

Attachment gearboxes of types RM-S and RM-D

For diesel engines with SAE connection dimensions

Speed reducing or speed increasing gearbox for attachment with a clutch:

$$\text{Transmission ratio } i = \frac{\text{engine speed}}{\text{gearbox output speed}} = \frac{n_e}{n_2}$$

T_e = perm. max. input torque for continuous operation

n_e = max. input speed

P_e = max. Nennleistung nominal power

A service factor S , as defined in the selection guidelines, is to be taken into account when selecting the PTO size with gearbox.

Lubrication: We recommend to use oil with EP additives and a viscosity of SAE 90 for the gearbox. The gearbox is delivered without oil filling.

Oil operating temperature: The maximum oil temperature must not exceed 95 °C in continuous operation. In the case of a higher power-take off or operation near the load limit, the gearbox types RM 120 and RM 150 can be supplied with an oil cooling system.

Motor connection dimensions

PTO - Size

Gearbox design

Housing: SAE -5 -4 -3 Clutch: BD 110 - 6½" 170 Nm BD 112 - 8" (7½") 200 Nm	Type	Identical direction of rotation RM 20 S						Reverse direction of rotation RM 20 D					
	i		0.64	1.89	2.47			0.57	1.00	2.00	2.71		
	T _e [Nm]		75	55	50			75	75	55	50		
	n _e [rpm]		2800	3500				3500					
	P _e [kW]	12						15					

Housing: SAE -5 -4 -3 Clutch: BD 118 - 8" 240 Nm	Type	Identical direction of rotation RM 45 S						Reverse direction of rotation RM 45 D						
	i	0.57	1.50	1.81	2.65	4.09		0.67	1.00	2.00	2.88	3.40	4.00	5.00
	T _e [Nm]	160	130	110	90	70		165	160	120	120	80	80	70
	n _e [rpm]	3500						2800	3500					
	P _e [kW]	24						30						

Housing: SAE -4 -3 Clutch: BD 130 - 10" 330 Nm	Type	Identical direction of rotation RM 70 S							Reverse direction of rotation RM 70 D						
	i	0.50	0.63	0.70	1.32	1.88	2.73	3.25	0.58	1.00	1.58	2.00	2.45	3.00	3.75
	T _e [Nm]	280	280	260	220	200	160	120	290	290	250	210	190	170	155
	n _e [rpm]	2400	2600	2700	3200				2500	3200					
	P _e [kW]	38							48						

Housing: SAE -4 -3 Clutch: BD 130 - 10" 330 Nm BD 145 - 11½" 450 Nm	Type	Identical direction of rotation RM 100 S							Reverse direction of rotation RM 100 D								
	i	0.51	0.81	1.23	1.50	1.86	2.80	4.21	0.60	0.67	1.00	1.20	1.50	2.00	3.00	3.65	5.00
	T _e [Nm]	400	380	380	350	320	260	230	400	400	400	380	350	320	260	230	230
	n _e [rpm]	2000	2700	3000					2400	2500	3000						
	P _e [kW]	60							75								

Housing: SAE -4 -3 -2 -1 Clutch: BD 145 - 11½" 450 Nm BD 290 - 11½" 900 Nm	Type	Identical direction of rotation RM 120 S						Reverse direction of rotation RM 120 D					
	i	0.67	1.50	2.00	2.60	2.80	3.00	0.50	1.02	1.70	2.00	3.00	3.55
	T _e [Nm]	830	500	480	480	480	480	1000	880	740	700	510	450
	n _e [rpm]	2000	2500					2000	2500				
	P _e [kW]	68*						85*					

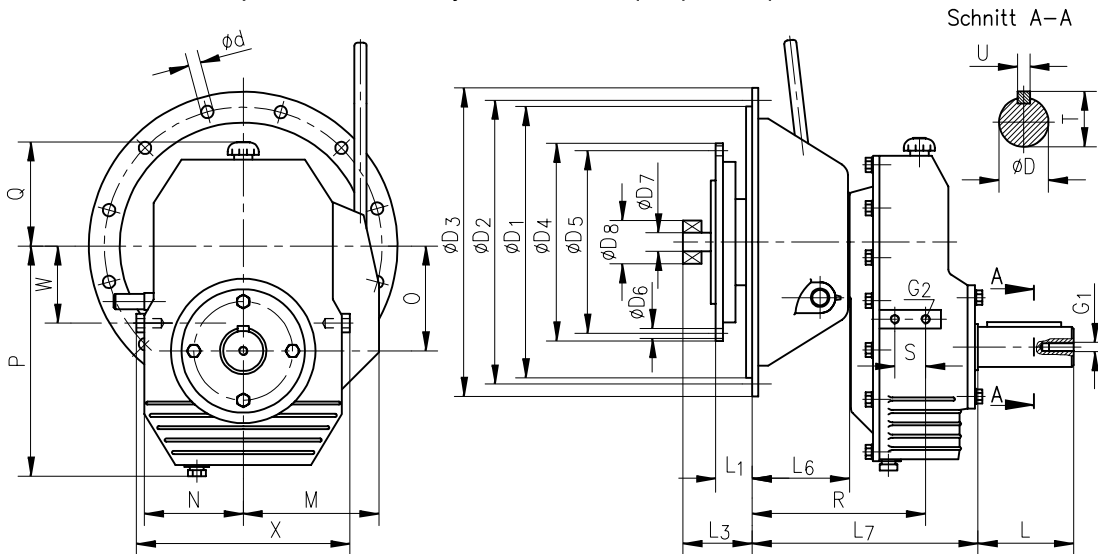
Housing: SAE -3 -2 -1 Clutch: BD 290 - 11½" 900 Nm BD 2200 - 14" 2000 Nm	Type	Identical direction of rotation RM 150 S						Reverse direction of rotation RM 150 D					
	i	1.51	1.96	2.70				0.66	1.02	1.47	2.00	3.04	
	T _e [Nm]	950	950	640				1500	1450	1250	1090	850	
	n _e [rpm]	2500						2000	2500				
	P _e [kW]	80*						100*					

* An oil cooling system is required in the case of higher power ratings

Clutch of type RM-BD with attachment gearbox

For diesel engines with SAE connection dimensions - dimension table page 10.

Gearboxes with output shaft, offset by 180° to the top, upon request.



Gearbox Type	Clutch Type	T _Ü Nm	Housing SAE	Flywheel connection				
				SAE size	D ₄ mm	D ₅ mm	Number of holes Z x D ₆	D ₈ mm
RM 20 (-)	BD 110	170	5	6½"	215.9	200	6 x 8,5	52
	BD 112	200	3 · 4	8"	263.5	244.5	6 x 11	62
RM 45 (-)	BD 110	170	5	6½"	215.9	200	6 x 8,5	52
	BD 118	200	3 · 4	8"	263.5	244.5	6 x 11	62
RM 70 (-)	BD 130	330	3 · 4	10"	314.3	295.3	8 x 11	72
RM 100 (-)	BD 130	330	3 · 4	10"	314.3	295.3	8 x 11	72
	BD 145	450	3 · 4	11½"	352.4	333.4	8 x 11	72
RM 120 (-)	BD 145	450	3 · 4	11½"	352.4	333.4	8 x 11	72
	BD 290	900	1 · 2 · 3	11½"	352.4	333.4	8 x 11	72
RM 150 (-)	BD 290	900	1 · 2 · 3	11½"	352.4	333.4	8 x 11	72
	BD 2200	2000	1	14"	466.7	438.2	8 x 14	80

Clutches of types RM-BD and RM-BDS

Permissible radial load on the gear shaft

For radial power take-off, the permissible radial load F_R in N is to be calculated according to the following formula while taking a service factor S_R for the type of drive into account:

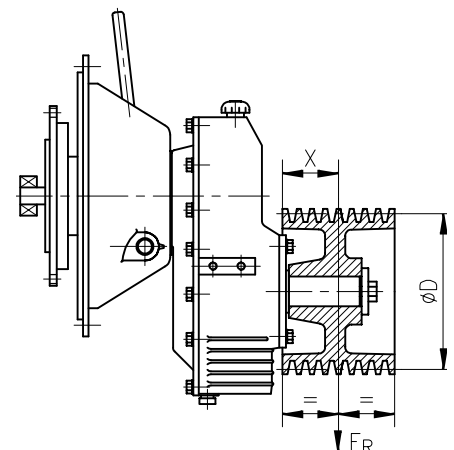
$$F_R = \frac{P \cdot 19100}{n_2 \cdot D} \cdot S_R$$

P [kW] input power
n₂ [rpm] output speed
D pitch diameter in m

Type of drive

Gear or chain drive	S _R = 1.0
V-belt drive	S _R = 2.5
Flat belt drive	S _R = 3.5
V-belt drive (compressor)	S _R = 5

Gearbox Type	n ₂ rpm	Distance X [mm]						
		30	40	50	60	80	100	150
RM 20	1000	4000	3800	3300	2800	2200	-	-
	2500	3300	2800	2400	2000	1600	-	-
RM 45	1000	-	5000	4500	3900	3000	2500	-
	2500	-	3800	3500	2900	2300	1900	-
RM 70	1000	-	10500	9000	7800	6500	5300	-
	2500	-	8000	7000	6000	5000	4100	-
RM 100	1000	-	12000	11000	10000	8300	7000	5300
	2500	-	8500	7200	6500	5400	4700	3500
RM 120	1000	-	-	16000	14000	11500	9700	7500
	2500	-	-	12500	11000	9000	7900	5700
RM 150	1000	-	-	19000	17000	14200	12000	9000
	2500	-	-	17500	15800	13000	11000	8200

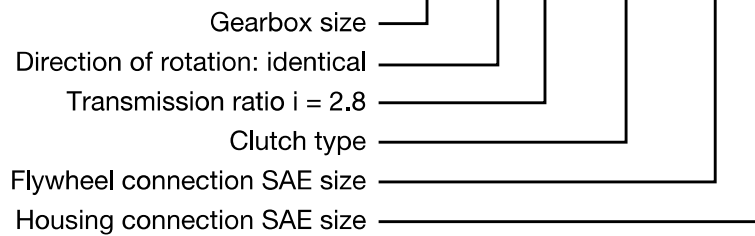


Clutch of type RM-BD with attachment gearbox

Gearbox Type	Clutch Type				Shaft end												Lateral support areas				
		D ₇ mm	L ₁ mm	L ₃ mm	D mm	L mm	U mm	T mm	G ₁	L ₆ mm	L ₇ mm	M mm	N mm	O mm	P mm	Q mm	R mm	S mm	X mm	G ₂	W mm
RM 20 (-)	BD 110	25	30	71	30	50	8	33	M10	108	215.5	110	82	67.5	164	137	-	-	-	-	-
	BD 112		62	100						80	187										
RM 45 (-)	BD 110	25	30	71	40	70	12	43.5	M10	108	239.5	130	103	88.5	215	160	-	-	-	-	-
	BD 118		62	100						80	211										
RM 70 (-)	BD 130	30	54	100	50	80	14	54	M12	114	256	155	125	121.5	278	170	-	-	-	-	-
RM 100 (-)	BD 130	30	54	100	60	120	16*	65	M14	114	286	183	135	135	283	176	-	-	-	-	-
	BD 145		40							114	286										
RM 120 (-)	BD 145	30	40	100	70	140	20	76	M14	114	314	220	170	160	337	208	232	50	380	M12	238
	BD 290			147						347	265										
RM 150 (-)	BD 290	30	40	100	80	140	24*	87	M20	147	409	220	190	189	384	229	292	50	420	M2	159
	BD 2200	35	25	100						236	493						381				

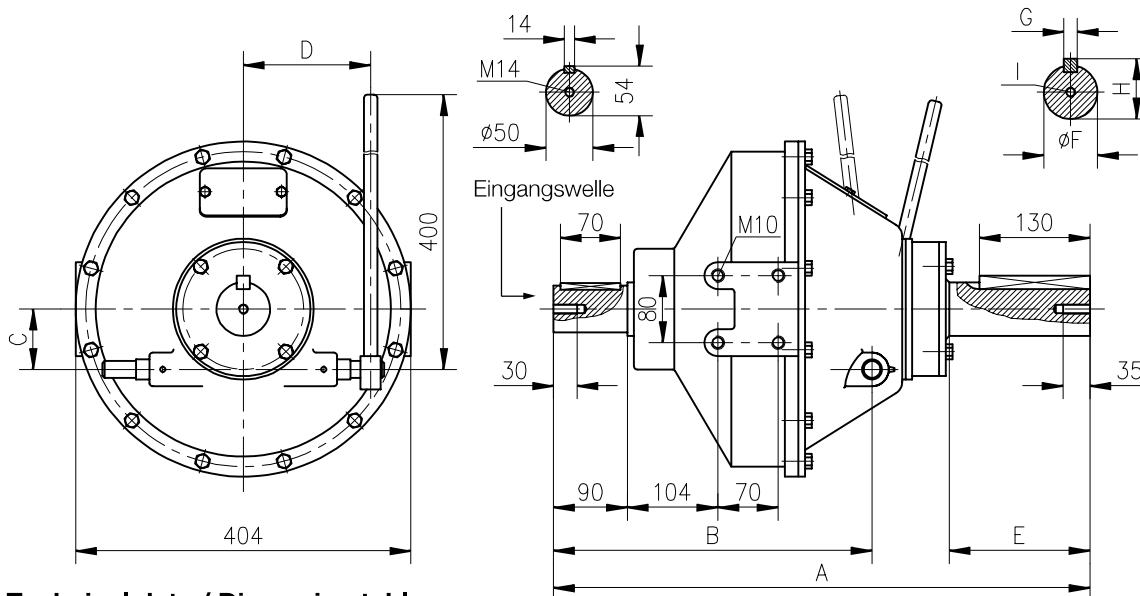
* Key not according to DIN 6885/1

Ordering example: Clutch designation **RM 120-S-2,80 BD 290-11,5-2**



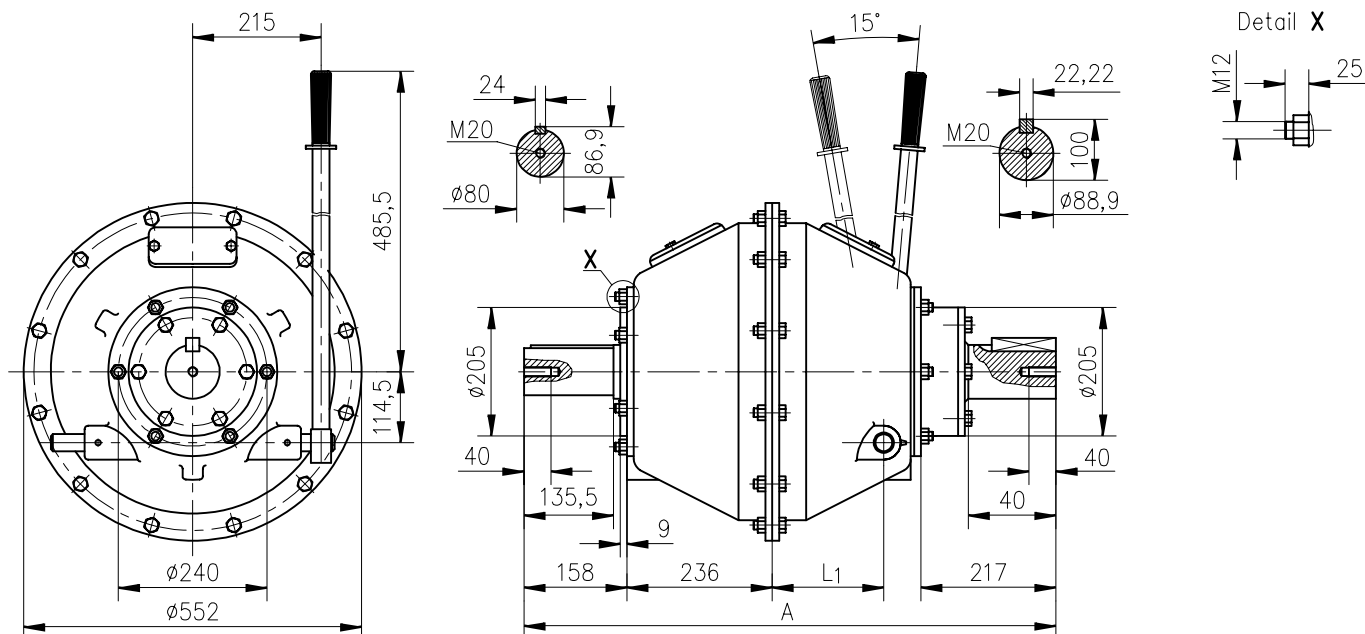
Clutches of type BDS

Within an enclosed housing version for free-standing installation



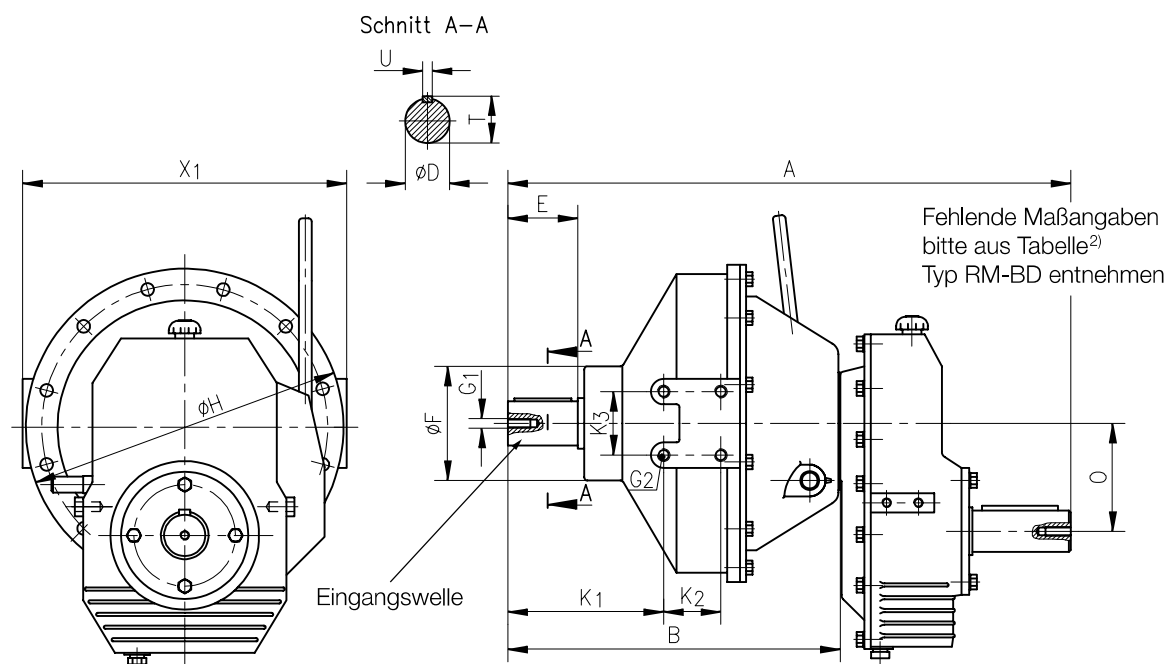
Technical data / Dimension table

Size	T _Ü Nm	n _{max} rpm	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	I	m kg	J kgm ²
BDS 112	200	3500	474	330	70	148	80	36.51	9.52	41.3	M10	52	0.1175
BDS 118	240	3500	511	330	70	148	100	44.45	12.70	50.8	M10	57	0.1373
BDS 130	330	3100	587	368	70	160	140	57.15	15.87	65.1	M10	75	0.2875
BDS 145	450	3100	623	368	70	155	165	75.15	15.87	65.1	M14	83	0.4375
BDS 290	900	2900	656	401	70	155	165	63.50	15.87	71.4	M14	106	0.6750
BDS 2200	2000	2400	862	573	114.5	215	140	88.90	22.22	100	M20	264	3.000
BDS 3300	3000	2400	890	601	114.4	215	140	88.90	22.22	100	M20	288	3.3750



Clutches of type RM-BDS with gearbox

Type with gearbox within an enclosed housing version for free-standing installation



Size					Inout shaft					Lateral support areas							
		A mm	B mm	C mm	E mm	D mm	U mm	T mm	G ₁	F mm	H mm	K ₁ mm	K ₂ mm	K ₃ mm	G ₂	X ₁ mm	O mm
RM 20	BD 112	526	369	128	90	50	14	54	M14	140	403	194	70	80	M10	404	67.5
RM 45	BD 118	570	369	128	90	50	14	54	M14	140	403	194	70	80	M10	404	88.5
RM 70	BD 130	627	403	128	90	50	14	54	M14	140	403	194	70	80	M10	404	121.5
RM 100	BD 145	695	403	128	90	50	14	54	M14	140	403	194	70	80	M10	404	135
RM 120	BD 145	743	403	128	90	50	14	54	M14	140	403	194	70	80	M10	404	160
RM 120	BD 290	776	436	128	90	50	14	54	M14	140	403	194	70	80	M10	404	160
RM 150	BD 290	838	436	128	90	50	14	54	M14	140	403	194	70	80	M10	404	189
RM 150	BD 2200	1027	630	135	135	80	24 ¹⁾	87	M20	2)	552	2)	2)	2)	2)	552	189

¹⁾ Keyway not according to DIN 6885/1