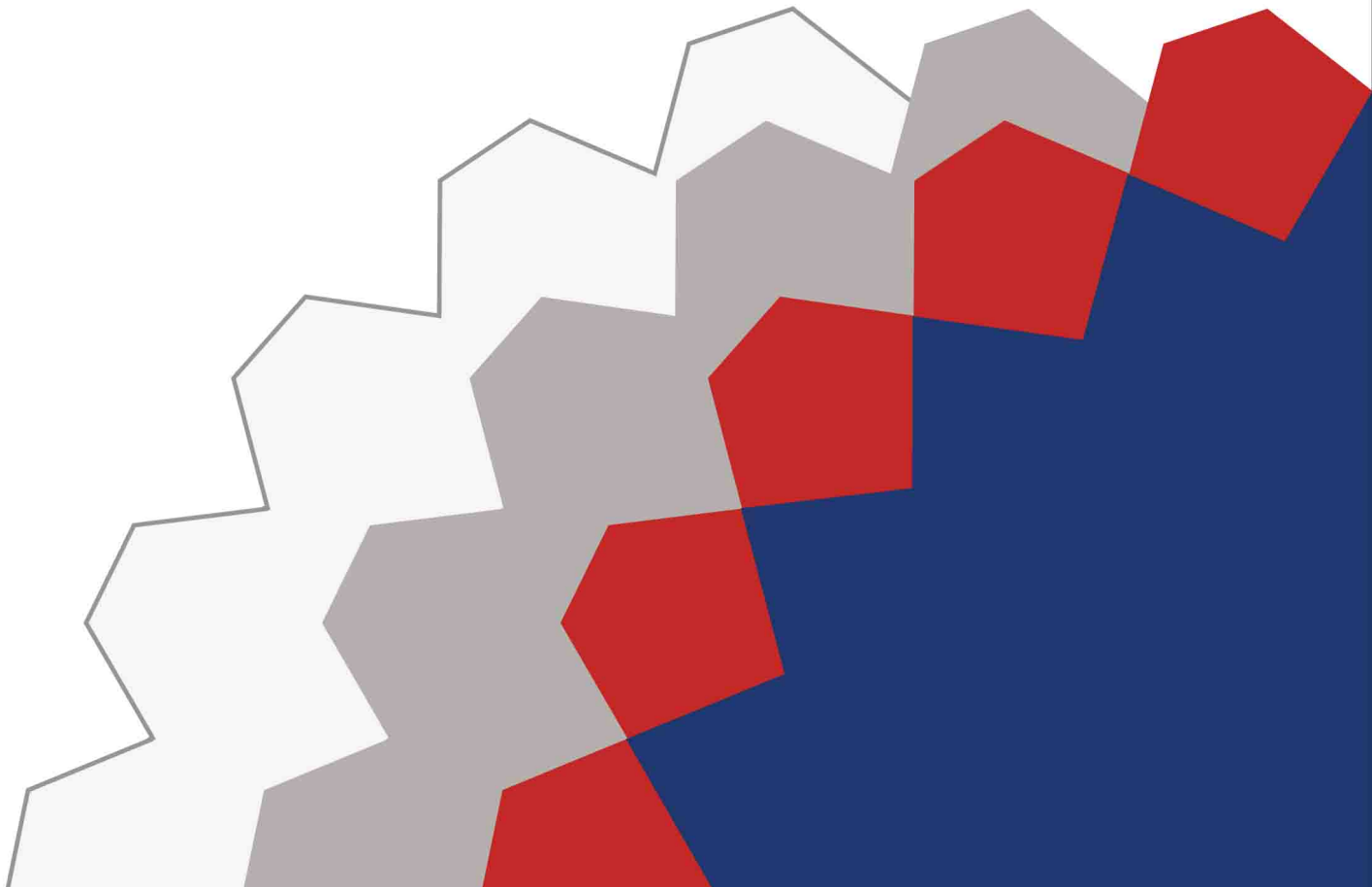




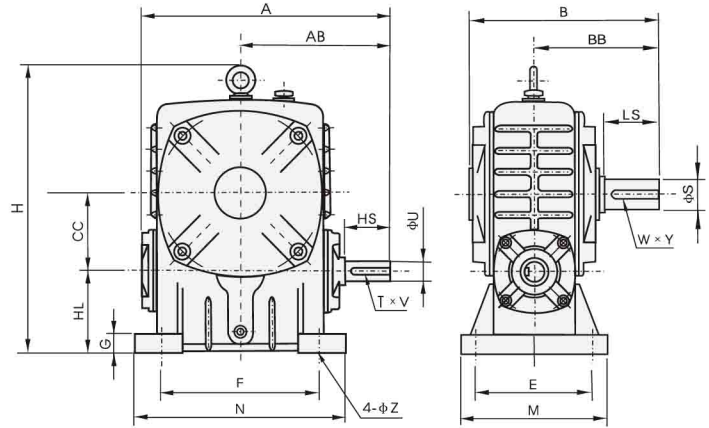
RIDOTTORI

SUPERIOR
TRANSMISSION

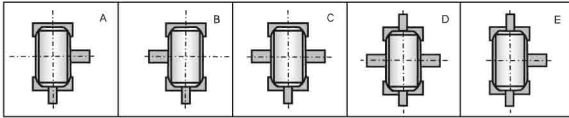
WP SERIES
WORM-GEAR
SPEED REDUCERS



WPA

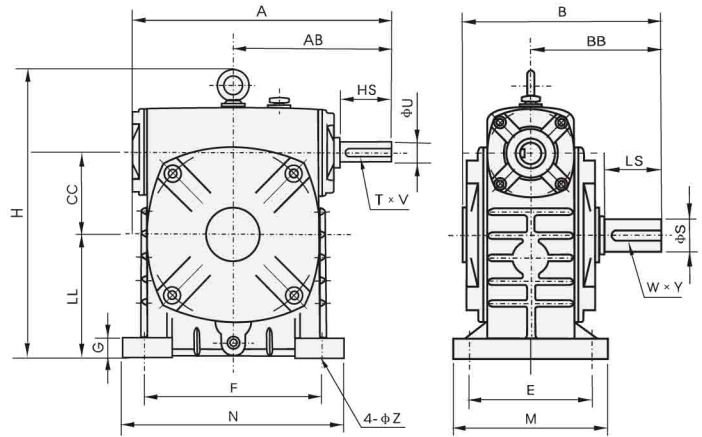


SHAFT DIRECTION

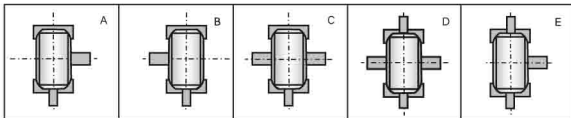


size	ratio	A	AB	B	BB	CC	H	HL	M	N	E	F	G	Z	input shaft				output shaft			(kg)
															HS	U	T×V	LS	S	W×Y		
40	1/10	143	87	114	74	40	138	40	90	100	70	80	13	10	25	12	4×2.5	28	14	5×3	4	
50		175	107	150	97	50	173	50	120	140	95	110	15	12	30	12	4×2.5	40	17	5×3	7	
60		198	122	168	112	60	204	60	130	150	105	120	20	12	40	15	5×3	50	22	6×3.5	10	
70	1/15	231	140	194	131	70	236	70	150	190	115	150	20	15	40	18	6×3.5	60	28	8×4	15	
80	1/20	261	160	214	142	80	268	80	170	220	135	180	20	15	50	22	6×3.5	65	32	10×5	20	
100	1/25	322	190	254	169	100	329	100	190	270	155	220	25	15	50	25	8×4	75	38	10×5	35	
120	1/30	381	229	282	190	120	430	120	230	320	180	260	30	18	65	30	8×4	85	45	14×5.5	60	
135	1/40	433	260	317	210	135	480	135	250	350	200	290	30	18	75	35	10×5	95	55	16×6	80	
147	1/50	439	264	324	212	147	501	123	250	350	200	280	32	18	80	35	10×5	95	55	16×6	90	
155	1/60	504	302	382	252	155	531	135	275	390	220	320	35	21	85	40	12×5	110	60	18×7	110	
175		545	325	402	262	175	600	160	310	430	250	350	40	21	85	45	14×5.5	110	65	18×7	150	
200		587	350	467	305	200	667	175	360	480	290	390	40	24	95	50	14×5.5	125	70	20×7.5	215	
250		705	420	552	360	250	800	200	460	560	380	480	45	28	110	60	18×7	155	90	25×9	360	

WPS



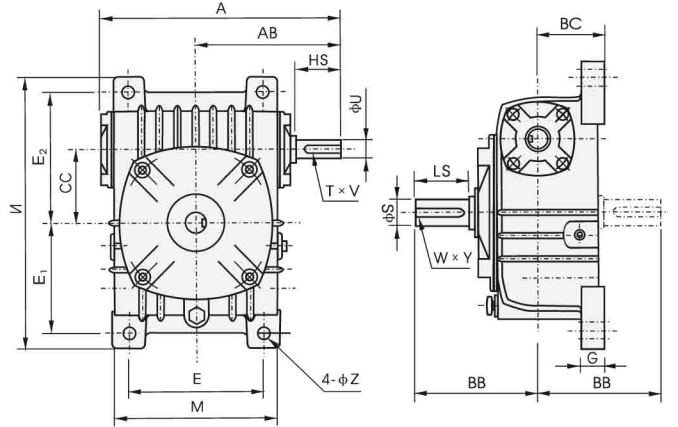
SHAFT DIRECTION



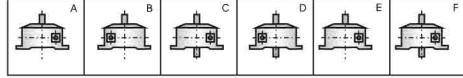
size	ratio	A	AB	B	BB	CC	H	LL	M	N	E	F	G	Z	input shaft				output shaft			(kg)
															HS	U	T×V	LS	S	W×Y		
40	1/10	143	87	114	74	40	141	60	90	100	70	80	13	10	25	12	4×2.5	28	14	5×3	4	
50		175	107	150	97	50	180	80	120	140	95	110	15	12	30	12	4×2.5	40	17	5×3	7	
60		198	122	168	112	60	207	90	130	150	105	120	20	12	40	15	5×3	50	22	6×3.5	10	
70	1/15	231	140	194	131	70	238	105	150	190	115	150	20	15	40	18	6×3.5	60	28	8×4	15	
80	1/20	261	160	214	142	80	270	120	170	220	135	180	20	15	50	22	6×3.5	65	32	10×5	20	
100	1/25	322	190	254	169	100	331	150	190	270	155	220	25	15	50	25	8×4	75	38	10×5	35	
120	1/30	381	229	282	190	120	423	180	230	320	180	260	30	18	65	30	8×4	85	45	14×5.5	60	
135	1/40	433	260	317	210	135	482	215	250	350	200	290	30	18	75	35	10×5	95	55	16×6	80	
147	1/50	439	264	324	212	147	495	203	250	350	200	280	32	18	80	35	10×5	95	55	16×6	90	
155	1/60	504	302	382	252	155	541	235	275	390	220	320	35	21	85	40	12×5	110	60	18×7	110	
175		545	325	402	262	175	594	260	310	430	250	350	40	21	85	45	14×5.5	110	65	18×7	150	
200		587	350	467	305	200	677	290	360	480	290	390	40	24	95	50	14×5.5	125	70	20×7.5	215	
250		705	420	552	360	250	824	350	460	560	380	480	45	28	110	60	18×7	155	90	25×9	360	

WPO

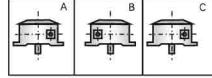
WPX



WPO SHAFT DIRECTION

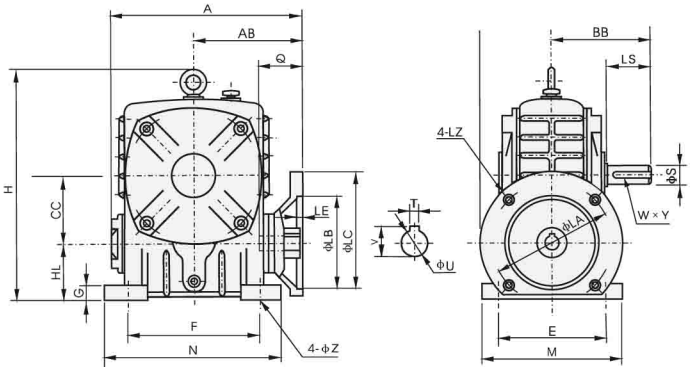


WPX SHAFT DIRECTION

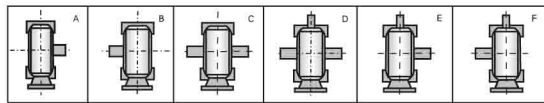


size	ratio	A	AB	BB	BC	CC	M	N	E	E ₁	E ₂	G	Z	input shaft			output shaft			(kg)
														HS	U	T×V	LS	S	W×Y	
40	1/10	143	87	74	45	40	94	184	70	74	86	10	10	25	12	4×2.5	28	14	5×3	5
50		175	107	97	50	50	116	220	90	93	102	15	12	30	12	4×2.5	40	17	5×3	6
60		198	122	112	55	60	126	260	100	105	120	20	12	40	15	5×3	50	22	6×3.5	10
70		231	140	131	65	70	156	295	120	120	135	20	15	40	18	6×3.5	60	28	8×4	15
80		261	160	142	70	80	175	320	140	130	150	20	15	50	22	6×3.5	65	32	10×5	20
100		322	190	169	90	100	224	375	190	155	180	26	15	50	25	8×4	75	38	10×5	35
120		381	229	190	100	120	266	450	220	185	215	30	18	65	30	8×4	85	45	14×5.5	50
135		433	260	210	110	135	306	495	260	210	235	30	18	75	35	10×5	95	55	16×6	75
147		439	264	212	113	147	310	556	250	254	254	32	18	80	35	10×5	95	55	16×6	90
155		504	302	252	140	155	350	590	290	245	295	35	21	85	40	12×5	110	60	18×7	115
175	545	325	262	150	175	394	640	320	267	323	40	21	85	45	14×5.5	110	65	18×7	140	
200	587	350	305	175	200	440	710	370	290	360	40	24	95	50	14×5.5	125	70	20×7.5	200	
250	705	420	360	200	250	510	860	440	350	440	45	28	110	60	18×7	155	90	25×9	340	

WPDA



SHAFT DIRECTION



size	(kw)	ratio	A	AB	BB	CC	H	HL	M	N	E	F	G	Z	flange				input hole			output shaft			(kg)			
															LA	LB	LC	LE	LZ	Q	U	T×V	LS	S		W×Y		
50	0.18	1/10	151	83	97	50	176	50	120	140	95	110	15	12	115	95	140	4	M8	31	11	4×12.8	40	17	5×3	8		
60	0.37		167	91	112	60	204	60	130	150	105	120	20	12	130	110	160	4	M8	33	14	5×16.3	50	22	6×3.5	11		
70	0.37		200	109	131	70	236	70	150	190	115	150	20	15	130	110	160	4	M8	40	14	5×16.3	60	28	8×4	17		
	0.75		202	111																							42	19
80	0.75		1.5	225	125	142	80	268	80	170	220	135	180	20	15	165	130	200	4.5	M10	48	19	6×21.8	65	32	10×5	22	
	1.5			52	24	8×27.3																						
100	1.5		1/10	280	148	169	100	336	100	190	270	155	220	25	15	165	130	200	4.5	M10	52	24	8×27.3	75	38	10×5	38	
120	2.2			333	181	190	120	430	120	230	320	180	260	30	18	215	180	250	5	M12	63	28	8×31.3	85	45	14×5.5	64	
135	3.0			1/20	375	202	210	135	480	135	250	350	200	290	30	18	215	180	250	5	M12	63	28	8×31.3	95	55	16×6	85
	4.0																											
147	3.0	1/30		380	204	212	147	501	123	250	350	200	280	32	18	215	180	250	5	M12	63	28	8×31.3	95	55	16×6	96	
	4.0																											1/40
155	4.0	1/50		425	224	252	155	531	135	275	390	220	320	35	21	215	180	250	5	M12	63	28	8×31.3	110	60	18×7	118	
	5.5																											1/60
175	5.5	7.5		448	247	252	155	531	135	275	390	220	320	35	21	215	180	250	5	M12	63	28	8×31.3	110	60	18×7	118	
	7.5																											481
200	7.5	11.0	516	258	262	175	600	160	310	430	250	350	40	24	265	230	300	5	M12	83	38	10×41.3	125	70	20×7.5	236		
	11.0																										543	285
250	11.0	15.0	615	330	360	250	800	200	460	560	380	480	45	28	300	250	350	6	M16	114	42	12×45.3	155	90	25×9	396		

WP without motor flange

Table of input shaft power and output shaft torque

size	(r/min)	ratio	1/10	1/15	1/20	1/25	1/30	1/40	1/50	1/60
40	1500	(kw)	0.44		0.26		0.24	0.18	0.15	0.12
		(N · m)	21		23		28	26	26	22
	1000	(kw)	0.35		0.18		0.18	0.14	0.12	0.10
		(N · m)	26		23		30	28	30	26
50	1500	(kw)	0.70		0.42		0.40	0.27	0.25	0.20
		(N · m)	34		39		48	42	46	42
	1000	(kw)	0.52		0.28		0.27	0.20	0.18	0.15
		(N · m)	37		38		47	46	46	45
60	1500	(kw)	1.10	0.85	0.76	0.75	0.65	0.45	0.40	0.36
		(N · m)	55	60	68	84	80	68	75	78
	1000	(kw)	0.84	0.63	0.45	0.44	0.42	0.35	0.25	0.25
		(N · m)	60	64	58	72	72	74	68	72
70	1500	(kw)	1.75	1.40	1.10	0.95	0.85	0.68	0.62	0.52
		(N · m)	88	100	102	108	108	110	115	102
	1000	(kw)	1.40	1.10	0.90	0.80	0.70	0.50	0.45	0.39
		(N · m)	102	112	112	130	120	112	122	120
80	1500	(kw)	2.45	1.82	1.35	1.33	1.28	0.92	0.85	0.76
		(N · m)	122	132	128	152	165	145	165	160
	1000	(kw)	1.98	1.50	1.05	1.00	0.96	0.72	0.68	0.55
		(N · m)	145	156	150	165	180	166	190	170
100	1500	(kw)	3.90	3.20	2.70	2.15	2.32	1.85	1.50	1.08
		(N · m)	198	232	260	252	302	315	300	280
	1000	(kw)	2.90	2.35	2.00	1.60	1.70	1.35	1.10	0.88
		(N · m)	220	250	275	268	316	350	310	280
120	1500	(kw)	6.60	4.60	3.90	3.50	3.50	2.40	2.10	1.80
		(N · m)	340	340	376	420	465	400	445	400
	1000	(kw)	4.90	3.50	2.90	2.60	2.65	1.80	1.56	1.34
		(N · m)	370	378	405	450	505	420	465	430
135	1500	(kw)	10.10	7.85	6.30	4.80	5.20	3.80	2.90	2.50
		(N · m)	530	595	625	580	710	670	620	620
	1000	(kw)	7.50	5.80	4.75	3.60	3.85	2.90	2.20	1.90
		(N · m)	575	630	680	630	750	735	670	660
147	1500	(kw)	11.20	8.70	6.90	5.50	6.00	4.30	3.50	2.90
		(N · m)	580	650	680	655	810	745	735	710
	1000	(kw)	8.30	6.50	5.15	4.20	4.55	3.20	2.65	2.20
		(N · m)	630	715	735	750	910	830	820	780
155	1500	(kw)	14.10	10.40	7.50	6.05	6.60	4.80	4.00	3.30
		(N · m)	705	750	740	730	870	850	850	810
	1000	(kw)	10.50	7.70	5.65	4.55	5.00	3.65	3.20	2.45
		(N · m)	780	820	810	795	945	910	970	860
175	1500	(kw)	20.30	14.50	11.50	8.25	9.20	6.50	5.10	4.60
		(N · m)	1055	1050	1110	990	1220	1130	1080	1140
	1000	(kw)	15.20	10.75	8.60	6.15	6.90	4.85	3.80	3.45
		(N · m)	1120	1150	1210	1080	1340	1210	1150	1200
200	1500	(kw)	23.20	18.60	14.20	10.50	10.70	8.70	8.70	5.80
		(N · m)	1245	1420	1410	1280	1530	1580	1580	1470
	1000	(kw)	17.40	13.80	10.60	7.8	8.00	6.50	5.15	4.3
		(N · m)	1400	1580	1550	1400	1670	1700	1610	1540
250	1500	(kw)	40.10	30.20	23.60	18.80	21.50	15.40	11.20	9.50
		(N · m)	2100	2310	2450	2440	3030	2930	2600	2550
	1000	(kw)	29.50	22.00	17.50	13.80	15.75	11.50	8.40	7.25
		(N · m)	2390	2500	2680	2620	3280	3180	2840	2780

Table1 : Load Factor f

Prime Mover	Duration Of Service Per Day	Load Factor f		
		Uniform Load	Moderate Shock	Heavy Shock
Electric Motor	Occasional 1/2h	0.80	0.90	1.00
	Intermittent 2h	0.90	1.00	1.25
	8-10h	1.00	1.25	1.50
	24h	1.25	1.50	1.75

Note: For frequent starts and stops multiply the values listed in the above table by 1.25

Table2: Overhung Load (O.H.L) Coefficient f₁

Transmission Method	Sprocket	Gear	V-Belt	Flat Belt
O.H.L. Coefficient f ₁	1.00	1.25	1.50	2.50

Example

One conveying machine needs to select a worm speed reducer (input shaft is lower). Its input shaft speed is 1500r/min. Its output speed is 30 r/min Chain pulley transmission, the tensile force is 5000N on full load. The diameter of sprocket, s reference circle is 400mm. Operating 10 hours continuously per day. Moderate shock.

Selecting As Follows:

$$\text{Ratio } 1=30 \div 1500=1/50$$

Refer to table 1, $f=1.25$

$$\text{Load torque } T=W \times R \times f = 5000 \times 0.4/2 \times 1.25 = 1250\text{Nm}$$

Refer to table 2, $f_1=1$




$$\text{O.H.L.} = W \times f_1 = 5000 \times 1 = 5000\text{N}$$

Refer to page 35, select type 175(1/50). Its max. allowed torque is 1412Nm and its max. Refer to page 41.

its max. allowed O.H.L is 17600N

Thus, FCA175-1/50 is selected.

Manufacturer's recommended lubricants

Lubricant	Mineral Oil		Synthetic Oil		Extreme Pressure Oil	
	15 to 60F -9 T O 16C	50 to 125F 10 T O 50C	15 to 60F -9 T O 16C	50 to 125F 10 T O 50C	15 to 60F -9 T O 16C	50 to 125F 10 T O 50C
AGMA	5	6	7	8	7 EP	8 EP
 Shell	Turbo oil 220	Turbo oil 320	Valvata J460	Valvata J680	Omala 460	Omala 680
Mobil	DTE oil BB	DTE oil AA	Mobil 600w cylinder oil	Mobil 600w super cylinder oil	Mobil gear 634	Mobil gear 636
 TEXACO	Regal oil R & O 220	Regal oil R & O 320	Vanguard cylinder oil 460	Honor Cylinder oil 680	Meropa 460	Meropa 680
 ESSO	Teresstic 220	Teresstic 320	Cylesstic Tk460	Cylesstic Tk680	SP ART AN EP460	SP ART AN EP680
Union 76div Union oil co.of CA	Union T urbine oil 220	Union T urbine oil 320	Union steaval A	Union worm gear lube 140	Extra duty NL gear lube 7EP	Extra duty NL gear lube 8EP
GB			L-CKE/320	L-CKE/460	L-CKE/P320	L-CKE/P460