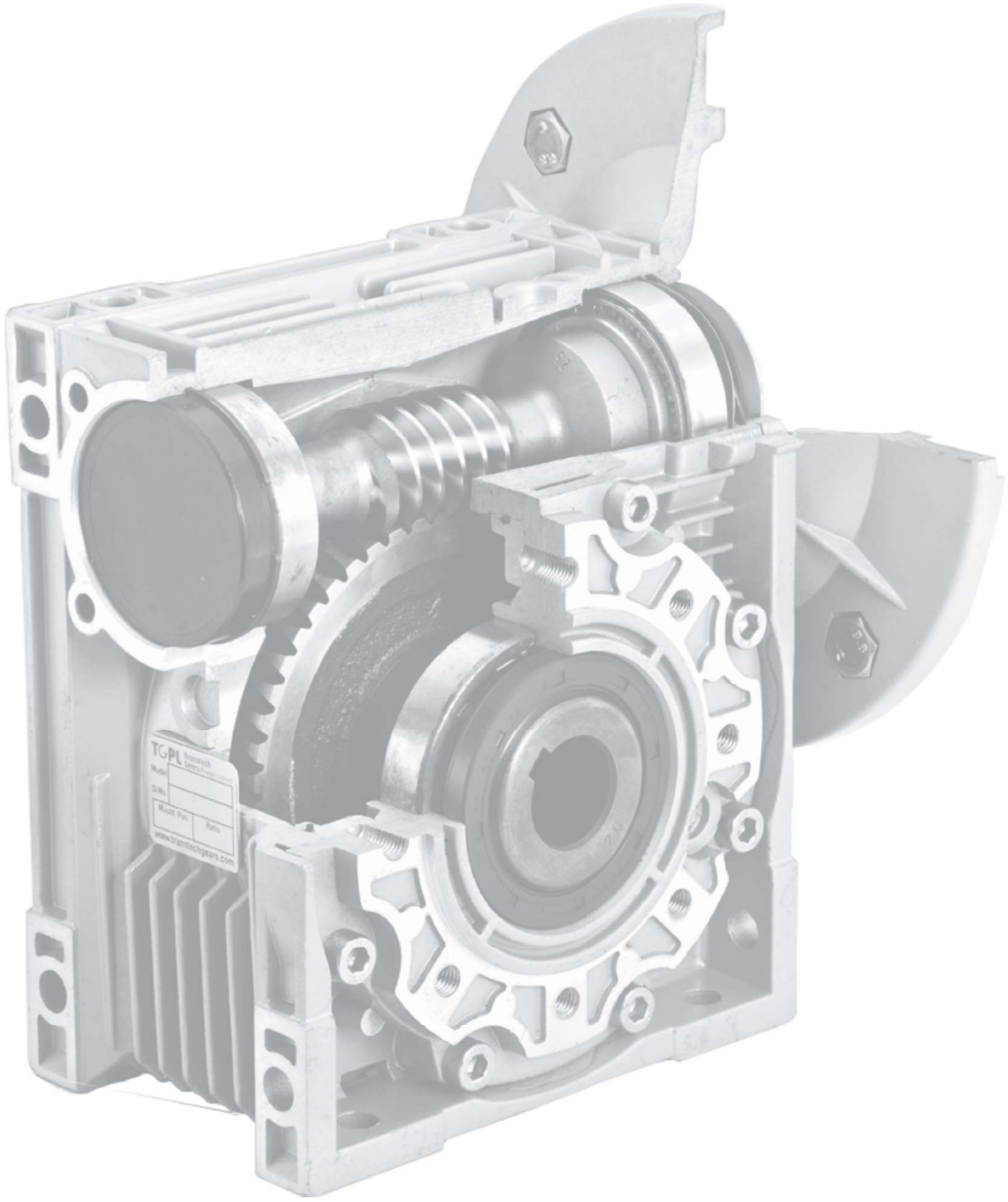
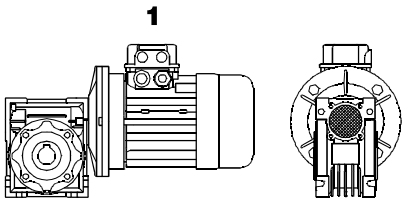
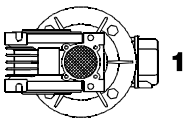
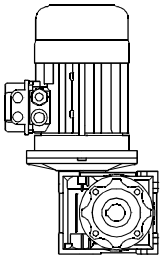
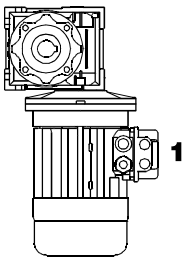
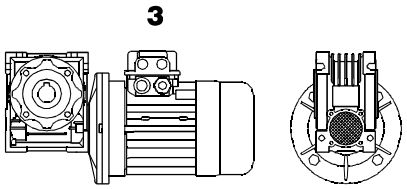
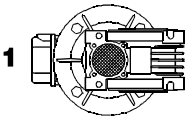
TW SERIES



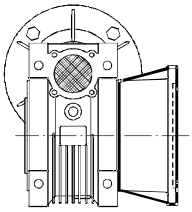
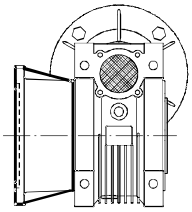
3.WORM GEAR BOX

3.1 MOUNTING POSITIONS

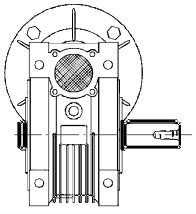
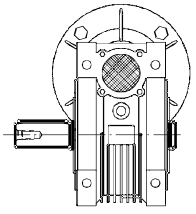
TW & TW.. ISS Mounting Positions

TW...U - B3	B6	V5	V6
			
B8	**B7**		
			

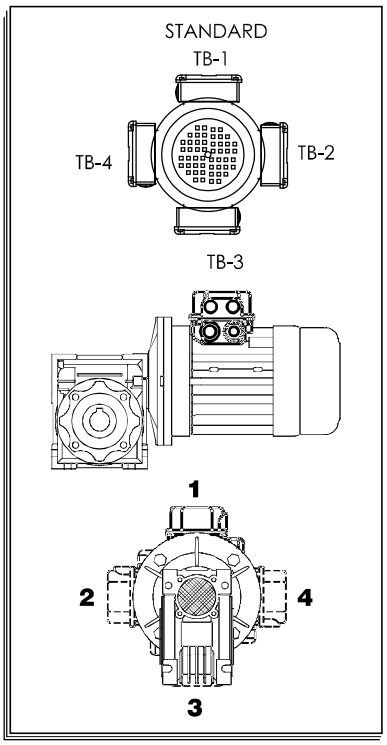
Position diagram for output flange

FA1, FB1, FD1	FA2, FB2, FD2
	

Position diagram for single output shaft

SSOS1	SSOS2
	

Position of terminal box



3.2 Direction of rotation

TW

TW / TW

TW.. ISS

TW / TW.. ISS

3.3 LUBRICATION

Lubricants detail

MODEL	GRADE			OIL TYPE	AMBIENT TEMPERATURE
	LIGHT DUTY	NORMAL DUTY	HEAVY DUTY		
TW30 TO TW90	150	220	320	SYNTHETIC OIL	-15°c to +50°c
TW110 TO TW150	220	220	320	MINERAL OIL	

Quantity of Lubricant (Ltrs)

	B3	B6	B7	B8	V5	V6
TW 30	0.05					
TW 40	0.1					
TW 50	0.15					
TW 63	0.3					
TW 75	0.5					
TW 90	1					
TW 110	3	2.5	2.5	2.2	3	2.2
TW 130	4.5	3.5	3.5	3.3	4.5	3.3
TW 150	7	5.4	5.4	5.1	7	5.1

3.4 Efficiency & Irreversibility Character

Efficiency is an important parameter of reducer, Efficiency η depends on the following parameters: 1) helix angle of gearing, 2) driving speed, 3) running-in of gearing, 4) The performance of oil,oil seal and bearing. The mesh data table on shows dynamic efficiency (n1=1400) and static efficiency values. Remember that these values are only achieved after the unit has been run in.Torque values Mn2 indicated in the catalogue are calculated by considering the steady-state performance of the gearboxes. The actual values mentioned above may be have deflection.

3.5 Dynamic irreversibility

Dynamic irreversibility is achieved when the output shaft stops instantly when drive is no longer transmitted through the worm shaft. This condition requires a dynamic efficiency of **ηd < 0.4**

3.6 Static irreversibility

Static irreversibility is achieved when the gear reducer at a standstill, the application of a load to the output shaft can't drive the worm shaft. This condition requires a static efficiency of **ηs < 0.5**

η_d	>0.6	0.5 ～ 0.6	0.4 ～ 0.5	<0.4
DYNAMIC IRREVERSIBILITY	dynamic reversibility	low dynamic reversibility	good dynamic irreversiblity	dynamic irreversibility

η_s	>0.55	0.5 ～ 0.55	<0.5
STATIC IRREVERSIBILITY	static reversibility	low static reversibility	static irreversibility

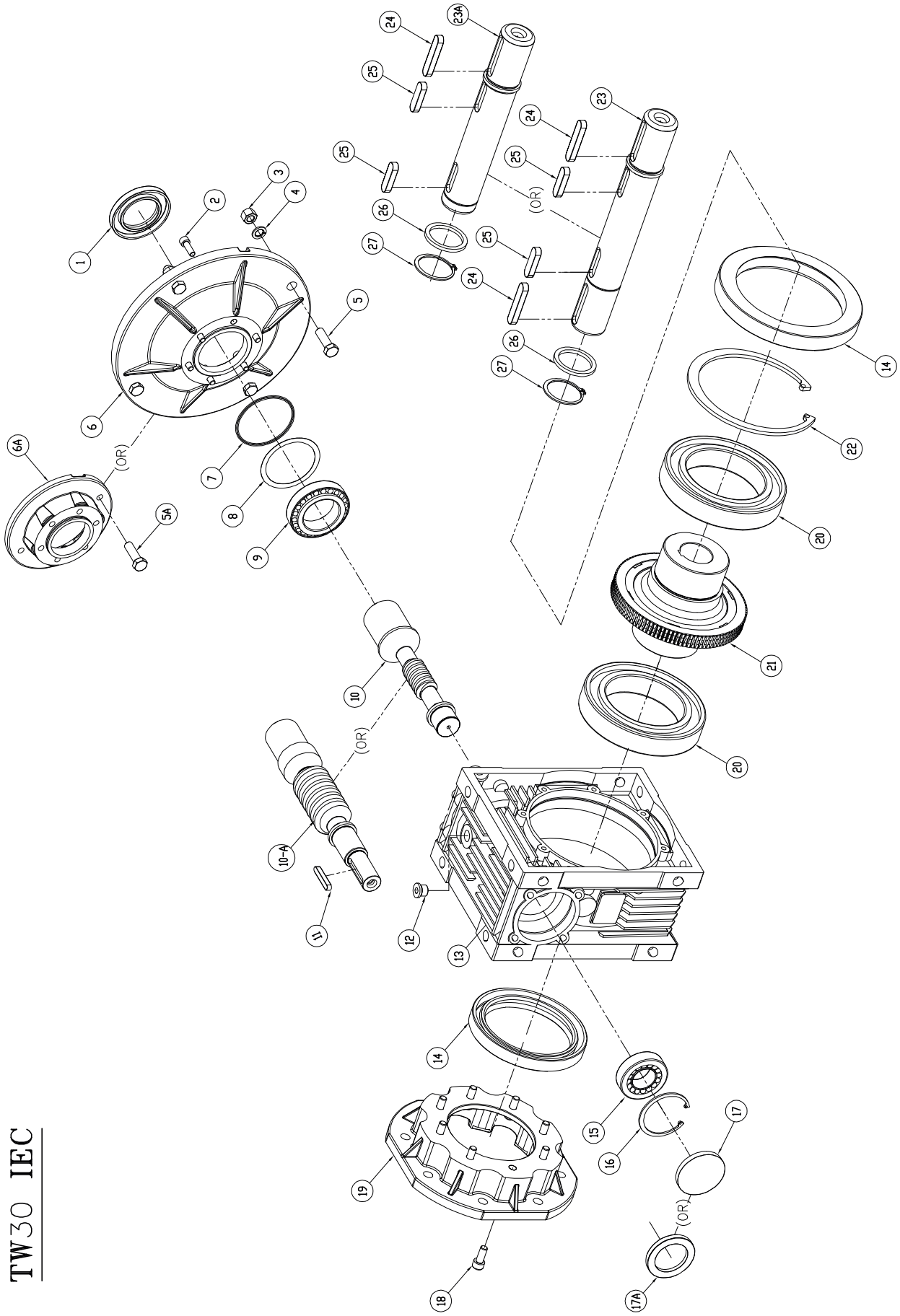
The table shows approximate irreversibility classes. Vibrations and shocks can affect a gear reducer's irreversibility. As it is virtually impossible to provide and guarantee total non reversing, we recommend the use of an external brake with sufficient capability to prevent vibrations in duced starting, where these circumstances are required. For the irreversibility conditions of a combined geared unit one must consider that the efficiency of the group is given by the product of the efficiencies of each single reducer, i.e.: $\eta_{tot} = \eta_1 \times \eta_2$.

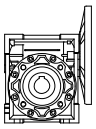
3.7 Mesh Data

	i	7.5	10	15	20	25	30	40	50	60	80	100
TW30	z_1	4	3	2	2	1	1	1	1	1		
	m_n	1.36	1.39	1.42	1.09	1.69	1.43	1.10	0.89	0.74		
	Y	18°55′	14°25′	9°44′	7°50′	5°33′	4°54′	3°56′	3°17′	2°43′		
	η_d	0.84	0.81	0.76	0.72	0.66	0.64	0.59	0.54	0.50		
	η_s	0.66	0.62	0.54	0.49	0.41	0.38	0.33	0.29	0.26		
TW40	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	1.87	1.95	2.00	1.54	1.26	2.04	1.55	1.27	1.06	0.80	0.65
	Y	23°54′	18°23′	12°30′	10°3′	8°45′	6°19′	5°4′	4°24′	3°42′	2°52′	2°29′
	η_d	0.86	0.84	0.80	0.77	0.74	0.69	0.65	0.61	0.57	0.51	0.47
	η_s	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
TW50	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	2.34	2.43	2.50	1.92	1.56	2.54	1.94	1.58	1.32	1.00	0.80
	Y	23°49′	18°19′	12°27′	10°3′	8°33′	6°18′	5°4′	4°18′	3°38′	2°52′	2°17′
	η_d	0.87	0.85	0.81	0.78	0.75	0.71	0.67	0.63	0.59	0.53	0.48
	η_s	0.70	0.66	0.59	0.54	0.51	0.44	0.39	0.36	0.32	0.27	0.24
TW63	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	2.96	3.08	3.17	2.44	1.98	3.23	2.47	1.99	1.68	1.27	1.02
	Y	24°31′	18°53′	12°51′	10°29′	8°45′	6°30′	5°17′	4°24′	3°49′	2°59′	2°26′
	η_d	0.88	0.86	0.82	0.80	0.77	0.73	0.69	0.65	0.62	0.56	0.51
	η_s	0.70	0.66	0.59	0.55	0.51	0.44	0.40	0.36	0.33	0.28	0.24
TW75	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	3.53	3.70	3.83	2.94	2.39	3.92	2.99	2.41	2.02	1.54	1.24
	Y	26°38′	20°37′	14°5′	11°19′	9°29′	7°9′	5°43′	4°46′	4°1′	3°17′	2°44′
	η_d	0.88	0.87	0.84	0.81	0.79	0.76	0.72	0.68	0.64	0.59	0.55
	η_s	0.71	0.68	0.61	0.57	0.53	0.47	0.41	0.37	0.34	0.29	0.26
TW90	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	4.23	4.47	4.66	3.60	2.93	4.79	3.67	2.97	2.49	1.89	1.52
	Y	29°5′	22°39′	15°33′	12°50′	10°53′	7°55′	6°30′	5°29′	4°46′	3°45′	3°6′
	η_d	0.89	0.88	0.85	0.83	0.81	0.78	0.74	0.71	0.68	0.63	0.59
	η_s	0·72	0·69	0·63	0·59	0·56	0·49	0·44	0·41	0·37	0·32	0·28
TW110	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	5.18	5.45	5.67	4.47	3.64	5.82	4.58	3.71	3.12	2.36	1.91
	Y	28°15′	21°57′	15°2′	14°42′	12°33′	7°39′	7°29′	6°21′	5°33′	4°27′	3°46′
	η_d	0.89	0.88	0.86	0.85	0.83	0.79	0.77	0.74	0.72	0.67	0.63
	η_s	0.72	0.69	0.62	0.62	0.59	0.48	0.48	0.44	0.41	0.36	0.32
TW130	z_1	4	3	2	2	2	1	1	1	1	1	1
	m_n	6.11	6.45	6.72	5.24	4.28	6.91	5.36	4.35	3.65	2.76	2.23
	Y	28°43′	22°20′	15°19′	13°47′	11°54′	7°48′	6°60′	6°1′	5°16′	4°8′	3°27′
	η_d	0.90	0.89	0.87	0.85	0.84	0.80	0.78	0.75	0.73	0.68	0.64
	η_s	0.72	0.69	0.63	0.61	0.58	0.49	0.46	0.43	0.40	0.34	0.30
TW150	z_1	6	4	3	2	2	2	1	1	1	1	1
	m_n	5.5	6.155	5.5	6.155	5	4.193	6.155	5	4.193	3.17	2.55
	Y	32°09’	24°35’	17°27’	12°53’	11°19’	9°50’	6°32’	5°43’	4°57’	3°55’	3°14’
	η_d	0.91	0.90	0.88	0.86	0.84	0.83	0.78	0.76	0.73	0.68	0.64
	η_s	0.73	0.71	0.66	0.60	0.57	0.54	0.45	0.42	0.39	0.33	0.29

3.8 TW SERIES EXPLODED VIEW

TW SERIES EXPLODED VIEW





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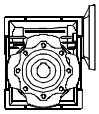
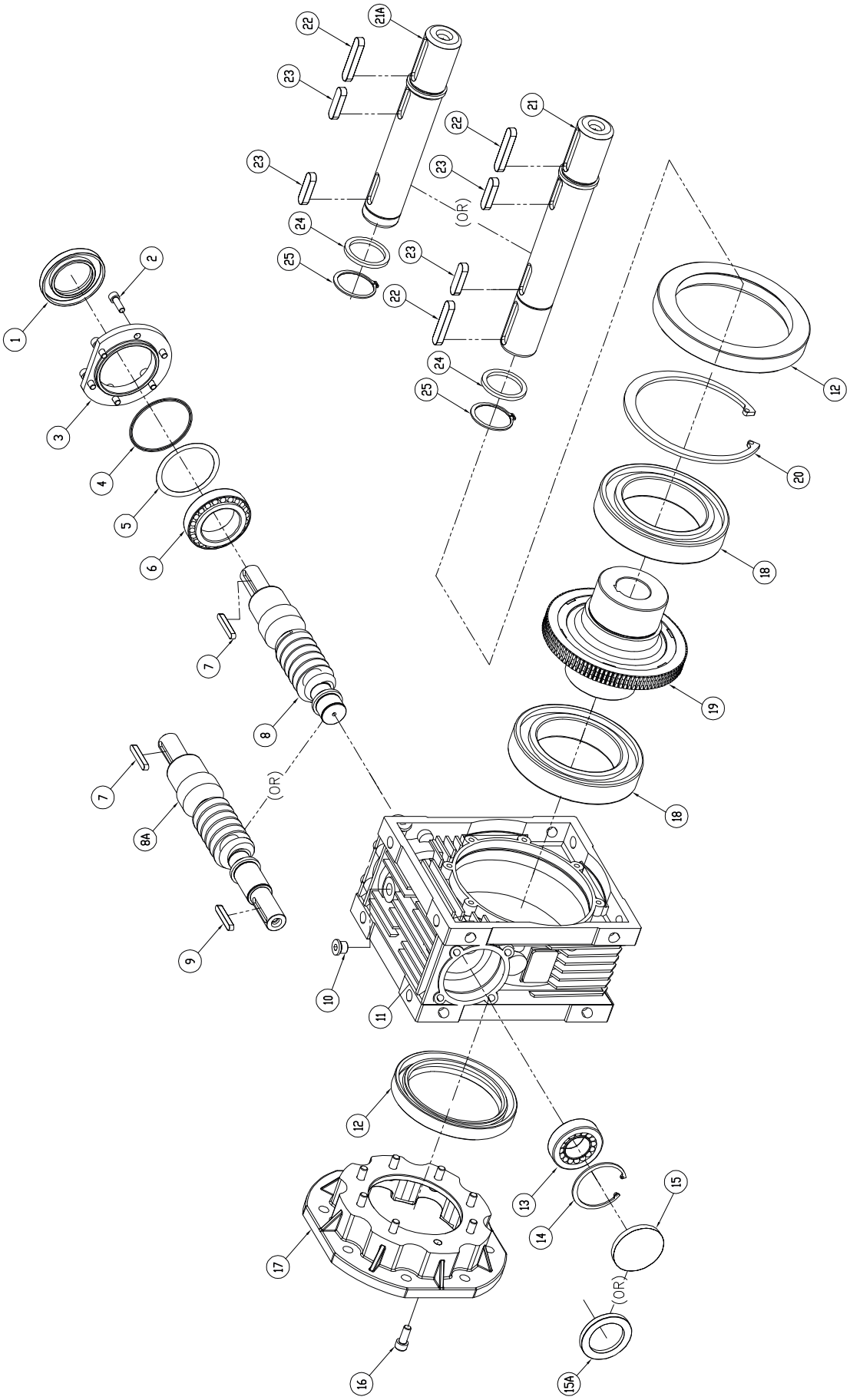


B14

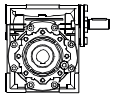
PARTS LIST FOR TW30 (IEC)

PART NO.	PART DESCRIPTION	QTY	TW30
1	INPUT OIL SEAL	1	20x30x7
2	HEX SCREW FOR INPUT FLANGE	4	M5x12
3 & 4	NUT & SPRING WASHER	4	M8
5	HEX SCREW	4	M8x25
5A	HEX SCREW	4	M5x14
6	INPUT - 63 B5 FLANGE	1	30 IEC 63 B5
6A	INPUT - 63 B14 FLANGE	1	30 IEC 63 B14
7	O-RING	1	37x34x2
8	ADJUST SPACER	1	37x30x0.2
9	INPUT BEARING	1	6005
10	WORM SHAFT	1	30 WORM SHAFT
10A	WORM SHAFT (NON DRIVEN SIDE EXTENDED SHAFT)	1	30 WORM SHAFT (NON DRIVEN SIDE)
11	KEY	1	5x5x30
12	OIL PLUG	1	M10x1.5
13	ALUMINUM CASING	1	30 CASING
14	OUTPUT OIL SEAL	2	25x47x7
15	NON DRIVEN SIDE BEARING	1	6002
16	CIRCLIP	1	32x1.5
17	DUMMY COVER	1	32x6
17A	NON DRIVEN SIDE OIL SEAL	1	15x32x7
18	HEX SCREW	4	M5x10
19	OUTPUT FLANGE	1	30 FA
20	OUTPUT BEARING	2	6904
21	WORM WHEEL	1	30 WORM WHEEL
22	CIRCLIP	1	47x1.5
23	DOUBLE OUTPUT SHAFT	1	30 DOS
23A	SINGLE OUTPUT SHAFT	1	30 SSOS
24	KEY	1	M5x25
25	KEY	1	M5x25
26	SPACER	1	23x14.x2
27	SHAFT CIRCLIP (A) TYPE	1	14x1

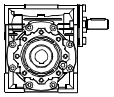
TW SERIES EXPLODED VIEW



TW30 ISS



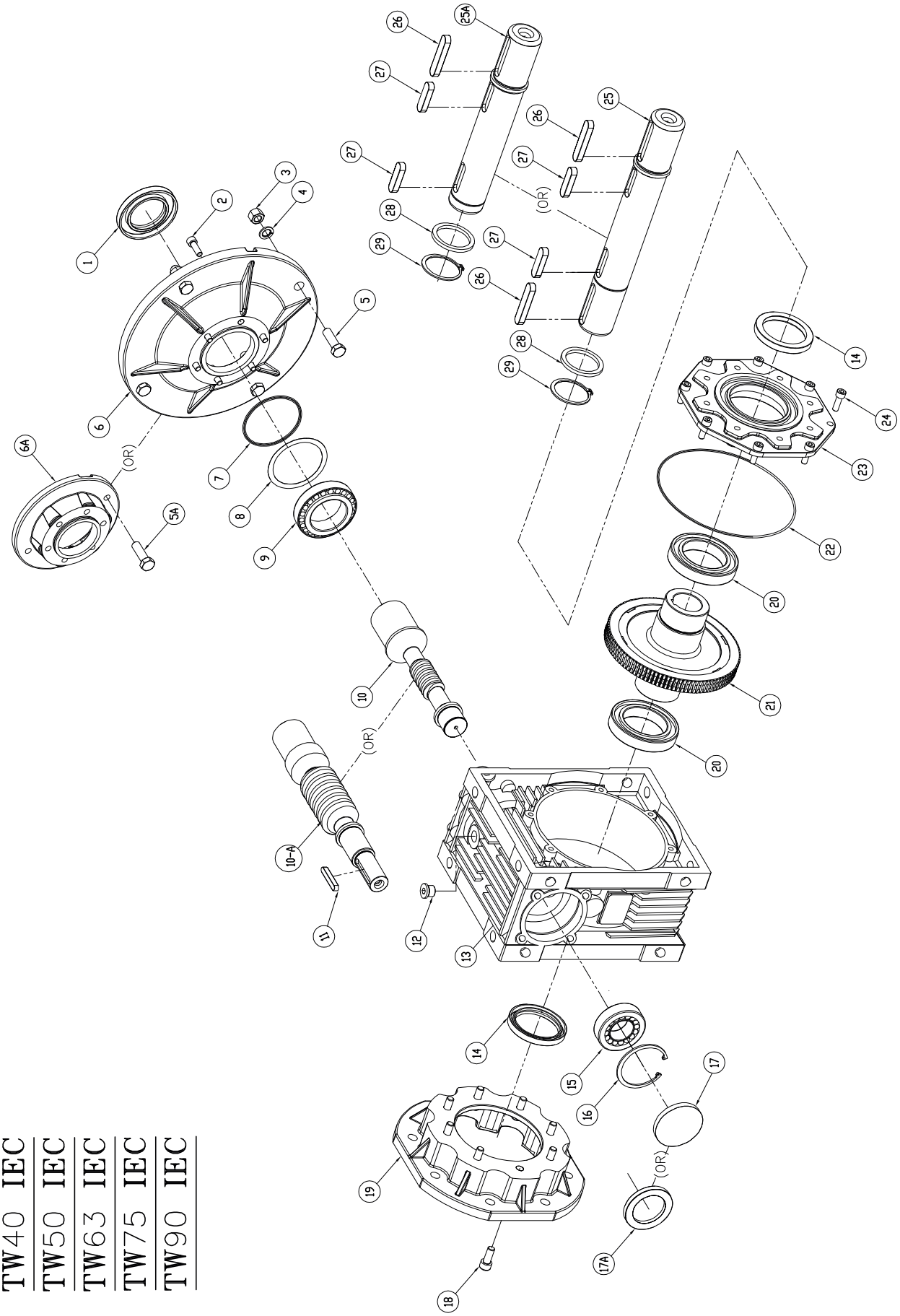
TG PL Transtech Gears Private Limited



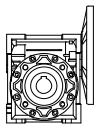
PARTS LIST FOR TW30 (ISS)

PART NO.	PART DESCRIPTION	QTY	TW30
1	INPUT OIL SEAL	1	20x30x7
2	HEX SCREW FOR INPUT FLANGE	4	5x12
3	ISS INPUT FLANGE	1	30 ISS FLANGE
4	O-RING	1	37x34x2
5	ADJUST SPACER	1	37x30x0.2
6	INPUT BEARING	1	6005
7	KEY	1	4x4x18
8	WORM SHAFT	1	30 WORM SHAFT
8A	WORM SHAFT (NON DRIVEN SIDE EXTENDED SHAFT)	1	30 WORM SHAFT (NON DRIVEN SIDE)
9	KEY	1	5x5x30
10	OIL PLUG	1	M10x1.5
11	ALUMINIUM CASING	1	30 CASING
12	OUTPUT OIL SEAL	2	25x47x7
13	NON DRIVEN SIDE BEARING	1	6002
14	CIRCLIP	1	32x1.5
15	DUMMY COVER	1	32x6
15A	NON DRIVEN SIDE OIL SEAL	1	15x32x7
16	HEX SCREW	4	M5x10
17	OUTPUT FLANGE	1	30 FA
18	OUTPUT BEARING	2	6904
19	WORM WHEEL	1	30 WORM WHEEL
20	CIRCLIP	1	47x1.5
21	DOUBLE OUTPUT SHAFT	1	30 DOS
21A	SINGLE OUTPUT SHAFT	1	30 SSOS
22	KEY	1	M5x25
23	KEY	1	M5x25
24	SPACER	1	23x14.2x2
25	SHAFT CIRCLIP (A) TYPE	1	14x1

TW SERIES EXPLODED VIEW



TW40 IEC
TW50 IEC
TW63 IEC
TW75 IEC
TW90 IEC



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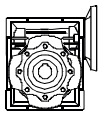
TGPL Transtech Gears Private Limited

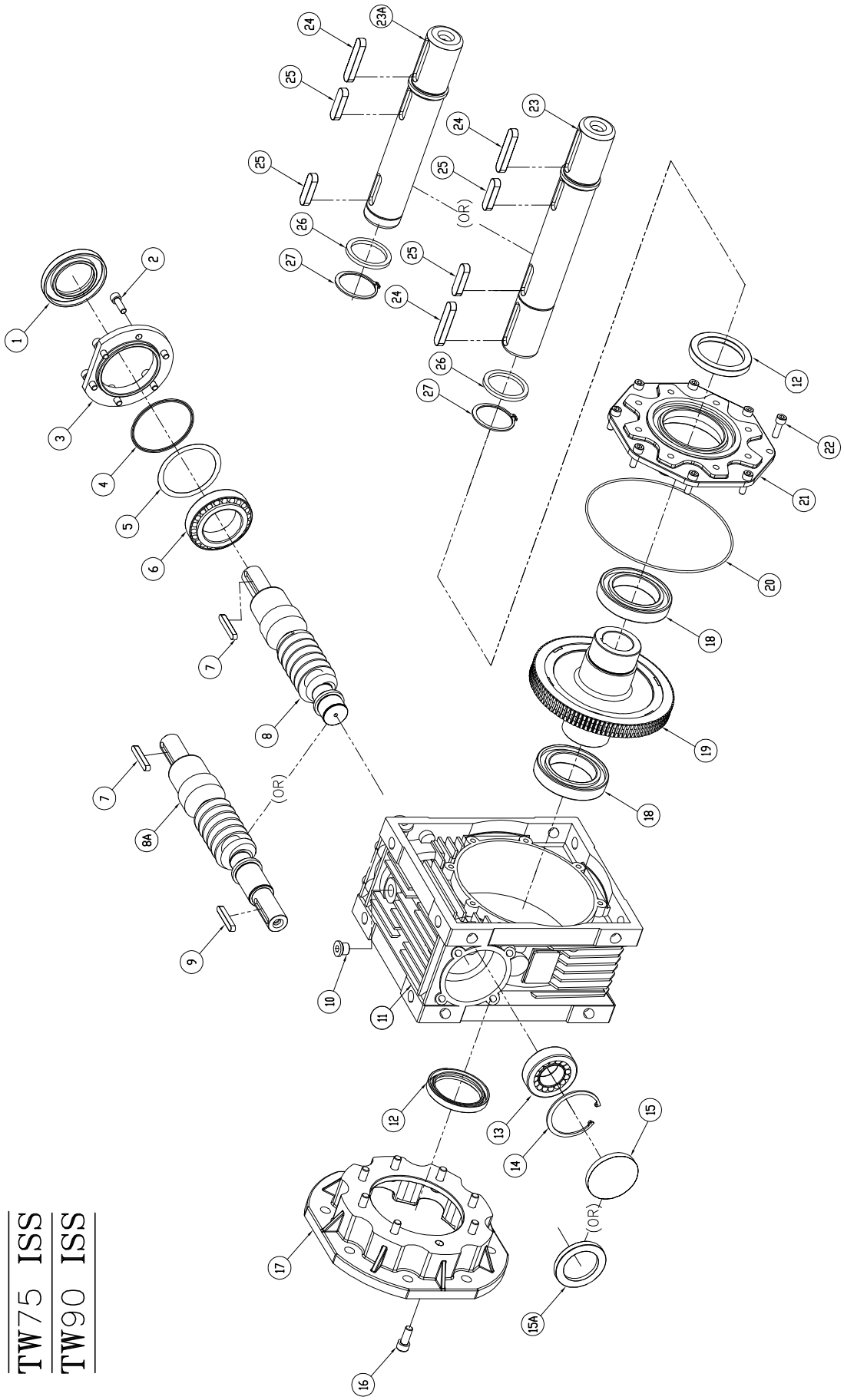


B14

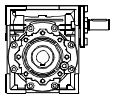
PARTS LIST FOR TW40, TW50, TW63, TW75 & TW90 (IEC)

PART NO.	PART DESCRIPTION	QTY	TW40	TW50	TW63	TW75	TW90
1	INPUT OIL SEAL	1	25x35x7	30x47x7	35x52x7	40x60x8	40x60x8
2	HEX SCREW FOR INPUT FLANGE	6	M6x16	M6x16	M8x16	M8x20	M8x20
3 & 4	NUT & SPRING WASHER	4	M8 (63&71)	M8 (63&71), M10 (80)	M8 (71), M10 (80&90)	M8 (71), M10 (80&90) & M12 (100&112)	M8 (71), M10 (80&90) & M12 (100&112)
5	HEX SCREW	4	M8x25 (63&71)	M8x25 (63&71), M10x30 (80)	M8x25 (71), M10x30 (80&90)	M8x25 (71), M10x30 (80&90) & M12x35 (100&112)	M8x25 (71), M10x30 (80&90) & M12x35 (100&112)
5A	HEX SCREW	4	M5x14 (63) M6x16 (71)	M5x23 (63) M6x20 (71 & 80)	M6x25(71),M6x22 (80)&M8x25(90)	M6x22(80), M8x25(90,100&112)	M8x30(100)
6	INPUT - B5 FLANGE	1					
	63 B5		40 IEC 63 B5	50 IEC 63 B5	-	-	-
	71 B5		40 IEC 71B5	50 IEC 71 B5	63 IEC 71B5	75 IEC 71 B5	90 IEC 71B5
	80 & 90 B5		-	50 IEC 80 B5	63 IEC 80&90 B5	75 IEC 80&90 B5	90 IEC 80&90 B5
	100 & 112 B5		-	-	-	75 IEC 100&112 B5	90 IEC100&112B5
6A	INPUT - B14 FLANGE	1					
	63 B14		40 IEC 63 B14	50 IEC 63 B14	-	-	-
	71 B14		40 IEC 71 B14	50 IEC 71B14	63 IEC 71 B14	-	-
	80 B14		-	50 IEC 80 B14	63 IEC 80 B14	75 IEC 80 B14	90 IEC 80 B14
	90 B14		-	-	63 IEC 90 B14	75 IEC 90 B14	90 IEC 90 B14
	100 & 112 B14		-	-	-	75 IEC 100&112 B14	90 IEC 100&112 B14
7	O-RING	1	44x47x2	55x52x2	62x59x2	68x65x2	68x65x2
8	ADJUST SPACER	1	46x36.5x0.2	54x46.5x0.2	63x46.5x0.2	68x62.3x0.2	68x62.5x0.2
9	INPUT BEARING	1	6005	6006	6007	32008 or 6008	32008 or 6008
10	WORM SHAFT	1	40 WORM SHAFT	50 WORM SHAFT	63 WORM SHAFT	75 WORM SHAFT	90 WORM SHAFT
10A	WORM SHAFT (NON DRIVEN SIDE EXTENDED SHAFT)	1	40 WORM SHAFT (NON DRIVEN SIDE)	50 WORM SHAFT (NON DRIVEN SIDE)	63 WORM SHAFT (NON DRIVEN SIDE)	75 WORM SHAFT (NON DRIVEN SIDE)	90 WORM SHAFT (NON DRIVEN SIDE)
11	KEY	1	5x5x25	5x5x25	6x6x30	8x7x40	8x7x50
12	OIL PLUG	2	M10x1	M10x1	M16x1.5	M16x1.5	M16x1.5
13	ALUMINIUM CASING	1	40 CASING	50 CASING	63 CASING	75 CASING	90 CASING
14	OUTPUT OIL SEAL	2	30x40x7	40x62x8	45x65x8	50x72x8	60x85x10
15	NON DRIVEN SIDE BEARING	1	6203	6204	6205	30206 or 6206	30206 or 6206
16	CIRCLIP	1	40x1.5	47x1.5	52x1.5	62x2	62x2
17	DUMMY COVER	1	40x7	47x7	52x7	62x7	62x7
17A	NON DRIVEN SIDE OIL SEAL	1	17x40x7	20x47x7	25x52x7	30x62x7	30x62x7
18	HEX SCREW	8	M6x16	M8x16	M8x16	M8x20	M10x25
19	OUTPUT FLANGE	1					
	FA (or) FB		40 FA (or) FB	50 FA (or) FB	63 FA (or) FB	75 FA (or) FB	90 FA
	FD		-	-	-	-	90 FD
20	OUTPUT BEARING	2	6006	6008	6009	6010	6012
21	WORM WHEEL	1	40 WORM WHEEL	50 WORM WHEEL	63 WORM WHEEL	75 WORM WHEEL	90 WORM WHEEL
22	O-RING	1	68x65x2	85x82x2	110x107x2	135x132x2	165x162x2
23	OUTPUT COVER	1	40 O/P COVER	50 O/P COVER	63 O/P COVER	75 O/P COVER	90 O/P COVER
24	HEX SCREW	8	M6x16	M6x16	M8x16	M8x20	M8x20
25	DOUBLE OUTPUT SHAFT	1	40 DOS	50 DOS	63 DOS	75 DOS	90 DOS
25A	SINGLE OUTPUT SHAFT	1	40 SSOS	50 SSOS	63 SSOS	75 SSOS	90 SSOS
26	KEY	1	6x6x30	8x7x40	8x7x40	8x7x50	10x8x70
27	KEY	1	6x6x30	8x7x34	8x7x40	8x7x40	10x8x45
28	SPACER	1	28x18.2x2	43x25.2x2	43x25.2x2	50x28.2x2	50x35.2x2
29	SHAFT CIRCLIP (A) TYPE	1	18x1.2	25x1.2	25x1.2	28x1.5	35x1.5

TW SERIES EXPLODED VIEW



TW40 ISS
TW50 ISS
TW63 ISS
TW75 ISS
TW90 ISS



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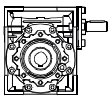
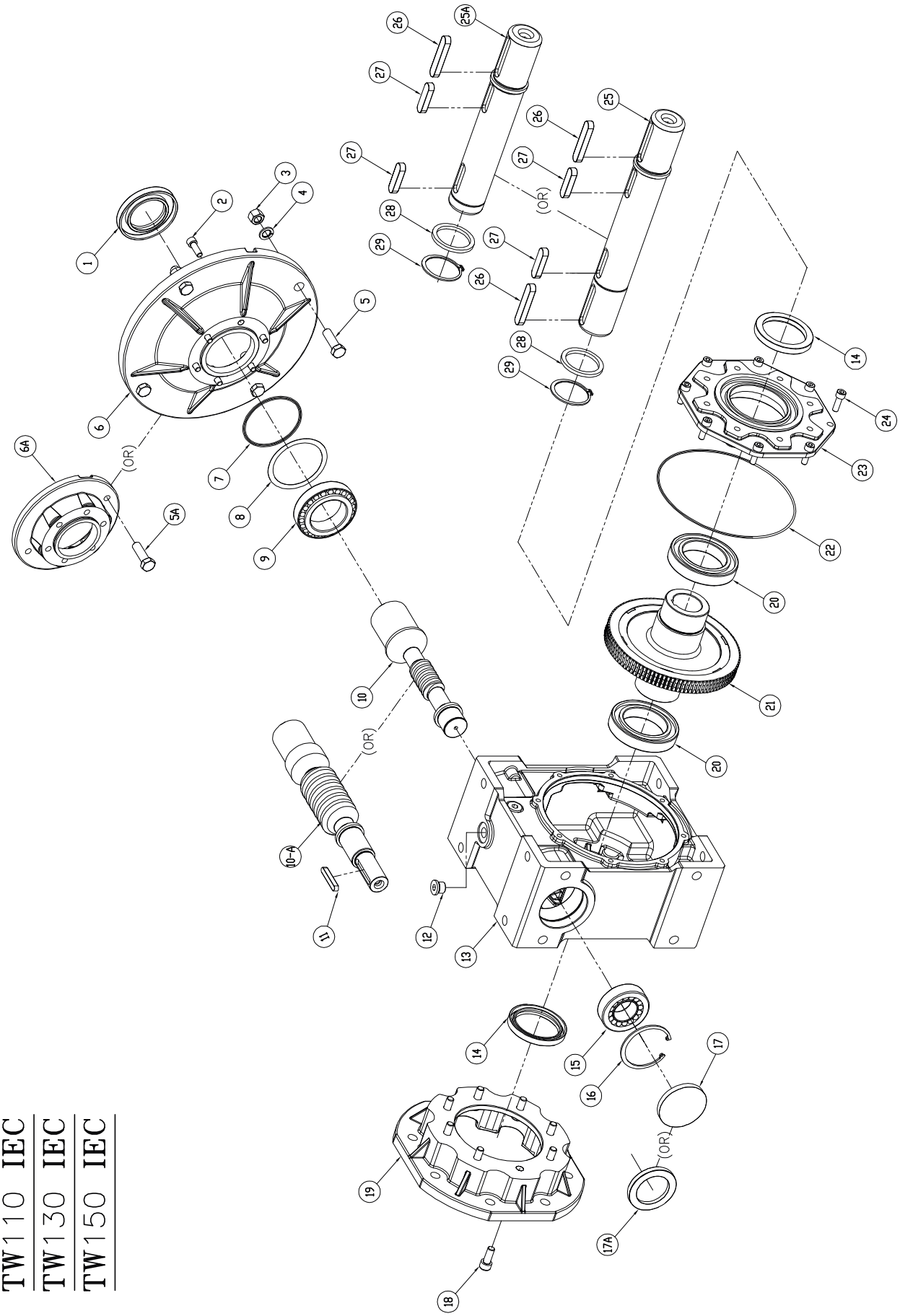


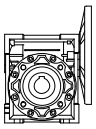
PARTS LIST FOR TW40, TW50, TW63, TW75 & TW90 (ISS)

PART NO.	PART DESCRIPTION	QTY	TW40	TW50	TW63	TW75	TW90
1	INPUT OIL SEAL	1	25x35x7	30x47x7	35x52x7	40x60x8	40x60x8
2	HEX SCREW FOR INPUT FLANGE	1	M6x16	M6x16	M8x16	M8x20	M8x20
3	INPUT ISS FLANGE	1	40 I/P ISSFL	50 I/P ISS FL	63 I/P ISS FL	75 I/P ISS FL	90 I/P ISS FL
4	O-RING	1	44x47x2	55x52x2	62x59x2	68x65x2	68x65x2
5	ADJUST SPACER	1	46x36.5x0.2	54x46.5x0.2	63x46.5x0.2	68x62.3x0.2	68x62.5x0.2
6	INPUT BEARING	8A	6005	6006	6007	32008 or 6008	32008 or 6008
7	KEY	1	4x4x16	5x5x25	6x6x30	8x7x40	8x7x40
8	WORM SHAFT	1	40 WORM SHAFT	50 WORM SHAFT	63 WORM SHAFT	75 WORM SHAFT	90 WORM SHAFT
8A	WORM SHAFT (NON DRIVEN SIDE EXTENDED SHAFT)	1	40 WORM SHAFT (NON DRIVEN SIDE)	50 WORM SHAFT (NON DRIVEN SIDE)	63 WORM SHAFT (NON DRIVEN SIDE)	75 WORM SHAFT (NON DRIVEN SIDE)	90 WORM SHAFT (NON DRIVEN SIDE)
9	KEY	1	5x5x25	5x5x25	6x6x30	8x7x40	8x7x50
10	OIL PLUG.	2	M10x1	M10x1	M16x1.5	M16x1.5	M16x1.5
11	ALUMINIUM CASING	1	40CASING	50 CASING	63 CASING	75 CASING	90 CASING
12	OUTPUT OIL SEAL	2	30x40x7	40x62x8	45x65x8	50x72x8	60x85x10
13	NON DRIVEN SIDE BEARING	1	6203	6204	6205	30206 or 6206	30206 or 6206
14	CIRCLIP	1	40x1.5	47x1.5	52x1.5	62x2	62x2
15	DUMMY COVER	1	40x7	47x7	52x7	62x7	62x7
15A	NON DRIVEN SIDE OIL SEAL	1	17x40x7	20x47x7	25x52x7	30x62x7	30x62x7
16	HEX SCREW	8	M6x16	M8x16	M8x16	M8x20	M10x25
17	OUTPUT FLANGE	1					
	FA (or) FB		40 FA (or) FB	50 FA (or) FB	63 FA (or) FB	75 FA (or) FB	90 FA
	FD		-	-	-	-	90 FD
18	OUTPUT BEARING	2	6006	6008	6009	6010	6012
19	WORM WHEEL	1	40 WORM WHEEL	50 WORM WHEEL	63 WORM WHEEL	75 WORM WHEEL	90 WORM WHEEL
20	O-RING	1	68x65x2	85x82x2	110x107x2	135x132x2	165x162x2
21	OUTPUT COVER	1	40 O/P COVER	50 O/P COVER	63 O/P COVER	75 O/P COVER	90 O/P COVER
22	HEX SCREW	8	M6x16	M6x16	M8x16	M8x20	M8x20
23	DOUBLE OUTPUT SHAFT	1	40 DOS	50 DOS	63 DOS	75 DOS	90 DOS
23A	SINGLE OUTPUT SHAFT	1	40 SSOS	50 SSOS	63 SSOS	75 SSOS	90 SSOS
24	KEY	1	6x6x30	8x7x40	8x7x40	8x7x50	10x8x70
25	KEY	1	6x6x30	8x7x34	8x7x40	8x7x40	10x8x45
26	SPACER	1	28x18.2x2	43x25.2x2	43x25.2x2	50x28.2x2	50x35.2x2
27	SHAFT CIRCLIP (A) TYPE	1	18x1.2	25x1.2	25x1.2	28x1.5	35x1.5

TW SERIES EXPLODED VIEW



TW110 IEC
TW130 IEC
TW150 IEC



B5

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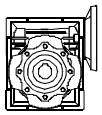
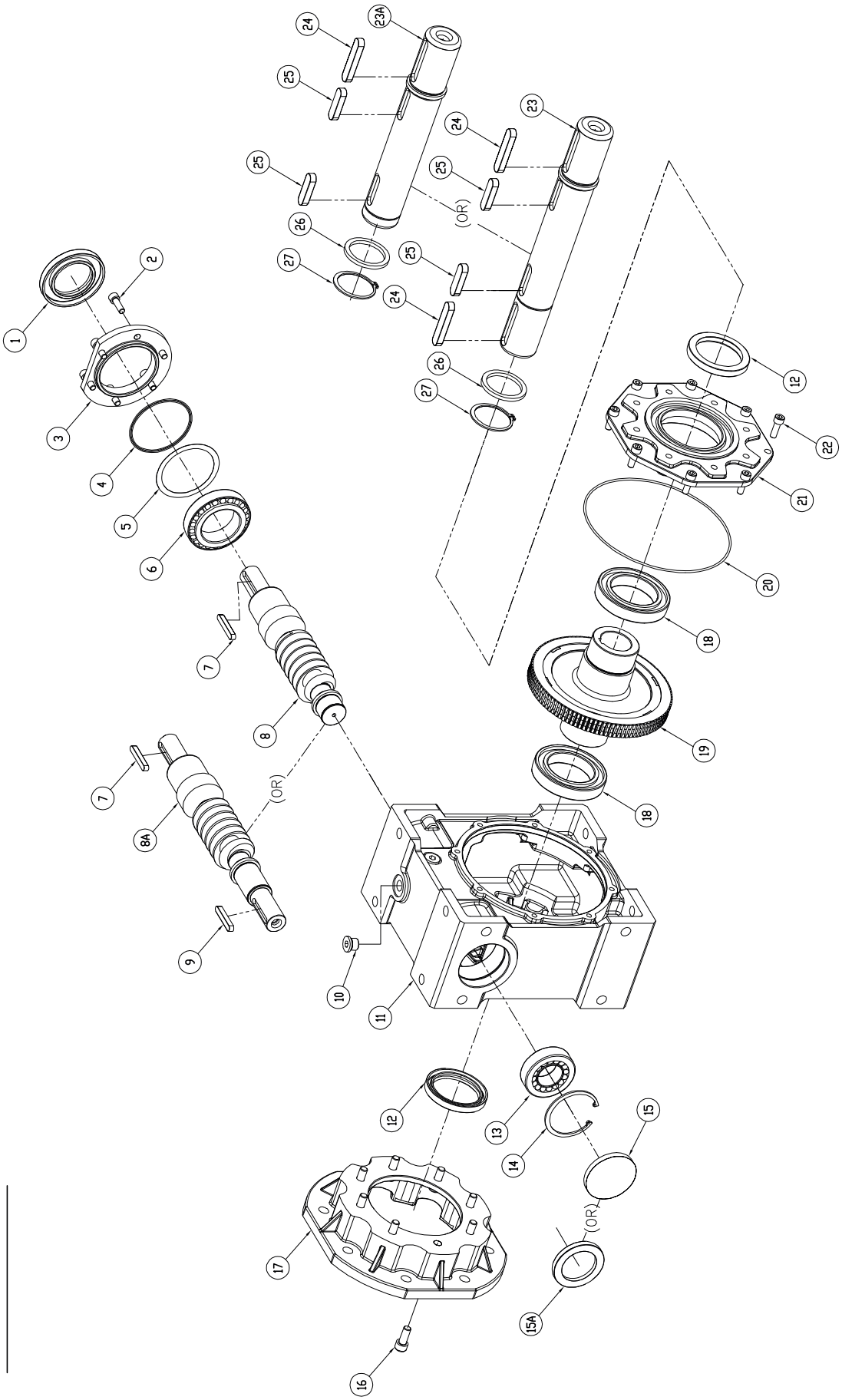


B14

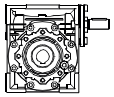
PARTS LIST FOR TW110, TW130 & TW150 GEAR BOXES (IEC)

PART NO.	PART DESCRIPTION	QTY	Tw110	TW130	Tw150
1	INPUT OIL SEAL	1	50x68x8	50x68x8	90x120x12
2	HEX SCREW FOR INPUT FLANGE	6	M8x20	M8x20	M12x30
3 & 4	NUT & SPRING WASHER	4	M10 (90), M12 (100&112)	M10 (90), M12 (100&112)	M12 (100&112, 132)
5	HEX SCREW	4	M12x45	M12x45	M12x45
5A	HEX SCREW	4	M8x30(100)	M8x30(100)	-
6	INPUT - B5 FLANGE	1			
	80 & 90 B5		110 IEC 90 B5	110 IEC 90 B5	
	100 & 112 B5		110 IEC 100 & 112 B5	130 IEC 100 & 112 B5	150 IEC 100 & 112 B5
	132 B5				150 IEC 132 B5
6A	INPUT - B14 FLANGE	1			
	90 B14		110 IEC 90 B14		
	100 & 112 B14		110 IEC 100 &112 B14	110 IEC 100 &112 B14	-
7	O-RING	1	80x77x2.5	80x77x2.5	-
8	ADJUST SPACER	1	80x71.5x0.25	80x71.5x0.25	110x100x0.2
9	INPUT BEARING	1	32010	32010	30212
10	WORM SHAFT	1	110 WORM SHAFT	130 WORM SHAFT	150 WORM SHAFT
10A	WORM SHAFT (NON DRIVEN SIDE EXTENDED SHAFT)	1	110 WORM SHAFT (NON DRIVENSIDE)	130 WORM SHAFT (NON DRIVEN SIDE)	150 WORM SHAFT (NON DRIVEN SIDE)
11	KEY	1	8x7x50	8x7x50	10x8x70
12	OIL PLUG	2	M16x1.5	M16x1.5	M16x1.5
13	CASING	1	110 CASING	130 CASING	150 CASING
14	OUTPUT OIL SEAL	2	65x85x10	70x90x10	90x120x12
15	NON DRIVEN SIDE BEARING	1	32207	32207	30209
16	CIRCLIP	1	72x2.5	72x2.5	85x3
17	DUMMY COVER	1	72x10	72x10	85x10
17A	NON DRIVEN SIDE OIL SEAL	1	35x72x7	35x72x7	45x85x10
18	HEX SCREW	8	M10x25	M12x30	M12x30
19	OUTPUT FLANGE	1	110 FA (or) FB	130 FA	150 FA
20	OUTPUT BEARING	2	6013	6014	6018
21	WORM WHEEL	1	110 WORM WHEEL	130 WORM WHEEL	150 WORM WHEEL
22	O-RING	1	200x197x3	240x236x2.5	-
23	OUTPUT COVER	1	110 O/P COVER	130 O/P COVER	150 O/P COVER
24	HEX SCREW	8	M8x25	M8x25	M12x35
25	DOUBLE OUTPUT SHAFT	1	110 DOS	130 DOS	150 DOS
25A	SINGLE OUTPUT SHAFT	1	110 SSOS	130 SSOS	150 SSOS
26	KEY	1	12x8x70	14x9x70	14x9x70
27	KEY	1	12x8x50	14x9x50	14x9x50
28	SPACER	1	55x42.2x2	60x45.2x2	65x50.2x2.5
29	SHAFT CIRCLIP (A) TYPE	1	42x1.75	45x1.75	50x2

TW SERIES EXPLODED VIEW



TW110 ISS
TW130 ISS
TW150 ISS



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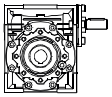

PARTS LIST FOR TW110, TW130 & TW150 GEAR BOXES (ISS)

PART NO.	PART DESCRIPTION	QTY	Tw110	TW130	Tw150
1	INPUT OIL SEAL	1	50x68x8	50x68x8	90x120x12
2	HEX SCREW FOR INPUT FLANGE	6	M8x20	M8x20	M12x30
3	ISS INPUT FLANGE	1	110 ISS I/P FL	130 ISS I/P FL	150 ISS I/P FL
4	O-RING	1	80x77x2.5	80x77x2.5	110x100x0.2
5	ADJUST SPACER	1	80x71.5x0.25	80x71.5x0.25	-
6	INPUT BEARING	1	32010	32010	30212
7	KEY	1	8x7x50	8x7x50	10x8x70
8	WORM SHAFT	1	110 WORM SHAFT	130 WORM SHAFT	150 WORM SHAFT
8A	WORM SHAFT (NON DRIVEN SIDE EXTENDED SHAFT)	1	110 WORM SHAFT (NON DRIVEN SIDE)	130 WORM SHAFT (NON DRIVEN SIDE)	150 WORM SHAFT (NON DRIVEN SIDE)
9	KEY	1	8x7x50	8x7x50	10x8x70
10	OIL PLUG	2	M16x1.5	M16x1.5	M16x1.5
11	CASING	1	110 CASING	130 CASING	150 CASING
12	OUTPUT OIL SEAL	2	65x85x10	70x90x10	90x120x12
13	NON DRIVEN SIDE BEARING	1	32207	32207	30209
14	CIRCLIP	1	72x2.5	72x2.5	85x3
15	DUMMY COVER	1	72x10	72x10	85x10
15A	NON DRIVEN SIDE OIL SEAL	1	35x72x7	35x72x7	45x85x10
16	HEX SCREW	8	M10x25	M12x30	M12x30
17	OUTPUT FLANGE	1	110 FA (or) FB	130 FA	150 FA
18	OUTPUT BEARING	2	6013	6014	6018
19	WORM WHEEL	1	110 WORM WHEEL	130 WORM WHEEL	150 WORM WHEEL
20	O-RING	1	200x197x3	240x236x2.5	-
21	OUTPUT COVER	1	110 O/P COVER	130 O/P COVER	150 O/P COVER
22	HEX SCREW	8	M8x25	M8x25	M12x35
23	DOUBLE OUTPUT SHAFT	1	110 DOS	130 DOS	150 DOS
23A	SINGLE OUTPUT SHAFT	1	110 SSOS	130 SSOS	150 SSOS
24	KEY	1	12x8x70	14x9x70	14x9x70
25	KEY	1	12x8x50	14x9x50	14x9x50
26	SPACER	1	55x42.2x2	60x45.2x2	65x50.2x2.5
27	SHAFT CIRCLIP (A) TYPE	1	42x1.75	45x1.75	50x2