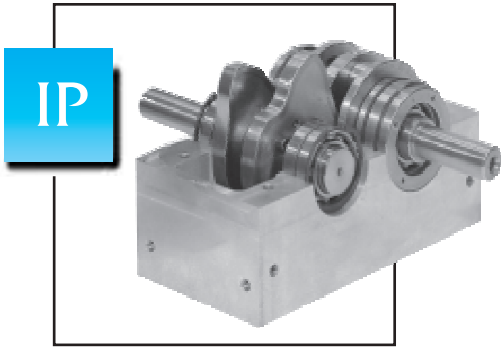


PARALLEL INDEX DRIVES IP

bettinelli f.lli s.p.a. div. **CDS**

Via Leonardo da Vinci, 56 - 26010 Bagnolo (CR) - ITALIA - Tel. + 39 0373 237311 Fax + 39 0373 648303 E-mail: cds@bettinelli.it

www.bettinelli.it



Parallel index drives	2
-----------------------	---

IP series technical data	3
---------------------------------	---

Loads on input shaft	4
----------------------	---

Technical data	5
----------------	---

Dimensions - Light duty series	9
--------------------------------	---

Dimensions - Heavy duty series	10
--------------------------------	----

Customizing and accessories	11
------------------------------------	----

Unidirectional function	12
-------------------------	----

Oscillating function	13
----------------------	----

Accessories - Customizing	14
---------------------------	----

Torque limiter - GLR	15
----------------------	----

Special executions	16
--------------------	----

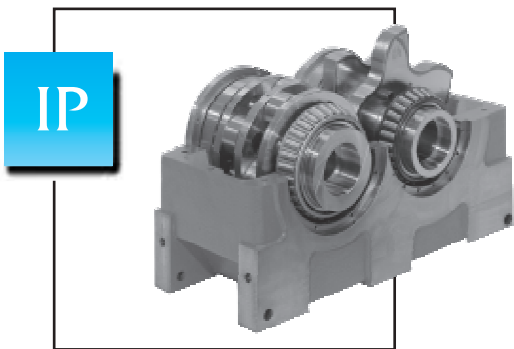
Cycle times with motoreducer - 50 Hz - 60Hz	17
---	----

Reducer matching table	18
------------------------	----

Motoreducer fitting position	18
------------------------------	----

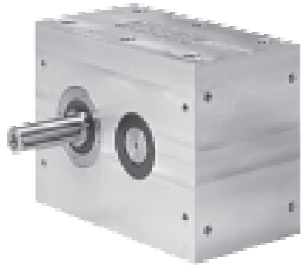
Working position - lubrication	19
--------------------------------	----

Conversion chart	21
------------------	----



PARALLEL INDEX DRIVES

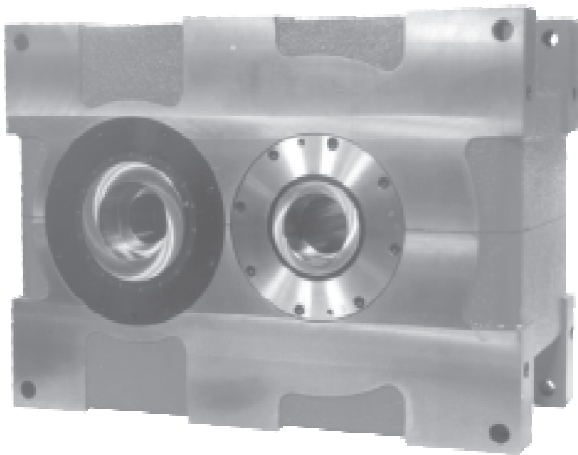
IP - Light duty series



Sizes: **40 65 80 105 130**
Stops: **1 - 2 - 3 - 4 - 6 - 8**
Special stops: **0.6 - 0.75 - 1 - 1.33 - 1.5 - 2 - 5 - 10**

- Airtight special aluminium alloy housing
- Universal mounting position
- CNC induction hardened cam profiles
- Yoke-mounted cam followers
- Eccentric bushing for pre-load adjustment between cam and followers
- Oscillating and customized cam motion available
- Long-life lubrication; guaranteed sealing system in any working position
- Worm gear reducer and motor mount directly

Size = Distance between input and output drive axis

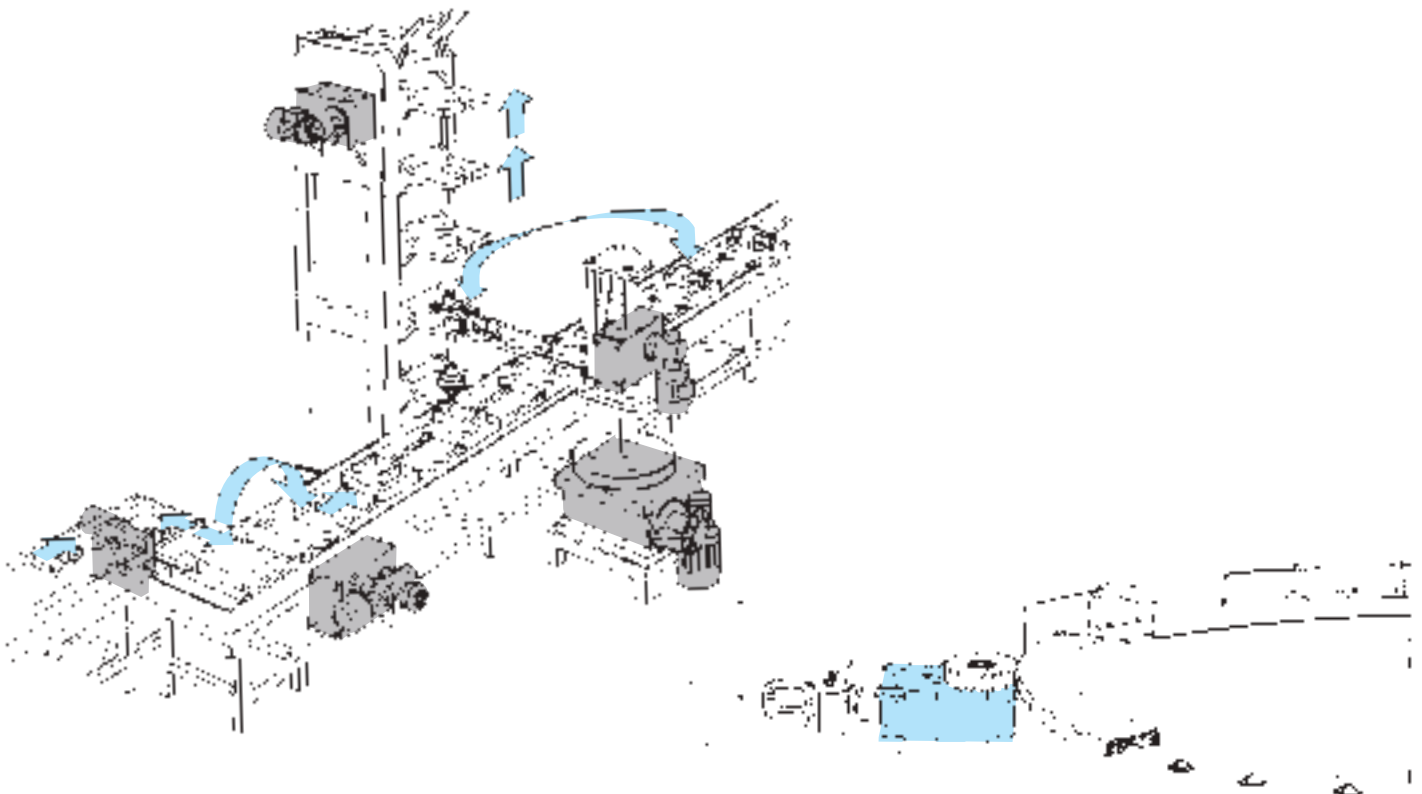


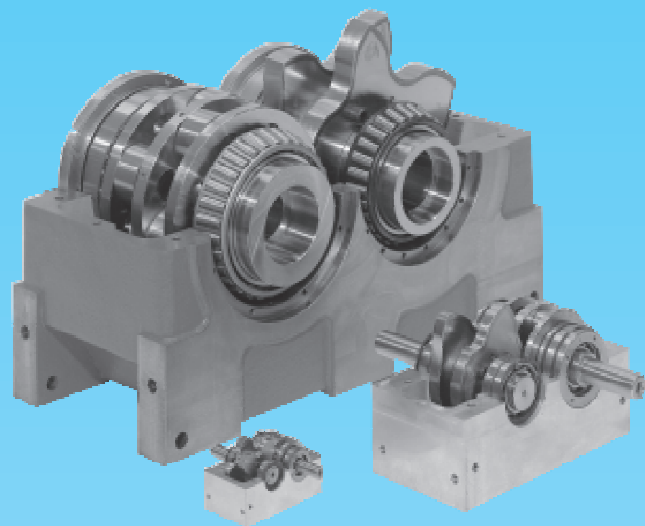
IP - Heavy duty series

Sizes: **165 200 250**
Stops : **1 - 2 - 3 - 4 - 6 - 8**
Special stops: **0.6 - 0.75 - 1 - 1.33 - 1.5 - 2 - 5 - 10**

- Airtight cast-iron alloy housing
- Flanged through-hole input and output for shafts connection
- Input and output supported by oversized tapered rollers bearings
- CNC induction hardened cam profiles
- Oscillating and customized cam motion available
- Long-Life lubrication; guaranteed sealing system in any working position
- Worm gear reducer and motor mount directly

Size = Distance between input and output drive axis.



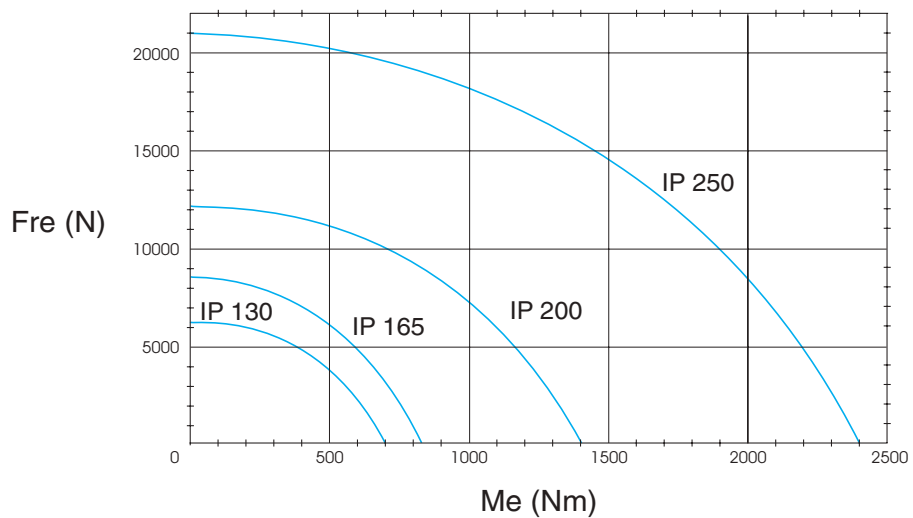
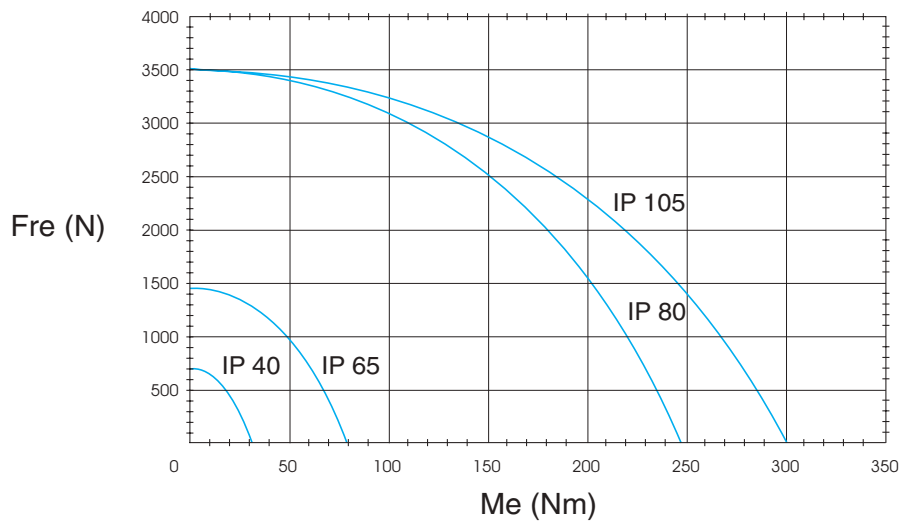
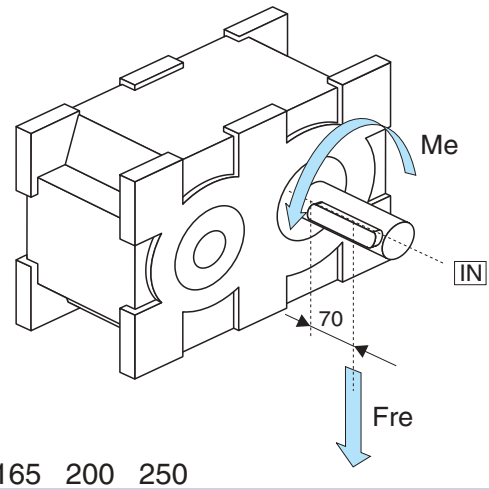
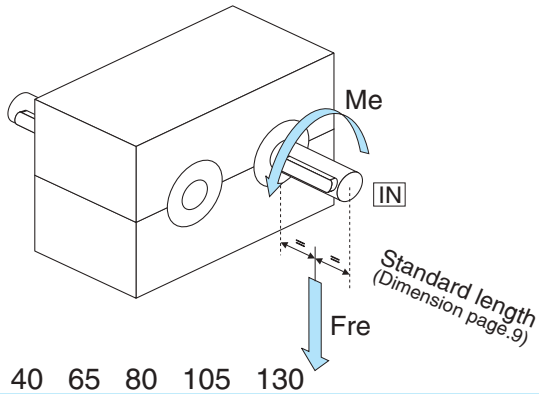


IP SERIES TECHNICAL DATA

LOADS ON INPUT SHAFT

Loads on the shaft

F_{re} = Input Radial Force (N)
 M_e = Input Torque (Nm)



The diagrams show the curves relating to **maximum (Fre/Me) values** for the input shaft of the various index drives. The values shown are referred to a **rotation speed of 100 rpm of the cam shaft**

IP SERIES TECHNICAL DATA

The schedules show some minimum and intermediate reference values.
 Also possible: - Number of stops not indicated in the schedule
 - Index angles not indicated in the schedule
 - Different and Customized Motion

Type	Number of stops S	Index angle (α°)	Maximum output torque - Mtu - (Nm)				Motion coefficients			Ptc. rad. Rp (mm)	Roller o.d. Dr (mm)	Inertia Jc (kgm²)	Mch.frt.(*) Mam (Nm)	
			Speed				Acc. Ca	Speed Cv	Disp. Ck					
			50 rpm	100 rpm	200 rpm	300 rpm								
IP 40	1	300	20	20	19	16	8,01	1,28	5,73	15	12	0,0001	4,1	
IP 65			51	51	44	38	8,01	1,28	5,73	22	16	0,0009	9,2	
IP 80			141	140	128	110	8,01	1,28	5,73	28	25	0,0028	17,2	
IP 105			319	317	284	239	8,01	1,28	5,73	36	35	0,0113	31,9	
IP 130			569	565	498	415	8,01	1,28	5,73	46	40	0,0232	44,5	
IP 165			1184	1175	1037	849	8,01	1,28	5,73	62,5	50	0,0611	73,6	
IP 200			1896	1878	1587	1275	8,01	1,28	5,73	75,5	60	0,1157	112,6	
IP 250			4536	4472	3800	2891	8,01	1,28	5,73	100	80	0,4257	206,7	
IP 40	2	150	16	16	16	16	8,01	1,28	5,73	15	12	0,0001	4,1	
IP 65			42	42	41	39	8,01	1,28	5,73	22,5	16	0,0009	9,2	
IP 80			112	111	108	102	8,01	1,28	5,73	28	25	0,0029	17,2	
IP 105			247	243	229	206	8,01	1,28	5,73	36	35	0,0117	31,9	
IP 130			452	445	415	367	8,01	1,28	5,73	46	40	0,0243	44,5	
IP 165			942	923	845	714	8,01	1,28	5,73	62,5	50	0,0648	73,6	
IP 200			1508	1470	1320	1070	8,01	1,28	5,73	75,5	60	0,1243	112,6	
IP 250			3244	3110	2574	1681	8,01	1,28	5,73	93	80	0,4433	206,7	
IP 40		270	270	16	16	16	16	6,62	1,4	5,21	15	12	0,0001	4,1
IP 65				49	49	49	48	6,62	1,4	5,21	25	16	0,0009	9,2
IP 80				124	124	123	121	6,62	1,4	5,21	30	25	0,003	17,2
IP 105				295	294	291	284	6,62	1,4	5,21	40	35	0,0121	31,9
IP 130				512	511	503	490	6,62	1,4	5,21	50	40	0,025	44,5
IP 165				1005	1000	979	946	6,62	1,4	5,21	65	50	0,0659	73,6
IP 200				1577	1568	1529	1464	6,62	1,4	5,21	77,5	60	0,126	112,6
IP 250				3654	3618	3476	3240	6,62	1,4	5,21	100	80	0,4609	206,7
IP 40	3	120	20	20	20	20	6,62	1,4	5,21	15	12	0,0001	4,1	
IP 65			53	53	52	50	6,62	1,4	5,21	22,5	16	0,0009	9,2	
IP 80			141	140	137	132	6,62	1,4	5,21	28	25	0,0028	17,2	
IP 105			312	309	297	278	6,62	1,4	5,21	36	35	0,0113	31,9	
IP 130			568	562	538	497	6,62	1,4	5,21	46	40	0,0232	44,5	
IP 165			1116	1100	1038	933	6,62	1,4	5,21	60	50	0,0603	73,6	
IP 200			1892	1862	1741	1541	6,62	1,4	5,21	75,5	60	0,1157	112,6	
IP 250			4521	4410	3968	3230	6,62	1,4	5,21	100	80	0,4257	206,7	
IP 40		180	180	20	20	20	20	6,62	1,4	5,21	15	12	0,0001	4,1
IP 65				61	61	61	60	6,62	1,4	5,21	25	16	0,0009	9,2
IP 80				155	154	153	151	6,62	1,4	5,21	30	25	0,0029	17,2
IP 105				368	367	361	352	6,62	1,4	5,21	40	35	0,0116	31,9
IP 130				638	635	624	606	6,62	1,4	5,21	50	40	0,0238	44,5
IP 165				1252	1244	1216	1168	6,62	1,4	5,21	65	50	0,0619	73,6
IP 200				1968	1955	1901	1811	6,62	1,4	5,21	77,5	60	0,117	112,6
IP 250				4541	4492	4296	3968	6,62	1,4	5,21	100	80	0,4257	206,7
IP 40		270	270	20	20	20	20	6,62	1,4	5,21	15	12	0,0001	4,1
IP 65				61	61	61	61	6,62	1,4	5,21	25	16	0,0009	9,2
IP 80				155	155	154	153	6,62	1,4	5,21	30	25	0,0029	17,2
IP 105				368	368	365	361	6,62	1,4	5,21	40	35	0,0116	31,9
IP 130				638	637	632	624	6,62	1,4	5,21	50	40	0,0238	44,5
IP 165				1253	1250	1237	1216	6,62	1,4	5,21	65	50	0,0619	73,6
IP 200				1971	1965	1941	1901	6,62	1,4	5,21	77,5	60	0,117	112,6
IP 250				4550	4529	4441	4296	6,62	1,4	5,21	100	80	0,4257	206,7
IP 40	4	90	11	10	10	10	8,01	1,28	5,73	15	12	0,0001	4,1	
IP 65			34	34	33	31	8,01	1,28	5,73	22,5	16	0,0009	9,2	
IP 80			70	68	63	55	8,01	1,28	5,73	28	25	0,0029	17,2	
IP 105			147	142	123	90	8,01	1,28	5,73	36	35	0,0117	31,9	
IP 130			283	273	232	164	8,01	1,28	5,73	46	40	0,0243	44,5	
IP 165			542	515	408	230	8,01	1,28	5,73	60	50	0,0637	73,6	
IP 200			947	895	686	339	8,01	1,28	5,73	75,5	60	0,1243	112,6	
IP 250			1905	1719	975		8,01	1,28	5,73	93	80	0,4433	206,7	
IP 40		120	120	14	14	14	14	5,53	1,76	5,46	15	12	0,0001	4,1
IP 65				49	49	48	47	5,53	1,76	5,46	25	16	0,0009	9,2
IP 80				106	106	104	100	5,53	1,76	5,46	30	25	0,003	17,2
IP 105				241	239	231	218	5,53	1,76	5,46	40	35	0,0121	31,9
IP 130				446	442	426	399	5,53	1,76	5,46	50	40	0,025	44,5
IP 165				863	852	809	738	5,53	1,76	5,46	65	50	0,0659	73,6
IP 200				1357	1336	1254	1118	5,53	1,76	5,46	77,5	60	0,126	112,6
IP 250				3024	2949	2648	2148	5,53	1,76	5,46	100	80	0,4609	206,7

Values referred to the worst running conditions - Equivalent service factor = 1.75 already applied

(*) Starting torque - Tolerance on the values indicated ± 15%

IP SERIES TECHNICAL DATA

Type	Number of stops S	Index angle (α°)	Maximum output torque - Mtu - (Nm)				Motion coefficients			Ptc. rad. Rp (mm)	Roller o.d. Dr (mm)	Inertia Jc (kgm ²)	Mch.frt.(*) Mam (Nm)	
			50 (rpm)	100 (rpm)	200 (rpm)	300 (rpm)	Acc. Ca	Speed Cv	Disp. Ck					
IP 40	4	180	16	16	16	16	5,53	1,76	5,46	15	12	0,0001	4,1	
IP 65			49	49	49	48	5,53	1,76	5,46	25	16	0,0009	9,2	
IP 80			124	124	123	122	5,53	1,76	5,46	30	25	0,003	17,2	
IP 105			295	294	291	285	5,53	1,76	5,46	40	35	0,0121	31,9	
IP 130			512	511	503	491	5,53	1,76	5,46	50	40	0,025	44,5	
IP 165			1005	1000	981	949	5,53	1,76	5,46	65	50	0,0659	73,6	
IP 200			1578	1569	1532	1471	5,53	1,76	5,46	77,5	60	0,126	112,6	
IP 250			3655	3621	3488	3265	5,53	1,76	5,46	100	80	0,4609	206,7	
IP 40		270	180	16	16	16	16	5,53	1,76	5,46	15	12	0,0001	4,1
IP 65				49	49	49	49	5,53	1,76	5,46	25	16	0,0009	9,2
IP 80				124	124	124	123	5,53	1,76	5,46	30	25	0,003	17,2
IP 105				295	295	294	291	5,53	1,76	5,46	40	35	0,0121	31,9
IP 130				513	512	509	503	5,53	1,76	5,46	50	40	0,025	44,5
IP 165				1006	1004	995	981	5,53	1,76	5,46	65	50	0,0659	73,6
IP 200				1579	1575	1559	1532	5,53	1,76	5,46	77,5	60	0,126	112,6
IP 250				3661	3646	3587	3488	5,53	1,76	5,46	100	80	0,4609	206,7
IP 40	6	80	13	13	13	13	5,53	1,76	5,46	14	12	0,0001	4,1	
IP 65			48	48	47	45	5,53	1,76	5,46	22,5	16	0,0009	9,2	
IP 80			98	97	94	90	5,53	1,76	5,46	28	25	0,0028	17,2	
IP 105			208	205	194	176	5,53	1,76	5,46	36	35	0,0113	31,9	
IP 130			398	393	370	332	5,53	1,76	5,46	46	40	0,0232	44,5	
IP 165			768	753	694	596	5,53	1,76	5,46	60	50	0,0603	73,6	
IP 200			1333	1305	1192	1004	5,53	1,76	5,46	75,5	60	0,1157	112,6	
IP 250			2710	2610	2207	1535	5,53	1,76	5,46	93	80	0,4125	206,7	
IP 40		100	80	18	18	18	18	5,53	1,76	5,46	15	12	0,0001	4,1
IP 65				61	61	61	60	5,53	1,76	5,46	25	16	0,0009	9,2
IP 80				138	137	135	133	5,53	1,76	5,46	30	25	0,0029	17,2
IP 105				312	310	303	291	5,53	1,76	5,46	40	35	0,0116	31,9
IP 130				577	573	558	534	5,53	1,76	5,46	50	40	0,0238	44,5
IP 165				1115	1106	1067	1002	5,53	1,76	5,46	65	50	0,0619	73,6
IP 200				1760	1742	1669	1547	5,53	1,76	5,46	77,5	60	0,117	112,6
IP 250				3899	3832	3566	3123	5,53	1,76	5,46	100	80	0,4257	206,7
IP 40		140	80	20	20	20	20	5,53	1,76	5,46	15	12	0,0001	4,1
IP 65				61	61	61	60	5,53	1,76	5,46	25	16	0,0009	9,2
IP 80				155	155	154	152	5,53	1,76	5,46	30	25	0,0029	17,2
IP 105				368	367	363	357	5,53	1,76	5,46	40	35	0,0116	31,9
IP 130				638	636	629	616	5,53	1,76	5,46	50	40	0,0238	44,5
IP 165				1252	1247	1228	1195	5,53	1,76	5,46	65	50	0,0619	73,6
IP 200				1970	1960	1923	1861	5,53	1,76	5,46	77,5	60	0,117	112,6
IP 250				4546	4512	4377	4150	5,53	1,76	5,46	100	80	0,4257	206,7
IP 40	8	60	7	7	7	7	5,53	1,76	5,46	15	12	0,0001	4,1	
IP 65			23	22	21	19	5,53	1,76	5,46	22,5	16	0,0009	9,2	
IP 80			46	45	41	35	5,53	1,76	5,46	28	25	0,0029	17,2	
IP 105			98	94	79	53	5,53	1,76	5,46	36	35	0,0117	31,9	
IP 130			188	180	149	96	5,53	1,76	5,46	46	40	0,0243	44,5	
IP 165			385	364	280	139	5,53	1,76	5,46	62,5	50	0,0648	73,6	
IP 200			655	614	450	176	5,53	1,76	5,46	77,5	60	0,126	112,6	
IP 250			1247	1103	525		5,53	1,76	5,46	93	80	0,4433	206,7	
IP 40		90	60	11	11	10	10	5,53	1,76	5,46	15	12	0,0001	4,1
IP 65				42	42	41	40	5,53	1,76	5,46	25	16	0,0009	9,2
IP 80				79	79	77	74	5,53	1,76	5,46	30	25	0,003	17,2
IP 105				181	179	172	160	5,53	1,76	5,46	40	35	0,0121	31,9
IP 130				335	331	316	292	5,53	1,76	5,46	50	40	0,025	44,5
IP 165				643	633	595	531	5,53	1,76	5,46	65	50	0,0659	73,6
IP 200				1010	992	919	797	5,53	1,76	5,46	77,5	60	0,126	112,6
IP 250				2252	2185	1918	1474	5,53	1,76	5,46	100	80	0,4609	206,7
IP 40		140	60	16	16	16	16	5,53	1,76	5,46	15	12	0,0001	4,1
IP 65				49	49	49	49	5,53	1,76	5,46	25	16	0,0009	9,2
IP 80				124	124	123	122	5,53	1,76	5,46	30	25	0,003	17,2
IP 105				282	281	278	274	5,53	1,76	5,46	40	35	0,0121	31,9
IP 130				513	511	505	495	5,53	1,76	5,46	50	40	0,025	44,5
IP 165				1005	1001	985	959	5,53	1,76	5,46	65	50	0,0659	73,6
IP 200				1578	1571	1540	1490	5,53	1,76	5,46	77,5	60	0,126	112,6
IP 250				3556	3528	3418	3234	5,53	1,76	5,46	100	80	0,4609	206,7

* Double cycle cam configuration (see page 12)

The schedules show some minimum and intermediate reference values.
 Also possible: - Number of stops not indicated in the schedule
 - Index angles not indicated in the schedule
 - Different and Customized Motion

IP SERIES TECHNICAL DATA

SPECIAL EXECUTIONS

Type	Number of stops S	Index angle (α°)	Maximum output torque - Mtu - (Nm)				Motion coefficients			Ptc. rad. Rp (mm)	Roller o.d. Dr (mm)	Inertia Jc (kgm²)	Mch.frt.(*) Mam (Nm)
			50 (rpm)	100 (rpm)	200 (rpm)	300 (rpm)	Acc. Ca	Speed Cv	Disp. Ck				
IP 65	0,6 (600°)	330	42	39	30	25	9,49	1,21	6,41	19	16	0,0008	9,2
IP 80			112	108	85	70	9,49	1,21	6,41	23,5	25	0,0027	17,2
IP 105			256	245	188	147	9,49	1,21	6,41	30,5	35	0,011	31,9
IP 130			441	416	315	239	9,49	1,21	6,41	38	40	0,0223	44,5
IP 40	0,75 (480°)	330	16	16	14	12	8,01	1,28	5,73	13	12	0,0001	4,1
IP 65			50	49	39	33	8,01	1,28	5,73	21,5	16	0,0009	9,2
IP 80			128	127	106	90	8,01	1,28	5,73	26	25	0,0028	17,2
IP 105			295	293	239	198	8,01	1,28	5,73	34	35	0,0112	31,9
IP 130			519	515	412	337	8,01	1,28	5,73	43	40	0,0229	44,5
IP 65	1	210	40	39	33	27	8,01	1,28	5,73	18	16	0,0008	9,2
IP 80			115	114	102	84	8,01	1,28	5,73	24	25	0,0027	17,2
IP 105			261	258	223	172	8,01	1,28	5,73	31	35	0,011	31,9
IP 130			440	434	365	273	8,01	1,28	5,73	38	40	0,0223	44,5
IP 40		240	16	16	15	13	8,01	1,28	5,73	13	12	0,0001	4,1
IP 65			45	45	38	32	8,01	1,28	5,73	20	16	0,0009	9,2
IP 80			127	127	114	96	8,01	1,28	5,73	26	25	0,0028	17,2
IP 105			295	292	258	209	8,01	1,28	5,73	34	35	0,0112	31,9
IP 130		503	497	429	340	8,01	1,28	5,73	42	40	0,0227	44,5	
IP 40		270	16	16	15	13	8,01	1,28	5,73	13	12	0,0001	4,1
IP 65			50	50	42	36	8,01	1,28	5,73	21,5	16	0,0009	9,2
IP 80			141	140	127	109	8,01	1,28	5,73	28	25	0,0028	17,2
IP 105	318		316	282	234	8,01	1,28	5,73	36	35	0,0113	31,9	
IP 130	568	564	493	405	8,01	1,28	5,73	46	40	0,0232	44,5		
IP 40	1,33 (270°)	180	13	13	13	12	8,01	1,28	5,73	13	12	0,0001	4,1
IP 65			40	39	38	33	8,01	1,28	5,73	21,5	16	0,0009	9,2
IP 80			101	100	96	87	8,01	1,28	5,73	26	25	0,0029	17,2
IP 105			224	220	206	174	8,01	1,28	5,73	33	35	0,0115	31,9
IP 130		398	390	360	292	8,01	1,28	5,73	42	40	0,0236	44,5	
IP 40		210	14	14	14	14	8,01	1,28	5,73	14	12	0,0001	4,1
IP 65			42	42	41	36	8,01	1,28	5,73	22,5	16	0,0009	9,2
IP 80			112	111	109	101	8,01	1,28	5,73	28	25	0,0029	17,2
IP 105			253	250	240	213	8,01	1,28	5,73	36	35	0,0117	31,9
IP 130		453	447	425	366	8,01	1,28	5,73	46	40	0,0243	44,5	
IP 40		240	16	16	16	15	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			49	49	48	43	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			112	112	110	103	8,01	1,28	5,73	28	25	0,0029	17,2
IP 105			253	251	243	220	8,01	1,28	5,73	36	35	0,0117	31,9
IP 130		453	449	432	382	8,01	1,28	5,73	46	40	0,0243	44,5	
IP 40		270	16	16	16	15	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			49	49	49	43	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			124	124	122	116	6,62	1,4	5,21	30	25	0,003	17,2
IP 105			295	293	287	265	8,01	1,28	5,73	40	35	0,0121	31,9
IP 130		512	508	494	447	8,01	1,28	5,73	50	40	0,025	44,5	
IP 40		300	16	16	16	16	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			49	49	49	44	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			124	124	123	117	6,62	1,4	5,21	30	25	0,003	17,2
IP 105			295	294	288	269	8,01	1,28	5,73	40	35	0,0121	31,9
IP 130		512	509	498	455	8,01	1,28	5,73	50	40	0,025	44,5	
IP 40		330	16	16	16	16	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			49	49	49	44	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			124	124	123	118	6,62	1,4	5,21	30	25	0,003	17,2
IP 105	295		294	290	272	8,01	1,28	5,73	40	35	0,0121	31,9	
IP 130	512	510	501	461	8,01	1,28	5,73	50	40	0,025	44,5		
IP 40	1,5 (240°)	180	16	16	16	15	8,01	1,28	5,73	13	12	0,0001	4,1
IP 65			53	53	51	43	8,01	1,28	5,73	22,5	16	0,0009	9,2
IP 80			141	140	137	121	8,01	1,28	5,73	28	25	0,0028	17,2
IP 105			318	315	302	255	8,01	1,28	5,73	36	35	0,0113	31,9
IP 130		568	561	535	438	8,01	1,28	5,73	46	40	0,0232	44,5	
IP 40		210	20	20	20	18	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			61	61	59	51	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			155	154	152	136	8,01	1,28	5,73	30	25	0,0029	17,2
IP 105			318	316	307	265	8,01	1,28	5,73	36	35	0,0113	31,9
IP 130		637	632	613	520	8,01	1,28	5,73	50	40	0,0238	44,5	

Values referred to the worst running conditions - Equivalent service factor = 1.75 already applied

(*) Starting torque - Tolerance on the values indicated ± 15%

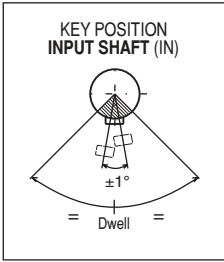
IP SERIES TECHNICAL DATA

SPECIAL EXECUTIONS

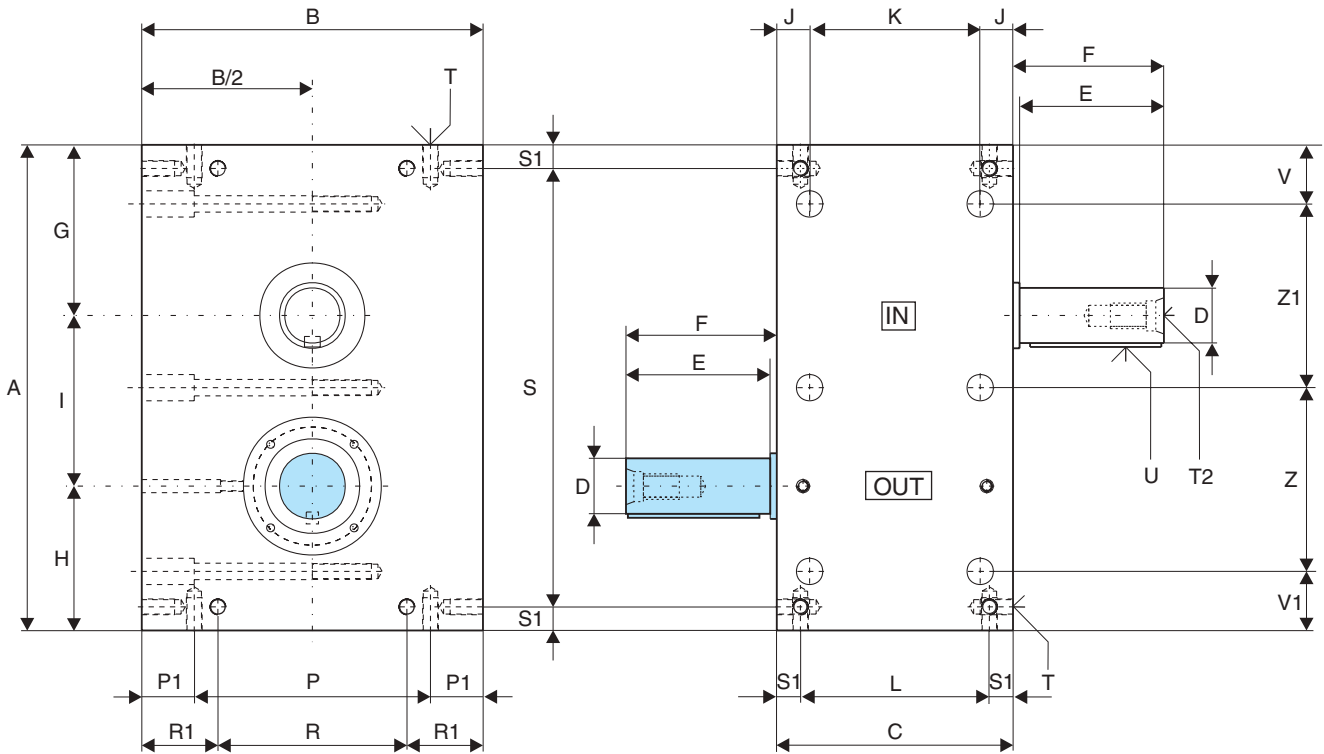
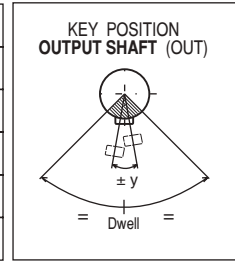
Type	Number of stops S	Index angle (α°)	Maximum output torque - Mtu - (Nm)				Motion coefficients			Ptc. rad. Rp (mm)	Roller o.d. Dr (mm)	Inertia Jc (kgm²)	Mch.frt.(*) Mam (Nm)
			50 (rpm)	100 (rpm)	200 (rpm)	300 (rpm)	Acc. Ca	Speed Cv	Disp. Ck				
IP 40	1,5 (240°)	240	20	20	20	18	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			61	61	59	51	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			155	154	153	138	8,01	1,28	5,73	30	25	0,0029	17,2
IP 105			368	366	359	317	8,01	1,28	5,73	40	35	0,0116	31,9
IP 130			637	634	619	534	8,01	1,28	5,73	50	40	0,0238	44,5
IP 40		270	20	20	20	18	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			61	61	59	52	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			155	154	153	139	8,01	1,28	5,73	30	25	0,0029	17,2
IP 105			368	366	361	321	8,01	1,28	5,73	40	35	0,0116	31,9
IP 130			638	635	623	543	8,01	1,28	5,73	50	40	0,0238	44,5
IP 40		300	20	20	20	18	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			61	61	59	52	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			155	155	153	139	8,01	1,28	5,73	30	25	0,0029	17,2
IP 105			368	367	362	324	8,01	1,28	5,73	40	35	0,0116	31,9
IP 130			638	636	626	550	8,01	1,28	5,73	50	40	0,0238	44,5
IP 40		330	20	20	20	18	8,01	1,28	5,73	15	12	0,0001	4,1
IP 65			61	61	59	52	8,01	1,28	5,73	25	16	0,0009	9,2
IP 80			155	155	154	140	8,01	1,28	5,73	30	25	0,0029	17,2
IP 105			368	367	363	327	8,01	1,28	5,73	40	35	0,0116	31,9
IP 130			638	636	628	555	8,01	1,28	5,73	50	40	0,0238	44,5
IP 40	2	120	11	11	10	10	8,01	1,28	5,73	13	12	0,0001	4,1
IP 65			40	39	37	35	8,01	1,28	5,73	21,5	16	0,0009	9,2
IP 80			93	91	86	77	8,01	1,28	5,73	28	25	0,0029	17,2
IP 105			168	163	141	105	8,01	1,28	5,73	33	35	0,0115	31,9
IP 130			320	309	265	190	8,01	1,28	5,73	42	40	0,0236	44,5
IP 80	5	120	101	100	98	96	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			212	210	203	192	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			374	370	356	332	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		150	126	126	125	123	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			265	264	260	252	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			468	466	457	442	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		180	131	130	130	128	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			294	293	290	285	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			492	490	484	474	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		210	131	130	130	129	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			294	293	291	287	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			492	491	486	479	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		240	131	130	130	129	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			294	293	292	289	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			492	491	488	482	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		270	131	130	130	130	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			294	293	292	290	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			492	492	489	484	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		300	131	130	130	130	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			294	294	292	291	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130	492		492	490	486	5,53	1,76	5,46	55	40	0,0275	44,5	
IP 250			3028	3017	2976	2907	5,53	1,76	5,46	100	80	0,4962	206,7
IP 80	10	80	67	66	65	61	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			141	139	131	118	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			249	245	229	202	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		120	84	83	82	80	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			177	175	170	162	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			312	309	299	282	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80		150	101	100	100	98	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			212	211	208	202	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			375	373	366	354	5,53	1,76	5,46	55	40	0,0275	44,5
IP 80			126	126	125	124	5,53	1,76	5,46	35	25	0,0033	17,2
IP 105			265	265	263	259	5,53	1,76	5,46	45	35	0,0132	31,9
IP 130			469	468	463	455	5,53	1,76	5,46	55	40	0,0275	44,5

Values referred to the worst running conditions - Equivalent service factor = 1.75 already applied

(*) Starting torque - Tolerance on the values indicated ± 15%



SERIES	± y
IP 40	30'
IP 65	26'
IP 80	23'
IP 105	20'
IP 130	18'



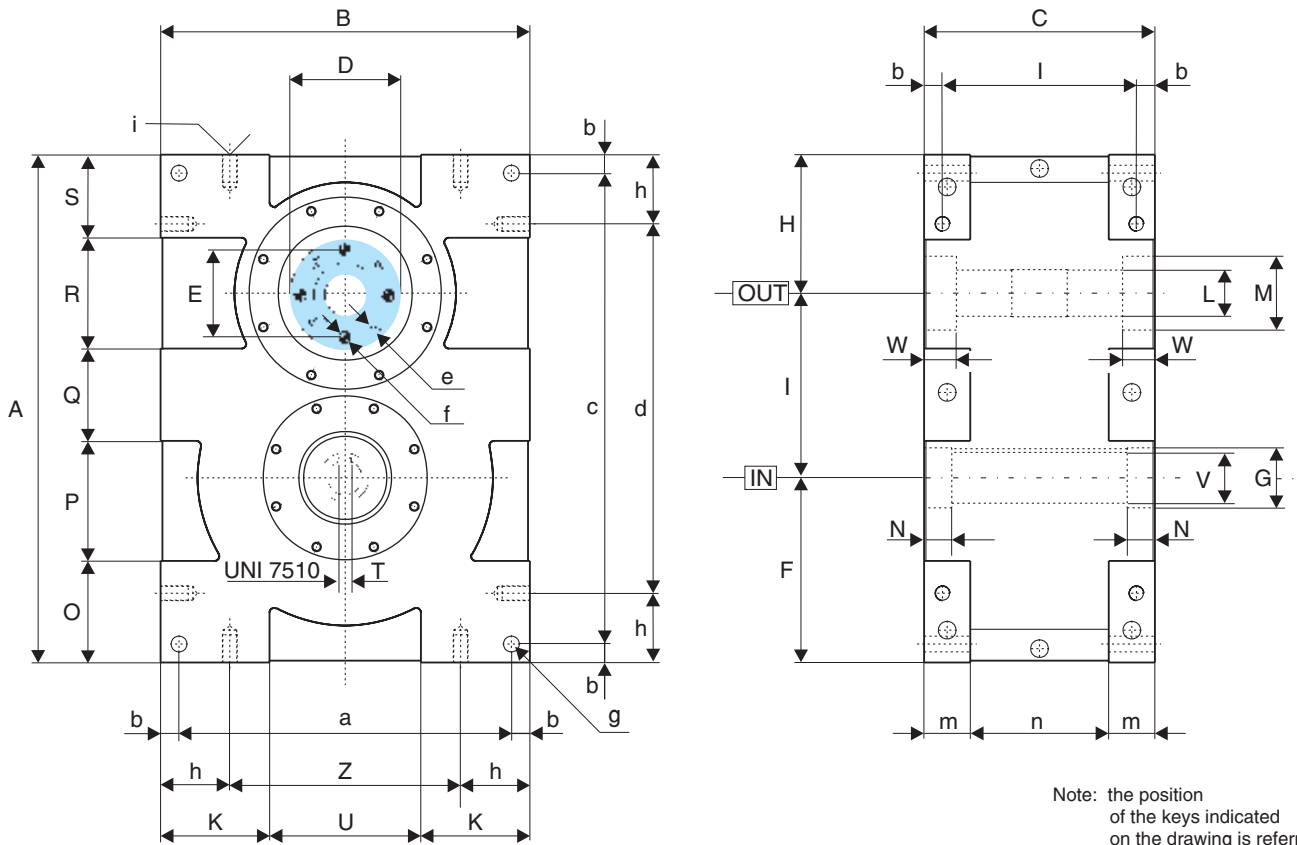
Note: the position of the keys indicated on the drawing is referred to the middle of the dwell angle.

Output rotating element

General manufacturing tolerances in compliance with UNI-ISO 2768-1 EN 22768-1

SERIES (CAD file reference)	A	B	C	K6 D	E	F	G	H	I	J	K	L	P	P1
IP 40	120	90	70	14	30	31,5	45	35	40	10	50	56	54	18
IP 65	190	140	95	19	40	43	70	55	65	15	65	80	95	22,5
IP 80	240	180	120	28	60	65	90	70	80	16,5	87	95	120	30
IP 105	300	210	150	30	80	85	105	90	105	25	100	115	140	35
IP 130	370	260	180	42	110	115	130	110	130	25	130	144	180	40

SERIES (CAD file reference)	R	R1	S	S1	T	T2	U	V	V1	Z	Z1	Weight (kg)	D.max
IP 40	43	23,5	106	7	M5x8	M5x10	5x5x25	19,25	14,25	41,5	45	2	15
IP 65	80	30	175	7,5	M6x12	M6x15	6x6x35	27,5	18,5	72	72	8	25
IP 80	95	42,5	215	12,5	M8x15	M10x22	8x7x55	37,5	26,5	86	90	16	35
IP 105	115	47,5	265	17,5	M10x20	M10x22	8x7x75	37,5	32,5	115	115	32	40
IP 130	144	58	334	18	M12x25	M16x36	12x8x100	45	45	140	140	45	50



Note: the position of the keys indicated on the drawing is referred to the middle of the dwell angle.

Output rotating element

General manufacturing tolerances in compliance with UNI-ISO 2768-1

SERIES (CAD file reference)	A	B	C	D	E	F	H8 G	H	I	K	H7 L	H7 M	N	O	P	Q	R	S
IP 165	460	330	220	95	80	165	55	130	165	90	40	62	30	90	110	85	90	85
IP 200	550	400	250	120	100	200	65	150	200	118	50	80	30	110	130	100	120	90
IP 250	700	500	300	150	125	250	100	200	250	145	65	95	30	145	160	115	160	120

SERIES (CAD file reference)	T	U	H7 V	W	Z	a	b	c	d	e	øf	øg	h	i	l	m	n	Weight (kg)
IP 165	14	150	45	30	210	295	17,5	425	340	M8x20	9,5x20	15,5	60	M14x25	185	40	140	120
IP 200	16	164	55	35	250	360	20	510	400	M10x25	11,5x25	17	75	M16x30	210	50	150	220
IP 250	22	210	85	50	320	450	25	650	520	M12x30	12,5x30	19,5	90	M18x35	250	50	200	350

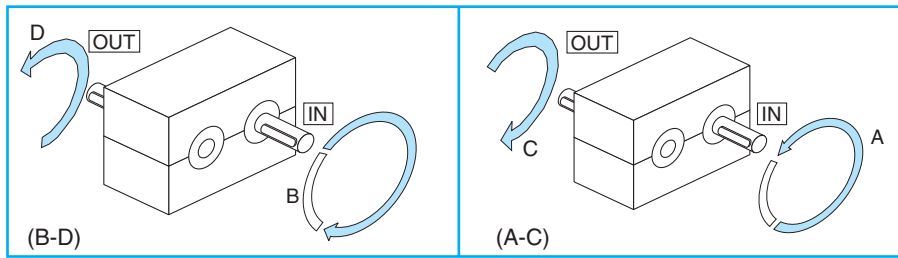
External OUTPUT shaft		FLANGE CONNECTION		OUTPUT				
		A ₄		IP165	IP200	IP250		
		A ₅						
		A ₆						
		∅D ₄		62	80	95		
		∅D ₅		95	120	150		
		± y		18'	15'	12'		
External INPUT shaft		UNI 7510		INPUT				
			A ₁		IP165	IP200	IP250	
			A ₂		35	35	35	
			A ₃					
			∅D ₁		45	55	85	
			∅D ₂		54	64	99	
			∅D ₃					

The empty boxes indicate the possibility to specify the required dimension

CUSTOMIZING AND ACCESSORIES

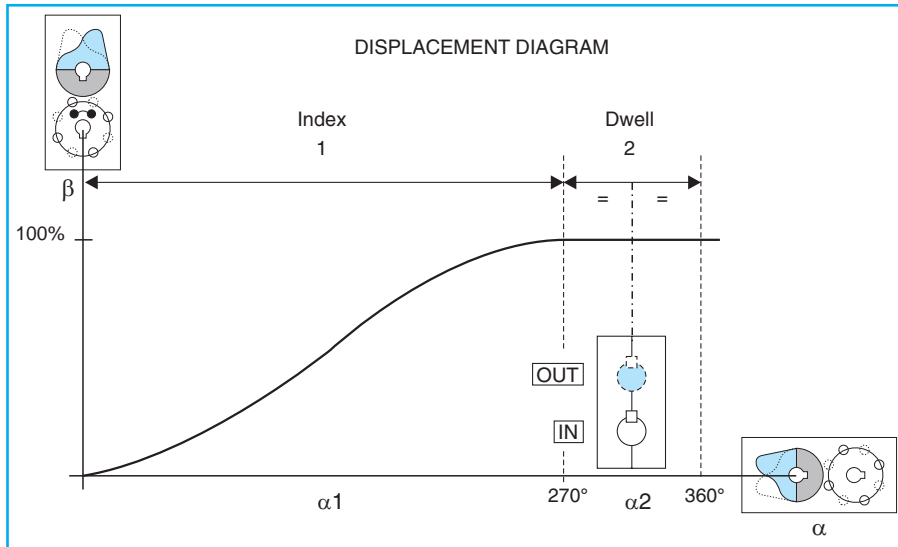


UNIDIRECTIONAL FUNCTION



Directions of rotations

For unidirectional running only the **(A-C)** and **(B-D)** combinations are possible. These can be obtained by rotating the cam shaft in the directions shown.



Single cycle cam

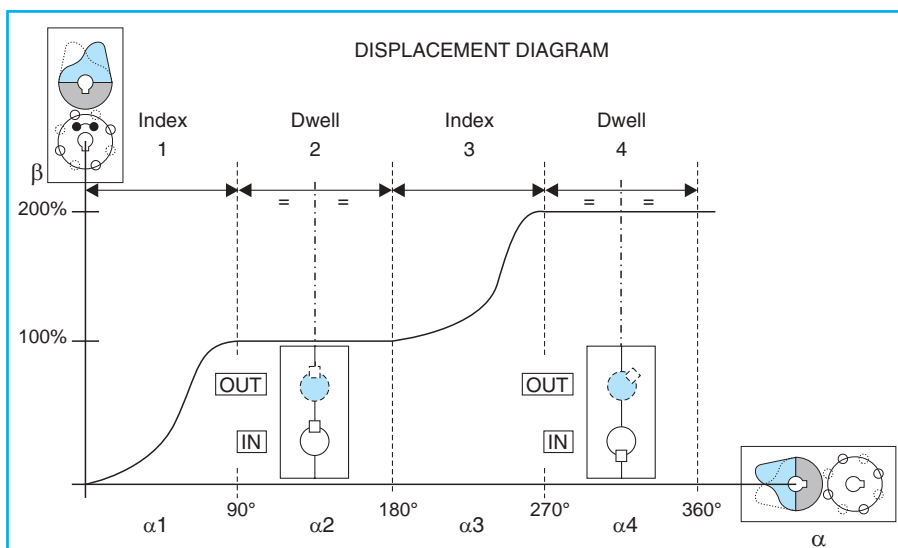
The diagram on the side shows the displacement of an index drive having a **single cycle cam**.

In a 360° rotation of the cam shaft the phases are:

- 1) **index**
- 2) **dwell** = The camshaft keyway oriented to the output shafts identifies the middle position of Dwell period (1/2 α_2)

Type	Size	Stops	$\alpha_1 + \alpha_2 = 360^\circ$				Rotation	Working position	Reduction unit fitting position
			Index 1	Dwell 2					
Pg.9-10	Pg.9-10	Pg.5	Pg.5	Pg.5			Pg.12	Pg.19	Pg.19
IP	130	4	$\alpha_1 270^\circ$	$\alpha_2 90^\circ$			BD	A	1-S2-90°

The indications on the side refer to the **preliminary coding**.



Double cycle cam

The diagram on the side shows the displacement of an index drive with **double cycle cam**.

In a rotation of 360° of the cam shaft the phases are:

- 1) **first index**
- 2) **first dwell**
- 3) **second index**
- 4) **second dwell** - center of dwell angle = **key on the input shaft, opposite to the output shaft.**

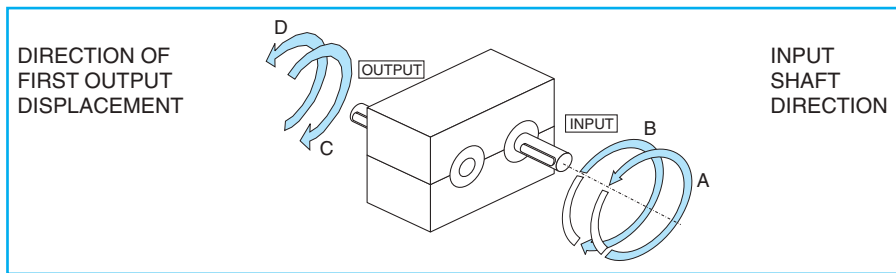
Note: For example, 60 rpm on the cam shaft will result in 120 indexes per minute at the output (see technical guidelines chapter 2.6)

Type	Size	Stops	$\alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 = 360^\circ$				Direction of rotation	Working position	Reducer fitting position
			Index 1	Dwell 2	Index 3	Dwell 4			
Pg.9-10	Pg.9-10	Pg.5	Pg.5	Pg.5	Pg.5	Pg.5	Pg.12	Pg.19	Pg.19
IP	130	8	$\alpha_1 60^\circ$	$\alpha_2 120^\circ$	$\alpha_3 60^\circ$	$\alpha_4 120^\circ$	BD	A	1-S2-90°

The indications on the side refer to the **preliminary coding**.

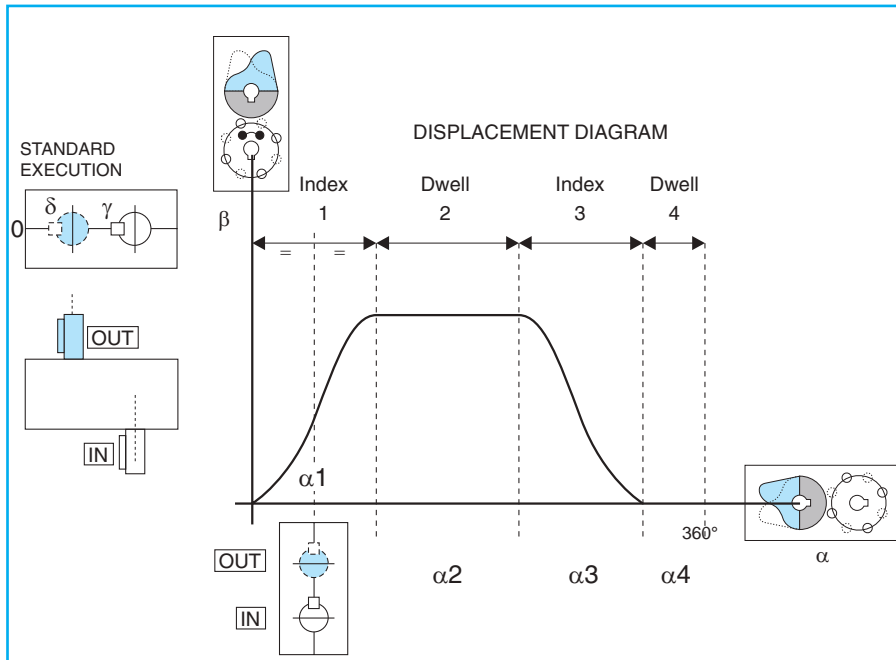
Output rotating element

OSCILLATING FUNCTION



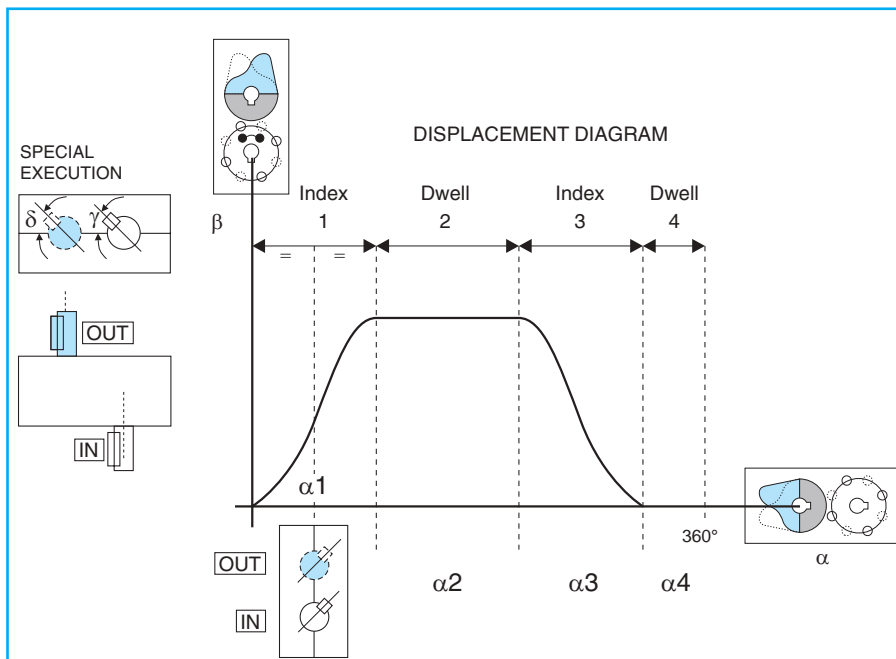
Directions of rotations on cycle start

Possible combinations:
(A-C) (B-C) (A-D) (B-D)
By convention **the beginning of the cycle coincides with the first displacement (1)**



Under the company standard, the values of the γ angle for the key of the cam shaft and the δ angle for the key of the output shaft are both **equal to 0 (zero) at the center of the first dwell phase**.

The keys are oriented as in the drawing on the side. This position is identified as a **phase axis**.



In case of specific necessity it is possible to indicate the values for the δ angle and the γ angle referred to the required position for the keys on the cam shaft and on the output shaft **at the beginning of the cycle**.

N.B. The oscillating cycle can be made by more than 4 phases.

Oscillating angle β	Minimum input cam angle α
15°	30°
30°	45°
45°	60°

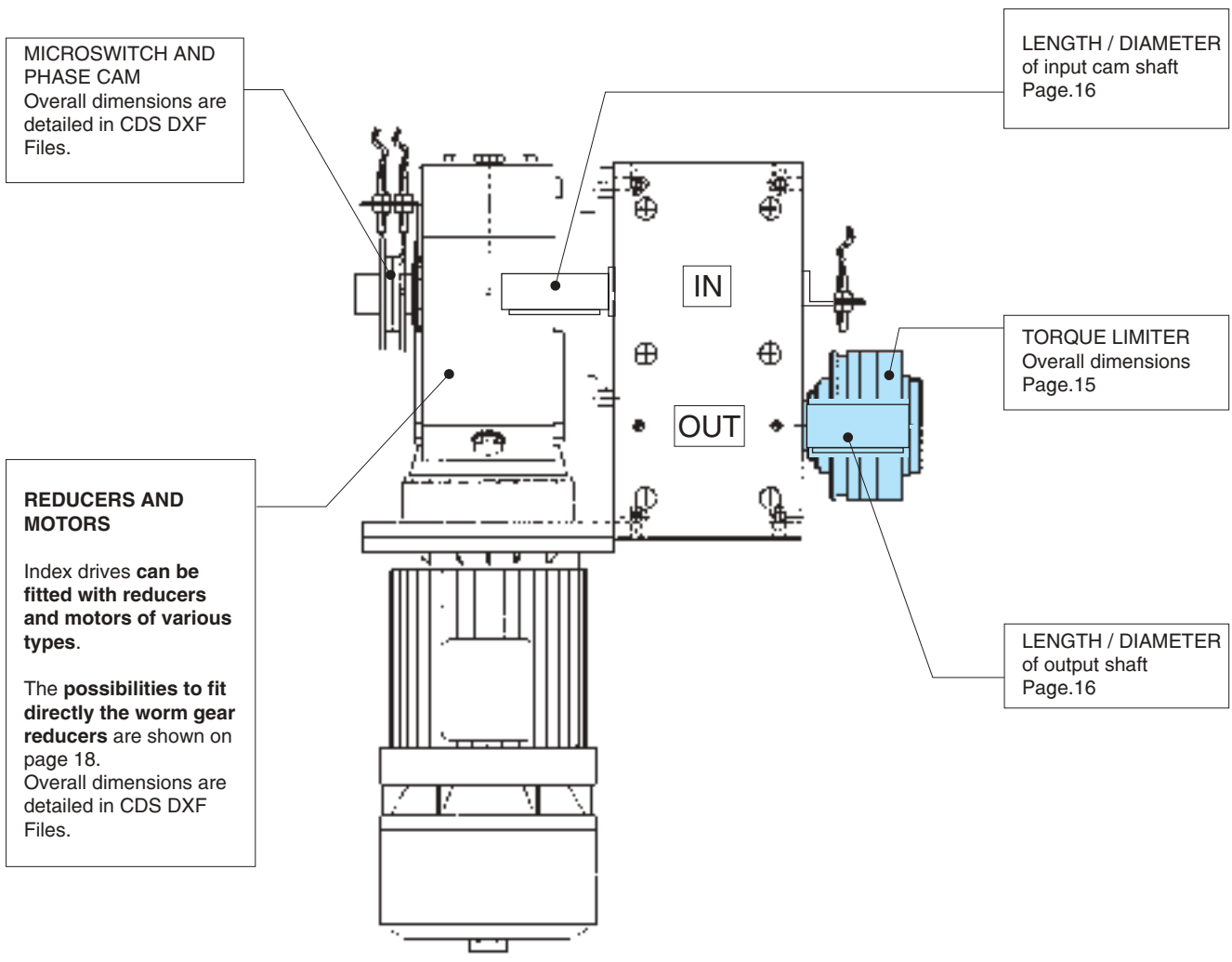
OUT IN

Type	Size	β	Index 1	Dwell 2	Index 3	Dwell 4	Cycle start direction	γ	δ	Working position	Reducer fitting position
Pg.9-10	Pg.9-10		α_1	α_2	α_3	α_4				Pg.19	Pg.19
IP	130	45°	90°	150°	60°	60°	BC	0°	0°	A	1-S2-90°

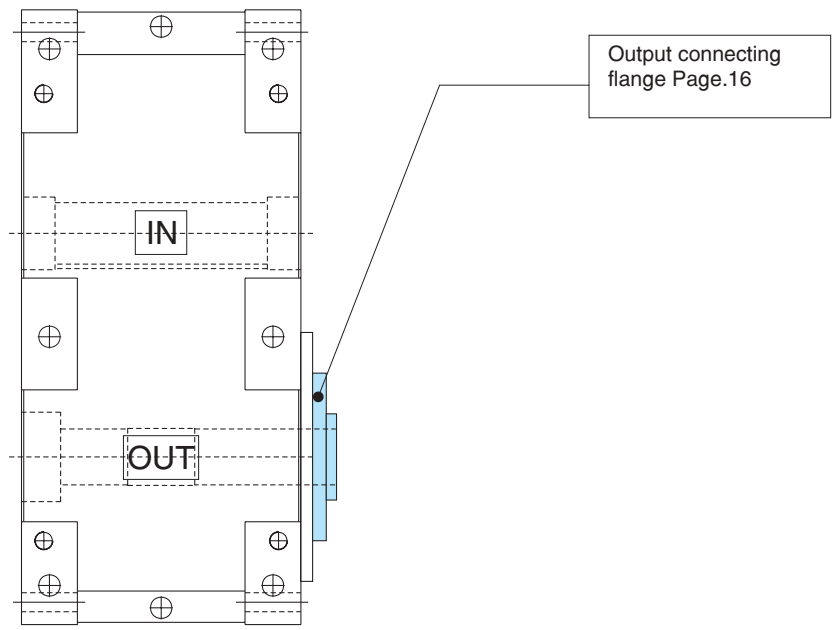
The indications on the side refer to the **preliminary coding**.

Output rotating element

ACCESSORIES - CUSTOMIZING

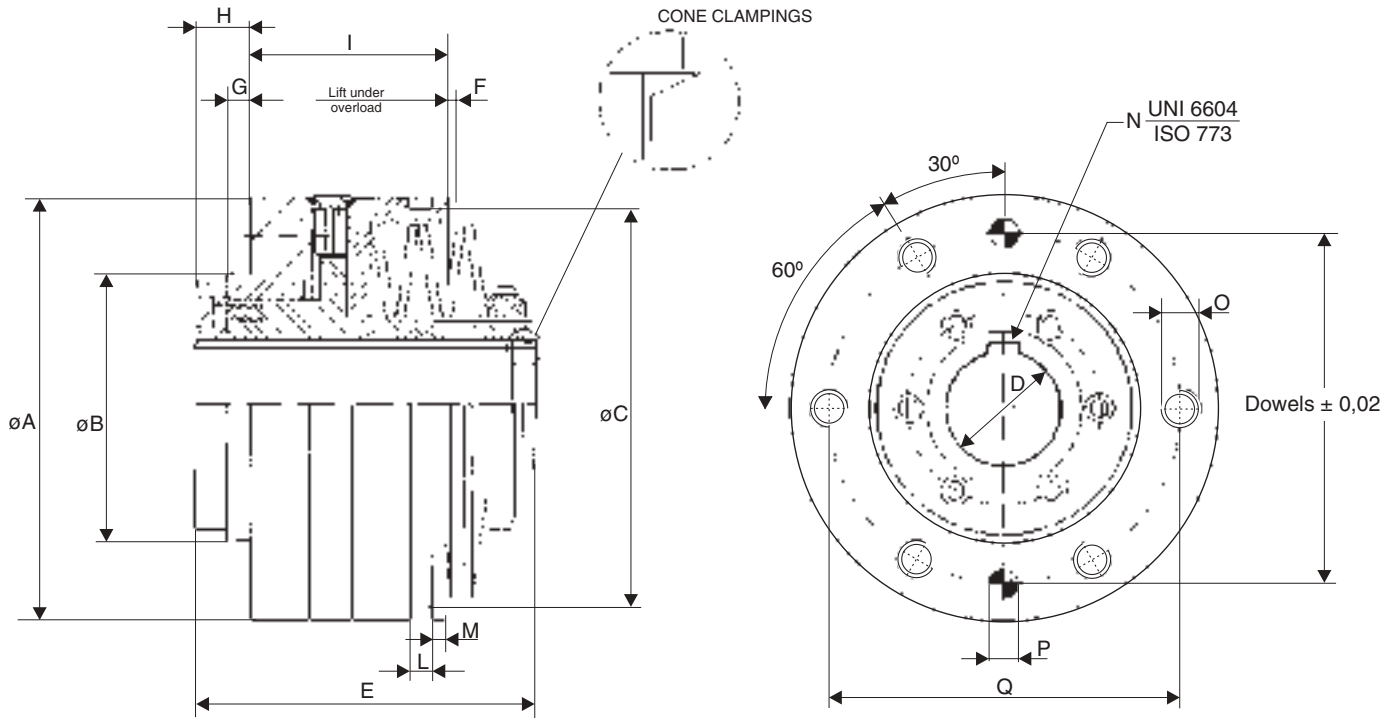


Heavy duty series

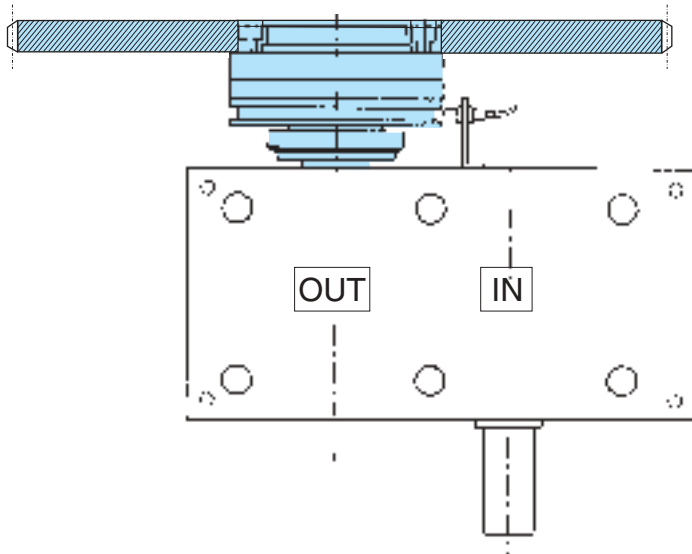


Output rotating element

TORQUE LIMITER - GLR



Type	A	B (h7)	C	D (H7)	E	F	G	H	I	L	M	N	O	P (H7)	Q			CAD FILE
GLR-50	79	55	73	19	50,3	1,32	3	10	27,3	5	2	6x6	M5	5	65			LR50
GLR-100	98	70	90	28	70,3	1,32	5,5	13,5	41,5	7	4	8x7	M6	6	85			LR100
GLR-400	118	80	110	30	90,3	1,71	5	14	57,4	9	4	8x7	M8	8	100			LR400
GLR-700	158	100	150	42	121	1,71	8,5	20,5	69,9	9	4	12x8	M10	10	130			LR700
GLR-1000	216	145	208	55	156	2,93	10	25	95	9	4	16x10	M12	12	180			LR1000



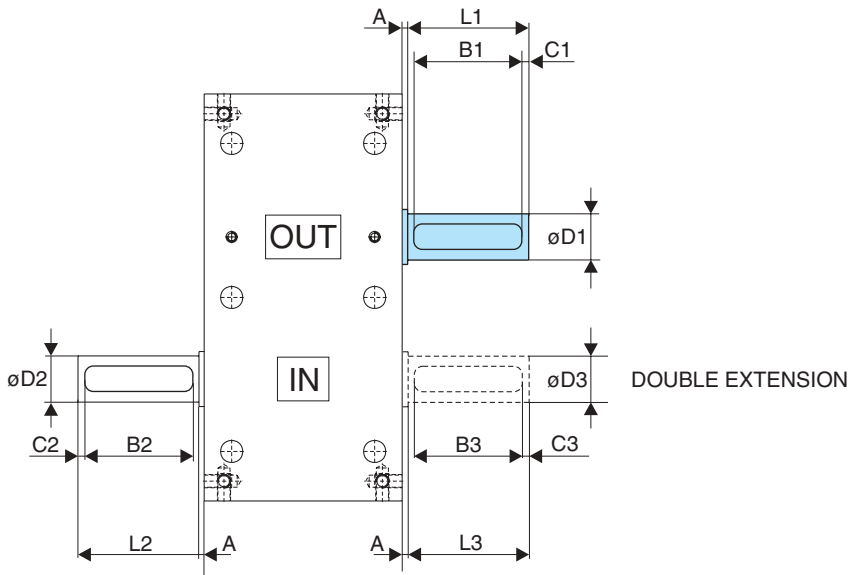
FITTING COMBINATIONS

Type	IP 40	IP 65	IP 80	IP 105	IP 130	IP 165	IP 200	IP 250
GLR-50		•						
GLR-100			•					
GLR-400				•				
GLR-700					•			
GLR-1000						•	•	•

Output rotating element

SPECIAL EXECUTIONS

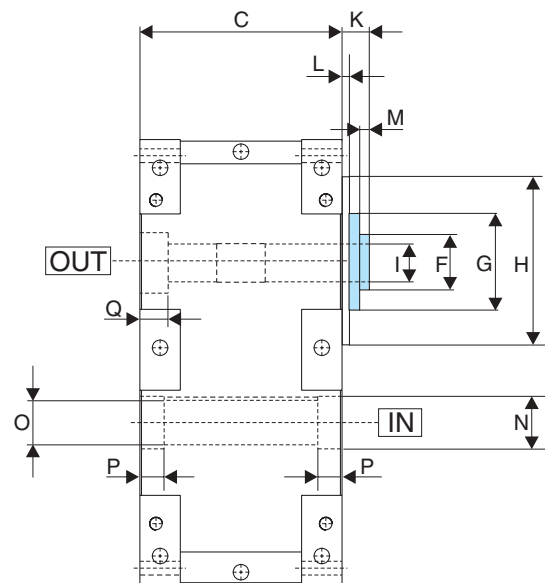
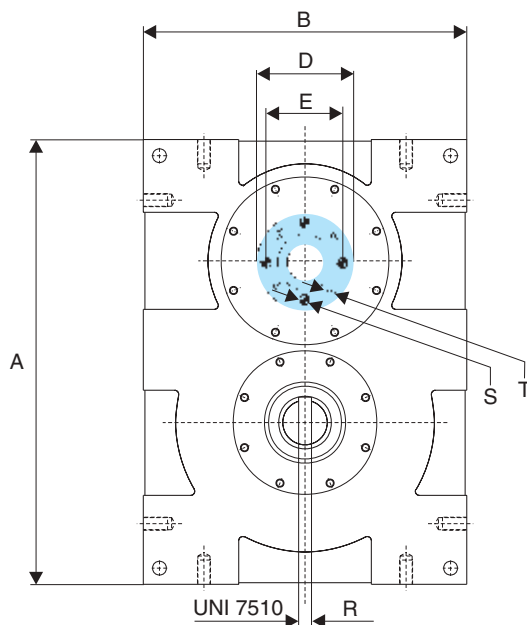
Input-output shafts



Type	A	B1	B2	B3	C1	C2	C3	øD1 ^{K6} max	øD2 ^{K6} max	øD3 ^{K6} max	L1	L2	L3
IP 40								15	15	15			
IP 65								25	25	25			
IP 80								35	35	35			
IP 105								40	40	40			
IP 130								50	50	50			
IP 165													
IP 200													
IP 250													

The empty boxes indicate the possibility to specify the required dimension

Output connecting flange



Output rotating element

SERIES	A	B	C	D	E	h7 F	h7 G	g7 H	H7 I	K	L	M	H8 N	H7 O	P	Q	R	øS	T
IP 165	460	330	220	95	80	65	95	173	40	31	11	8	55	45	30	30	14	9,5 x 20	M8 x 20
IP 200	550	400	250	120	100	80	120	210	50	40	14	10	65	55	30	35	16	11,5 x 25	M10 x 25
IP 250	700	500	300	150	125	100	150	260	65	46	18	10	100	85	30	50	22	12,5 x 30	M12 x 30

CYCLE TIMES WITH MOTOREDUCER

- 50Hz -

Combined gear	4 Poles - 50Hz 1400 rpm		T Cycle Time [s]	Index Angle [°]															
	Reducer Ratio	Cycles/m		30°	45°	60°	75°	90°	105°	120°	135°	150°	180°	210°	240°	270°	300°	315°	330°
				Index time - t_i - [s]															
	7	200,0	0,30	0,03	0,04	0,05	0,06	0,08	0,09	0,10	0,11	0,13	0,15	0,18	0,20	0,23	0,25	0,26	0,28
	10	140,0	0,43	0,04	0,05	0,07	0,09	0,11	0,13	0,14	0,16	0,18	0,21	0,25	0,29	0,32	0,36	0,38	0,39
	13	107,7	0,56	0,05	0,07	0,09	0,12	0,14	0,16	0,19	0,21	0,23	0,28	0,33	0,37	0,42	0,46	0,49	0,51
	16	87,5	0,69	0,06	0,09	0,11	0,14	0,17	0,20	0,23	0,26	0,29	0,34	0,40	0,46	0,51	0,57	0,60	0,63
	20	70,0	0,86	0,07	0,11	0,14	0,18	0,21	0,25	0,29	0,32	0,36	0,43	0,50	0,57	0,64	0,71	0,75	0,79
	25	56,0	1,07	0,09	0,13	0,18	0,22	0,27	0,31	0,36	0,40	0,45	0,54	0,63	0,71	0,80	0,89	0,94	0,98
(*)	32	43,8	1,37	0,11	0,17	0,23	0,29	0,34	0,40	0,46	0,51	0,57	0,69	0,80	0,91	1,03	1,14	1,20	1,26
(*)	40	35,0	1,71	0,14	0,21	0,29	0,36	0,43	0,50	0,57	0,64	0,71	0,86	1,00	1,14	1,29	1,43	1,50	1,57
(*)	50	28,0	2,14	0,18	0,27	0,36	0,45	0,54	0,63	0,71	0,80	0,89	1,07	1,25	1,43	1,61	1,79	1,88	1,96
(**)	63	22,2	2,70	0,23	0,34	0,45	0,56	0,68	0,79	0,90	1,01	1,13	1,35	1,58	1,80	2,03	2,25	2,36	2,48
(**)	80	17,5	3,43	0,29	0,43	0,57	0,71	0,86	1,00	1,14	1,29	1,43	1,71	2,00	2,29	2,57	2,86	3,00	3,14
(**)	100	14,0	4,29	0,36	0,54	0,71	0,89	1,07	1,25	1,43	1,61	1,79	2,14	2,50	2,86	3,21	3,57	3,75	3,93
(**)	125	11,2	5,36	0,45	0,67	0,89	1,12	1,34	1,56	1,79	2,01	2,23	2,68	3,13	3,57	4,02	4,46	4,69	4,91
(**)	160	8,8	6,86	0,57	0,86	1,14	1,43	1,71	2,00	2,29	2,57	2,86	3,43	4,00	4,57	5,14	5,71	6,00	6,29
(**)	200	7,0	8,57	0,71	1,07	1,43	1,79	2,14	2,50	2,86	3,21	3,57	4,29	5,00	5,71	6,43	7,14	7,50	7,86
(**)	250	5,6	10,71	0,89	1,34	1,79	2,23	2,68	3,13	3,57	4,02	4,46	5,36	6,25	7,14	8,04	8,93	9,38	9,82

- 60Hz -

Combined gear	4 Poles - 60Hz 1700 rpm		T Cycle Time [s]	Index Angle [°]															
	Reducer Ratio	Cycles/m		30°	45°	60°	75°	90°	105°	120°	135°	150°	180°	210°	240°	270°	300°	315°	330°
				Index time - t_i - [s]															
	7	242,9	0,25	0,02	0,03	0,04	0,05	0,06	0,07	0,08	0,09	0,10	0,12	0,14	0,16	0,19	0,21	0,22	0,23
	10	170,0	0,35	0,03	0,04	0,06	0,07	0,09	0,10	0,12	0,13	0,15	0,18	0,21	0,24	0,26	0,29	0,31	0,32
	13	130,8	0,46	0,04	0,06	0,08	0,10	0,11	0,13	0,15	0,17	0,19	0,23	0,27	0,31	0,34	0,38	0,40	0,42
	16	106,3	0,56	0,05	0,07	0,09	0,12	0,14	0,16	0,19	0,21	0,24	0,28	0,33	0,38	0,42	0,47	0,49	0,52
	20	85,0	0,71	0,06	0,09	0,12	0,15	0,18	0,21	0,24	0,26	0,29	0,35	0,41	0,47	0,53	0,59	0,62	0,65
	25	68,0	0,88	0,07	0,11	0,15	0,18	0,22	0,26	0,29	0,33	0,37	0,44	0,51	0,59	0,66	0,74	0,77	0,81
(*)	32	53,1	1,13	0,09	0,14	0,19	0,24	0,28	0,33	0,38	0,42	0,47	0,56	0,66	0,75	0,85	0,94	0,99	1,04
(*)	40	42,5	1,41	0,12	0,18	0,24	0,29	0,35	0,41	0,47	0,53	0,59	0,71	0,82	0,94	1,06	1,18	1,24	1,29
(*)	50	34,0	1,76	0,15	0,22	0,29	0,37	0,44	0,51	0,59	0,66	0,74	0,88	1,03	1,18	1,32	1,47	1,54	1,62
(**)	63	27,0	2,22	0,19	0,28	0,37	0,46	0,56	0,65	0,74	0,83	0,93	1,11	1,30	1,48	1,67	1,85	1,95	2,04
(**)	80	21,3	2,82	0,24	0,35	0,47	0,59	0,71	0,82	0,94	1,06	1,18	1,41	1,65	1,88	2,12	2,35	2,47	2,59
(**)	100	17,0	3,53	0,29	0,44	0,59	0,74	0,88	1,03	1,18	1,32	1,47	1,76	2,06	2,35	2,65	2,94	3,09	3,24
(**)	125	13,6	4,41	0,37	0,55	0,74	0,92	1,10	1,29	1,47	1,65	1,84	2,21	2,57	2,94	3,31	3,68	3,86	4,04
(**)	160	10,6	5,65	0,47	0,71	0,94	1,18	1,41	1,65	1,88	2,12	2,35	2,82	3,29	3,76	4,24	4,71	4,94	5,18
(**)	200	8,5	7,06	0,59	0,88	1,18	1,47	1,76	2,06	2,35	2,65	2,94	3,53	4,12	4,71	5,29	5,88	6,18	6,47
(**)	250	6,8	8,82	0,74	1,10	1,47	1,84	2,21	2,57	2,94	3,31	3,68	4,41	5,15	5,88	6,62	7,35	7,72	8,09

 Index angle - suggested for CONTINUOUS RUN mode

(See technical guidelines ch. 3.1)

 Index angle - suggested for CYCLE ON DEMAND mode

(*) Direct or combined ratio available

(**) Combined ratio with 1 cylindrical gear pair plus worm

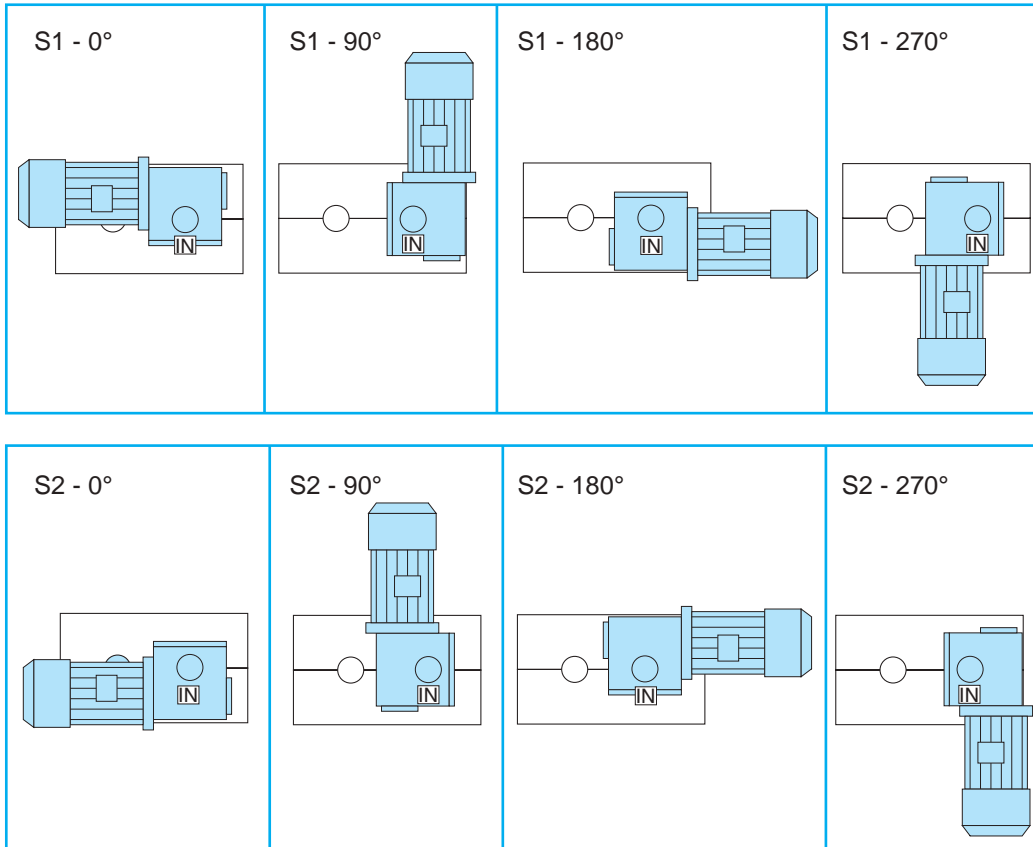
REDUCER MATCHING TABLE

REDUCER		Shaft Diameter	IP index drive							
Type	Shaft Diameter		IP40	IP 65	IP 80	IP 105	IP 130	IP 165	IP 200	IP 250
↓	↓	Std →	14	19	28	30	42	a	a	a
		Max →	15	25	35	40	50	55	65	100
RMI 28	14		●							
MVF 30	14		●							
MRV 32	19			●						
MRIV 32	19			●						
MRV 40	24			●	●					
MRV 40	24			●	●					
MRV 50	28				●	●				
MRIV 50	28				●	●				
MRV 63	32				●	●	●			
MRIV 63	32				●	●	●			
MRV 80	38					●	●	●		
MRIV 80	38					●	●	●		
MRV 100	48						●	●	●	
MRIV 100	48						●	●	●	
MRV 125	60							●	●	●
MRIV 125	60							●	●	●
MRV 160	70								●	●
MRIV 160	70								●	●
MRV 200	90									●
MRIV 200	90									●
MRV 250	110									●
MRIV 250	110									●

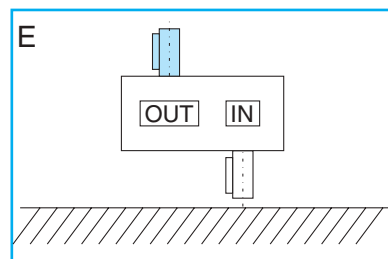
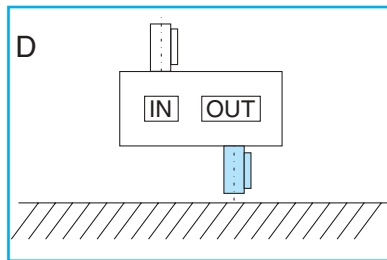
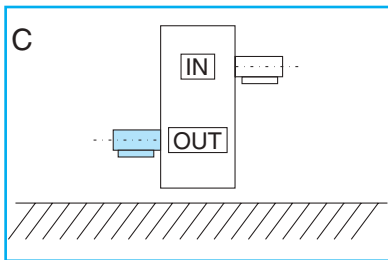
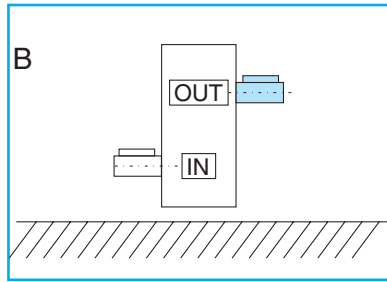
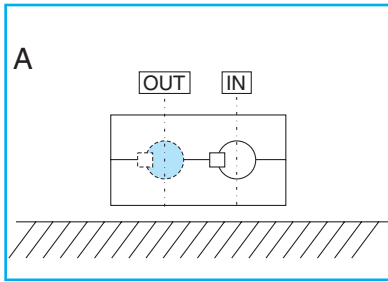
● Reducer direct fitting

a Standard with hollow input shaft

FITTING POSITION



WORKING POSITION - LUBRICATION



STANDARD IP index drive has sealed housing without filling plug, control plug and drain plug with adequate quantity of long life lubricant.

For running condition faster than $\cong 180$ cycles/min., or when specified, the index drive can be supplied with oil bath lubrication. If necessary the exact coordinates of the position of the filling plug, control plug and drain plug can be supplied.

CONVERSION CHART

	Unit	Symbol	Kg	lb	N
Weight	Kilogram	Kg	1	2.2046	9.8066
	Pound	lb	0.4536	1	4.4818
Force	Newton	N	0.1019	0.2246	1
	Unit	Symbol	m	mm	In
Lenght	Meter	m	1	1000	39.37
	Millimeter	mm	0.001	1	0.3937
	Inch	In	0.0254	25.4	1
	Unit	Symbol	Kg x m	lb x in	N x m
Torque	Kilogram - meter	Kg x m	1	86.7951	9.8066
	Inch – Pound	lb x in	0.015213	1	0.11308
	Newton - meter	N x m	0.01152	8.6425	1
	Unit	Symbol	Kg x m ²	lb x in ²	
Inertia	Kilogram – square meter	Kg x m ²	1	3417.1231	
	Pounds – square Inch	lb x in ²	0.0002926	1	
	Unit	Symbol	Kw	HP	CV
Power	Kilowatt	Kw	1	1.34	1.01
	British Horsepower	HP	0.746	1	1.01
	Metric Horsepower	CV	0.736	0.966	1

The data contained in this brochure are not binding. Bettinelli S.p.A. reserves the right to change without forewarning notice any specification in the interest of technical improvement.

All rights reserved
2nd Edition -July 2001



Head Office

CDS - Bettinelli S.p.A.


Via Leonardo da Vinci, 56
26010 Bagnolo (CR) - ITALIA

Tel. (+ 39) 0373 237 311
Fax (+ 39) 0373 648 303

E-mail: cds@bettinelli.it
Web: www.bettinelli.it



Head Office

CDS Corp. 

532 Route 15
Sparta NJ 07871 (USA)

Phone (001) 973 579 3400
Fax (001) 973 579 3222

Area

Dealer

Area	Dealer