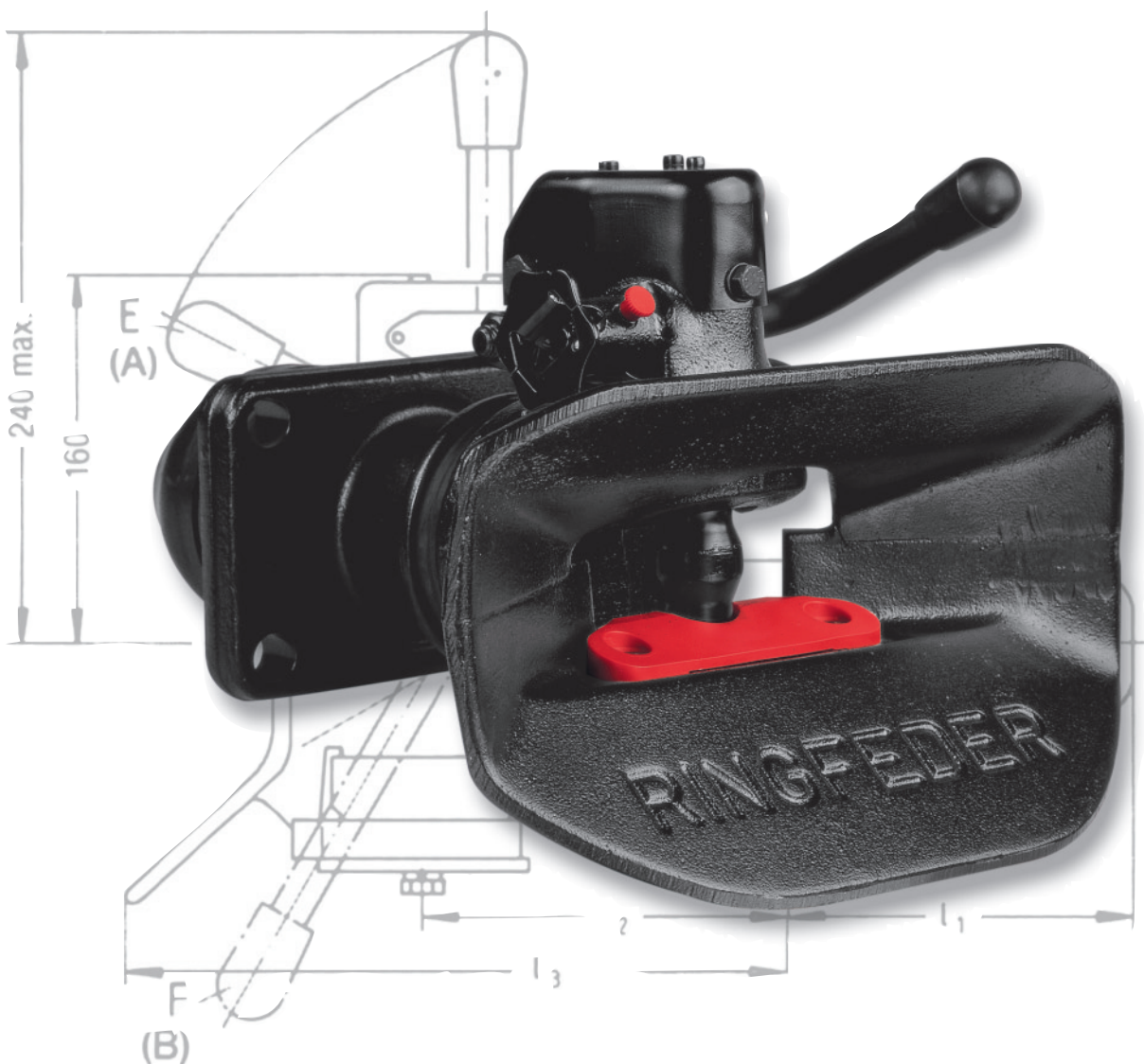


# RINGFEDER

## Automatic Trailer Couplings

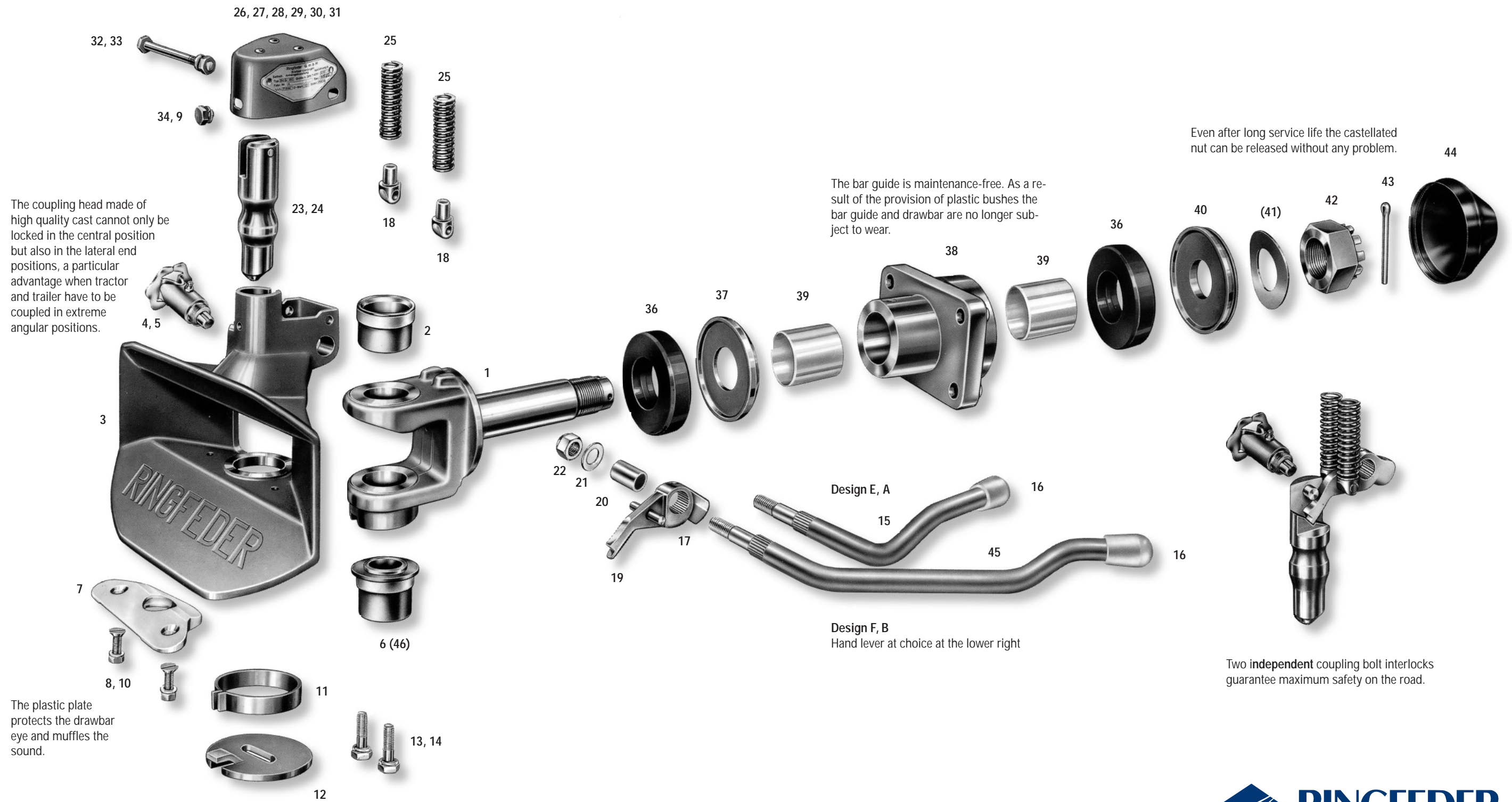
for 40 mm towing eyes according to DIN 74054

Type 86



# Automatic Trailer Couplings Type 86

Automatic bolt coupling 40 in accordance with DIN 74051 for 40 mm drawbar eyes to DIN 74054



The coupling head made of high quality cast cannot only be locked in the central position but also in the lateral end positions, a particular advantage when tractor and trailer have to be coupled in extreme angular positions.

The plastic plate protects the drawbar eye and muffles the sound.

The bar guide is maintenance-free. As a result of the provision of plastic bushes the bar guide and drawbar are no longer subject to wear.

Even after long service life the castellated nut can be released without any problem.

Design E, A  
15 16  
Design F, B  
Hand lever at choice at the lower right

Two independent coupling bolt interlocks guarantee maximum safety on the road.

## Parts list for replacement and maintenance

Type 86 G/110/125			
Item	Order No.	Description	Qty.
1		Drawbar incl. items 2, 41, 42, 43	1
2	6 997 899	Top guide bush	1
3	2 991 187	Coupling body incl. items 4, 5	1
4	6 997 805	Safety device, cpl., incl. item 5	1
5		Tapered grease nipple AM 8 x 1, DIN 71412	1
6	6 997 880	Bottom guide bush	1
7	6 998 771	Special plastic plate incl. 2 pcs. of items 8, 10	1
8		Countersunk screw M 8 x 30, DIN 965	2
9		Washer 8,4, DIN 125	1
10		Hexagonal nut M 8, DIN 934	2
11	7 995 563	Return spring	1
12	7 995 571	Tab washer	1
13		Washer 10,5, DIN 125	2
14		Hexagonal screw M 10 x 35, DIN 933 incl. item 13	2
15	6 997 872	Hand lever incl. items 16, 19, 20, 21, 22, design E/A	1
16		Knob for hand lever	1
17		Bolt for spring arm	1
18	7 998 341	Spring arm	2
19		Locking lever	1
20		Distance bush	1
21		Washer B15, DIN 125	1
22		Lock nut VM 14, DIN 980	1
23	6 997 910	Coupling bolt, incl. item 24 and 2 pcs. of item 25	1
24	12 991 452	Locking lever pin	1
25	7 998 171	Locking spring	2
26	6 998 755	End cap incl. 2 pcs. of items 27, 28, 29	1
27		Spring pin	2
28		Volute spring	1
29		Buttonhead rivet 6 x 12, DIN 660	1
30		Nameplate incl. 2 pcs. of item 31	1
31		Blind rivet 3 x 6	2
32		Hexagonal screw M 10 x 85, DIN 931 incl. item 33	1
33		Lock nut VM 10, DIN 980	1
34		Hexagonal screw M 8 x 8, DIN 933 incl. item 9	1
36	7 998 295	Rubber spring	2
37	7 995 547	Thrust washer	1
38	990 523 9 996 885	Bar guide incl. 2 pcs. of item 39 > valid for type 86 G/125	1
39	10 995 302	Bearing bush	2
40	7 995 512	Tension washer	1
41	10 995 299	Spring washer B 30, DIN 137	1
42	6 997 759	Castellated nut M 30, DIN 935 incl. item 43	1
43	10 998 433	Cotter pin 6,3 x 50, DIN 94	1
44	10 996 678	Protecting cap	1
45	6 997 864	Hand lever incl. items 16, 19, 20, 21, 22, design F/B	1
46	7 998 260	Special plastic bush	1

Type 86 G/135			
Item	Order No.	Description	Qty.
1		Drawbar incl. items 2, 41, 42, 43	1
2	6 997 899	Top guide bush	1
3	2 991 144	Coupling body incl. items 4, 5	1
4	6 997 805	Safety device, cpl., incl. item 5	1
5		Tapered grease nipple AM 8 x 1, DIN 71412	1
6	6 997 880	Bottom guide bush	1
7	6 998 771	Special plastic plate incl. 2 pcs. of items 8, 10	1
8		Countersunk screw M 8 x 30, DIN 965	2
9		Washer 8,4, DIN 125	1
10		Hexagonal nut M 8, DIN 934	2
11	7 995 563	Return spring	1
12	7 995 571	Tab washer	1
13		Washer 10,5, DIN 125	2
14		Hexagonal screw M 10 x 35, DIN 933 incl. item 13	2
15	6 997 872	Hand lever incl. items 16, 19, 20, 21, 22, design E/A	1
16		Knob for hand lever	1
17		Bolt for spring arm	1
18	7 998 341	Spring arm	2
19		Locking lever	1
20		Distance bush	1
21		Washer B15, DIN 125	1
22		Lock nut VM 14, DIN 980	1
23	6 997 910	Coupling bolt, incl. item 24 and 2 pcs. of item 25	1
24	12 991 452	Locking lever pin	1
25	7 998 171	Locking spring	2
26	6 998 755	End cap incl. 2 pcs. of items 27, 28, 29	1
27		Spring pin	2
28		Volute spring	1
29		Buttonhead rivet 6 x 12, DIN 660	1
30		Nameplate incl. 2 pcs. of item 31	1
31		Blind rivet 3 x 6	2
32		Hexagonal screw M 10 x 85, DIN 931 incl. item 33	1
33		Lock nut VM 10, DIN 980	1
34		Hexagonal screw M 8 x 8, DIN 933 incl. item 9	1
36	7 998 309	Rubber spring	2
37	7 995 539	Thrust washer	1
38	990 531	Bar guide incl. 2 pcs. of item 39	1
39	10 995 310	Bearing bush	2
40	7 995 687	Tension washer	1
41	10 995 248	Spring washer B 36, DIN 137	1
42	6 997 740	Castellated nut M 36 X 3, DIN 935 incl. item 43	1
43	12 991 550	Cotter pin 6,3 x 63, DIN 94	1
44	10 996 660	Protecting cap	1
45	6 997 864	Hand lever incl. items 16, 19, 20, 21, 22, design F/B	1
46	7 998 260	Special plastic bush	1

Type 86 G/140/145/150			
Item	Order No.	Description	Qty.
1		Drawbar incl. items 2, 41, 42, 43	1
2	6 997 899	Top guide bush	1
3	2 991 144	Coupling body incl. items 4, 5	1
4	6 997 805	Safety device, cpl., incl. item 5	1
5		Tapered grease nipple AM 8 x 1, DIN 71412	1
6	6 997 880	Bottom guide bush	1
7	6 998 771	Special plastic plate incl. 2 pcs. of items 8, 10	1
8		Countersunk screw M 8 x 30, DIN 965	2
9		Washer 8,4, DIN 125	1
10		Hexagonal nut M 8, DIN 934	2
11	7 995 563	Return spring	1
12	7 995 571	Tab washer	1
13		Washer 10,5, DIN 125	2
14		Hexagonal screw M 10 x 35, DIN 933 incl. item 13	2
15	6 997 872	Hand lever incl. items 16, 19, 20, 21, 22, design E/A	1
16		Knob for hand lever	1
17		Bolt for spring arm	1
18	7 998 341	Spring arm	2
19		Locking lever	1
20		Distance bush	1
21		Washer B15, DIN 125	1
22		Lock nut VM 14, DIN 980	1
23	6 997 910	Coupling bolt, incl. item 24 and 2 pcs. of item 25	1
24	12 991 452	Locking lever pin	1
25	7 998 171	Locking spring	2
26	6 998 755	End cap incl. 2 pcs. of items 27, 28, 29	1
27		Spring pin	2
28		Volute spring	1
29		Buttonhead rivet 6 x 12, DIN 660	1
30		Nameplate incl. 2 pcs. of item 31	1
31		Blind rivet 3 x 6	2
32		Hexagonal screw M 10 x 85, DIN 931 incl. item 33	1
33		Lock nut VM 10, DIN 980	1
34		Hexagonal screw M 8 x 8, DIN 933 incl. item 9	1
36	7 998 317	Rubber spring	2
37	7 995 520	Thrust washer	1
38	990 540 990 558	Bar guide incl. 2 pcs. of item 39 >valid for type 86 G/150	1
39	10 996 732	Bearing bush	2
40	7 995 555	Tension washer	1
41	10 996 686	Spring washer B 45, DIN 137	1
42	6 997 732	Castellated nut M 45 X 3, DIN 935 incl. item 43	1
43	12 991 533	Cotter pin 8 x 80, DIN 94	1
44	10 991 463	Protecting cap	1
45	6 997 864	Hand lever incl. items 16, 19, 20, 21, 22, design F/B	1
46	7 998 260	Special plastic bush	1

# Automatic Trailer Couplings Type 86

## Installation:

Remove protecting cap (44), castellated nut (42), spring washer (41), rear rubber spring (36) and bar guide (38) from the drawbar. Introduce bar guide (38) against driving direction in the cross member until the flange fits close to the cross member. Fasten bar guide (38) to the cross member from the rear using 4 hexagonal screws quality 8.8, DIN 931 and 4 hexagonal nuts quality 8 in turns.

Max. tightening torque per screw:

86 G/110,	M 10 x	49 Nm
86 G/135,	M 14 x	135 Nm
86 G/145,	M 16 x	210 Nm
86 G/150,	M 20 x	410 Nm

Push the drawbar (1) with coupling head, front rubber spring (36) and thrust washer (37) into the bar guide (38). Fit rear rubber spring (36), tension washer (40) and spring washer (41). Tighten castellated nut (42) with the specified tightening torque (see installation and operating instructions) until it is fully tightened and secure using a cotter pin (43). (To reach the next hole position for the cotter pin even higher tightening torques may be required.) Fit protective cap (44). Straighten the coupling. Removal is effected similarly. During repair attend to always using new, corrosion-resisting cotter pins to fix the castellated nut with (DIN94 - A3C).

## Operation:

Pull out the button-type safety device (4) with a quarter turn to the left and allow it to engage in the locking device. You now have both hands free again in order to open the coupling. For that purpose the coupling jaw must be in the central position or it must be moved by hand to one of the lateral end positions. Only now can the coupling be opened and locked into place. When inserting the drawbar eye, the mechanism is released by lifting the coupling bolt (23). In the lower position a second independent safety device (4) automatically locks the coupling bolt. For your own safety check that the safety device (4) is fully engaged after each coupling process.

## Maintenance:

The safety device (4) is provided with a tapered grease nipple (5) which permits lubrication of the entire coupling head. Please lubricate regularly. The coupling bolt and drawbar eye will be subject to less wear and tear if they are always kept clean and well lubricated. The drawbar guide is maintenance-free.

## Repair:

Besides the spare parts overleaf we offer for the repair of our couplings a kit comprising of all important wear parts and repair instructions.

The repair kit is composed of:

- coupling bolt including locking lever pin and 2 locking springs
- 1 bottom and 1 top guide bush
- plastic plate and mounting material order no. 2991179

Reconditioned original RINGFEDER couplings may be supplied on request.

## Important Instructions:

When fitting (or replacing) the trailer coupling please attend to the relevant statutory regulations and particular information from the vehicle manufacturers.

## EEC Type Approval:

The mounting of the trailer coupling has to be checked in accordance with the regulations contained in appendix I, no. 5.10 and in compliance with the requirements laid down in appendix VII of the EC-regulation 94/20.

## Technical Data:

### D-value for towing vehicle and semi-trailer:

$$D \text{ (kN)} = g \cdot \frac{T \cdot R}{T + R}$$

The calculated D-value may be **less or equal to** the D-value of the coupling.

T: max. mass in tonnes of the towing vehicle

R: max. mass in tonnes of the semi-trailer

g: acceleration due to gravity 9,81 m/s<sup>2</sup>

### Dc-value for the towing vehicle and centre axle trailer

(only applicable in connection with the V-value):

$$Dc \text{ (kN)} = g \cdot \frac{T \cdot C}{T + C}$$

The calculated Dc-value may be **less or equal to** the Dc-value of the coupling.

T: max. mass in tonnes of the towing vehicle

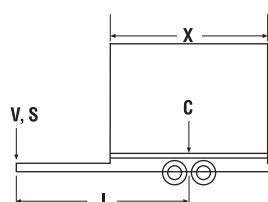
C: sum of the axle loads of the centre axle trailer carrying maximum permissible load, in tonnes.

g: acceleration due to gravity 9,81 m/s<sup>2</sup>

### V-value for the centre axle trailer

(only applicable in connection with the Dc-value)

$$V \text{ (kN)} = a \cdot \frac{X^2}{l^2} \cdot C$$



The calculated V-value may be **less or equal to** the V-value of the coupling.

a: equivalent vertical acceleration in the coupling point, in m/s<sup>2</sup>

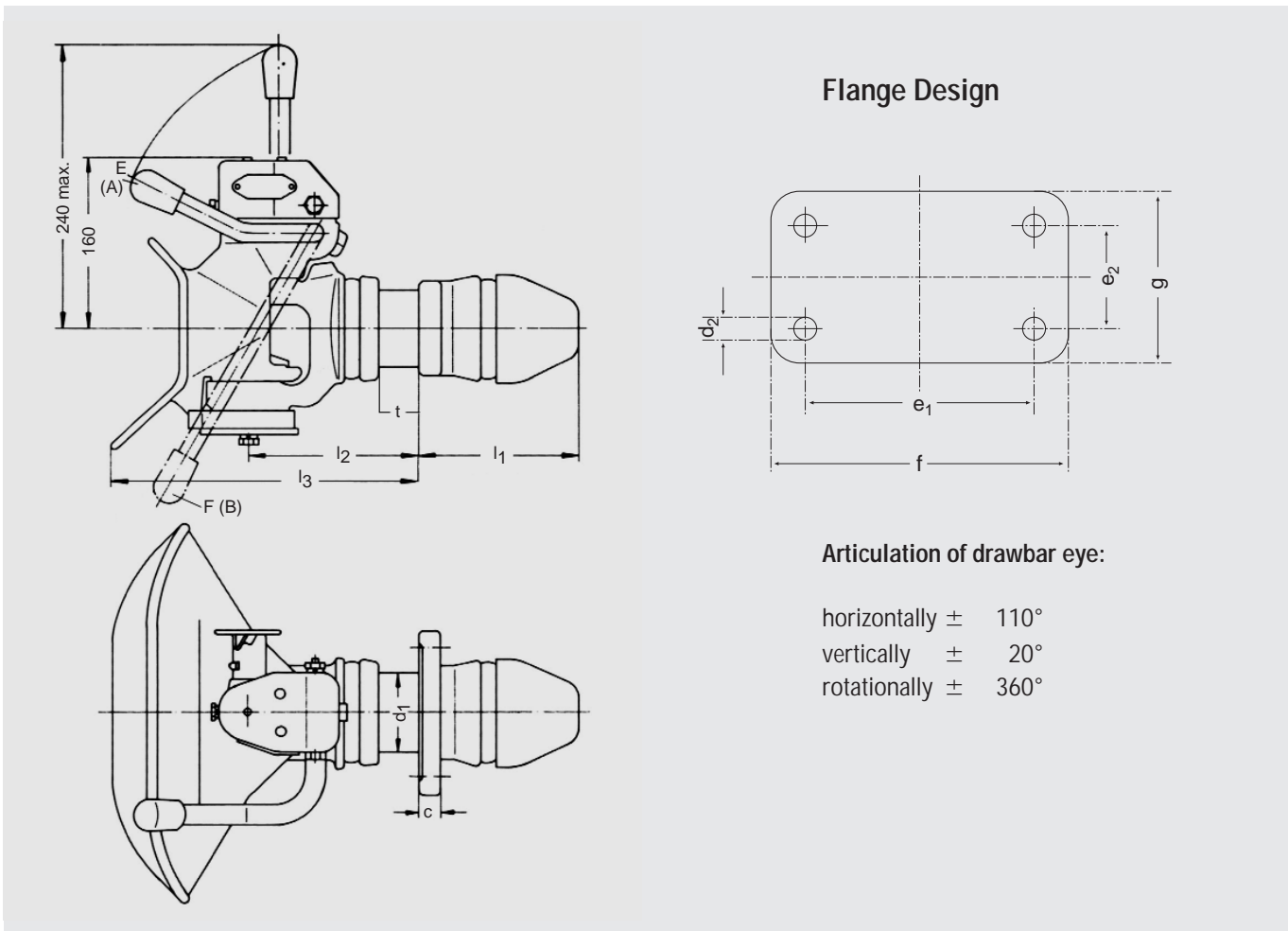
a = 1,8 for vehicles with air suspension

a = 2,4 for vehicles with other suspension

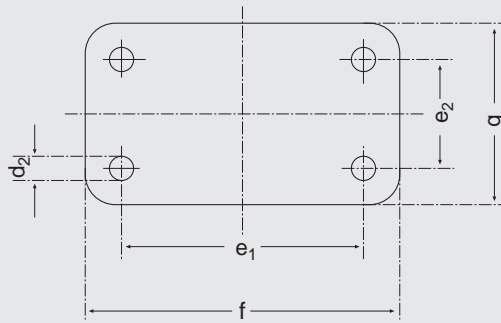
l: theoretical drawbar length in metres  
X: length of the loading area of the trailer in m

$X^2/l^2$  **at least 1.0** (for the calculation).

C: sum of the axle loads of the centre axle trailer carrying maximum permissible load, in tonnes.



## Flange Design



### Articulation of drawbar eye:

horizontally  $\pm 110^\circ$   
 vertically  $\pm 20^\circ$   
 rotationally  $\pm 360^\circ$

## Technical Data:

De- sign	Order No.	Type	Class to 94/20 EC	Gen. Type Approval/ EEC Type Approval	D- Value kN	Dc- Value kN	V- Value kN	Adm. Static Support- ing Load	Admiss. Trailer Load for Rigid Drawbar Trailers kg	c <sub>1</sub>	d <sub>1</sub>	d <sub>2</sub>	e <sub>1</sub> x e <sub>2</sub>	f	g	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	t	Weight kg
A	9 991 433	86 G/110	S	e1 00-0427	66	35	15,5	500	acc. to V-value	16	ø54	ø11	83 x 56	110	85	153	126	221	15	20
E		86 G/135	40-A-135	F 642	70	-	-	700	6 500**	21	ø74	ø15	120 x 55	155	90	150	168	295	35	26
	1 999 923	86 G/135	S	e1 00-0499	70	70	20	700	acc. to V-value	21	ø74	ø15	120 x 55	155	90	150	168	295	35	26
F		86 G/135	40-B-135	F 642	70	-	-	700	6 500**	21	ø74	ø15	120 x 55	155	90	150	168	295	35	26
	2 990 121	86 G/135	S	e1 00-0499	70	70	20	700	acc. to V-value	21	ø74	ø15	120 x 55	155	90	150	168	295	35	26
A		86 G/145	40-A-145	F 643	100	-	-	950	9 000**	23	ø84	ø17	140 x 80	180	120	162	168	295	35	32
	8 994 145	86 G/145	S	e1 00-0269	100	70	25	950	acc. to V-value	23	ø84	ø17	140 x 80	180	120	162	168	295	35	32
B		86 G/145	40-B-145	F 643	100	-	-	950	9 000**	23	ø84	ø17	140 x 80	180	120	162	168	295	35	32
	8 994 471	86 G/145	S	e1 00-0269	100	70	25	950	acc. to V-value	23	ø84	ø17	140 x 80	180	120	162	168	295	35	32
A		86 G/150	40-A-150	F 644	120	-	-	1000	9 500**	23	ø94	ø21	160x100	200	140	155	175	305	35	33
	1 999 842	86 G/150	S	e1 00-0144	130	72	25	1000	acc. to V-value	23	ø94	ø21	160x100	200	140	155	175	305	35	33
B		86 G/150	40-B-150	F 644	120	-	-	1000	9 500**	23	ø94	ø21	160x100	200	140	155	175	305	35	33
	2 990 148	86 G/150	S	e1 00-0144	130	72	25	1000	acc. to V-value	23	ø94	ø21	160x100	200	140	155	175	305	35	33

\*\* will be replaced by V-value



A certified company in accordance with DIN EN ISO 9001 and VDA 6.1

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