



Purifiers for diesel engine applications



Material handling
Construction
Industrial
On-highway
Mining



Diesel purifiers

Engine Control Systems diesel purifiers consist of either a ceramic (AZ series) monolith or a metallic (DZ series) monolith coated with advanced precious metal catalysts and packaged into stainless steel housings. These purifiers oxidise hazardous carbon monoxide (CO) and hydrocarbons (HC) to form harmless carbon dioxide and water. Engine Control Systems AZ diesel purifiers will also reduce total particulate emissions by typically 25%-40% by oxidising the soluble organic fraction of the particulate.

Both the AZ and DZ series purifiers are designed for ease of installation and feature quick release clamps to allow for easy removal of the catalyst centerbody for periodic inspection and baseline smoke testing.



Custom design Purimufflers™

Often standard in-line design catalysts can not be utilised due to the restrictions of space. For these applications AZ / DZ or EZ purifiers are available as custom designed units specifically tailored to suit the installation restrictions of the vehicle. Specialist custom designs are often manufactured as silencer replacement products. Selecting from an extensive ECS database, many designs are available for present and past ranges of vehicle models.

Please consult ECS for selection and recommendation, providing vehicle make, model and engine type details. Selection lists by vehicle make are often available – on request.



Product sizing

1. If available, use the actual engine intake air flow from the original engine manufacturer (OEM) and locate this value in the included product charts to obtain the proper product model for your engine. If you do not have the actual OEM engine intake air flow, use the general equation below to determine the approximate value. Locate this value in the appropriate product-sizing chart.

2. If your engine intake air flow value is in the range of two models of purifier, exhaust back pressure and equipment duty cycle should be used as a guide to choose the appropriate product model. In general, the larger model will provide improved carbon monoxide and hydrocarbon reductions and lower exhaust back pressure.

3. When sizing DMS and DMXS-II add-on silencers, ensure that the flange dimension (E) is the same for both the purifier and silencer. If flange dimensions (E) do not match, select an adjacent model of silencer with the correct flange size that meets exhaust friction requirements.

Engine intake air flow (m³/h) =

Engine displacement (liters) x maximum RPM of engine x VE x 60
Engine cycle x 500

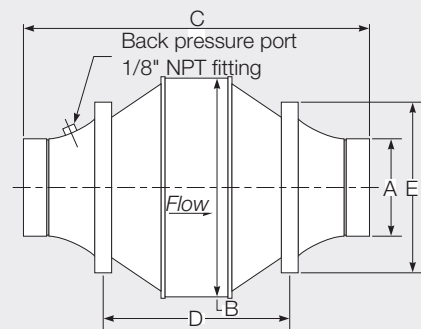
Engine cycle = 2 for two-stroke engines
and 4 for four-stroke

VE = 0.85 for normally aspirated engines
1.7 for turbocharged
2.0 for turbocharged and aftercooled

DZ diesel purifiers

The DZ series (metallic monolith), long an industry favourite, offers compact size and low exhaust back pressure. For optimum performance, we recommend that you install the DZ purifier as close to the engine exhaust manifold as possible (within 300 - 500 mm).

To further ensure low exhaust back pressure and noise, Engine Control Systems offers a complete line of low restriction DMS and DMXS-II clamp-on silencers.

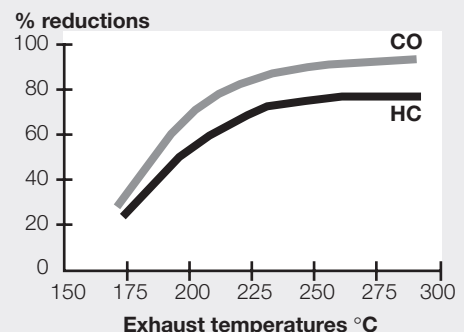
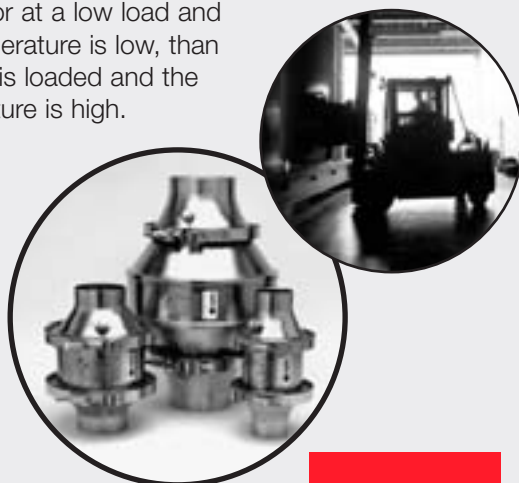


DZ purifier dimension and sizing chart

Engine Control Systems model	Part number	Dimension B mm	Dimension C mm	Dimension D mm	Dimension E mm	Inlet/Outlet Dimension A mm	Engine intake air flow (m ³ /h)	Exhaust restriction (mm water)
5DZ	A20-0148	108	266	94	153	51	110 - 205	75 - 200
	A20-0154					64		
	A20-0157					76		
6DZ	A20-0194	133	266	94	179	76	195 - 320	75 - 200
	A20-0195					89		
	A20-0197					102		
7DZ	A20-0239	159	266	94	204	76	315 - 465	75 - 200
	A20-0243					89		
	A20-0245					102		
8DZ	A20-0267	184	304	94	229	76	460 - 635	125 - 200
	A20-0268					89		
	A20-0305					102		
	A20-0306					114		
	A20-0274					127		
10DZ	A20-0009	222	453	244	229	102	630 - 920	125 - 200
	A20-0012					114		
	A20-0013					127		
12DZ	A20-0042	264	453	244	229	102	910 - 1360	125 - 200
	A20-0043					114		
	A20-0044					127		
	A20-0046					152		
14DZ	A20-0070	295	453	244	229	127	1350 - 1720	125 - 200
	A20-0072					152		
16DZ	A20-0098	372	453	244	229	127	1700 - 2745	125 - 200
	A20-0099					152		

DZ and EZ purifier performance

The temperature of the exhaust gases determines the degree of reduction of carbon monoxide (CO) and hydrocarbons (HC). The reduction is less when idling or at a low load and the exhaust temperature is low, than when the engine is loaded and the exhaust temperature is high.

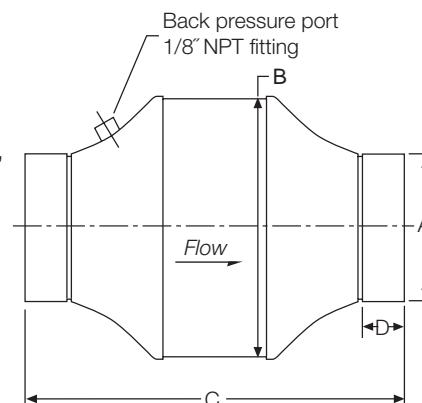


DZ and EZ purifier light-off curves

EZ diesel purifiers

The EZ series purifier offers the same metallic substrate and catalyst as the DZ series but features all welded construction for an ultra compact size. The EZ purifier is an ideal in-line converter when retrofitting light industrial and highway vehicles where space for installation is limited.

For optimum performance, we recommend that you install the EZ purifier as close to the engine exhaust manifold as possible (within 300 - 500 mm), ahead of the vehicle's original muffler.



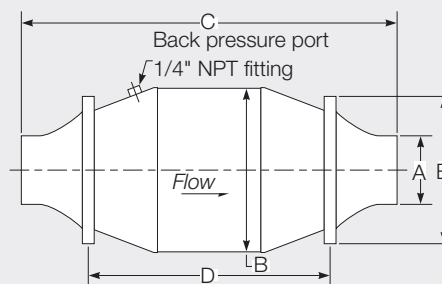
EZ purifier dimension and sizing chart

Engine Control Systems model	Part number	Dimension B mm	Dimension C mm	Inlet/Outlet Dimension A mm	Engine intake air flow (m ³ /h)	Exhaust restriction (mm water)
EZ20	A20-0395	57	178	25	0 - 60	125 - 200
	A20-0397			29		
	A20-0398			32		
	A20-0399			35		
	A20-0652			37		
	A20-0394			38		
	A20-0402			41		
	A20-0403			51		
EZ40	A20-0405	83	203	25	50 - 120	125 - 200
	A20-0684			32		
	A20-0407			35		
	A20-0685			38		
	A20-0686			44		
	A20-0411			48		
	A20-0687			51		
	A20-0413			57		
EZ50	A20-0425	110	229	32	110 - 205	125 - 200
	A20-0426			38		
	A20-0688			44		
	A20-0429			48		
	A20-0689			51		
	A20-0433			57		
	A20-0690			64		
	A20-0436			76		
	A20-0437			89		
EZ60	A20-0449	133	254	44	195 - 320	125 - 200
	A20-0692			51		
	A20-0693			64		
	A20-0694			76		
	A20-0662			83		
	A20-0459			89		
	A20-0460			102		
EZ70	A20-0472	159	292	51	315 - 465	125 - 200
	A20-0473			64		
	A20-0476			76		
	A20-0477			89		
	A20-0478			102		
EZ80	A20-0487	184	267	76	460 - 635	150 - 200
	A20-0489			89		
	A20-0490			102		
	A20-0491			127		

AZ diesel purifiers

The AZ series purifier (ceramic monolith) offers a unique zeolite washcoat base and precious metal catalyst that provides extraordinary emissions reduction performance on modern diesel engines.

The superior low temperature performance of the AZ catalyst is beneficial, especially in applications where installation 0.5 - 2m from the exhaust manifold is required.



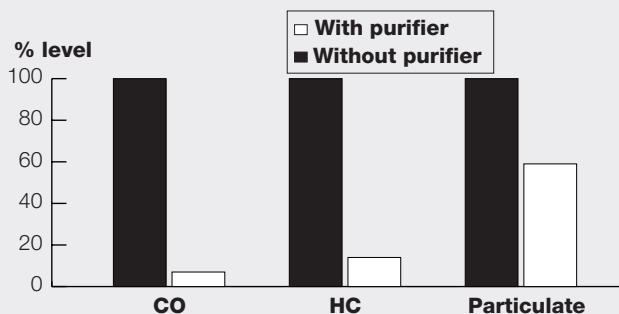
AZ purifier dimension and sizing chart

Engine Control Systems model	Part number	Dimension B mm	Dimension C mm	Dimension D mm	Dimension E mm	Inlet/Outlet Dimension A mm	Engine intake air flow (m ³ /h)	Exhaust restriction (mm water)
AZ25	A16-0025	154	304	134	204	51	205 - 290	125 - 250
	A16-0030					64	205 - 290	100 - 225
	A16-0040					76	205 - 290	100 - 200
	A16-0044					89	205 - 290	75 - 175
AZ26	A16-0023	154	338	168	204	51	255 - 350	175 - 275
	A16-0033					76	255 - 350	175 - 275
	A16-0047					89	255 - 365	175 - 250
	A16-0059					102	255 - 375	175 - 225
AZ27	A16-0032	201	516	345	204	76	340 - 545	135 - 250
	A16-0043					89	340 - 610	110 - 225
	A16-0056					102	340 - 610	90 - 200
AZ28	A16-0055	201	567	396	229	102	535 - 680	200 - 275
	A16-0101					114	535 - 815	175 - 250
AZ29	A16-0054	252	575	366	229	102	645 - 945	125 - 250
	A16-0064					114	780 - 1045	60 - 250
	A16-0071					127	780 - 1130	50 - 250
AZ30	A16-0057	277	575	366	229	102	935 - 1105	150 - 275
	A16-0066					114	985 - 1190	125 - 250
	A16-0070					127	1070 - 1275	125 - 250
AZ31	A16-0069	296	575	366	229	127	1240 - 1785	100 - 200
	A16-0077					152	1240 - 2050	50 - 150

AZ performance

The AZ purifier has been tested according to the Buscyclus, Braunschweig and ISO 8178 by the Swedish Vehicles Test Authority and meets the stringent approval requirements for the Swedish market. The US EPA has also certified the AZ Purimuffler™ under the US urban bus retrofit/rebuild program.

The graph shows the reductions measured after an AZ 29 purifier has been installed on a Mercedes 814D lorry with an OM 366 engine.

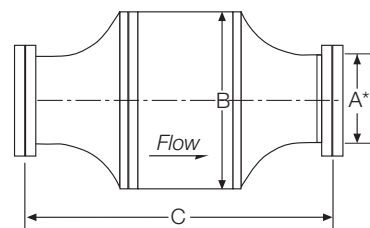


AZ performance on a Mercedes truck

AX purifiers

Model AX 230 W-AX 280 W catalyst are compact and of stainless steel all-welded construction.

The size often allows easy installation even where space is limited. The models are delivered with or without flanges for welding into exhaust systems.



AX purifier dimension and sizing chart

Engine Control Systems model	Part number	Dimension A* mm	Dimension B mm	Dimension C mm	Engine intake air flow (m ³ /h)
AX 250 W	A16-0181	70	154	309	205 - 290
AX 260 W	A16-0083	70	154	371	255 - 375
AX 270 W	A16-0017	102	204	356	340 - 544
AX 280 W	A16-0095	102	204	406	535 - 680

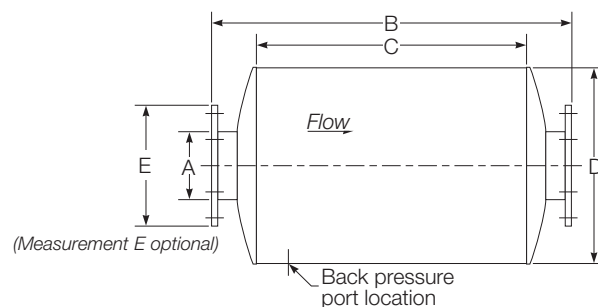
* Other dimensions on request (by adding optional flanges)

AZ severe duty Purimufflers™

The AZ Severe Duty Purimuffler™ integrates an AZ catalyst and silencer in one rugged package, specially designed for use in mining and heavy industrial applications. AZ Severe Duty Purimufflers™ will afford 12-15 dB(A) sound reduction at exhaust back pressures less than 500 mm water.

The AZ Severe Duty Purimuffler™ features a double wall, heavy gauge (14 and 16 gauge), 304 series stainless steel, insulated muffler shell. The insulation serves to maximize catalyst performance while reducing muffler skin temperatures. The insulated skin also reduces heat radiation from the muffler, which can be particularly

beneficial in equipment with vehicle electronic control systems. AZ Severe Duty Purimufflers™ are available with standard slip fit inlet/outlet or with optional bolted inlet and outlet flanges.



AZ Severe Duty purimuffler™ shown with optional flanges

AZ severe duty purimuffler dimension and sizing chart

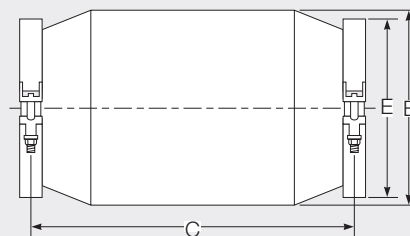
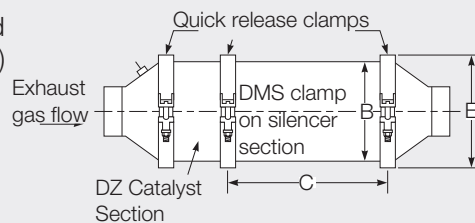
Engine Control Systems model	Part number	Dimension B mm	Dimension C mm	Dimension D mm	Dimension E (optional) mm	Inlet/Outlet Dimension A mm	Engine intake air flow (m ³ /h)
AZ27M-3S	A17-0313	709	528	229		76	340-610
AZ27M-3F	A17-0312	711	528	229	191	76	340-610
AZ28M-4S	A17-0307	734	554	229		102	535-765
AZ28M-4F	A17-0306	737	554	229	229	102	535-765
AZ29M-4S	A17-0301	734	538	279		102	680-1020
AZ29M-4F	A17-0300	737	538	279	229	102	680-1020
AZ29M-5S	A17-0325	734	538	279		127	680-1130
AZ29M-5F	A17-0326	734	538	279	254	127	680-1130
AZ30M-5S	A17-0327	785	570	326		127	935-1275
AZ30M-5F	A17-0328	787	570	326	254	127	935-1275
AZ31M-5S	A17-0303	785	570	326		127	1240-1785
AZ31M-5F	A17-0302	787	570	326	254	127	1240-1785
AZ33M-5S	A17-0329	811	597	396		127	1615-2125
AZ33M-5F	A17-0330	813	597	396	254	127	1615-2125

Engine Control Systems DMS and DMXS-II add-on silencers

Engine Control Systems also offers a range of DMS and DMXS-II clamp-on silencers that can be combined readily with DZ and AZ purifiers to provide a compact purifier/silencer system with known back pressure characteristics. Both DMS and DMXS-II silencers conveniently fit between the purifier centerbody and outlet cone.

DMS silencers are designed to typically provide 10 dB(A) noise reduction. DMXS-II silencers are designed to typically provide 15 dB(A) noise reduction.

Add-on silencers are furnished with a clamp and gasket to allow combination with AZ or DZ quick release purifiers.



DMXS-11 add-on silencer section

DMS and DMXS-II dimensional and sizing data

Engine Control Systems model	Part number	Dimension B mm	Dimension C mm	Dimension E mm	Maximum engine intake air flow (m ³ /h) @ 250 mm water exhaust restriction	Maximum engine intake air flow (m ³ /h) @ 375 mm water exhaust restriction
5DMS	A42-0012	124	314	153	430	585
6DMS	A42-0001	149	314	178	635	850
7DMS	A42-0002	162	314	203	750	1000
8DMS	A42-0011	200	314	229	1140	1520
10DMS	A42-0013	200	314	229	1445	1930
12DMS	A42-0006	200	314	229	1785	2400
14DMS	A42-0014	200	314	229	2165	2900
16DMS	A42-0015	200	314	229	2585	3460
5DMXS-II	A44-0008	193	406	153	280	375
6DMXS-II	A44-0001	219	406	178	355	475
7DMXS-II	A44-0002	260	406	203	500	670
10DMXS-II	A44-0007	295	406	229	645	865
12DMXS-II	A44-0003	356	406	229	935	1260
14DMXS-II	A44-0004	375	406	229	1035	1395
16DMXS-II	A44-0005	392	406	229	1145	1540

Note: Please refer to the second page of the brochure to find instructions for product sizing





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