



# WORM

## SPEED REDUCERS

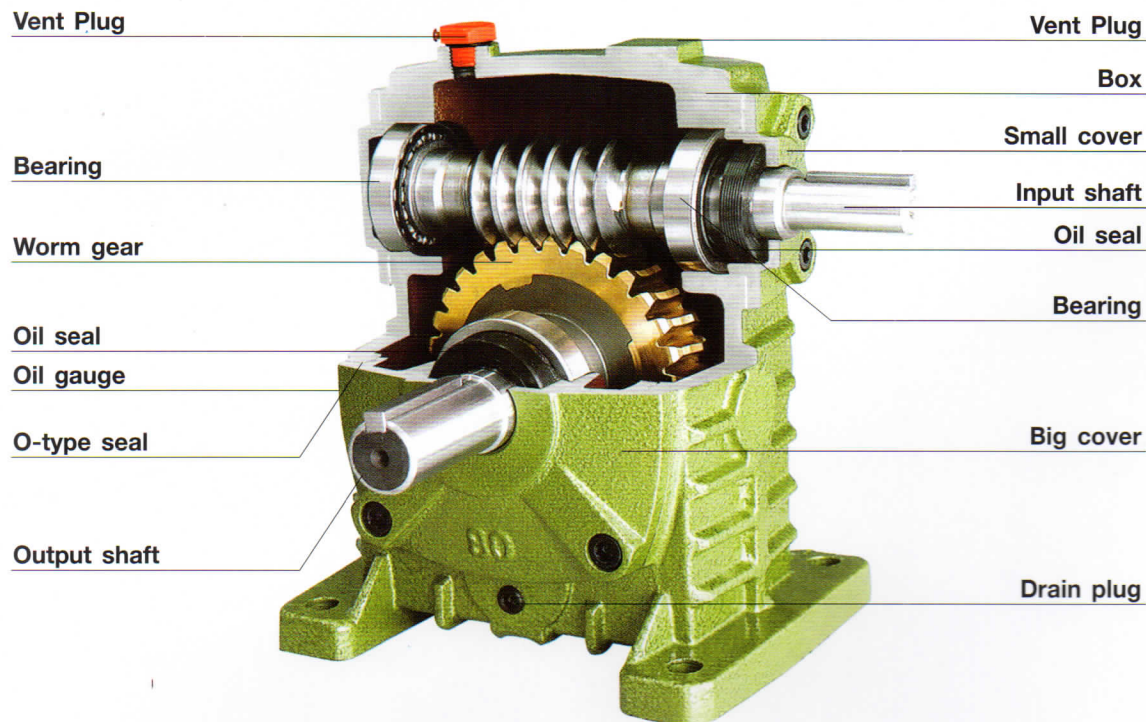




# Worm Reducer



## Product structural View



### Selection of Lubricant

Before operation, input N220-N320(Ambient temperature -30°C~40°C) N320-N460(Ambient temperature -30°C~40°C) lubrication oil up to the center line of the oil gauge. In the meanwhile, remove the small screw of the air-vent. After working for 100 hours in the first time, clear the inside and add new lubrication oil in it, then renew the lubricant oil per 2500 hour.

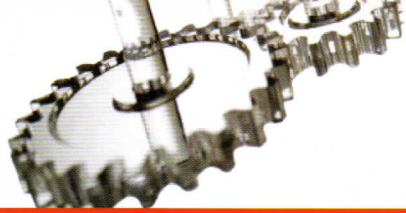
Lubricants for a reducer are optional in foreign as the below table.

Worm shaft speed (r/min)		Lubricant	Operating position Worm shaft, upper Worm shaft vertical	Operating position Worm shaft, lower Output shaft vertical
over	up to			
1000	3000	Synthetic oils	PG460	PG220
	1000			PG460
2000	3000	Mineral oils	ISO VG460	ISO VG200
750	2000			ISO VG320
250	750			ISO VG460
	250			ISO VG680

Ambient Temp	Load	ISO VG	GB3141-82		Mobil	AGMA
-30°C ~ -15°C	Normal	VG-100	N100	Shell Omala 100	Gear 627	5
	Heavy	VG-100	N150	Shell Omala 150	Gear 629	7
-15°C ~ -5°C	Normal	VG-100	N150	Shell Omala 150	Gear 629	7
	Heavy	VG-100	N220	Shell Omala 220	Gear 630	7EP
5°C ~ -25°C	Normal	VG-100	N220	Shell Omala 220	Gear 630	7EP
	Heavy	VG-100	N320	Shell Omala 320	Gear 632	6
25°C ~ 40°C	Normal	VG-100	N320	Shell Omala 320	Gear 632	6
	Heavy	VG-100	N460	Shell Omala 460	Gear 634	8
40°C ~ 65°C	Normal	VG-100	N460	Shell Omala 460	Gear 634	8
	Heavy	VG-100	N680	Shell Omala 680	Gear 636	8EP

After the first 100 hours of operation:  
Drain unit and flush with light oil. Refill

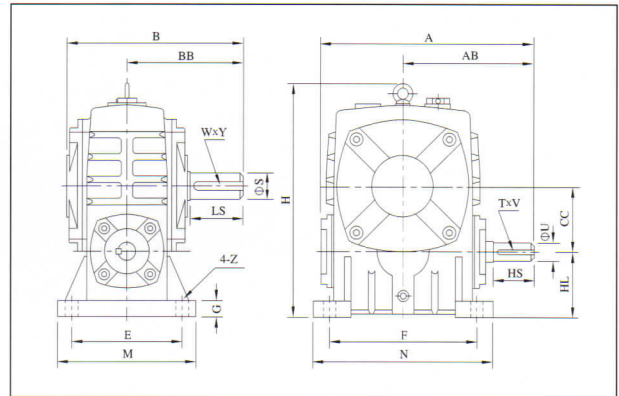
Every 2500 hours of operation  
Drain; flush and refill



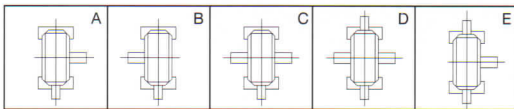
# Worm Reducer



## Model : M-PA



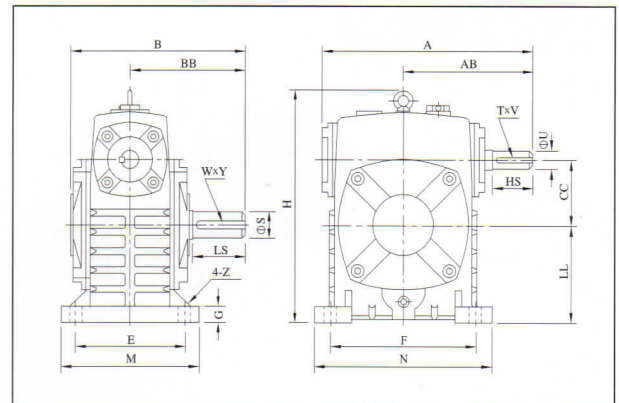
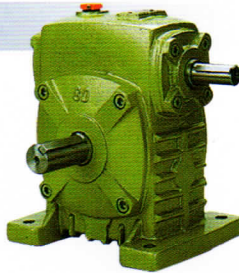
SHAFT DIRECTION



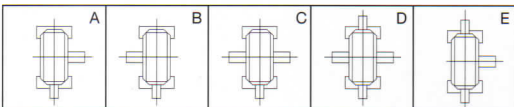
(mm.)

SIZE	INPUT (kw)	RATIO	A	AB	B	BB	CC	H	HL	M	N	E	F	G	Z	INPUT SHAFT			OUTPUT SHAFT			WEIGHT(kg)
																HS	ΦU	TxV	LS	ΦS	WxY	
40	0.09	10	143	87	114	74	40	138	40	90	100	70	80	13	10	25	12	4x2.5	28	14	5x3	4
50	0.18		175	107	150	97	50	173	50	120	140	95	110	15	12	30	12	4x2.5	40	17	5x3	7
60	0.37		198	122	168	112	60	204	60	130	150	105	120	20	12	40	15	5x3	50	22	6x3.5	10
70	0.37	15	231	140	194	131	70	236	70	150	190	115	150	20	15	40	18	6x3.5	60	28	8x4	15
80	0.75		261	160	214	142	80	268	80	170	220	135	180	20	15	50	22	6x3.5	65	32	10x5	20
100	1.5	20	322	190	254	169	100	329	100	190	270	155	220	25	15	50	25	8x4	75	38	10x5	35
120	2.2	30	381	229	282	190	120	430	120	230	320	180	260	30	18	65	30	8x4	85	45	14x5.5	60
135	3.0		433	260	317	210	135	480	135	250	350	200	290	30	18	75	35	10x5	95	55	16x6	80
147	3.0	50	439	264	324	212	147	501	123	250	350	200	280	32	18	80	35	10x5	95	55	16x6	90
155	4.0		504	302	382	252	155	531	135	275	390	220	320	35	21	85	40	12x5	110	60	18x7	110
175	5.5	60	545	325	402	262	175	600	160	310	430	250	350	40	21	85	45	14x5.5	110	65	18x7	150
200	7.5		587	350	467	305	200	667	175	360	480	290	390	40	24	95	50	14x5.5	125	70	20x7.5	215
250	11.0	15.5	705	420	552	360	250	800	200	460	560	380	480	45	28	110	60	18x7	155	90	25x9	360

## Model : M-PR



SHAFT DIRECTION



(mm.)

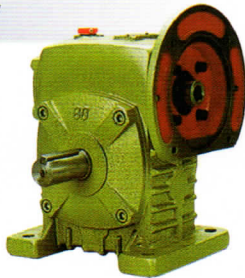
SIZE	INPUT (kw)	RATIO	A	AB	B	BB	CC	H	LL	M	N	E	F	G	Z	INPUT SHAFT			OUTPUT SHAFT			WEIGHT(kg)
																HS	ΦU	TxV	LS	ΦS	WxY	
40	0.09	10	143	87	114	74	40	141	60	90	100	70	80	13	10	25	12	4x2.5	28	14	5x3	4
50	0.18		175	107	150	97	50	180	80	120	140	95	110	15	12	30	12	4x2.5	40	17	5x3	7
60	0.37		198	122	168	112	60	207	90	130	150	105	120	20	12	40	15	5x3	50	22	6x3.5	10
70	0.37	15	231	140	194	131	70	238	105	150	190	115	150	20	15	40	18	6x3.5	60	28	8x4	15
80	0.75		261	160	214	142	80	270	120	170	220	135	180	20	15	50	22	6x3.5	65	32	10x5	20
100	1.5	20	322	190	254	169	100	331	150	190	270	155	220	25	15	50	25	8x4	75	38	10x5	35
120	2.2	30	381	229	282	190	120	423	180	230	320	180	260	30	18	65	30	8x4	85	45	14x5.5	60
135	3.0		433	260	317	210	135	482	215	250	350	200	290	30	18	75	35	10x5	95	55	16x6	80
147	3.0	50	439	264	324	212	147	495	203	250	350	200	280	32	18	80	35	10x5	95	55	16x6	90
155	4.0		504	302	382	252	155	541	235	275	390	220	320	35	21	85	40	12x5	110	60	18x7	110
175	5.5	60	545	325	402	262	175	594	260	310	430	250	350	40	21	85	45	14x5.5	110	65	18x7	150
200	7.5		587	350	467	305	200	677	290	360	480	290	390	40	24	95	50	14x5.5	125	70	20x7.5	215
250	11.0	15.5	705	420	552	360	250	824	350	460	560	380	480	45	28	110	60	18x7	155	90	25x9	360



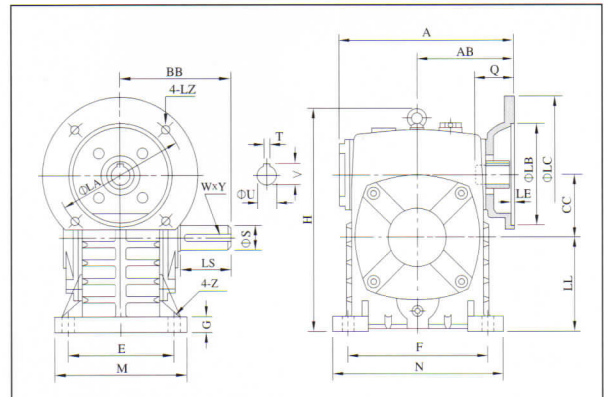
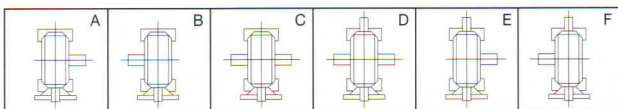
# Worm Reducer



## Model : M-PRF



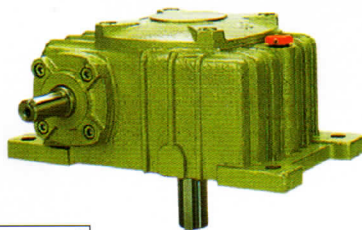
SHAFT DIRECTION



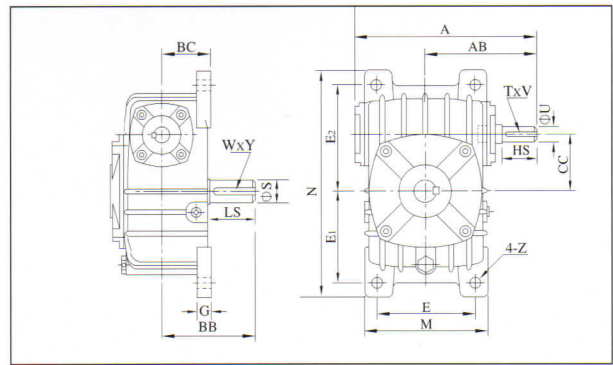
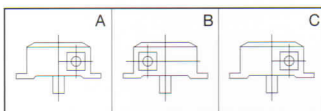
(mm.)

SIZE	INPUT (kw)	RATIO	A	AB	BB	CC	H	LL	M	N	E	F	G	Z	FLANGE					INPUT HOLE			OUTPUT SHAFT			WEIGHT (kg)
															LA	LB	LC	LE	LZ	Q	ΦU	TxV	LS	ΦS	WxY	
50	0.18	10	151	83	97	50	108	80	120	140	95	110	15	12	115	95	140	4	M8	31	11	4x12.8	40	17	5x3	8
60	0.37		167	91	112	60	207	90	130	150	105	120	20	20	130	110	160	4	M8	33	14	5x16.3	50	22	6x3.5	11
70	0.37		200	109	131	70	238	105	150	190	115	150	20	15	130	110	160	4	M8	40	14	5x16.3	65	28	8x4	17
	0.75		202	111																						
80	0.75	15	225	125	142	80	273	120	170	220	135	180	20	15	165	130	200	4.5	M10	48	19	6x21.8	60	32	10x5	22
100	1.5		280	148	169	100	334	150	190	270	155	220	25	15	165	130	200	4.5	M10	52	24	8x27.3	75	38	10x5	38
120	2.2	20	333	181	190	120	423	180	230	320	180	260	30	18	215	180	250	5	M12	63	28	8x31.3	85	45	14x5.5	64
135	3.0		375	202	210	135	482	215	250	350	200	290	30	18	215	180	250	5	M12	63	28	8x31.3	95	55	16x6	85
147	4.0	30	380	204	212	147	495	203	250	350	200	280	32	18	215	180	250	5	M12	63	28	8x31.3	95	55	16x6	96
	3.0		425	224	252	155	541	235	275	390	220	320	35	24	215	180	250	5	M12	63	28	8x31.3	110	60	18x7	118
4.0	448	247	265	230											300	5	M12	83	38	10x41.3						
155	5.5	40	481	262	262	175	600	260	310	430	250	350	40	21	265	230	300	5	M12	83	38	10x41.3	110	65	18x7	165
175	7.5		516	258	305	200	667	290	360	480	290	390	40	24	265	230	300	5	M12	83	38	10x41.3	125	70	20x7.5	236
200	11.0	543	285	300											250	350	6	M16	114	42	12x45.3					
250	15.5	60	615	330	360	250	824	350	460	560	380	480	45	28	300	250	350	6	M16	114	42	12x45.3	155	90	25x9	396

## Model : M-POD



SHAFT DIRECTION



(mm.)

SIZE	INPUT (kw)	RATIO	A	AB	BB	BC	CC	M	N	E	E1	E2	G	Z	INPUT SHAFT			OUTPUT SHAFT			WEIGHT(kg)
															HS	ΦU	TxV	LS	ΦS	WxY	
40	0.09	10	143	87	74	45	40	94	184	70	74	86	10	10	25	12	4x2.5	28	14	5x3	5
50	0.18		175	107	97	50	50	116	220	90	93	102	15	12	30	12	4x2.5	40	17	5x3	6
60	0.37		198	122	112	55	60	126	260	100	105	120	20	12	40	15	5x3	50	22	6x3.5	10
70	0.37		231	140	131	65	70	156	295	120	120	135	20	15	40	18	6x3.5	60	28	8x4	15
80	0.75	15	261	160	142	70	80	175	320	140	130	150	20	15	50	22	6x3.5	65	32	10x5	20
100	1.5		322	190	169	90	100	224	375	190	155	180	26	15	50	25	8x4	75	38	10x5	35
120	2.2	20	381	229	190	100	120	266	450	220	180	215	30	18	65	30	8x4	85	45	14x5.5	50
135	3.0		433	260	210	110	135	306	495	260	210	235	30	18	75	35	10x5	95	55	16x6	75
147	4.0	30	439	264	212	113	147	310	556	250	254	254	32	18	80	35	10x5	95	55	16x6	90
155	4.0		504	302	252	140	155	350	590	290	245	295	35	21	85	40	12x5	110	60	18x7	115
175	5.5	40	545	325	262	150	175	394	640	320	267	323	40	21	85	45	14x5.5	110	65	18x7	140
200	7.5		587	350	305	175	200	440	710	370	290	390	40	24	95	50	14x5.5	125	70	20x7.5	200
250	11.0	60	705	420	360	200	250	510	860	440	350	440	45	28	110	60	18x7	155	90	25x9	340



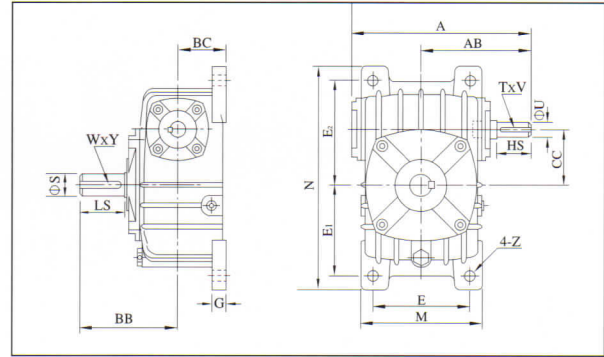
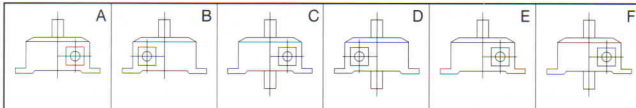
# Worm Reducer



## Model : M-POU



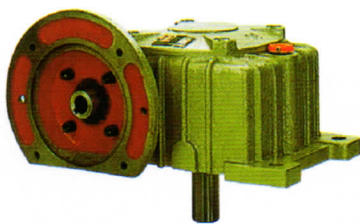
SHAFT DIRECTION



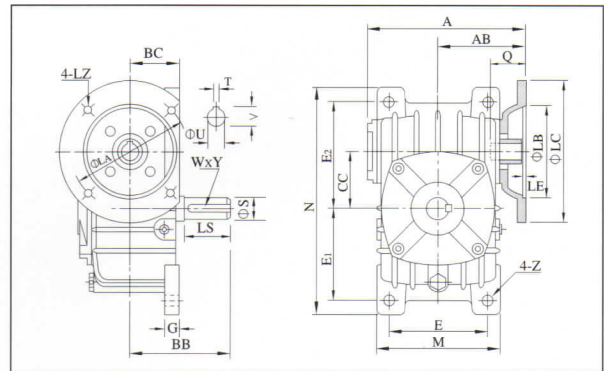
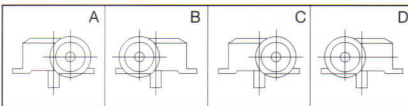
(mm.)

SIZE	INPUT (kw)	RATIO	A	AB	BB	BC	CC	M	N	E	E <sub>1</sub>	E <sub>2</sub>	G	Z	INPUT SHAFT			OUTPUT SHAFT			WEIGHT(kg)
															HS	ΦU	TxV	LS	ΦS	WxY	
40	0.09	10	143	87	74	45	40	94	184	70	74	86	10	10	25	12	4x2.5	28	14	5x3	5
50	0.18		175	107	97	50	50	116	220	90	93	102	15	12	30	12	4x2.5	40	17	5x3	6
60	0.37	15	198	122	112	55	60	126	260	100	105	120	20	12	40	15	5x3	50	22	6x3.5	10
70	0.37		231	140	131	65	70	156	295	120	120	135	20	15	40	18	6x3.5	60	28	8x4	15
80	0.75	20	261	160	142	70	80	175	320	140	130	150	20	15	50	22	6x3.5	65	32	10x5	20
100	1.5		322	190	169	90	100	224	375	190	155	180	26	15	50	25	8x4	75	38	10x5	35
120	2.2	30	381	229	190	100	120	266	450	220	180	215	30	18	65	30	8x4	85	45	14x5.5	50
135	3.0		433	260	210	110	135	306	495	260	210	235	30	18	75	35	10x5	95	55	16x6	75
147	3.0	40	439	264	212	113	147	310	556	250	254	254	32	18	80	35	10x5	95	55	16x6	90
155	4.0		504	302	252	140	155	350	590	290	245	295	35	21	85	40	12x5	110	60	18x7	115
175	5.5	60	545	325	262	150	175	394	640	320	267	323	40	21	85	45	14x5.5	110	65	18x7	140
200	7.5		587	350	305	175	200	440	710	370	290	390	40	24	95	50	14x5.5	125	70	20x7.5	200
250	11.0	15.5	705	420	360	200	250	510	860	440	350	440	45	28	110	60	18x7	155	90	25x9	340
	15.5																				

## Model : M-POD-F



SHAFT DIRECTION



(mm.)

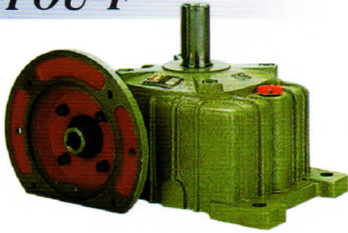
SIZE	INPUT(kw)	RATIO	A	AB	BB	BC	CC	M	N	E	E <sub>1</sub>	E <sub>2</sub>	G	Z	FLANGE					INPUT HOLE			OUTPUT SHAFT			WEIGHT (kg)
															LA	LB	LC	LE	LZ	Q	ΦU	TxV	LS	ΦS	WxY	
50	0.18	10	151	83	97	50	50	116	220	90	93	105	15	12	115	95	140	4	M8	31	11	4x12.8	40	17	5x3	8
60	0.37		167	91	112	55	60	126	260	100	105	120	20	12	130	110	160	4	M8	33	14	5x16.3	50	22	6x3.5	11
70	0.37	15	200	109	131	65	70	156	295	120	120	135	20	15	130	110	160	4	M8	40	14	5x16.3	60	28	8x4	17
80	0.75		202	111											165	130	200	4	M10	42	19	6x21.8				
80	0.75	20	225	125	142	70	80	175	320	140	130	150	20	15	165	130	200	4.5	M10	48	19	6x21.8	65	32	10x5	22
100	1.5		280	148	169	90	100	224	375	190	155	180	26	15	165	130	200	4.5	M10	52	24	8x27.3				
120	2.2	30	333	181	190	100	120	266	450	220	185	215	30	18	215	180	250	5	M12	63	28	8x31.3	75	38	10x5	38
135	3.0		375	202	210	110	135	306	495	260	210	235	30	18	215	180	250	5	M12	63	28	8x31.3				
147	3.0	40	380	204	212	131	147	310	556	250	254	254	32	18	215	180	250	5	M12	63	28	8x31.3	95	55	16x6	80
155	4.0		425	224	247	140	155	350	590	290	245	295	35	21	215	180	250	5	M12	63	28	8x31.3				
175	5.5	60	448	247	252	150	175	394	640	320	267	323	40	21	265	230	300	5	M12	83	38	10x41.3	110	60	18x7	122
200	7.5		516	258	285	175	200	440	710	370	290	360	40	24	265	230	300	5	M12	83	38	10x41.3				
250	11.0	15.5	543	285	305	175	200	440	710	370	290	360	40	24	300	250	350	6	M16	114	42	12x45.3	125	70	20x7.5	220
	15.5		615	330	360	250	250	510	860	440	350	440	45	28	300	250	350	6	M16	114	42	12x45.3				



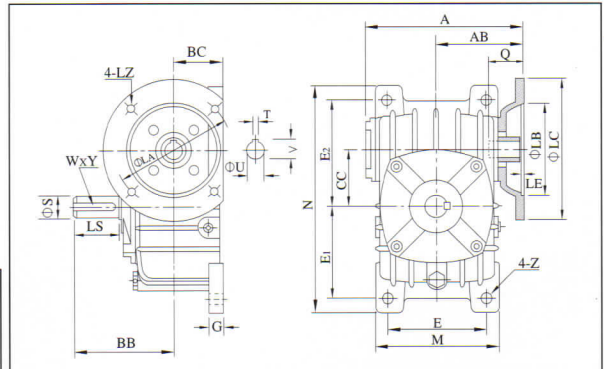
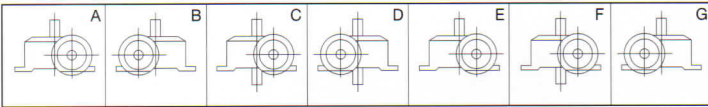
# Worm Reducer



## Model : M-POU-F



SHAFT DIRECTION



(mm.)

SIZE	INPUT(kw)	RATIO	A	AB	BB	BC	CC	M	N	E	E <sub>1</sub>	E <sub>2</sub>	G	Z	FLANGE					INPUT HOLE			OUTPUT SHAFT			WEIGHT (kg)
															LA	LB	LC	LE	LZ	Q	ΦU	TxV	LS	ΦS	WxY	
50	0.18	10	151	83	97	50	50	116	220	90	93	105	15	12	115	95	140	4	M8	31	11	4x12.8	40	17	5x3	8
60	0.37		167	91	112	55	60	126	260	100	105	120	20	12	130	110	160	4	M8	33	14	5x16.3	50	22	6x3.5	11
70	0.37	15	200	109	131	65	70	156	295	120	120	135	20	15	130	110	160	4	M8	40	14	5x16.3	60	28	8x4	17
	0.75		202	111											M10	42	19		6x21.8							
80	0.75	20	225	125	142	70	80	175	320	140	130	150	20	15	165	130	200	4.5	M10	48	19	6x21.8	65	32	10x5	22
	1.5		280	148	169	90	100	224	375	190	155	180	26	15	165	130	200	4.5	M10	52	24	8x27.3	75	38	10x5	38
100	1.5	25	333	181	190	100	120	266	450	220	185	215	30	18	215	180	250	5	M12	63	28	8x31.3	85	45	14x5.5	54
	2.2		375	202	210	110	135	306	495	260	210	235	30	18	215	180	250	5	M12	63	28	8x31.3	95	55	16x6	80
120	3.0	30	380	204	212	131	147	310	556	250	254	254	32	18	215	180	250	5	M12	63	28	8x31.3	95	55	16x6	96
	4.0		425	224	247	252	140	155	350	590	290	245	295	35	21	215	180	250	5	M12	63	28	8x31.3	110	60	18x7
135	4.0	40	448	247	252	140	155	350	590	290	245	295	35	21	265	230	300	5	M12	83	38	10x41.3	110	65	18x7	154
	5.5		481	262	262	150	175	394	640	320	267	323	40	21	265	230	300	5	M12	83	38	10x41.3	110	65	18x7	154
147	7.5	50	516	258	305	175	200	440	710	370	290	360	40	24	265	230	300	5	M12	83	38	10x41.3	125	70	20x7.5	220
	11.0		543	285											M16	114	42	12x45.3								
155	11.0	60	615	330	360	250	250	510	860	440	350	440	45	28	300	250	350	6	M16	114	42	12x45.3	155	90	25x9	374
	15.5																									

## MOTOR KW SELECTION TABLE TORQUE

Speed of input shaft : 1500 r/min

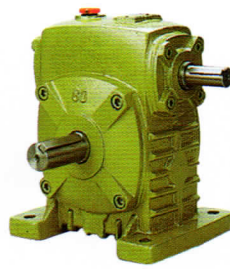
RATIO SIZE	Input Power (kw)									Output Torque (N.m)						
	10	15	20	25	30	40	50	60	10	15	20	25	30	40	50	60
40	0.40	0.33	0.26	0.24	0.22	0.16	0.14	0.12	19	23	20	25	25	20	22	20
50	0.65	0.52	0.40	0.37	0.34	0.27	0.24	0.20	31	36	32	38	39	36	37	35
60	1.00	0.82	0.65	0.59	0.54	0.45	0.40	0.32	50	58	58	68	62	71	75	59
70	1.50	1.35	1.10	0.95	0.82	0.67	0.61	0.52	83	98	98	112	99	104	113	97
80	2.20	1.78	1.36	1.28	1.20	0.90	0.80	0.75	113	133	133	149	151	140	145	146
100	3.60	3.10	2.60	2.35	2.10	1.68	1.30	1.00	193	237	237	284	277	291	257	229
120	5.20	4.35	3.50	3.25	3.00	2.20	1.90	1.50	262	336	336	404	413	392	399	355
135	9.75	7.85	6.00	5.50	5.00	3.69	2.89	2.30	540	622	622	696	707	667	626	562
147	10.71	6.43	6.18	5.71	5.23	3.84	3.09	2.52	586	676	676	727	739	694	669	616
155	12.80	9.90	7.00	6.53	6.00	4.40	3.61	3.00	709	785	785	842	848	784	770	791
175	17.30	13.50	10.00	9.13	8.30	6.18	1.85	4.07	958	1091	1091	1221	1189	1133	1127	1078
200	22.60	18.20	13.86	12.75	11.67	8.78	6.71	5.58	1280	1477	1477	1643	1782	1654	1561	1449
250	33.20	27.40	21.60	20.00	18.43	14.00	10.43	8.62	1881	2266	2266	2579	2764	2357	2357	2371



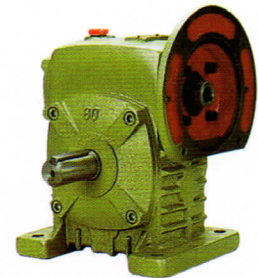
# Worm Reducer



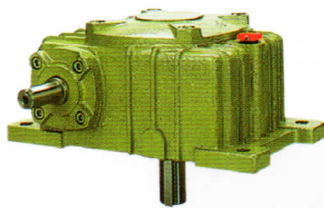
*Model : M-PA*



*Model : M-PR*



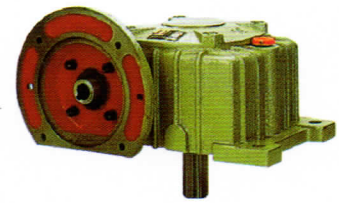
*Model : M-PRF*



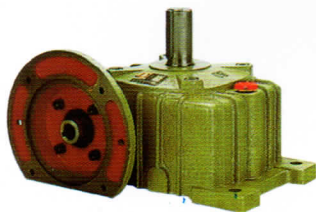
*Model : M-POD*



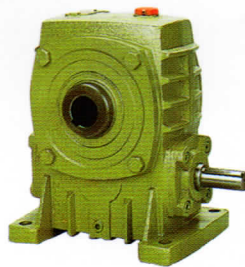
*Model : M-POU*



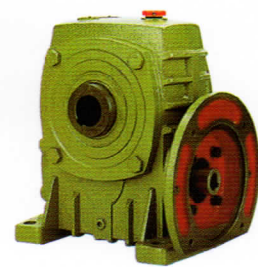
*Model : M-POD-F*



*Model : M-POU-F*



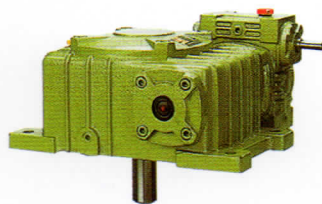
*Model : M-PA-HO*



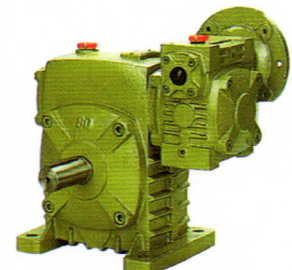
*Model : M-PAF-HO*



*Model : M-PRF-HO*



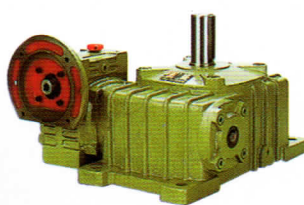
*Model : M-PDOD*



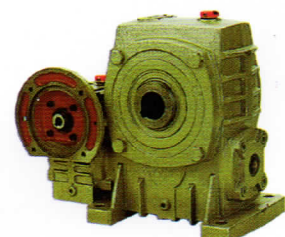
*Model : M-PRD-F*



*Model : M-PDOD-F*



*Model : M-PDOU-F*



*Model : M-PDA-F-HO*



# GEAR

Worm Reducer • Geared Reducer

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