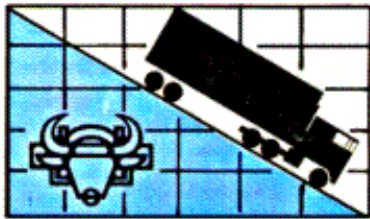
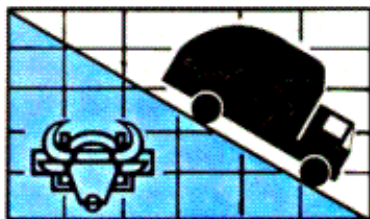


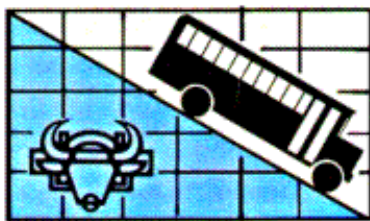
BLUE OX EXHAUST BRAKE



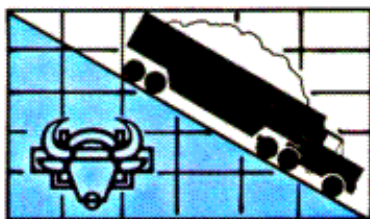
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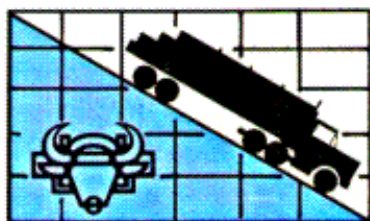
REFUSE UTILITY



BUSES



MINING



LOGGING



EXHAUST BRAKING SYSTEM
FOR
FOUR STROKE DIESEL ENGINES

INLINE PIPEMOUNT SIZES
2 1/2 TO 5 INCHES

FLANGEMOUNT

TURBOMOUNT

DESIGNER & MANUFACTURER OF EXHAUST BRAKES
MADE IN THE USA

MANUFACTURED BY BRAKE SYSTEMS INC.

2221 NE HOYT, PORTLAND, OR 97232
PH: 503-236-2116 FAX: 503-239-5005 TOLL FREE: 800-452-5734
EMAIL: brakesystems@brakesystemsinc.com
WEBSITE: www.brakesystemsinc.com



REVISED 2012.11.28



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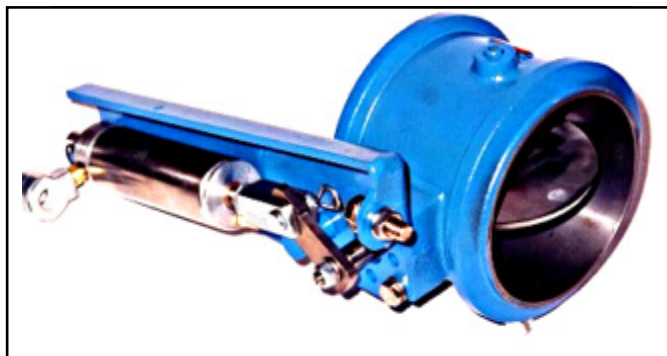
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BLUE OX EXHAUST BRAKE



WHY AN EXHAUST BRAKE?

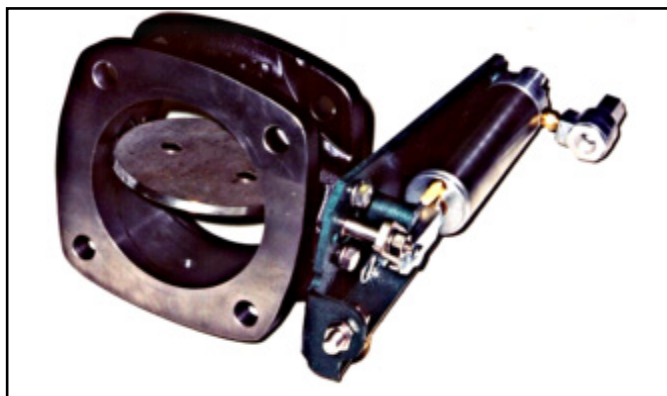


- Increases safety by reducing load on foundation brakes.
- Faster engine warm up.
- Improves cold weather operation, reduces thermal stress on intake valves and allows prolonged idling in
- Aids in shifting of some engine / transmission combinations.
- Increases brake lining life.
- Less expensive option for an exhaust brake.
- Less noise / no special muffling necessary.

WHY A BLUE OX?



- Nodular iron housing, 50 years of testing.
- Stainless shaft and butterfly, no rusting here.
- Butterfly design minimizes weight and envelope size. Guillotine design for heavy duty industrial application.
- Adjustable opening stop allows system tuning to your engine and exhaust system.
- Actuating cylinder assembled with Hi-temperature components.
- Cylinder shells for Guillotine units is hard anodized aluminum and for butterfly models in stainless steel.
- Available with installation kits to cover several, 1) pipe sizes, 2) various control kit options and 3) various operating voltages, including 12 & 24 volt.
- Guillotine and butterfly types available in several pipe sizes.



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BLUE OX EXHAUST BRAKE



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BLUE OX EXHAUST BRAKE



EXHAUST BRAKE APPLICATION TABLE BY ENGINE

CAUTION: ADJUST TO MANUFACTURER'S BACK PRESSURE SPECIFICATIONS. Exhaust brake, control kit and mounting kit required for installation. Important: Automatic transmissions must have a lock-up torque converter for exhaust brake to be operational..

Note: On any engine 2006 or newer design, please specify if the engine is equipped with a VGT.

ENGINE MAKE	ENGINE MODEL	EXHAUST BRAKE MODEL		CONTROL KIT	MOUNTING KIT	MAXI MUM BACK** PRESSURE	EXHAUST PIPE DIAMETER	SPECIAL INSTRUCTIONS
		GUILLOTINE or BUTTERFLY						
Caterpillar	3116 Manufactured after 8/92***	WM770D —	— WM771A	WM901L WM901L1	WM902C WM902C	55 PSI	4.0 IN.	
Caterpillar	3126 (439)	WM770D — —	— WM771A WM790A	WM901M WM901M1 WM901M1	WM902C WM902C WM904B	55 PSI	4.0 IN.	
Caterpillar	3126B Dual intake valves 1/98 (439)	WM770D — —	— WM771A WM790A	WM901M WM901M1 WM901M1	WM902C WM902C WM904B	40 PSI	4.0 IN.	
Caterpillar	3126E-2	—	WM790A	WM901M1	WM904B	40 PSI	3.5 IN.	
Caterpillar	3176 & 3176B	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	33 PSI	4.0 IN.	
Caterpillar	3208T & ATAAC	WM770D —	— WM771A	WM901K WM901K1	WM902C-2 For Ford trucks WM902C For all others	25 PSI	4.0 IN.	Approval limited to engines w/steel camshaft and roller followers
Caterpillar	3406A (893)	WM770D —	— WM771A	WM901J WM901J1	WM902A WM902A	35 PSI	5.0 IN.	
Caterpillar	3406B Mechanical engine (893)	WM770D —	— WM771A	WM901J WM901J1	WM902A WM902A	50 PSI	5.0 IN.	Back pressure can be increased to 70 PSI w/ Caterpillar special kit #9Y6712
Caterpillar	3406B mechanically fueled electronic en- gine (893)	WM770D —	— WM771A	WM901N WM901N1	WM902A WM902A	50 PSI	5.0 IN.	Back pressure can be increased to 70 PSI w/ Caterpillar special kit #9Y6712
Caterpillar	3406C (893)	WM770D —	— WM771A	WM901M WM901M1	WM902A WM902A	50 PSI	5.0 IN.	Back pressure can be increased to 70 PSI w/ Caterpillar special kit #9Y6712
Caterpillar	3406E (893)	WM770D —	— WM771A	WM901M WM901M1	WM902A WM902A	70 PSI	5.0 IN.	
Caterpillar	C6.6 (402)	WM780A —	— WM781A	WM901M WM901M1	WM903A WM904A	40 PSI	3.5 IN.	
Caterpillar	C7 (441)	WM770D — —	— WM771A WM790A	WM901M WM901M1 WM901M1	WM902C WM902C WM902D	40 PSI	4.0 IN.	
Caterpillar	C9 (537)	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	60 PSI	5.0 IN.	
Caterpillar	C10 (677)	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	40 PSI	5.0 IN.	
Caterpillar	C11 (677)	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	40 PSI	5.0 IN.	

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*Consult engine manufacturer. **Back pressure can be adjusted by repositioning the gate adjustment screw.
*** For models before 8/92, consult engine manufacturer.

Continued on next page



BLUE OX EXHAUST BRAKE



Note: On any engine 2006 or newer design, please specify if the engine is equipped with a VGT.

ENGINE MAKE	ENGINE MODEL	EXHAUST BRAKE MODEL GUILLOTINE or BUTTERFLY		CONTROL KIT	MOUNTING KIT	MAXIMUM BACK** PRESSURE	EXHAUST PIPE DIAMETER	SPECIAL INSTRUCTIONS
Caterpillar	C12	WM770D —	— WM771A	WM901MA WM901M1A	WM902B WM902B	40 PSI	5.0 IN.	
Caterpillar	C13 (793)	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	40 PSI	5.0 IN.	
Caterpillar	C15 (928)	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	40 PSI	5.0 IN.	
Caterpillar	C18 (1105)	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	40 PSI	5.0 IN.	
Cummins	V/VT-903	WM770D —	— WM771A	WM901E WM901E1	WM902B WM902B	45 PSI	5.0 IN.	Direct turbo mount not recommended
Cummins	855 Series w/ Standard Engine Components	WM770D —	— WM771A	WM901E WM901E1	WM902A WM902A	30 PSI	5.0 IN.	
Cummins	855 Series w/ Optional Heavy Duty Valve Springs (#178869)	WM770D —	— WM771A	WM901E WM901E1	WM902A WM902A	45 PSI	5.0 IN.	
Cummins	855 Series Big Cam 400	WM770D —	— WM771A	WM901E WM901E1	WM902A WM902A	42 PSI	5.0 IN.	
Cummins	ISC (506)	WM780A —	— WM781A	WM901M WM901M1	WM903A WM904A	65 PSI	3.5 IN.	
Cummins	ISM (661)	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	65 PSI	4.0 IN.	
Cummins	1SX (912)	WM770D —	— WM771A	WM901M WM901M1	WM902A WM902A	65 PSI	5.0 IN.	
Cummins	1SL (540)	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	65 PSI	4.0 IN.	
Cummins	L-10 Celec	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	65 PSI	4.0 IN.	
Cummins	L-10	WM770D —	— WM771A	WM901E WM901E1	WM902C WM902C	65 PSI	4.0 IN.	
Cummins	M-11	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	65 PSI	4.0 IN.	
Cummins	N-14	WM770D —	— WM771A	WM901M WM901M1	WM902A WM902A	45 PSI	5.0 IN.	
Cummins	5.9 B Series Not Equipped with catalytic converter	WM780A —	— WM781A	WM901H WM901H1	WM903B WM904C	35 PSI	3.0 IN.	Back pressure 60 PSI w/ Cummins 3916588 springs

*Higher pressure with Heavy Duty Valve Springs (178869) as standard on later engines.

Continued on next page



BLUE OX EXHAUST BRAKE



Note: On any engine 2006 or newer design, please specify if the engine is equipped with a VGT.

ENGINE MAKE	ENGINE MODEL	EXHAUST BRAKE MODEL GUILLOTINE or BUTTERFLY		CONTROL KIT	MOUNTING KIT	MAXIMUM BACK** PRESSURE	EXHAUST PIPE DIAMETER	SPECIAL INSTRUCTIONS
Cummins	5.9 B Series Equipped with catalytic converter	WM780A —	— WM781A	WM901H WM901H1	WM903B WM904C	35 PSI	3.0 IN.	Back pressure 60 PSI w/ Cummins 3916588 springs
Cummins	8.3 C Series Not Equipped with catalytic converter	WM770D —	— WM771A	WM901H WM901H1	WM902C Bracket 130453 WM902C Bracket 130453	35 PSI	4.0 IN.	Back pressure 65 PSI w/ Cummins 3916588 springs
Cummins	8.3 Series Equipped with catalytic converter	WM770D —	— WM771A	WM901H WM901H1	WM902F Bracket 130453 WM902F Bracket 130453	35 PSI	4.0 IN.	Back pressure 65 PSI w/ Cummins 3916588 springs
Cummins	NH 220 / 250 all with four bolt flange	—	WM728A	WM901L1	—	30-40 PSI*	4.0 IN.	
Detroit Diesel	Series 50 4-519	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	39 PSI	4.0 IN.	
Detroit Diesel	11.1 & 12.7 Series 60 6-778 6-858	WM770D —	— WM771A	WM901M WM901M1	WM902B WM902B	40 PSI	5.0 IN.	
Detroit Diesel	6.2 Liter 1982-1983 Model Year	WM780A	—	WM901L	WM903C	33 PSI	2.5 IN.	
Detroit Diesel	6.2 Liter 1984 Model Year to Date	WM780A	—	WM901L	WM903C	42 PSI	2.5 IN.	
Ford	6.6 Liter	WM770D —	— WM771A	WM901L WM901L1	WM902C2 WM902C2	35 PSI	4.0 IN.	Exhaust brake must be minimum of 5.5ft. From turbocharger
Ford	7.3 Liter	See "Vehicle / Engine Application Table"						
Ford	7.8 Liter	WM770D —	— WM771A	WM901L WM901L1	WM902C2 WM902C2	35 PSI	4.0 IN.	Exhaust brake must be minimum of 5.5ft. From turbocharger
Ford	FD. 1060 (B)	WM780A —	— WM781A	WM901H WM901H1	WM903B WM904C	35 PSI	3.0 IN.	Back pressure 60 PSI w/dual exhaust valve spring
Ford	FD. 1460 (C)	WM770D —	— WM771A	WM901H WM901H1	WM902C Bracket 130453	35 PSI	4.0 IN.	Back pressure 65 PSI w/dual exhaust valve spring
GMC Isuzu	Duramax 6.6 V8	WM780A —	— WM781A	WM901M WM901M1	WM903A WM904A	—	3.5 IN.	
GMC Isuzu	Duramax 7.8 - I6	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	—	4.0 IN.	
Komatsu/ Cummins	QST30	WM770D	—	WM901M	WM902B (2)	55 PSI	5.0 IN.	
Komatsu/ Cummins	KT 38C	WM770D (2)	—	WM901M	WM902B (2)	55 PSI	5.0 IN.	
Mack	E6	WM770D —	— WM771A	WM901M WM901M1	WM902C WM902C	40 PSI	4.0 IN.	

REVISED 2012.08.17



Continued on next page 5

BLUE OX EXHAUST BRAKE



Note: On any engine 2006 or newer design, please specify if the engine is equipped with a VGT.

ENGINE MAKE	ENGINE MODEL	EXHAUST BRAKE MODEL GUILLOTINE or BUTTERFLY		CONTROL KIT	MOUNTING KIT	MAXIMUM BACK** PRESSURE	EXHAUST PIPE DIAMETER	SPECIAL INSTRUCTIONS
Mack	E-6 w/4 Valves Per Cylinder	WM770D —	— WM771A	WM901E WM901E1	WM902C WM902C	45 PSI	4.0 IN.	
Mack	E-2 w/2 Valves Per Cylinder	WM770D —	— WM771A	WM901E WM901E1	WM902C WM902C	40 PSI	4.0 IN.	Engine must have heavy duty valve springs
Mack	E7 & E9	WM770D —	— WM771A	WM901E WM901E1	WM902C WM902C	45 PSI	4.0 IN.	
Mack	Midliner 200 & 250	WM780A —	— WM781A	WM901L WM901L1	WM903B WM904C	40 PSI	3.0 IN.	
Mack	Midliner 300	WM770D —	— WM771A	WM901L WM901L1	WM902C WM902C	40 PSI	4.0 IN.	
Mack	Midliner 300	WM780A — —	— WM771A WM781A	WM901L WM901L1 WM901L1	WM903A WM902E WM904A	40 PSI	3.5 IN.	
Mercedes	MBE 900-210	WM770D —	— WM771A	WM901MB WM901MB	WM902C WM902C	42 PSI	4.0 IN.	Fl 70 Electronic engine add 540A
Mercedes	MBE 4000 (781)(12.8)	WM770D —	— WM771A	WM901MB WM901MB	WM902B WM902B	60 PSI	5.0 IN.	
Navistar	DT-360 & DTA-360	WM780A — —	— WM771A WM781A	WM901L WM901L1 WM901L1	WM903A WM902E WM904A	38 PSI	3.5 IN.	
Navistar	DT-466 & DTA-466 w/Bosch Fuel Pump	WM780-100 — —	— WM771A WM781A	WM901H WM901H1 WM901H1	WM903A WM902E WM904A	28 PSI	3.5 IN.	
Navistar	DT-466 after 1988	WM780A — —	— WM771A WM781A	WM901H WM901H1 WM901H1	WM903A WM902E WM904A	51 PSI	3.5 IN.	Approval limited to engines w/steel camshaft and roller followers
Navistar	DT 466E	WM780A — —	— WM771A WM781A	WM901M WM901M1 WM901M1	WM903A WM902E WM904A	53 PSI	3.5 IN.	
Navistar	DT-466-NGD 9/93 and after	WM780A — —	— WM771A WM781A	WM901H WM901H1 WM901H1	WM903A WM902E WM904A	53 PSI	3.5 IN.	Approval limited to engines w/steel camshaft and roller followers
Navistar	530E	WM780A — —	— WM771A WM781A	WM901M WM901M1 WM901M1	WM903A WM902E WM904A	52 PSI	3.5 IN.	
Navistar	530H	WM780A — —	— WM771A WM781A	WM901H WM901H1 WM901H1	WM903A WM902E WM904A	52 PSI	3.5 IN.	



BLUE OX EXHAUST BRAKE



VEHICLE / ENGINE APPLICATION TABLE

CAUTION (a): ADJUST TO MANUFACTURERS BACK PRESSURE SPECIFICATIONS. Pressure listed herein are suggested from industry input.

CAUTION (b): Vehicles with automatic transmissions must have a lock-up feature to enable retarding torque to pass through the transmission. If you have a question please contact BSI Technical Support personnel.

VEHICLE	YEAR	ENGINE	BRAKE MODEL	CONTROL KIT & COMBI KIT*	MOUNTING KIT	MAX PRESSURE	PIPE SIZE	NOTES
Dodge PU	1998½-2002	Cummins 5.9	WM781A	WM734C 533A	WM904A	55 PSI	3.5 IN.	WM781 AK20
Dodge PU	2003 & Up	Cummins 5.9	WM781A	WM734C	WM904A	60 PSI	3.5 IN.	WM781 AK18
Dodge PU	2003 & Up	Cummins 5.9	WM771A	WM734C	WM902C	60 PSI	4.0 IN.	WM771 AK19
Ford F Series	2004 & Up	6.0	WM781A	WM734D	WM904A	50 PSI	3.5 IN.	***
Ford F Series	1999 & Up	7.3	WM781A	WM734D	WM904A	40 PSI	3.5 IN.	WM781 AK19
Ford F650	2004	Caterpillar C7	WM771A	WM901L1	WM902C	55 PSI	4.0 IN.	—
Ford Excursion	1997- 2003	7.3 Powerstroke	WM781A	WM734D	WM904A	40 PSI	3.5 IN.	—

Note: On any engine 2006 or newer design, please specify if the engine is equipped with a VGT.

***Combi Kit includes necessary control items, plus air supply and idle validation device (switch or ECU pins).**

****For Idle Validation 1) tap into electronic system per WBO 21, or 2) add 540A switch to throttle**

*****Special mounting instructions.**

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BLUE OX EXHAUST BRAKE



VEHICLE / ENGINE APPLICATION TABLE

CAUTION (a): ADJUST TO MANUFACTURERS BACK PRESSURE SPECIFICATIONS. Pressure listed herein are suggested from industry input.

CAUTION (b): Vehicles with automatic transmissions must have a lock-up feature to enable retarding torque to pass through the transmission.

If you have a question please contact BSI Technical Support personnel.

Note: On any engine 2006 or newer design, please specify if the engine is equipped with a VGT.

VEHICLE	YEAR	ENGINE	BRAKE MODEL	CONTROL KIT & COMBI KIT*	MOUNTING KIT	MAX PRESSURE	PIPE SIZE	NOTES
Freightliner FL40-50-60	2000-2004	MBE 900	WM771A	WM901M1B **	WM902B	43PSI	5.0 IN.	—
Freightliner FL40-50-60	2000-2004	Caterpillar 3126E	WM771A	WM901M1 **	WM902C	55 PSI	4.0 IN.	—
Freightliner FL70	2000-2004	Mercedes MBE900	WM771A	WM901M1B **	WM902C	43PSI	4.0 IN.	—
Freightliner FL80	2002	Caterpillar 3126	WM790A	WM901M1	WM904B	55PSI	3.5 IN.	—
Freightliner FL106	1997 & Up	Series 50 GMC	WM771A	WM901S1	WM902C2	39 PSI	4.0 IN.	—
GM Hummer	2001 & Up	6.5 I6	WM781A	WM734D	WM904C	38 PSI	3.0 IN.	Use Torqloc
GMC Isuzu	ALL	Duramax 6.6 V8	WM780A WM781A	WM901M WM901M1	WM903A WM904A	—	3.5 IN.	—
GMC Isuzu	ALL	Duramax 7.8 Inline 6	WM770D WM781A	WM901M WM901M1	WM902C	—	4.0 IN.	—
IH 4300/4400	2000 & Up	DT466E	WM781A	WM734C 544A	WM904A	51 PSI	3.5 IN.	—
IH 4700/4900	2000 & Up	DT466E	WM781A WM771A	WM736C 544A	WM904A WM902C	51 PSI	3.5 IN. 4.0 IN.	—
Komatsu	ALL	QST30	WM770-105	—	—	—	5.0 IN.	—
Komatsu	ALL	KT38C	WM770-105 (x2)	—	—	—	5.0 IN.	—
Sterling	2004 & Up	Cummins 5.9	WM781A	WM901H1	WM904C	60 PSI	3.0 IN.	Air on board

*Combi Kit includes necessary control items, plus air supply and idle validation device (switch or ECU pins).

**For Idle Validation 1) tap into electronic system per WBO 21, or 2) add 540A switch to throttle

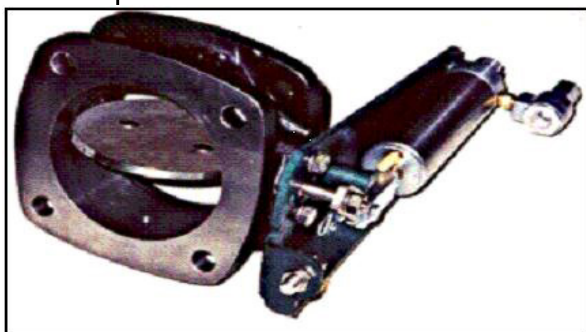
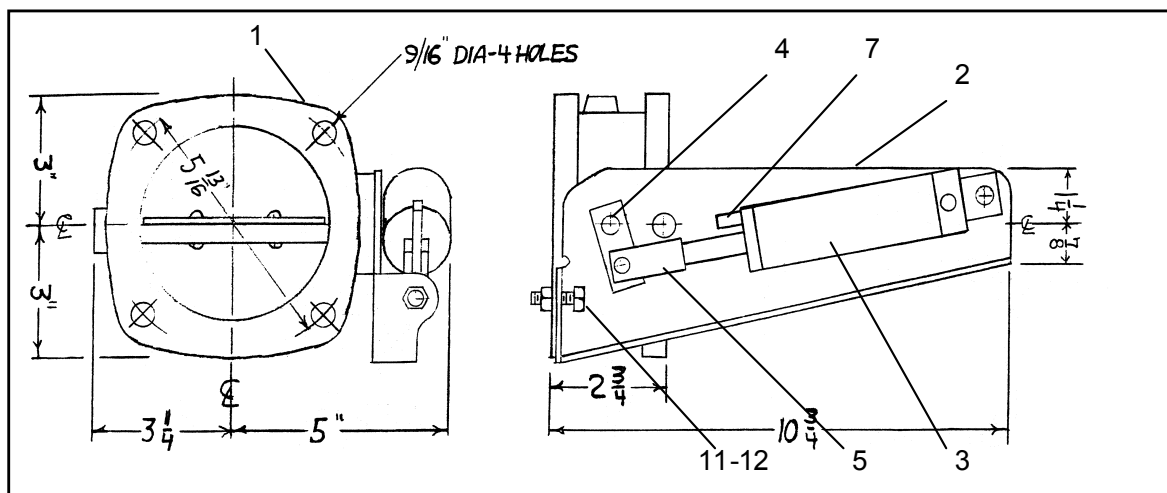
***Special mounting instructions.



BLUE OX EXHAUST BRAKE



WM728A BUTTERFLY



WEIGHT-13lb, 8oz

BRAKE SYSTEMS INC.		
SCALE: $\frac{1}{2}$ " = 1"	APPROVED BY:	DRAWN BY: HD
DATE: 03-09-01		REVISED:
00728A BRAKE ASSY.- 4 IN.		
		DRAWING NUMBER: 00728-00

Blue Ox exhaust brake devices provide downhill retarding horsepower as well as cold weather protection for the engine in both highway & idling modes. This is a bolt on retarder unit designed to mate with certain naturally aspirated or super charged diesel engines. This unit fits the four bolt, 4" exhaust flange popular on some Cummins 855 cubic engines.

Item	Description	Part Number	Quantity	Item	Description	Part Number	Quantity
1	Housing Assembly, consists of:	728-01C	1	10	Lock Washer	728-31	2
	Housing	728-01	1	11	Stop Screw	728-36	1
	Shaft	728-02A	1	12	Jam Nut	728-37	1
	Butterfly	728-03	1	13	Bushing	728-17	1
	Rivet	728-09	2	14	Bushing	728-18	1
	Collar	728-09B	2	15	Mounting Screw	728-28	2
	Seal Ring	728-16	3	16	Hex Nipple	3325X2	1
2	Bracket Assembly	771-04B	1	17	Shaft Nut	728-35	1
3	Cylinder Assembly	728-05	1	18	C Clip	728-55	1
4	Link	728-07	1	Mounting Hardware:			
5	Clevis Assembly	728-08	1	19	Gasket	728-06	2
6	QR Valve	728-19	1	20	Mounting Bolt	728-25	4
7	Breather	728-23	1	21	Mounting Bolt	728-26	4
8	Snap Ring	728-55	1	22	Mounting Nut	728-41	8
9	Lock Washer	728-29	3				

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7-2005



BLUE OX EXHAUST BRAKE



WM728A KIT DETAILS

Item	Kit Number	Size	Control Kit	Install Kit	Application
1	WM728AK2	4.0	532A	736A	NHB 270
2	WM728AK4	4.0	901L1	—	NHB 270
3	WM728AK6	4.0	—	736A	—

COMPLETE INSTALLATION KITS INCLUDE:

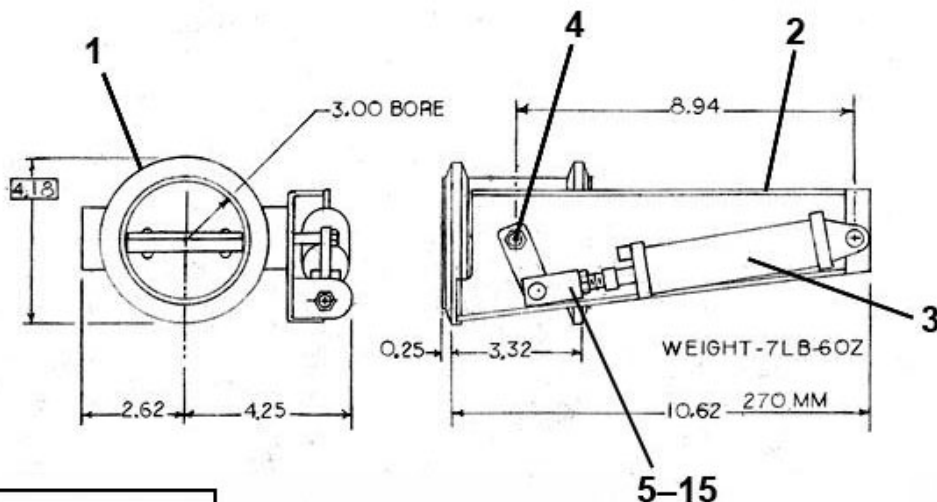
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|-------------|--|
| 1 WM728 AK | Brake kit without controls. |
| 2 WM728 AK2 | 12 volt manual
type foot operated. |
| 3 WM728 AK4 | 12 volt automatic
type throttle rod actuated. |
| 4 WM728 AK6 | 12 volt automatic
type electronic engine control. |



BLUE OX EXHAUST BRAKE



WM760A BUTTERFLY



BRAKE SYSTEMS INC			
SCALE 1/2"=1" IN		APPROVED BY:	
DATE 10-17-05		DRAWN BY JD	
		REVISED	
BRAKE ASSEMBLY-SMALL			
ADAPTS TO 2 IN, 58MM, 3 IN		DRAWING NUMBER WM-760A	



Blue Ox exhaust brake devices provide downhill retarding horsepower as well as cold weather protection for the 4 stroke engine in both highway and idling modes. This unit is designed to mount inline and downstream of the turbo or manifold flange. The WM760A is the smallest of the Blue Ox family and will mate with pipe sizes from two to three inches, including 58mm outer diameter as well as engine displacements up to 300 cubic inches (5 L).

Item	Description	Part Number	Quantity	Item	Description	Part Number	Quantity
1	Housing Assembly, consists of:		1	6	Cap Screw	728-28	3
	Housing	760-01	1	7	Breather	WM111C	1
	Shaft	760-02	1	8	Snap Ring	728-55	1
	Butterfly	760-03	1	9	Lock Washer	728-29	5
	Rivet	790-09	2	10	Shaft Nut	728-35	1
	Collar	728-09B	2	11	Stop Screw	728-36	1
	Seal Ring	728-16	3	12	Jam Nut	114542	1
	Bushing	728-18	1	13	Hair Clip	728-40	1
	Bushing	790-18	1	14	Pin	115171	1
2	Bracket	160028C	1	15	Clevis Pin	115159	1
3	Cylinder	WM635B3B-100	1	16	Clevis Pin	115167	1
4	Link	728-07	1	17	Cap Screw	160032	1
5	Clevis Assembly	115404	1	18	Lock Washer	160033	1

2010.05.17



BLUE OX EXHAUST BRAKE



WM760A KIT DETAILS

Item	Kit Number	Size	Pipe Kit	Control Kit	Install Kit	Application
1	WM760AK6	2.0	WM903E	WM901M1	-	-
2	WM760AK8	58 mm	WM903D	WM901M1	-	-
3	WM760AK10	58 mm	WM903D	-	WM734C	-
4	WM760AK12	2.5	WM903C	WM901M1	-	-
5	WM760AK14	2.5	WM903C	-	WM734C	-

COMPLETE INSTALLATION KITS INCLUDE:

1	WM760 AK6	2.0 inches	12 volt DC electronic engine control.
2	WM760 AK8	58 millimeters	12 volt DC electronic engine control.
3	WM760 AK10	58 millimeters	12 volt DC electronic engine control with air supply kit.
4	WM760 AK12	2.5 inches	12 volt DC electronic engine control.
5	WM760 AK14	2.5 inches	12 volt DC electronic engine control with air supply kit.

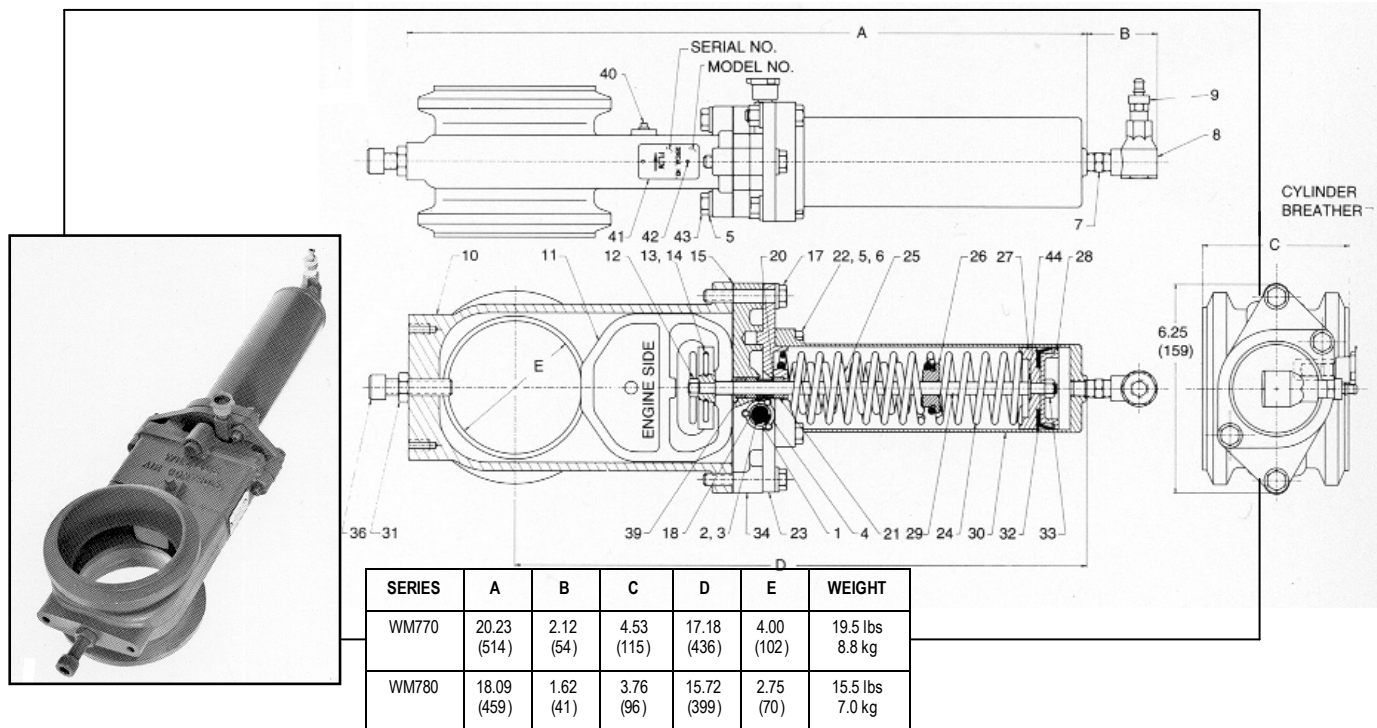
10/05



BLUE OX EXHAUST BRAKE



WM770D, WM780A GUILLOTINE



The Blue Ox exhaust brake is an engine retarder for fourstroke diesel engines. WM770D models fit engines with exhaust system diameters of 4 to 5 inches. WM780A models are used on engines with exhaust system diameters under 3 1/2 inches.

ITEM	DESCRIPTION	WM770D 118139	WM780A 118012	QTY.	ITEM	DESCRIPTION	WM770D 118139	WM780A 118012	QTY.
1●▲	Snap Ring	116283	116283	1	23●▲	Cylinder Adapter	117995	117995	1
2●▲	Screen	116458	116458	1	24●▲	Spring	117023	117023	1
3●▲	Filter	118043	118043	-	25●▲	Spring	117022	117022	1
4●▲	Air Cleaner Body	118042	118042	1	26●▲	Spring Retainer	117534	117534	1
5●▲	Washer	117125	117125	6	27●▲■	Piston	117026	117026	1
6●▲	Nut	118022	118022	4 for 780 2 for 770	28●▲■	Seal Retainer	117121	117121	1
7	Pipe Nipple	115201	115201	1	29●▲	Piston Rod	117992	117992	1
8	Quick Release	117157	117157	1	30●▲	Cylinder Shell	117035	117035	1
9	Male Connector	117355	117355	1	31	Nut	114550	118020	1
10	Brake Body	118097	118021	1	32●▲■	Packing Cup	117806	117806	1
11	Slide Gate	118094	118019	1	33●▲■	Nut	114547	114547	1
12●▲	Nut	118014	118014	1	34●▲	Base Cap	117993	117993	1
13●▲	Waste Gate	117998	117998	1	36	Screw	117036	118080	1
14●■	Waste Gate Seal	117999	117999	1	39●▲■	Bushing	117031	117031	11
15●■	Gasket	118023	118023	1	40	Pipe Plug	115829	115829	1
17●	Screw	117371	117371	2	41	I.D. Tag	117114	117114	1
18●▲■	Spring	101241	101241	1	42	Screw	117124	117124	2
20●▲■	Washer	118008	118008	2	43●■	Screw	117370	117370	2
21●▲■	Packing	117808	117808	2	44●■	Washer	115017	115017	1
22●▲	Screw	118015	118015	2					

●Item is included in cylinder assembly kit 118142
 ■Item is included in repair kit R770D/780 (118116).
 ▲Item is included in cylinder / waste gate assembly kit 118006.

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BLUE OX EXHAUST BRAKE

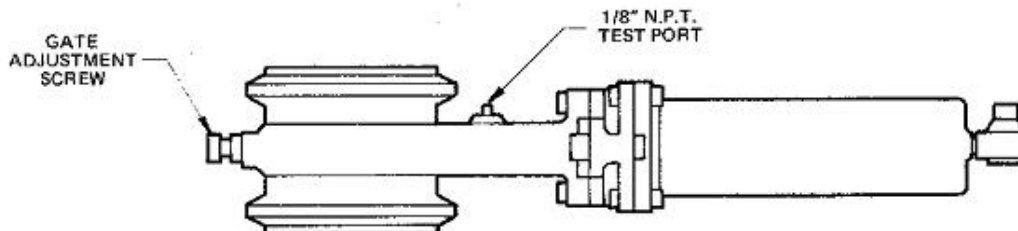


WM770D, WM780A

ADJUSTMENT, ROAD TESTING AND TROUBLESHOOTING

WM770 AND WM780 SERIES EXHAUST BRAKE

The adjustment and road test sequence in this bulletin is mandatory after an exhaust brake is installed. Refer to the Exhaust Brake Reference Bulletin or consult engine manufacturer for specifications on maximum back pressure and engine speed for specific engine models. Before beginning the adjustment and road test sequence, warm your engine to its normal operating temperature.



A. ADJUSTMENT

1. **Idle Speed:** Compare engine's idle speeds with exhaust brake "applied" and "released". Idle speed should drop 25-50 RPM* when the exhaust brake is applied. To decrease the drop in idle speed, tighten the adjustment screw. Loosen the screw to increase the drop in idle speed.
*May be less for some engine models.
2. **Microswitch:** **CAUTION: NEVER MANUALLY OPERATE THE THROTTLE MICROSWITCH. IF EXHAUST BRAKE IS APPLIED WHILE ENGINE IS BEING FUELED, DAMAGE MAY RESULT.** To check microswitch operation, manually open the throttle to full fuel position and release. Microswitch must actuate immediately when the throttle reaches the idle position.
3. **Leakage:** With the exhaust brake "applied" and the engine decelerating, check system for leaks. Leakage must be corrected before road testing brake.

B. ROAD TEST

1. **Gage Installation:** Remove the pipe plug from brake's test port. Install gage kit P/N 117774 so that gage will be easily visible during road test.
2. Select a slope for the road test where the engine can reach maximum allowable RPM for extended periods. Change gears to maintain maximum engine speed during exhaust braking. The back pressure level indicated on the 117774 gage must not exceed the maximum back pressure specified by the engine manufacturer. If the pressure level is too high, tighten the gate adjustment screw and repeat the road test. If pressure level is too low:
 - a. Check system for leakage.
 - b. Check brake's air supply.
 - c. Check engine's exhaust valve springs for correct loading. Some engine manufacturers specify valve spring requirements when exhaust brakes are installed. Refer to Special Engine Manufacturer's Recommendations in Reference Bulletin or consult manufacturer.

C. TROUBLESHOOTING

1. First, establish whether it is safe to continue using engine and/or exhaust brake. If the engine is malfunctioning, don't use the exhaust brake until engine problems are corrected.
2. Investigate simple solutions first. Refer to the chart on the right for assistance.

EXHAUST BRAKE TROUBLESHOOTING

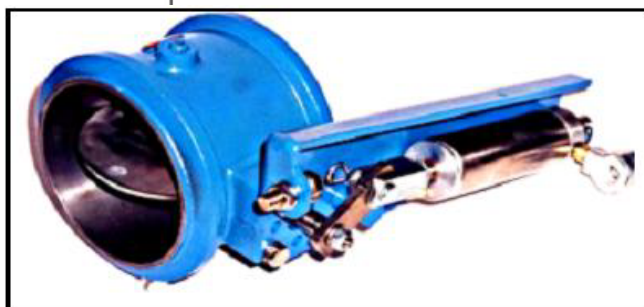
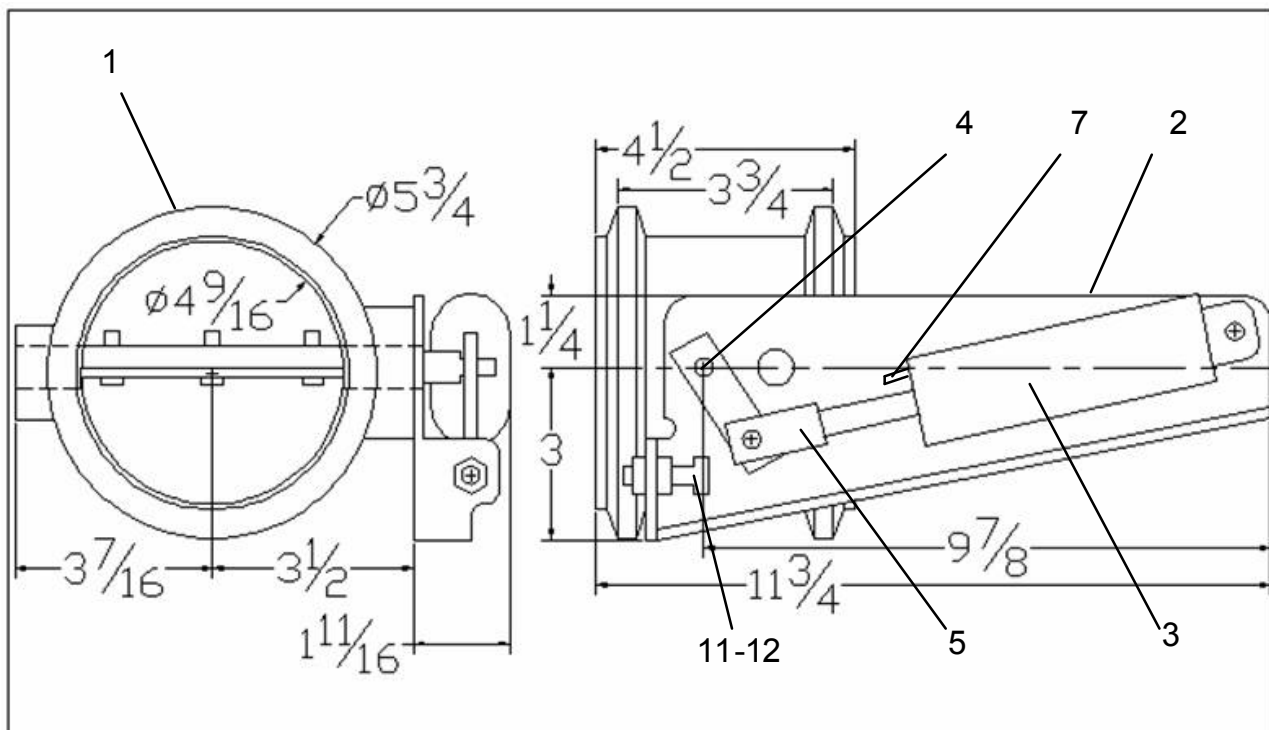
COMPLAINT

CAUSE	EXHAUST FUMES IN CAB									
	INTERMITTENT OPERATION									
	BRAKE WON'T RELEASE									
	TOO MUCH BACK PRESSURE									
	INSUFFICIENT BACK PRESSURE									
	BRAKE SLOW TO OPERATE									
	BRAKE WON'T OPERATE									
BROKEN AIRLINE	X									
INSUFFICIENT AIR SUPPLY		X	X							
WRONG POWER SOURCE	X									
LOOSE ELECTRICAL CONNECTIONS	X						X	X		
BLOWN FUSE	X									
MICROSWITCH FAILURE	X									
SOLENOID VALVE FAILURE	X									
SOLENOID VALVE MOUNTED INCORRECTLY	X								X	
PLUGGED CYLINDER VENT		X	X							
DAMAGED BRAKE CYLINDER	X	X	X				X	X	X	
DAMAGED CYLINDER SEAL	X	X								
WORN SHAFT SEAL										X
LEAKY GASKET			X							X
BURRED "T" BAR			X							
LOOSE MOUNTING BOLTS									X	X
PLUGGED QUICK RELEASE VALVE	X		X				X	X		
CARBON IN BRAKE BODY		X	X				X			
INCORRECT GATE ADJUSTMENT			X	X						
WORN RETURN SPRINGS		X					X			
LEAKY EXHAUST SYSTEM										X
LOOSE IDLE LINKAGE	X			X			X			
THROTTLE NEEDS ADJUSTMENT				X	X					
WORN VALVE SPRINGS			X				X			

BLUE OX EXHAUST BRAKE



WM771A BUTTERFLY



BRAKE SYSTEMS INC.			
SCALE: NTS		DRAWN BY: RTH	
INTD: 28 APRIL 2005		REVISED	
WM-771A BRAKE ASSY.			
ADAPTS TO 4" & 5" PIPE			DRAWING NUMBER: WM-771A

WEIGHT-12lb, 12oz

Item	Description	Part Number	Quantity	Item	Description	Part Number	Quantity
1	Housing Assembly, consists of:	771-01C	1	4	Link	728-07	1
	Housing	771-01	1	5	Clevis Assembly	728-08	1
	Shaft	771-02	1	6	Cap Screw	728-28	3
	Butterfly	771-03	1	7	Breather	728-23	1
	Rivet	728-09A	3	8	Snap Ring	728-55	1
	Collar	728-09B	3	9	Lock Washer	728-29	3
	Seal Ring	728-16	3	10	Shaft Nut	728-35	1
	Bushing	728-17	1	11	Stop Screw	728-36	1
	Bushing	728-18	1	12	Stop Nut	728-37	1
2	Bracket Assembly	771-04B	1	13	QR Valve	728-19	1
3	Cylinder	728-05	1	14	Hex Nipple	3325X2	1

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7-2005



BLUE OX EXHAUST BRAKE



WM771A KIT DETAILS

Item	Kit Number	Size	Pipe Kit	Control Kit	Install Kit	Air Kit	Application
1	WM771AK2	4.0	902C	532A	736A	—	—
2	WM771AK4	4.0	902C	—	901E	—	—
3	WM771AK6	4.0	902C	—	736A	—	—
4	WM771AK12	5.0	902B	532A	736A	—	—
5	Wm771AK14	5.0	902B	—	901E	—	—
6	WM771AK16	5.0	902B	—	736A	—	—
7	WM771AK18	3.5	902E	—	736B	734A	Dodge
8	WM771AK19	4.0	902C	—	736B	734A	Dodge
9	WM771AK20	4.0	902C	—	736A	734A	Ford
10	WM771AK21	4.0	902C	540A	901R	—	FL50 / FL70
11	WM771AK22	3.5	902E	—	736A	734A	Ford

COMPLETE INSTALLATION KITS INCLUDE:

1. WM771 AK2 4" 12 volt manual type foot operated.
2. WM771 AK4 4" 12 volt automatic type throttle rod actuated.
3. WM771 AK6 4" 12 volt automatic type electronic engine cotrolled.
4. WM771 AK12 5" 12 volt manual type foot operated.
5. WM771 AK14 5" 12 volt automatic type throttle rod actuated.
6. WM771 AK16 5" 12 volt automatic type electronic engine controlled.
7. WM771 AK18 3 1/2" 12 volt electronic engine air supply kit.
8. WM771 AK20 4" 12 volt electronic engine air supply kit.

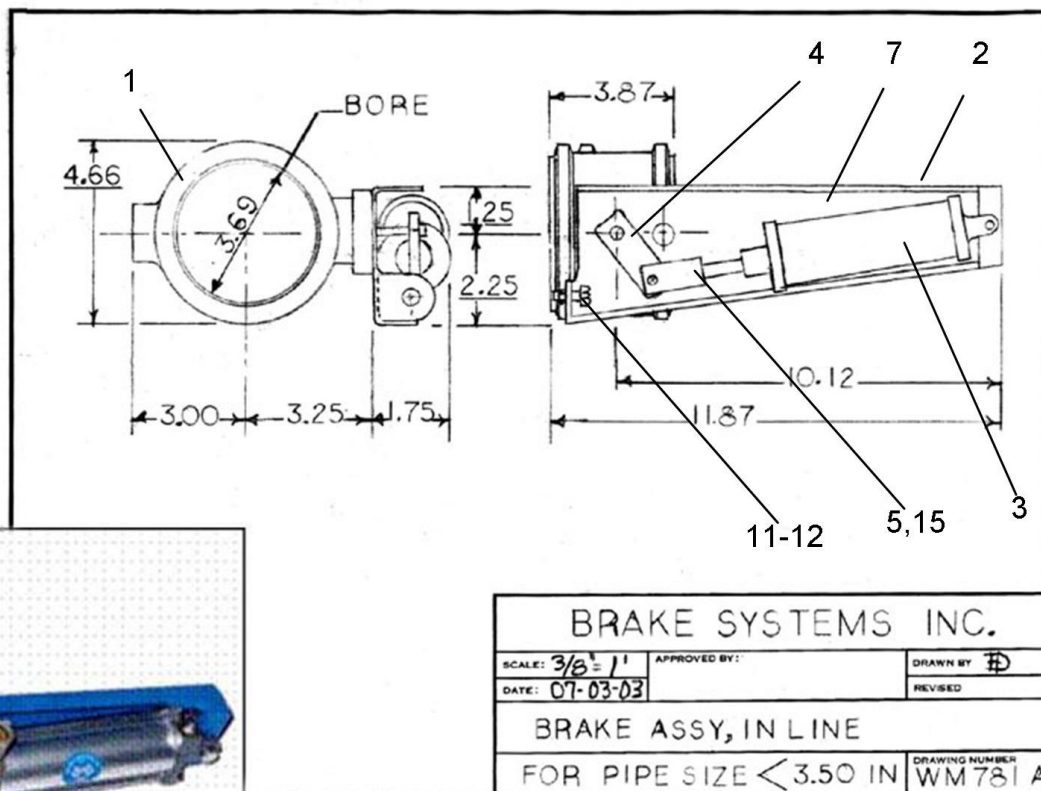
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7-2005



BLUE OX EXHAUST BRAKE



WM781A BUTTERFLY



Weight-8lbs 13oz

Blue Ox exhaust brake devices provide downhill retarding horsepower as well as cold weather protection for the 4 stroke engine in both highway and idling modes. This unit is designed to mount in-line and down stream of the turbo or manifold flange. The WM781A is the smaller of the Blue Ox family and will mate with pipe sizes up to 3 1/2" as well as engine displacements up to 470 cubic inches.

Item	Description	Part Number	Quantity	Item	Description	Part Number	Quantity
1	Housing Assembly, consists of:	781-01C	1	5	Clevis Assembly	115383	1
	Housing	781-01	1	6	Cap Screw	728-28	4
	Shaft	790-02	1	7	Breather	WM111C	1
	Butterfly	790-03	1	8	Snap Ring	728-55	1
	Rivet	790-09	2	9	Lock Washer	728-29	5
	Collar	790-09B	2	10	Shaft Nut	728-35	1
	Seal Ring	728-16	3	11	Stop Screw	728-36	1
	Bushing	728-17	1	12	Jam Nut	728-37	1
	Bushing	728-18	1	13	Pin	115171	1
2	Bracket	160028	1	14	Hair Clip	728-40	1
3	Cylinder	WM635B3B	1	15	Clevis Pin	115159	1
4	Link	728-07	1				

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9-2010



BLUE OX EXHAUST BRAKE



WM781A KIT DETAILS

Item	Kit Number	Size	Pipe Kit	Control Kit	Install Kit	Air Kit	Application
1	WM781AK2	3.5	904A	532A	736A	—	Manual
2	WM781AK4	3.5	904A	—	901E1	—	Throttle Rod
3	WM781AK6	3.5	904A	—	736A	—	Electric Engine
4	WM781AK12	4.0	904D	532A	736A	—	Manual
5	WM781AK14	4.0	904D	—	901E1	—	Throttle Rod
6	WM781AK16	4.0	904D	—	736C	734A	Ford 7.3
7	WM781AK18	3.5	904A	—	736A	734A	Air Kit
8	WM781AK19	3.5	904A	—	901L	734A	Whisker
9	WM781AK20	3.5	904A	—	736B	734A	Dodge '98
10	WM781AK21	3.5	904A	—	736A	734A	Electric
11	WM781AK22	3.0	904G	—	736C	734A	Ford

COMPLETE INSTALLATION KITS INCLUDE:

- | | |
|--------------|--|
| 1 WM781 AK2 | 3 1/2" 12 volt manual
type foot operated. |
| 2 WM781 AK4 | 3 1/2" 12 volt automatic
type throttle rod actuated. |
| 3 WM781 AK6 | 3 1/2" 12 volt automatic
type electronic engine control. |
| 4 WM781 AK18 | 3 1/2" 12 volt automatic type
electronic engine control
(with air supply kit). |

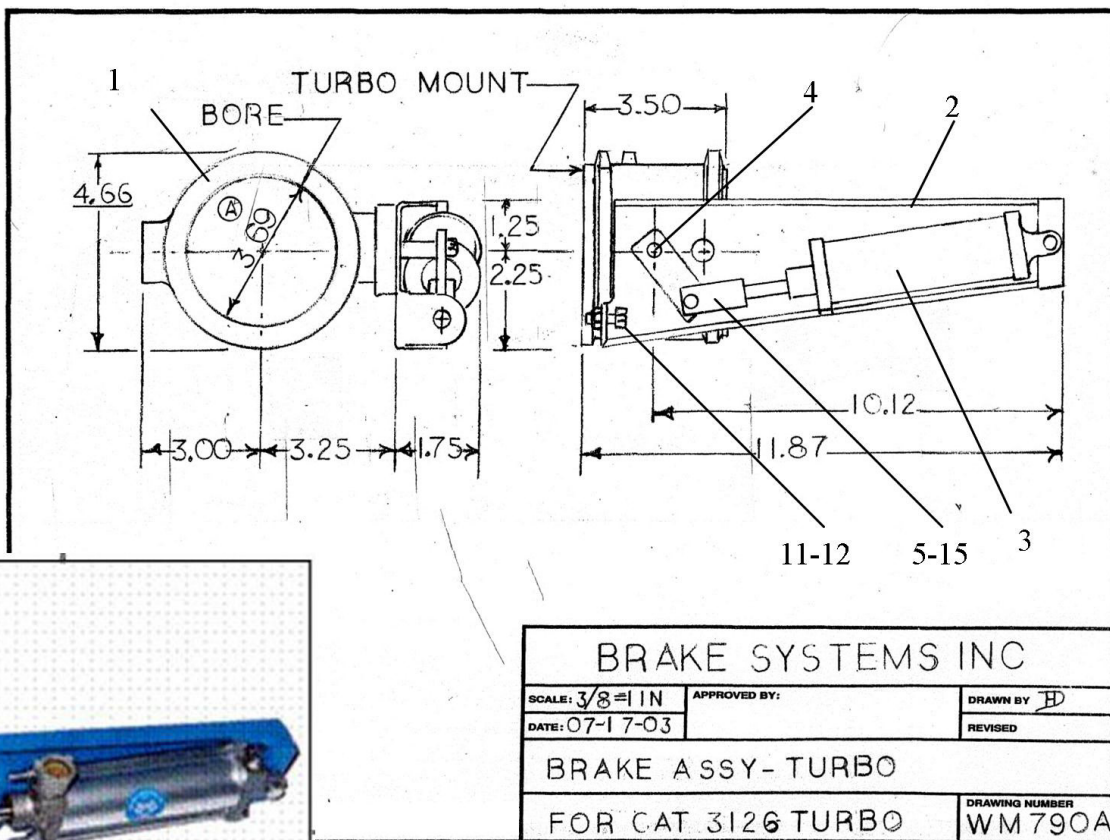
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BLUE OX EXHAUST BRAKE



WM790A BUTTERFLY



Weight -8 lbs 13 oz

Blue Ox exhaust brake devices provide downhill retarding horsepower as well as cold weather protection for the 4 stroke engine in both highway and idling modes. This unit is designed to mate directly with the turbo charger for several engines including the Caterpillar 3126. Usually the downstream exhaust pipe is 3 1/2" diameter but other size flange kits are also available.

Item	Description	Part Number	Quantity	Item	Description	Part Number	Quantity
1	Housing Assembly, consists of:	790-01C	1	5	Clevis Assembly	115383	1
	Housing	790-01	1	6	Cap Screw	728-28	4
	Shaft	790-02	1	7	Breather	WM111C	1
	Butterfly	790-03	1	8	Snap Ring	728-55	1
	Rivet	790-09	2	9	Lock Washer	725-29	5
	Collar	728-09B	2	10	Shaft Nut	728-35	1
	Seal Ring	728-16	3	11	Stop Screw	728-36	1
	Bushing	728-17	1	12	Jam Nut	728-37	1
	Bushing	728-18	1	13	Hair Clip	728-40	1
2	Bracket	160028	1	14	Pin	115171	1
3	Cylinder	WM635B3B	1	15	Clevis Pin	115159	1
4	Link	728-07	1				

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2011-12



BLUE OX EXHAUST BRAKE



WM790A KIT DETAILS

Item	Kit Number	Size	Pipe Kit	Control Kit	Install Kit	Application
1	WM790AK2	3.5	904B	540A	736A	3126T
2	WM790AK4	4.0	904D	540A	736A	3126T

COMPLETE INSTALLATION KITS INCLUDE:

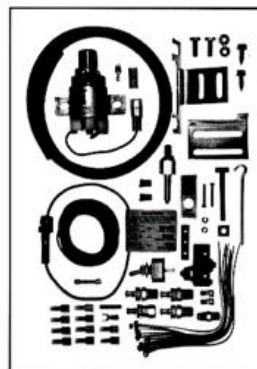
- | | | |
|---|-----------|-----------------------------|
| 1 | WM790 AK2 | 3 1/2" 12 volt
3126T, FL |
| 2 | WM790 AK4 | 3 1/2" 12 volt
3126T, FL |



BLUE OX EXHAUST BRAKE



WM901 CONTROL KITS



WM901 series kits provide the control circuit components for Blue Ox exhaust brakes. The WM901 control circuit is governed by an on/off electric switch mounted on the vehicle's dash. When the switch is in the "on" position, the exhaust brake is automatically applied whenever the throttle is returned to idle. When the operator moves the throttle from the idle position, the exhaust brake is released and completely withdrawn from the exhaust.

For Butterfly Brakes, add the suffix "1" after kit number (example: WM901E1). Includes regulator assembly.

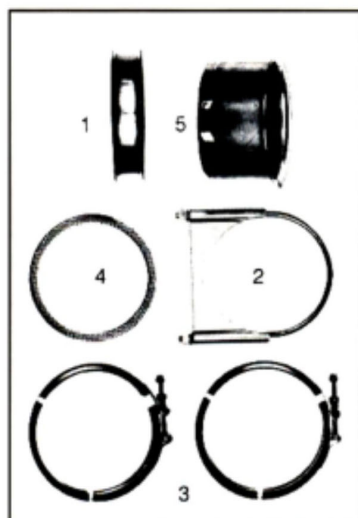
DESCRIPTION	WM901E 117431	WM901H 119252	WM901J 119417	WM901K 119431	WM901L 119566	WM901M* 130233	WM901N 130524	QTY
Microswitch	117784	117784	119415	117784	WM779B	—	—	1
Bracket	110412	119251	—	119429	—	—	130483	1
Bracket	110357	—	—	—	—	—	130484	1
Screw	114778	114778	—	119437	—	—	114848	2
Washer	115059	115059	—	—	—	—	—	2
Tinnerman Nut	117847	117847	—	117847	—	—	—	1
Lever	110358	—	—	119428	—	—	—	1
Bolt Tee	110392	—	—	—	—	—	—	1
Saddle Clamp	110359	—	—	—	—	—	—	1
Lock Nut	114543	114543	114543	114543	—	114543	114543	2
Solenoid	130379	130379	130379	130379	130379	130379	130379	1
Wire	110380	110380	110380	110380	110380	130239	110380	1
Fuse Holder	110386	110386	110386	110386	110386	110386	110386	1
Fuse	110387	110387	110387	110387	110387	110387	110387	1
Connector	110388	110388	110388	110388	110388	110388	110388	1
Toggle Switch	110384	110384	110384	110384	110384	110384	—	1
Escutcheon Plate	110345	110345	110345	110345	110345	110345	110345	1
Connector	117783	117783	117783	117783	117783	117783	117783	10
Terminal	110383	110383	110383	110383	110383	110383	110383	2
Screw	110389	110389	110389	110389	110389	110389	110389	2
Screw	114835	114835	114835	114835	114835	114835	114835	2
Terminal	110382	110382	110382	110382	110382	110382	110382	1
Connector	110390	110390	110390	110390	110390	110390	110390	1
Connector	110381	110381	110381	110381	110381	110381	110381	1
Hose	130917	130917	130917	130917	130917	130917	130917	1
Adapter	115685	115685	115685	115685	115685	115685	115685	1
Swivel	115706	115706	115706	115706	115706	115706	115706	1
Connector	117355	117355	117355	117355	117355	117355	117355	3
Cable Ties	117508	117508	117508	117508	117508	117508	117508	12
Terminal	104741	104741	104741	104741	104741	104741	104741	4 for 901M 2 for others
Washer	—	115016	—	—	—	—	—	2
Screw	—	119253	—	—	—	—	—	2
Label	—	—	—	119455	—	—	—	1
Connector	—	—	—	—	—	130234	—	1
Connector	—	—	—	—	—	130235	—	2
Relay	—	—	—	—	—	130238	—	1
Wire Terminal Assy	—	—	—	—	—	130412	—	1
Switch Assy	—	—	—	—	—	—	130485	1
Actuator Switch	—	—	—	—	—	—	130487	1
Bracket	—	—	—	—	—	—	130770	1
Bracket	—	—	—	—	—	—	130771	1

*Includes ECU pin with wire.

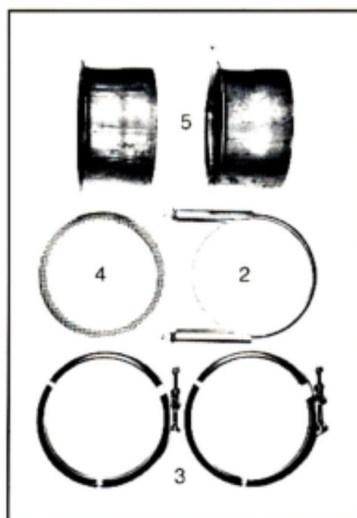
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07/05



BLUE OX EXHAUST BRAKE



WM902A



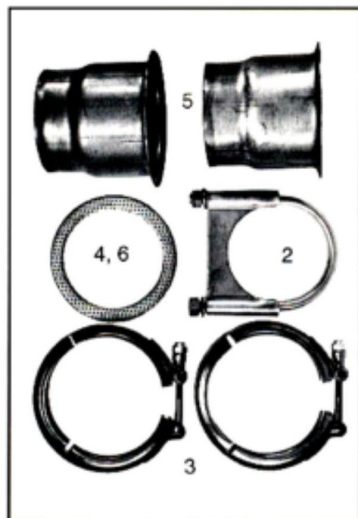
WM902B

WM902/903/904 MOUNTING KITS

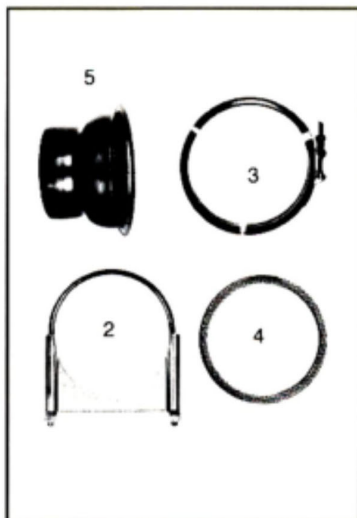
WM902 series mounting kits are used to install WM770D and WM771A series exhaust brakes in exhaust systems with diameters between 3 1/2 and 5 inches. A turbo-mount kit, WM902A, is available to mount the WM770D exhaust brake in the turbo outlet of some Cummins and Caterpillar engines.

WM903 series mounting kits install the WM780A series exhaust brakes in exhaust systems with diameters of 3 1/2 inches or less.

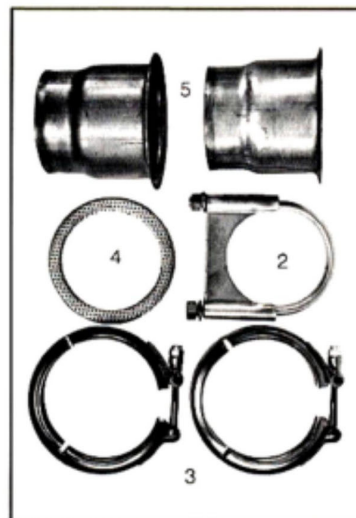
WM904 series mounting kits install the WM781A and WM790A series exhaust brakes in exhaust systems with diameters between 3 and 4 inches.



WM902C



WM902C2



WM903

			WM770D/771A MOUNTING KIT						WM760A/780A MOUNTING KIT					WM781A/790A MOUNTINGKIT			
ITE M	DESCRIP.	Q	WM902A 117558	WM902B 117559	WM902C 117560	WM902C2 130100	WM902E 117562	WM902F 131494	WM903A 117835	WM903B 117836	WM903C 117837	WM903D 117838	WM903H 131495	WM904A (781A)	WM904B (790A)	WM904C (781A)	WM904 D (781A)
1	ADAPTER	1	117488	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	U CLAMP	1	117505	117505	117504	117504	117503	117504	117503	117502	117843	117843	117502	117503	117503	117502	117504
3	V BAND CLAMP	2	117507	117507	117507	117507	117507	117507	118396	118396	118396	118396	118396	160029	160027 (1)	160029	160029
4	GASKET	2	118394	118394 (1)	118394 (1)	118394 (1)	118394	118394 (1)	118395	118395	118395	118395	118395 (1)	118397	118397	118397	118397
5	ADAPTER	2	118179 (1)	117490	117491	130099	160013	131481 (1)	118029	118030	118064	160077	131480	160014	160014 (1)	160040	160039
6	GASKET	1	—	—	—	—	—	130095	—	—	—	—	—	—	—	—	—
	PIPE SIZE		5.0" OD TURBO	5.0" ID	4.0" ID	4.0" OD	3.5" ID	4.0" ID *	3.5" ID	3.0" ID	2.5" ID	58 mm OD	3.0" ID *	3.5" ID	3.5" ID	2.5" & 3.0" ID	4.0" ID

* STAINLESS STEEL COMPONENTS

11117
10/05



BLUE OX EXHAUST BRAKE

AIR SUPPLY KITS



Supplies compressed air for engaging exhaust brakes.

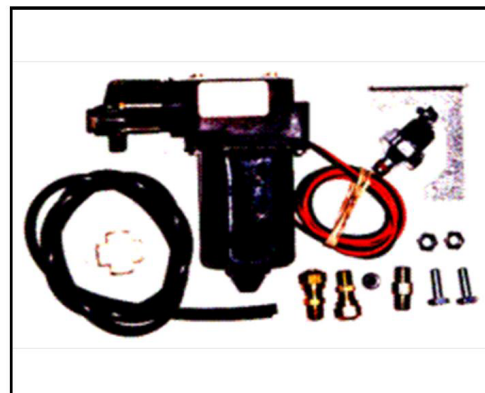
WM734A* AIR SUPPLY KIT, NO TANK

For butterfly brakes only, demand only.

The WM734A system uses the "demand" system for air. The compressor only turns on when the controls are in the "ON" position. This takes from 3 to 4 seconds for the compressor to pressurize the line and also the control cylinder. When the pressure is at the governor setting it then shuts off.

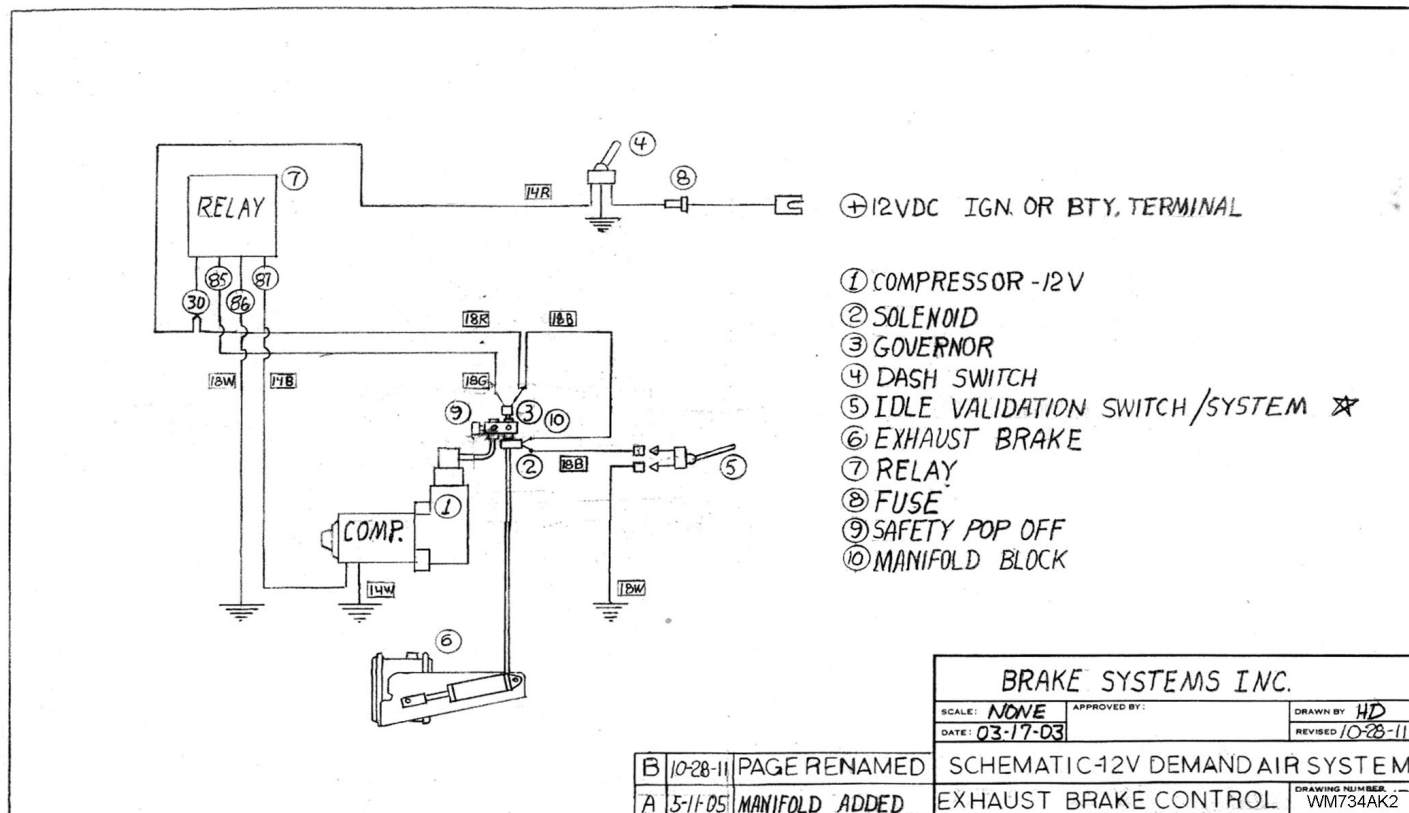
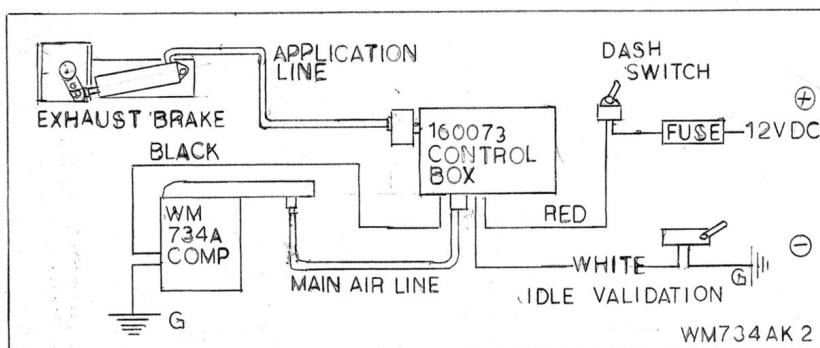
This system does not use an air tank therefore the compressor is not required to keep up a full tank and also with the various air leaks that often plague a more conventional system.

ITEM	QTY.	PART #	DESCRIPTION
1	1	160015	COMPRESSOR
2	1	160016	MTG. BRACKET
3	2	728-38	CAP SCREW
4	2	728-39	LOCK NUT
5	1	130917A	HOSE ROLL
6	1	3153X2	PLUG
7	1	3325X2	NIPPLE
8	2	10004B-102	HOSE BARB
9	1	11124A	CATALOG SHEET



WM734AK2

The ON-OFF signal in the WM734AK2 system comes from the whisker switch or other device which senses throttle idle position to complete the circuit. All of the required circuitry is enclosed in control box 160073. Hook the three wires (red, white and black) and two air hoses to their respective terminals.



11124A
 11/29/11



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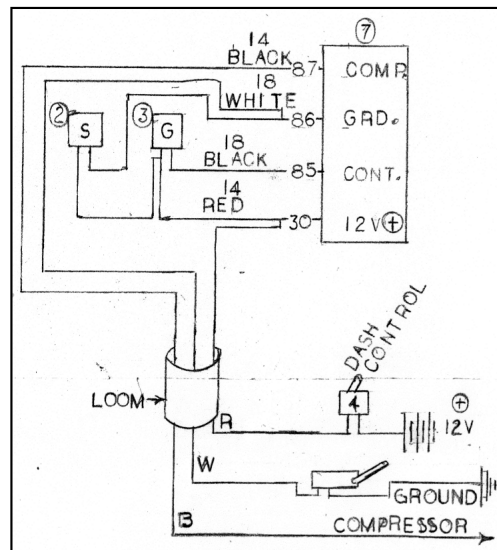
BLUE OX EXHAUST BRAKE



Item	Qty.		Part Number	Description
	AK1	AK2		
1	1	1	WM734A	12 VDC Compressor Kit
2	*	*	728-11B	Solenoid
3	*	*	160018A	Governor
4	1	1	728-12B	Dash Switch
5	1	1	110345	Escutcheon Plate
6	0	1	WM779B	Idle Validation
7	2	0	160020	ECU Pin
8	*	*	130238A	Relay 4 Pin
9	**	**	728-15	Fuse 10A
10	**	**	728-45	Fuse Holder
11	*	*	160023	Safety Pop-off
12	*	*	212322	Manifold Block
13	1	1	160073	Air Assy.
14	1	1	734A Typical	Drawing, Schematic
15	1	1	728-20C	Electrical Kit
16	2	2	10004B-102	Union 1/2

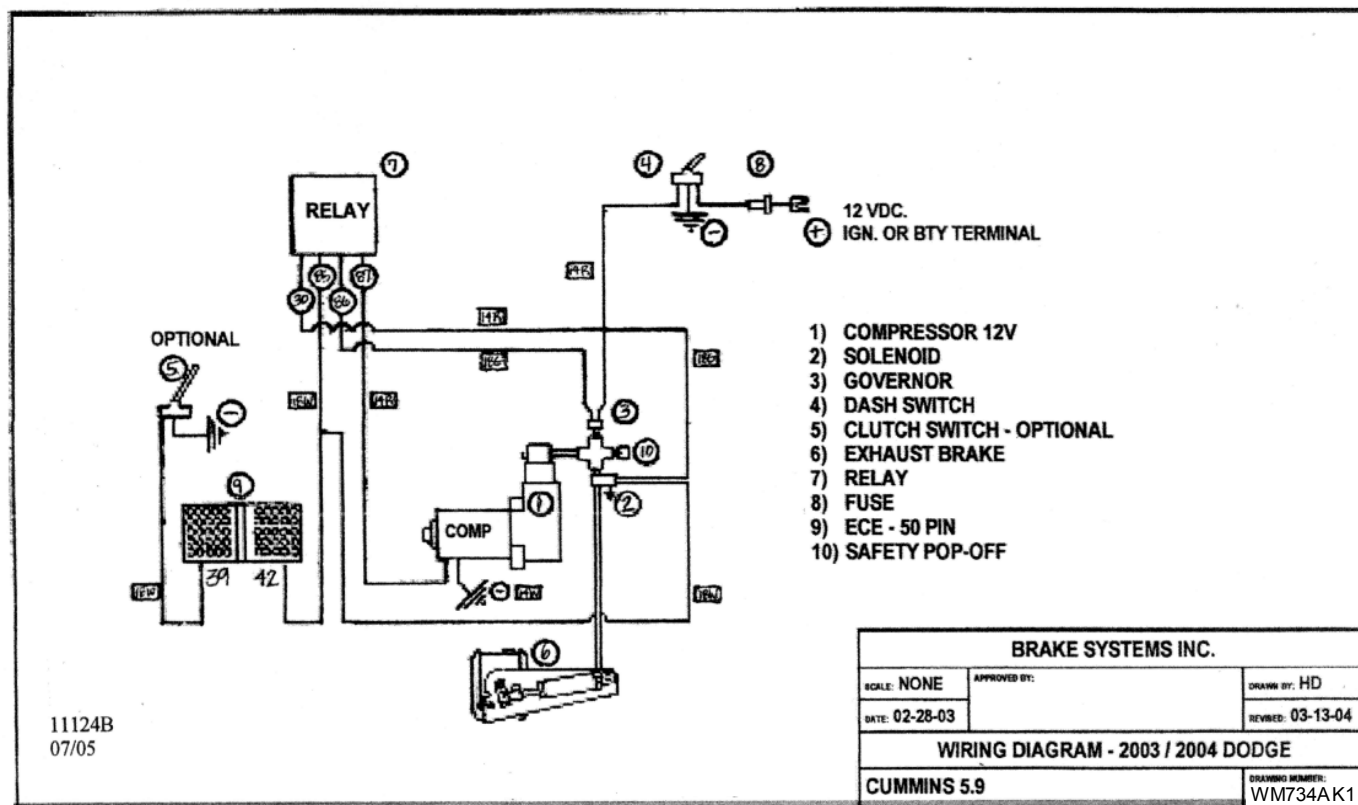
* Included in 160073 Air Assy

****Included in 728-20C Electrical Kit**



WM734AK1

The ON-OFF signal in the WM734AK1 system comes from the on board ECU and usually uses pins 39 and 42 to complete the circuit. The relay turns on the compressor when the control circuit is completed by a ground through the ECU. (See dwg. WM734AK1; 11124B). All of the required circuitry is enclosed in the control box 160073. Hook the three wires (red, white and black) and two air hoses to their respective terminals.



BLUE OX EXHAUST BRAKE

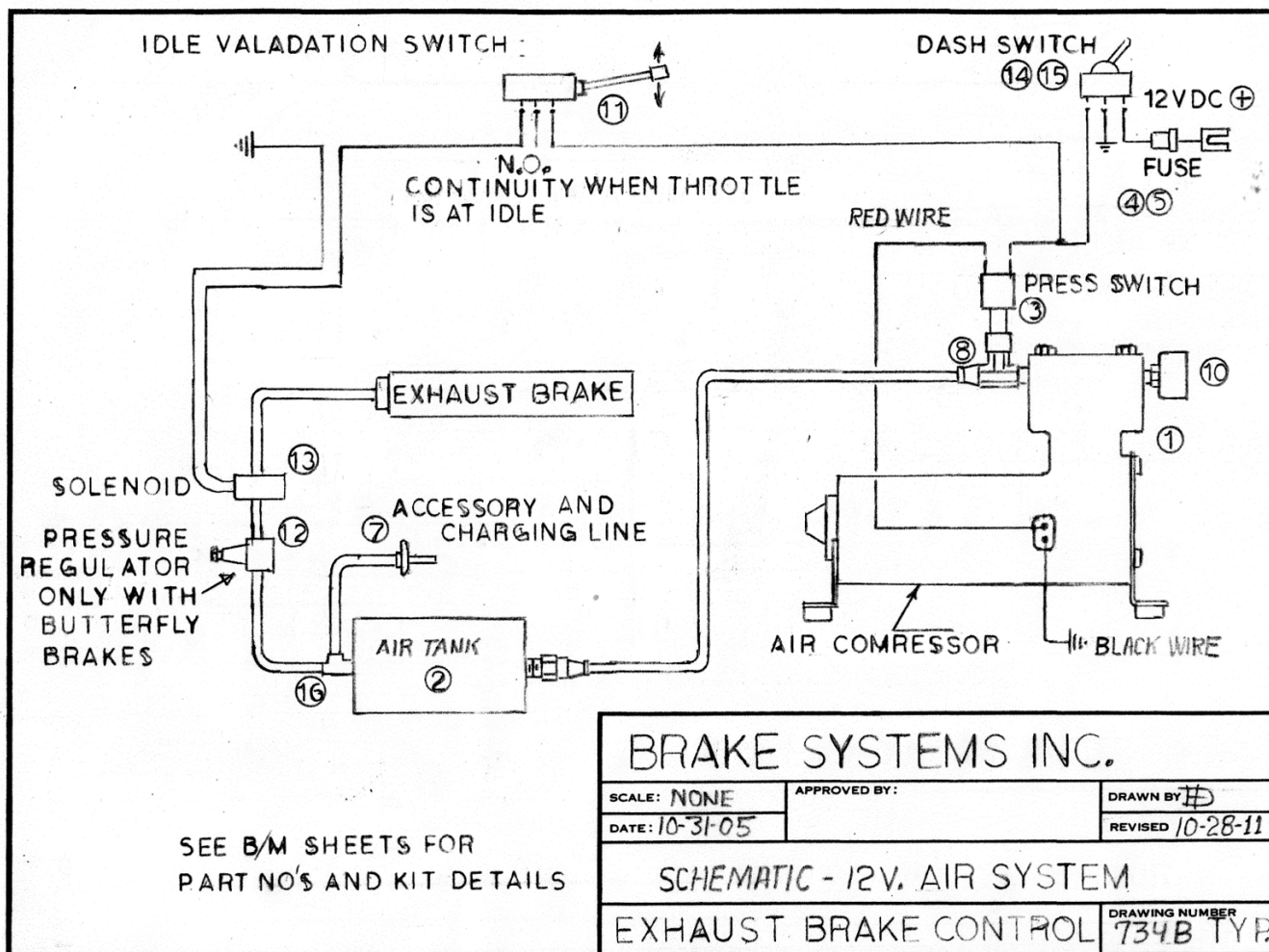


AIR SUPPLY KITS

Complete air kit designed for light to medium duty vehicles that do not already have an onboard air system.

***WM734B AIR SUPPLY KIT** includes air tank.

ITEM	QTY.	DESCRIPTION	REF. #
1	1	COMPRESSOR	1
2	1	AIR TANK	2
3	1	PRESSURE SWITCH	3
4	1	FUSE 20 A	4
5	1	FUSE HOLDER	5
6	1	EXTENSION HOSE 25'	
7	1	INFLATION VALVE	7
8	1	BRASS T FITTING	8
9	1	WIRE KIT	
10	1	AIR FILTER	10
11	1	COILED HOSE W/ CHUCK	



8 1/2 X 11 PRINTED ON NO. 1000H CLEARPRINT

REV. 2011.11.10



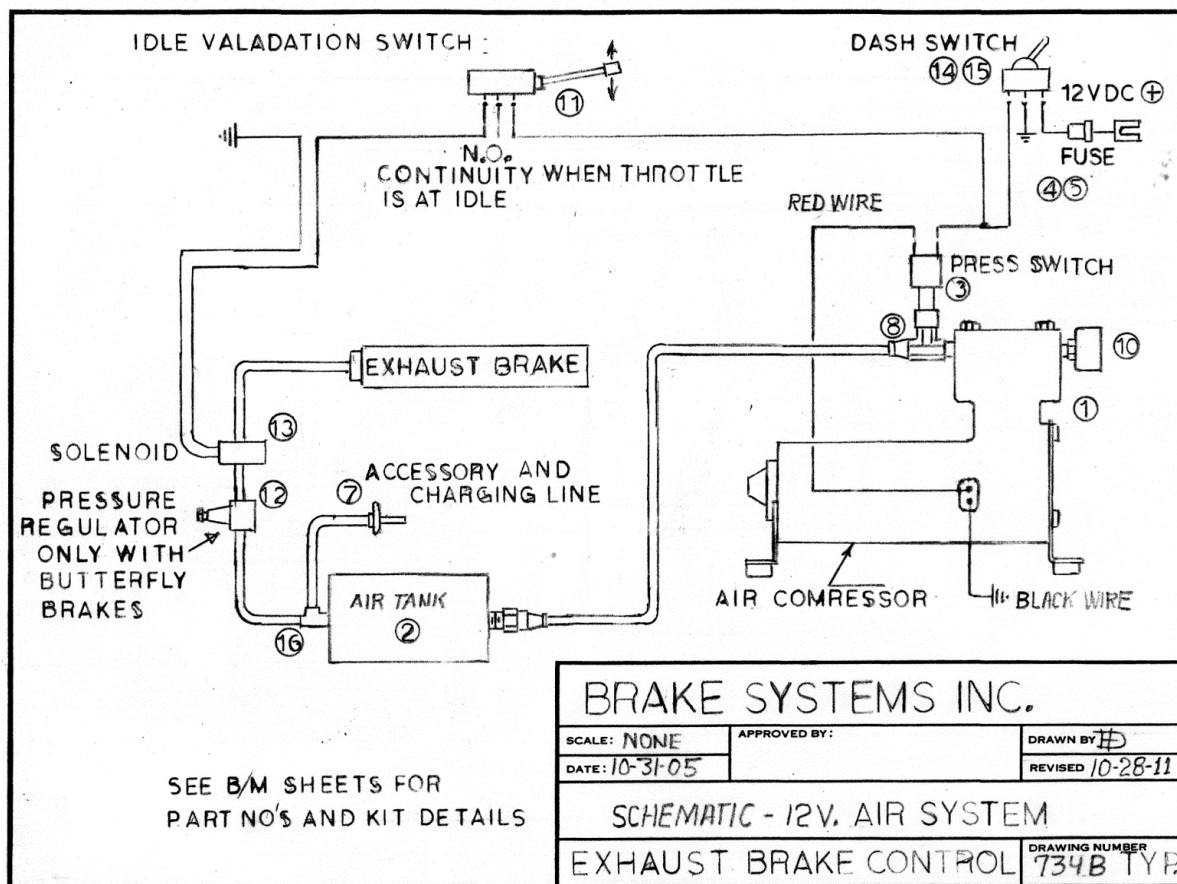
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BLUE OX EXHAUST BRAKE



WM734BK1 COMPLETE AIR KIT

ITEM	QTY.	PART #	DESCRIPTION	REF. #
1	1	WM734B	SUPPLY KIT W/ TANK	1
2	1	WM779B	WHISKER SWITCH KIT	11
3	1	110379A	SOLENOID/REGULATOR	12, 13
4	1	110384	DASH SWITCH	14
5	1	110345	ESCUTCHEON PLATE	15
6	1	3750X4	SERVICE TEE	16
7	3	1868X4X4	HOSE END	
8	1	728-02C	ELECTRICAL KIT	
9	1	BLUE OX CATALOG PG. 22A AND 22B	CATALOG SHEET	



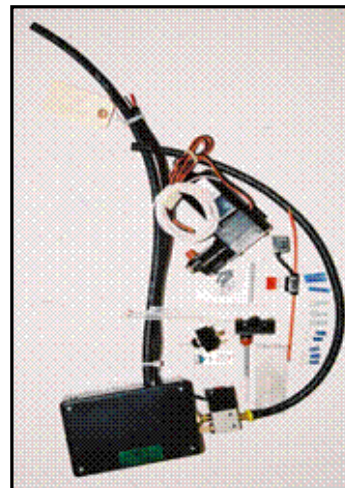
BLUE OX EXHAUST BRAKE



WM734C,D AIR CONTROL/SUPPLY KIT

A complete supply and control kit for butterfly type exhaust brakes on vehicles without an air supply. K it includes the (on demand) air compressor, mounting bracket and preassembled circuitry with two variations for idle validation. The WM734C kit includes pins to plug into the engine ECU. The WM734D kit includes a whisker switch with bracket to validate pedal position.

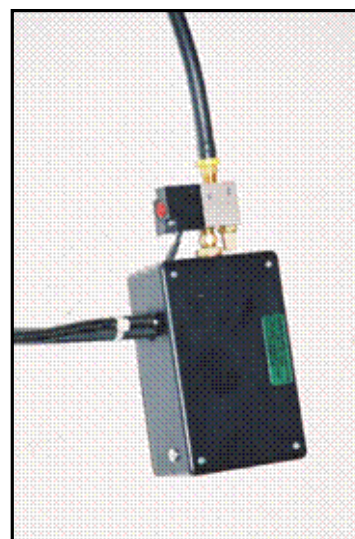
ITEM	QUANTITY		PART NUMBER	DESCRIPTION
	734C	734D		
1	1	1	728-12B	Switch, 12V
2	1	1	728-20B	Electrical Package
3	2	2	728-38	Cap Screw
4	2	2	728-39	Lock Nut
5	1	1	734-01A	DWG
6	2	2	10004B-102	Union, 1/2"
7	1	1	110345	Escutcheon Plate
8	1	1	160015	Compressor
9	1	1	160016	Bracket
10	2	-	160020	ECU Pin
11	1	1	160073	Control Assembly
12	1	1	3500X2	Elbow
13	-	1	WM779B	Whisker Kit



160073 AIR CONTROL ASSEMBLY

Pre-plumbed wire and sealed control system, all ready to install. Add the compressor, dash switch and idle validation switch to make up the complete unit listed above as WM734C, D.

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	110390	Connector
2	1	114664	Cap Screw
3	1	117783	Connector
4	3	118872	Wire, Red, 14ga
5	1	118873	Wire, Green, 18ga
6	3	118874	Wire, Black, 18ga
7	4	118875	Wire, Red, 18ga
8	3	118876	Wire, White, 18ga
9	3	118881	Wire, Black, 14ga
10	1	130235	Connector
11	1	130238	Relay, 4 Pin
12	1	160066	Manifold Assembly
13	2	160069	Doubler Blade
14	1	160072	Enclosure Box
15	1	160078	Retainer
16	1	998108	Roll Loom, 1/2"
17	4	H10104	Roll Hose, 1/4"



BLUE OX EXHAUST BRAKE

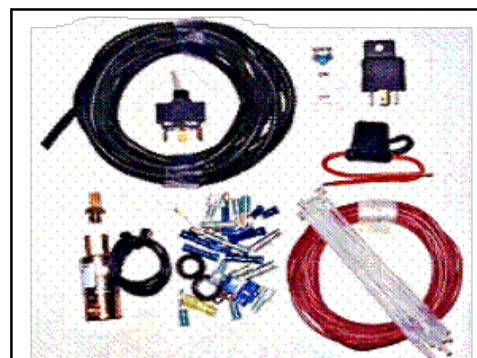


CONTROL KITS

Control kits for exhaust brake applications.

WM736A, GENERIC N.C. SIGNAL

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	110345	Escutcheon Plate
2	1	130238	Relay
3	1	160019	Breather
4	1	728-11B	Solenoid, 12V
5	1	728-12B	Switch, 12V
6	1	728-20B	Electrical Package
7	1	11124B	Catalog Page



WM736B, DODGE 5.9

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	110345	Escutcheon Plate
2	1	130238	Relay
3	1	160019	Breather
4	2	160020	Terminal
5	1	728-11B	Solenoid, 12V
6	1	728-12B	Switch, 12V
7	1	728-20B	Electrical Package
8	1	11124B	Catalog Page
9	1	771-03D	Wiring Program

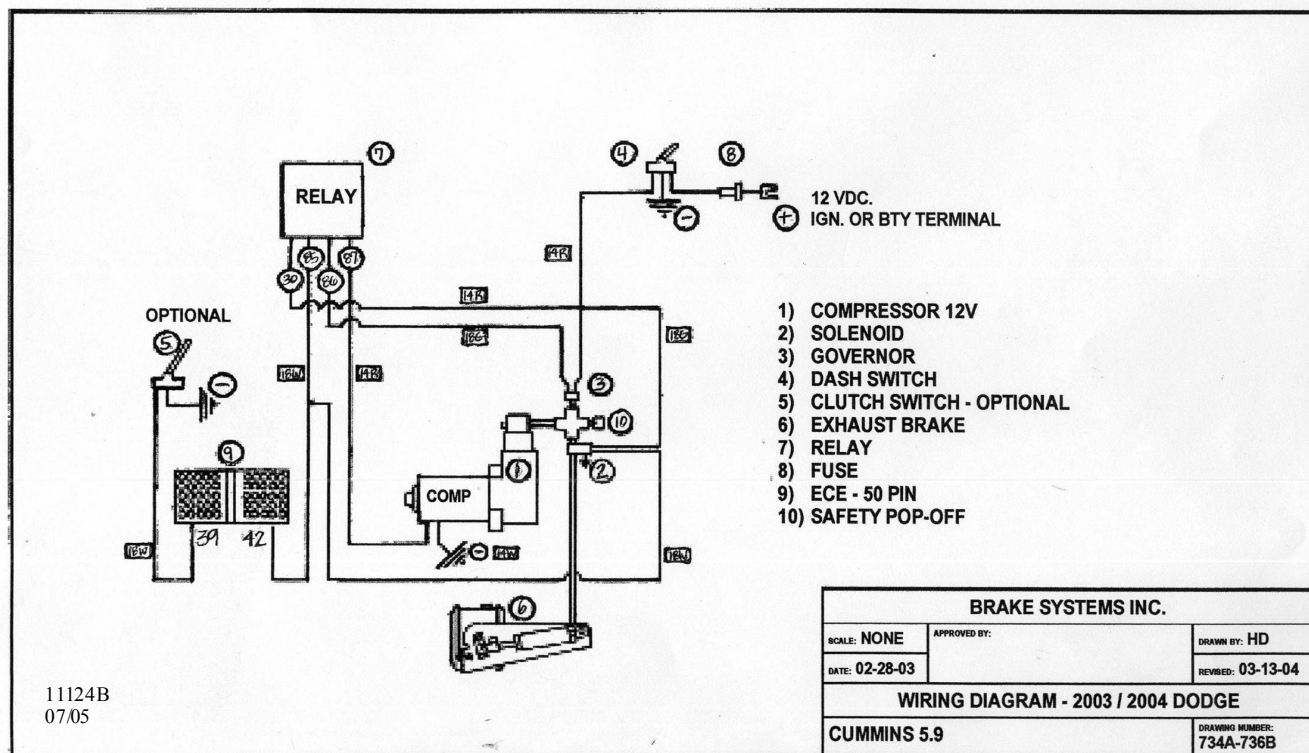
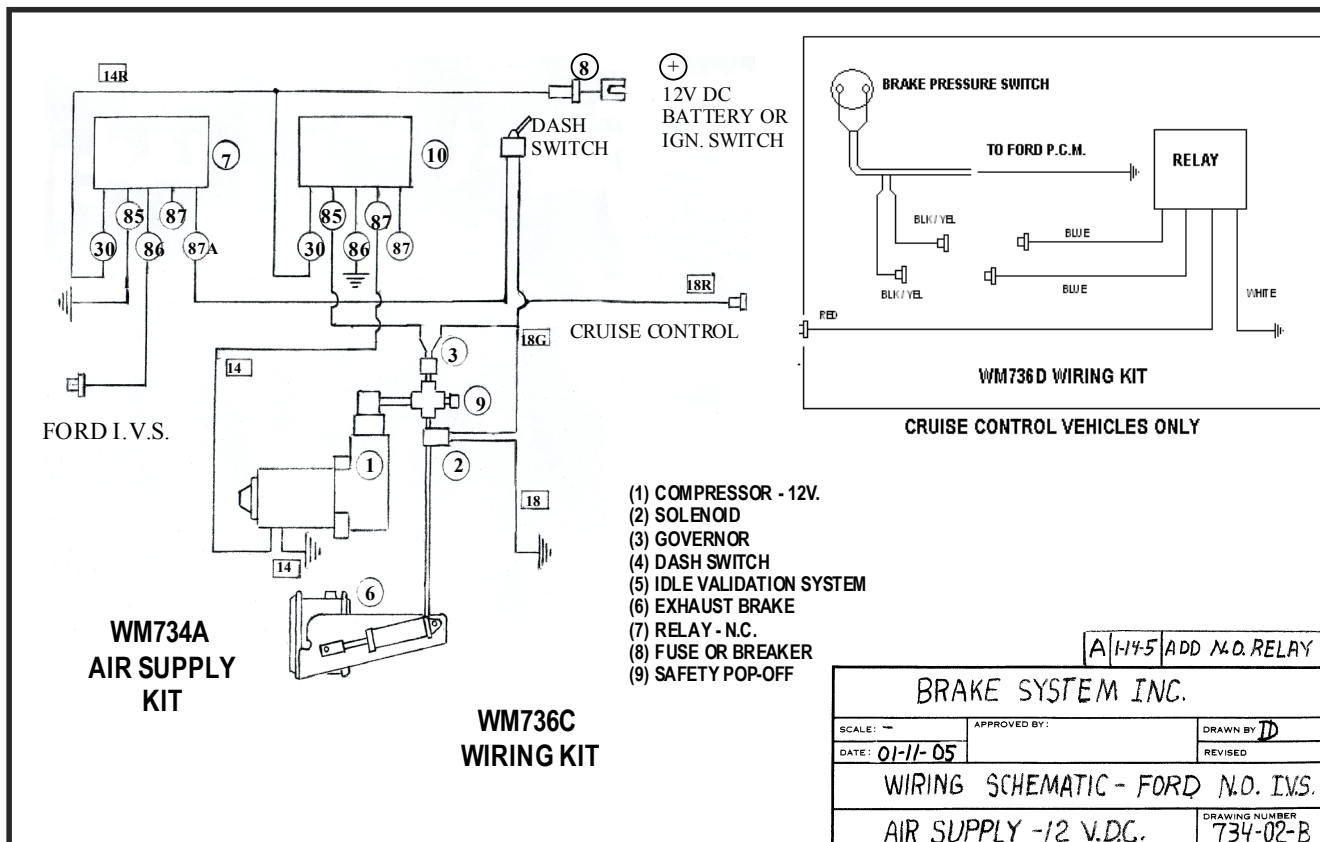
WM736C, FORD 7.3

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	110345	Escutcheon Plate
2	5	110382	Blade Receptacle
3	2	117783	Blade Receptacle
4	1	130238	Relay
5	1	130241	Relay N.C.
6	1	160019	Breather
7	1	728-11B	Solenoid, 12V
8	1	728-12B	Switch, 12V
9	1	728-20B	Electrical Package
10	1	11124B	Catalog Page
11	1	11154	Catalog Page

11124B
07/05



BLUE OX EXHAUST BRAKE





IDLE VALIDATION *via* **IDLE VALIDATION SWITCH (I.V.S.)**

This acronym is used in modern technology to describe what was at one time called a throttle interlock. The idea is to insure that an exhaust brake (or other device) will only be activated when the engine throttle is in the idle mode. The brake must never be turned on (exhaust shut off) when a throttle setting is telling the engine to put out horsepower. This is a conflict that may harm the engine.

Throttle technology has gone from:

- 1.) Throttle rods including clevis and ball joints, to
- 2.) Air throttles using variable air pressure, and currently,
- 3.) Electronic throttle positioning using variable voltage.

For I.V.S., it is possible to use a whisker switch, a micro switch on the throttle pedal. Or, simplest of all, use a plug to connect into the electronic engine control (ECU, ECM).

Some military installations use yet another solution. The brake is activated with a foot switch on the floorboard. Placement of the switch requires the operator to take his foot off of the throttle in order to press on the switch, hence the term "I.V.".

Blue Ox offers a myriad of devices and wiring diagrams, so you can pick the one most suited to your engine/truck combinations, such as:

- 1.) Straight Air
- 2.) Electric/Air
- 3.) Electronic/Air

Our technical service department can suggest a hook up that is simple and reliable.

11173
07/05



BLUE OX EXHAUST BRAKE



ENGINE IDLE KITS

Energizes auxiliary circuit when electronic engines are in idle mode.

526B IDLE KIT

For Williams floor mount pedals.

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	526-01	Bracket
2	1	526-02	Spacer
3	1	526-03	Switch
4	2	526-04	Cap Screw
5	2	526-05	Self Lock Nut
6	2	526-06	Cap Screw
7	2	526-07	Self Lock Nut
8	1	526-08	Cap Screw
9	1	526-09	Nut
10	1	526-10	Washer, Big
11	2	526-11	Washer, Small
12	1	11129	Catalog Page



533A IDLE KIT

For many Dodge pickup trucks with Cummins 5.9 electronic engines.

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	533-01	Mounting Bracket
2	1	533-02	Striker Bracket
3	2	110388	Terminal
4	2	114778	Screw
5	2	115059	Washer
6	1	117784	Switch
7	1	117847	Tinnerman Nut
8	2	160048	Screw
9	1	11129	Catalog Page



TYPICAL USES FOR ENGINE IDLE KITS INCLUDE:

- 1.) Exhaust brake/engine retarder interlock circuit.
- 2.) Bus door interlock when used in conjunction with brake interlock.
- 3.) Bus deceleration lighting programs.

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BLUE OX EXHAUST BRAKE



540A IDLE KIT

For Williams overhung (firewall) mount pedals.

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	540-01	Switch Bracket
2	1	540-02	Idle Bracket
3	2	104741	Blade Connector
4	2	114778	Screw
5	1	117785	Switch
6	1	117847	Tinnerman Nut
7	1	11129	Catalog Page



544A IDLE KIT

For many International trucks including some 2000 and later models, such as 4300, 4700, 4900 and models with DT466 and other engines.

ITEM	QUANTITY	PART NUMBER	DESCRIPTION
1	1	526-03	Switch
2	2	526-05	Lock Nut
3	1	544-01	Mounting Bracket
4	2	160045	Cap Screw
5	3	160046	Terminal, Elbow
6	1	160047	Terminal, Straight
7	1	11129	Catalog Page



TYPICAL USES FOR ENGINE IDLE KITS INCLUDE:

- 1.) Exhaust brake/engine retarder interlock circuit.
- 2.) Bus door interlock when used in conjunction with brake interlock.
- 3.) Bus deceleration lighting programs.

11129
07/05



BLUE OX EXHAUST BRAKE



MISCELLANEOUS CONTROL KITS

545B PUSH PULL CONTROL KIT

Push Pull On-Off switch for shift lever mounting.

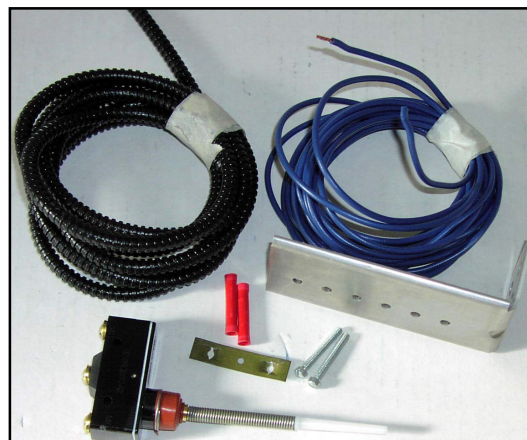
ITEM	QTY.	PART NUMBER	DESCRIPTION
1	2	110390	Connector
2	1	114545	Lock Nut
3	1	114825	Cap Screw
4	2	117508	Nylon Ties
5	1	130239	Roll Wire
6	1	160049	Switch
7	1	160051	Bracket
8	1	160055	Roll Loom
9	1	—	Blue Ox Sticker
10	1	—	Catalog Page



WM779B (119518) SWITCH KIT

Position sensing switch (whisker) in many cases used for idle validation (IVS) on a throttle pedal.

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	2	110385	Terminal
2	2	114778	Screw
3	1	117847	Tinnerman Nut
4	1	119570	Switch
5	1	130242	Roll Wire
6	1	160055	Roll Loom
7	1	160056	Bracket
8	1	—	Catalog Sheet



11155
12/05



BLUE OX EXHAUST BRAKE



MISCELLANEOUS CONTROLS

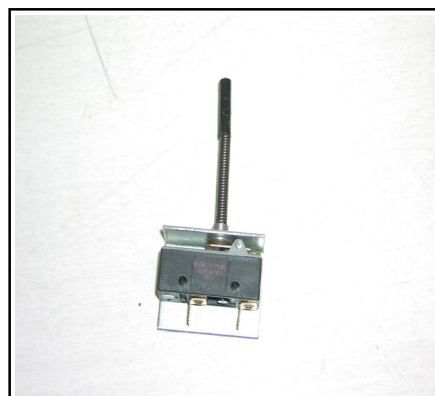
528A FOOT SWITCH

A small compact foot switch used for a manual activation of exhaust brakes as well as other circuits up to 12, 24, or 42DC volts. Comes with 18" pigtail and mounting ears. Circuits up to 4 amps.



530A WHISKER SWITCH

A small micro switch mounted on a universal bracket with a 3" activation whisker used to validate throttle or clutch pedal position. Used on automotive systems of 12, 24, or 42DC volts. Circuits up to 4 amps.



532A FOOT SWITCH

Momentary contact foot switch assembly with mounting bracket for floor board mount. Capacity 160 AMP, 5/16 stud terminal.



BLUE OX EXHAUST BRAKE



130379/130657 SOLENOID

A small special purpose three-way solenoid with 1/8" NPT ports, up to 125 PSI supply pressure, 10 watts of electric draw with a 3/32 orifice; 12 or 24V DC.

130379 (12V DC)

130657 (24V DC)



728-12 DASH SWITCH

Dashboard mount (7/16" hole) for automotive applications. 1/4" blade connections. For illuminated toggle version, the extra blade needs to be grounded to provide a circuit for the LED in the handle which glows when the switch is turned on.

728-12 (24V DC Illuminated)

728-12B (12V DC Illuminated)



160066 MANIFOLD ASSEMBLY

Manifold assembly including all necessary components of a Blue Ox air supply system. Designed for smaller vehicles without an air supply system. Add a 12 volt compressor (160015) and the system will supply air on demand and limited to 70 PSI.



WM125A MOTION VALVE

A small 3-way N.C. air valve (1/8 NPT) with a push rod actuator. Originally designed to sense motion in the throttle mechanism of diesel engines.

11175
01/09



BLUE OX EXHAUST BRAKE



SOLENOID REGULATOR ASSEMBLY W/ MOUNTING BRACKET

116971A – 24V

110379A – 12V



MICRO SWITCH

117785



DASH TOGGLE SWITCH

110384 – Standard

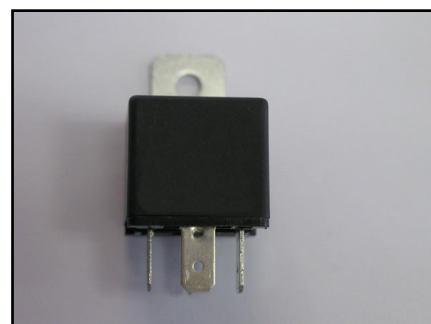
728-12 – Lighted Toggle – 24V

728-12B – Lighted Toggle – 12V



RELAY 12V, 30 AMP W/ MOUNTING BRACKET

130241



01/09

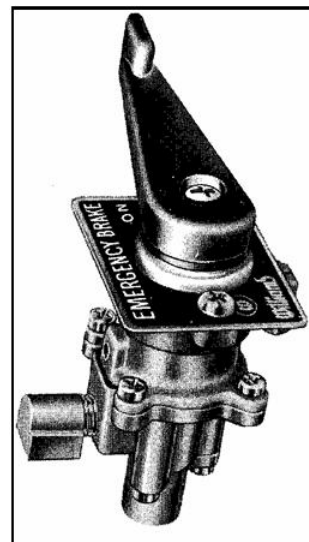


BLUE OX EXHAUST BRAKE



WM224H COMPENSATING HAND VALVE, SMALL

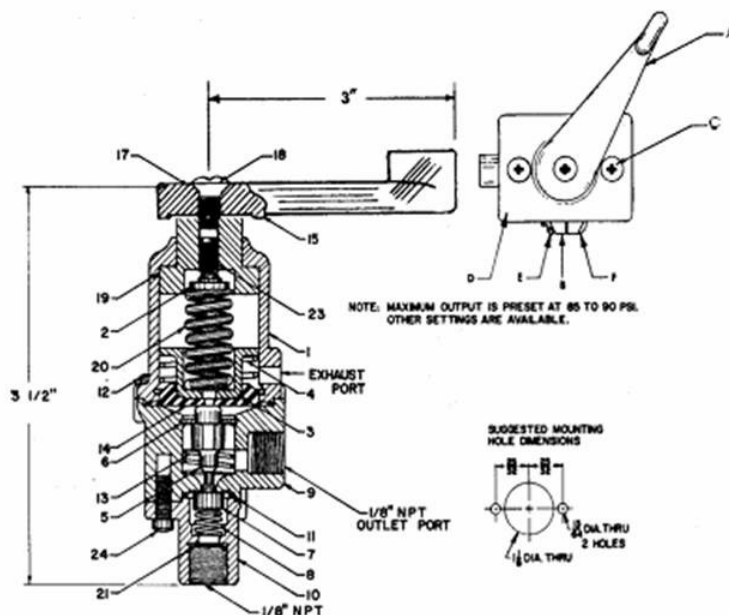
Used as a Blue Ox dash control on some older type of control systems (aka WM901P). It is a combination of an on-off dash valve and a pressure regulator and usually used in conjunction with a WM125A motion valve to detect throttle position. It provides a full air/mechanical control system without the need for electrical input.



WM-224-H PARTS LIST			
DWG. NO.	DESCRIPTION	QTY.	PART NO.
A	VALVE ASSEMBLY	1	111370
B	MOUNTING BRACKET	1	101822
C	SCREW—MOUNTING	2	114787
D	ESCUTCHEON PLATE	1	103689
E	NUT—CLAMP	1	114533
F	SCREW—CLAMP	1	114667

WM-106-H PARTS LIST			
DWG. NO.	DESCRIPTION	QTY.	PART NO.
1	UPPER BODY	1	101456
2	SPRING BUTTON ASSY.	1	101460
3	SPRING PLATE	1	101463
*4	EXHAUST SPRING	1	101464
*5	STEM	1	101465
*6	RETAINER RING	1	116179
*7	POPPET	1	101466
*8	POPPET SPRING	1	101467
9	CENTER BODY	1	101468
10	INLET BODY	1	101470
*11	"O" RING	1	116303
*12	MACHINE SCREWS	4	114657
*13	STEM SPRING	1	101469
*14	DIAPHRAGM	1	101471
15	HANDLE	1	105115
17	LOCK WASHER	1	115011
18	MACHINE SCREW	1	114664
19	CAM	1	101809
*20	SPRING	1	101474
*21	SCREEN	1	116455
22	OUTLET FITTING	1	115183
23	SET SCREW	1	115523
24	MACHINE SCREWS	3	114657
X	HANDLE TRAVEL	75°	
PSI	PRESSURE SETTING	85 to 90	

*INCLUDED IN REPAIR KIT 114116



PARTS LIST		
DESCRIPTION	PART NO.	WM-356-E
CONTROL	WM-224-H	1
RELAY	WM-494-A	1



BLUE OX EXHAUST BRAKE



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BLUE OX EXHAUST BRAKE



WARRANTY

Brake Systems Inc. warrants to the Original Purchaser that all exhaust brake products manufactured by Brake Systems Inc. will be free from defects in materials and workmanship under normal use and service. This warranty also provides an unlimited lifetime warranty on the:

NODULAR IRON EXHAUST BRAKE BODY

Brake Systems Inc. also warrants a Limited Lifetime Warranty extended to the original purchaser of the components of the Blue Ox Exhaust Brake under the following limitations:

FOR HIGHWAY VEHICLES

Two (2) years from date of installation or 100,000 miles, whichever shall occur first.

FOR OFF-HIGHWAY VEHICLES

50,000 miles

FOR STATIONARY EQUIPMENT

2000 hours of operation

WARRANTY DEFINITION

The exhaust brake is factory tested and preset for most normal installations.

1. If the brake assembly is field adjusted the user accepts responsibility for the consequences of the change.
2. The brake kit must include a factory of field designed throttle interlock. In no case shall the brake assembly be closed at the same time as the throttle control is above idle. This can harm your engine with so much heat with nowhere to go
3. Warranty requests must include verification of the above requirements
4. Warranty shall not apply to units that have been subject to misuse, misapplication, fire or accident, or to units which have been improperly installed or have been subject to unauthorized alteration.

NO OTHER WARRANTY, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE (INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS OR PERFORMANCE), SHALL EXIST IN CONNECTION WITH THE SALE OR USE OF EXHAUST BRAKE UNITS SOLD BY BRAKE SYSTEMS INC.

In the event that claims are made with regard to defective materials or workmanship, Brake Systems Inc. shall have the option to repair, replace or grant a credit for any unit which Brake Systems Inc. in its sole discretion determines to be defective at time of sale. THE FOREGOING STATES BRAKE SYSTEMS INC.'S SOLE RESPONSIBILITY FOR BREACH OF THIS WARRANTY. IN NO EVENT SHALL BRAKE SYSTEMS INC. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

To make a claim against the warranty, all claim units must be reviewed by Brake Systems Inc. All warranty claims must be presented within 30 days of discovery of defect. To make a warranty claim, the purchaser must ship the unit freight prepaid along with the invoice number, purchaser's name, address, and vehicle mileage (at the time of failure) to:

Brake Systems Inc., Warranty Dept.,
2221 NE Hoyt St. Portland, Oregon 97232.

11163
03/06/12

The reasonable cost of returning merchandise will be reimbursed, if it is subsequently determined that the unit was defective at the time of sale





BRAKE SYSTEMS, INC.



2221 N.E. HOYT PORTLAND, OR 97232

503-236-2116 FAX 503-239-5005

TOLL FREE 1-800-452-5734



PRODUCT LINES <div> WWW.BRAKESYSTEMSINC.COM email: brakesystems@brakesystemsinc.com </div>	
DISTRIBUTOR OF:	
AIR CYLINDERS	MIDLAND HALDEX BRAKE PRODUCTS
BENDIX - POWER BRAKES HYDRAULICS & COMPRESSORS	PBD REPLACEMENT AIR VALVES
BLUE OX EXHAUST BRAKES	REXROTH INDUSTRIAL CONTROLS WABCO
C/R,SKF AIR DRYERS, BEARINGS	TSE SPRING BRAKES
CARLISLE INDUSTRIAL BRAKE PRODUCTS	VELVAC BRAKE & ELECTRIC PRODUCTS
CHICAGO RAWHIDE AIR DRYERS	WAGNER / FEDERAL MOGUL
DELCO BOOSTERS & VACUUM PUMPS	WEATHERHEAD HOSE & FITTINGS
DEL HYDRAULIC	WILLIAMS CONTROLS - AIR VALVES & ELECTRONIC THROTTLES
ELECTRONIC THROTTLE CONTROLS	ZERO-RUST
EUCLID / SEALCO/ARVIN-MERITOR	MANUFACTURER OF: SPECIALTY ELECTRONIC THROTTLE & BRAKE PRODUCTS
FIRESTONE - RIDE RITE	EXHAUST BRAKES - BLUE OX
GROVER AIR HORNS	AIR CYLINDERS - BSI & WILLIAMS
HAYES LEMMERZ CONTROLLERS	AIR VALVES - BSI & WILLIAMS
HORTON FAN CLUTCHES	REMANUFACTURER OF:
 SUPER STORE	BRAKE BOOSTERS
KIP SOLENOIDS	LUCAS/GIRLING BACKING PLATES
LOCKTITE	AIR VALVES, FAN HUBS
MAGNETEK / PATRIOT / GEMCO / WAGNER INDUSTRIAL BRAKE PRODUCTS	PRESSURE CONVERTERS
MGM SPRING BRAKES	INDUSTRIAL CALIPERS
 BRAKE PRODUCTS	AIR COMPRESSORS

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