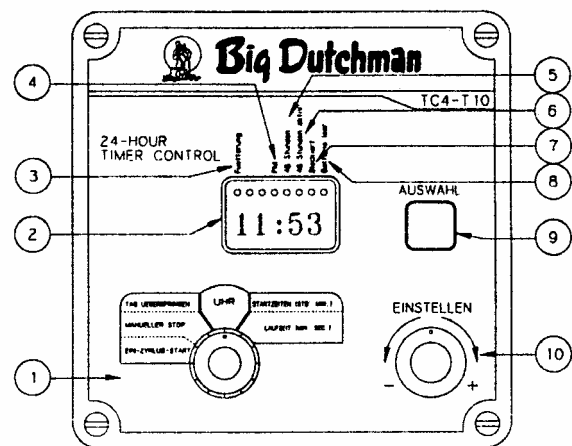
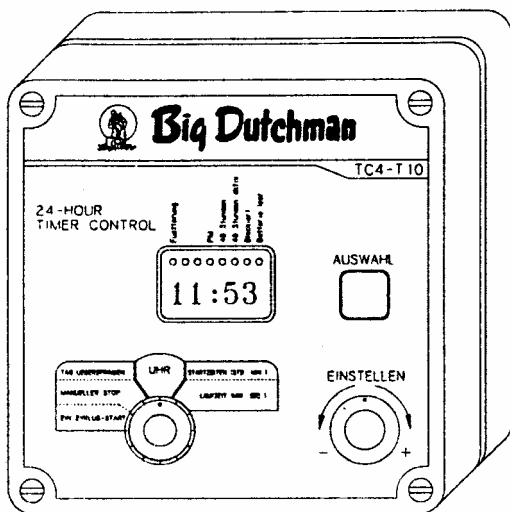
This timer can switch on and off paces of 15 minutes. Several starting signs can be entered.

The distance is 15 minutes.



4.33.2 Digital time switch TC4-T10 1 channel

	<p>This time switch is delivered without stickers. The sticker in the packaging has to be fixed to the housing cover before taking into operation.</p> <p>Enclosed please find also current mounting and operating instructions for the time switch.</p>
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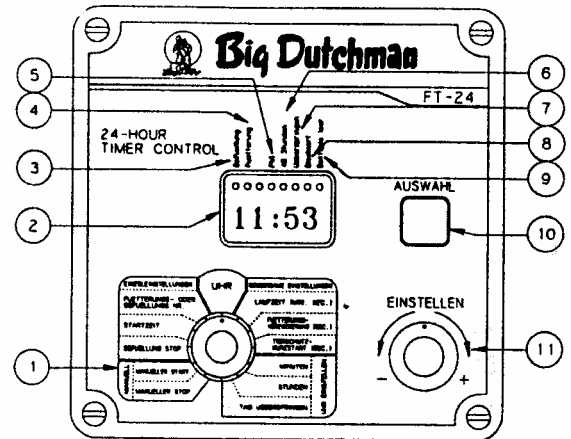
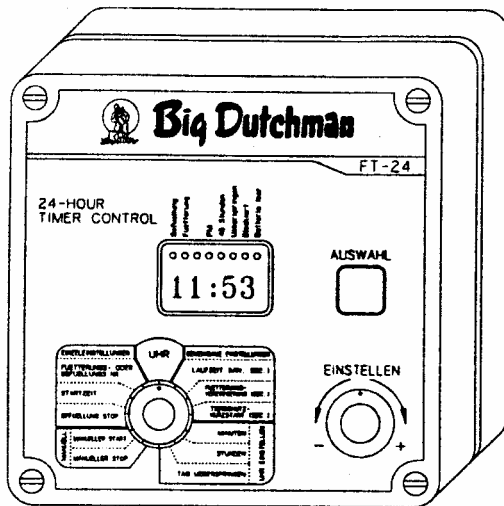
Code No. 91 40 1345

- 1 = clock switch: is used for selecting a function
- 2 = display: indicates time switch and other information
- 3 = status information channel 1 (on/off): lights up when a feed distribution has been started
- 4 = 12-hours mode: lights up when the time switch is in the 12-hours mode
- 5 = „skip-a-day“: lights up when the skip-a-day function has been selected
- 6 = „skipping“: lights up when the „skipping“ day is reached
- 7 = locked entry: lights up when the entry is being blocked
- 8 = low battery: lights up when the battery is empty
- 9 = choice button: is pressed when the selected parameters are supposed to be stored
- 10 = setting switch: is turned for selecting the size of the parameters

4.33.3 Digital time switch FT-24 2 channels



This time switch is delivered without stickers. The sticker in the packaging has to be fixed to the housing cover before taking into operation. Enclosed please find also current mounting and operating instructions for the time switch.



Code No. 91 40 1335

- 1 = clock switch: is used for selecting a function
- 2 = display: indicates time switch and other information
- 3 = status information channel 1 (on/off): lights up when a silo filling has been started
- 4 = status information channel 2 (on/off): lights up when a feed distribution has been started
- 5 = 12-hours mode: lights up when the time switch is in the 12-hours mode
- 6 = „skip-a-day“: lights up when the skip-a-day function has been selected
- 7 = „skipping“: lights up when the „skipping“ day is reached
- 8 = locked entry: lights up when the entry is being blocked
- 9 = low battery: lights up when the battery is empty
- 10 = choice button: is pressed when the selected parameters are supposed to be stored
- 11 = setting switch: is turned for selecting the size of the parameters
- 12 = DIP-switch:
 - 1 **ON** = The entry is blocked, it can only be viewed in the display (except for hour).
 - OFF** = The entry is not blocked, it can be viewed in the display and modified.
 - 2 **ON** = The hour in the display is in the 24-hours mode.
 - OFF** = The hour in the display is in the 12-hours mode.

4.34 Suspension material

The suspension material is required for raising the chain feeding when moving birds out and when the house is cleaned.

Suspension material consists of:

- a cable winch with fixing material
- pulley with fixing material
- cable with cable clamp
- suspension material for corner, feed trough, feed hopper and MPF drive



When selecting the suspension material, take the carrying capacity of the support material and the permissible charges of cable winches and fixing material into account.

During planning or before start of assembly, evaluate the weights of the material to be suspended.

4.35 Weights of the installation parts

Medium trough 3000 mm (incl. trough, feed chain, coupler, feed, FO-grill) = 6.5 kg/m

Regular trough 3000 mm (incl. trough, feed chain, coupler, feed, FO-grill) = 5.6 kg/m

Additional charges per circuit:

Feed hopper Mini 1-line with feed 62 kg

Feed hopper Mini 2-lines with feed 78 kg

Feed hopper Mini 3-lines with feed 94 kg

Feed hopper Mini 4-lines with feed 110 kg

Extension column 240 l with feed 181 kg


Drive 2.2 kW 42 kg

Corner 7 kg

Feed chain cleaner 13 kg

4.36 Cable winches

4.36.1 Notes on the use of cable winches

	Warning	Before starting to assemble, operate or maintain the cable winch, read the enclosed leaflet and consider the following safety instructions !
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- High forces are created when using a winch, creating potential safety hazards. It should be operated and maintained in accordance with instructions.
Never allow children or anyone who is not familiar with the operation of the winch to use it.
- Maintain a firm grip on the winch handle at all times, and never release the handle when ratchet lever is in unlocked position with a load on the winch. Otherwise, handle will spin violently, which could cause personal injury.
- Check for proper ratchet operation on each use of the winch. Do not use if damaged. Seek immediate repairs.
- Never pull on the winch handle against a locked ratchet.
- Never exceed rated capacity. Excess load may cause premature failure and could result in serious personal injury.
- Never apply load on winch with cable of rope fully extended. Keep at least three full turns of cable or rope on the reel.
- Winches should not be operated with a motor of any kind.

Space for your notes:



4.36.2 Types of cable winches

Pos.	Code No.	Description
1	99 50 0793	Winch overhead 550 kg
2	99 50 9100	Crank 2500-3500 mm for cable winch ceiling suspension
3	99 50 9130	Crank 1500 mm hand operated for cable winch ceiling suspension
4	99 50 9185	Crank 2500 mm hand operated for cable winch ceiling suspension
5	99 50 9190	Crank 2500 mm for drilling machine cable winch ceiling suspension
6	99 50 3097	Drilling machine 300/1200 rpm for cable winch
7	99 50 3093	Cable winch 900 kg GS for wall mounting incl. crank
8	99 50 3111	Cable winch 0.37 kW 230/400 V 50/60 Hz 800 kp w/limit switch
	99 50 3112	Cable winch 0.37 kW 230 V 50/60 Hz 800 kp with limit switch
	99 50 3113	Cable winch 0.55 kW 230/400 V 50/60Hz 1350kp w/limit switch
	99 50 3114	Cable winch 0,55 kW 230 V 50/60 Hz with limit switch

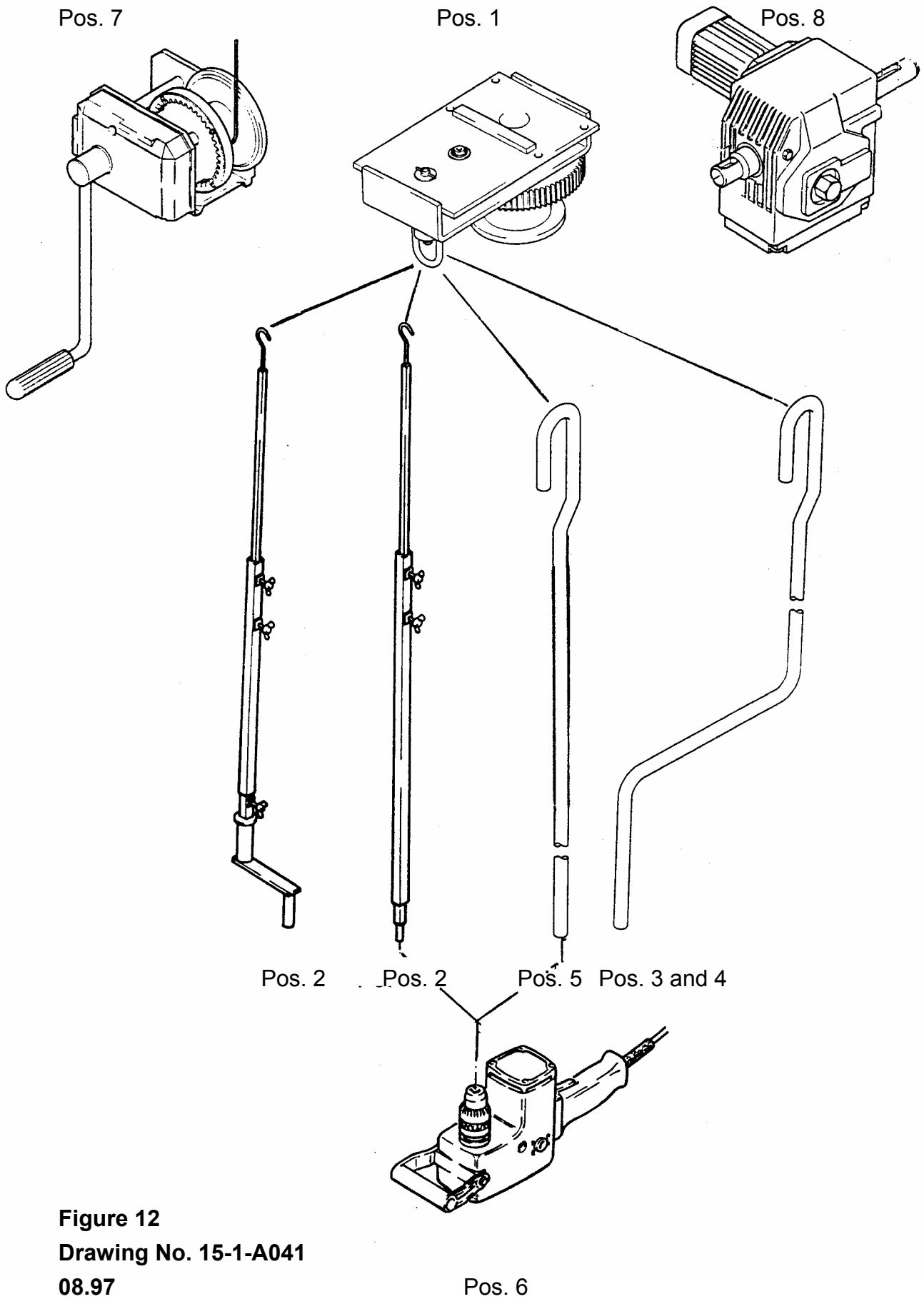



Figure 12
Drawing No. 15-1-A041
08.97

Pos. 6

Space for your notes:

4.37 Assembly of suspension

	<p>The assembly of suspension is done according to planning information or installation drawings.</p> <p>The max. distance between the suspension points should be 3 m.</p> <p>The cup hooks have to be mounted alternately on both sides of the pulling rope \varnothing 5 mm in case of suspension in a straight line.</p> <p>If charges have to be lifted that are heavier than the permissible charge of the cable winch, install a loose roller. If a loose roller is used, the charge on the winch is halved, the rope length to be enrolled is however doubled.</p> <p>Take into consideration the arrangement of the rollers.</p>
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For each row, a cable winch 900 kg GS wall mounting with crank is installed to the gable wall at working height.

For each row, a cable winch 550 kg ceiling mounting is installed in the centre of the house below the ceiling. The raising and lowering is done manually by means of a crank or by means of a special drilling machine with max. 300 rpm.

For each house, a cable winch with motor and limit switch is installed in the centre of the house below the ceiling.

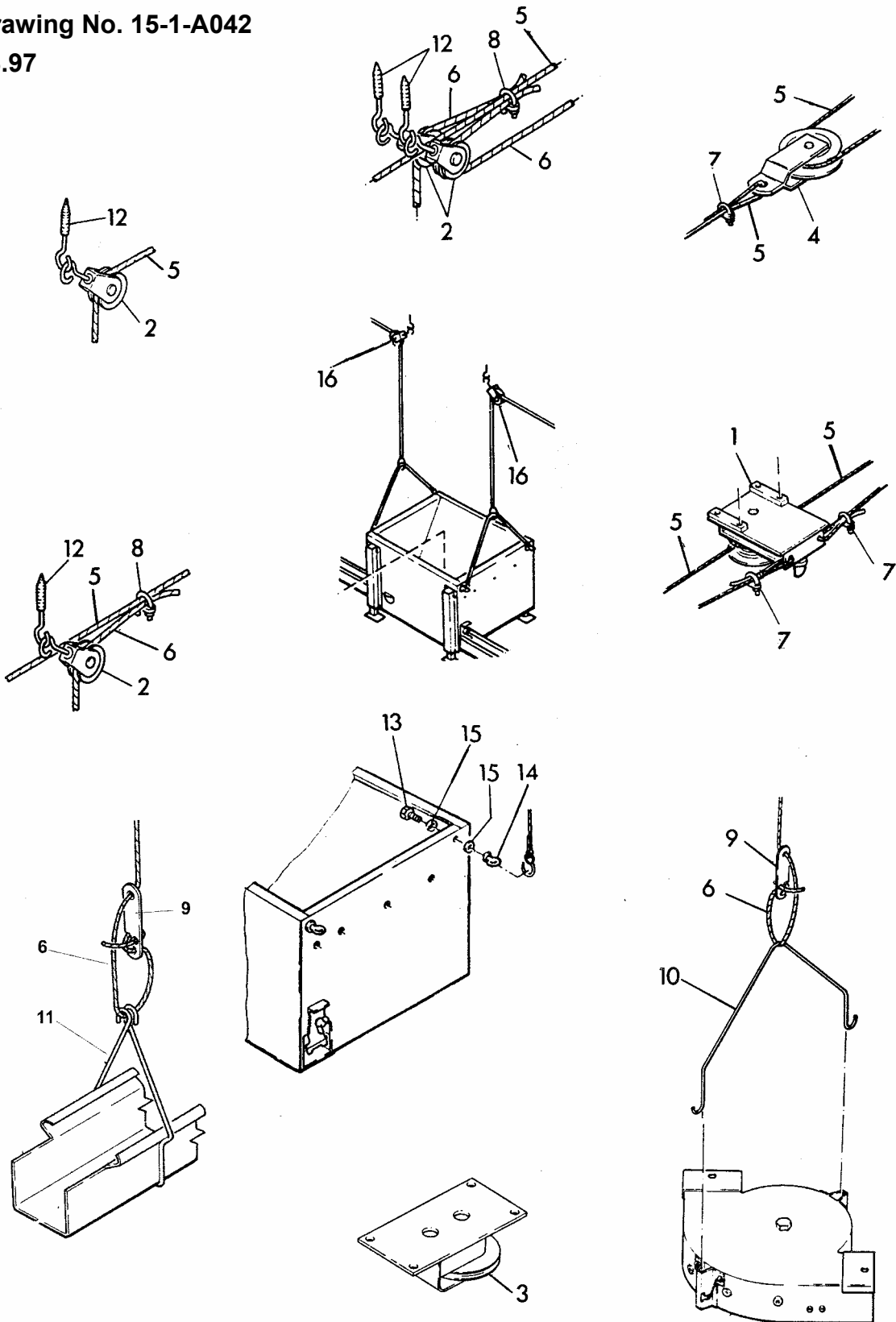
4.37.1 Component parts suspension

Pos.	Code No.	Description
1		Cable winch
2	00 00 0313	Pulley 1 7/8"
3	60 10 1140	Bracket T4 with 1 sheave
4	00 00 3005	Pulley 3½" 89 mm with bearing
5	99 50 3700	Rope wire- 5 mm galv. 7x19
6	99 50 0013	Rope-wire- 3 mm galv. 6x7
7	99 50 0120	Cable clamp 5 mm 3/16" galv. DIN 741
8	99 50 0014	Cable clamp 3 mm 1/8" galv. DIN 741
9	11 00 3002	Cable lock AM
10	15 00 1005	Hanger for corner 90/135deg
11	10 93 3856	Hanger for feed trough 3000 regular/ medium 1.2 mm
12	10 93 1629	Cup hook galv. 80x22x7,8
	10 93 1642	Cup hook galv. 120x22x7,8
	99 50 3834	Cup hook galv. 140x22x7,8
	99 50 3814	Hooked bolt galv. 140x6,5c
13	99 10 1046	Hexagon head screw M8x16 DIN 558 galv.
14	99 20 1114	Lifting eye nut M8 DIN 582 galv.
15	99 50 1483	Washer flat B 10,5 DIN 9021 galv.
16	00 00 3006	Pulley plastic 105 mm

Exploded view 30

Drawing No. 15-1-A042

08.97



Construction examples:

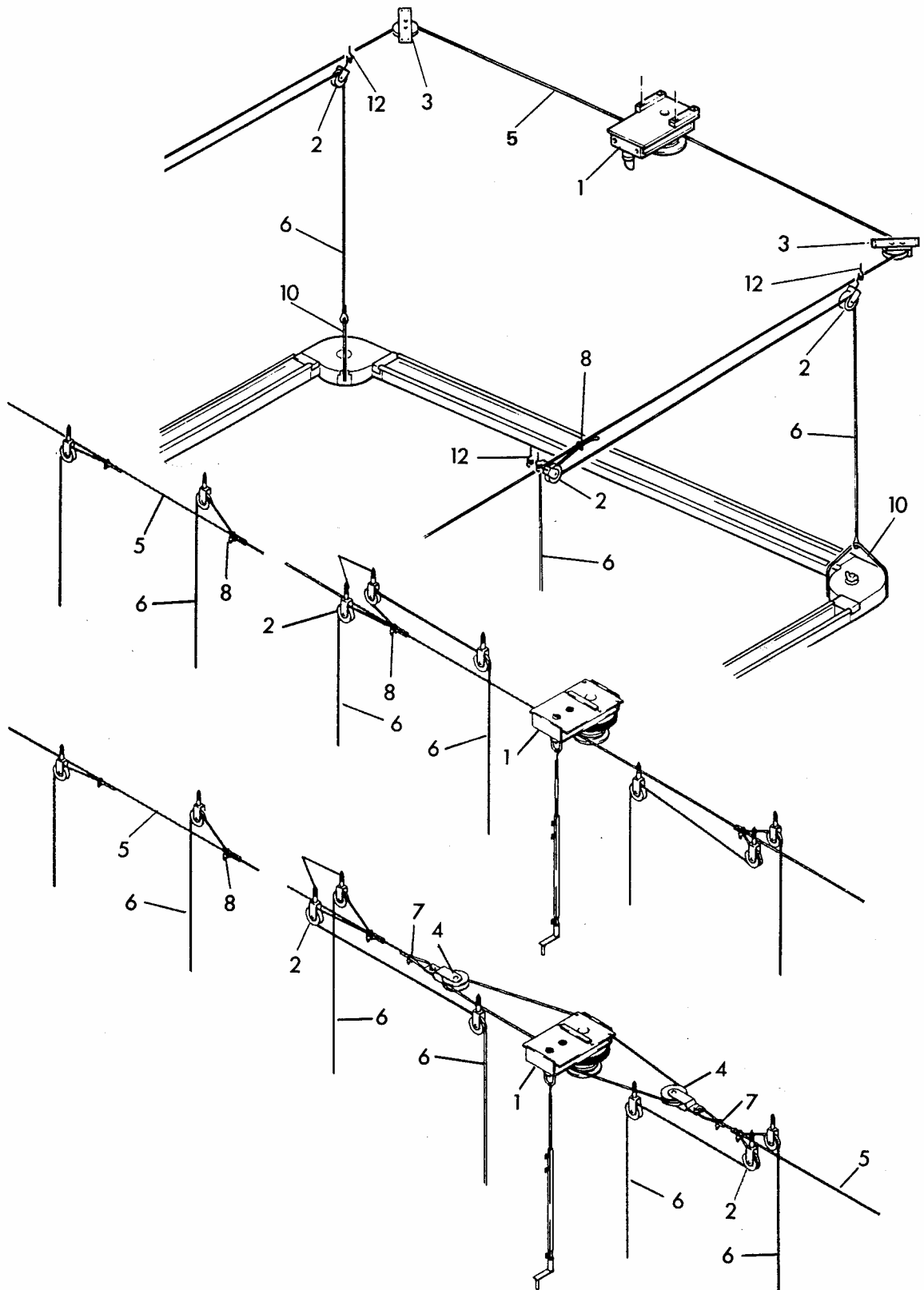


Figure 13
Drawing No. 15-1-A043
08.97

Construction examples:

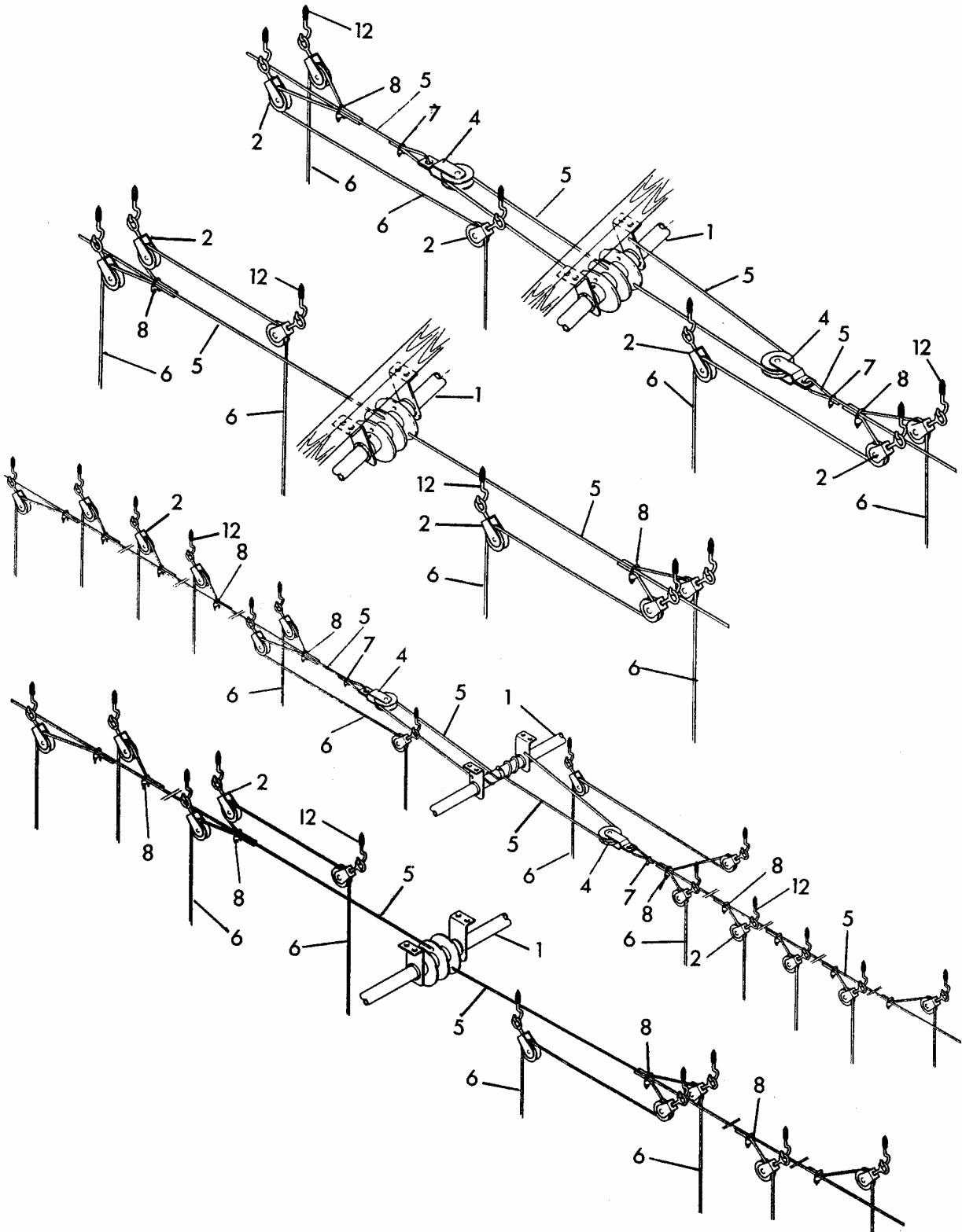


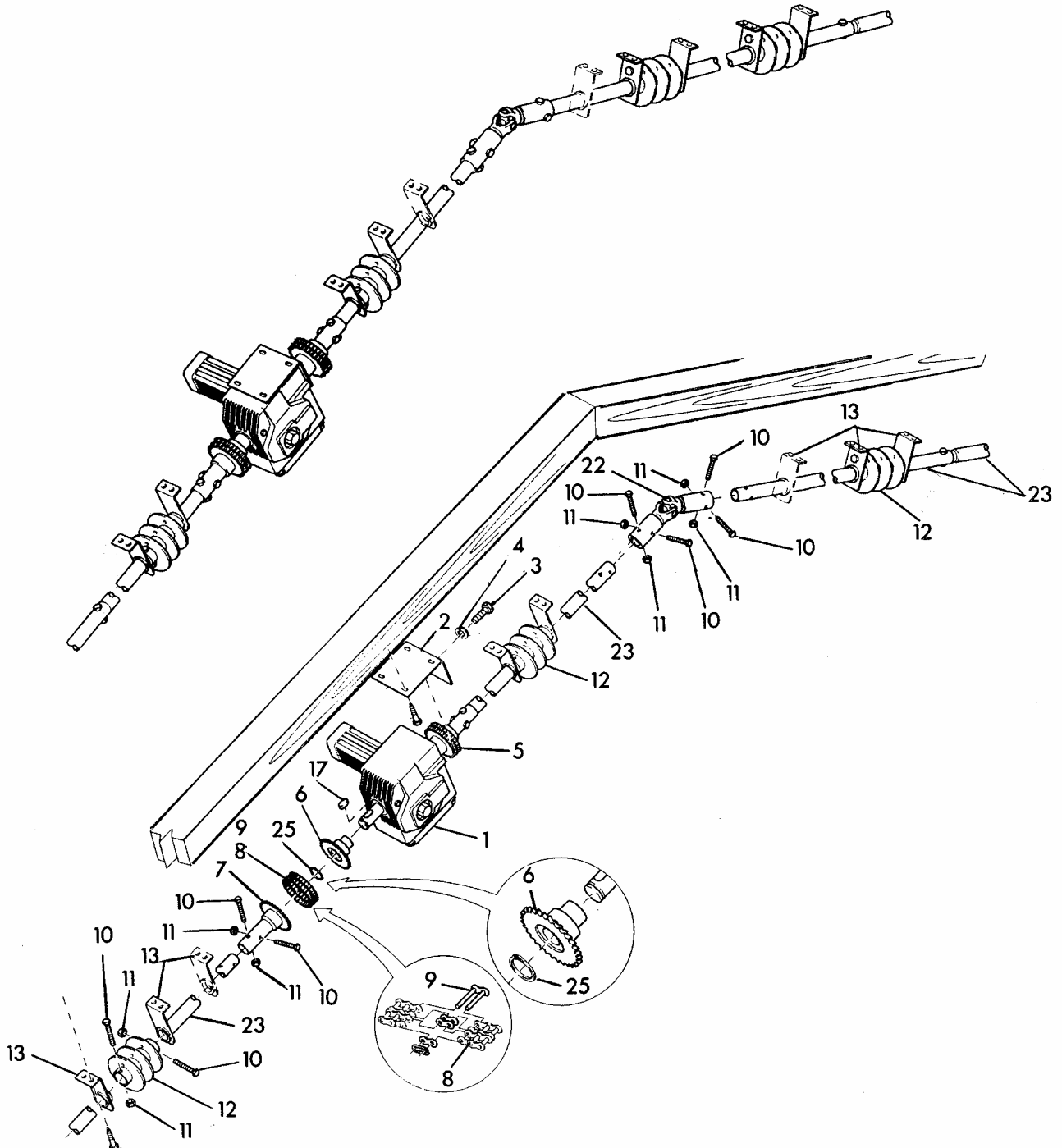
Figure 14
Drawing No. 15-1-A044
08.97

4.37.2 Assembly of suspension cable winch with limit switch

Pos.	Code No.	Description
1	99 50 3111	Cable winch 0.37 kW 230/400 V 50/60 Hz 800 kp w/limit switch
	99 50 3112	Cable winch 0.37 kW 230 V 50/60 Hz 800 kp with limit switch
	99 50 3113	Cable winch 0.55 kW 230/400 V 50/60Hz 1350kp w/limit switch
	99 50 3114	Cable winch 0.55 kW 230 V 50/60 Hz 1350 kp with limit switch
2	99 50 3194	Mounting plate rectangular H=100 for cable winch 0,37/0,55
3	99 10 1068	Hexagon head screw M10x20 DIN 558
4	99 20 1055	Spring washer A 10 DIN 127
5	99 50 3183	Chain bolt coupler 1"/25 for cable winch 0.37/0.55 kW
6		Chain wheel ½", z 15 drive side
7		Chain wheel ½", z 15 for pipe connection
8	99 98 8138	Roller chain double 1/2" 22l + joint
9	71 15 1134	Chain joint 1/2"x5/16" double
10	99 10 1259	Hexagon head screw M8x50 DIN 558
11	99 20 1064	Self-locking counter nut M8 DIN 985
12	99 50 3181	Drum for cable winch 0,37/0,55 for tube 1"
13	99 50 3185	Plain bearing plate 1" H=100 for tube
17	99 50 1264	Key 8x7x40 DIN 6885
22	99 50 3197	Universal joint coupling 1" for tube
23	99 50 3188	Tube 1"x2,5-6500 galv.
25	99 50 3825	Retaining ring DIN 471 - 25x1,2



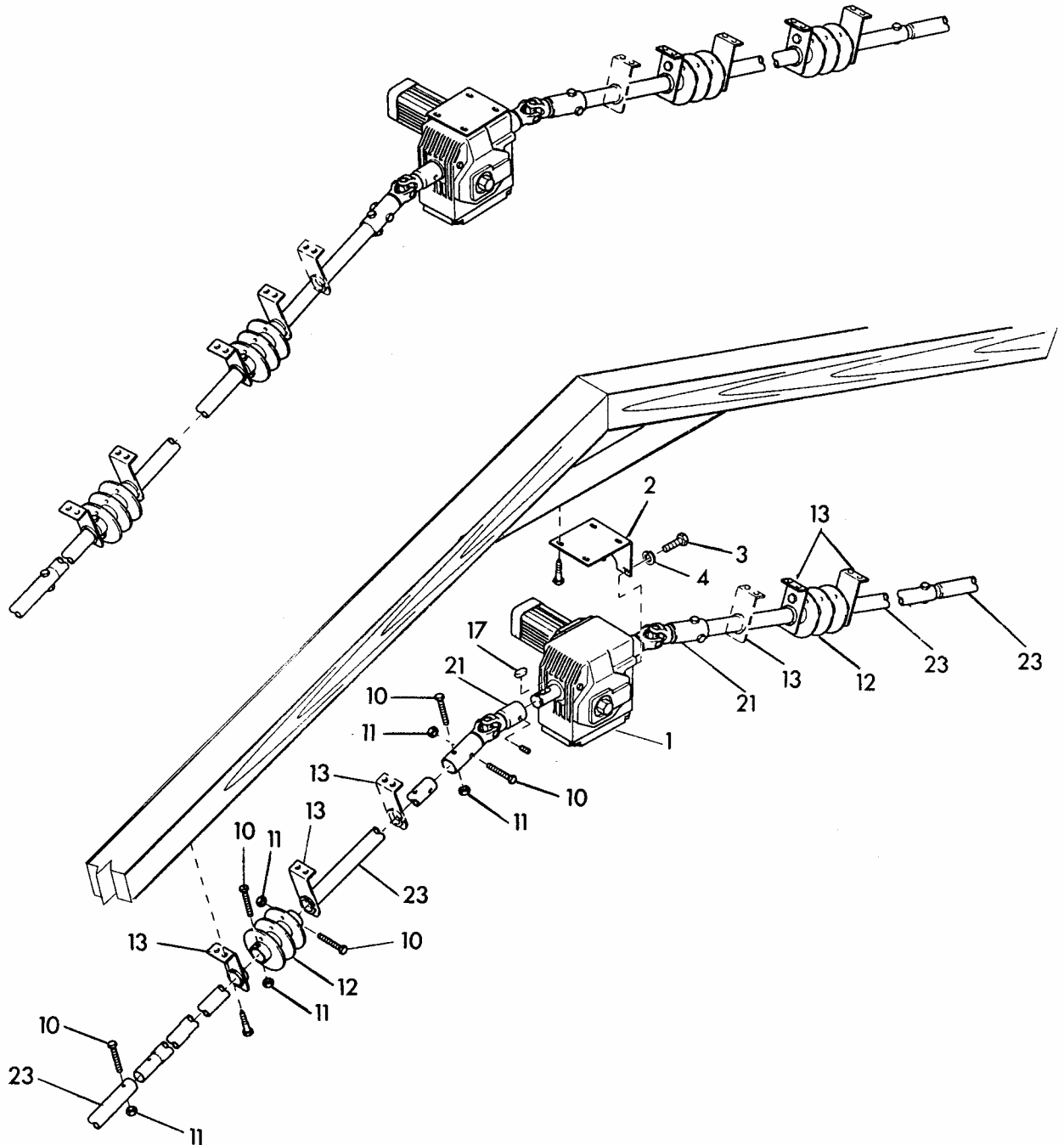
Exploded view 31
Drawing No. 15-1-A045
08.97



Pos.	Code No.	Description
1	99 50 3111	Cable winch 0.37 kW 230/400 V 50/60 Hz 800 kp w/limit switch
	99 50 3112	Cable winch 0.37 kW 230 V 50/60 Hz 800 kp with limit switch
	99 50 3113	Cable winch 0.55 kW 230/400 V 50/60Hz 1350kp w/limit switch
	99 50 3114	Cable winch 0.55 kW 230 V 50/60 Hz with limit switch
2	99 50 3194	Mounting plate rectangular H=100 for cable winch 0.37/0.55
3	99 10 1068	Hexagon head screw M10x20 DIN 558
4	99 20 1055	Spring washer A10 DIN 127
10	99 10 1259	Hexagon head screw M8x50 DIN 558
11	99 20 1064	Self-locking counter nut M8 DIN 985
12	99 50 3181	Drum for cable winch 0,37/0,55 for tube 1"
13	99 50 3185	Plain bearing plate 1" H=100 for tube
17	99 50 1264	Key 8x7x40 DIN 6885
21	99 50 3198	Universal joint coupling 1" for cable winch 0.37/0.55 kW
23	99 50 3188	Tube 1"x2,5-6500 galv.



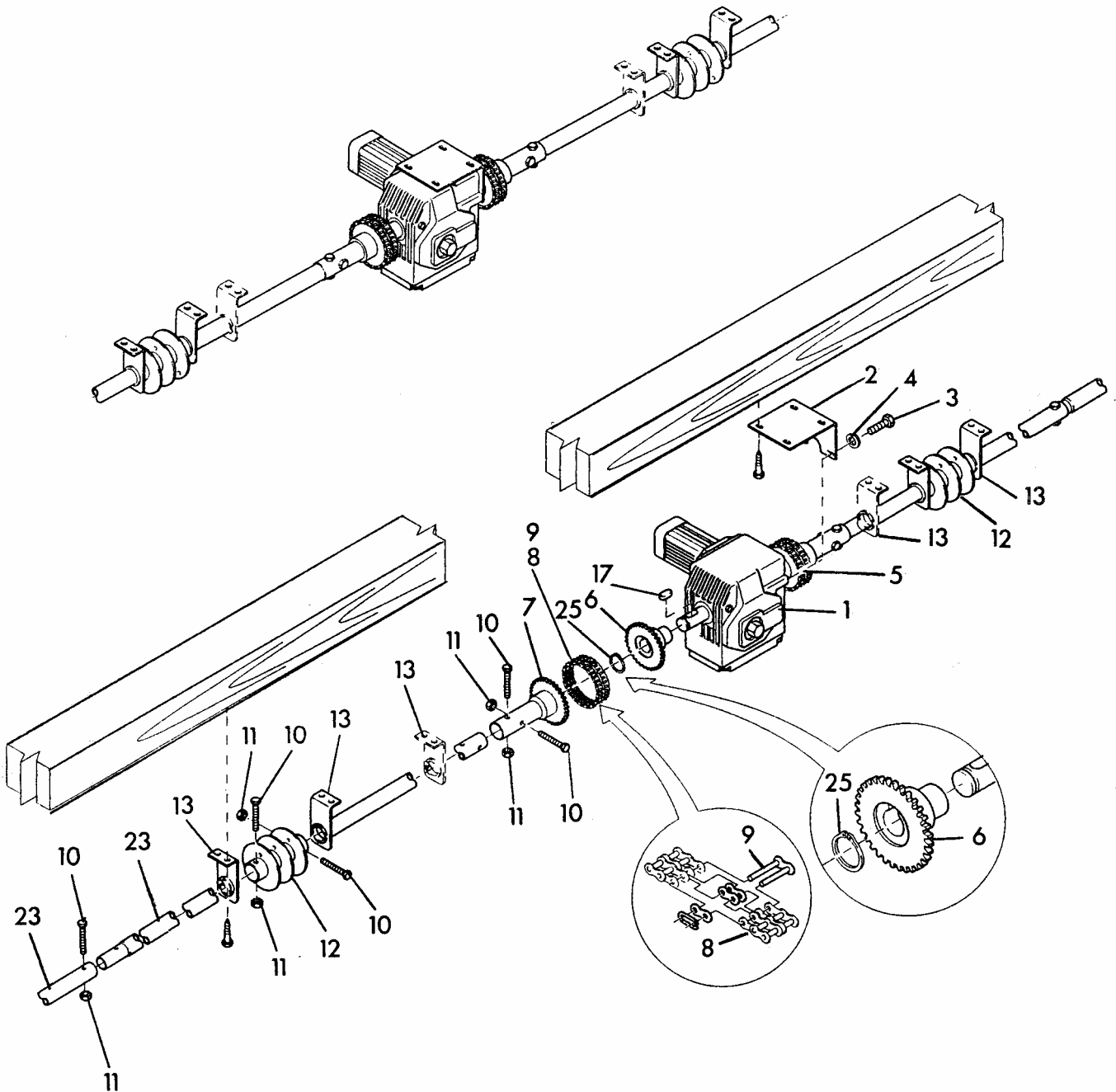
Exploded view 32
Drawing No. 15-1-A046
08.97



Pos.	Code No.	Description
1	99 50 3111	Cable winch 0.37 kW 230/400 V 50/60 Hz 800 kp w/limit switch
	99 50 3112	Cable winch 0.37 kW 230 V 50/60 Hz 800 kp with limit switch
	99 50 3113	Cable winch 0.55 kW 230/400 V 50/60Hz 1350 kp w/limit switch
	99 50 3114	Cable winch 0.55 kW 230 V 50/60 Hz 1350 kp with limit switch
2	99 50 3194	Mounting plate rectangular H=100 for cable winch 0,37/0,55
3	99 10 1068	Hexagon head screw M10x20 DIN 558
4	99 20 1055	Spring washer A10 DIN 127
5	99 50 3183	Chain bolt coupler 1"/25 for cable winch 0.37/0.55 kW
6		Chain wheel ½", z 15 drive side
7		Chain wheel ½", z 15 for pipe connection
8	99 98 8138	Roller chain double 1/2" 22l + joint
9	71 15 1134	Chain joint 1/2"x5/16" double
10	99 10 1259	Hexagon head screw M8x50 DIN 558
11	99 20 1064	Self-locking counter nut M8 DIN 985
12	99 50 3181	Drum for cable winch 0,37/0,55 for tube 1"
13	99 50 3185	Plain bearing plate 1" H=100 for tube
17	99 50 1264	Key 8x7x40 DIN 6885
23	99 50 3188	Tube 1"x2,5-6500 galv.
25	99 50 3825	Retaining ring DIN471 - 25x1,2



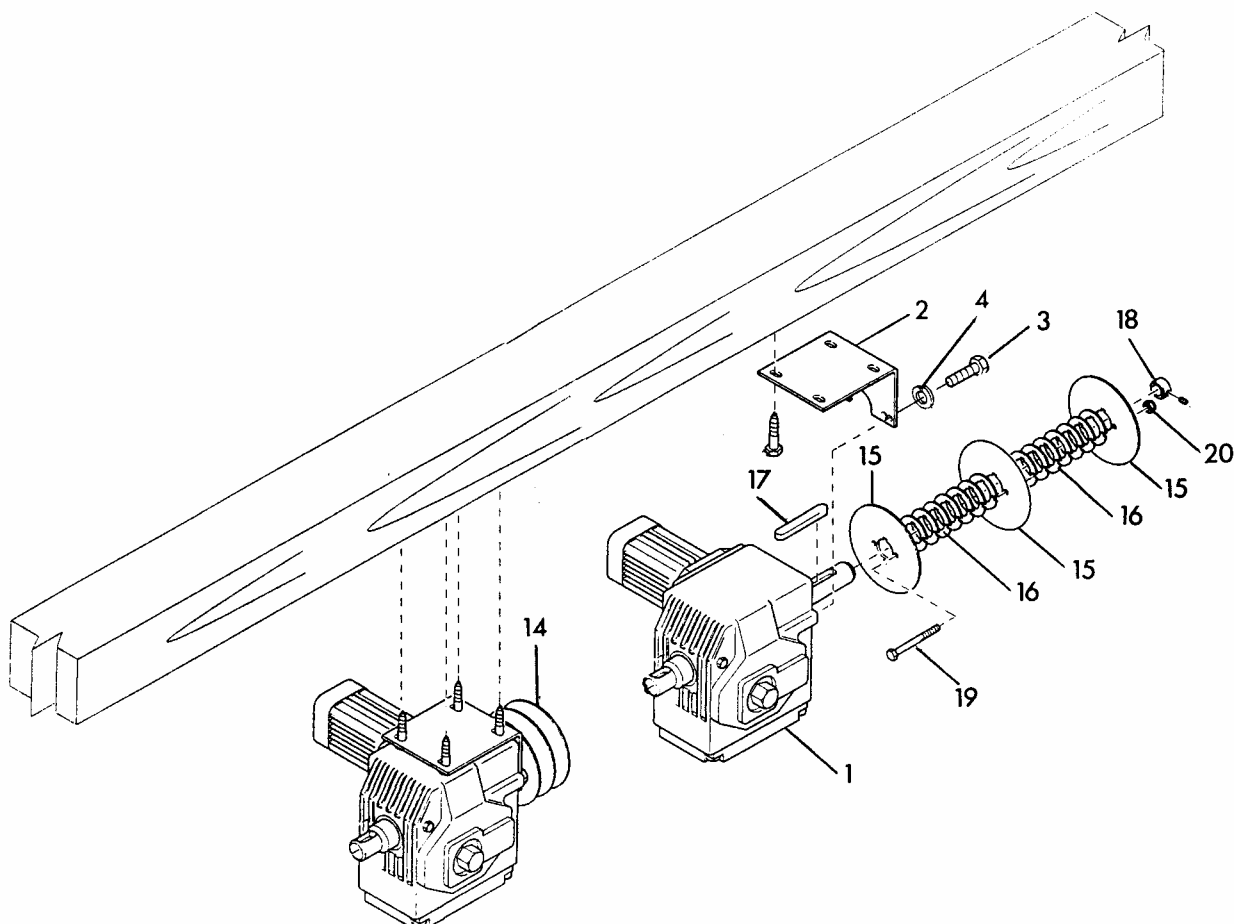
Exploded view 33
Drawing No. 15-1-A047
07.97



Pos.	Code No.	Description
1	99 50 3111	Cable winch 0.37 kW 230/400 V 50/60 Hz 800 kp w/limit switch
	99 50 3112	Cable winch 0.37 kW 230 V 50/60 Hz 800 kp with limit switch
	99 50 3113	Cable winch 0.55 kW 230/400 V 50/60Hz 1350kp w/limit switch
	99 50 3114	Cable winch 0.55 kW 230 V 50/60 Hz 1350 kp with limit switch
2	99 50 3194	Mounting plate rectangular H=100 for cable winch 0.37/0.55
3	99 10 1068	Hexagon head screw M10x20 DIN 558
4	99 20 1055	Spring washer A10 DIN 127
14	99 50 3191	Drum for cable winch 0.37/0.55 kW for gear shaft
15		Drum discs large
16		Drum discs small
17		Key 8x8x70
18	15 40 1310	Adjusting ring A16 DIN 705
19		Hexagon head screw M6x85 DIN
20	99 20 1043	Self-locking counter nut M6 DIN 985



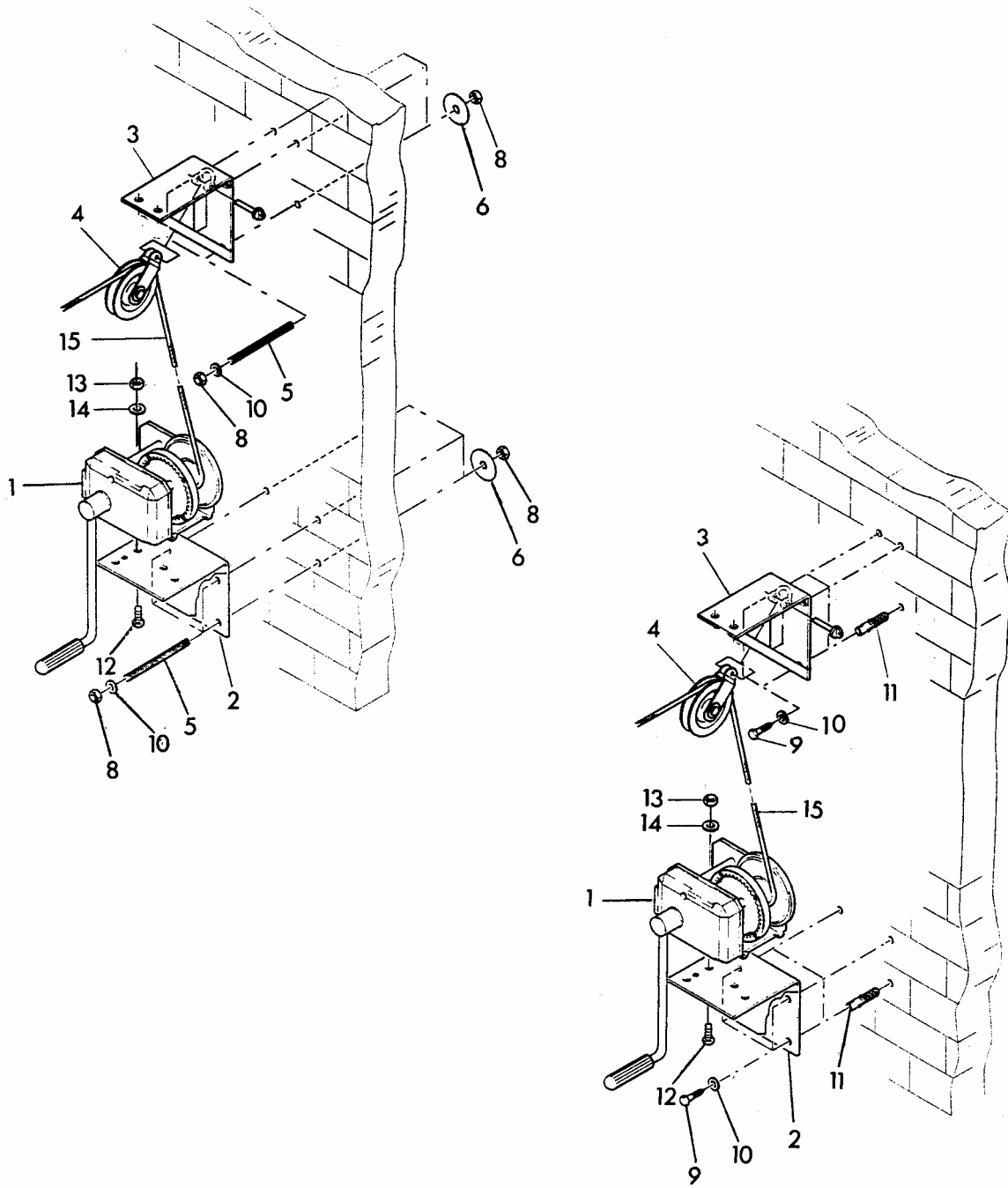
Exploded view 34
Drawing No. 15-1-A048
08.97



4.37.3 Assembly of cable winch 900 kg GS wall mounting

Pos.	Code No.	Description
1	99 50 3093	Cable winch 900 kg GS for wall mounting incl. crank
2	11 00 3003	Bracket for cable winch 650 kg/340 kg/900 kg
3	11 00 3004	Bracket for idler pulley AM
4	00 00 3005	Pulley 3½" 89mm with bearing
5	99 10 3710	Rod threaded M10x1000 DIN 975 galv.
6	20 90 3759	Washer flat 13x50-2 galv.
7	99 10 1095	Hexagon head screw M10x30 DIN 558 galv.
8	99 20 1029	Hexagon nut M10 galv. DIN 555
9	99 10 3823	Hexagon wood screw 10x120 DIN 571-ST galv.
10	99 50 1483	Washer flat B 10,5 DIN 9021 galv.
11	99 98 3783	Dowel S12
12	99 10 1058	Hexagon head screw M8x30 DIN 558 galv.
13	99 10 1040	Hexagon nut M8 galv. DIN 934-8
14	37 80 2011	Washer flat A8,4 DIN 9021 galv.
15	99 50 3700	Rope wire- 5mm galv. 7x19

Exploded view 35
Drawing No. 15-1-A049
08.97




5 Operation and maintenance

5.1 Management recommendations

Bird type	Number of birds / m ²	Feeding kind	Bird no. / m trough	cm trough / bird side	Feed requi. / bird per day in g
Broiler breeders Ø 3.5 kg	4.5 - 6.5	rationed	12 - 15	13 - 16	130 - 160
Laying hens Ø 2 kg	6 - 8	slightly rationed	15 - 20	10 - 13	110 - 130
Pullets Ø 1.5 kg	8 - 10	rationed	20 - 25	8 - 10	20 - 110
Broilers 1.5 - 1.7 kg	22 - 24	ad libitum	50 - 65	3 - 4	20 - 150
Broilers 1.7 - 2.5 kg	30 - 40	slightly rationed	30 - 40	5 - 7	20 - 190

The above-mentioned values are average values, which have to be adapted depending on climate and strain.

5.2 Positioning of the PA posts for couplers 1-line

	<p>For the rearing phase of layer and broiler breeders, the feed trough has to be adjusted as low as possible to ensure uniformity up to the 12th week. On the other side, the feed trough should be adjusted as high as possible in order to ensure a safe operation of the feed chain depending of the structure of the litter.</p> <p>Basic rule: Upper edge of feed trough at the height of the birds' backs.</p>
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The PA posts for couplers 1-line have numbers for the height positions of the feed trough. When in position 1, the feed trough is lying at the bottom of the post.

Position at post	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Height with regular trough (mm)	82	107	133	158	184	209	235	260	286	311	337	362	338	413
appropriate for														
Pullets 0 to 18 weeks	x	x	x	x	x	x	x	x						
Broiler breeders - rearing	x	x	x	x	x	x	x	x	x					
Broiler breeders - production										x	x	x	x	
Broiler growing	x	x	x	x	x	x	x							
Height with medium trough (mm)	102	127	153	178	204	229	255	280	306	331	357	382	408	433
appropriate for														
Pullets 0 to 18 weeks	x	x	x	x	x	x	x							
Laying hens from 18 weeks								x	x	x				
Broiler breeders - rearing	x	x	x	x	x	x	x	x	x					
Broiler breeders - production										x	x	x		

5.3 Length of feed chain

The decisive feature for dimensioning the MPF drive is the length of feed chain. See point 2.1.1.

- The indicated length of feed chain comprises four corners 90° BD2000. For each additional corner 90° BD2000, the max. length of feed chain has to be reduced by 12.5 m.
- If the chain feeding system is located in the litter area, the max. length of feed chain has to be reduced by 30%.
- In case of single-phase motors, the max. length of feed chain has to be reduced by 30%.
- In case of rationed feeding, the feed chain speed and the circuit length should be selected so that one circuit takes a maximum of 5 minutes.
- For MPF drives 36 m/min, we recommend a time control with seconds program for controlling the operating time of a feed chain circuit.


5.4 Feeding system

Shear pin at the feed chain drive wheels

The carrier (tightly connected with the motor shaft) puts the feed chain drive wheel into operation by means of the shear pin (reversible drive gear).

If the feed chain is jammed for some reason, the shear pin will break and the drive wheel of the feed chain stops. Thanks to that, damage of the installation can be avoided.

Apply shear pin (99-50-3905 5x35 St mushroom head rivet DIN 660). See paragraph "Tensioning the feed chain".

	Warning	Accidental starting of the drive can lead to severe injuries. Always switch off the main switch of the drive before replacing the shear pin.
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Never replace a broken shear pin without having established the reason for the failure.

Check the feeding system at least twice a day for its functionality.

Check if all feed chains are running and if the corner wheels rotate in the feed chain corners.

Check the feed level at the outlet of the feed column.

First putting into operation of the feed chain

Check the pre-tension of the feed chain !

The chain tension of the feed chain is correct, if the chain links of the feed chain can be pushed slightly but not lifted more than 10 mm at the exit of the MPF drive while the system is running.

To provide a full circuit of the feed chain, enough feed has to be available.

Start the feed chain drive and watch the chain running. Make sure the installation could be immediately switched off in case of emergency. As long as the feed trough is not yet filled with feed, a chain clearance can be determined at the outlet of the drive unit.

If during filling of the installation the chain pushes further so that there are folds in the feed channel, immediately switch off the drive. Investigate the chain for possible jams in the feed channel and remove them, if any.

When the entire feeding circle is filled with feed, the chain drive together with the feed chain take on a slow and smooth run.

In case of a new feed chain, test its tension weekly. It is important that a new chain must first undergo a running-in procedure, for remains of paint and grease on its links to come off.

For the assembly of the feed chain, see point 4.31.

5.5 Maintenance and lubrication of the feeding system

Timer, switch box, motor

- Always keep these devices clean and protect them from dust.
- Prevent penetration of condensation water into the inside of these devices.
- Protect the motor from dropping and splash water.
- These devices need no lubrication.

Gear motor


- Before the start remove plug from the ventilation screw of the gear motor. See point 4.32.
- Under normal operating conditions there is no need for oil or grease change.
- Carry out the change of oil in accordance with the directions of the gear motor manufacturer (see sticker at the gear motor).
- For exceptional cases, e.g. after leaks we would recommend the following lubricants:

ARAL	aral grease FDO
BP	Bp energrease HT-EP-OO
CALYPSOL	calypsol D 8024
ESSO	esso fibrax EP 370
MOBILOIL	mobilflex 46
SHELL	shell special reductor grease H
SHELL	shell grease S 3655
SHELL	shell semnia grease-O
TEXACO	glissando GF 1464

The lubricant quantity for gear motors type ESTA is 90 g for 0.37 kW and 280 g for 0.75 kW.

Reversible feed chain drive wheel and drive guide shoe SF/MP

Check these parts every quarter of a year for wear and correct operation. In case of wear on the teeth of the drive wheel reversible and the working surface of the drive guide shoe SF/MP they can be turned around. This ensures a double life length of these parts.

	When replacing or reversing a toothed drive wheel provide sufficient grease between the working surfaces of the driver and the toothed drive wheel reversible.
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Use the following lubricants:

- Chevron Dura-Lith Grease EP 2
- Shell Retinex-A
- Shell Alvania EP 2
- Esso Beacon EP 2
- Texaco Multi Purpose Grease H

Feed level adjuster

- Please daily check the feed level at the feed level adjuster. Remove feathers, flour clumps or other foreign matter.
- Adjust the feed level at the correct height.

Feed chain corners

The feed chain corners are equipped with a maintenance-free plastic sliding bearing in the corner wheel, a chain guide rail and an additional guide link plate in the corner bottom.

A plastic sliding bearing in the corner wheel results in:

- no need for lubrication,
- long life thanks to wear-proof plastic,
- uniform and easy run of the corner wheel.

The chain guide rail HD ensures:

- better chain guiding,
- extremely low wear,
- much higher life expectation,

The additional guide link plate in the corner bottom provides:

- better clamping of feed troughs in the corner box,
- less wear of the feed troughs in the area of the 90° corners,

Test the feed chain corner as follows:

- release feed chain
- remove wing screw, washer, cover, retaining washer and distance washer
- remove corner wheel together with bushing from the shaft
- remove encrusted feed remains etc., replace the bearing if necessary
- the corner wheel has to turn easily on the shaft
- put the feed chain wheel together again in reverse order.

5.6 Adjusting the *Big Dutchman* time switches SF and TD



For mounting and operating the timers please refer to the enclosed operating instructions.

The *Big Dutchman* time switches SF and TD have a

- large disc with a 24-hour division,
- a small disc with a 55-minute division.



For correct programming of feeding times it is required to match the *Big Dutchman* time switch with the local time.



Always use the turning knob for moving the large disc. Do not touch the disc or turn it to prevent damage to the *Big Dutchman* time switch.

- Turn the knob in the centre of the *Big Dutchman* time switch counterclockwise, until the pointer shows the local time on the large disc.



Leave at least one hole free between two pins.

Both discs turn counterclockwise.

- Set the desired starting time on the large disc. Insert one pin each into the holes in the edge for the respective starting times.

- Set the required feeding duration on the small disc. Push the bronze pointer slightly and turn it counterclockwise, until it is located opposite the number indicating the length of the selected feed procedure.

Example: Evaluation of the feeding period:

Chain length per circuit = 250 m + 3 m addition = 253 m : 12 m/min feed chain speed = 21.08 minutes of feeding duration.

21 minutes of feeding duration will be adjusted.



The minimum feeding time is 2 minutes and the maximum 55 minutes.

5.7 Feed metering - Introduction

Big Dutchman can provide only recommendations and information for managing the feed quantity. Talk to your bird and feed suppliers as well.

The basic idea of automatic feeding is to create a complete feed cycle. To achieve this, the operating time of the feed chain has to be adapted to it.

The time switch controls the feeding times and the operating times of the feed chain.

The correct adjustment of the time switch means

- a uniform supply of feed to the entire feeding line,
- that the feed does not spill over when returning to the feed hopper,
- that pelletized is not ground.

The first feed distribution should be carried out in the morning before switching the light on.

The number of daily feed distributions depends on

- the feed level in the trough,
- the actual feed requirements of the birds, depending on weight, age, strain, house climate and
- the number of birds per meter of feeding trough.

The following rule of thumb for this could be assumed:

- before moving the chicks in, the feed troughs are filled up to the max. feed level so that the chicks can easily feed from them
- from approx. 2 weeks onwards, the min. feed level is used to prevent feed losses
- basically all feed lines are run with the same feed level.



5.8 Examples for controlling light and feeding times in broiler breeder management

The aim of all measures taken in this respect is to achieve a uniform distribution of the total restricted daily feed quantity over the entire trough length.

- This gives the birds the opportunity to eat their ration quietly.
- This achieves a uniform sexual development of the flock.

The examples listed below are only supposed to be guidelines. They diverge very much from each other, i.e.:

- regarding their dependence of the respective strain,
- particularly regarding the feed quantities/bird,
- regarding the notes for the design of lighting programme and climate.

Example:

15th to 21st week of life

- 7 a.m. lights on, 3 p.m. lights off = 8 hours of light.
- One feed distribution at 7 a.m. The chain is switched on for the duration of one circuit. (trough length [m] / feed chain speed [m/min] = circuit time [min]).
- Put the feed level slide at the feed hopper to the **bottom** position. This is the only way to distribute this small quantity of feed over the entire trough length.
This position of the feed level slide results in approx. 700 g feed per meter of trough. A length of trough of 15 cm for example available per bird results then in the smallest feed quantity of approx. 53 g/bird to be metered out on the entire length of feed trough.
- During the following weeks larger daily rations are distributed with longer feed chain operating times.
- If the increasing feed quantity requires operating times of more than 10 min., the following weeks the feed level slide at the feed hopper is opened further.
- After feed distribution, the Auto-Limit scale (ALS) is refilled with the daily feed ration of the following day (bird number x daily ration / bird = feed quantity to be set at ALS). Before filling the ALS, close the slide at the weighing container. Open it again after filling, so that feeding can be started automatically the next day.



21st week of life

- 7 a.m. lights on, 3 p.m. lights off = 8 hours light
- two feeding circuits at 7 a.m. and at 9 a.m.
- feed ration approx. 110 g \Rightarrow 2 x 55 g/bird
- Put feed level slide to the **bottom** position. For the first feed distribution, put the feed chain into operation exactly for the duration of one circuit.
- If necessary, extend the second feeding circuit until the entire quantity in the weighing container has been distributed.
- If due to an increased feed quantity longer operating times are required, the feed level slide can be opened further. Take into consideration in any case that the feed circuit is completely filled. This is the case always when a minimum feed quantity has to be metered out of the feed hopper after a complete feed chain circuit. Longer operating times of the feed chain with lower feed level slide position are thus better than partly filled feeding lines.

23rd week of life

- 3 a.m. lights on, 3 p.m. lights off = 12 hours light
- two feeding circuits at 7 a.m. and 9 a.m.
- feed ration 130 g \Rightarrow 2 x 67.5 g/bird

1st day of 25th week of life (in summer already in week 24)

- 2 a.m. lights on, 6 p.m. lights off = 16 hours light
- two feeding circuits at 7 a.m. and 9 a.m.
- feed ration 150 g - 170 g \Rightarrow 2 x 75 g/bird

5.9 Switching on feed chain

Switching on MPF drive by hand.

- If switching on the feed chain by hand, turn it off again after one feed chain circuit; otherwise the feed flows over at the inlet of the MPF hopper.

Switching on MPF drive automatically by means of the *Big Dutchman* time switch.

- Adjust the time for a feed chain circuit at the *Big Dutchman* time switch.
- Adjust the number of daily feed distributions at the *Big Dutchman* time switch.
- Adjust the feed level at the feed hopper by means of the feed level rubber.

5.10 Controlled feeding with the Auto-Limit scale

Prerequisite: The daily feed quantity is actually distributed in the exactly calculated amount. No more - no less.


Controlled feeding is very simple with the Auto-Limit scale:

- Place the feed hopper on the Auto-Limit scale.
- Adjust the required feed ration. The feed supply system now fills the feed hopper until the set weight has been reached. Then, the Auto-Limit scale cuts off further feed supply.
- Pull open the slide at the feed hopper. The feed flows into the MPF feed hopper. The system is ready for the following feed distribution.

It is, however, not sufficient to check the administration of the daily feed ration only. For successful utilisation of controlled feeding, some prerequisites have to be fulfilled in any case.

- Check the bird weight upon moving in (random samples) and later on once or twice a week.
- Take the feeding programme of your chick supplier into consideration.
- Get information from your feed supplier on energy content and composition of the feed.
- Daily check feed consumption, house temperature, laying performance, egg weight and mortality.
- Care for a technically impeccable condition of the feeding system. Feed losses due to technical problems can eventually be worse than those caused by the birds.
- The feed has to flow easily, i.e. feed bridges in the feed bin and/or feed hopper may not occur.


5.10.1 Manual filling of feed hopper and manual feeding

	<p>Before each filling of the feed hopper, close the slide and open it again before the next feed distribution.</p> <p>The feed level in the feed trough is adjusted by means of the feed level slide at the feed hopper and has to be evaluated in tests.</p>
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Filling of the entire daily feed ration, feeding afterwards

- Adjust the daily feed ration at the Auto-Limit scale.
- Close the feed hopper slide by hand.
- Manually switch on filling of the feed hopper. It automatically stops when the daily feed ration is reached.
- Manually open the feed hopper slide.
- Manually switch on the feeding system (MPF) and switch it off again after one feed chain circuit plus 3 m or when it is completely empty.

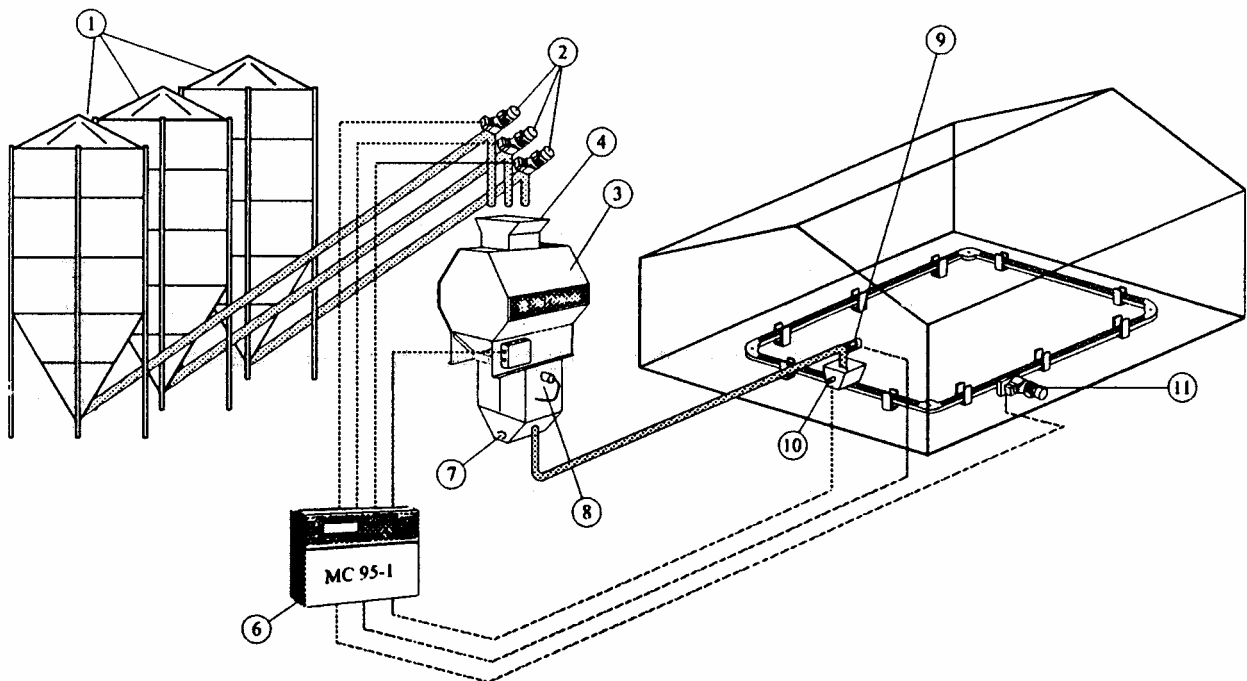
5.10.2 Manual filling of feed hopper and feeding with a time switch

	<p>Before each filling of the feed hopper, close the slide and open it again before the next feed distribution.</p> <p>The feed level in the feed trough is adjusted by means of the feed level slide at the feed hopper and has to be evaluated in tests.</p>
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Filling of the entire daily feed ration, automatic feeding afterwards

- Adjust the daily feed ration at the Auto-Limit scale.
- Close the feed hopper slide by hand.
- Manually switch on filling of the feed hopper. It automatically stops when the daily feed ration is reached.
- Manually open the feed hopper slide.
- Adjust feeding time and feeding period at the time switch. The feeding duration is one feed chain circuit plus 3 m.
- The timer switches the feeding system on and off.

5.11 Control survey by production computer MC95-1



Pos.	Description
1	Feed bins (max. 3)
2	Silo augers (max. 3)
3	MC 99 B Flow weigher
4	Filling funnel
5	free
6	MC95-1 Production computer
7	Reception funnel
8	DOL 21 R Feed demand sensor
9	Distributing auger
10	DOL 21 R Minimum sensor
11	Feed chain drive

The MC95-1 (Code No. 60 40 2511) is particularly appropriate in broiler houses for control and survey of production.

In combination with the MC 99 B feed weigher (Code No. 60 40 2613) and the MC 98 B poultry weigher (Code No. 60 40 0411) it is an effective control and information system for increasing production.

The MC 95-1 meters out up to three different feed components and ensures gradual transitions when changing between different feed types.

The feeding program is very flexible, up to 16 feeding times can be entered.

Feed supply can either be carried out ad libitum, time-controlled or restricted.

The MC 95-1 permits automatic weighing by means of the MC 98 B poultry weigher. Two weighers can be connected per house. Light in the house is either controlled by a dimmer or on/off. You can enter up to 16 light periods.

The computer additionally registers water consumption and can switch off water via a program. You can also synchronise light and water consumption.

If two sensors are connected, the computer can evaluate e.g. the temperature, humidity or carbon dioxide content in the house.



For further information please refer to the manuals on the respective products.

5.12 Maintenance instructions

Before starting any maintenance or assembly work, check the following:

- whether the switch responsible for the machine has been switched off
- whether the switch for the electric remote control, if comprised in the system, (mostly kept in a separate, central room) has been switched off and marked by the warning "**DO NOT PUT INTO OPERATION**".

If the warning has not yet been applied, do it now !



Never try to carry out adjustments or to remove troubles with the machine being in operation, unless the maintenance instructions explicitly allow this !

5.13 Notes for maintenance of the cable winch

The winch is delivered completely lubricated.

To ensure a constant easy operation and a long service life we recommend to take the maintenance instructions on the enclosed leaflet into consideration !

Immediately replace damaged or extremely worn parts !



6 Troubles and their remedies

Trouble	Reason	Remedy
Shear pins break	Feed chain may be too loose.	Correct feed tension.
	Feed trough is not correctly placed under the guide shoe, thus, the feed chain gets stuck under the feed trough.	Assemble feed trough with guide shoe anew and align it.
	Some part of the machine is blocked by foreign matter.	Remove foreign matter.
	Feed chain gets stuck at trough coupler or corner.	Align trough coupler or corner.
	Feed chain gets stuck between the reversible toothed drive wheel and the guide shoe.	Align reversible toothed drive wheel and guide shoe, 0.5 to 1 mm space gap.
	Guide shoe is worn and feed chain gets stuck.	Replace guide shoe.
	Corner wheels do not operate.	Check corners.
Feed return does not work.	Too high feed level, too much feed in the trough.	Adjust feed level at the feed level slide of the MPF feed hopper.
	The MPF drive runs longer than necessary for the feeding procedure. This overfills the feed trough.	Adjust feeding duration anew.
	Feed return wheel runs too tightly.	Refill oil (sewing machine oil or HD 10/HD 20 oil).
Feed jam in the corners.	Feed level in the feed trough is too high.	Adjust feed level at the feed level slide of the MPF feed hopper.
	Water in feed, feed jams in the corners.	Remove wet and swollen feed from the feeding line.

Trouble	Reason	Remedy
Excessive heat generation at gear motor.	Not properly lubricated.	Check quantity and type of gear oil. Change oil, if necessary.
	Feed chain tension too high or too low.	Correct feed chain tension.
Corner wheels do not operate.	Feed chain tension too high or too low.	Check and correct feed chain tension.
	Foreign matter jams under the corner wheels.	Check corners for foreign matter and remove foreign matter.
Motor does not start.	Fuse is blown.	Replace fuse.
	Protective motor switch has reacted.	Correctly adjust protective motor switch.
	Protective motor switch does not switch.	Check control of protective motor switch and correctly adjust it.
Motor starts tightly.	Planned for triangle connection 380 V, but switched as star 220 V.	Correctly adjust switching.
	Tension or frequency strongly vary when switching on.	Care for better electricity circumstances.
Motor gets too hot	Motor is switched in a triangle instead of a star as planned.	Correct switching.
	Cooling air quantity too small, cooling air paths obstructed.	Care for unobstructed intake and outlet of cooling air.

7 List of spare parts

For ordering spare parts please use the code numbers or position numbers of the respective component parts listed in the individual sections.

For your notes: