MSHA Approval (30 CFR Part 7) of DEUTZ EPA Tier 2 / 4I Engines

Issued by: J. E. Sauerteig *** DEUTZ Corporation *** Status: May 19, 2008

Engine	Rating			Assigned Vent.		Particulate Index		Approval No.	Issue Date	High Idle	Max Perm Press		Max Altitude	8-Mode Cycle Results					Min Filter efficiency	Min Filter efficiency
	kW	HP	rpm	cfm	cfm/HP	cfm	cfm/HP				Intake	Exhaust	Bef. Derate (*)	NOx	HC	CO	PM	PM rate		
										[rpm]	mbar	mbar	[m] / [ft]	[g/kWh]				[g/hr]	for 5 [g/hr]	for 2.5 [g/hr]
F2L 2011 **D 2011 L02i (Tier 4I)**	22.5	30.2	2800	1,500	50	2,000	66	**07-ENA040010-0**	**Nov 2, 2004** **June 5, 2007**	3220	45	48	305 / 1,000	5.77	0.42	2.83	0.267	3.26	0.0%	23.0%
F2M 2011 **D 2011 L02 (Tier 4I)**	23.5	31.5	2800	1,500	48	2,000	63	**07-ENA040010-0**	**Nov 2, 2004** **June 5, 2007**	3220	45	48	305 / 1,000	5.77	0.42	2.83	0.267	3.26	0.0%	23.0%
F3L 2011 **D 2011 L03i (Tier 4I)**	35.8	48.0	2800	2,000	42	3,000	62	**07-ENA040011-0**	**Nov 2, 2004** **June 5, 2007**	3220	50	62	305 / 1,000	5.77	0.42	2.83	0.267	4.89	0.0%	48.9%
F3M 2011 **D 2011 L03 (Tier 4I)**	36.5	49.0	2800	2,000	41	3,000	61	**07-ENA040011-0**	**Nov 2, 2004** **June 5, 2007**	3220	50	62	305 / 1,000	5.77	0.42	2.83	0.267	4.89	0.0%	48.9%
F4L 2011	47.8	64.0	2800	3,000	47	4,000	62	**07-ENA040012-0**	**Nov 2, 2004**	3100	55	100	305 / 1,000	5.77	0.42	2.83	0.267	6.52	23.3%	61.7%
F4M 2011	48.5	65.0	2800	3,000	46	4,000	62	**07-ENA040012-0**	**Nov 2, 2004**	3100	55	100	305 / 1,000	5.77	0.42	2.83	0.267	6.52	23.3%	61.7%
BF3L 2011	44.9	60.2	2800	4,500	75	2,000	33	**07-ENA050007-0**	**Sept 28, 2005**	3150	50	62	305 / 1,000	6.59	0.51	1.55	0.123	3.02	0.0%	17.2%
	38.9	52.2	2300	4,000	77	2,000	38	**07-ENA050007-0**	**Sept 28, 2005**	2650	50	62	305 / 1,000	6.75	0.4	1.13	0.12	2.68	0.0%	6.7%
BF3M 2011	48.5	65.0	2800	4,500	69	2,000	31	**07-ENA050007-0**	**Sept 28, 2005**	3150	50	62	305 / 1,000	6.59	0.51	1.55	0.123	3.02	0.0%	17.2%
	42.0	56.3	2300	4,000	71	2,000	36	**07-ENA050007-0**	**Sept 28, 2005**	2650	50	62	305 / 1,000	6.75	0.4	1.13	0.12	2.68	0.0%	6.7%
BF4L 2011	58.1	78	2800	6,000	77	2,500	32	**07-ENA040004-0** **07-ENA040004-1**	**Aug 24, 2004** **Sept 27, 2005**	3100	55	75	305 / 1,000	6.69	0.30	1.16	0.11	3.50	0.0%	28.6%
BF4M 2011	65	87	2800	6,000	69	2,500	29	**07-ENA040004-0** **07-ENA040004-1**	**Aug 24, 2004** **Sept 27, 2005**	3100	55	75	305 / 1,000	6.69	0.30	1.16	0.11	3.50	0.0%	28.6%
BF4M 2012	74.9	100	2500	6,000	60	3,000	30	**07-ENA040002-0**	**July 12, 2004**	2900	75	100	305 / 1,000	6.68	0.15	0.83	0.11	4.51	0.0%	44.6%
BF4M 2012C	103	138	2500	6,500	47	3,000	22	**07-ENA040003-0**	**July 12, 2004**	2850	55	75	1,000 / 3,280	5.60	0.18	0.69	0.083	4.57	0.0%	45.3%
	95	127	2200	5,500	43	3,000	24			2508			1,000 / 3,280	5.25	0.14	0.75	0.087	4.52	0.0%	44.7%
BF6M 2012C	155	208	2500	9,000	43	3,500	17	**07-ENA040008-0**	**Sept 16, 2004**	2850	55	100	305 / 1,000	5.39	0.12	0.80	0.068	5.58	10.4%	55.2%
BF4M 1013FC (Mech)	129	173	2300	7,000	40	4,000	23	**07-ENA040007-1**	**Jan 11, 2006**	2600	55	75	305 / 1,000	5.19	0.37	0.75	0.089	6.20	19.0%	60.0%
	117	157	2200	6,500	41	3,000	19			2500			305 / 1,000	5.21	0.49	0.72	0.077	4.88	0.0%	49.0%
BF4M 1013EC	118	158	2300	7,000	44	4,000	25	**07-ENA040007-1**	**Jan 11, 2006**	2600	55	75	305 / 1,000	5.19	0.37	0.75	0.089	6.20	19.0%	60.0%
BF4M 1013C	112	150	2300	7,000	47	4,000	27	**07-ENA040007-1**	**Jan 11, 2006**	2600	55	75	305 / 1,000	5.19	0.37	0.75	0.089	6.20	19.0%	60.0%
BF6M 1013FC (Mech)	200	268	2300	12,000	45	5,500	21	**07-ENA040005-0**	**Aug 24, 2004**	2690	55	75	1,000 / 3,280	5.26	0.47	0.65	0.086	9.24	45.9%	72.9%
BF4M 1013FC (MVS)	127	170	2300	9,000	53	2,500	15	**07-ENA040014-0**	**Dec 3, 2004**	2560±100	50	100	Automatic	6.07	0.10	0.31	0.058	3.94	0.0%	36.5%
	112	150	2200	6,000	40	2,000	13	**07-ENA040014-1**	**Nov 8, 2005**	2450±100	50	100	Automatic	5.71	0.36	0.57	0.052	3.09	0.0%	19.0%
	101	135	2200	6,000	44	1,500	11	**07-ENA040014-1**	**Nov 8, 2005**	2450±100	50	100	Automatic Electronic	5.89	0.32	0.60	0.047	2.54	0.0%	1.5%
BF6M 1013FC (MVS)	180	241	2300	12,000	50	3,000	12	**07-ENA050002-0**	**April 26, 2005**	2690	60	100	Automatic Electronic	5.59	0.37	0.70	0.05	4.63	0.0%	46.0%
F6L 914	87.5	117	2300	6,000	51	3,500	30	**07-ENA040018-0**	**Dec 16, 2004**	2392	55	100	305 / 1,000	5.93	0.60	2.67	0.124	5.73	12.7%	56.4%

(*) The altitude listed is the maximum altitude for operation before fuel deration. The fuel rate of the engine must be reduced by 1% per 100 m (328 ft) above the elevation liste

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