



Illustrated Parts Catalogue

Illustrated Parts Catalogue Woodward Diesel Systems

**MAN Diesel (Mirrlees Blackstone)
Pumps & Injectors**

Manual 55177

General

This Illustrated Parts Catalog (IPC) is designed to assist customers in identifying spare parts for the most common applications of Woodward equipment.

We recognize that there may be instances where engines of identical type have, at times, been fitted with fuel injection equipment which differs from that listed. It is important, therefore, to quote the type-code of the equipment in use when ordering replacement parts.

A number in parenthesis indicates quantity per unit of more than one.

An item number with suffix "ND" indicates item Not Drawn, and suffix "AR" indicates As Required.

Part numbers of other manufacturers are included for cross reference purposes only.

It is Woodward policy to update the information contained in this catalog periodically and to re-issue to Distributors and Operators as appropriate.

This IPC contains the spare part and sub assembly level of breakdown consistent with the overhaul and maintenance policy recommended by Woodward Diesel Systems.

If you have a need for additional or change information to be included in this IPC or for other applications to be added please contact Woodward Customer Services Department. Your requirements will be considered at the next revision point.

Woodward Diesel Systems strive to achieve the maximum accuracy of the information provided within this document, no liability can be accepted by Woodward for damage, loss or injury caused by any errors in the information within this IPC.

To guarantee the safety, performance, and reliability of the equipment, only genuine Woodward spares must be used during rework.

References

These publications are available at www.woodward.com/publications:

55142—Diesel Engine Fuel Pump Supersession List

55143—Diesel Engine Fuel Pump Application List

55151—Fuel Injection Equipment Introductory Manual

55152—Practical Aspects of Fuel Injection Equipment

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MAN Diesel (Mirrlees Blackstone)

Pump	Injector	Engine Ref.
FCCAB160B0592	—	K MAJOR Mk.I
FCCAB160B0592	—	K MAJOR Mk.II
FCCAB180B0694	99/490	ESL Mk.II
FCCAB200B0813	99/543	ESL Mk.II
FCCAB200B0864	99/543	ESL Mk.II
FCCAR180M0822	99/539	MB190
FCOAB160B0094	—	J, JL
FCOAB160B0094	—	JS, JLS
FCOAB160B0231	—	J, JL
FCOAB160B0231	—	JS, JLS
FCOAB160B0231	—	JVST12
FCOAB160B0231	—	JVST12
FCOAB180B0094	—	JSS, JLSS
FCOAB180B0231	—	JSS, JLSS
FCOAB160C6179	99/397	EB
FCOAB160C6179	99/332	EBS, ERS, ESS, EVS
FCOAB160C6179	—	EH, ER, EV, EVDF, ERDF
FCOAB160C6179	—	ES, ESDF
FCOAB160C6179	99/332	ERDFS, ESDFS, EVDFS
FCOAB180B0125	—	TP, TP(T)
FCOAB180B0555	99/399	ERDFS, ESDFS, EVDFS
FCOAB180B0555	99/396	ECSL, ESSL, ETS, ETSL, EWSL, EXSL, EYSL, EZSL
FCVAB200B0801	99/531	EVSL Mk.II
FCVAB200B0801	99/537	EVSL Mk.II
FCVAB200B0899	99/531	EVSL Mk.II
FCVAB200C0890	99/531	EVSL Mk.II
FCVAB200C0890	99/537	EVSL Mk.II
FCVAB200C0918	99/544	EVSL Mk.II
FCVAB200C0918	99/545	EVSL Mk.II
FDDAB280A0522	99/488	K MAJOR Mk.II
FDDAB280A0522	99/487	K MAJOR Mk.II
FDDAB280A0522	99/525	K MAJOR Mk.II
FDDAB280A0522	99/526	K MAJOR Mk.II
FDDAB280A0522	99/528	K MAJOR Mk.II
FDDAB280A0644	99/489	K MAJOR Mk.II
FDDAB280A0721	99/524	K MAJOR Mk.II
FDDAB280A0807	99/460	K MAJOR Mk.II

FDDAB280A0807	99/526	K MAJOR Mk.II
FDDAB300A0845	99/460	K MAJOR Mk.III
FDDAB300A0845	99/488	K MAJOR Mk.III
FDDAB300A0845	99/559	K MAJOR Mk.III
FDDAB300A0845	99/661	K MAJOR Mk.III
FEEAB340A0855	99/530	MB430
FEEAB340A0855	99/541	MB430
FEEAB340A0905	99/530	MB430
FEEAB340A0905	99/541	MB430
FWVAR200B0699	99/456	MB275
FWVAR200B0699	99/457	MB275
FWVAR240A0844	99/504	MB275
FWVAR240A0844	99/511	MB275
FWVAR240B0866	99/504	MB275
FWVAR240B0866	99/511	MB275
FWVAR240C0872	99/504	MB275
FWVAR240C0872	99/511	MB275
FXOAB180B0182	—	F
FXOAB180B0182	—	FP
FXOAB180B0182	—	FS
FXOAB200B0096	—	HF
FXOAB200B0096	—	K Series I
FXOAB200B0182	—	FSCP
FXOAB200B0182	—	FSCP
FXOAB200B0182	—	FSS
FXOAB240B0357	—	K Series I
FXXAB260A0408	—	K Series II
FXXAB260A0476	—	K Series II
FXXAB260B0422	—	K Series II
FXXAB280A0465	99/322	K MAJOR Mk.I
FXXAB280A0465	99/323	K MAJOR Mk.I
FXXAB300B0430	—	K MAJOR Mk.I
FXXAB300B0430	99/322	K MAJOR Mk.I
FXXAB300B0430	99/323	K MAJOR Mk.I
FXXAB300B0534	99/487	K MAJOR Mk.I
FXXAB300B0534	99/488	K MAJOR Mk.I
FXXAB300B0549	99/487	K MAJOR Mk.I
FXXAB300B0549	99/488	K MAJOR Mk.I

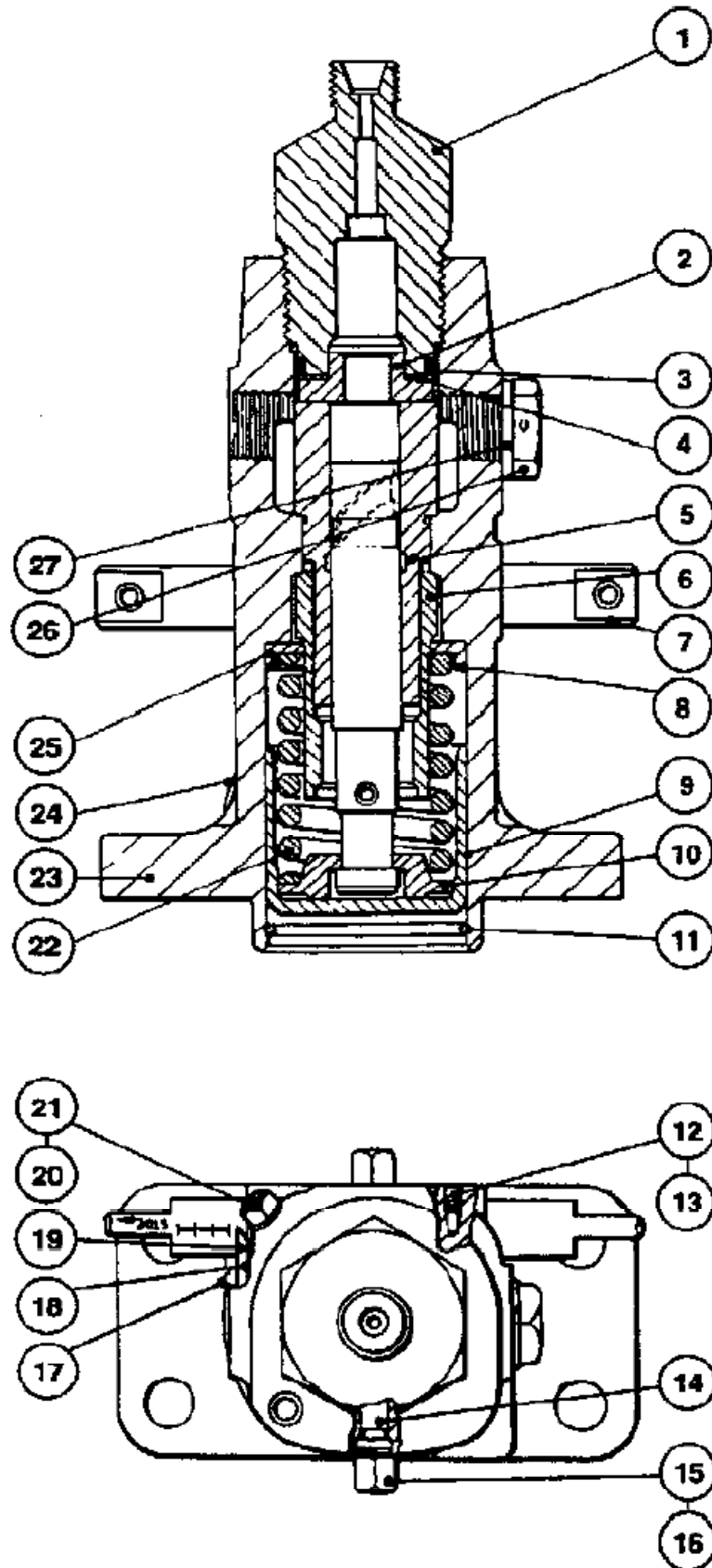
FCCAB160B0592 Fuel Injection Pump for Mirrlees Blackstone Engines:

K Major Mk I (gas valve actuator)

K Major Mk II (gas valve actuator)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCCAB160B0592	K44994 K44994Y
1	Union body	6/361	
2	Delivery valve seat	21/126B	
3	Seal-O-ring	372/20	31-210-471
4	Seal-high pressure	6/120	31-210-460
5	Element assembly	6/423A	
6	Control sleeve	6/349	31-210-561
7	Control rod assembly	6/136	
8	Circlip-upper	25/25	31-210-050
9	Tappet	6/106	31-210-360
10	Spring plate-lower	6/107	31-210-330
11	Circlip-lower	6/105	31-210-060
12	Screw-control rod locating (2)	25/17	31-210-040
13	Lead seal (2)	2/2	
14	Dowel-barrel locating	6/125	31-210-070
15	Spill plug (2)	6/464	
16	Washer-spill plug (2)	113/27	31-210-090
17	Screw-pointer	223/203	
18	Shims-pointer (1AR)	106/1A-E	
19	Pointer-control rod	3/2	
20	Washer-vent screw	113/75	31-210-160 98-25116
21	Screw-vent	3/262	31-210-150
22	Spring-plunger	6/109	31-210-310
23	Pump housing	6/166	
24	Plug-timing window	6/162	
25	Spring plate-upper	7022/232	31-210-320
26	Blanking plug-inlet	6/102	
27	Washer-inlet connector	NW5-50W4	

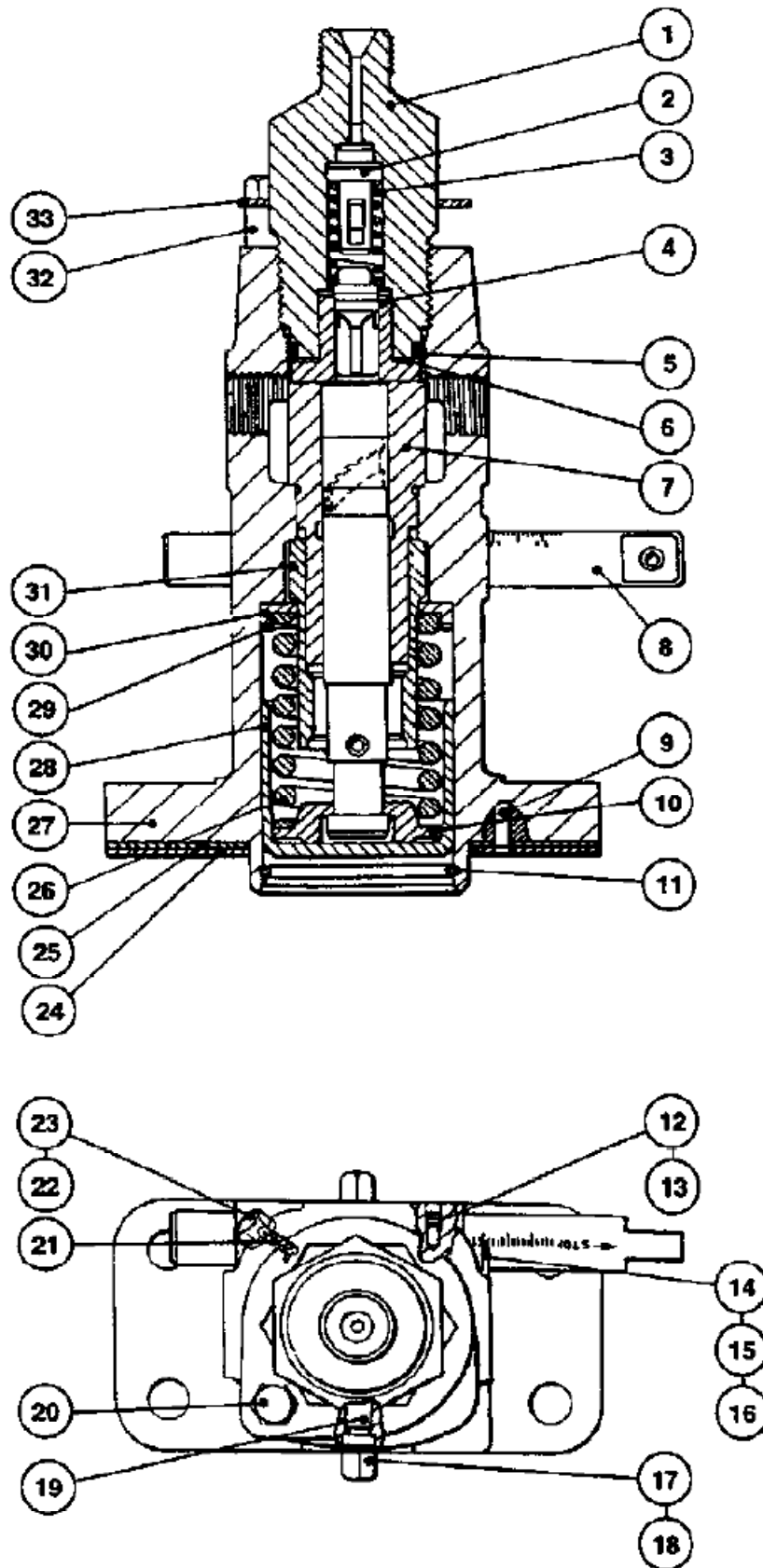


FCCAB160B0592 Fuel Injection Pump

FCCAB180B0694 Fuel Injection Pump for Mirrlees Blackstone ESL Mk II Engine (4 valve head)

(April 1995, Issue #2)

Item No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCCAB180B0694	31-210-001
1	Union body	6/456	31-210-450
2	Spring peg	21/321B	31-210-440
			SPH4816-2
3	Spring-delivery valve	6/121	31-210-430
4	Delivery valve & seat assembly	6/450	31-210-400
5	Seal-O-ring	372/20	31-210-471
6	Seal-high pressure	6/120	31-210-460
7	Element assembly R.H.	6/441C	31-210-500
8	Control rod assembly	6/454	31-210-200
9	Tucker rivets (4)	369/1	31-210-140
10	Spring plate-lower	6/107	31-210-330
11	Circlip-lower	6/105	31-210-060
12	Screw-control rod locating (2)	25/17	31-210-040
13	Lead seal (2)	2/2	31-210-710
14	Pointer-control rod	3/2A	98-25120
15	Screw-pointer	297/203	98-25121
16	Shims-pointer (AR)	106/1A-E	
17	Spill plug (2)	6/464	
18	Washer-spill plug (2)	113/27	31-210-090
19	Dowel-barrel locating	6/125	31-210-070
20	Bolt-locking plate	25/21	31-210-730
21	Locking wire (AR)	18SWG	
22	Washer-vent screw	113/75	31-210-160
			98-25116
23	Screw-vent	3/262	31-210-150
24	Shim plate-pump housing	6/179	31-210-120
25	Shims-pump housing (1AR)	6/180	31-210-130
26	Spring-plunger	6/109	31-210-310
27	Pump housing	6/453	
28	Tappet	6/106	31-210-360
29	Circlip-upper	25/25	31-210-050
30	Spring plate-upper	7022/232	31-210-320
31	Control sleeve	6/349	31-210-561
32	Collar-locking plate	25/22	
33	Locking plate	6/126	31-210-720

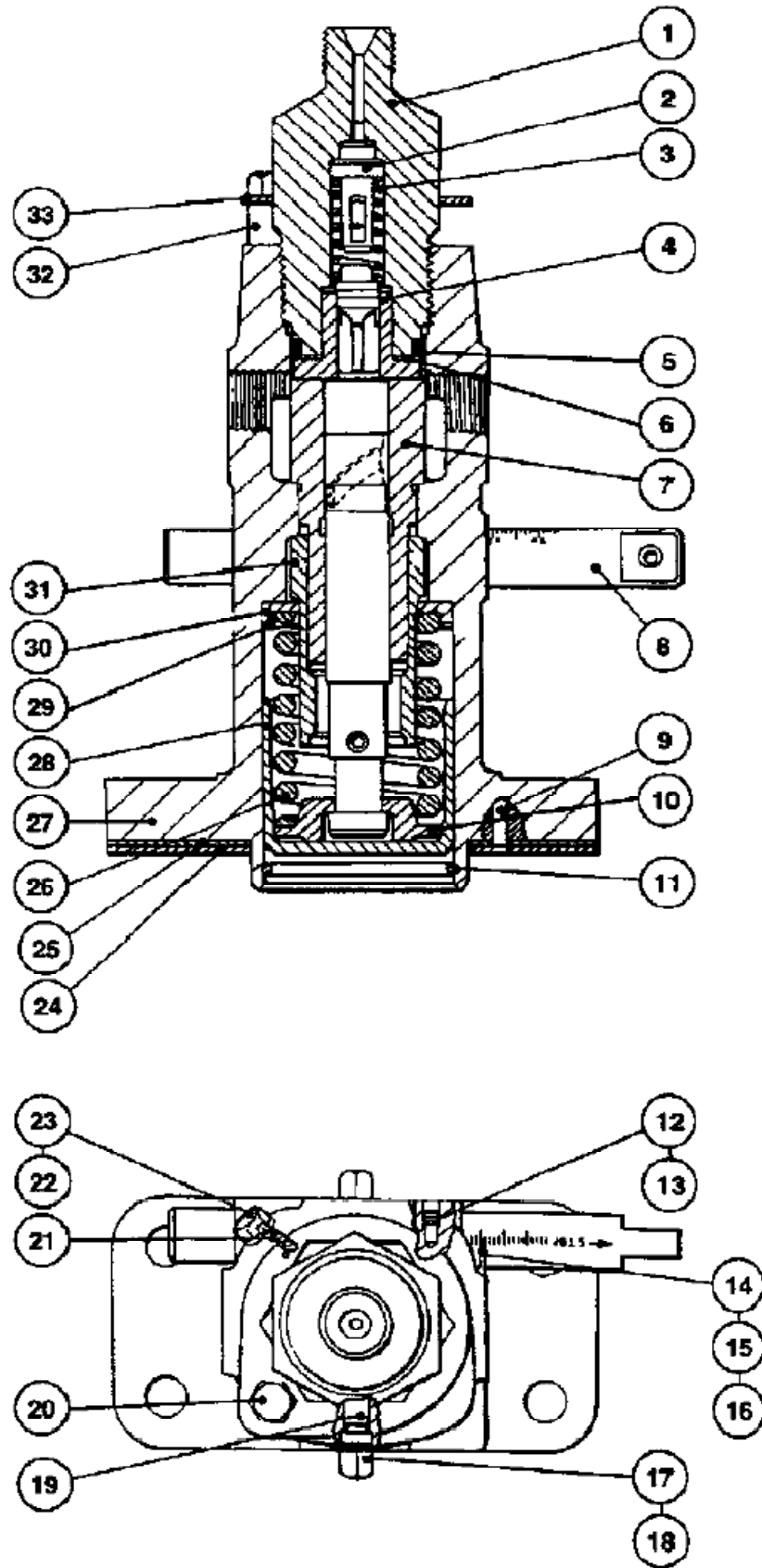


FCCAB180B0694 Fuel Injection Pump

FCCAB200B0813 Fuel Injection Pump for Mirrlees Blackstone ESL Mk II Engine (heavy fuel)

(July 2000, Issue #3)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCCAB200B0813	
1	Union body	6/456	31-210-450
2	Spring peg	21/321B	31-210-440
			SPH4816-2
3	Spring-delivery valve	6/121	31-210-430
4	Delivery valve & seat assembly	6/515	31-213-401
5	Seal-O-ring	372/20	31-210-471
6	Seal-high pressure	6/120	31-210-460
7	Element assembly	6/531E	
8	Control rod assembly	6/528	31-210-200
9	Tucker rivets (2)	369/1	31-210-140
10	Spring plate-lower	6/107	31-210-330
11	Circlip-lower	6/105	31-210-060
12	Screw-control rod locating (2)	25/17	31-210-040
13	Lead seal (2)	2/2	31-210-710
14	Pointer-control rod	3/2A	98-25120
15	Screw-pointer	297/203	98-25121
16	Shims-pointer (AR)	106/1A-E	
17	Spill plug (2)	112/4	
18	Washer-spill plug (2)	113/27	31-210-090
19	Dowel-barrel locating	6/125	31-210-070
20	Bolt-locking plate	25/21	31-210-730
21	Locking wire (AR)	18SWG	
22	Washer-vent screw	113/75	31-210-160
			98-25116
23	Screw-vent	3/262	31-210-150
24	Shim plate-pump housing	6/179	31-210-120
25	Shims-pump housing (3AR)	6/180	31-210-130
26	Spring-plunger	36/31	31-210-310
27	Pump housing	6/453	
28	Tappet	6/106	31-210-360
29	Circlip-upper	25/25	31-210-050
30	Spring plate-upper	7022/232	31-210-320
31	Control sleeve	6/349	31-210-561
32	Collar-locking plate	25/22	
33	Locking plate	6/126	31-210-720

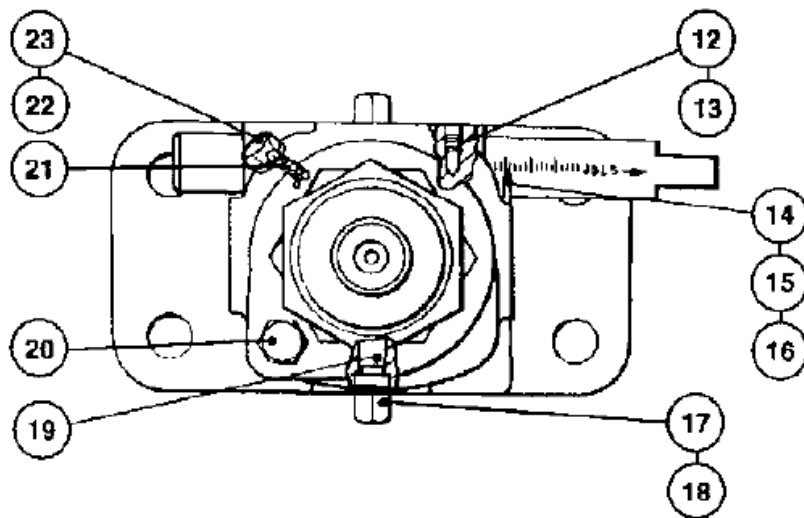
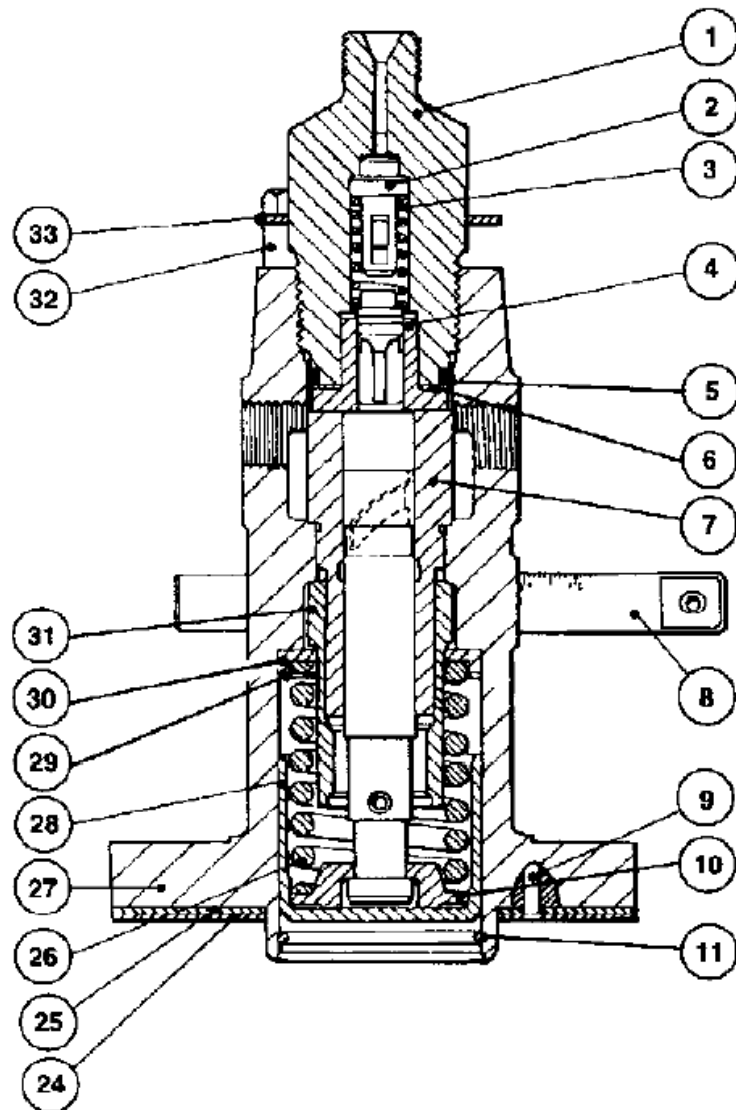


FCCAB200B0813 Fuel Injection Pump

FCCAB200B0864 Fuel Injection Pump for Mirrlees Blackstone ESL Mk II Engine (heavy fuel)

(July 2000, Issue #4)

Item No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCCAB200B0864	31-213-050
1	Union body	6/456	31-210-450
2	Spring peg	21/321B	31-210-440
			SPH4816-2
3	Spring-delivery valve	6/121	31-210-430
4	Delivery valve & seat assembly	6/515	31-213-401
5	Seal-O-ring	372/20	31-210-471
6	Seal-high pressure	6/120	31-210-460
7	Element assembly	6/513E	31-213-501
8	Control rod assembly	6/528	31-210-200
9	Tucker rivets (2)	369/1	31-210-140
10	Spring plate-lower	6/107	31-210-330
11	Circlip-lower	6/105	31-210-060
12	Screw-control rod locating (2)	25/17	31-210-040
13	Lead seal (2)	2/2	31-210-710
14	Pointer-control rod	3/2A	98-25120
15	Screw-pointer	297/203	98-25121
16	Shims-pointer (AR)	106/1A-E	
17	Spill plug (2)	122/4	
18	Washer-spill plug (2)	113/27	31-210-090
19	Dowel-barrel locating	6/125	31-210-070
20	Bolt-locking plate	25/21	31-210-730
21	Locking wire (AR)	18SWG	
22	Washer-vent screw	113/75	31-210-160
			98-25116
23	Screw-vent	3/262	31-210-150
24	Shim plate-pump housing	6/179	31-210-120
25	Shims-pump housing (3AR)	6/180	31-210-130
26	Spring-plunger	36/31	31-210-310
27	Pump housing	6/453	
28	Tappet	6/106	31-210-360
29	Circlip-upper	25/25	31-210-050
30	Spring plate-upper	7022/232	31-210-320
31	Control sleeve	6/349	31-210-561
32	Collar-locking plate	25/22	
33	Locking plate	6/126	31-210-720

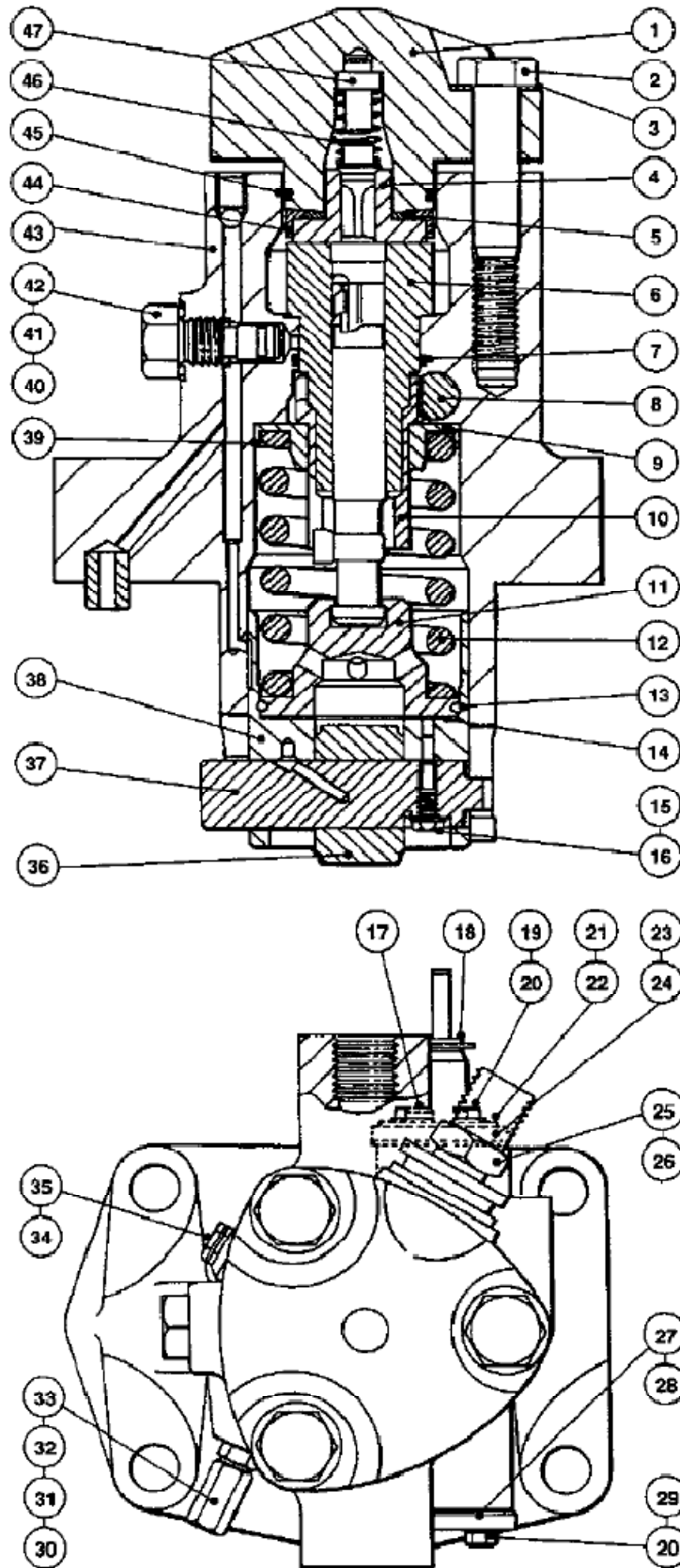


FCCAB200B0864 Fuel Injection Pump

FCCAR180M0822 Fuel Injection Pump for Mirrlees Blackstone MB190 Engine

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCCAR180M0822	
1	Delivery valve holder	6/506	
2	Bolt-housing (3)	6/400	
3	Washer-bolt (3)	395/160	
4	Delivery valve & seat assembly	6/470J	
5	Seal-high pressure	6/2538	
6	Element assembly R.H.	6/525C	
7	Seal-O-ring	235/34	
8	Control rod	6/434	
9	Spring plate-upper	6/256	
10	Control sleeve	6/527	
11	Spring plate-lower	6/407	
12	Spring plunger	6/270	
13	Circlip	124/57	
14	Shims-tappet (1AR)	6/411 A/L	
15	Screw-roller locking	6/414	
16	Washer-locating screw	259/504	
17	Screw-control rod plate (2)	N516/10	
18	Circlip	393/13	
19	Bolt (2)	383/0520	
20	Washer (5)	NW2/32	
21	Plate control rod (2)	6/350	
22	Shims-control rod plate (AR)	6/351 A/F	
23	Retaining ring	6/261	
24	Gasket	6/262	
25	Snubber valve assembly	6/505	
26	Seal-H.P.	6/503	
27	Gasket	6/402	
28	Stop plate	6/401	
29	Bolt (3)	383/0516	
30	Screw-overload stop	6/398	
31	Washer (2)	NW5/18W4	
32	Nut	398/8	
33	Cap nut	6/397	
34	Spill plug	6/272	
35	Washer-spill plug	113/96	
36	Roller	6/500	
37	Pin-roller	6/499	
38	Tappet	6/410	
39	Circlip-upper	6/255	
40	Valve group-non return	30/103B	
41	Seal-O-ring	359/110	
42	Washer	NW5/50W4	
43	Pump housing sub assembly	6/433	
44	Seal-support ring	6/254	
45	Seal-O-ring	235/35	
46	Spring-delivery valve	21/127	
47	Spring peg	6/463C	
48ND	Locking wire	18SWG	
49ND	Screw barrel locating	6/269	
50ND	Seal-O-ring	262/106	



FCCAR180M0822 Fuel Injection Pump

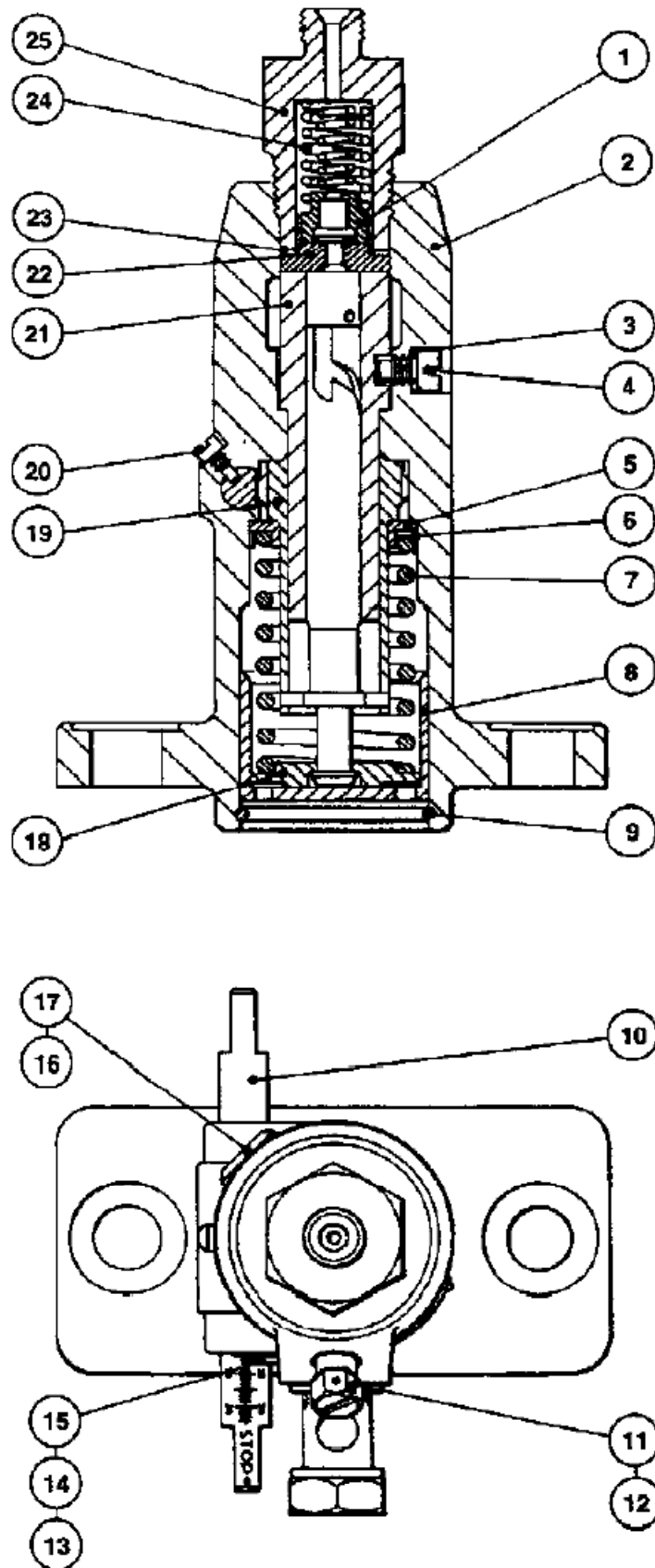
FCOAB160B0094 Fuel Injection Pump for Mirrlees Blackstone Engines:

J, JL (below 675 rpm; above 675 rpm; 800 to 1000 rpm)

JS, JLS (below 750 rpm; 800 to 1000 rpm)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB160B0094	J16970
1	Delivery valve & seat assembly	25/52	98-25103
2	Pump housing	3/143	
3	Washer-locating screw	113/75	98-25116 31-210-160
4	Screw-barrel locating	3/191	98-25123
5	Spring plate-upper	3/4680	98-25109
6	Circlip-upper	3/4683	98-25110
7	Spring-plunger	3/178	98-25111
8	Tappet	3/4682	98-25113
9	Circlip-lower	3/3361	98-25114 99-2998
10	Control rod	3/69	
11	Screw-vent	3/170	98-25153 98-25163
12	Washer-vent screw	113/75	31-210-160 98-25116
13	Shims-pointer (1AR)	106/1A-E	
14	Screw-pointer	297/203	98-25121
15	Pointer-control rod	3/2	
16	Washer-spill plug	113/62	98-25118
17	Spill plug	122/3	
18	Spring plate-lower	3/71	98-25112
19	Control sleeve	3/1B	
20	Screw-control rod locating	123/9	98-25107
21	Element assembly L.H.	3/298G	
22	Seal-high pressure	3/326	98-25105
23	Seal-O-ring	235/14	98-25104
24	Spring-delivery valve	25/15	98-25102
25	Delivery valve holder	3/331	98-25131



FCOAB160B0094 Fuel Injection Pump

FCOAB160B0231 Fuel Injection Pump for Mirrlees Blackstone Engines:

J, JL (variable speed, below 675 rpm)

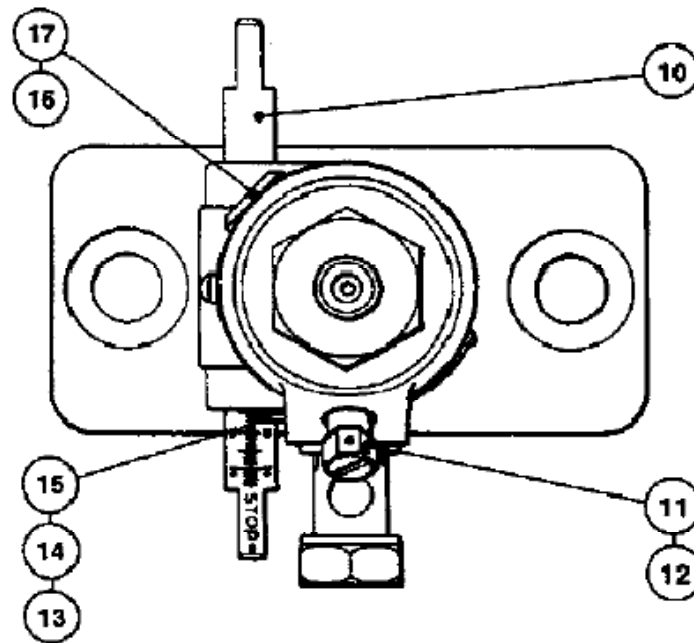
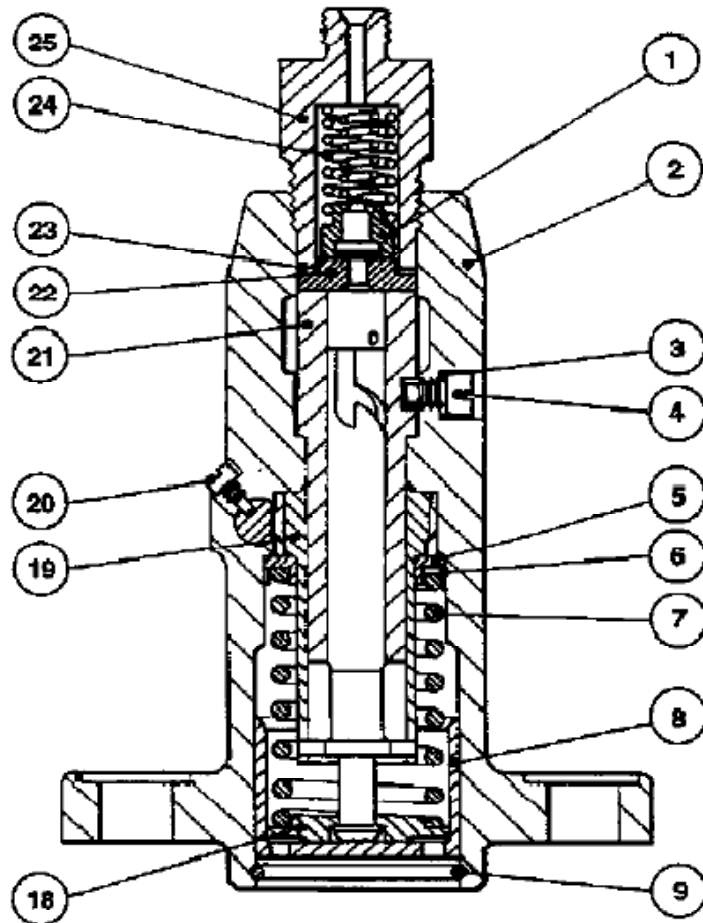
JS, JLS (variable speed, below 675 rpm)

JVST12 (1250 to 1365 bhp)

JVST12 (1600 bhp)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB160B0231	J16969
1	Delivery valve & seat assembly	25/52	98-25107
2	Pump housing	3/143	
3	Washer-locating screw	113/75	98-25116 31-210-160
4	Screw-barrel locating	3/191	98-251123
5	Spring plate-upper	3/4680	98-25109
6	Circlip-upper	3/4683	98-25110
7	Spring-plunger	3/178	98-25111
8	Tappet	3/4682	98-25113
9	Circlip-lower	3/3361	98-25114 99-2998
10	Control rod	3/246	
11	Screw-vent	3/170	98-25153 98-25163
12	Washer-vent screw	113/75	31-210-160 98-25116
13	Shims-pointer (1AR)	106/1A-E	
14	Screw-pointer	297/203	98-25121
15	Pointer-control rod	3/2	
16	Washer-spill plug	113/62	98-25118
17	Spill plug	3/228	98-25117
18	Spring plate-lower	3/71	98-25112
19	Control sleeve	3/1C	
20	Screw-control rod locating	123/9	98-25107
21	Element assembly L.H.	3/245G	
22	Seal-high pressure	3/326	98-25105
23	Seal-O-ring	235/14	98-25104
24	Spring-delivery valve	25/15	98-25102
25	Delivery valve holder	3/331	98-25131



FCOAB160B0231 Fuel Injection Pump

FCOAB160C6179 Fuel Injection Pump for Mirrlees Blackstone Engines:

EB, EBS

EH

ER, ERDF, ERDFS, ERS

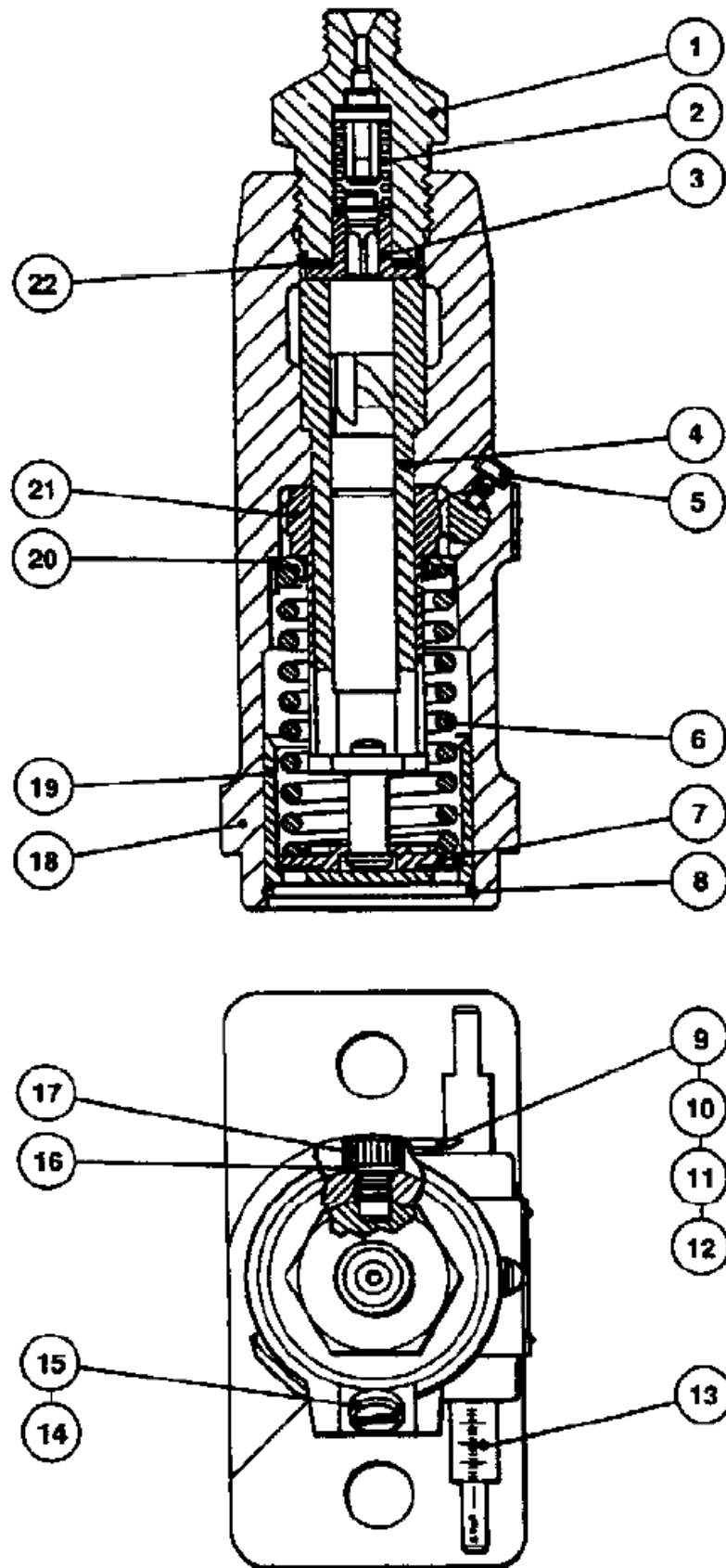
ES, ESDF, ESDFS, ESS

EV, EVDF, EVDFS, EVS

(April 1995, Issue #2)

Item

No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB160C6179	99-10018
1	Delivery valve holder	3/491	02-68747
2	Spring-delivery valve	7022/9	99-03255
			99-3255
3	Delivery valve & seat assembly	3/405	99-02985
			99-2985
4	Element assembly R.H.	7022/132	99-6023
5	Screw-control rod locating	7022/22	99-3246
6	Spring-plunger	7022/8	99-2994
7	Spring plate-lower	7022/12	99-2996
8	Circlip (2)	3/3361	98-25114
			98-2998
9	Pointer-control rod	7003/75	
10	Screw-pointer	409/0516	
11	Shims-pointer (1AR)	106/1A-E	
12	Washer-locking	205/3	
13	Control rod	7022/93E	99-7244
			N99-07244
14	Washer-vent screw	5936/53	
15	Screw-vent	7022/157A	
16	Washer-locating screw	5936/32	
17	Screw-barrel locating	7022/159	99-10020
18	Pump housing	7022A/3Y	99-7243
19	Tappet	7022A/84	99-029933
			99-2993
20	Spring plate-upper	7022/11	99-029973
			99-2997
21	Control sleeve	7022/20	99-2995
22	Seal-high pressure	7035/96	98-2987



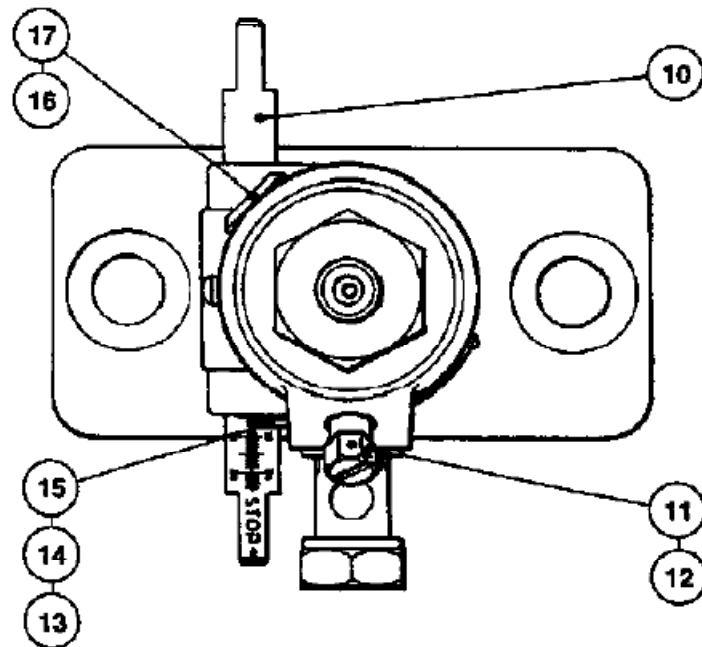
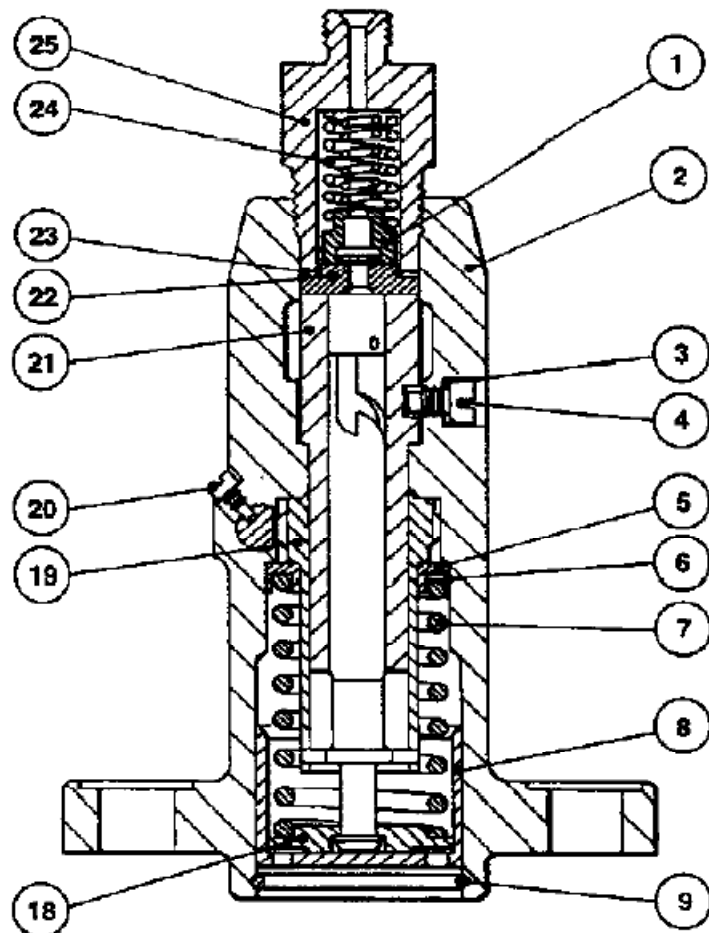
FCOAB160C6179 Fuel Injection Pump

FCOAB180B0094 Fuel Injection Pump for Mirrlees Blackstone Engines:

JSS, JLSS (below 750 rpm; 800 to 1000 rpm)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB180B0094	
1	Delivery valve & seat assembly	25/52	98-25103
2	Pump housing	3/143	
3	Washer-locating screw	113/75	98-25116 31-210-160
4	Screw-barrel locating	3/191	98-25123
5	Spring plate-upper	3/4680	98-25109
6	Circlip-upper	3/4683	98-25110
7	Spring-plunger	3/178	98-25111
8	Tappet	3/4682	98-25113
9	Circlip-lower	3/3361	98-25114 99-2998
10	Control rod	3/69	
11	Screw-vent	3/170	98-25153 98-25163
12	Washer-vent screw	113/75	31-210-160 98-25116
13	Shims-pointer (1AR)	106/1A-E	
14	Screw-pointer	297/203	98-25121
15	Pointer-control rod	3/2	
16	Washer-spill plug	113/62	98-25118
17	Spill plug	122/3	
18	Spring plate-lower	3/71	98-25112
19	Control sleeve	3/1B	
20	Screw-control rod locating	123/9	98-25107
21	Element assembly L.H.	3/298K	
22	Seal-high pressure	3/326	98-25105
23	Seal-O-ring	235/14	98-25104
24	Spring-delivery valve	25/15	98-25102
25	Delivery valve holder	3/331	98-25131

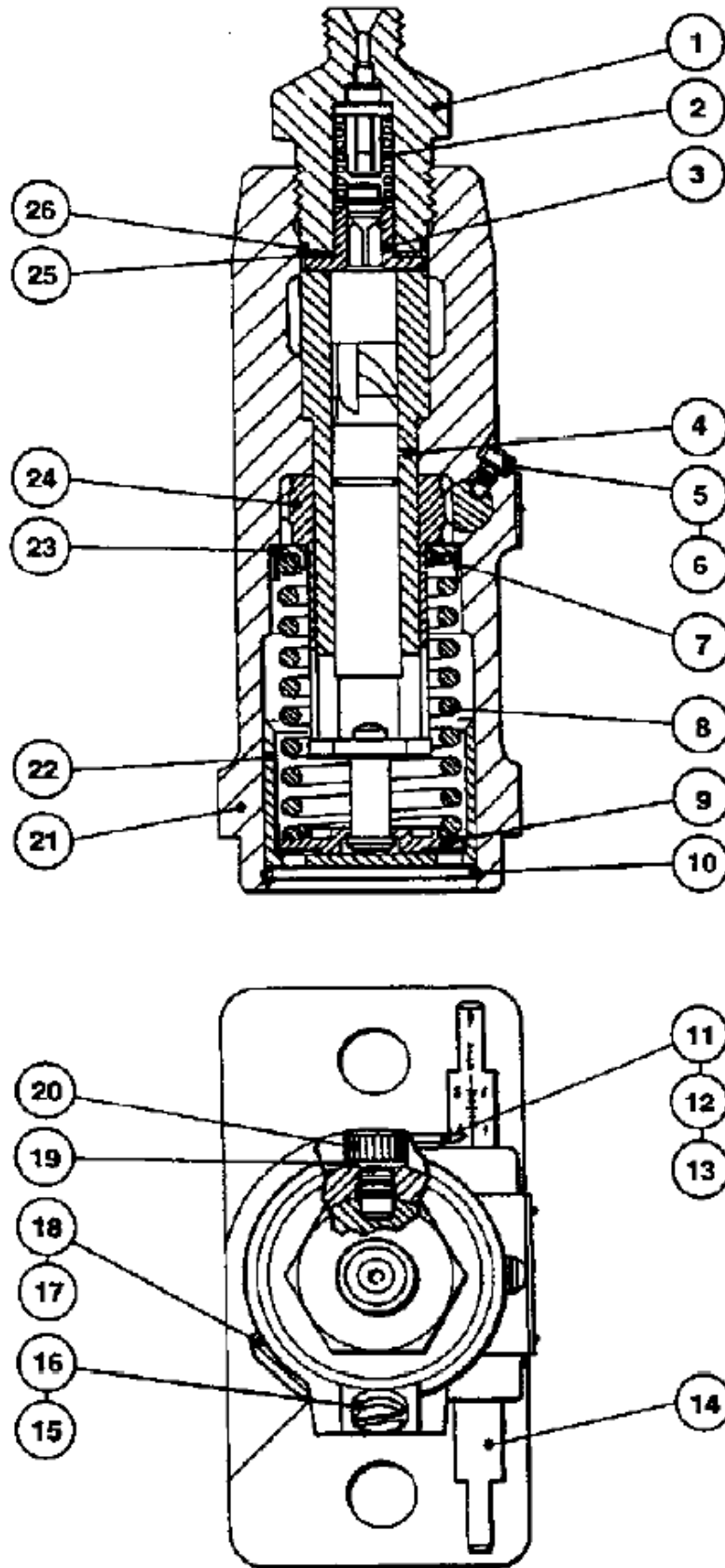


FCOAB180B0094 Fuel Injection Pump

FCOAB180B0125 Fuel Injection Pump for Mirrlees Blackstone TP, TP(T) Engines

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB180B0125	99-33306
1	Delivery valve holder	3/331	98-25131
2	Spring-delivery valve	25/15	98-25102
3	Delivery valve & seat assembly	25/52	98-25103
4	Element assembly L.H.	3/298K	
5	Screw-control rod locating	123/9	98-25107
6	Lead seal	3/4699	
7	Circlip-upper	3/4683	98-25110
8	Spring-plunger	3/178	98-25111
9	Spring plate-lower	3/71	98-25112
10	Circlip-lower	3/3361	98-25114
			98-2998
11	Pointer-control rod	3/2A	98-25120
12	Screw-pointer	297/203	98-25121
13	Shims-pointer (1AR)	106/1A-E	
14	Control rod	3/90	
15	Washer-vent screw	106/5	98-25138
16	Screw-vent	3/124	98-25115
17	Washer-spill plug	113/62	98-25118
18	Spill plug	122/3	
19	Washer-locating screw	113/75	31-210-160
			98-25116
20	Screw-barrel locating	3/191	98-25123
21	Pump housing	3/186	
22	Tappet	3/4682	98-25113
23	Spring plate-upper	3/4680	98-25109
24	Control sleeve	3/1N	98-25108
25	Seal-high pressure	3/326	98-25105
26	Seal-O-ring	235/14	98-25104

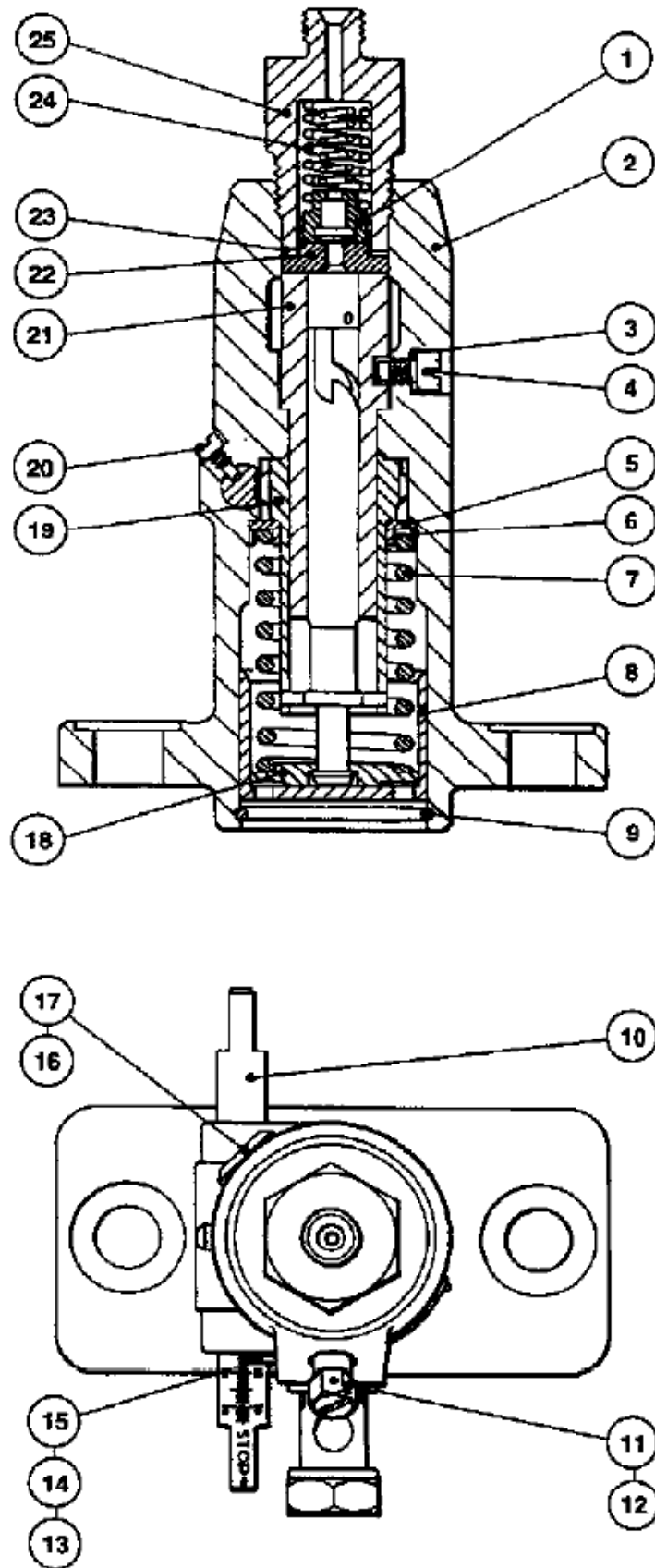


FCOAB180B0125 Fuel Injection Pump

FCOAB180B0231 Fuel Injection Pump for Mirrlees Blackstone JSS, JLSS Engines (variable speed)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB180B0231	
1	Delivery valve & seat assembly	25/52	31-210-050
2	Pump housing	3/143	
3	Washer-locating screw	113/75	98-25116 31-210-160
4	Screw-barrel locating	3/191	98-25123
5	Spring plate-upper	3/4680	98-25109
6	Circlip-upper	3/4683	98-25110
7	Spring-plunger	3/178	98-25111
8	Tappet	3/4682	98-25113
9	Circlip-lower	3/3361	98-25114 99-2998
10	Control rod	3/246	
11	Screw-vent	3/170	98-25153 98-25163
12	Washer-vent screw	113/75	31-210-160 98-25116
13	Shims-pointer (1AR)	106/1A-E	
14	Screw-pointer	297/203	98-25121
15	Pointer-control rod	3/2	
16	Washer-spill plug	113/62	98-25118
17	Spill plug	3/228	98-25117
18	Spring plate-lower	3/71	98-25112
19	Control sleeve	3/1C	
20	Screw-control rod locating	123/9	98-25107
21	Element assembly L.H.	3/245G	
22	Seal-high pressure	3/326	98-25105
23	Seal-O-ring	235/14	98-25104
24	Spring-delivery valve	25/15	98-25102
25	Delivery valve holder	3/331	98-25131



FCOAB180B0231 Fuel Injection Pump

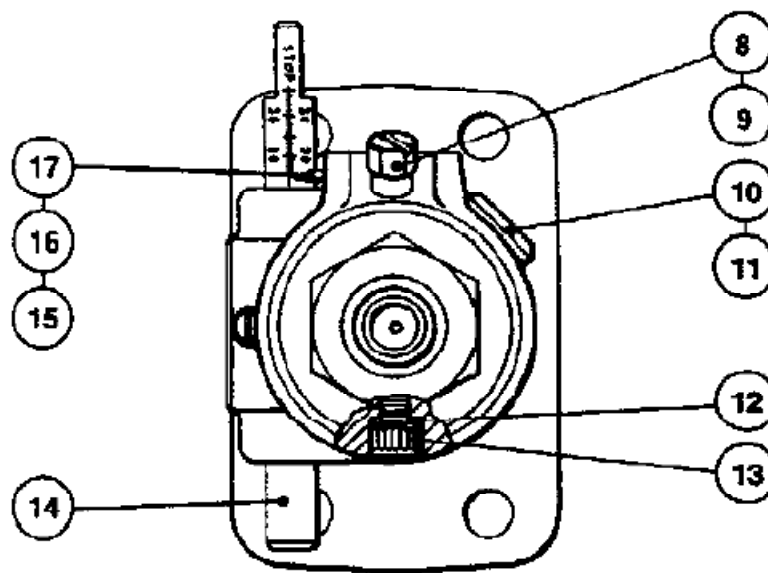
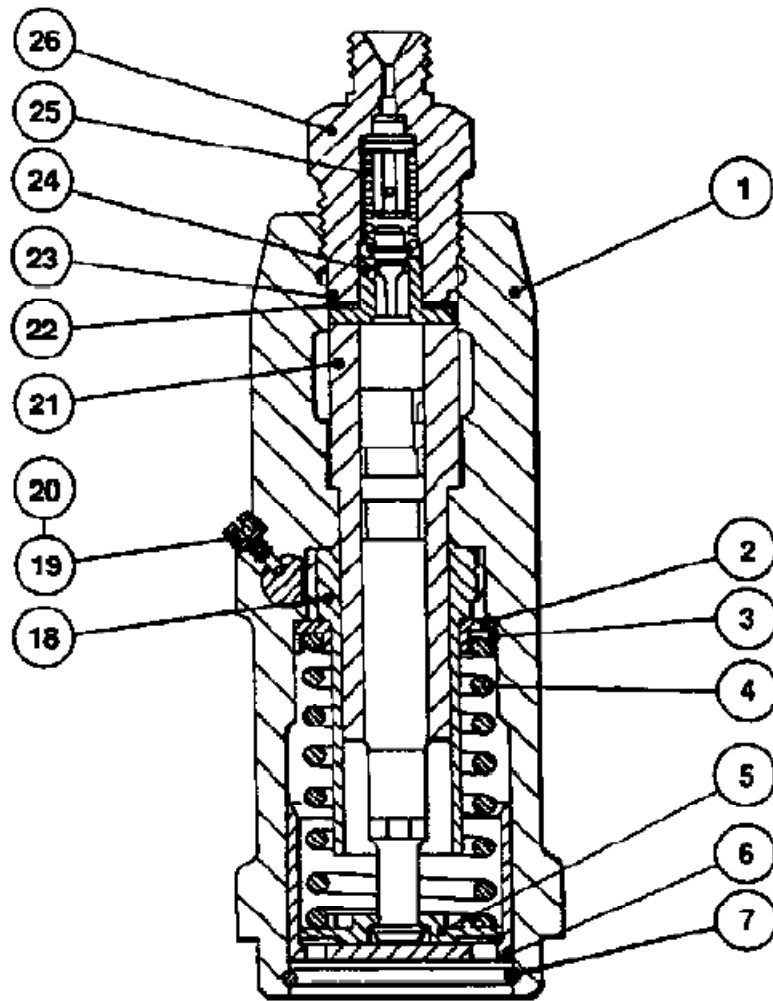
FCOAB180B0555 Fuel Injection Pump for Mirrlees Blackstone Engines:

ERDFS, ESDFS, EVDFS

ECSL, ESSL, ETS, ETSL, EWSL, EXSL, EYSL, EZSL

(October 1998, Issue #5)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCOAB180B0555	99-46598 99-46598-0B
1	Pump housing	3/375	
2	Spring plate-upper	3/4680	98-25109
3	Circlip-upper	3/4683	98-25110
4	Spring-plunger	3/178	98-25111
5	Spring plate-lower	3/71	98-25112
6	Tappet	3/4682	98-25113
7	Circlip-lower	3/3361	98-25114 98-2998
8	Screw-vent	3/170	98-25153 98-25163
9	Washer-vent screw	113/75	31-210-160 98-25116
10	Spill plug	3/228	98-25117
11	Washer-spill plug	113/62	98-25118
12	Washer-locating screw	113/75	31-210-160 98-25116
13	Screw-barrel locating	3/191	98-25123
14	Control rod	3/376	98-25119
15	Shims-pointer (1AR)	106/1A-E	
16	Screw-pointer	297/203	98-25121
17	Pointer-control rod	3/2A	98-25120
18	Control sleeve	3/1N	98-25108
19	Screw-control rod locating	123/9	98-25107
20	Lead seal	3/4699	98-25125
21	Element assembly R.H.	3/416K	98-25141
22	Seal-high pressure	3/326	98-25105
23	Seal-O-ring	235/14	98-25104
24	Delivery valve & seat assembly	25/52	98-25103
25	Spring-delivery valve	25/15	98-25102
26	Delivery valve holder	3/332	02-68746



FCOAB180B0555 Fuel Injection Pump

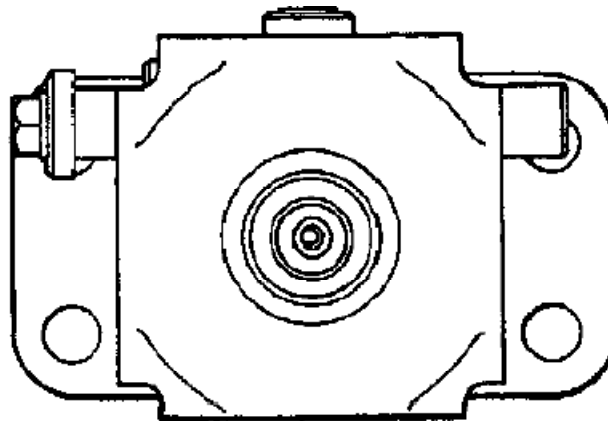
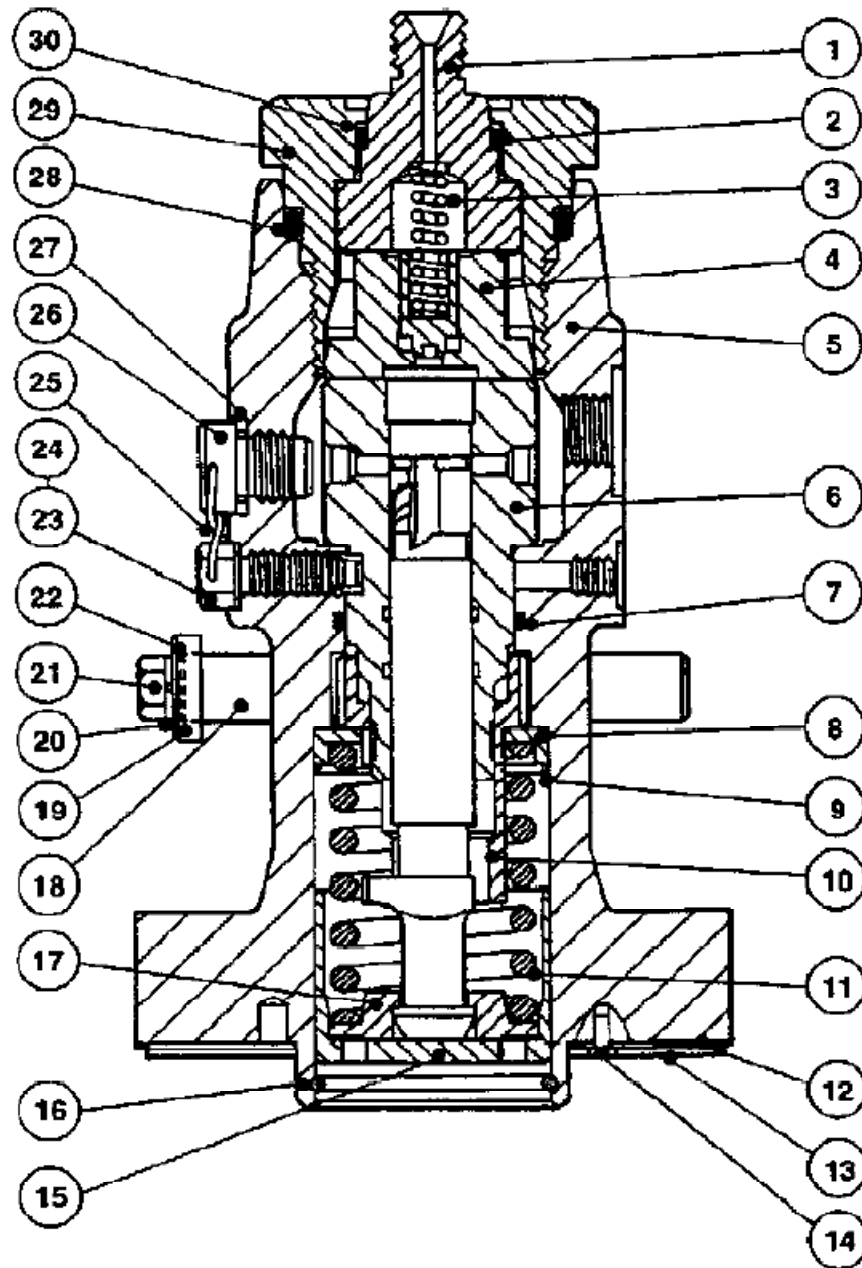
FCVAB200B0801 Fuel Injection Pump for Mirrlees Blackstone Engines:

EVSL Mk II (constant speed)

EVSL Mk II (constant speed, heavy fuel)

(July 2000, Issue #3)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCVAB200B0801	
1	Delivery valve holder	36/193	
2	Seal-O-ring	372/15	
3	Spring-delivery valve	36/34	
4	Delivery valve & seat assembly	36/107D	
5	Pump housing	36/188	
6	Element assembly R.H.	36/189E	
7	Seal-O-ring	372/18	
8	Spring plate-upper	7022/232	
9	Circlip-upper	25/25	
10	Control sleeve	36/187	
11	Spring plunger	36/31	
12	Shims pump housing (3AR)	6/180	
13	Shim plate pump housing	6/179	
14	Tucker rivets (2)	369/1	
15	Tappet	6/289	
16	Circlip-lower	6/105	
17	Spring plate-lower	6/107	
18	Control rod assembly	36/191	
19	Stop cap-control rod	6/116	
20	Washer-locking	282/5	
21	Bolt stop cap	295/504	
22	Shims stop cap (1AR)	NW2/76-83	
23	Screw-barrel locating	36/27	
24	Washer-locating screw (2)	NW5/22	
25	Locking wire (AR)	18SWG	
26	Spill plug	21/201	
27	Washer-spill plug	113/62	
28	Seal-O-ring	372/36	
29	Retaining nut	36/56	
30	Washer-O-ring	106/116	
3IND	Blanking plug	119/5081	



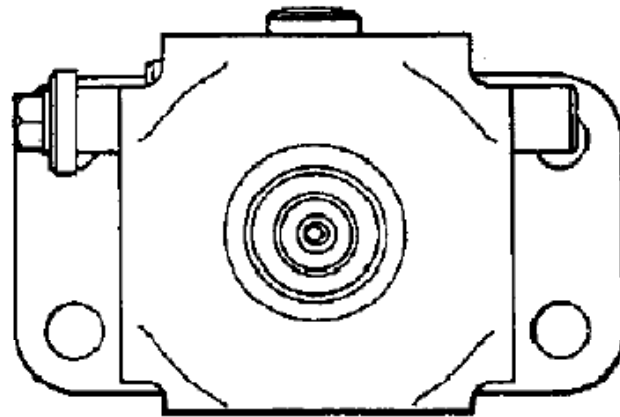
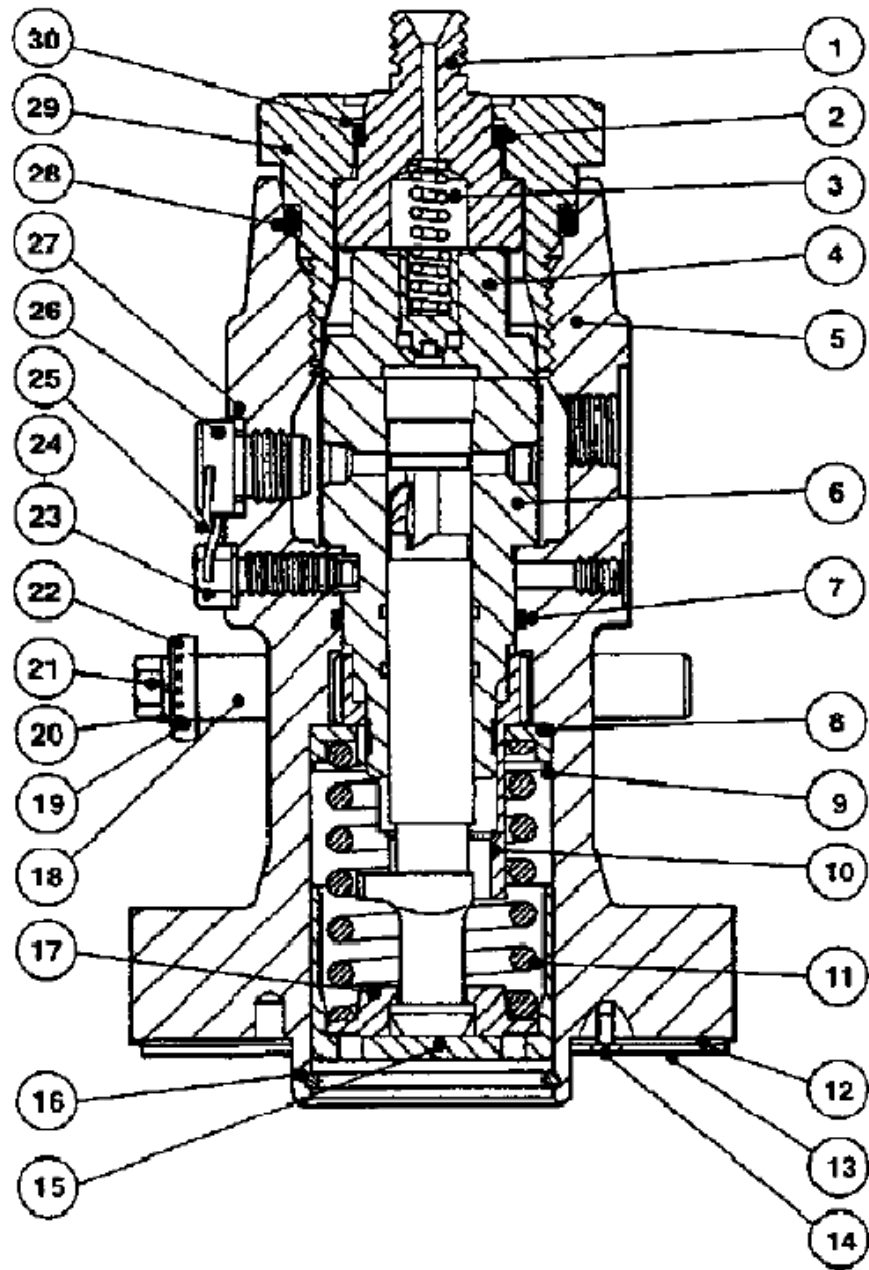
FCVAB200B0801 Fuel Injection Pump

FCVAB200B0899 Fuel Injection Pump for Mirrlees Blackstone EVSL Mk II Engine (19.8 bar)

(July 2000, Issue #3)

Item

No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FCVAB200B0899	
1	Delivery valve holder	36/193	
2	Seal-O-ring	372/15	
3	Spring-delivery valve	36/34	
4	Delivery valve & seat assembly	36/107D	
5	Pump housing	36/188	
6	Element assembly	36/228E	
7	Seal-O-ring	372/18	
8	Spring plate-upper	7022/232	
9	Circlip-upper	25/25	
10	Control sleeve	36/187	
11	Spring plunger	36/31	
12	Shims pump housing (3AR)	6/180	
13	Shim plate pump housing	6/179	
14	Tucker rivets (2)	369/1	
15	Tappet	6/289	
16	Circlip-lower	6/105	
17	Spring plate-lower	6/107	
18	Control rod assembly	36/191	
19	Stop cap-control rod	6/116	
20	Washer-locking	282/5	
21	Bolt stop cap	295/504	
22	Shims stop cap (1AR)	NW2/76-83	
23	Screw-barrel locating	36/27	
24	Washer-locating screw (2)	NW5/22	
25	locking wire (AR)	18SWG	
26	Spill plug	21/201	
27	Washer-spill plug	113/62	
28	Seal-O-ring	372/36	
29	Retaining nut	36/56	
30	Washer-O-ring	106/116	
31ND	Blanking plug	119/5081	



FCVAB200B0899 Fuel Injection Pump

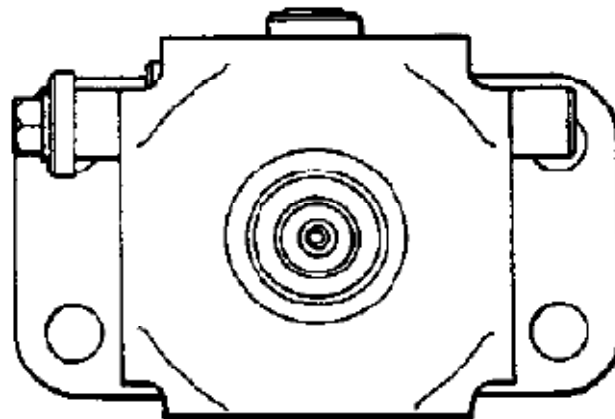
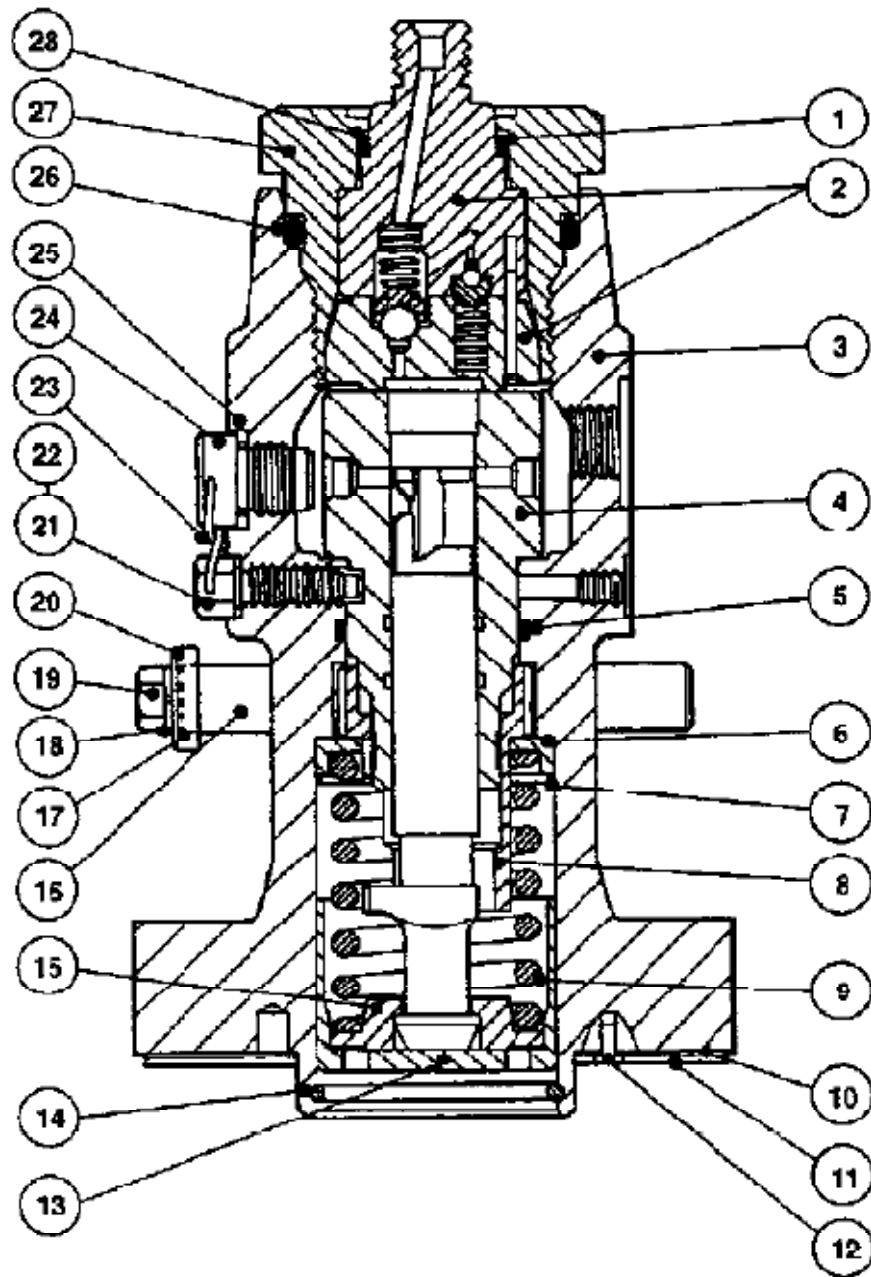
FCVAB200C0890 Fuel Injection Pump for Mirrlees Blackstone Engines:

EVSL Mk II (low load retard)

EVSL Mk II (low load retard, heavy fuel)

(January 2003, Issue #3)

Item B.L.		Part Name	Qty	Woodward No.	Blackstone No.
No.	No.				
		Fuel Pump		FCVAB200C0890	
1	60	Seal-O-ring		372/15	
2	35	PUDV assembly		36/179BG	
3	2	Pump housing		36/188	
4	5	Element assembly		36/219E	
5	9	Seal-O-ring		372/18	
6	29	Spring plate-upper		7022/232	
7	30	Circlip-upper		25/25	
8	26	Control sleeve		36/187	
9	31	Spring-plunger		36/31	
10	4	Shims pump housing	3AR	6/180	
11	3	Shim plate pump housing		6/179	
12	62	Tucker rivets	2	369/1	
13	33	Tappet		6/289	
14	34	Circlip-lower		6/105	
15	32	Spring plate-lower		6/107	
16	14	Control rod assembly		36/191	
17	17	Stop cap-control rod		6/116	
18	25	Washer locking		282/5	
19	23	Bolt stop cap		295/504	
20	24	Shims stop cap	1AR	NW2/76-83	
21	10	Screw-barrel locating		36/27	
22	11	Washer-locating screw	2	NW5/22	
23	28	Locking wire	AR	18SWG	
24	12	Spill plug		21/201	
25	31	Washer-spill plug		113/62	
26	59	Seal-O-ring		372/36	
27	47	Retaining nut		36/56	
28	61	Washer-O-ring		106/116	
29ND	27	Blanking plug		119/5081	

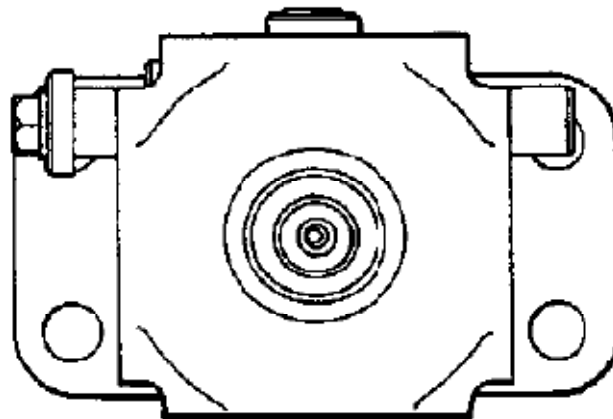
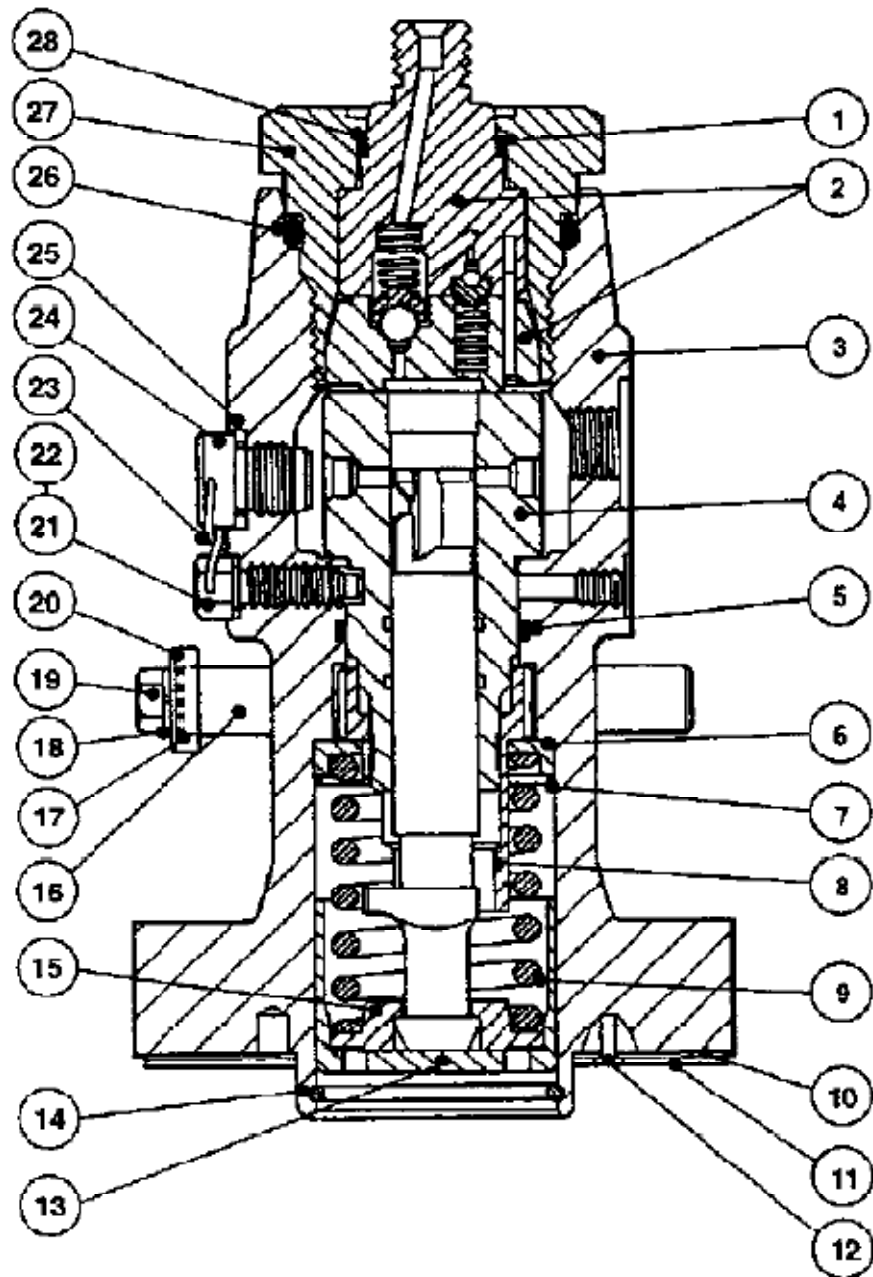


FCVAB200C0890 Fuel Injection Pump

FCVAB200C0918 Fuel Injection Pump for Mirrlees Blackstone EVSL Mk II Engine (constant speed)

(January 2003, Issue #3)

Item No.	B.L. No.	Part Name	Qty	Woodward No.	Blackstone No.
		Fuel Pump		FCVAB200C0918	
1	60	Seal-O-ring		372/15	
2	35	PUDV assembly		36/179BG	
3	2	Pump housing		36/188	
4	5	Element assembly		36/219E	
5	9	Seal-O-ring		372/18	
6	29	Spring plate-upper		7022/232	
7	30	Circlip-upper		25/25	
8	26	Control sleeve		36/187	
9	31	Spring-plunger		36/31	
10	4	Shims pump housing	3AR	6/180	
11	3	Shim plate pump housing		6/179	
12	62	Tucker rivets	2	369/1	
13	33	Tappet		6/289	
14	34	Circlip-lower		6/105	
15	32	Spring plate-lower		6/107	
16	14	Control rod assembly		36/191	
17	17	Stop cap-control rod		6/116	
18	25	Washer locking		282/5	
19	23	Bolt stop cap		295/504	
20	24	Shims stop cap	1AR	NW2/76-83	
21	10	Screw-barrel locating		36/27	
22	11	Washer-locating screw	2	NW5/22	
23	28	Locking wire	AR	18SWG	
24	12	Spill plug		21/201	
25	31	Washer-spill plug		113/62	
26	59	Seal-O-ring		372/36	
27	47	Retaining nut		36/56	
28	61	Washer-O-ring		106/116	
29ND	27	Blanking plug		119/5081	

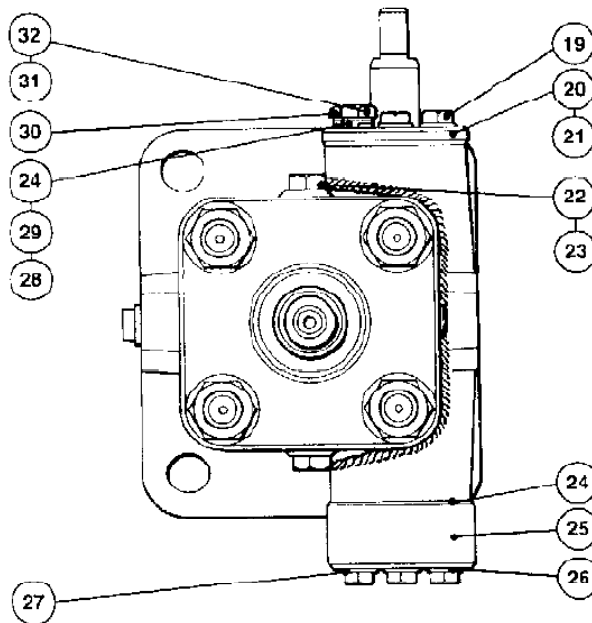
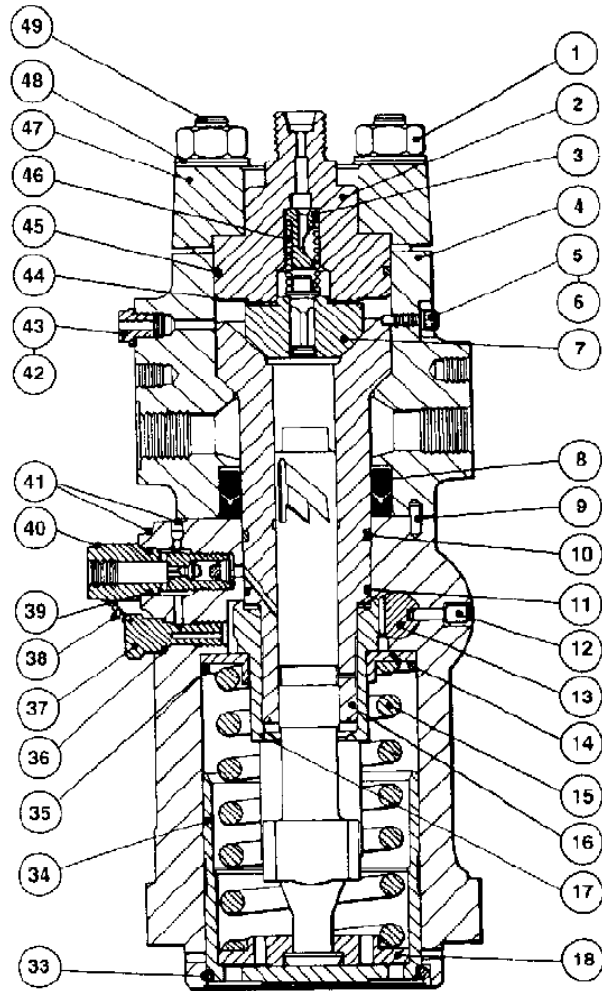


FCVAB200C0918 Fuel Injection Pump

FDDAB280A0522 Fuel Injection Pump for Mirrlees Blackstone K Major Mk II Engine (light fuel, 250 bmep @600 rpm)

(September 1997, Issue #4)

Item No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FDDAB280A0522	K38157
1	Nut (4)	386/6	
2	Union body	34/52	
3	Spring peg	34/51	
4	Top half housing	34/19	
5	Washer-locating screw	NW5/14	
6	Screw-barrel locating	34/2	
7	Delivery valve & seat assembly	34/44E	
8	Seal	256/5	
9	Dowel	53/5062	
10	Seal-O-ring	372/27	
11	Seal-O-ring	372/28	
12	Dowel-control rod locating	34/5	
13	Control rod	34/4	
14	Spring plate-upper	34/10	
15	Spring-plunger	34/11	
16	Element assembly	34/33F	
17	Control sleeve	34/71	
18	Spring plate-lower	34/12	
19	Set screw (2)	402/0830	
20	Retaining ring	34/6	
21	Seal	130/116	
22	Spill plug (2)	34/3	
23	Washer-spill plug (3)	113/9	98-25151
24	Gasket-stop cap (2)	34/8	
25	Stop cap-control rod	34/7	
26	Washer (5)	395/80	
27	Setscrew (3)	402/0845	
28	Pointer-control rod	34/26	
29	Shims-pointer (1AR)	34/29A-E	
30	Screw-pointer	409/0816	
31	Screw-pointer	409/830	
32	Washer-locking (2)	205/5	
33	Circlip-lower	32/33	
34	Tappet	34/13	
35	Circlip-upper	32/32	
36	Washer-sealing	NW5/32	
37	Union-metering	34/39	
38	Locking wire (AR)	18SWG	
39	Seal-O-ring	372/4	
40	Valve group non-return	34/22	
41	Bottom half housing sub assembly	34/27	
42	Washer-sealing	113/27	31-210-090
43	Plug-leak off	119/10	
44	Seal-high pressure	22/51	
45	Seal-O-ring	372/39	
46	Spring-delivery valve	22/52	
47	Clamp plate	34/20	
48	Washer (4)	395/180	
49	Stud-housing (4)	34/18	
50ND	Plug-timing window	34/16	
51ND	Adjusting screw	34/28	
52ND	Nut	398/8	

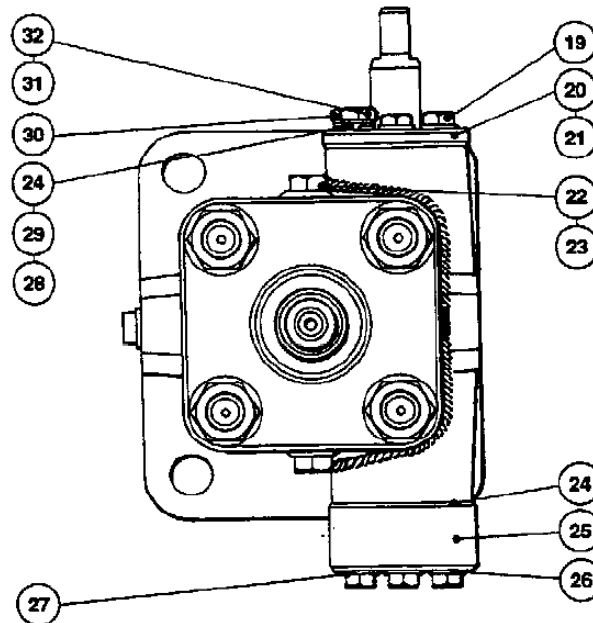
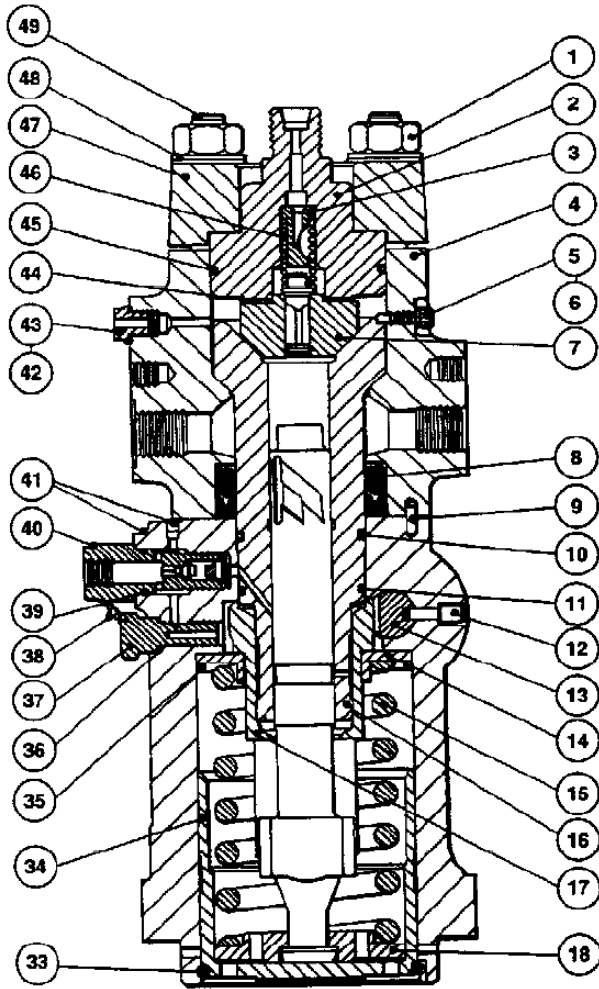


FDDAB280A0522 Fuel Injection Pump

FDDAB280A0644 Fuel Injection Pump for Mirrlees Blackstone K Major Mk II Engine (light fuel)

(October 1998, Issue #5)

Item No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FDDAB280A0644	K52624
1	Nut (4)	386/6	
2	Union body	34/52	
3	Spring peg	34/51	
4	Top half housing	4/19	
5	Washer-locating screw	NW5/14	
6	Screw-barrel locating	34/2	
7	Delivery valve & seat assembly	34/44J	
8	Seal	256/5	
9	Dowel	53/5062	
10	Seal-O-ring	372/27	
11	Seal-O-ring	372/28	
12	Dowel-control rod locating	34/5	
13	Control rod	34/4	
14	Spring plate-upper	34/10	
15	Spring-plunger	34/11	
16	Element assembly	34/55F	
17	Control sleeve	34/71	
18	Spring plate-lower	34/12	
19	Set screw (2)	402/0830	
20	Retaining ring	34/6	
21	Seal	130/116	
22	Spill plug (2)	34/3	
23	Washer-spill plug (3)	113/9	98-25151
24	Gasket-stop cap (2)	34/8	
25	Stop cap-control rod	34/7	
26	Washer (5)	395/80	
27	Setscrew (3)	402/0845	
28	Pointer-control rod	34/26	
29	Shims-pointer (1AR)	34/29A-E	
30	Screw-pointer	409/0816	
31	Screw-pointer	409/0830	
32	Washer-locking (2)	205/5	
33	Circlip-lower	32/33	
34	Tappet	34/13	
35	Circlip-upper	32/32	
36	Washer-sealing	NW5/32	
37	Union-metering	34/39	
38	Locking wire (AR)	18SWG	
39	Seal-O-ring	372/4	
40	Valve group non-return	34/22	
41	Bottom half housing sub-assy	34/27	
42	Washer-sealing	113/27	31-210-090
43	Plug-leak off	119/10	
44	Seal-high pressure	22/51	
45	Seal-O-ring	372/39	
46	Spring-delivery valve	22/52	
47	Clamp plate	34/20	
48	Washer (4)	395/180	
49	Stud-housing (4)	34/18	
50ND	Plug-timing window	34/16	
51ND	Adjusting screw	34/28	
52ND	Nut	398/8	

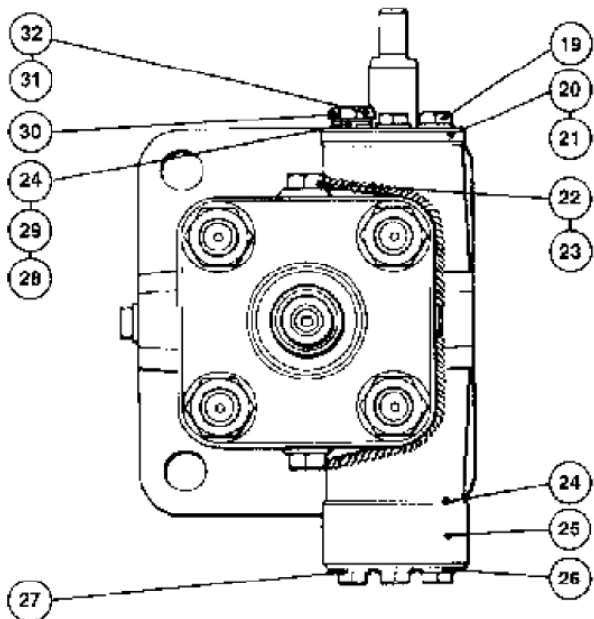
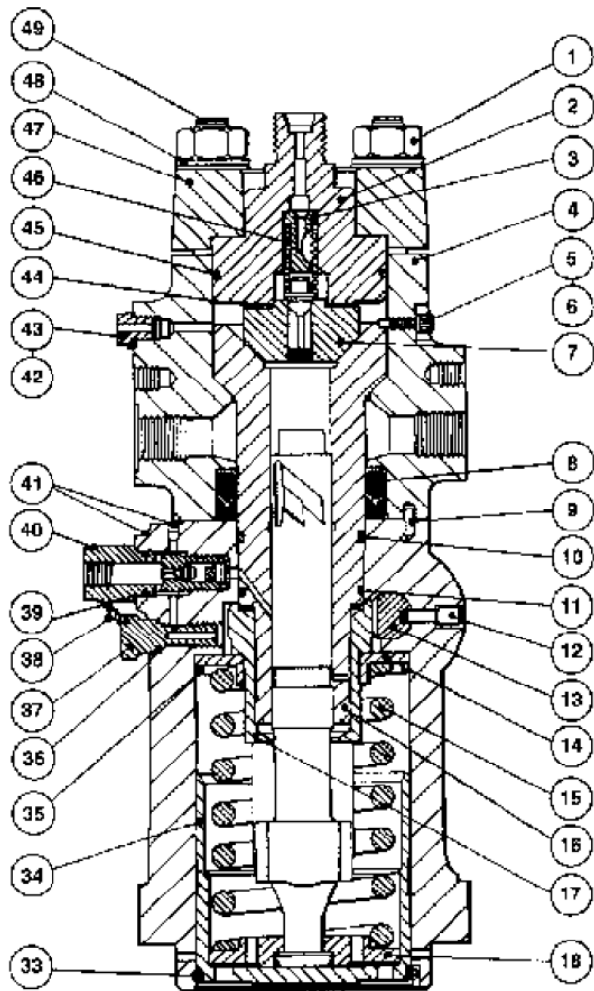


FDDAB280A0644 Fuel Injection Pump

FDDAB280A0721 Fuel Injection Pump for Mirrlees Blackstone K Major Mk II Engine (dual fuel)

(May 2000, Issue #7)

Item		Woodward No.	Blackstone No.
No.	Part Name		
	Fuel Pump	FDDAB280A0721	
1	Nut (4)	386/6	
2	Union body	34/52	
3	Spring peg	34/60	
4	Top half housing	4/19	
5	Washer-locating screw	NW5/14	
6	Screw-barrel locating	34/2	
7	Delivery valve & seat assembly	34/58B	
8	Seal	256/5	
9	Dowel	53/5062	
10	Seal-O-ring	372/27	
11	Seal-O-ring	372/28	
12	Dowel-control rod locating	34/5	
13	Control rod	34/4	
14	Spring plate-upper	34/10	
15	Spring-plunger	34/11	
16	Element assembly	34/56F	
17	Control sleeve	34/71	
18	Spring plate-lower	34/12	
19	Set screw	402/0830	
20	Retaining ring	34/6	
21	Seal	130/116	
22	Spill plug (2)	34/3	
23	Washer-spill plug (3)	113/9	98-25151
24	Gasket-stop cap (2)	34/8	
25	Stop cap-control rod	34/7	
26	Washer (5)	395/80	
27	Setscrew (3)	402/0845	
28	Pointer-control rod (2)	34/26	
29	Shims-pointer (1AR)	34/29A-E	
30	Screw-pointer(2)	409/0816	
1	Screw-pointer(2)	409/0830	
32	Washer-locking (4)	205/5	
33	Circlip-lower	32/33	
34	Tappet	34/13	
35	Circlip-upper	32/32	
36	Washer-sealing	NW5/32	
37	Union-metering	34/39	
38	Locking wire (AR)	18SWG	
39	Seal-O-ring	372/4	
40	Valve group non-return	34/22	
41	Bottom half housing sub-assy	34/63	
42	Washer-sealing	113/27	31-210-090
43	Plug-leak off	119/10	
44	Seal-high pressure	22/51	
45	Seal-O-ring	372/39	
46	Spring-delivery valve	34/38	SPV8152-3
47	Clamp plate	34/20	
48	Washer (4)	395/80	
49	Stud-housing (4)	34/18	



FDDAB280A0721 Fuel Injection Pump

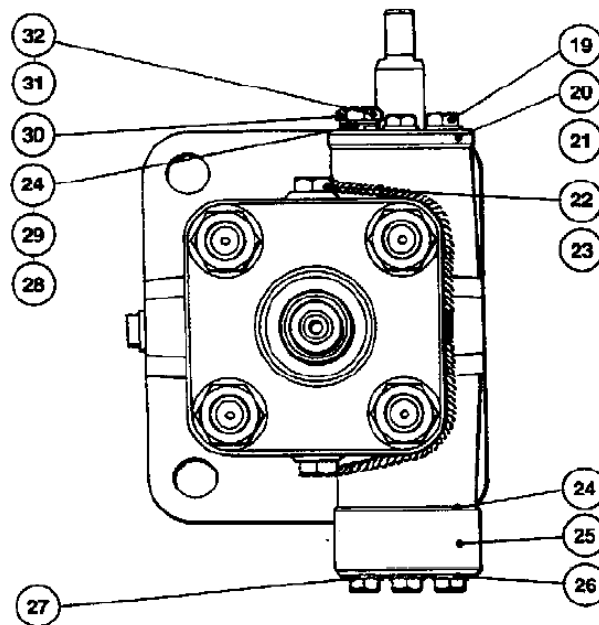
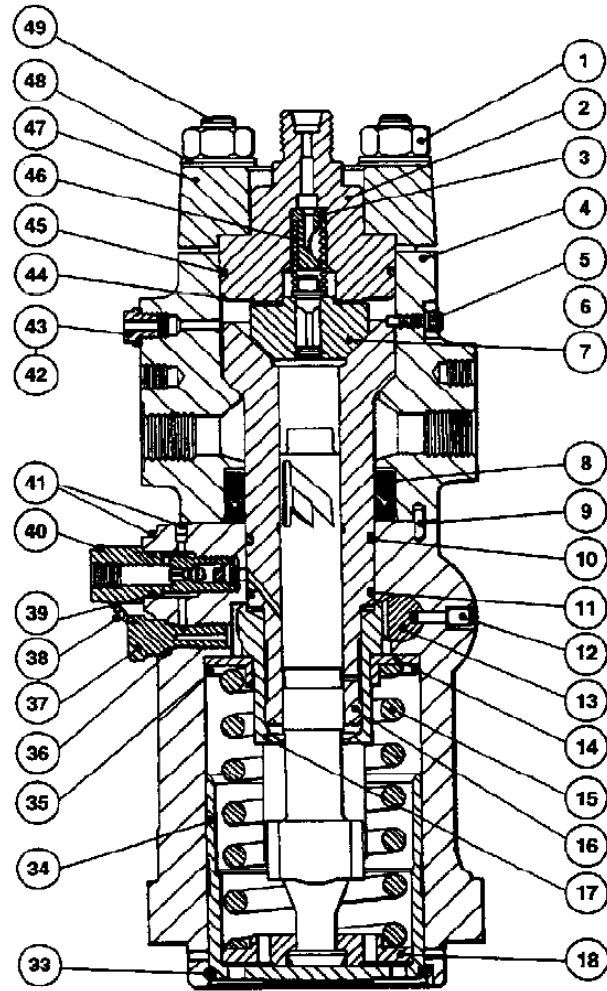
FDDAB280A0807 Fuel Injection Pump for Mirrlees Blackstone Engines:

K Major Mk II (dual fuel, 250 bmep @600 rpm)

K Major Mk II (dual fuel, 250 bmep @600 rpm, gas valve actuator)

(May 2000, Issue #7)

Item No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FDDAB280A0807	K54921
1	Nut (4)	386/6	
2	Union body	34/52	
3	Spring peg	34/60	
4	Top half housing	4/19	
5	Washer-locating screw	NW5/14	
6	Screw-barrel locating	34/2	
7	Delivery valve & seat assembly	34/36	SPV8152-1
8	Seal	256/5	
9	Dowel	53/5062	
10	Seal-O-ring	372/27	
11	Seal-O-ring	372/28	
12	Dowel-control rod	34/5	
13	Control rod	34/4	
14	Spring plate-upper	34/10	
15	Spring-plunger	34/11	
16	Element assembly	34/56F	
17	Control sleeve	34/71	
18	Spring plate-lower	34/12	
19	Set screw	402/0830	
20	Retaining ring	34/6	
21	Seal	130/116	
22	Spill plug (2)	34/3	
23	Washer-spill plug (3)	113/9	98-25151
24	Gasket-stop cap (2)	34/8	
25	Stop cap-control rod	34/7	
26	Washer (4)	395/180	
27	Setscrew (3)	402/0845	
28	Pointer-control rod (2)	34/26	
29	Shims-pointer (AR)	34/29A-E	
30	Screw-pointer (2)	409/0816	
31	Screw-pointer (2)	409/0830	
32	Washer-locking (4)	205/5	
33	Circlip-lower	32/33	
34	Tappet	34/13	
35	Circlip-upper	32/32	
36	Washer-sealing	NW5/32	
37	Union-metering	34/39	
38	Locking wire (AR)	18SWG	
39	Seal-O-ring	372/4	
40	Valve group non-return	34/22	
41	Bottom half housing sub assy	34/63	
42	Washer-sealing	113/27	31-210-090
43	Plug-leak off	119/10	
44	Seal-high pressure	22/51	
45	Seal-O-ring	372/39	
46	Spring-delivery valve	34/38	SPV8152-3
47	Clamp plate	34/20	
48	Washer (4)	395/80	
49	Stud-housing (4)	34/18	



FDDAB280A0807 Fuel Injection Pump

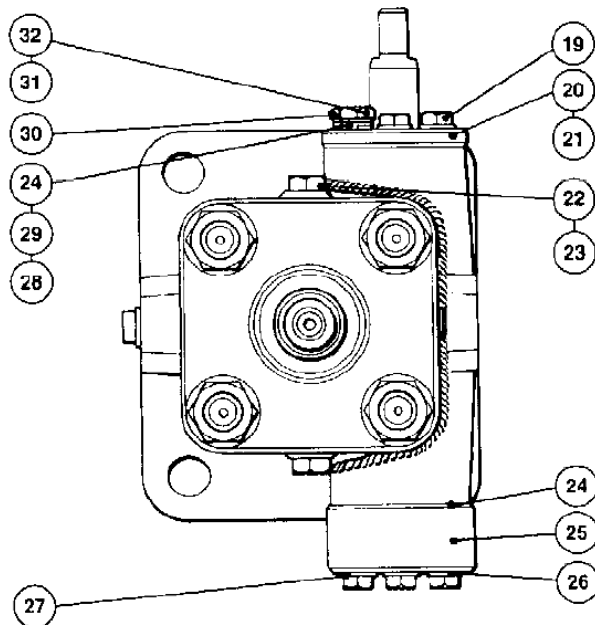
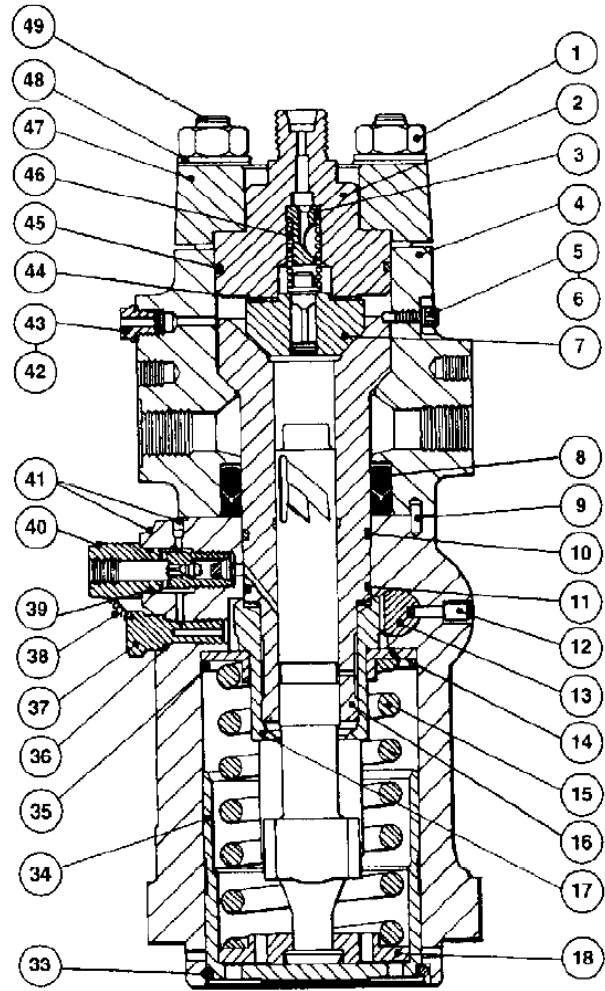
FDDAB300A0845 Fuel Injection Pump for Mirrlees Blackstone Engines:

K Major Mk III (heavy fuel)

K Major Mk III (light fuel)

(October 1998, Issue #5)

Item		Woodward No.	Blackstone No.
No.	Part Name		
	Fuel Pump	FDDAB300A0845	
1	Nut (4)	386/6	
2	Union body	34/52	
3	Spring peg	34/51	
4	Top half housing	34/19	
5	Washer-locating screw	NW5/14	
6	Screw-barrel locating	34/2	
7	Delivery valve & seat assembly	34/70J	
8	Seal	256/5	
9	Dowel	53/5062	
10	Seal-O-ring	372/27	
11	Seal-O-ring	372/28	
12	Dowel-control rod locating	34/5	
13	Control rod	34/4	
14	Spring plate-upper	34/10	
15	Spring-plunger	34/11	
16	Element assembly	34/73G	
17	Control sleeve	34/71	
18	Spring plate-lower	34/12	
19	Set screw (2)	402/0830	
20	Retaining ring	34/6	
21	Seal	130/116	
22	Spill plug (2)	34/3	
23	Washer-spill plug (3)	113/9	98-25151
24	Gasket-stop cap (2)	34/8	
25	Stop cap-control rod	34/7	
26	Washer (5)	395/80	
27	Setscrew (3)	402/0845	
28	Pointer-control rod	34/26	
29	Shims-pointer (1AR)	34/29A-E	
30	Screw-pointer	409/0816	
31	Screw-pointer	409/0830	
32	Washer-locking (2)	205/5	
33	Circlip-lower	32/33	
34	Tappet	34/13	
35	Circlip-upper	32/32	
36	Washer-sealing	NW5/32	
37	Union-metering	34/39	
38	Locking wire (AR)	18SWG	
39	Seal-O-ring	372/4	
40	Valve group non-return	34/22	
41	Bottom half housing sub assy	34/27	
42	Washer-sealing	113/27	31-210-090
43	Plug-leak off	119/10	
44	Seal-high pressure	22/51	
45	Seal-O-ring	372/39	
46	Spring-delivery valve	22/52	
47	Clamp plate	34/20	
48	Washer (4)	395/180	
49	Stud-housing (4)	34/18	



FDDAB300A0845 Fuel Injection Pump

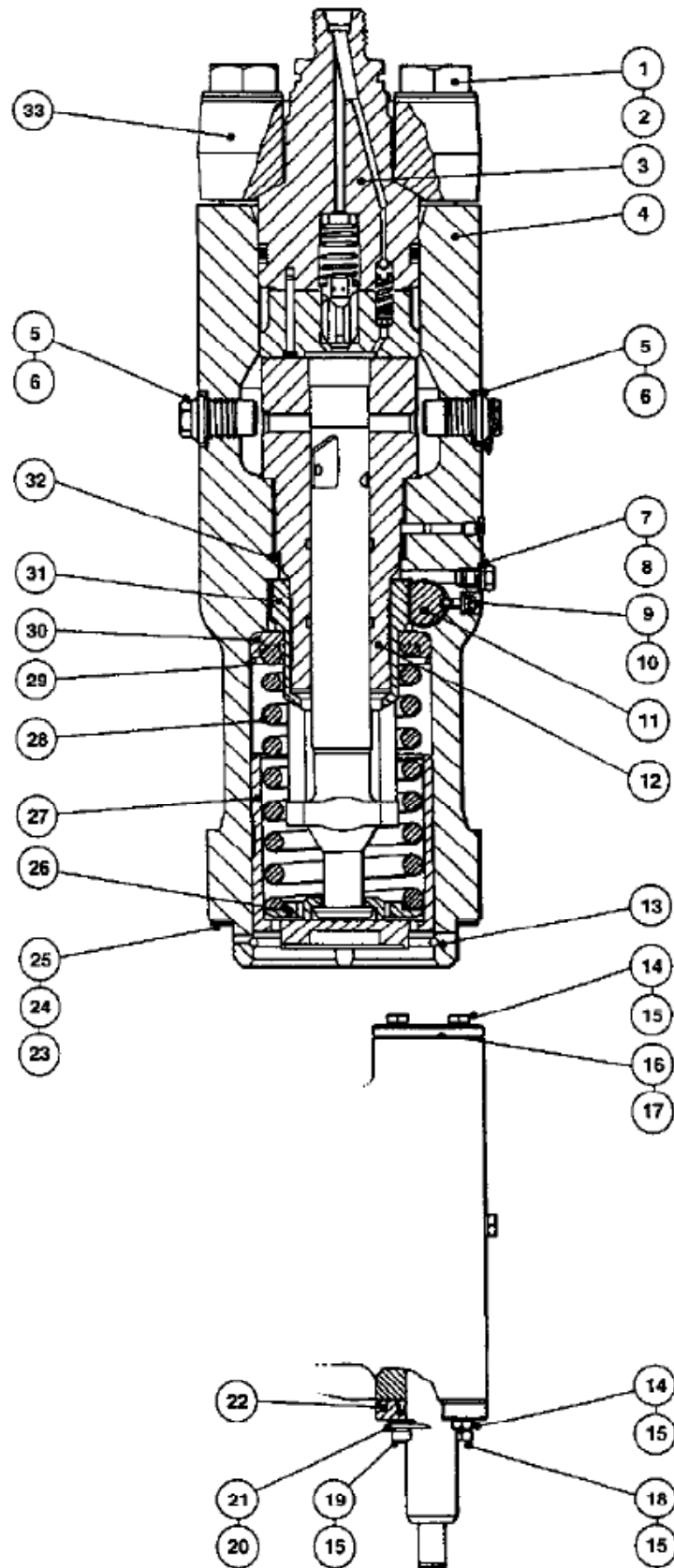
FEEAB340A0855 Fuel Injection Pump for Mirrlees Blackstone Engines:

MB430 (light fuel)

MB430 (heavy fuel)

(July 2000, Issue #3)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FEEAB340A0855	
1	Bolt-housing (4)	33/29	
2	Washer-bolt (4)	395/240	
3	PUDV group	33/40	
4	Pump housing sub-assembly	33/1	
5	Washer-spill plug (2)	113/9	
6	Spill plug (2)	32/127	
7	Blanking plug	119/1	
8	Washer-blanking plug	NW5/22	
9	Screw-control rod locating	33/34	
10	Washer	NW5/12	
11	Control rod	33/9	
12	Element assembly R.H.	33/4C	
13	Circlip lower	32/33	
14	Bolt (6)	383/0616	
15	Washer (8)	NW2/48	
16	Gasket-stop plate	33/11	
17	Stop plate	33/12	
18	Bolt	383/0625	
19	Screw-pointer	409/0616	
20	Pointer	33/13	
21	Shims-pointer (AR)	33/14 A-E	
22	Retaining ring	33/10	
23	Shim plate-pump housing	33/7	
24	Shims-pump housing (5AR)	33/8	
25	Tucker rivets (2)	369/1	
26	Spring plate-lower	33/18	
27	Tappet	32/74	
28	Spring-plunger	33/17	
29	Circlip-upper	32/32	
30	Spring plate-upper	33/16	
31	Control sleeve	33/15	
32	Seal-O-ring	372/53	
33	Clamping plate	33/28	
34ND	Blanking plug	119/1	
35ND	Washer-blanking plug	106/51	



FEEAB340A0855 Fuel Injection Pump

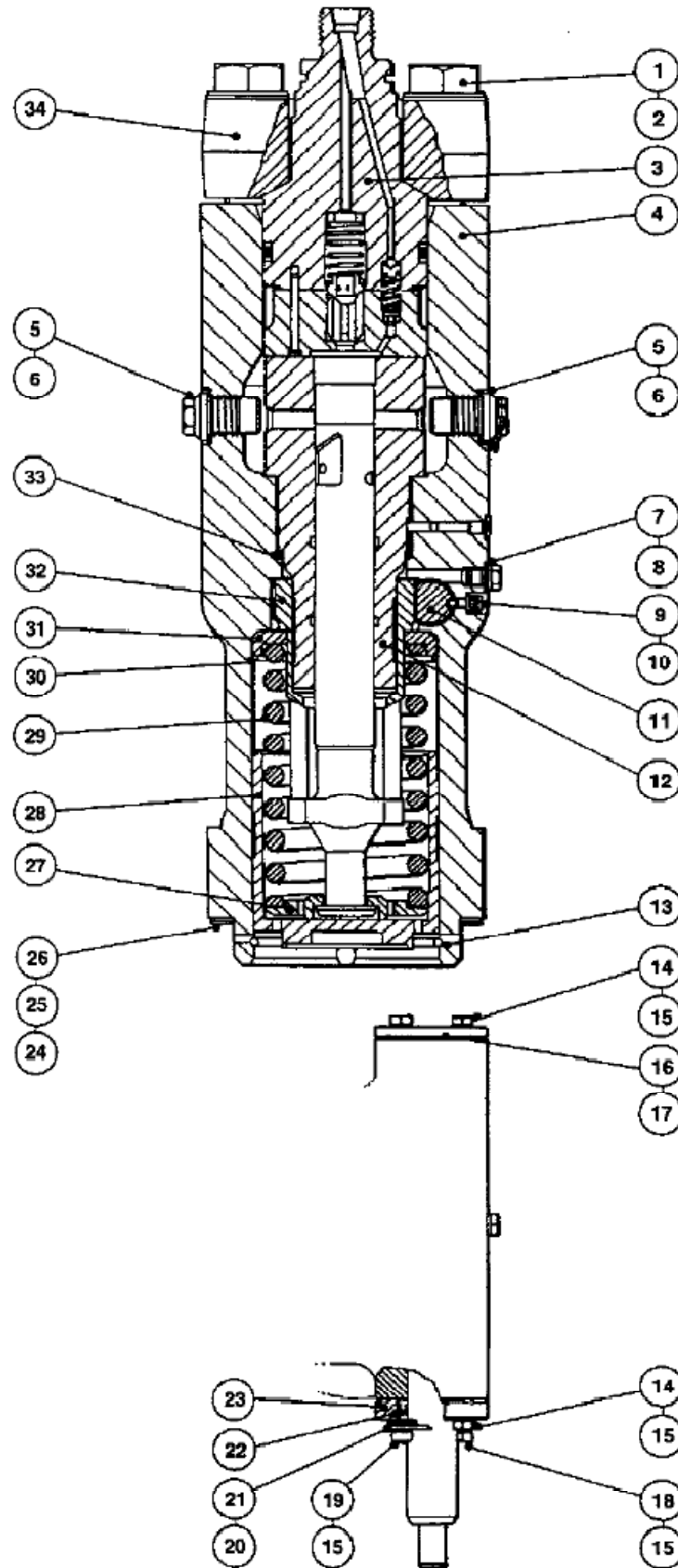
FEEAB340A0905 Fuel Injection Pump for Mirrlees Blackstone Engines:

MB430 (light fuel)

MB430 (heavy fuel)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FEEAB340A0905	
1	Bolt-housing (4)	33/29	
2	Washer-bolt (4)	395/240	
3	PUDV group	33/40	
4	Pump housing sub-assembly	33/1	
5	Washer-spill plug (2)	113/9	
6	Spill plug (2)	32/127	
7	Blanking plug	119/1	
8	Washer-blanking plug	NW5/22	
9	Screw-control rod locating	33/34	
10	Washer	NW5/12	
11	Control rod	33/9	
12	Element assembly R.H.	33/48C	
13	Circlip lower	32/33	
14	Bolt (6)	383/0616	
15	Washer (8)	NW2/48	
16	Gasket-stop plate	33/11	
17	Stop plate	33/12	
18	Bolt	383/0625	
19	Screw-pointer	409/0616	
20	Pointer	33/13	
21	Shims-pointer (AR)	33/14 A-E	
22	Lip seal	130/117	
23	Retaining ring	33/50	
24	Shim plate-pump housing	33/7	
25	Shims-pump housing (5AR)	33/8	
26	Tucker rivets (4)	369/1	
27	Spring plate-lower	33/18	
28	Tappet	32/74	
29	Spring-plunger	33/17	
30	Circlip-upper	32/32	
31	Spring plate-upper	33/16	
32	Control sleeve	33/15	
33	Seal-O-ring	372/53	
34	Clamping plate	33/28	
35ND	Blanking plug	119/1	
36ND	Washer-blanking plug	106/51	



FEEAB340A0905 Fuel Injection Pump

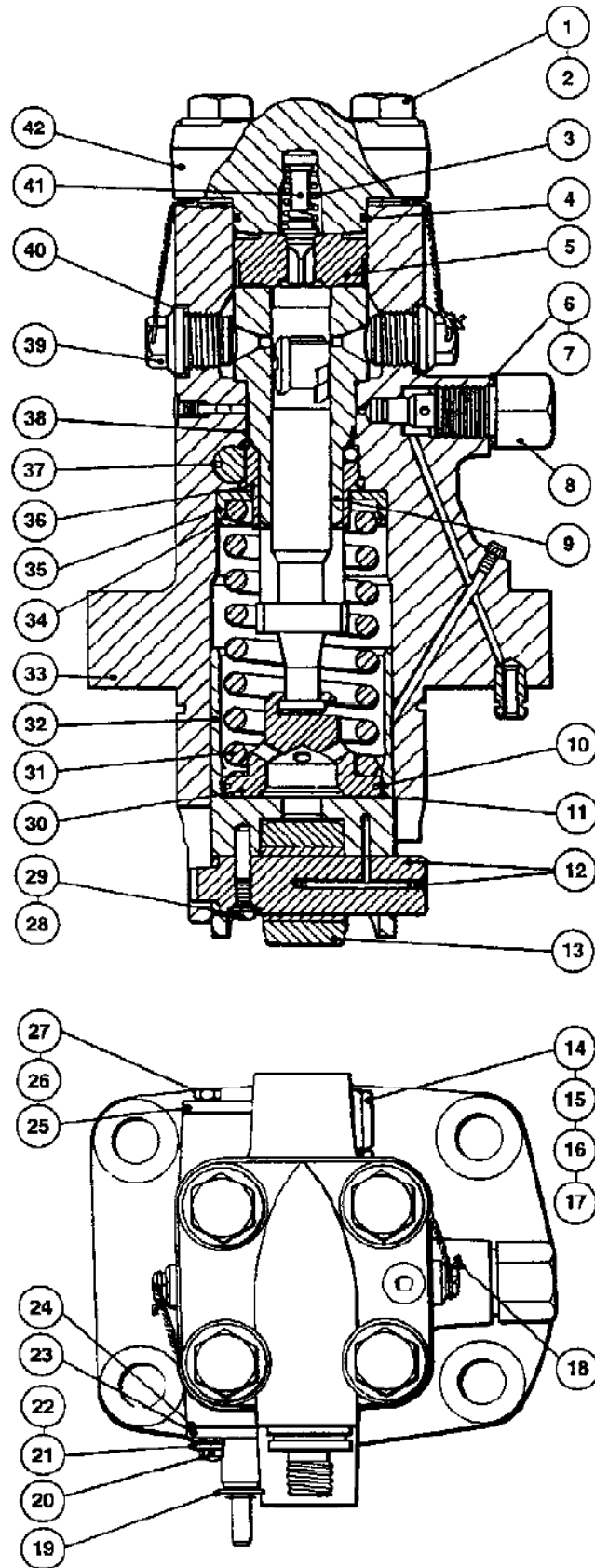
FWVAR200B0699 Fuel Injection Pump for Mirrlees Blackstone Engines:

MB275 (light fuel)

MB275 (heavy fuel)

(April 1995, Issue #2)

Item No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FWVAR200B0699	MB6015
1	Bolt housing (4)	23/123B	
2	Washer-bolt (4)	395/200	
3	Spring-delivery valve	23/145	
4	Seal-O-ring	372/48	
5	Delivery valve & seat assembly	23/178G	
6	Seal-O-ring	359/110	40-63210
7	Bonded seal	130/91V	
8	Valve group-non return	30/103C	
9	Element assembly	23/175C	
10	Circlip-tappet	124/59	
11	Shims-tappet (2AR)	23/121J-N	
12	Roller pin assembly	23/173	
13	Roller assembly	23/154	
14	Screw-overload stop	23/132	
15	Washer (2)	NW5/18W4	
16	Nut	398/8	
17	Cap nut	6/397	
18	Locking wire (AR)	18SWG	
19	Circlip-control rod	393/13	
20	Screws-control rod plate	NS19/12	
21	Shims-control rod plate	23/129A-F	
22	Plate-control rod	23/128	
23	Retaining ring	23/126	
24	Gasket (2)	23/127	
25	Stop plate	23/125	
26	Washer (8)	NW2/48	
27	Bolt (7)	383/0616	
28	Washer-locking	259/205	
29	Screw-roller locking	23/151	
30	Spring plate-lower	23/139	
31	Spring-plunger	23/107	
32	Tappet body	23/171	
33	Pump housing	23/228	
34	Circlip-upper	124/60	
35	Spring plate-upper	23/141	
36	Control sleeve	23/140	
37	Control rod	23/116	
38	Seal-O-ring	372/49	
39	Spill plug (2)	23/226	40-63110
40	Washer-spill plug (2)	113/107	40-63120
41	Spring peg	23/180	
42	Delivery valve holder	23/170A	
43ND	Screw control rod locating	6/436	
44ND	Washer	NW5/12	



FWVAR200B0699 Fuel Injection Pump

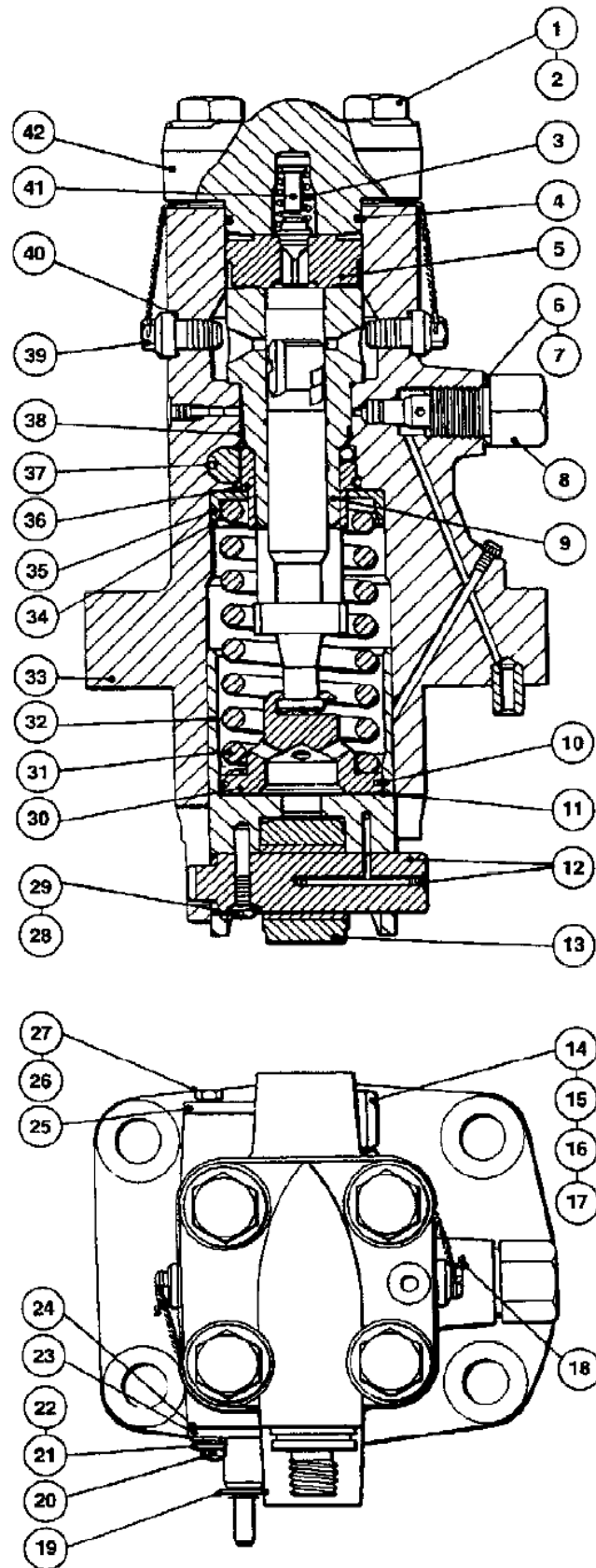
FWVAR240A0844 Fuel Injection Pump for Mirrlees Blackstone Engines:

MB275 (19 bar, light fuel)

MB275 (19 bar, heavy fuel)

(April 1995, Issue #2)

Item		Woodward No.	Blackstone No.
No.	Part Name		
	Fuel Pump	FWVAR240A0844	
1	Bolt housing (4)	23/123B	
2	Washer-bolt (4)	395/200	
3	Spring-delivery valve	15/51	
4	Seal-O-ring	372/48	
5	Delivery valve & seal assembly	23/143E	
6	Seal-O-ring	359/110	40-63210
7	Bonded seal	130/91V	
8	Valve group-non return	30/103C	
9	Element assembly	23/199E	
10	Circlip-tappet	124/59	
11	Shims-tappet (2AR)	23/121J-N	
12	Roller pin assembly	23/204	
13	Roller	23/196	
14	Screw-overload stop	23/132	
15	Washer (2)	NW5/18W4	
16	Nut	398/8	
17	Cap nut	6/397	
18	Locking wire (AR)	18SWG	
19	Circlip-control rod	393/13	
20	Screw-control rod plate	NS19/12	
21	Shims-control rod plate (AR)	23/129A-F	
22	Plate-control rod	23/128	
23	Retaining ring	23/126	
24	Gasket (2)	23/127	
25	Stop plate	23/125	
26	Washer (8)	NW2/48	
27	Bolt (7)	383/0616	
28	Washer-locking	259/205	
29	Screw-roller locking	23/206	
30	Spring plate-lower	23/139	
31	Spring-plunger	23/107	
32	Tappet	23/201	
33	Pump housing sub-assembly	23/197	
34	Circlip-upper	124/60	
35	Spring plate-upper	23/141	
36	Control sleeve	23/140	
37	Control rod	23/116	
38	Seal-O-ring	372/49	
39	Spill plug (2)	6/272	
40	Washer-spill plug (2)	113/96	
41	Spring peg	23/180	
42	Delivery valve holder	23/170A	
43ND	Screw control rod locating	6/436	
44ND	Washer	NW5/12	



FWVAR240A0844 Fuel Injection Pump

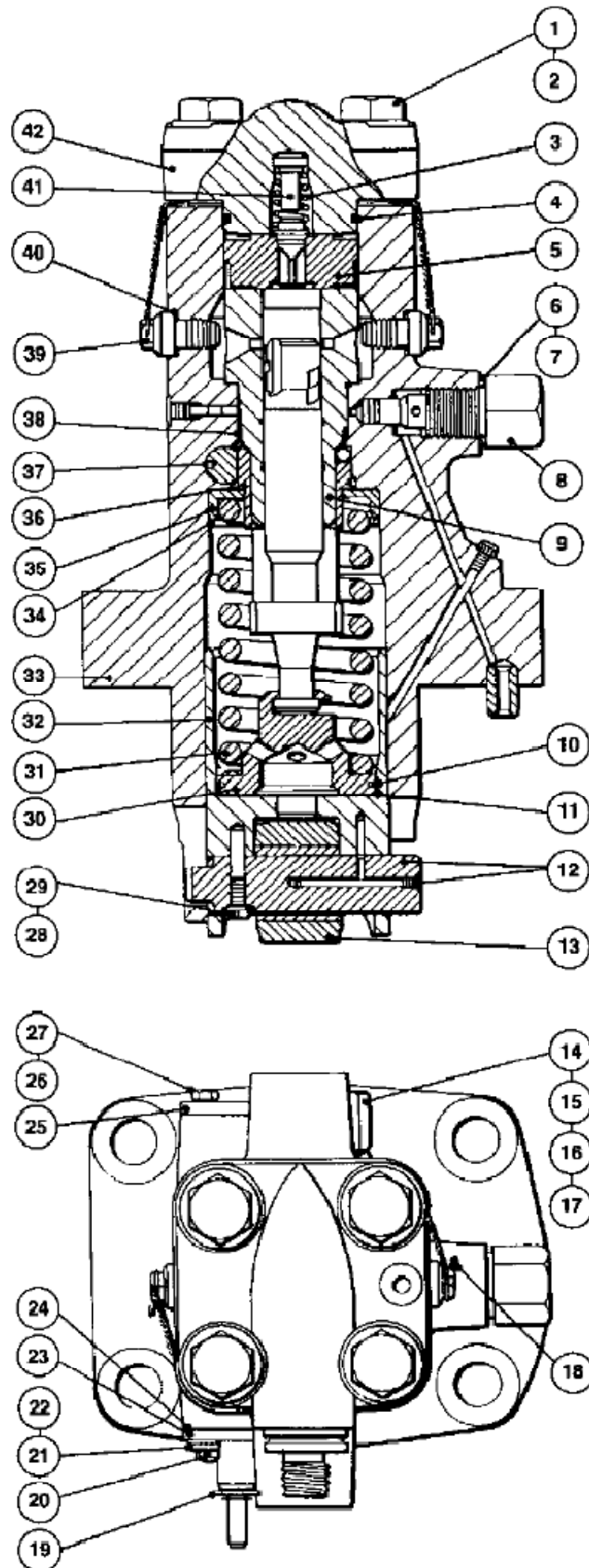
FWVAR240B0866 Fuel Injection Pump for Mirrlees Blackstone Engines:

MB275 (19 bar, light fuel)

MB275 (19 bar, heavy fuel)

(January 1997, Issue #3)

Item		Woodward No.	Blackstone No.
No.	Part Name		
	Fuel Pump	FWVAR240B0866	
1	Bolt housing (4)	23/123B	
2	Washer-bolt (4)	395/200	
3	Spring-delivery valve	15/51	
4	Seal-O-ring	372/48	
5	Delivery valve & seat assembly	23/143E	
6	Seal-O-ring	359/110	40-63210
7	Bonded seal	130/91V	
8	Valve group-non return	30/103C	
9	Element assembly	23/199E	
10	Circlip-tappet	124/59	
11	Shims-tappet (2AR)	23/121J-N	
12	Roller pin assembly	23/204	
13	Roller	23/153	
14	Screw-overload stop	23/132	
15	Washer (2)	NW5/18W4	
16	Nut	398/8	
17	Cap nut	6/397	
18	Locking wire (AR)	18SWG	
19	Circlip-control rod	393/13	
20	Screw-control rod plate	NS19/12	
21	Shims-control rod plate (AR)	23/129A-F	
22	Plate-control rod	23/128	
23	Retaining ring	23/126	
24	Gasket (2)	23/127	
25	Stop plate	23/125	
26	Washer (8)	NW2/48	
27	Bolt (7)	383/0616	
28	Washer-locking	259/205	
29	Screw-roller locking	23/206	
30	Spring plate-lower	23/139	
31	Spring-plunger	23/107	
32	Tappet	23/201	
33	Pump housing sub-assembly	23/227	
34	Circlip-upper	124/60	
35	Spring plate-upper	23/141	
36	Control sleeve	23/140	
37	Control rod	23/116	
38	Seal-O-ring	372/49	
39	Spill plug (2)	23/226	40-63110
40	Washer-spill plug (2)	113/107	40-63120
41	Spring peg	23/180	
42	Delivery valve holder	23/202	
43ND	Screw control rod locating	6/436	
44ND	Washer	NW5/12	



FWVAR240B0866 Fuel Injection Pump

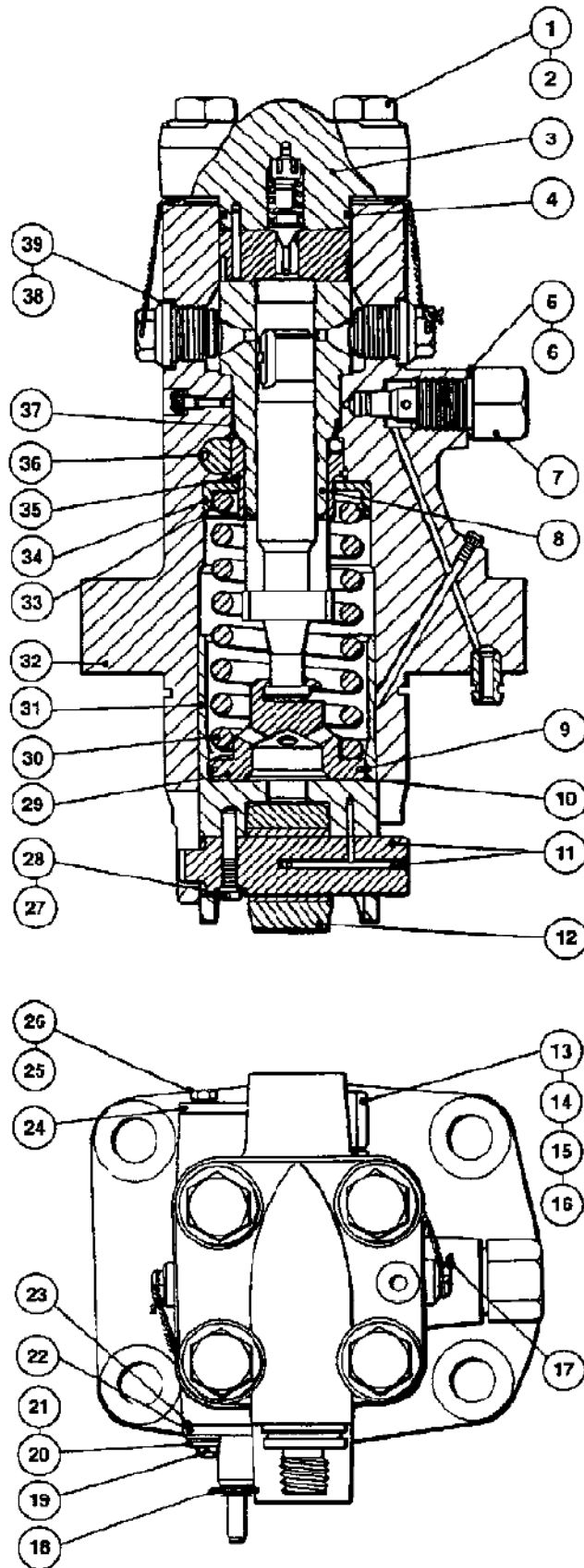
FWVAR240C0872 Fuel Injection Pump for Mirrlees Blackstone Engines:

MB275 (19 bar, light fuel)

MB275 (19 bar, heavy fuel)

(April 1995, Issue #2)

Item		Woodward No.	Blackstone No.
No.	Part Name		
	Fuel Pump	FWVAR240C0872	
1	Bolt housing (4)	23/123B	
2	Washer-bolt (4)	395/200	
3	PUDV assembly	23/214	
4	Seal-O-ring	372/48	
5	Seal-O-ring	359/110	40-63210
6	Bonded seal	130/91V	
7	Valve group-non return	30/103C	
8	Element assembly	23/224E	
9	Circlip-tappet	124/59	
10	Shims-tappet (2AR)	23/121J-N	
11	Roller pin assembly	23/204	
12	Roller	23/153	
13	Screw-overload stop	23/132	
14	Washer (2)	NW5/18W4	
15	Nut	398/8	
16	Cap nut	6/397	
17	Locking wire (AR)	18SWG	
18	Circlip-control rod	393/13	
19	Screw-control rod plate	NS19/12	
20	Shims-control rod plate (AR)	23/129A-F	
21	Plate-control rod	23/128	
22	Retaining ring	23/126	
23	Gasket (2)	23/127	
24	Stop plate	23/125	
25	Washer (8)	NW2/48	
26	Bolt (7)	383/0616	
27	Washer-locking	259/205	
28	Screw-roller locking	23/206	
29	Spring plate-lower	23/139	
30	Spring-plunger	23/107	
31	Tappet	23/201	
32	Pump housing sub-assembly	23/229	
33	Circlip-upper	124/60	
34	Spring plate-upper	23/141	
35	Control sleeve	23/140	
36	Control rod	23/116	
37	Seal-O-ring	372/49	
38	Spill plug (2)	23/226	40-63110
39	Washer-spill plug (2)	113/107	40-63120
40ND	Screw control rod locating	6/436	
41ND	Washer	NW5/12	



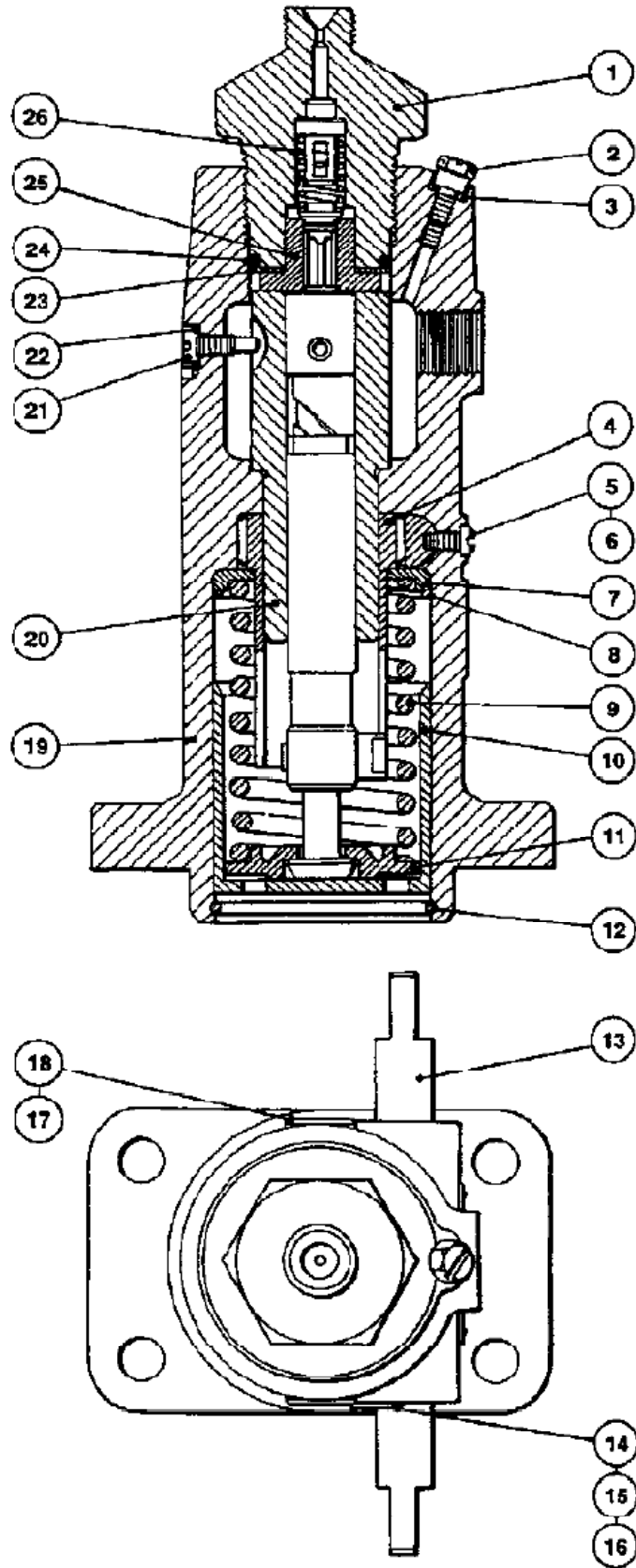
FWVAR240C0872 Fuel Injection Pump

FXOAB180B0182 Fuel Injection Pump for Mirrlees Blackstone Engines:

F (300 to 600 rpm)**FP (500 to 600 rpm)****FS (300 to 600 rpm)**

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXOAB180B0182	
1	Delivery valve holder	21/132	
2	Screw-vent	3/216	
3	Washer-vent screw	106/5	98-25138
4	Control sleeve	21/249B	
5	Screw-control rod locating	13/9	
6	Lead seal	3/4699	
7	Spring plate-upper	21/7	
8	Circlip-upper	21/11	
9	Spring-plunger	21/8	
10	Tappet	21/5A	
11	Spring plate-lower	21/6	
12	Circlip-lower	21/17	
13	Control rod	21/65	
14	Pointer-control rod	3/2A	98-25120
15	Screw-pointer	297/203	98-25121
16	Shims-pointer (1AR)	106/1A-E	
17	Washer-spill plug (2)	113/62	98-25118
18	Spill plug (2)	122/3	
19	Pump housing	21/42	
20	Element assembly L.H.	21/19C	
21	Screw-barrel locating	21/12	
22	Washer-locating screw	106/22	99-2991
23	Seal-high pressure	21/139	
24	Seal-O-ring	359/142	
25	Delivery valve & seat assembly	21/125D	
26	Spring-delivery valve	21/127	40-63170

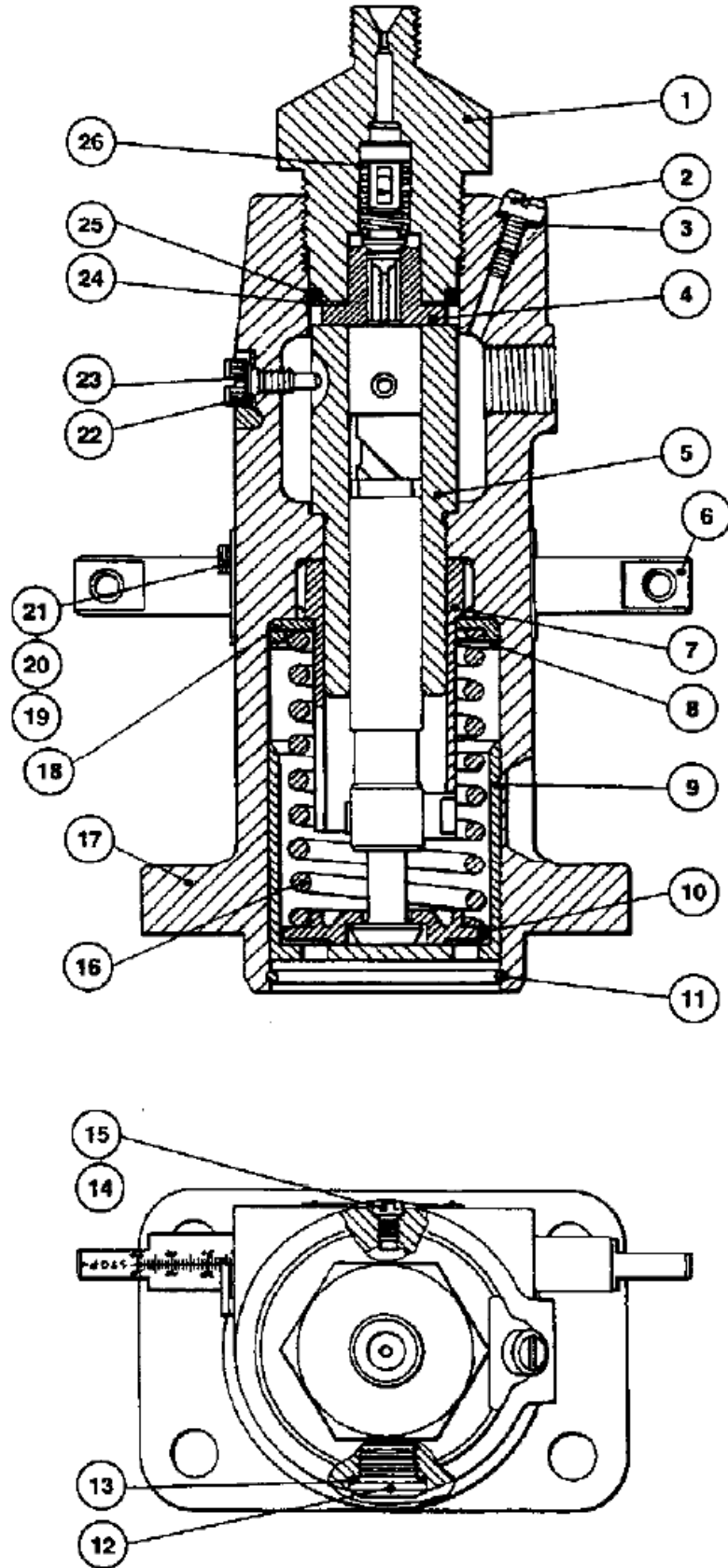


FXOAB180B0182 Fuel Injection Pump

FXOAB200B0096 Fuel Injection Pump for Mirrlees Blackstone HF, K Series I Engines

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXOAB200B0096	
1	Delivery valve holder	21/132	
2	Screw-vent	3/216	
3	Washer-vent screw	106/5	98-25138
4	Delivery valve & seat assembly	21/125D	
5	Element assembly L.H.	21/19D	
6	Control rod	21/9	
7	Control sleeve	21/249A	
8	Circlip-upper	21/11	
9	Tappet	21/5A	
10	Spring plate-lower	21/6	
11	Circlip-lower	21/17	
12	Spill plug (2)	122/3	
13	Washer-spill plug (2)	113/62	98-25118
14	Screw-control rod locating	13/9	
15	Lead seal	3/4699	
16	Spring-plunger	21/8	
17	Pump housing	21/1	
18	Spring plate-upper	21/7	
19	Shims-pointer (1AR)	106/1A-E	
20	Screw-pointer	297/203	98-25121
21	Pointer-control rod	3/2	
22	Washer-locating screw	106/22	99-2991
23	Screw-barrel locating	21/12	
24	Seal-high pressure	21/139	
25	Seal-O-ring	359/142	
26	Spring-delivery valve	21/127	40-63170



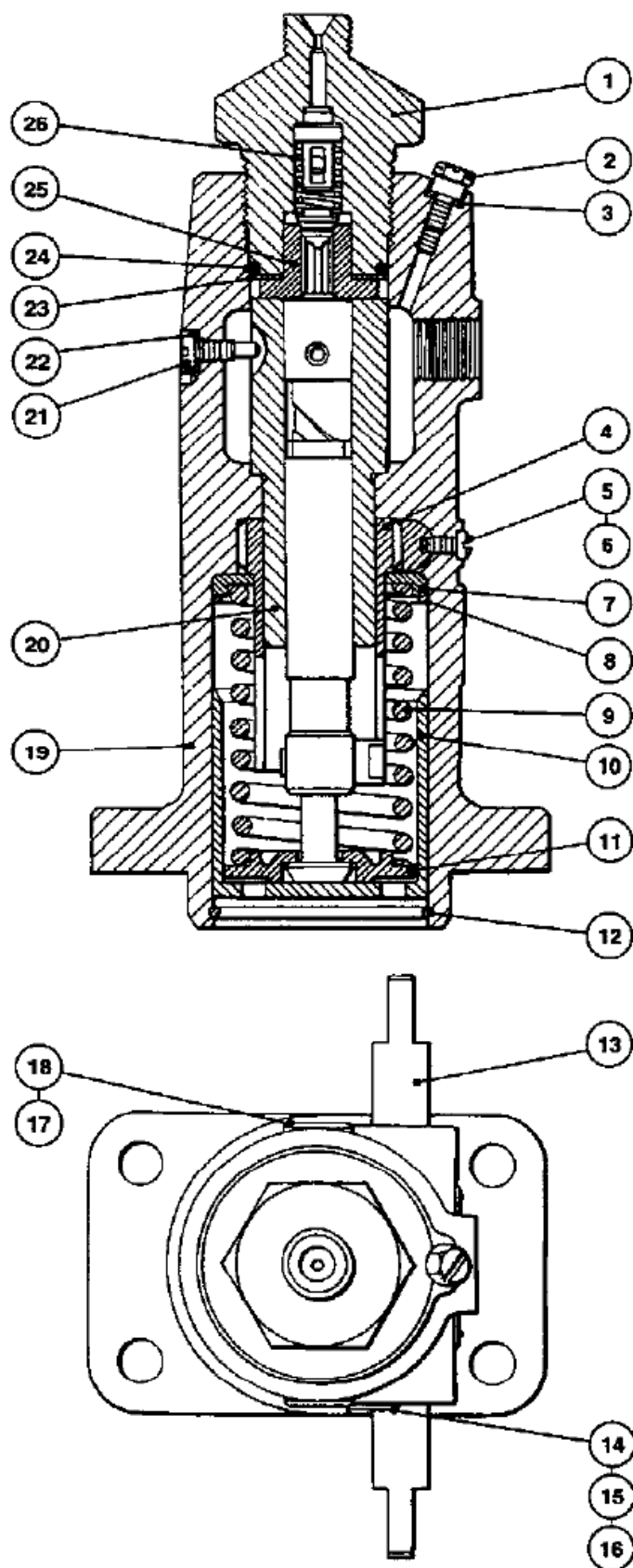
FXOAB200B0096 Fuel Injection Pump

FXOAB200B0182 Fuel Injection Pump for Mirrlees Blackstone Engines:

FSCP**FSCP (town gas)****FSS (300 to 600 rpm)**

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXOAB200B0182	
1	Delivery valve holder	21/132	
2	Screw-vent	3/216	
3	Washer-vent screw	106/5	98-25138
4	Control sleeve	21/249B	
5	Screw-control rod locating	13/9	
6	Lead seal	3/4699	98-25125
7	Spring plate-upper	21/7	
8	Circlip-upper	21/11	
9	Spring-plunger	21/8	
10	Tappet	21/5A	
11	Spring plate-lower	21/6	
12	Circlip-lower	21/17	
13	Control rod	21/65	
14	Pointer-control rod	3/2A	98-25120
15	Screw-pointer	297/203	98-25121
16	Shims-pointer (1AR)	106/1A-E	
17	Washer-spill plug (2)	113/62	98-25118
18	Spill plug (2)	122/3	
19	Pump housing	21/42	
20	Element assembly	21/19D	
21	Screw-barrel locating	21/12	
22	Washer-locating screw	106/22	99-2991
23	Seal-high pressure	21/139	
24	Seal-O-ring	359/142	
25	Delivery valve & seat assembly	21/125D	
26	Spring-delivery valve	21/127	40-63170

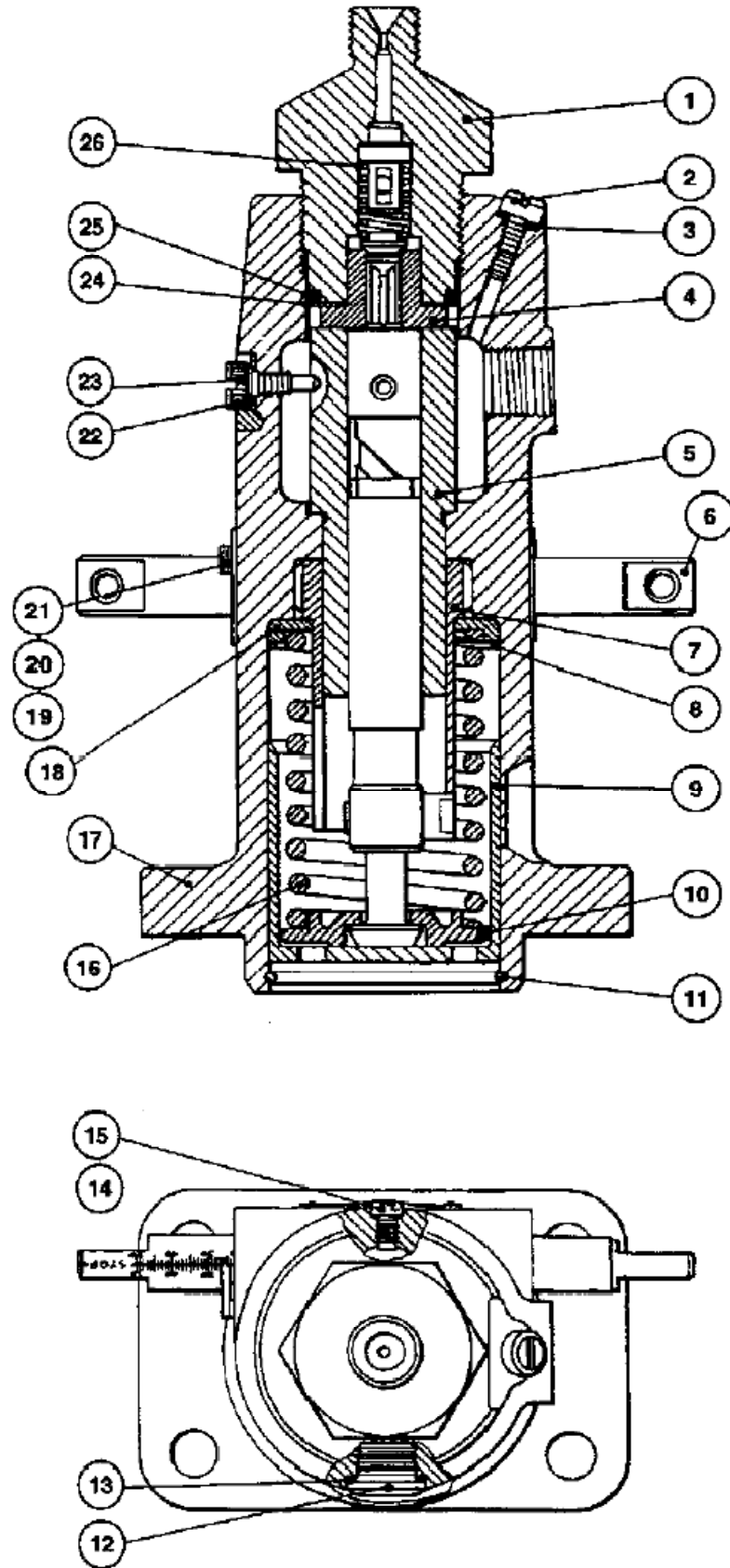


FXOAB200B0182 Fuel Injection Pump

FXOAB240B0357 Fuel Injection Pump for Mirrlees Blackstone K Series I Engine (turbocharged, heavy fuel)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXOAB240B0357	K19775
1	Delivery valve holder	21/229	
2	Screw-vent	3/216	
3	Washer-vent screw	106/5	98-25138
4	Delivery valve & seat assembly	6/118	
5	Element assembly L.H.	21/194F	K21914
6	Control rod	21/9	
7	Control sleeve	21/249A	
8	Circlip-upper	21/11	
9	Tappet	21/5A	
10	Spring plate-lower	21/6	
11	Circlip-lower	21/17	
12	Spill plug (2)	21/201	
13	Washer-spill plug (2)	113/62	98-25118
14	Screw-control rod locating	13/9	
15	Lead seal	3/4699	98-25125
16	Spring-plunger	21/8	
17	Pump housing	21/1	
18	Spring plate-upper	21/7	
19	Shims-pointer (1AR)	106/1A-E	
20	Screw-pointer	297/203	98-25121
21	Pointer-control rod	3/2	
22	Washer-locating screw	106/22	99-2991
23	Screw-barrel locating	21/12	
24	Seal-high pressure	21/139	
25	Seal-O-ring	359/142	
26	Spring-delivery valve	6/121	31-210-430

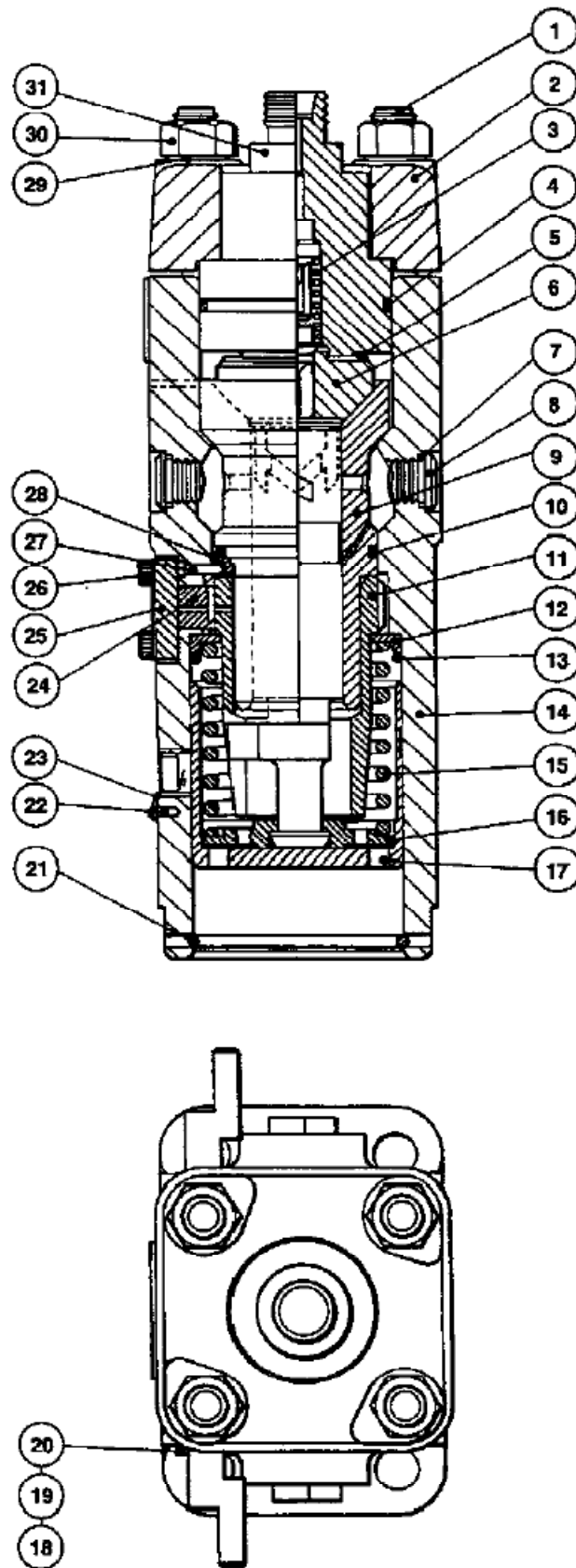


FXOAB240B0357 Fuel Injection Pump

FXXAB260A0408 Fuel Injection Pump for Mirrlees Blackstone K Series II Engine (heavy fuel)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB260A0408	
1	Stud-pump housing (4)	22/17	
2	Clamping plate	22/62	
3	Spring-delivery valve	22/52	
4	Seal-O-ring	359/165	
5	Seal-high pressure	22/51	
6	Delivery valve & seat assembly	22/91E	
7	Washer-spill plug (2)	113/62	98-25118
8	Spill plug (2)	122/3	
9	Element assembly	22/158S	
10	O-ring-barrel	372/25	
11	Control sleeve	22/95B	
12	Spring plate-upper	22/96	
13	Circlip-upper	22/24	
14	Pump housing	22/15	
15	Spring-plunger	22/89	
16	Spring plate-lower	22/84B	
17	Tappet	22/28	
18	Shims-pointer (1AR)	106/1A-E	
19	Screw-pointer	297/204	
20	Pointer-control rod	22/60A	
21	Circlip-lower	22/27	
22	Pin-timing window	315/610	
23	Pointer-timing window	32/39	
24	Control rod	22/29	
25	Cover plate	22/31	
26	Screw-cover plate (4)	22/32	
27	Dowel-barrel locating	22/63	
28	Backing ring seal (2)	394/1	
29	Washer-plain (4)	32/40	
30	Nut-clamping plate (4)	323/10	
31	Delivery valve holder	22/119	
32ND	Locking wire (AR)	20SWG	

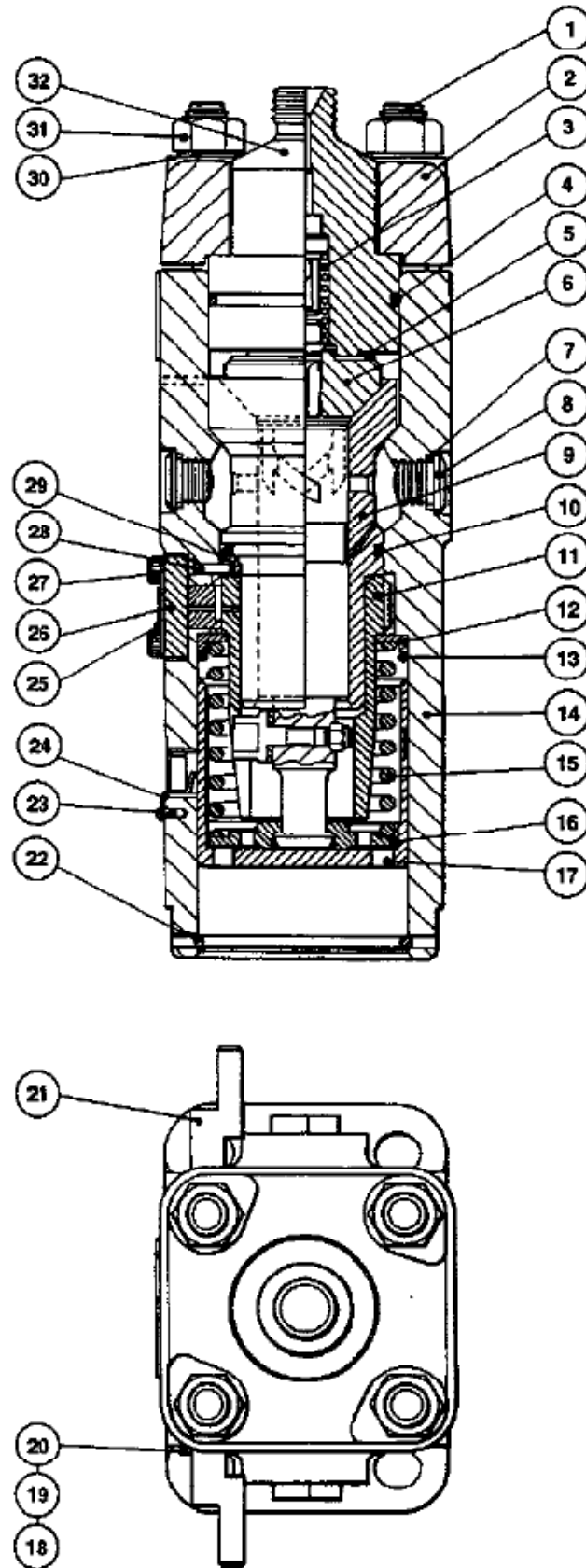


FXXAB260A0408 Fuel Injection Pump

FXXAB260A0476 Fuel Injection Pump for Mirrlees Blackstone K Series II Engine (light fuel, sheathed pipe)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB260A0476	
1	Stud-pump housing (4)	22/17	
2	Clamping plate	22/62	
3	Spring-delivery valve	22/52	
4	Seal-O-ring	359/165	
5	Seal-high pressure	22/51	
6	Delivery valve & seat assembly	22/91E	
7	Washer-spill plug (2)	113/62	98-25118
8	Spill plug (2)	122/3	
9	Element assembly	22/138	
10	Seal-O-ring	372/25	
11	Control sleeve	22/95B	
12	Spring plate-upper	22/96	
13	Circlip-upper	22/24	
14	Pump housing	22/15	
15	Spring-plunger	22/89	
16	Spring plate-lower	22/84B	
17	Tappet	22/28	
18	Shims-pointer (1AR)	106/1A-E	
19	Screw-pointer	297/204	
20	Pointer-control rod	22/60A	
21	Control rod	22/29	
22	Circlip-lower	22/27	
23	Pin-timing window	315/610	
24	Pointer-timing window	32/39	
25	Locking wire (AR)	20SWG	
26	Cover plate	22/31	
27	Screw-cover plate (4)	22/32	
28	Dowel-barrel locating	22/63	
29	Backing ring seal (2)	394/1	
30	Washer-plain (4)	32/40	
31	Nut-clamping plate (4)	323/10	
32	Delivery valve holder	22/121	

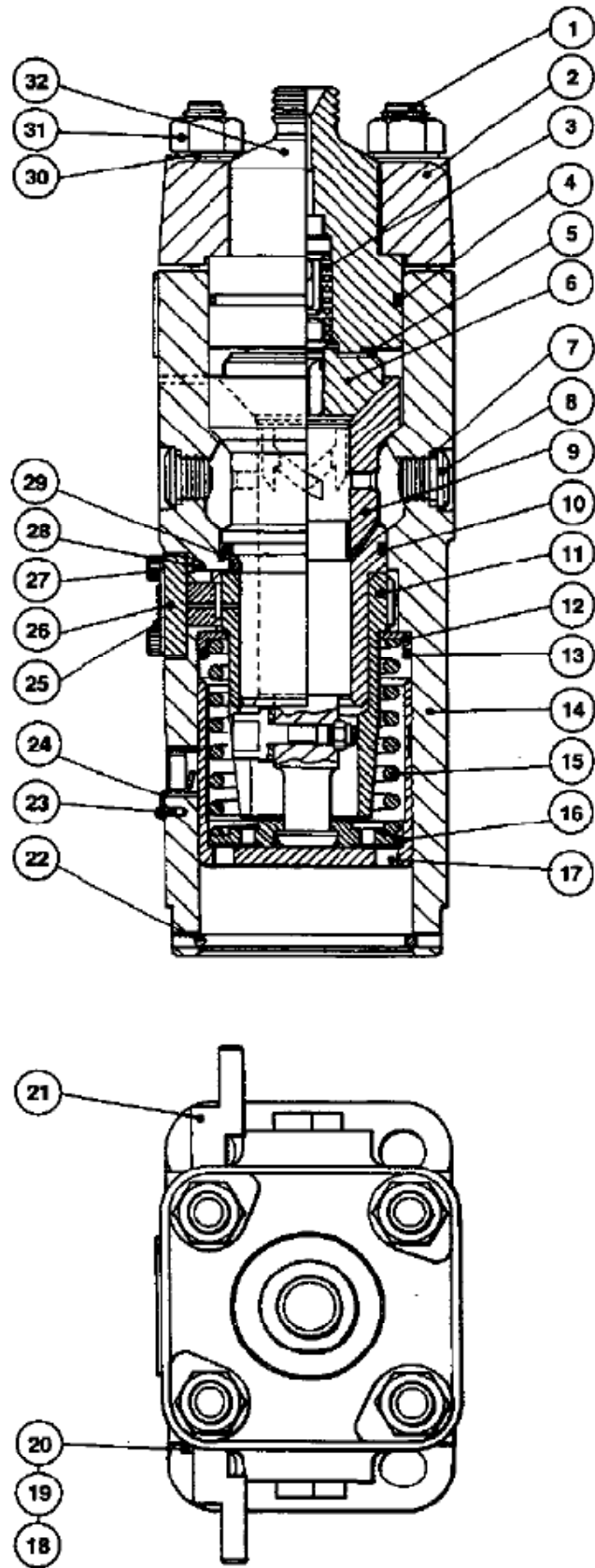


FXXAB260A0476 Fuel Injection Pump

FXXAB260B0422 Fuel Injection Pump for Mirrlees Blackstone K Series II Engine (light fuel)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB260B0422	
1	Stud-pump housing (4)	22/17	
2	Clamping plate	22/62	
3	Spring-delivery valve	22/52	
4	Seal-O-ring	359/165	
5	Seal-high pressure	22/51	
6	Delivery valve & seat assembly	22/91E	
7	Washer-spill plug (2)	113/62	98-25118
8	Spill plug (2)	122/3	
9	Element assembly	22/138	
10	Seal-O-ring	372/25	
11	Control sleeve	22/95B	
12	Spring plate-upper	22/96	
13	Circlip-upper	22/24	
14	Pump housing	22/15	
15	Spring-plunger	22/89	
16	Spring plate-lower	22/84B	
17	Tappet	22/28	
18	Shims-pointer (1AR)	106/1A-E	
19	Screw-pointer	297/204	
20	Pointer-control rod	22/60A	
21	Control rod	22/29	
22	Circlip-lower	22/27	
23	Pin-timing window	315/610	
24	Pointer-timing window	32/39	
25	Locking wire (AR)	20SWG	
26	Cover plate-control rod	22/31	
27	Screw-cover plate (4)	22/32	
28	Dowel-barrel locating	22/63	
29	Backing ring seal (2)	394/1	
30	Washer-plain (4)	32/40	
31	Nut-clamping plate (4)	323/10	
32	Delivery valve holder assembly	22/54	

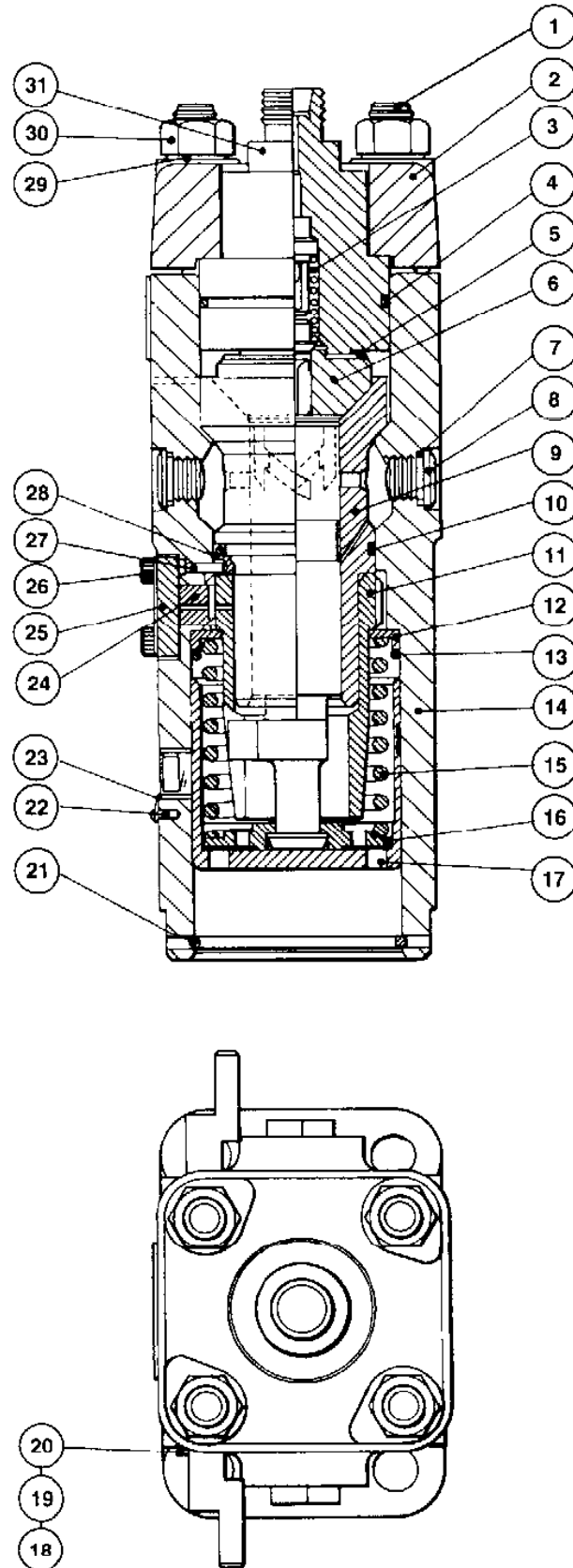


FXXAB260B0422 Fuel Injection Pump

**FXXAB280A0465 Fuel Injection Pump
for Mirrlees Blackstone K Major Mk I Engine
(heavy fuel, up to 220 bmep @500 rpm)**

(September 1997, Issue #4)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB280A0465	K33356
1	Stud-pump housing (4)	22/17	
2	Clamping plate	22/62	
3	Spring-delivery valve	22/52	
4	Seal-O-ring	359/165	
5	Seal-high pressure	22/51	
6	Delivery valve & seat assembly	22/91E	
7	Washer-spill plug (2)	113/62	98-25118
8	Spill plug (2)	122/3	
9	Element assembly L.H.	22/109	
10	Seal-O-ring	372/25	
11	Control sleeve	22/95B	
12	Spring plate-upper	22/96	
13	Circlip-upper	22/24	
14	Pump housing	22/15	
15	Spring-plunger	22/89	
16	Spring plate-lower	22/84B	
17	Tappet	22/28	
18	Shims-pointer (1AR)	106/1A-E	
19	Screw-pointer	297/204	
20	Pointer-control rod	22/60A	
21	Circlip-lower	22/27	
22	Pin-timing window	315/610	
23	Pointer-timing window	32/39	
24	Control rod	22/29	
25	Cover plate-control rod	22/31	
26	Screw-cover plate (4)	22/32	
27	Dowel-barrel locating	22/63	
28	Backing ring seal (2)	394/1	
29	Washer-plain (4)	32/40	
30	Nut-clamping plate (4)	323/10	
31	Delivery valve holder	22/122	
32ND	Locking wire (AR)	20SWG	



FXXAB280A0465 Fuel Injection Pump

FXXAB300B0430 Fuel Injection Pump for Mirrlees Blackstone Engines:

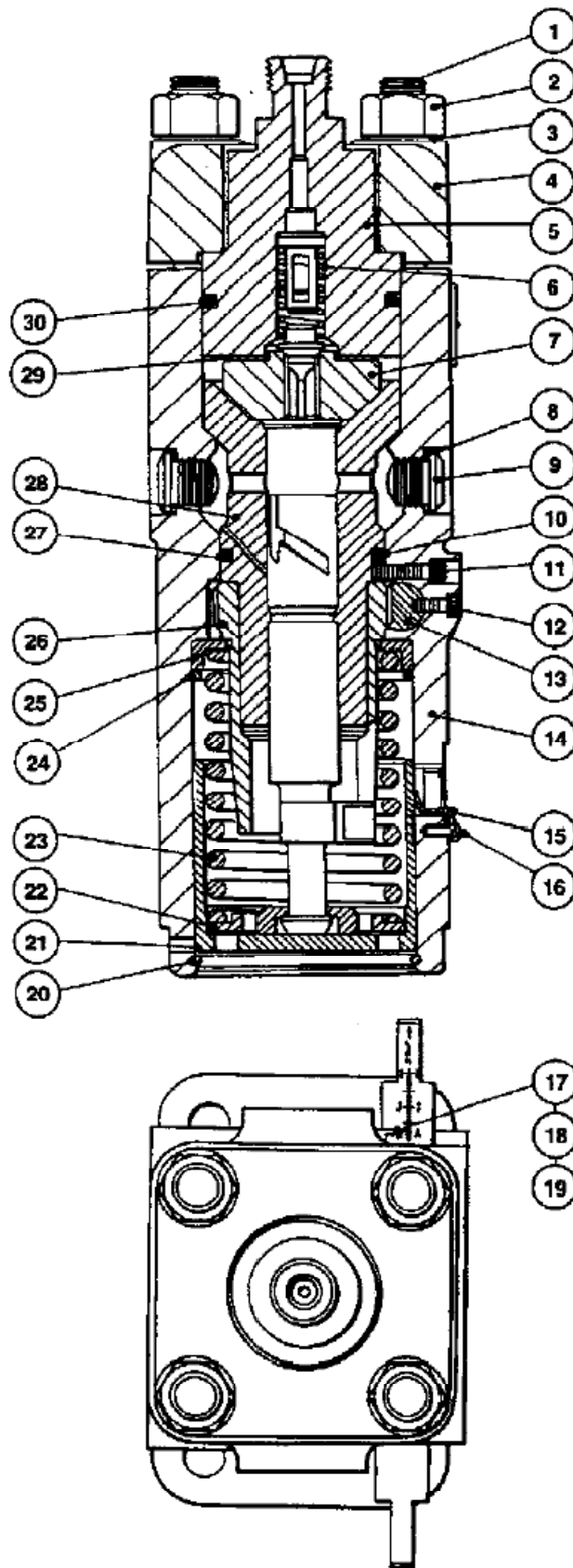
K Major Mk I (for prolonged light fuel running)

K Major Mk I (heavy fuel, up to 220 bmep @500 rpm)

K Major Mk I (light fuel, up to 220 bmep @500 rpm)

(January 1997, Issue #3)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB300B0430	K33322
1	Stud-pump housing (4)	22/17	
2	Nut-clamping plate (4)	323/10	
3	Washer-plain (4)	32/40	
4	Clamping plate	22/62	
5	Delivery valve holder	22/122	
6	Spring-delivery valve	22/52	
7	Delivery valve & seat assembly	22/91A	
8	Washer-spill plug (2)	113/62	98-25118
9	Spill plug (2)	122/3	
10	Backing ring seal (2)	394/1	
11	Screw-barrel locating	22/103	
12	Screw-control rod locating	22/101	
13	Control rod	22/102	
14	Pump housing	22/105	
15	Pointer-timing window	32/39	
16	Pin-timing window	315/610	
17	Pointer-control rod	3/2	
18	Screw-pointer	297/203	98-25121
19	Shims-pointer (1AR)	106/1A-E	
20	Circlip-lower	22/27	
21	Tappet	22/28	
22	Spring plate-lower	22/84B	
23	Spring-plunger	22/89	
24	Circlip-upper	22/24	
25	Spring plate-upper	22/96	
26	Control sleeve	22/95B	
27	O-ring-barrel	372/25	
28	Element assembly L.H.	22/141	
29	Seal-high pressure	22/51	
30	Seal-O-ring	359/165	



FXXAB300B0430 Fuel Injection Pump

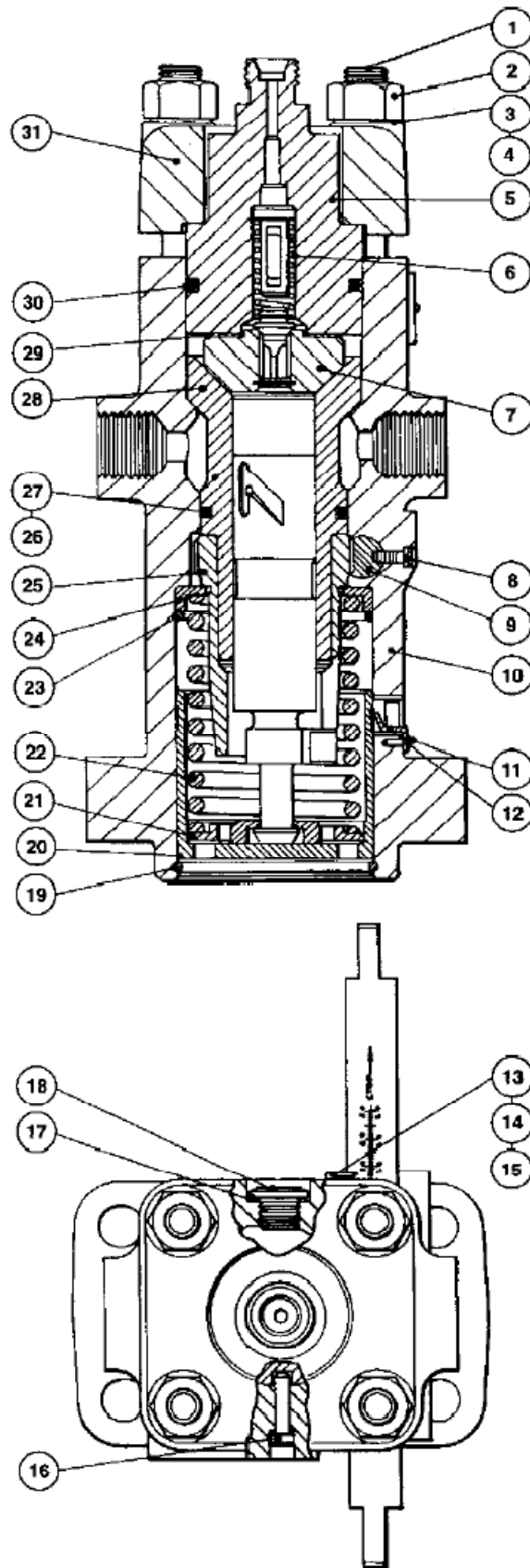
FXXAB300B0534 Fuel Injection Pump for Mirrlees Blackstone Engines:

K Major Mk I (light fuel, 220 bmep @600 rpm)

K Major Mk I (heavy fuel, 220 bmep @600 rpm)

(January 1997, Issue #3)

Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB300B0534	
1	Stud-pump housing (4)	22/17	
2	Nut-clamping plate (4)	323/10	
3	Washer-plain (4)	32/40	
4	Stud-button	22/149	
5	Delivery valve holder	22/146	
6	Spring-delivery valve	22/52	
7	Delivery valve & seat assembly	22/152	
8	Screw-control rod locating	22/101	
9	Control rod	22/154	
10	Pump housing	22/180	
11	Pin-timing window	315/610	
12	Pointer-timing window	32/39	
13	Pointer-control rod	3/2	
14	Screw-pointer	297/203	98-25121
15	Shims-pointer (1AR)	106/1A-E	
16	Dowel-barrel locating	22/103	
17	Washer-spill plug (2)	113/62	98-25118
18	Spill plug (2)	122/3	
19	Circlip-lower	22/27	
20	Tappet	22/28	
21	Spring plate-lower	22/84B	
22	Spring-plunger	22/144	
23	Circlip-upper	22/24	
24	Spring plate-upper	22/96	
25	Control sleeve	22/95C	
26	Backing ring seal (2)	394/1	
27	O-ring-barrel	372/25	
28	Element assembly	22/150U	
29	Seal-high pressure	22/51	
30	Seal-O-ring	359/165	
31	Clamping plate	22/62	



FXXAB300B0534 Fuel Injection Pump

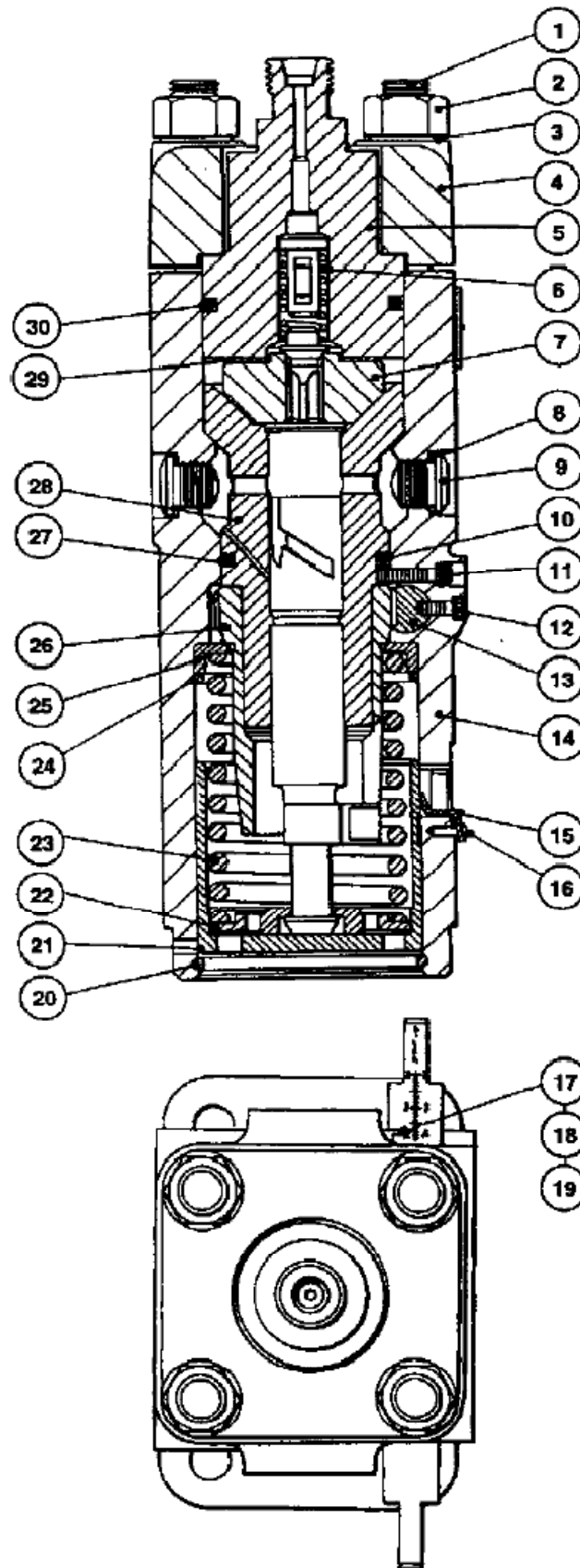
FXXAB300B0549 Fuel Injection Pump for Mirrlees Blackstone Engines:

K Major Mk I (light fuel, 250 bmep @500 rpm)

K Major Mk I (heavy fuel, up to 250 bmep @500 rpm)

(May 2000, Issue #7)

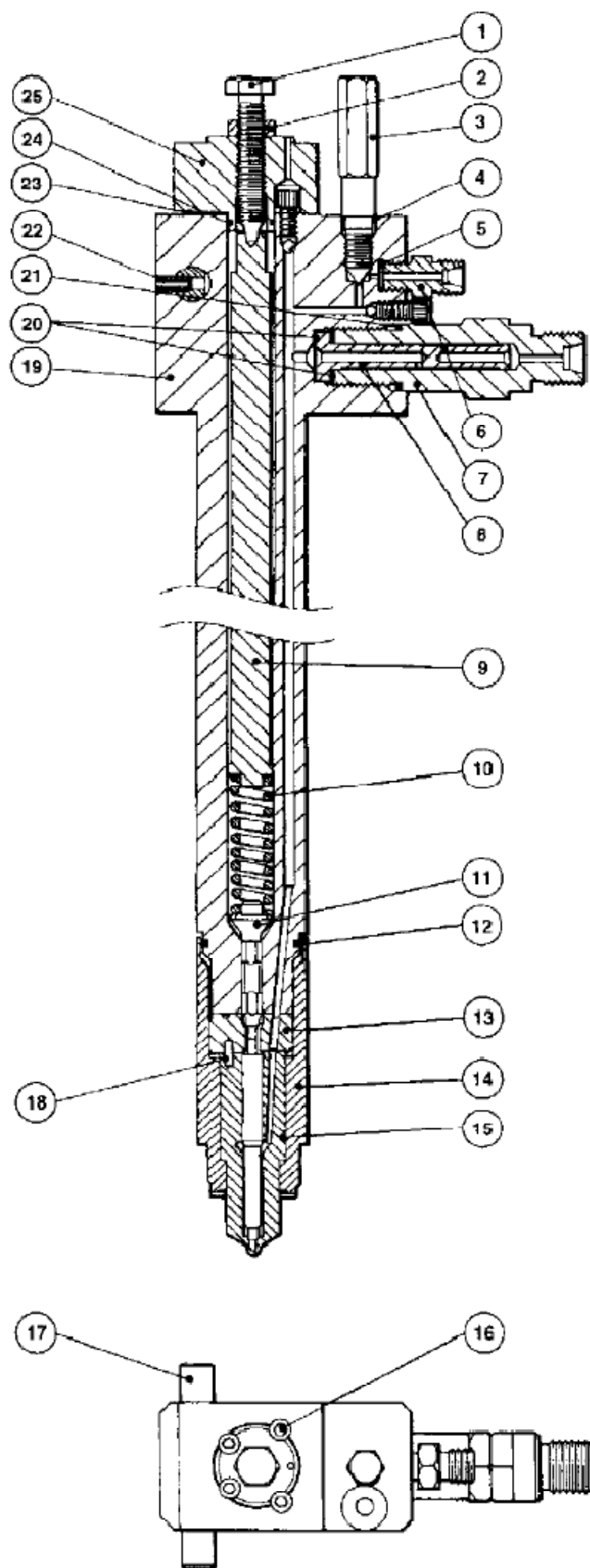
Item			
No.	Part Name	Woodward No.	Blackstone No.
	Fuel Pump	FXXAB300B0549	K39629
1	Stud-pump housing (4)	22/17	
2	Nut-clamping plate (4)	323/10	
3	Washer-plain (4)	32/40	
4	Clamping plate	22/62	
5	Delivery valve holder	22/146	
6	Spring-delivery valve	22/52	
7	Delivery valve & seat assembly	22/91A	
8	Washer-spill plug (2)	113/62	98-25118
9	Spill plug (2)	122/3	
10	Backing ring seal (2)	394/1	
11	Screw-barrel locating	22/103	
12	Screw-control rod locating	22/101	
13	Control rod	22/102	
14	Pump housing	22/105	
15	Pointer-timing window	32/39	
16	Pin-timing window	315/610	
17	Pointer-control rod	3/2	
18	Screw-pointer	297/203	98-25121
19	Shims-pointer (1AR)	106/1A-E	
20	Circlip-lower	22/27	
21	Tappet	22/28	
22	Spring plate-lower	22/84B	
23	Spring-plunger	22/144	
24	Circlip-upper	22/24	
25	Spring plate-upper	22/96	
26	Control sleeve	22/95B	
27	O-ring-barrel	372/25	
28	Element assembly L.H.	22/141	
29	Seal-high pressure	22/51	
30	Seal-O-ring	359/165	



FXXAB300B0549 Fuel Injection Pump

99/322 Injector
for Mirrlees Blackstone Engine:
K Major Mk I (heavy fuel, up to 220 bmep @500 rpm)
 (September 1997, Issue #4)

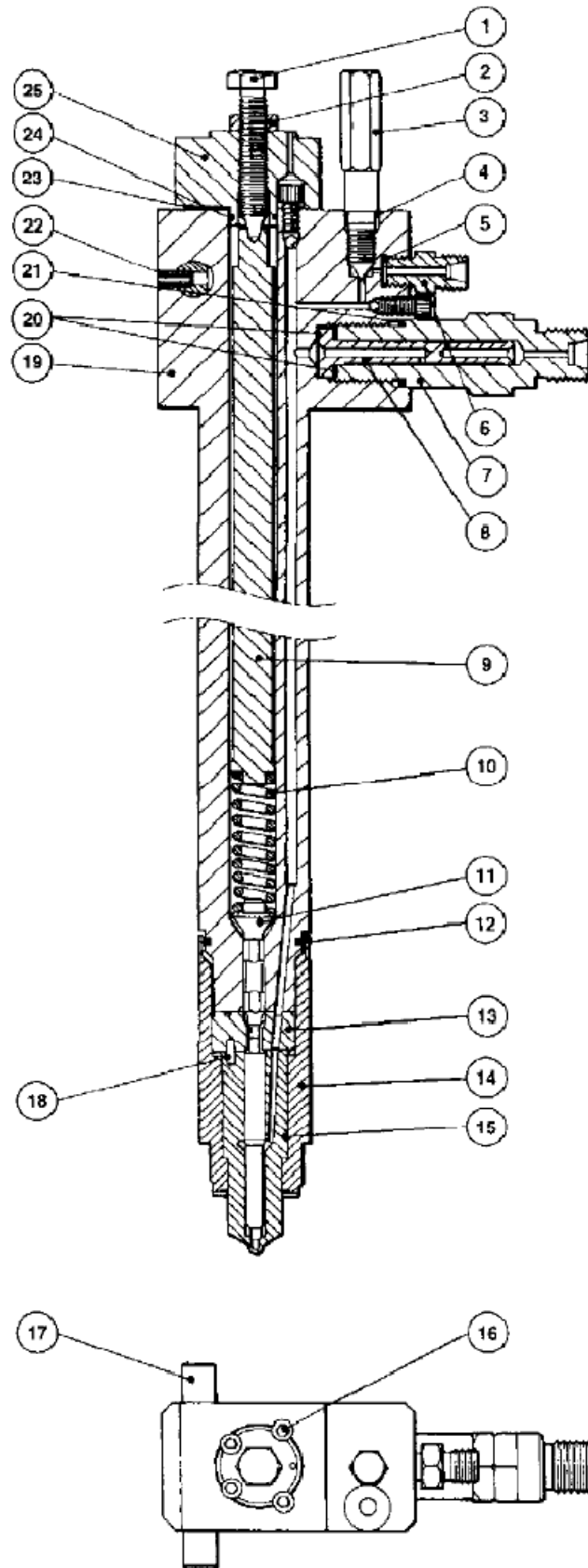
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/322	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/244	
8	Edge filter	53/181	
9	Spindle	53/255	
10	Spring-injector	53/183	
11	Spindle-one piece	53/295	
12	Seal-O-ring	372/19	
13	Transfer block	53/171	
14	Nozzle nut	53/172	
15	Nozzle assembly	HL135U67H821P6	K54475
16	Cap screw (4)	313/414	
17	Lifting handle	53/185	
18	Dowel (4)	53/5062	
19	Nozzle holder body assembly	53/254A	
20	Washer-inlet connector (2)	53/184	
21	Seal-O-ring	372/13	K32709
22	Dowel-lifting handle	357/1610	
23	Washer	53/261	
24	O-ring	235/44	
25	Top cap	53/257A	



99/322 Injector

99/323 Injector
for Mirrlees Blackstone Engine:
K Major Mk I (light fuel, up to 220 bmep @500 rpm)
 (September 1997, Issue #4)

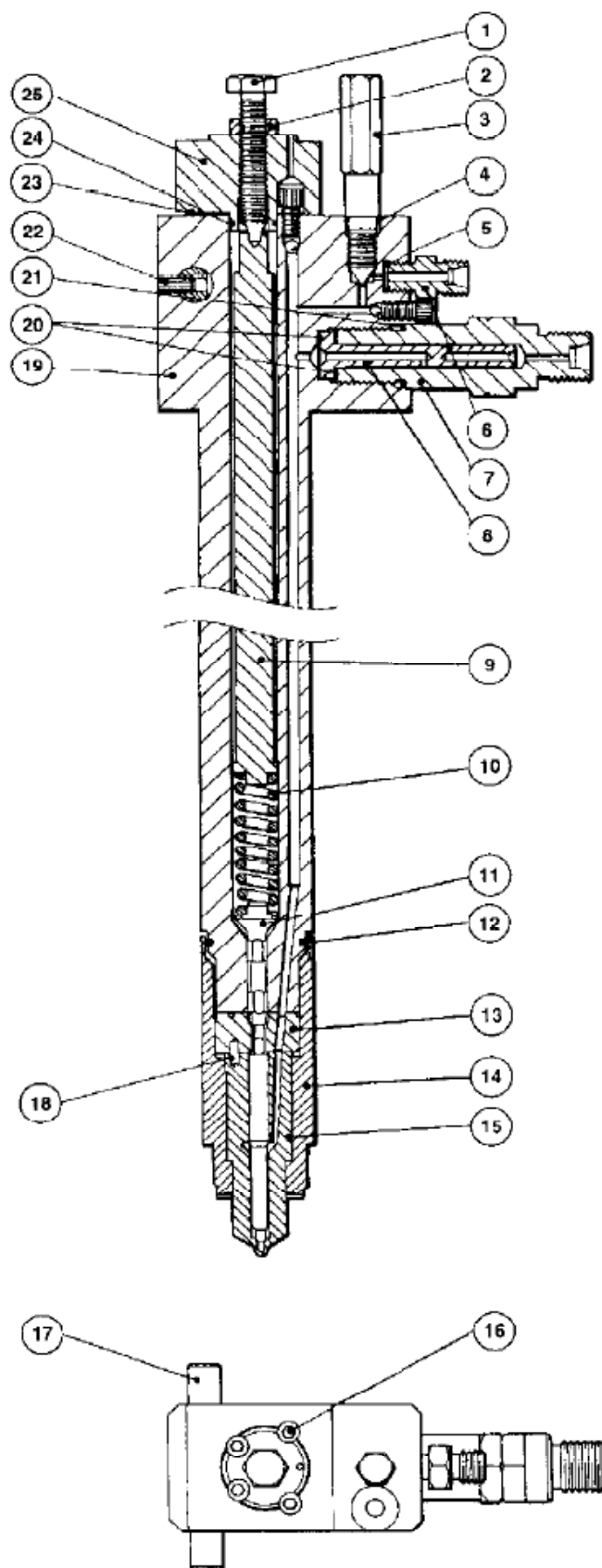
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/323	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/244	
8	Edge filter	53/181	
9	Spindle	53/255	
10	Spring-injector	53/183	
11	Spindle-one piece	53/295	
12	Seal-O-ring	372/19	
13	Transfer block	53/191	
14	Nozzle nut	53/172	
15	Nozzle assembly	HL135U67H820P6	K54474
16	Cap screw (4)	313/414	
17	Lifting handle	53/185	
18	Dowel (4)	53/5062	
19	Nozzle holder body assembly	53/254B	
20	Washer-inlet connector (2)	53/184	
21	Seal-O-ring	372/13	K32709
22	Dowel-lifting handle	357/1610	
23	Washer	53/261	
24	O-ring	235/44	
25	Top cap	53/257B	



99/323 Injector

99/332 Injector
for Mirrlees Blackstone Engines:
EGS, ERS, ESS, EVS
ERDFS, ESDFS, EVDFS
 (April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/332	99-33025 99-33025-0B
1	Cap nut	7008/429C	98-25046
2	Locknut-adjusting screw	NU7-20Y1	99-3098
3	Washer	NW5-60	
4	Spring housing	7008/35E	98-25040
5	Screw-adjusting	52/483	98-25047 98-25052
6	Spring-injector	7024/185	98-25039
7	Spindle assembly	7024/186	98-25037
8	Nozzle holder body	7024/2F	
9	Nozzle assembly	H160T40F464P3	99-33026
10	Nozzle nut	7024/13	99-07252 99-7252
11	Washer-inlet connector	106/83	31-230-220 98-25161 99-30354
12	Inlet connector	52/462	02-68748



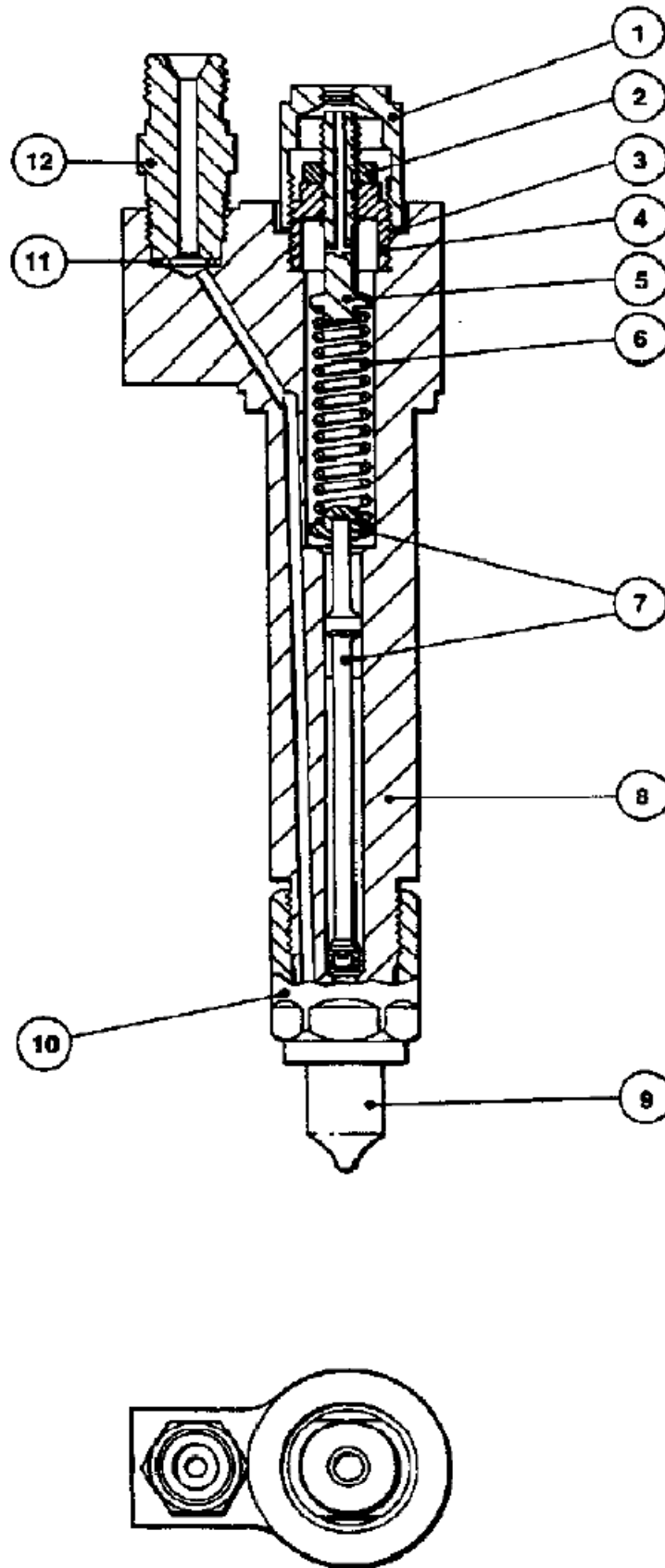
99/332 Injector

99/396 Injector for Mirrlees Blackstone Engine

**ECSL, ESSL, ETS, ETSL,
EWSL, EXSL, EYSL, EZSL**

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/396	99-33030 99-33030-0B
1	Cap nut	7008/429C	98-25046
2	Locknut-adjusting screw	NU7-20Y1	99-3098
3	Washer	NW5-60	
4	Spring housing	7008/35E	98-25040
5	Screw-adjusting	52/483	98-25047 98-25052
6	Spring-injector	7024/185	98-25039
7	Spindle assembly	7024/186	98-25037
8	Nozzle holder body	7024/2F	
9	Nozzle assembly	H160T45F464P4	99-33029
10	Nozzle nut	7024/13	99-07252 99-7252
11	Washer-inlet connector	106/83	31-230-220 98-25161 99-30354
12	Inlet connector	52/462	02-68748

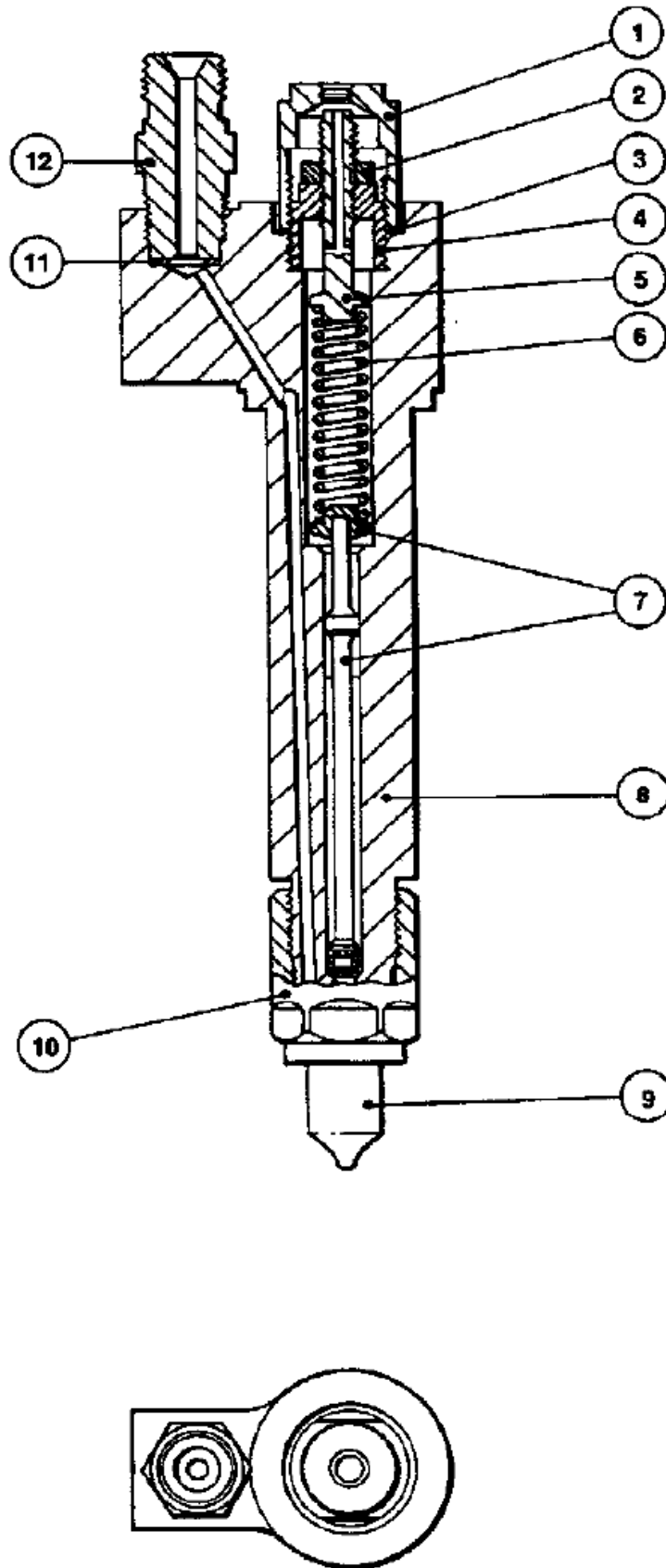


99/396 Injector

99/397 Injector for Mirrlees Blackstone EB Engine

(April 1995, Issue #2)

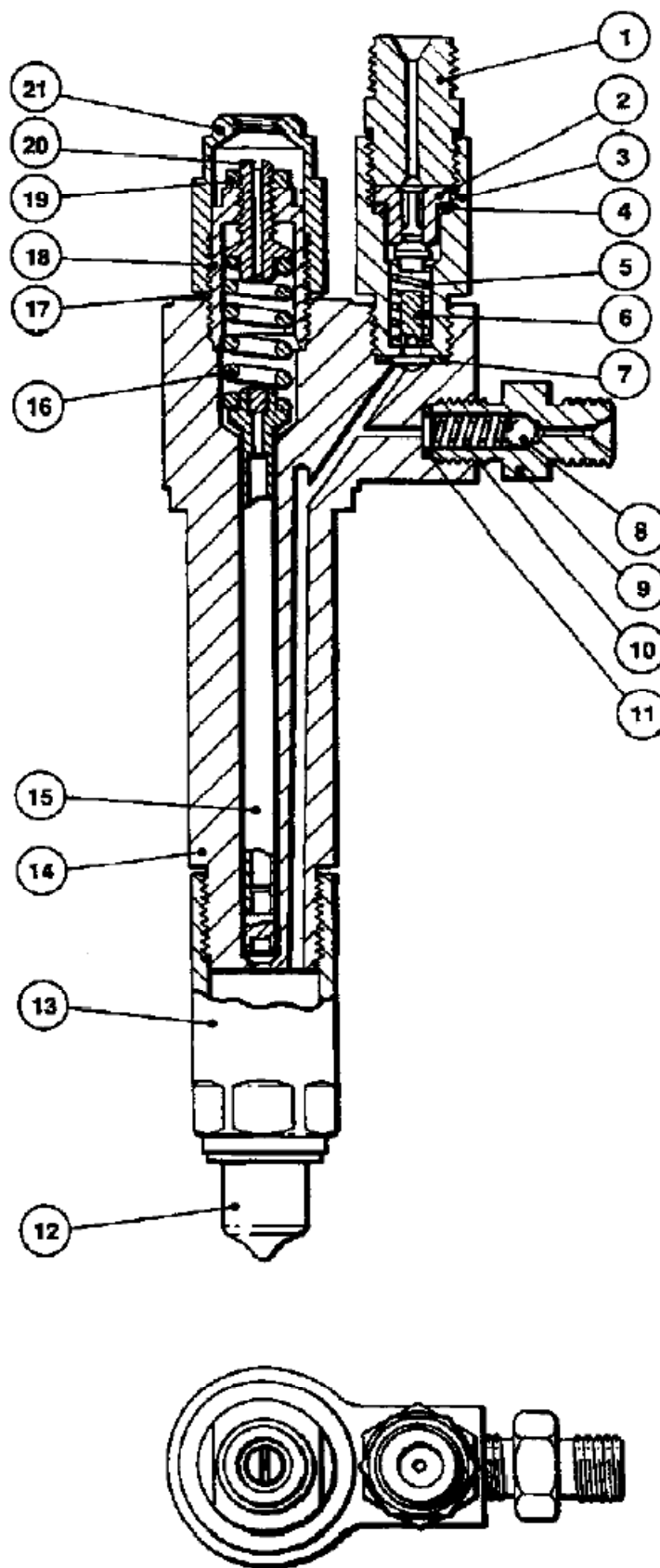
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/397	
1	Cap nut	7008/429C	98-25046
2	Locknut-adjusting screw	NU7-20Y1	99-3098
3	Washer	NW5-60	
4	Spring housing	7008/429C	98-25040
5	Screw-adjusting	52/483	98-25047
			98-25052
6	Spring-injector	7027/185	98-25039
7	Spindle assembly	7024/186	98-25037
8	Nozzle holder body	7024/2F	
9	Nozzle assembly	H160T36FP5	99-33027
10	Nozzle nut	7024/13	99-07252
			99-7252
11	Washer-inlet connector	106/83	31-230-220
			98-25161
			99-30354
12	Inlet connector	52/462	02-68748



99/397 Injector

99/399 Injector
for Mirrlees Blackstone Engines:
ERDFS, ESDFS, EVDFS
 (April 1995, Issue #2)

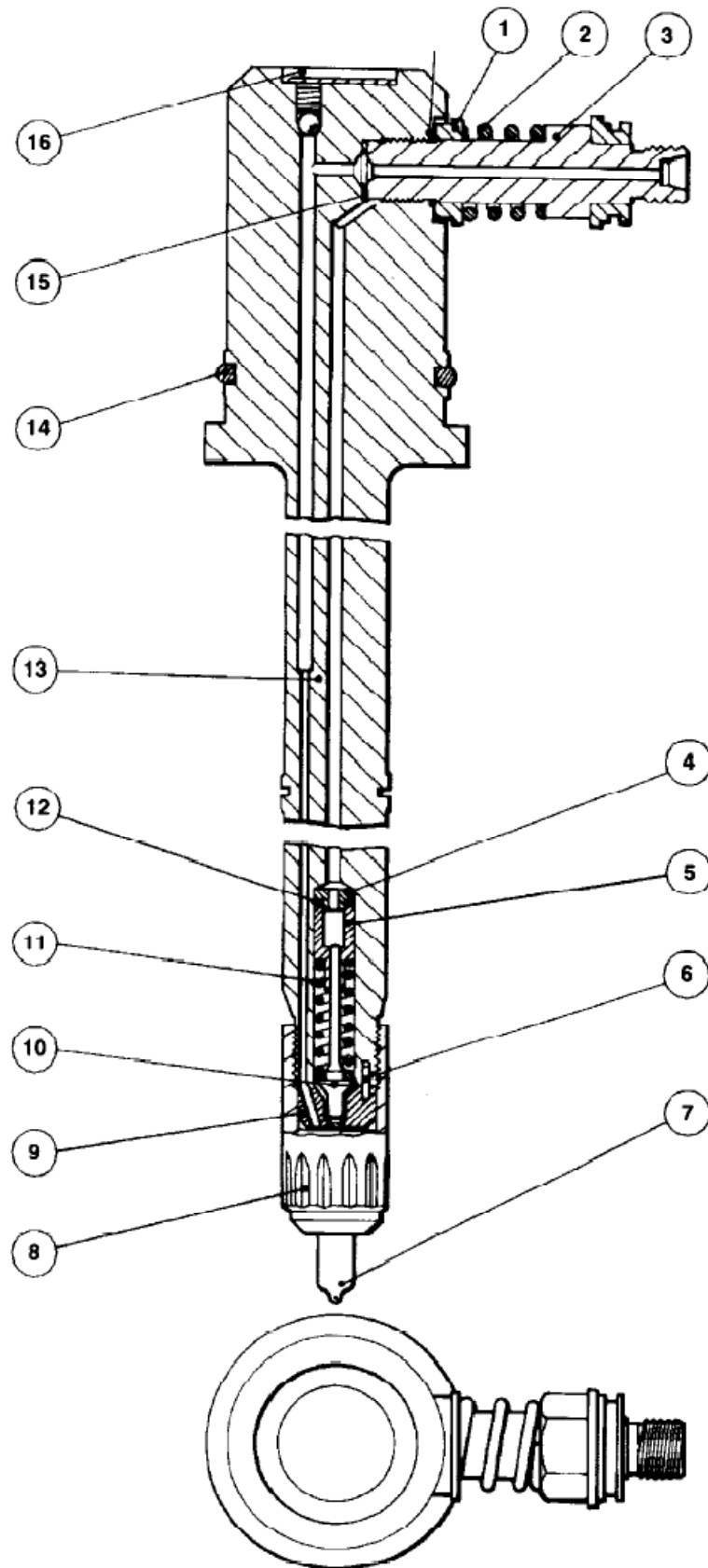
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/399	02-68310 61-76200
1	Inlet connector	52/407	
2	Delivery valve & seat assembly	1/367X	
3	Delivery valve holder	52/406	
4	Seal-high pressure	52/413	98-25159
5	Spring-delivery valve	13/212	
6	Spring peg	52/412	
7	Washer-inlet connector	106/83	31-230-220 98-25161 99-30354
8	Steel ball	200/8	
9	Washer-inlet connector	52/422	
10	Spring	52/408	
11	Inlet connector	52/404	
12	Nozzle assembly	HL160T40F637P3	
13	Nozzle nut	52/96	
14	Nozzle holder body	52/403	
15	Spindle assembly	52/206E	
16	Spring-injector	52/259	
17	Washer	113/9	98-25151
18	Spring housing	52/114	
19	Locknut-adjusting screw	112/5011	
20	Screw adjusting	52/409	
21	Cap nut	52/405	



99/399 Injector

99/456 Injector
for Mirrlees Blackstone Engine:
MB275 (17 bar, light fuel)
(May 2000, Issue #7)

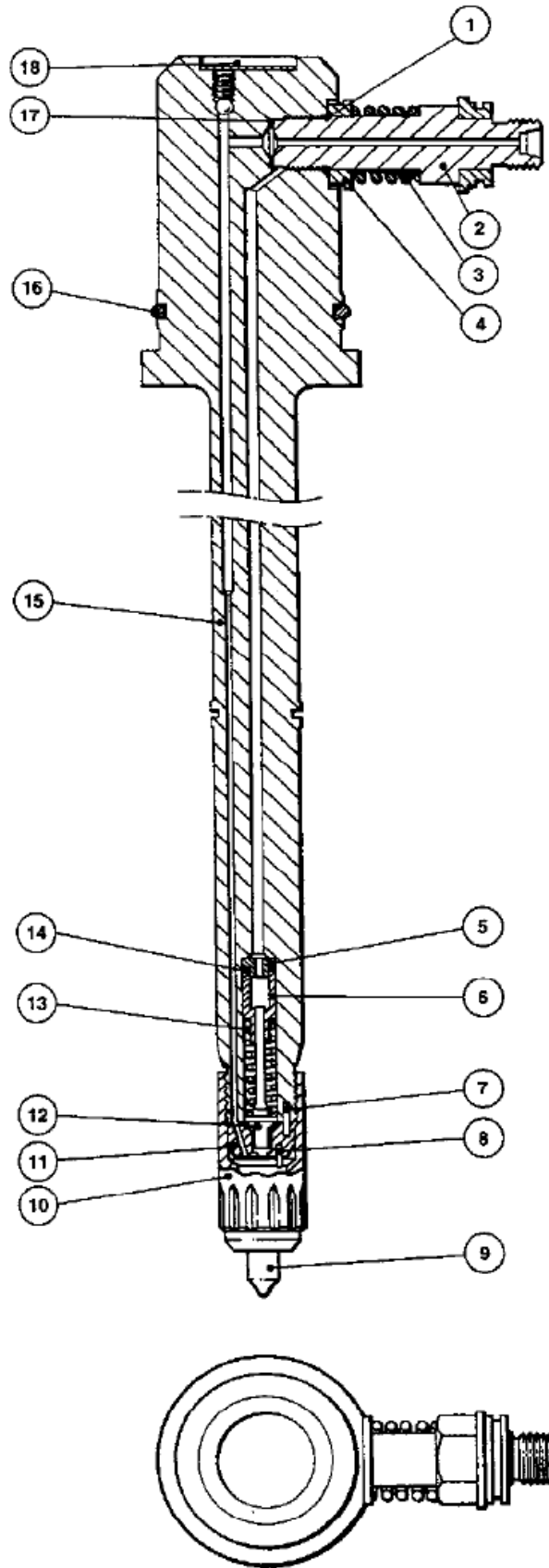
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/456	MB2022
1	Thrusting-seal	52/519	
2	Spring-seal	15/53	
3	Inlet connector assembly	52/521	
4	Plate shim	52/433	31-231-170
5	Spring plate-upper	52/445	31-230-160 40-64080
6	Dowel (2)	52/440	31-230-060 40-64030 4064030
7	Nozzle assembly	HL155T46K879P4	
8	Nozzle nut	52/480	40-64160
9	Transfer block	52/485	31-230-070 40-64040
10	Spindle-guided thrust	52/357	31-230-080
11	Spring-injector	52/444	31-230-150 40-64070
12	Shim (AR)	NW2/77-80	
13	Nozzle holder body assembly	52/515	
14	Seal-O-ring	52/522B	
15	Washer-inlet connector	113/102	
16	Core plug	52/447	
17ND	Clamp injector	52/522A	



99/456 Injector

99/457 Injector
for Mirrlees Blackstone Engine:
MB275 (heavy fuel)
 (April 1995, Issue #2)

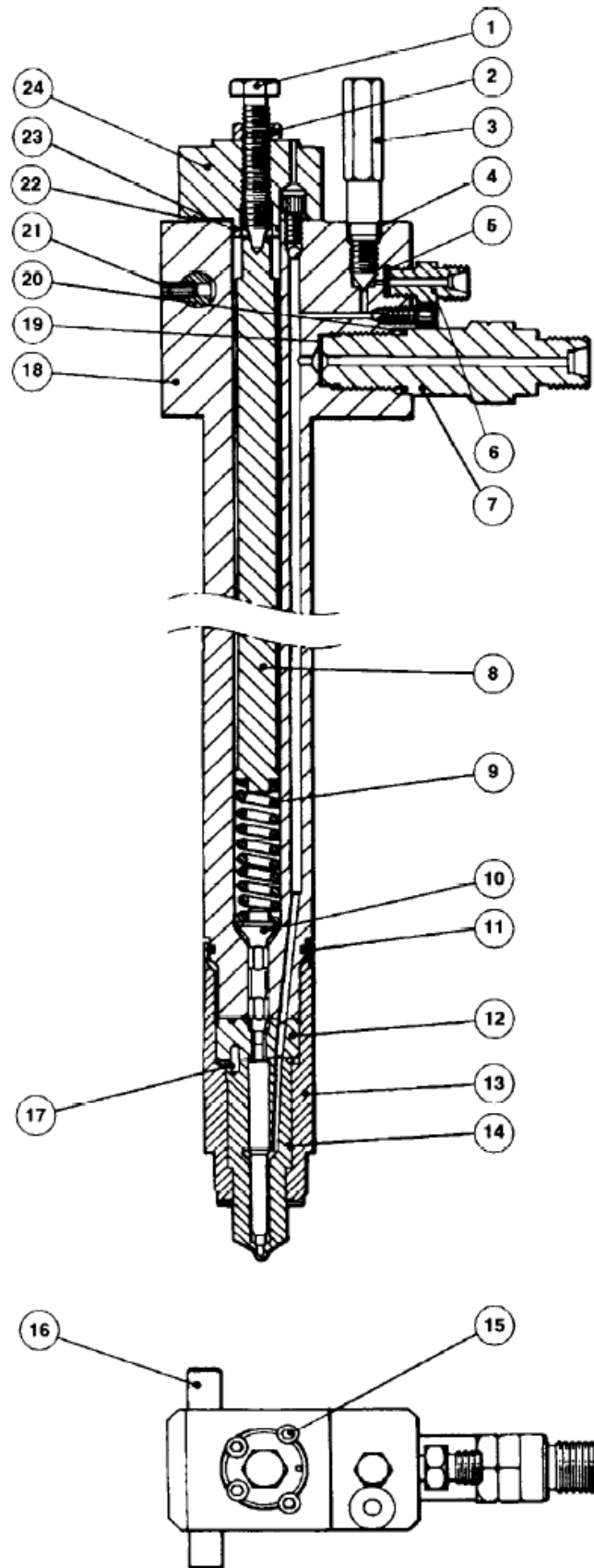
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/457	MB2023
1	Seal-O-ring	372/51	
2	Thrusting-seal	52/519	
3	Spring-seal	15/53	
4	Inlet connector assembly	52/521	
5	Plate shim	52/433	31-231-170
6	Spring plate-upper	52/445	31-230-160 40-64080
7	Dowel (2)	52/440	31-230-060 40-64030 4064030
8	Dowel (2)	51/415C	
9	Nozzle assembly	HL155T46K880P4	
10	Nozzle nut	52/480	40-64160
11	Transfer block	52/439	
12	Spindle-guided thrust	52/357	31-230-080
13	Spring-injector	52/444	31-230-150 40-64070
14	Shim (AR)	NW2/77-80	
15	Nozzle holder body assembly	52/441	
16	Seal-O-ring	52/522B	
17	Washer-inlet connector	113/102	
18	Core plug	52/447	



99/457 Injector

99/460 Injector
for Mirrlees Blackstone Engines:
K Major Mk II (dual fuel, 250 bmep @600 rpm)
K Major Mk III (heavy fuel)
(May 2000, Issue #7)

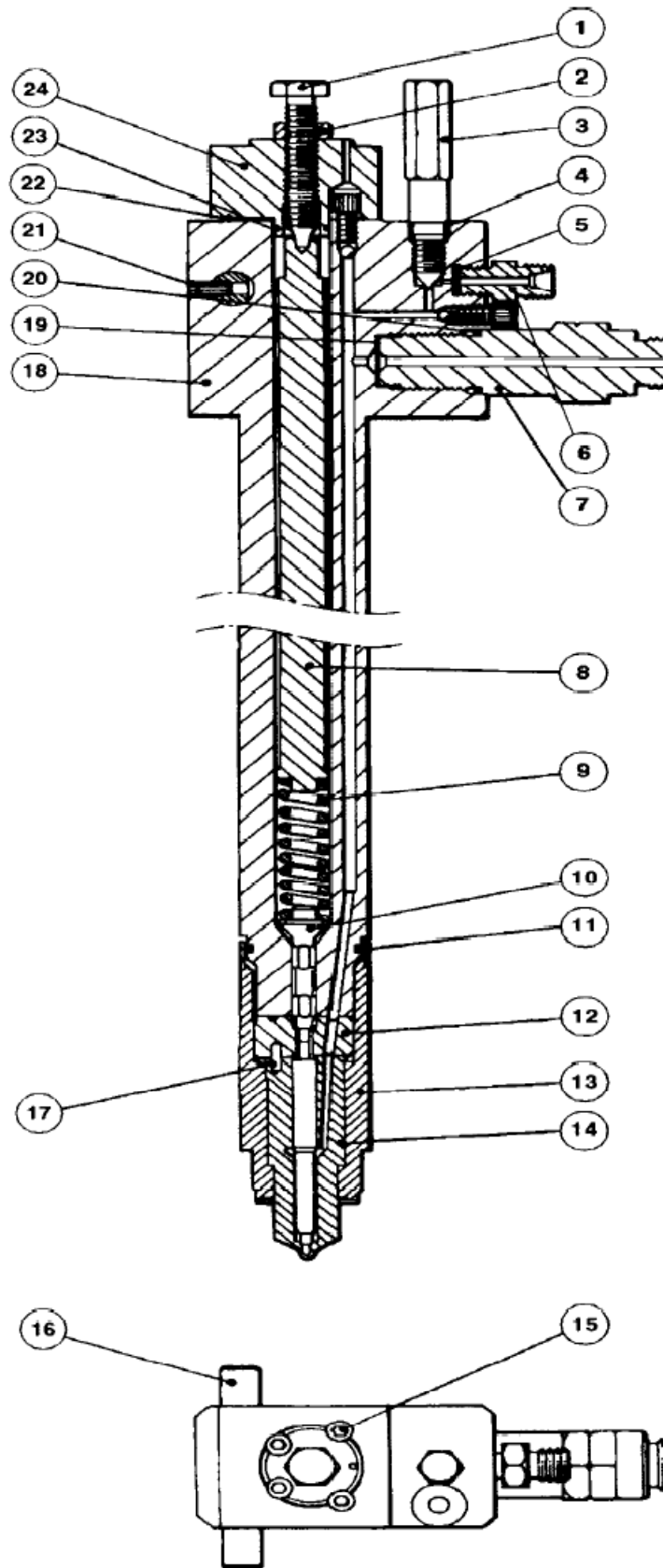
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/460	K52699
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/171	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL135U68K787P6	K52599
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Dowel (4)	53/5062	
18	Nozzle holder body assembly	53/254A	
19	Washer-inlet connector	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257A	



99/460 Injector

99/487 Injector
for Mirrlees Blackstone Engines:
K Major Mk I (heavy fuel, 200 bmep, 500 rpm)
(May 2000, Issue #7)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/487	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/171	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL135U67H821P6	K54475
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Dowel (4)	53/5062	
18	Nozzle holder body assembly	53/254A	
19	Washer-inlet connector (2)	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257A	

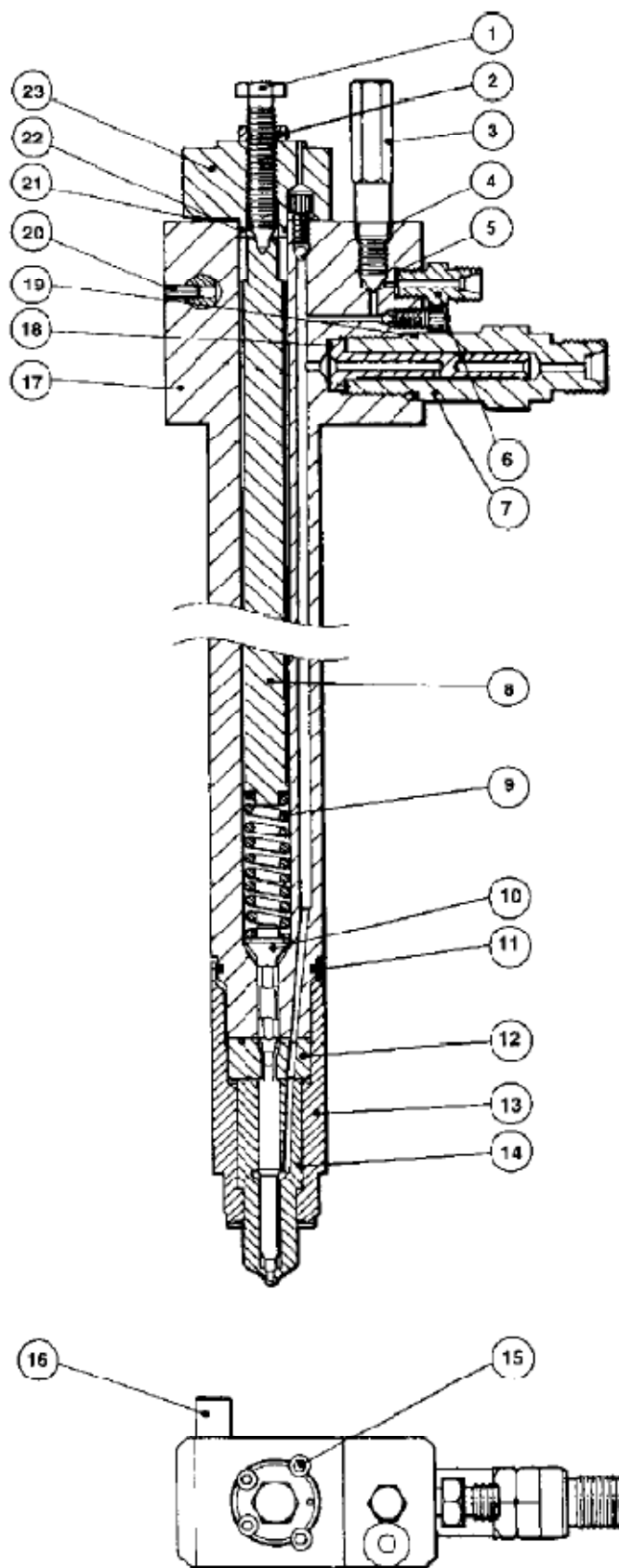


99/487 Injector

99/488 Injector**for Mirrlees Blackstone Engines:****K Major Mk II (light fuel, 220 bmep @600 rpm)****K Major Mk II (light fuel, 250 bmep @600 rpm)**

(May 2000, Issue #7)

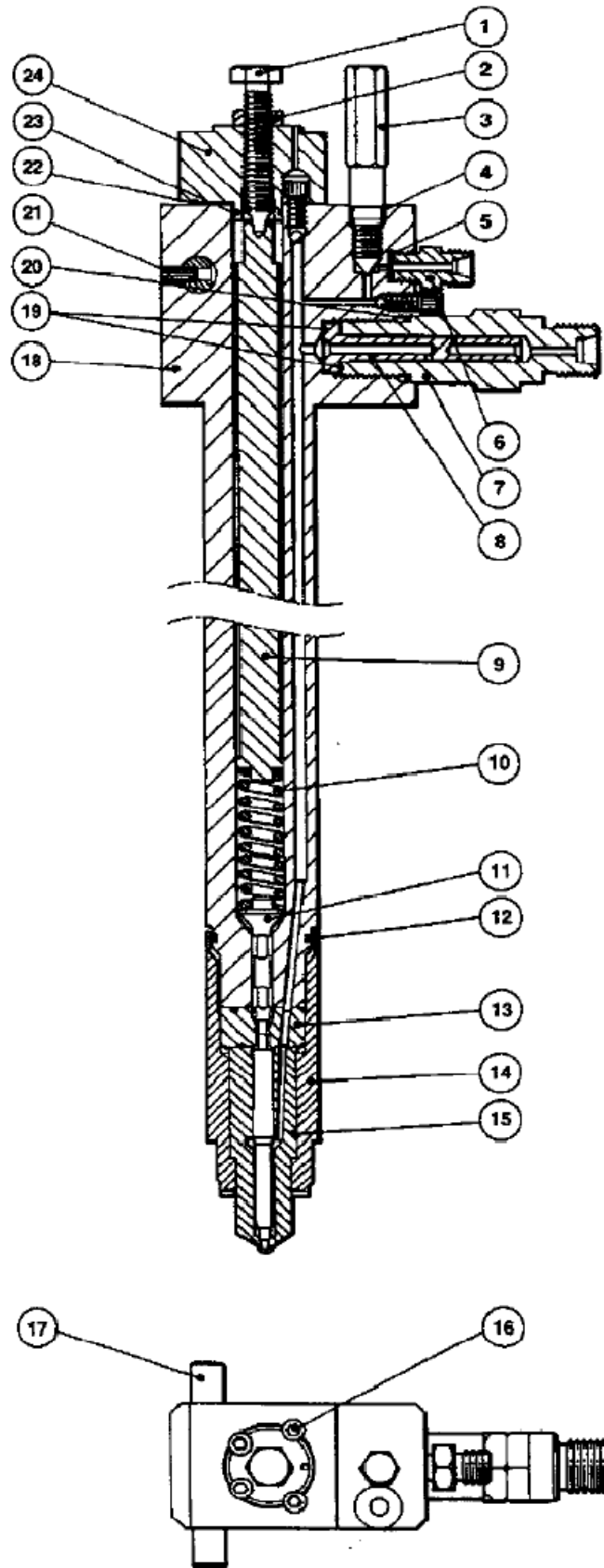
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/488	K54572
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/191	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL135U67H820P6	K54474
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Nozzle holder body assembly	53/254B	
18	Washer-inlet connector (2)	53/184	
19	Seal-O-ring	372/13	K32709
20	Dowel-lifting handle	357/1610	
21	Washer	53/261	
22	O-ring	235/44	
23	Top cap	53/257B	



99/488 Injector

99/489 Injector
for Mirrlees Blackstone Engines:
K Major Mk III (light fuel)
 (October 1998, Issue #5)

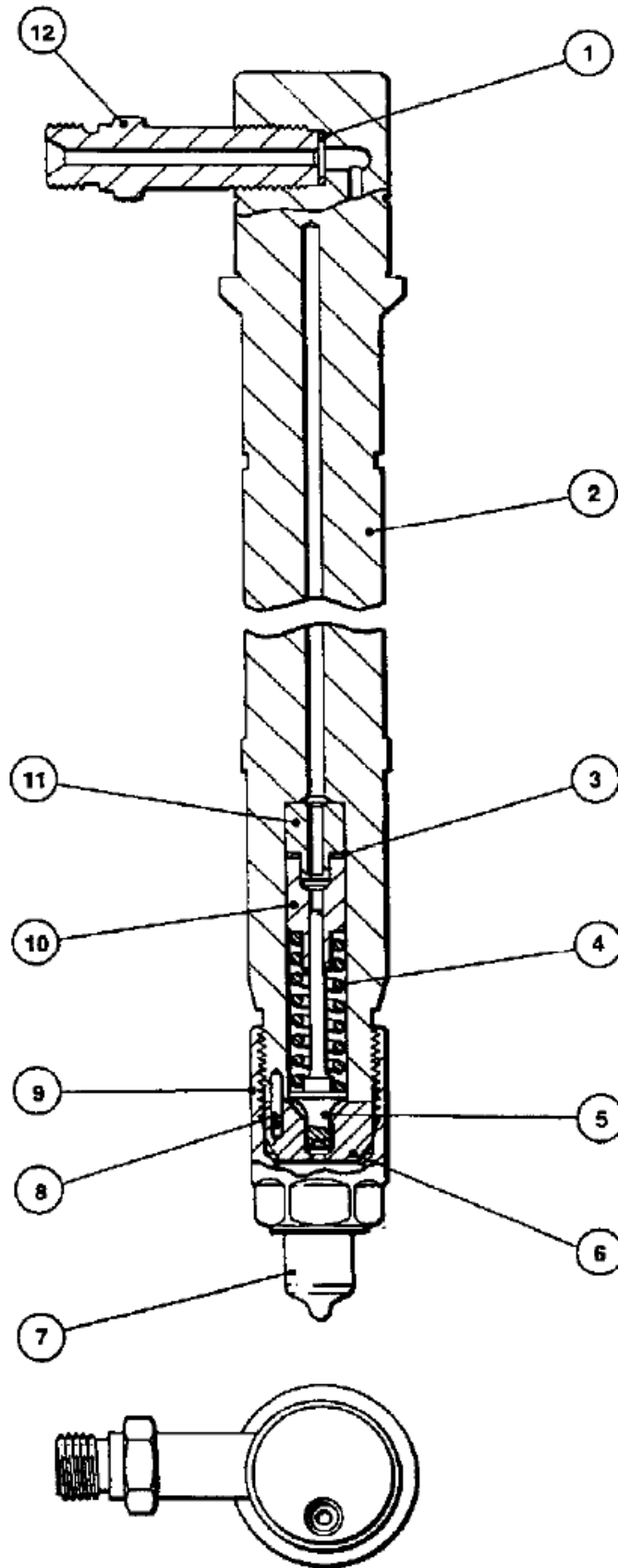
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/489	K54908
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Edge filter	53/181	
9	Spindle	53/255	
10	Spring-injector	53/183	
11	Spindle-one piece	53/295	
12	Seal-O-ring	372/19	
13	Transfer block	53/191	
14	Nozzle nut	53/172	
15	Nozzle assembly	HL135U68K858P6	K54910
16	Cap screw (4)	313/414	
17	Lifting handle	53/185	
18	Nozzle holder body assembly	53/254B	
19	Washer-inlet connector (2)	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257B	



99/489 Injector

99/490 Injector
for Mirrlees Blackstone Engine:
ESL Mk II (4 valve head)
 (April 1995, Issue #2)

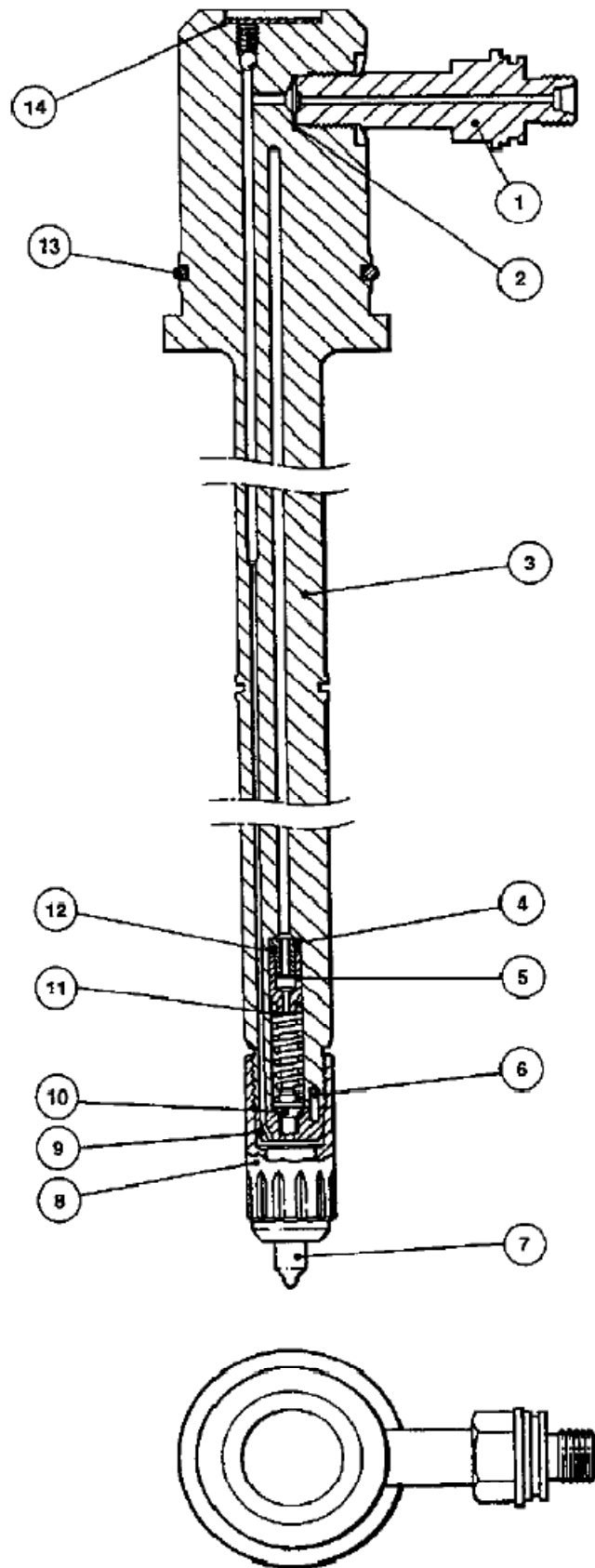
Item			
No.	Part Name	Woodward No.	Mirrlees No.
1	Injector	99/490	31-023-001
	Washer-inlet connector	106/83	31-230-220
			98-25161
			99-30354
2	Nozzle holder body assembly	52/503	
3	Shim (1AR)	NW2/76-80	
4	Spring-injector	52/444	31-230-150
5	Spindle-guided thrust	52/357	40-64070
			31-230-080
			40-64050
6	Transfer block	52/485	40-64040
7	Nozzle assembly	H145T38H464P4	31-230-111
8	Dowel (2)	52/440	31-230-060
9	Nozzle nut	52/505	40-64030
			31-230-130
			31-230-160
10	Spring plate-upper	52/445	40-64080
11	Plate-shim	52/513	31-230-170
12	Inlet connector	52/508	31-230-210



99/490 Injector

99/504 Injector
for Mirrlees Blackstone Engine:
MB275 (19 bar, light fuel)
(April 1995, Issue #2)

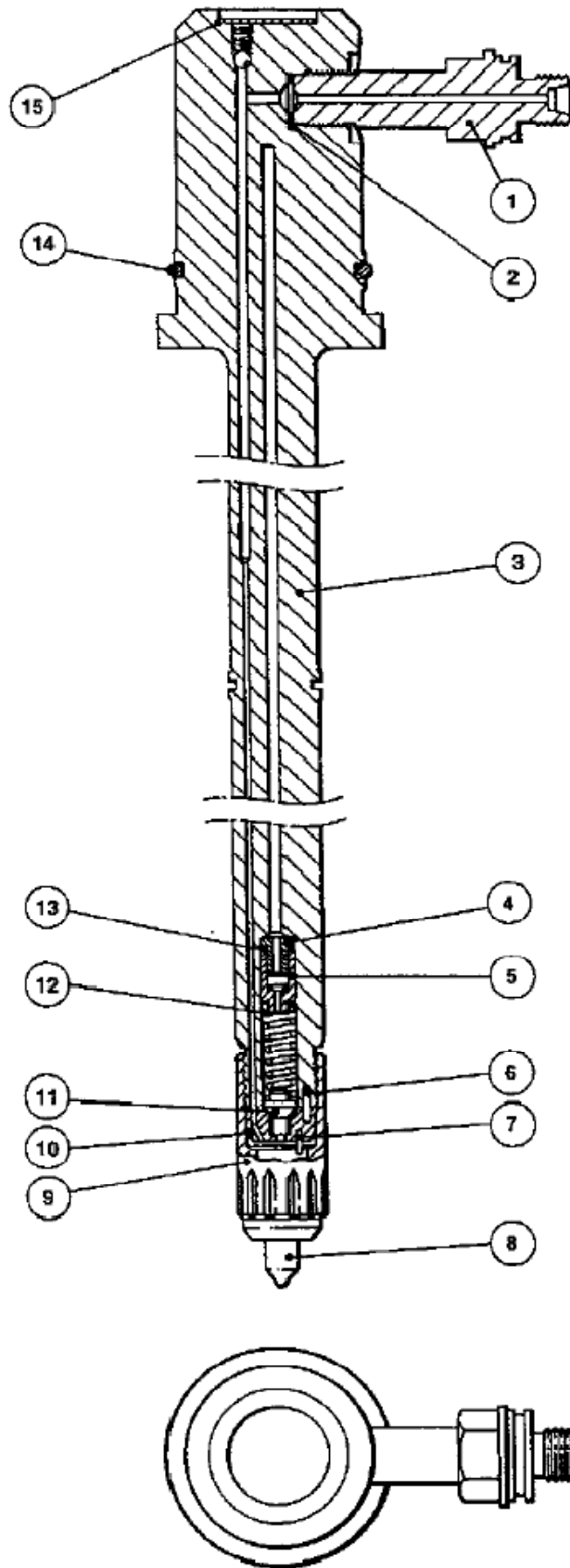
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/504	
1	Inlet connector	52/582	
2	Washer-inlet connector	113/102	
3	Nozzle holder body assembly	52/515	
4	Plate-shim	52/433	
5	Spring plate-upper	52/561	
6	Dowel (2)	52/440	
7	Nozzle assembly	HL155T46K879P4	
8	Nozzle nut	52/480	
9	Transfer block	52/565	
10	Thrust cap	52/562	
11	Spring-injector	52/554	
12	Shim (AR)	NW2/77-80	
13	Seal-O-ring	52/522B	
14	Core plug	52/447	
15ND	Clamp injector	52/522A	



99/504 Injector

99/511 Injector
for Mirrlees Blackstone Engine:
MB275 (19 bar, heavy fuel)
(April 1995, Issue #2)

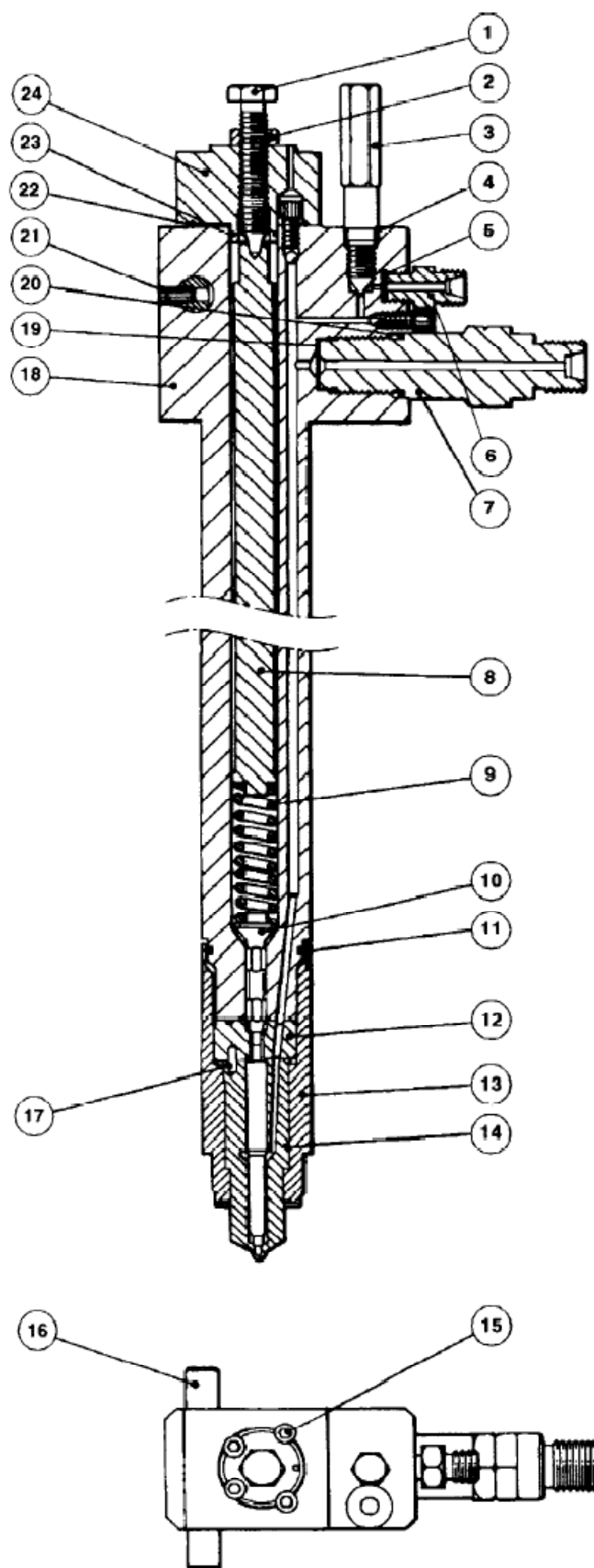
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/511	
1	Inlet connector	52/582	
2	Washer-inlet connector	113/102	
3	Nozzle holder body assembly	52/441	
4	Plate-shim	52/433	
5	Spring plate-upper	52/561	
6	Dowel (2)	52/440	
7	Dowel (2)	51/415A	
8	Nozzle assembly	HL155T46K880P4	
9	Nozzle nut	52/480	
10	Transfer block	52/560	
11	Thrust cap	52/562	
12	Spring-injector	52/554	
13	Shim (AR)	NW2/77-80	
14	Seal-O-ring	52/522B	
15	Core plug	52/447	
16ND	Clamp injector	52/522A	



99/511 Injector

99/524 Injector
for Mirrlees Blackstone Engine:
K Major Mk II (dual fuel)
(May 2000, Issue #7)

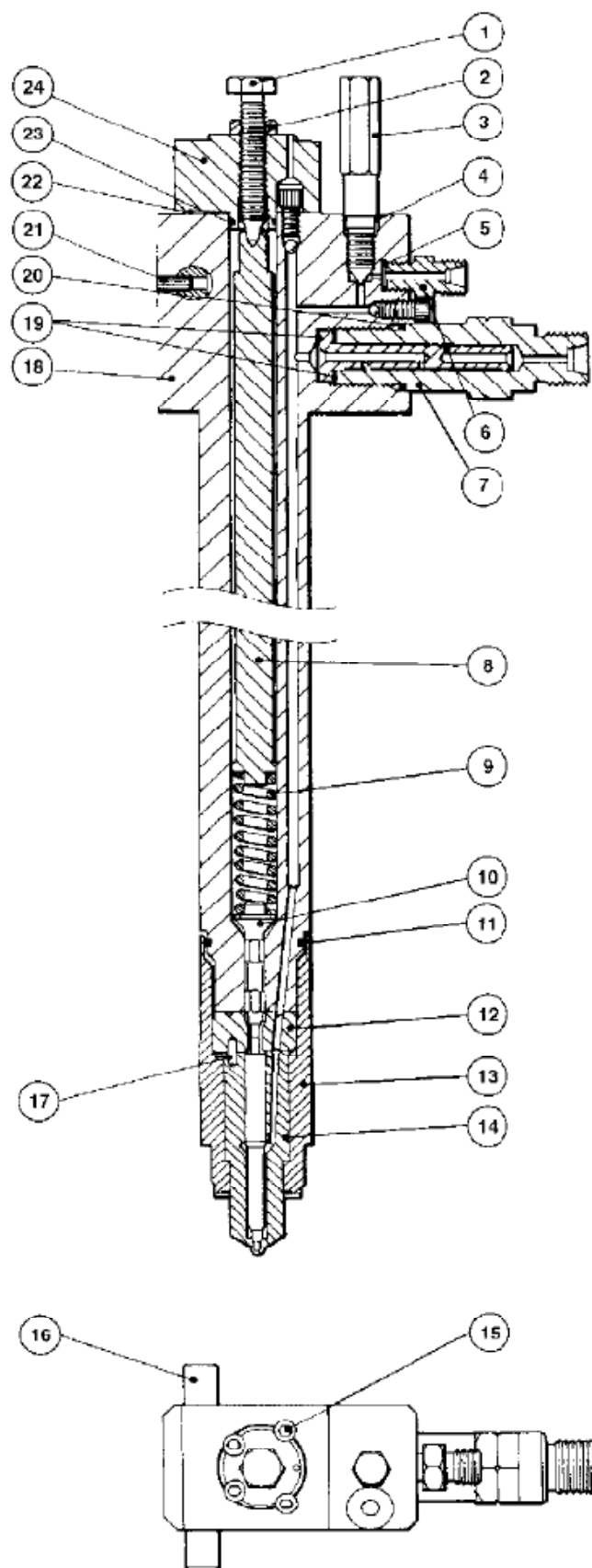
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/524	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/171	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL135U67H821P6P	
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Dowel (4)	53/5062	
18	Nozzle holder body assembly	53/254A	
19	Washer-inlet connector (2)	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257A	



99/524 Injector

99/525 Injector
for Mirrlees Blackstone Engine
K Major Mk II (heavy fuel, 250 bmep @600 rpm)
 (September 1999, Issue #1)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/525	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/171	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL135U67H821P6P	
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Dowel (4)	53/5062	
18	Nozzle holder body assembly	53/254A	
19	Washer-inlet connector (2)	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257A	

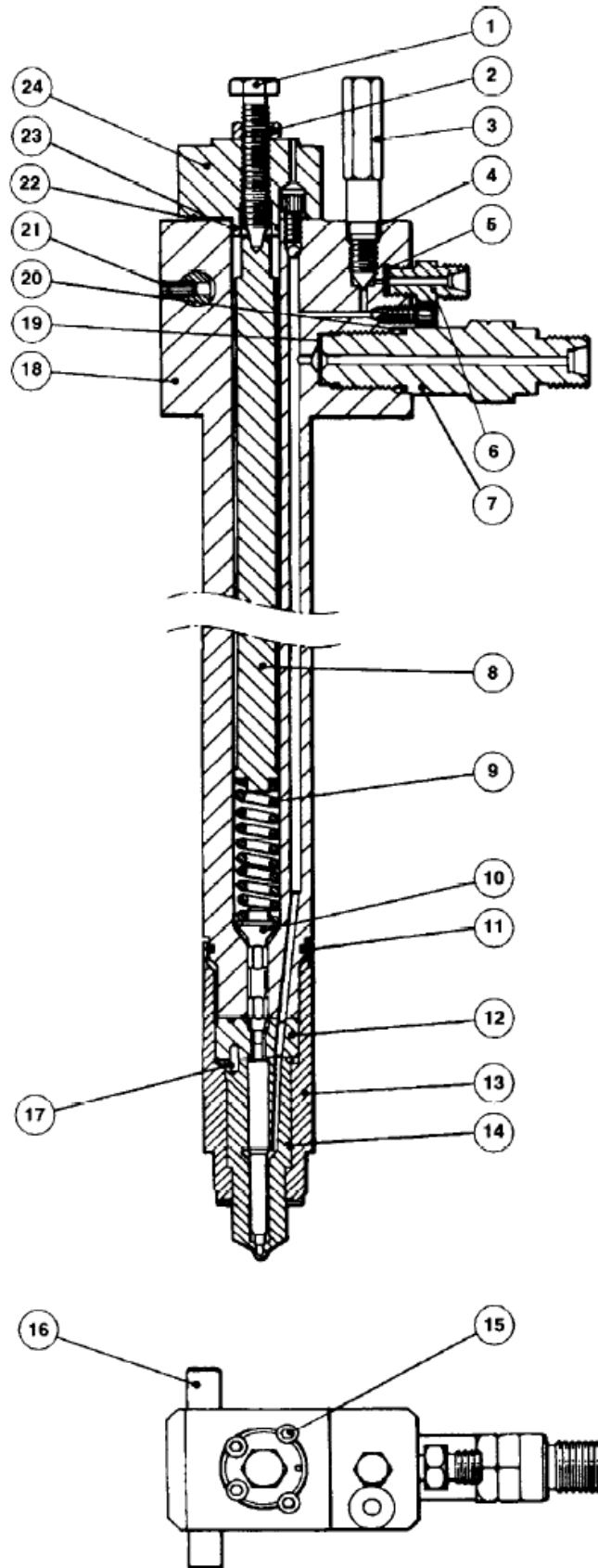


99/525 Injector

99/526 Injector
for Mirrlees Blackstone Engine:
K Major Mk II (dual fuel, 250 bmep @600 rpm, gas valve
actuator)

(May 2000, Issue #7)

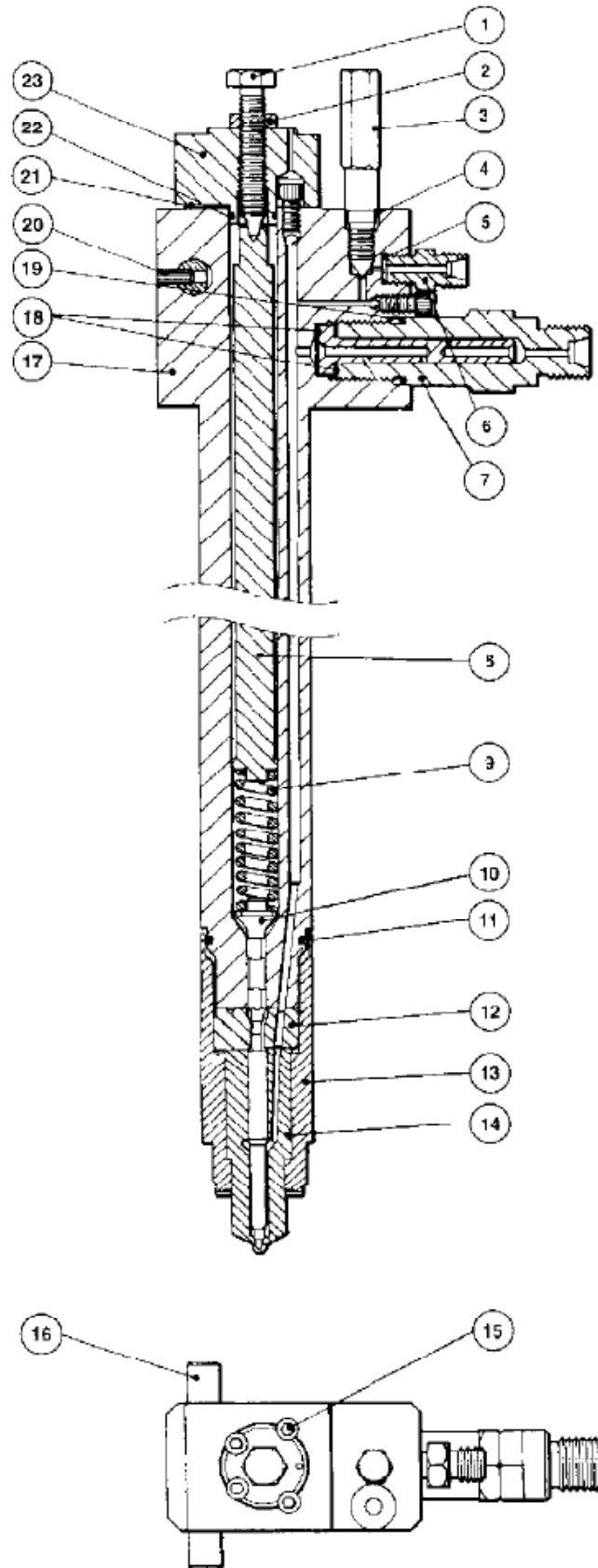
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/526	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/171	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL145U68K846P6P	
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Dowel (4)	53/5062	
18	Nozzle holder body assembly	53/254A	
19	Washer-inlet connector	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257A	



99/526 Injector

99/528 Injector
for Mirrlees Blackstone Engine:
K Major Mk II (light fuel, 250 bmep @600 rpm)
 (September 1999, Issue #1)

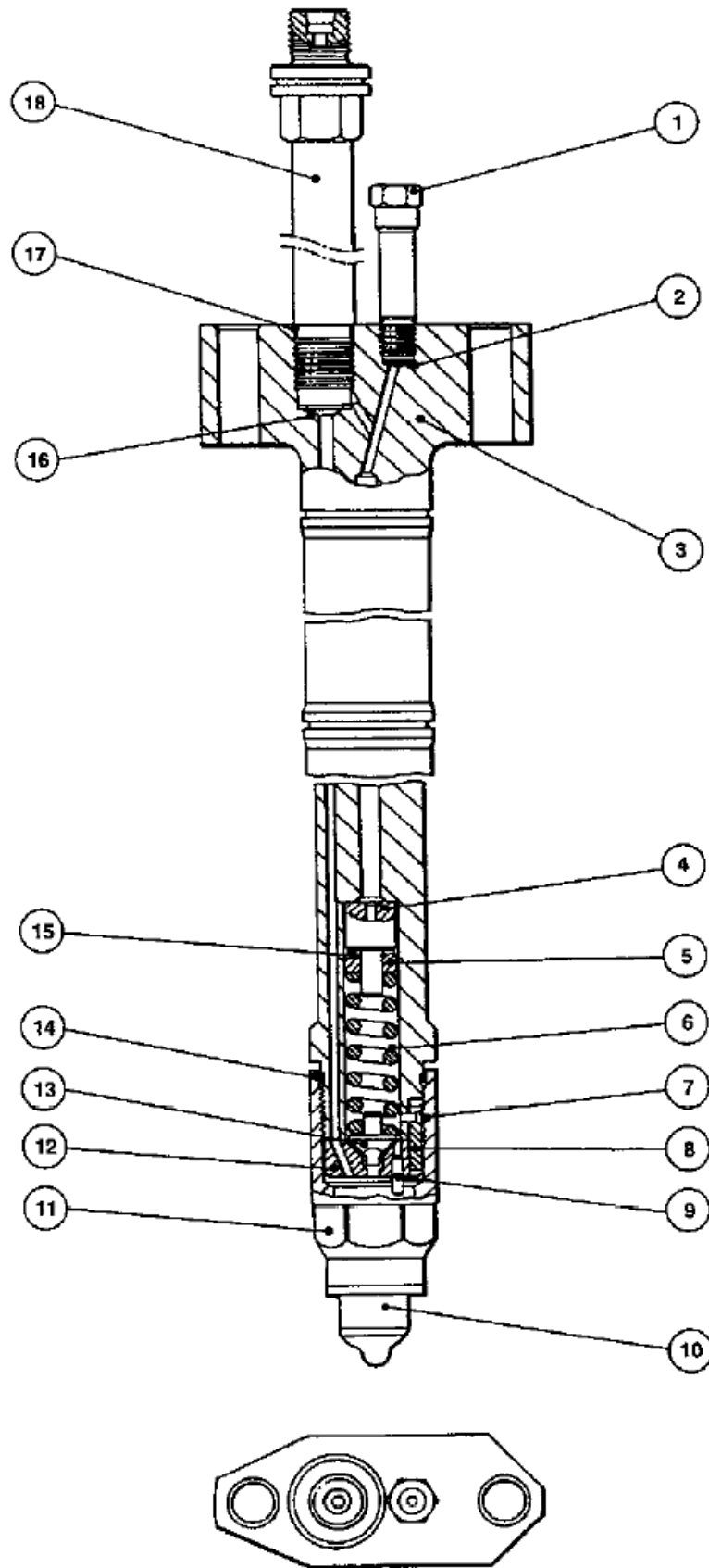
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/528	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/191	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL135U67H820P6P	
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Nozzle holder body assembly	53/254B	
18	Washer-inlet connector (2)	53/184	
19	Seal-O-ring	372/13	K32709
20	Dowel-lifting handle	357/1610	
21	Washer	53/261	
22	O-ring	235/44	
23	Top cap	53/257B	



99/528 Injector

99/530 Injector
for Mirrlees Blackstone Engine:
MB430 (light fuel)
(April 1995, Issue #2)

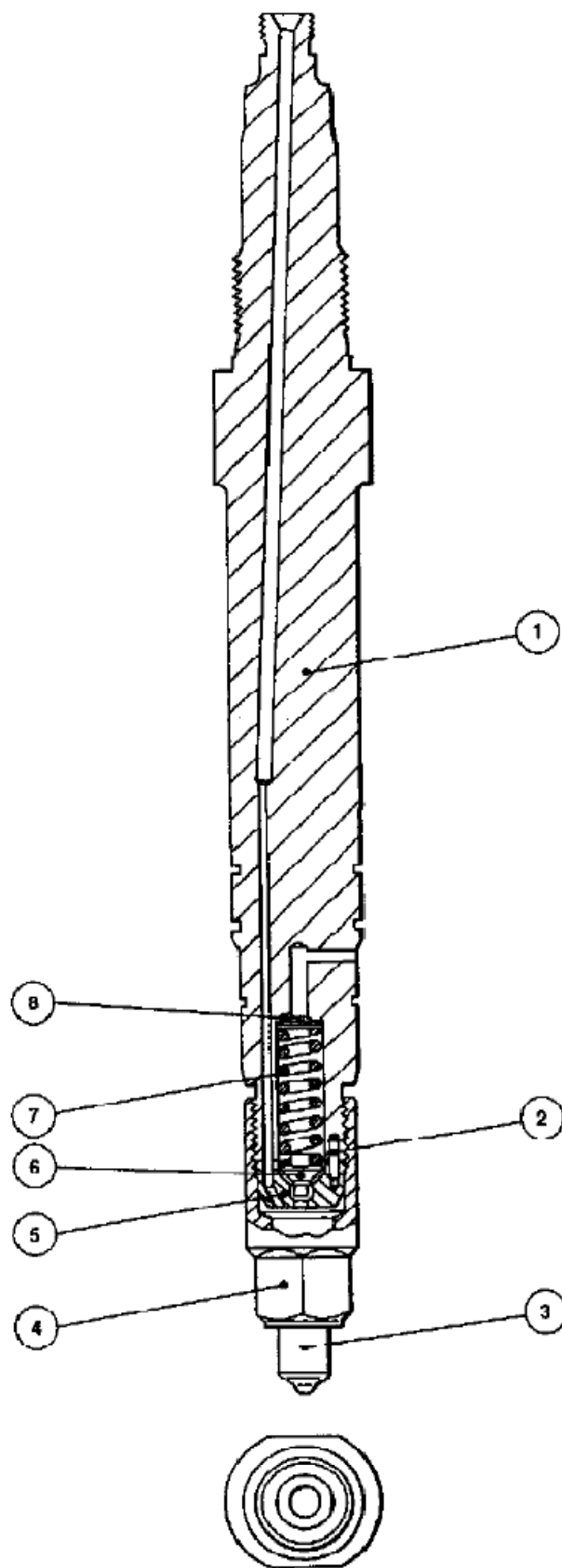
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/530	
1	Connector leak off	54/92B	
2	Washer-leak off connector	5936/95L	
3	Nozzle holder body	54/100	
4	Spring plate - upper	54/73	
5	Thrust washer	54/74	
6	Spring-injector	54/91	
7	Screw-locating key	368/1	
8	Locating key	54/59	
9	Dowel nozzle body (2)	54/58	
10	Nozzle assembly	HL135V76K910P6	
11	Nozzle nut	54/96	
12	Transfer block	54/99	
13	Thrust cap	54/61	
14	Seal-O-ring	372/29	
15	Shim (AR)	54/80 A/L	
16	Washer-inlet connector	106/127	
17	Seal-O-ring	372/13	
18	Inlet connector	54/94	



99/530 Injector

99/531 Injector
for Mirrlees Blackstone Engines:
ERDFS, ESDFS, DVDFS
EVSL Mk II (19.8 bar)
EVSL Mt II (low load retard)
(April 1995, Issue #2)

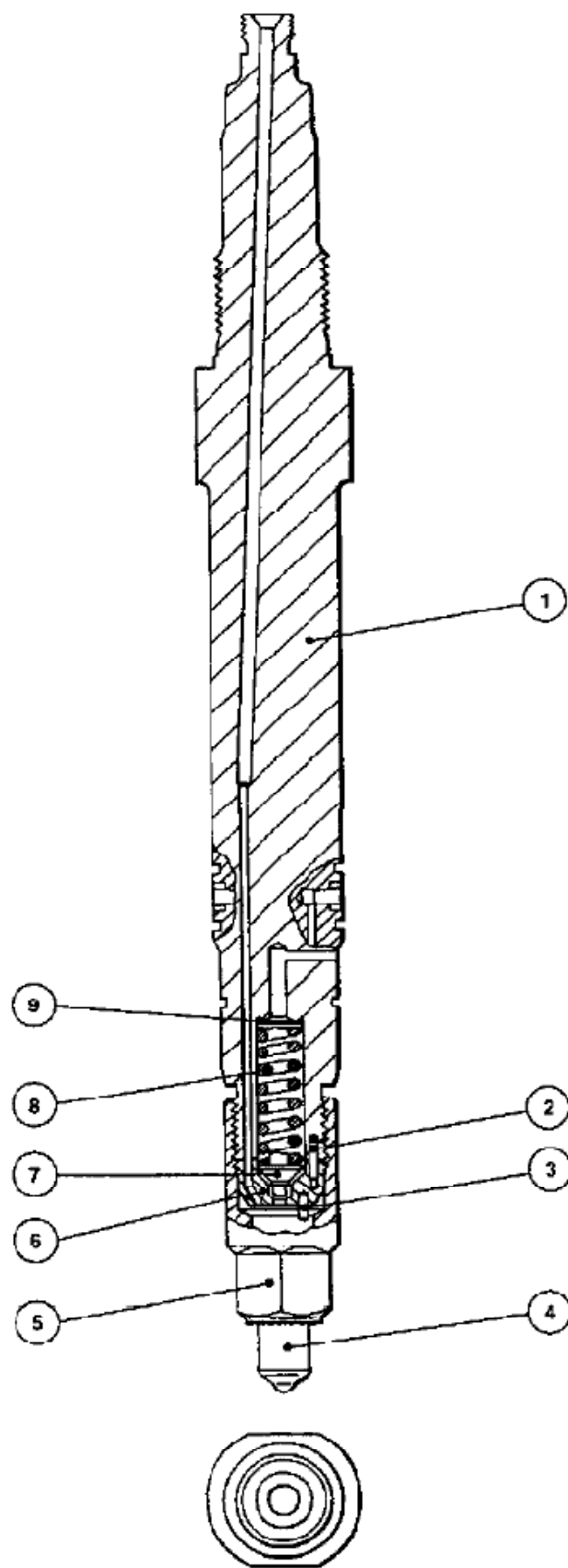
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/531	
1	Nozzle holder body	52/587	
2	Dowel-holder (2)	52/440	
3	Nozzle assembly	HL145T38H775P4	
4	Nozzle nut	52/489	
5	Transfer block	52/565	
6	Thrust cap	52/562	
7	Spring-injector	52/554	
8	Shims (AR)	NW2/76-80	



99/531 Injector

99/537 Injector
for Mirrlees Blackstone Engine
EVSL Mk II (constant speed, heavy fuel)
EVSL Mt II (low load retard, heavy fuel)
(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/537	
1	Nozzle holder body	52/607	
2	Dowel-holder (2)	52/440	
3	Dowel-transfer block (2)	51/415A	
4	Nozzle assembly	HL145T38H785P4	
5	Nozzle nut	52/489	
6	Transfer block	52/560	
7	Thrust cap	52/562	
8	Spring-injector	52/554	
9	Shims (AR)	NW2/76-80	

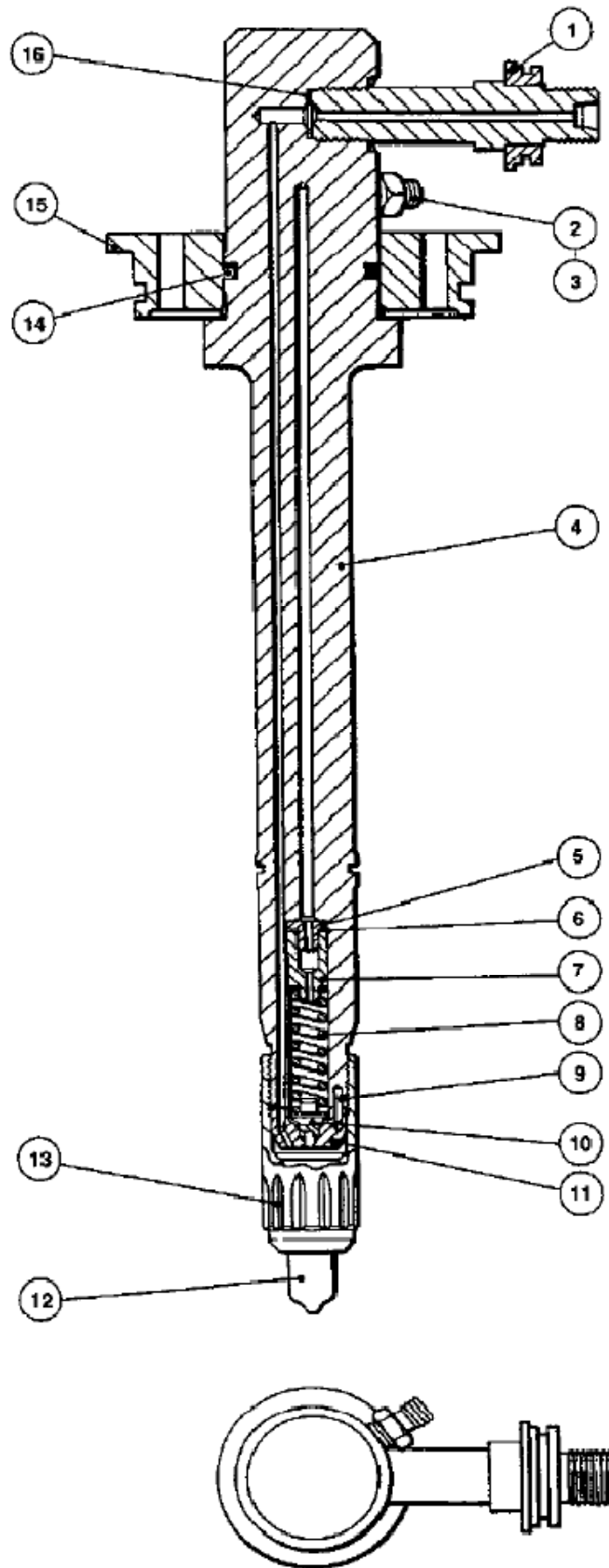


99/537 Injector

99/539 Injector for Mirrlees Blackstone MB190 Engine

(April 1995, Issue #2)

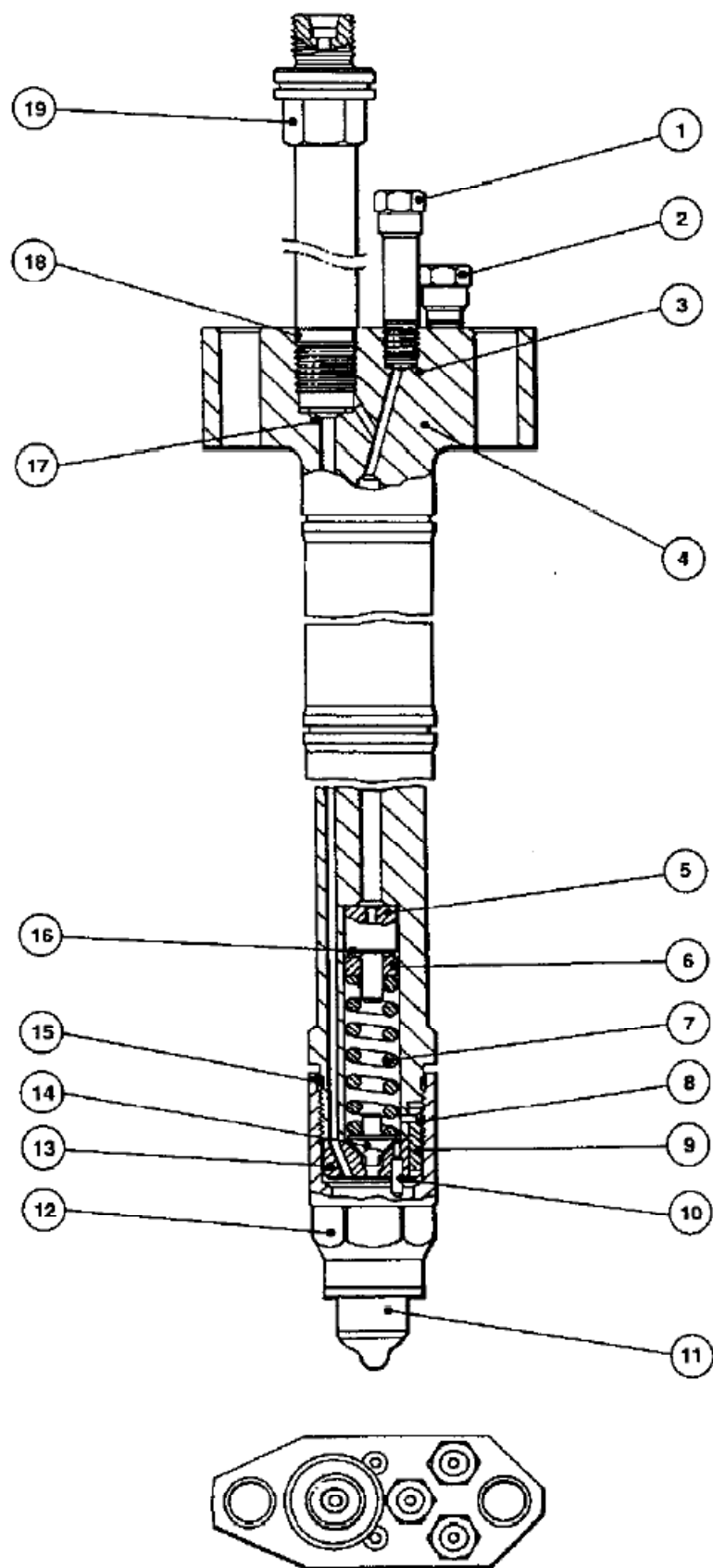
Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/539	
1	Inlet connector assembly	52/476	
2	Union-leak off	52/475	
3	Washer-leak off union	113/87	
4	Nozzle holder body	52/474	
5	Plate-shim	52/433	
6	Shim (1AR)	NW2/76-80	
7	Spring plate-lower	52/561	
8	Spring-injector	52/554	
9	Dowel (2)	52/440	
10	Thrust cap	52/562	
11	Transfer block	52/565	
12	Nozzle assembly	HL150T35L813P4	
13	Nozzle nut	52/480	
14	Seal-O-ring	52/482B	
15	Clamp injector	52/482A	
16	Washer-inlet connector	113/18	



99/539 Injector

99/541 Injector
for Mirrlees Blackstone Engine:
MB430 (heavy fuel)
(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/541	
1	Connector leak off	54/92B	
2	Connector coolant (2)	54/92A	
3	Washer-leak off connector (3)	5936/95L	
4	Nozzle holder body	54/88	
5	Spring plate-upper	54/73	
6	Thrust washer	54/74	
7	Spring-injector	54/91	
8	Screw-locating key	368/1	
9	Locating key	54/59	
10	Dowel nozzle body (2)	54/58	
11	Nozzle assembly	HL145V72K905P6	
12	Nozzle nut	54/96	
13	Transfer block	54/99	
14	Thrust cap	54/61	
15	Seal-O-ring	372/29	
16	Shim (AR)	54/80 A/L	
17	Washer-inlet connector	106/127	
18	Seal-O-ring	372/13	
19	Inlet connector	54/94	



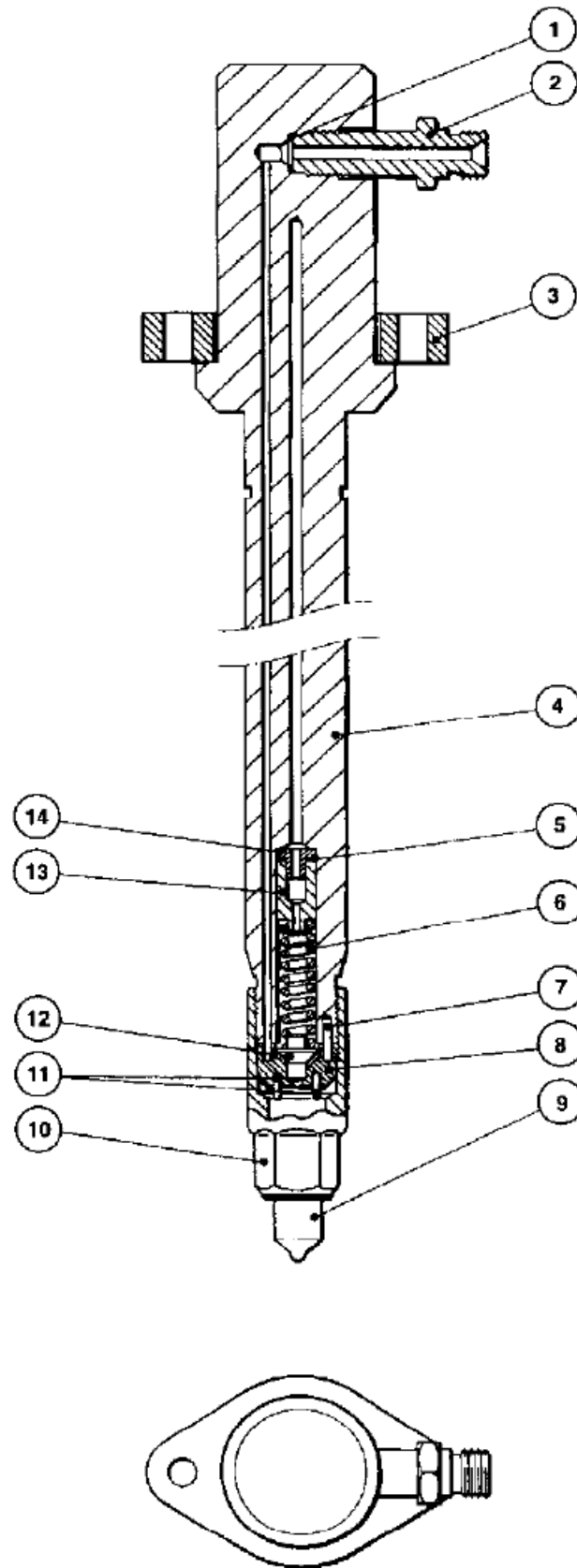
99/541 Injector

99/543 Injector

for Mirrlees Blackstone ESL Mk II Engine (heavy fuel)

(April 1995, Issue #2)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/543	31-023-100
1	Washer-inlet connector	106/83	31-230-220
		98-25161	
2	Inlet connector	52/508	31-230-210
3	Clamp-injector	52/548	
4	Nozzle holder body	52/559	
5	Shim	NW2/76-80	
6	Spring-injector	52/554	31-231-150
7	Dowel (2)	52/440	31-230-060
			40-64030
8	Transfer block	52/560	
9	Nozzle assembly	HL145T38H785P4	
10	Nozzle nut	52/489	31-231-130
11	Dowel (2)	51/415A	31-231-090
12	Thrust cap	52/562	
13	Spring plate-upper	52/561	
4	Plate-shims	52/433	31-231-170



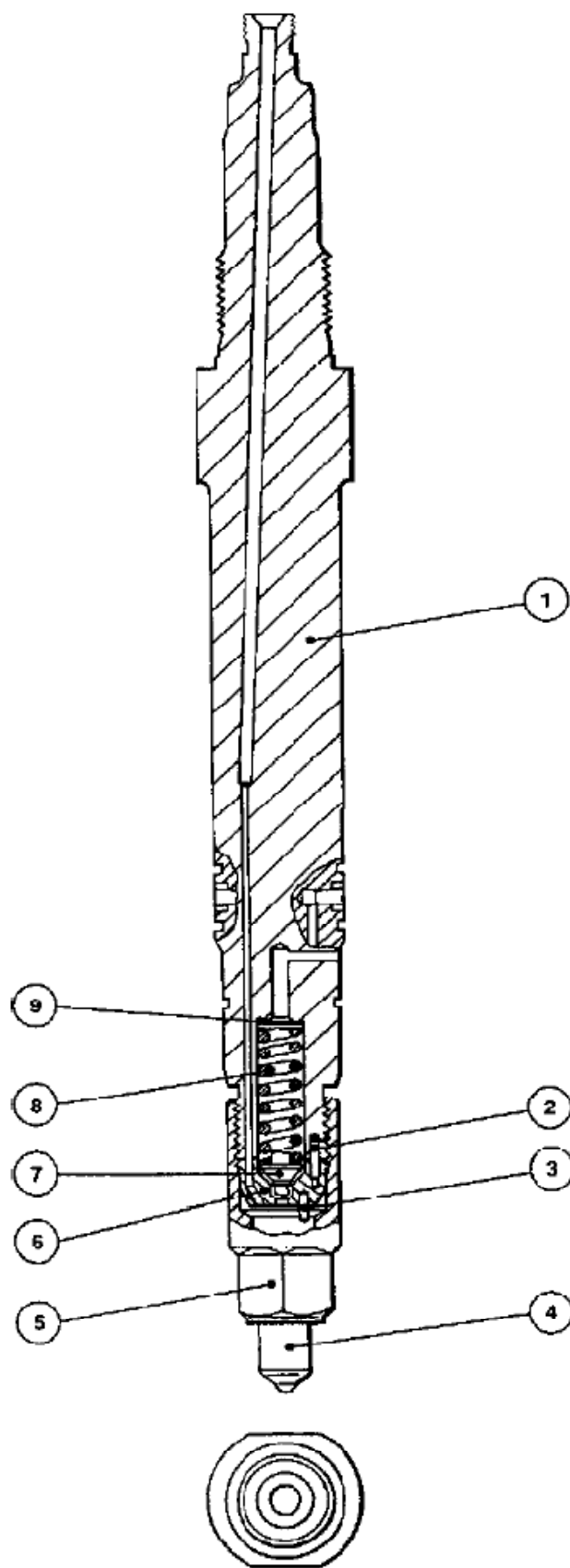
99/543 Injector

99/544 Injector

for Mirrlees Blackstone EVSL Mk II Engine (19.8 bar)

(January 1997, Issue #3)

Item B.L.					
No.	No.	Part Name	Qty	Woodward No.	Mirrlees No.
		Injector		99/544	
1	2	Nozzle holder body		52587	
2	6	Dowel - holder	2	52/440	
3	58	Nozzle assembly		HL155T38K775P4	
4	49	Nozzle nut		52/489	
5	7	Transfer block		52/565	
6	12	Thrust cap		52/562	
7	15	Sprint - injector		52/554	
8	14	Shims	AR	NW2/76-80	

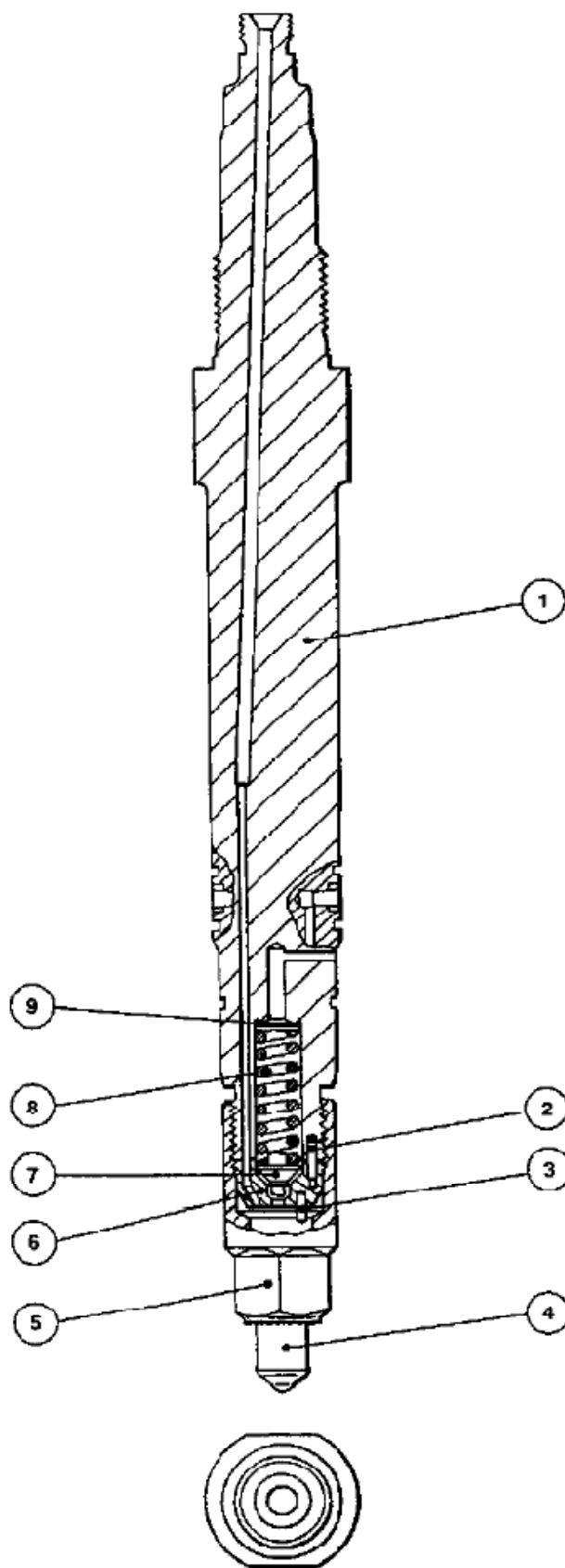


99/544 Injector

99/545 Injector for Mirrlees Blackstone EVSL Mk II Engine (heavy fuel)

(January 1997, Issue #3)

Item B.L.					
No.	No.	Part Name	Qty	Woodward No.	Mirrlees No.
		Injector		99/545	
1	2	Nozzle holder body		52/607	
2	6	Dowel - holder	2	52/440	
3	8	Dowell - transfer Block	2	51/415A	
4	58	Nozzle assembly		HL155T38K785P4	
5	49	Nozzle nut		52/489	
6	7	Transfer block		52/560	
7	12	Thrust cap		52/562	
8	15	Sprint - injector		52/554	
9	14	Shims	AR	NW2/76-80	



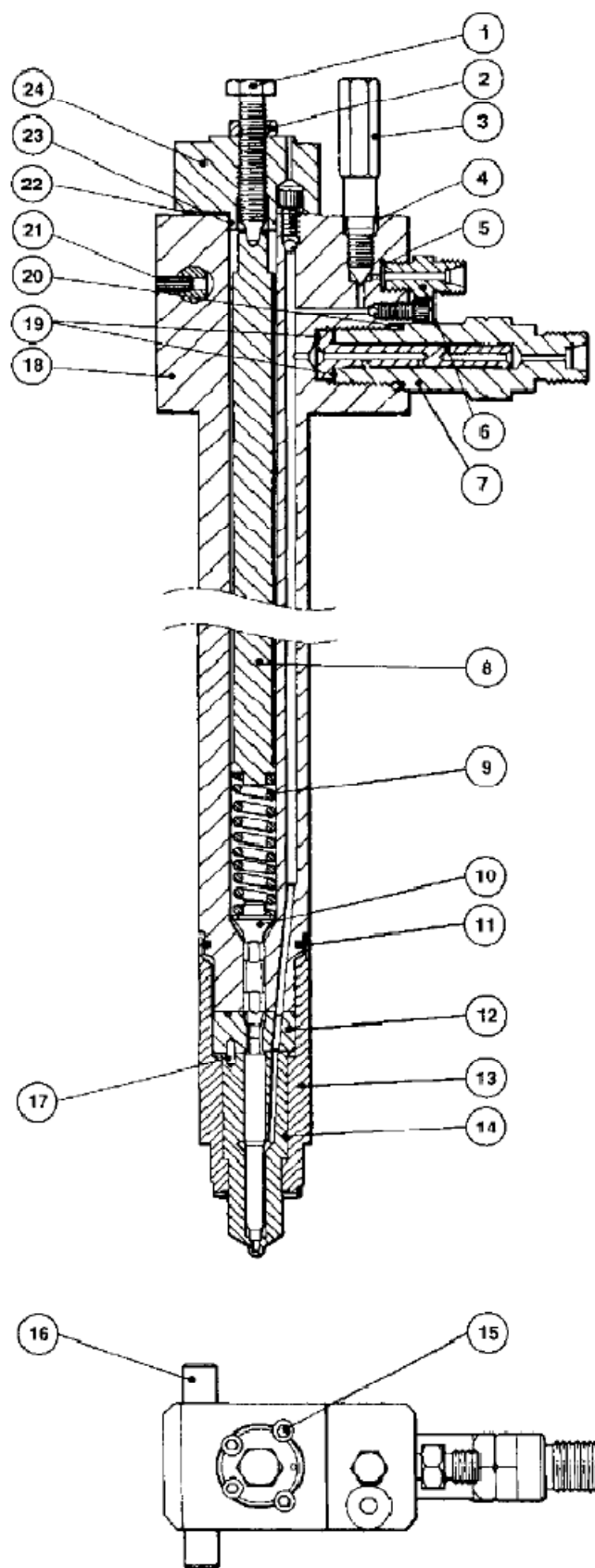
99/545 Injector

99/559 Injector

for Mirrlees Blackstone K Major Mk III Engine

(July 2000, Issue #5)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/559	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/171	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL145U68K846P6	
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Dowel (4)	53/5062	
18	Nozzle holder body assembly	53/254A	
19	Washer-inlet connector	53/184	
20	Seal-O-ring	372/13	K32709
21	Dowel-lifting handle	357/1610	
22	Washer	53/261	
23	O-ring	235/44	
24	Top cap	53/257A	

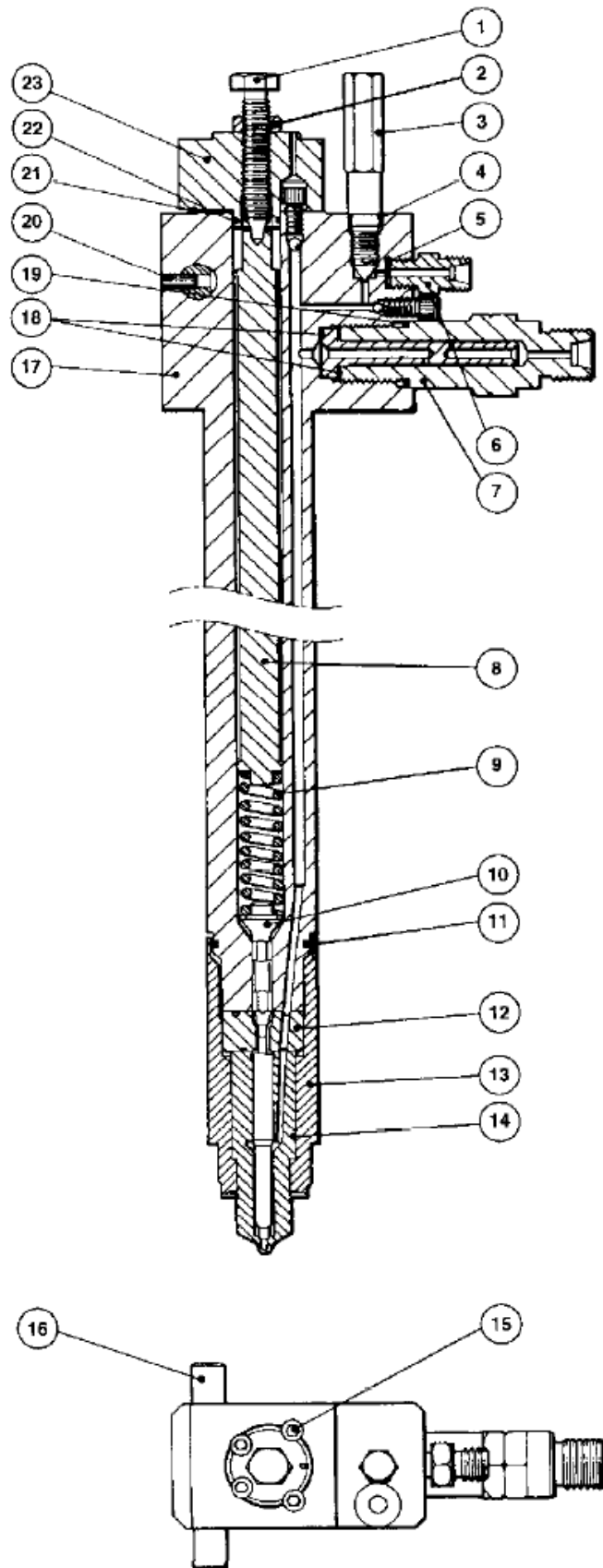


99/559 Injector

99/661 Injector for Mirrlees Blackstone K Major Mk III Engine (light fuel)

(September 1997, Issue #4)

Item			
No.	Part Name	Woodward No.	Mirrlees No.
	Injector	99/661	
1	Screw-adjusting	53/173	
2	Locknut-adjusting screw	310/8	
3	Screw-vent	53/179A	
4	Seal-O-ring	372/1	
5	Washer-leak off union	113/3460A	
6	Union-leak off	53/233	
7	Inlet connector	53/341	
8	Spindle	53/255	
9	Spring-injector	53/183	
10	Spindle-one piece	53/295	
11	Seal-O-ring	372/19	
12	Transfer block	53/191	
13	Nozzle nut	53/172	
14	Nozzle assembly	HL145U68K858P6	
15	Cap screw (4)	313/414	
16	Lifting handle	53/185	
17	Nozzle holder body assembly	53/254B	
18	Washer-inlet connector	53/184	
19	Seal-O-ring	372/13	K32709
20	Dowel-lifting handle	357/1610	
21	Washer	53/261	
22	O-ring	235/44	
23	Top cap	53/257B	



99/661 Injector

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please include the manual number from the front cover of this publication.



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