

PRODUCT CATALOGUE

AMF Series

High thermal capacity, two or three stage,
vertically mounted helical gear units





AMF Series: Proven technology for agitation, mixing and flotation applications in industries worldwide



Gear units located in harsh or remote environments where external cooling is not available require tremendous reliability. Santasalo's AMF vertical gear unit incorporates a bi-directional axial fan and optimised housing design, providing high thermal capacity and eliminating the need for external cooling in extreme ambient conditions. Robustly built, Santasalo AMF gear units feature Santasalo's proven drive technology in operation in hundreds of vertical mixing applications around the world.

Advantages of Santasalo AMF gear units:

- **Designed and manufactured for demanding vertical applications** with severe external forces coming from the customer processes
- Direct drive construction with electrical motor and flexible HSS coupling for **ensuring high efficiency**
- **Reversible operational direction**
- **No requirement for external cooling** due to an optimised structure
- **Easy to transport and locate** without risk of damages

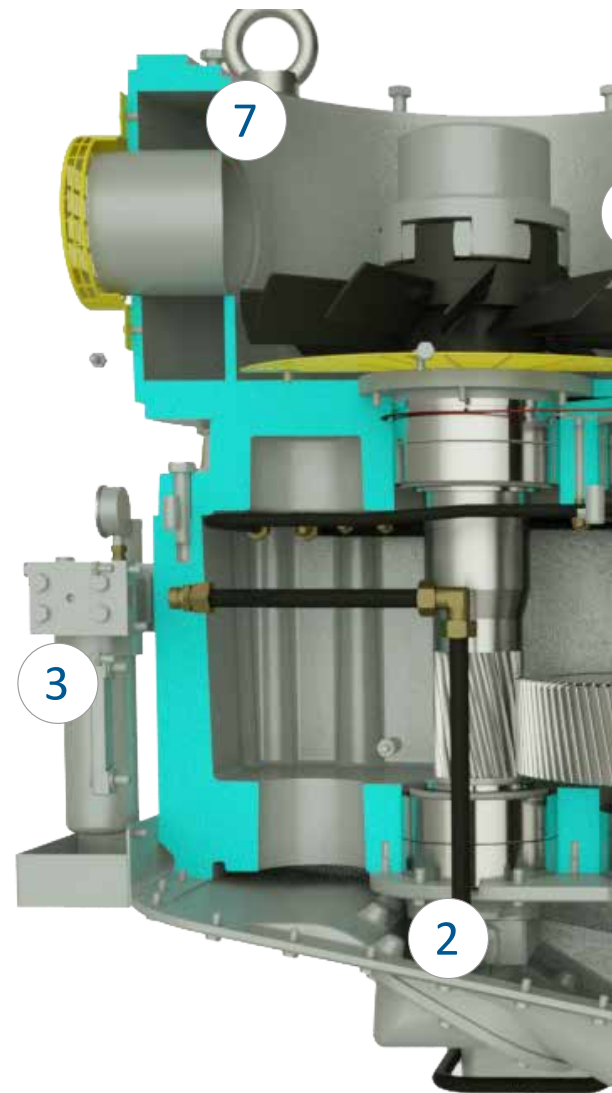
TECHNICAL DATA

Design Sizes	4
Number of Stages	2 - 3
Power Range	up to 750 kW
Transmission Ratio	7....90
Nominal Output Torque	up to 200 kNm



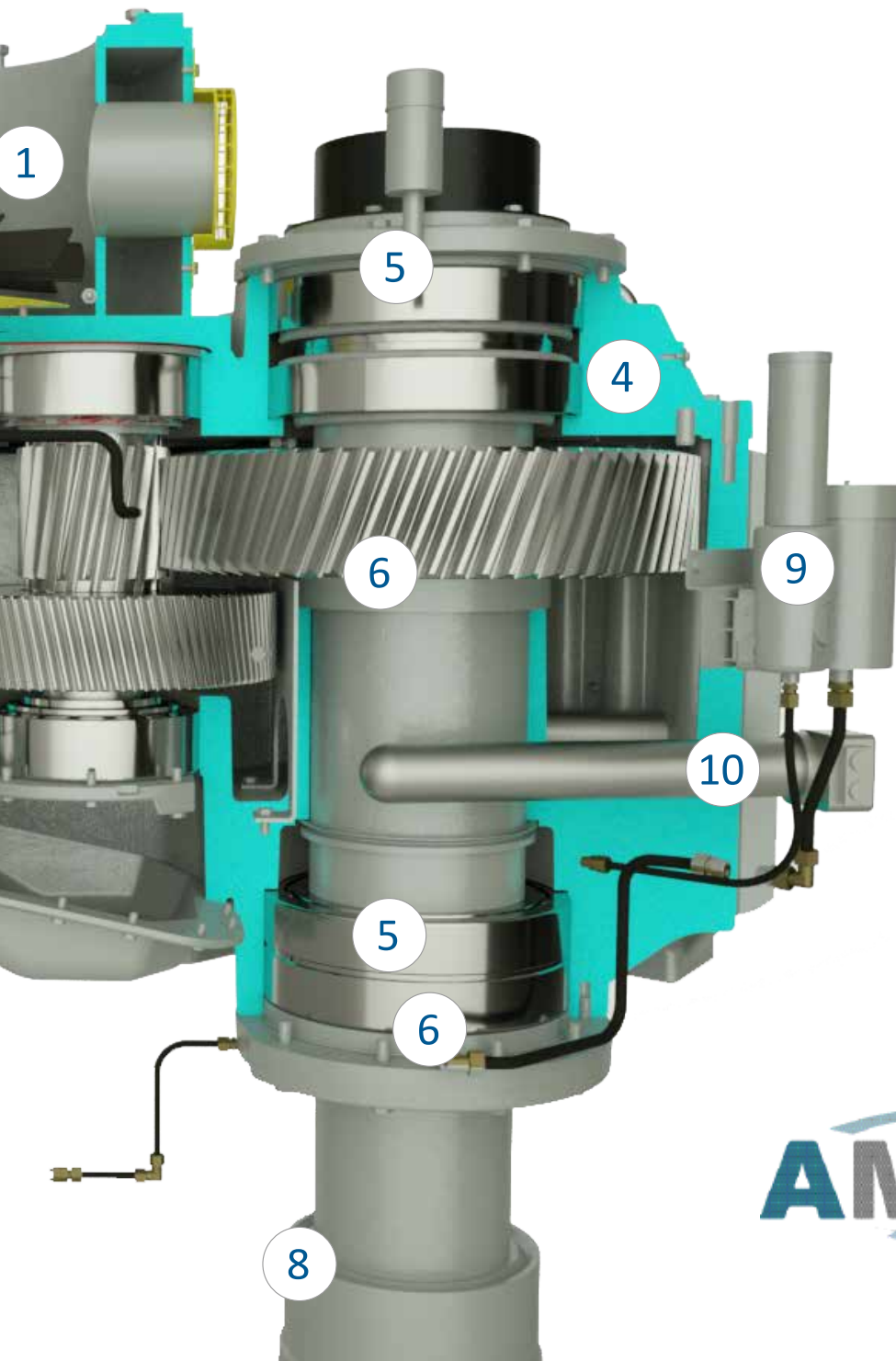
AMF Gear Series

- 1 Bi-directional fan integrated on the flexible HSS-coupling
- 2 Shaft end pump (electrical as an option)
- 3 Lubrication assembly with filter & optional instrumentation
- 4 Optimised housing design for high thermal capacity and strength
- 5 Extended bearing distance
- 6 Dry well and grease lubricated lower bearing for leak prevention
- 7 Integrated motor flange
- 8 LSS flange with shrink fit connection
- 9 Automatic grease dispenser as an option
- 10 Oil heater as an option



*Highly optimised gear unit lay-out means
cost savings and smaller footprint*

*Built for vertical applications with high external forces
without the need for external cooling*



2-stage helical gear units, vertical LSS

Size	n min-1	Nominal mechanical power ratings P _{N1} in kW												
		Nominal ratio i _N												
D2PV...AMF		6.3	7.1	8	9	10	11.2	12.5	14	16	18	20	22.5	25
40	1800	758*	689*	637*	551*	465*	464*	375*	374*	267+	265+	232+	182+	176+
	1500	655*	599*	554*	462*	390*	388*	314+	313+	224+	222+	195+	151+	146+
	1200	534*	498*	460*	371+	314+	313+	252+	251+	180+	179+	157+	119+	116+
	1000	447+	428+	393+	311+	262+	262+	209+	208+	151+	150+	131+	99.1+	96.6+
60	1800	1667*	1498*	1390*	1271*	1127*	1045*	961*	878*	816*	697*	595*	531*	482*
	1500	1434*	1279*	1188*	1094*	973*	900*	824*	737*	702*	583*	495*	442+	401+
	1200	1187*	1068*	992*	906*	817*	747*	673+	588+	568+	468+	396+	353+	320+
	1000	1031*	928*	861*	782*	696+	627+	563+	489+	478+	391+	330+	294+	267+
75	1800	2746*	2457*	2252*	2063*	1888*	1752*	1587*	1443*	1330*	1195*	1098*	954*	866*
	1500	2323*	2113*	1923*	1779*	1640*	1494*	1357*	1253*	1139*	1012*	914*	800*	721*
	1200	1858*	1776*	1616*	1493*	1355*	1257*	1130*	1040*	913*	808*	730+	644+	576+
	1000	1548*	1518*	1380*	1277*	1177*	1075*	968*	868+	760+	673+	608+	539+	480+
90	1800	4460**	4148**	3840**	3534**	3219**	2972**	2749**	2456**	2199**	1870**	1633**	1454**	1238**
	1500	3789*	3563*	3301*	3077*	2738*	2546*	2286*	2043*	1829*	1569*	1369*	1214*	1028*
	1200	3183*	2961*	2739*	2530*	2284*	2119*	1825*	1631*	1460*	1263*	1094*	974*	819+
	1000	2723*	2574*	2313*	2175*	1956*	1776*	1518*	1357*	1215*	1058*	909+	813+	680+

*) Pressure lubrication is required

+) Bath lubrication is possible

Size	n min-1	Nominal output torque MN2 in kNm												
		Nominal ratio i _N												
D2PV...AMF		6.3	7.1	8	9	10	11.2	12.5	14	16	18	20	22.5	25
40	1800	24.4	24.9	25.5	24.8	23.9	26.8	23.9	26.8	21.6	24.3	23.7	20.7	22.8
	1500	25.3	26	26.6	24.9	24.1	27	24	26.9	21.7	24.4	23.8	20.7	22.7
	1200	25.8	27	27.6	25.1	24.2	27.2	24.1	27	21.9	24.6	24	20.4	22.6
	1000	25.9	27.8	28.3	25.2	24.3	27.3	24	26.9	21.9	24.7	24.1	20.4	22.5
60	1800	52.8	54.4	55.5	56.8	58.2	59.8	61.2	62.5	65.1	62.2	61.5	61.5	61.1
	1500	54.5	55.8	56.9	58.7	60.2	61.8	62.9	63	67.2	62.5	61.5	61.5	61.1
	1200	56.4	58.2	59.4	60.7	63.2	64.2	64.3	62.8	68	62.7	61.4	61.4	61
	1000	58.8	60.6	61.9	62.9	64.6	64.6	64.5	62.7	68.6	62.8	61.4	61.4	61
75	1800	88.5	90.5	93.6	97.3	99.9	103	106	107	111	113	115	111	110
	1500	89.8	93.4	95.9	101	104	106	108	112	114	115	114	112	109
	1200	89.8	98.1	101	106	108	111	113	116	114	114	114	112	109
	1000	89.8	101	103	108	112	114	116	116	114	114	114	113	109
90	1800	146	151	157	162	169	173	182	182	182	174	171	167	162
	1500	149	155	162	169	172	178	181	181	181	175	172	167	161
	1200	156	161	168	174	180	185	181	181	181	176	171	167	160
	1000	161	168	171	179	185	187	181	181	181	177	171	168	160

2-stage helical gear units, vertical LSS

Size	Exact ratios i_{ex} Nominal ratio i_N												
D2PV...AMF	6.3	7.1	8	9	10	11.2	12.5	14	16	18	20	22.5	25
40	6.2609	7.0165	7.7681	8.7436	9.9933	11.2491	12.3794	13.9351	15.7103	17.8333	19.8182	22.2	25.1211
60	6.1581	7.0565	7.7586	8.6806	10.026	11.125	12.3641	13.8393	15.5	17.3409	20.1096	22.5265	24.6667
75	6.261	7.1591	8.0769	9.1667	10.2778	11.4352	12.9398	14.4444	16.2222	18.3311	20.2778	22.5952	24.5798
90	6.3626	7.0526	7.966	8.8857	10.1862	11.3333	12.8529	14.375	16.0508	18.0802	20.2941	22.2727	25.3909

Size	Thermal ratings P_{TN} in kW ($n_1=1500$ 1/min) Nominal ratio i_N / Ambient air temperature															
	Oil surface temperature in the oil sump 80°C / Mineral oil								Oil surface temperature in the oil sump 90°C / Synthetic oil							
D2PV...AMF	$i_N = 6.3...11.2$				$i_N = 12.5...25$				$i_N = 6.3...11.2$				$i_N = 12.5...25$			
	20 °C	30 °C	40 °C	50 °C	20 °C	30 °C	40 °C	50 °C	20 °C	30 °C	40 °C	50 °C	20 °C	30 °C	40 °C	50 °C
40	380	286	191	96	413	318	224	129	475	380	286	191	508	413	318	224
60	503	378	253	127	547	421	296	171	629	503	378	253	672	547	421	296
75	909	682	456	230	987	761	535	308	1135	909	682	456	1214	987	761	535
90	917	689	460	232	996	768	540	311	1145	917	689	460	1225	996	768	540

3-stage helical gear units, vertical LSS

Size	n min-1	Nominal mechanical power ratings P _{N2} in kW													
		Nominal ratio i _N													
D3PV...AMF		20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
40	1800	196+	181+	165+	153+	143+	129+	129+	120+	90.7+	87.9+	77.2+	79.6+	51.0+	47.8+
	1500	170+	156+	141+	132+	123+	110+	110+	100+	76.1+	73.9+	64.7+	66.4+	42.8+	40.1+
	1200	141+	127+	114+	108+	101+	88.6+	88.4+	80.2+	61.3+	59.5+	52.1+	53.8+	34.5+	32.3+
	1000	122+	106+	95.1+	90.8+	84.3+	74.0+	73.8+	66.9+	51.3+	49.8+	43.6+	44.9+	28.9+	27.1+
60	1800	507*	468*	431*	431*	406*	356+	321+	288+	239+	229+	192+	173+	173+	139+
	1500	433*	407+	371+	371+	339+	297+	268+	241+	200+	191+	160+	144+	144+	116+
	1200	361+	336+	312+	309+	272+	238+	215+	193+	161+	153+	128+	115+	115+	92.5+
	1000	312+	292+	267+	269+	227+	199+	180+	161+	135+	128+	107+	96.2+	96.1+	77.1+
75	1800	948*	886*	805*	743*	686*	618*	547*	498+	448+	405+	370+	328+	278+	248+
	1500	822*	770*	693*	635*	576*	524+	463+	419+	376+	341+	309+	277+	235+	210+
	1200	681+	636+	574+	523+	469+	424+	373+	336+	301+	274+	254+	229+	194+	168+
	1000	586+	550+	485+	441+	393+	354+	312+	281+	251+	228+	215+	186+	166+	140+
90	1800	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1500	1194*	1110*	1029*	933*	836*	766*	710+	661+	591+	520+	465+	416+	377+	342+
	1200	996*	927*	853+	777+	698+	643+	580+	530+	474+	416+	376+	342+	311+	282+
	1000	860+	805+	741+	675+	594+	536+	485+	442+	396+	354+	322+	292+	265+	237+

*) Pressure lubrication is required

+) Bath lubrication is possible

Size	n min-1	Nominal output torque MN2 in kNm													
		Nominal ratio i _N													
D3PV...AMF		20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
40	1800	19.8	20.4	21.2	21.8	22.5	23.1	26	26.6	22.9	24.8	24.1	28.2	20.6	21.7
	1500	20.6	21.1	21.7	22.4	23.3	23.7	26.6	26.7	23.1	25	24.2	28.2	20.7	21.9
	1200	21.4	21.4	21.9	23	23.7	23.8	26.7	26.8	23.3	25.2	24.4	28.5	20.9	22.1
	1000	22.2	21.5	21.9	23.2	23.9	23.8	26.8	26.8	23.4	25.3	24.5	28.6	21	22.2
60	1800	50	51.1	52.9	61.1	63.9	64	64.2	64.3	59.9	63.9	60.2	60.2	67.3	60.4
	1500	51.3	53.3	54.7	63.2	64	64.2	64.3	64.4	60.3	64	60.1	60.2	67.3	60.4
	1200	53.4	55	57.4	65.8	64.2	64.3	64.4	64.5	60.7	64.1	60.1	60.2	67.3	60.4
	1000	55.3	57.4	59	68.6	64.3	64.4	64.5	64.6	61	64.2	60.1	60.2	67.3	60.4
75	1800	96.8	101	104	107	111	112	113	114	115	116	120	120	114	115
	1500	101	105	108	109	112	113	114	115	115	117	120	122	116	117
	1200	104	108	111	112	114	115	115	115	116	117	123	126	120	117
	1000	108	112	113	114	115	115	115	116	116	117	125	123	123	117
90	1800	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1500	146	149	154	160	166	169	174	180	181	180	180	180	182	185
	1200	152	155	160	167	173	177	178	181	181	180	182	185	188	191
	1000	157	162	167	174	177	177	178	181	181	184	187	190	192	193

3-stage helical gear units, vertical LSS

Size	Exact ratios i_{ex} Nominal ratio i_N													
D3PV...AMF	20	22.5	25	28	31.5	35.5	40	45	50	56	63	71	80	90
40	19.9866	22.2708	25.2956	27.9813	31.0435	35.314	39.7516	43.9302	49.9206	55.7403	61.5465	69.8636	79.7236	89.88
60	19.4564	21.5406	24.2457	28.0038	31.0733	35.5144	39.401	43.9943	49.599	55.1234	61.7001	68.5674	76.7954	85.9163
75	20.1568	22.4267	25.5492	28.2896	32.0119	35.6297	40.5894	45.1103	50.4924	56.3636	63.9683	72.2222	81.1111	91.6556
90	20.0644	22.061	24.6824	28.2951	32.6808	36.263	40.3021	44.8406	50.1905	56.9202	63.6805	71.2216	79.5244	89.082

Size	Thermal ratings P_{TN} in kW ($n_1=1500$ 1/min) Nominal ratio i_N / Ambient air temperature															
	Oil surface temperature in the oil sump 80°C / Mineral oil								Oil surface temperature in the oil sump 90°C / Synthetic oil							
D3PV...AMF	$i_N = 20...56$				$i_N = 63...90$				$i_N = 20...56$				$i_N = 63...90$			
	20 °C	30 °C	40 °C	50 °C	20 °C	30 °C	40 °C	50 °C	20 °C	30 °C	40 °C	50 °C	20 °C	30 °C	40 °C	50 °C
40	276	213	150	87	290	226	163	100	339	276	213	150	353	290	226	163
60	365	282	198	115	383	300	216	132	449	365	282	198	467	383	300	216
75	660	509	358	207	692	541	390	239	811	660	509	358	843	692	541	390
90	666	513	361	209	698	546	394	241	818	666	513	361	851	698	546	394

Continuous allowed external loads FR, FA

Size	Allowed nominal axial and radial forces F _{AN} and F _{RNL} calculated with LSS speed of 50 1/min.		
	F _{AN} [kN]	F _{RNL} [kN]	L [m]
40	40	17.4	2
60	50	34.3	2
75	65	55	2
90	80	62	2

$$F_R = \frac{F_{RNL}}{F_S}$$

$$F_A = \frac{F_{AN}}{F_S}$$

- F_R = the allowed actual radial force
- F_A = the allowed actual axial force
- F_{RNL} = the allowed nominal radial force at the distance l from the shaft end
- F_{AN} = the allowed nominal axial force on the shaft end
- F_S = service factor

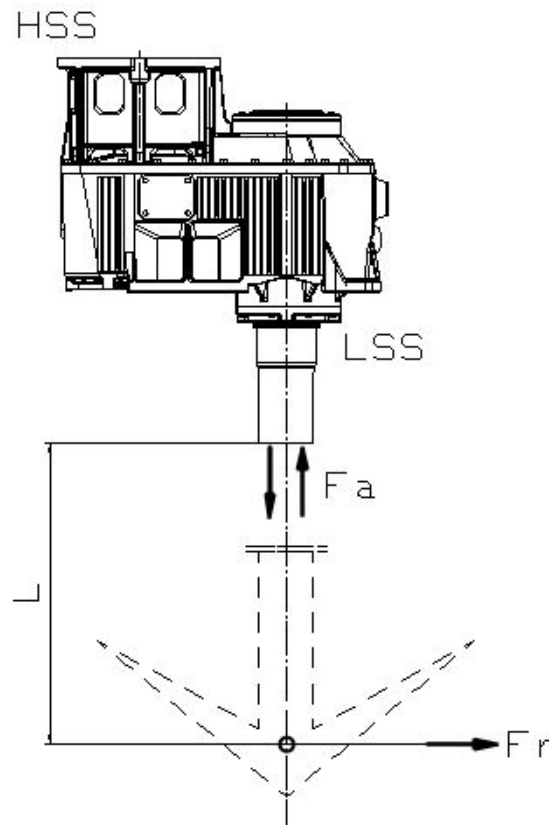


Image: Radial and axial forces
 Ensure that the gear unit is rigidly mounted in order not to be moved by the external forces.



Santasalo understands how to service mission-critical gear units to ensure optimal results and long gear unit life



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