



**CHIARAVALLI**<sup>®</sup>  
**GROUP** *S.p.A.*



**RINVII ANGOLARI DI PRECISIONE**

**RIGHT-ANGLE PRECISION  
BEVEL GEAR DRIVES**

# RINVII ANGOLARI DI PRECISIONE

## RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

I rinvii angolari serie CHT-RB e CHT-RP sono progettati per applicazioni industriali ove occorre trasmettere un moto rotatorio di potenza tra alberi disposti perpendicolarmente tra loro. Sono disponibili in diverse misure con due o tre uscite ed un rapporto di trasmissione, 1/1 - 1/2 - 1/3

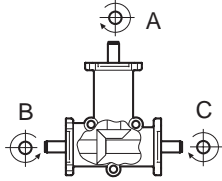
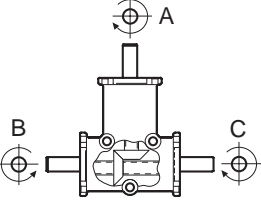
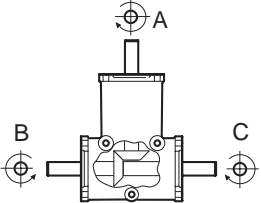
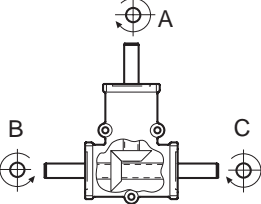
### Identificazione del rinvio:

Nelle tabelle riportate per ogni modello è indicato: il diametro dell'albero, il rapporto di trasmissione, l'albero di entrata A, gli alberi di uscita B - C o D e il senso di rotazione (guardando frontalmente l'albero).

*CHT-RB and CHT-RP right-angle drives are designed for industrial applications where rotary power must be transferred between two shafts at right-angles to each other. CHT-RB and CHT-RP are available in many different sizes with 2 or 3 outputs and 1/1 - 1/2 - 1/3 transmission ratios.*

### Right-angle identification:

*The following tables show: the shaft diameter, the transmission ratio, the input shaft, the output shafts B-C or D and the direction of rotation (looking at the shaft from the front)*

MISURA	SIZE	MOD. RB	CHT					PESO Kg.	
			ALBERO SHAFT	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	TIPO TYPE	CODICE CODE	WEIGHT Kg
1			Ø 8	1/1	A	B	1	R1081101	0.3
			Ø 8	1/1	A	C	2	R1081102	
			Ø 8	1/2	A	B	3	R1081203	
			Ø 8	1/2	A	C	4	R1081204	
			Ø 8	1/1	A	B-C	5	R1081105	
			Ø 8	1/2	A	B-C	6	R1081206	
2			Ø 15	1/1	A	B	1	R1151101	1.1
			Ø 15	1/1	A	C	2	R1151102	
			Ø 15	1/2	A	B	3	R1151203	
			Ø 15	1/2	A	C	4	R1151204	
			Ø 15	1/1	A	B-C	5	R1151105	1.2
			Ø 15	1/2	A	B-C	6	R1151206	
3			Ø 20	1/1	A	B	1	R1201101	3.4
			Ø 20	1/1	A	C	2	R1201102	
			Ø 20	1/2	A	B	3	R1201203	
			Ø 20	1/2	A	C	4	R1201204	
			Ø 20	1/1	A	B-C	5	R1201105	3.5
			Ø 20	1/2	A	B-C	6	R1201206	
4			Ø 25	1/1	A	B	1	R1251101	5.5
			Ø 25	1/1	A	C	2	R1251102	
			Ø 25	1/2	A	B	3	R1251203	
			Ø 25	1/2	A	C	4	R1251204	
			Ø 25	1/1	A	B-C	5	R1251105	5.8
			Ø 25	1/2	A	B-C	6	R1251206	

# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA	SIZE	MOD. RP	CHT					PESO Kg. WEIGHT Kg	
			ALBERO SHAFT	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	TIPO TYPE	CODICE CODE	
1			Ø 8	1/1	A	B	1	R3081101	0.6
			Ø 8	1/1	A	C	2	R3081102	
			Ø 8	1/2	A	B	3	R3081203	
			Ø 8	1/2	A	C	4	R3081204	
			Ø 8	1/1	A	B-C	5	R3081105	
			Ø 8	1/2	A	B-C	6	R3081206	
2			Ø 14	1/1	A	B	1	R3141101	2
			Ø 14	1/1	A	C	2	R3141102	
			Ø 14	1/2	A	B	3	R3141203	
			Ø 14	1/2	A	C	4	R3141204	
			Ø 14	1/3	A	B	5	R3141305	
			Ø 14	1/3	A	C	6	R3141306	
			Ø 14	1/1	A	B-C	7	R3141107	
			Ø 14	1/2	A	B-C	8	R3141208	
			Ø 14	1/3	A	B-C	9	R3141309	
3			Ø 14	1/1	A	B-C	10	R3141110	1.9
			Ø 14	1/2	A	B-C	11	R3141211	
			Ø 14	1/3	A	B-C	12	R3141312	
4			Ø 14	1/1	A	B-C	13	R3141113	3.2
			Ø 14	1/1	A	C-D	14	R3141114	
			Ø 14	1/2	A	B-C	15	R3141215	
			Ø 14	1/2	A	C-D	16	R3141216	
			Ø 14	1/3	A	B-C	17	R3141317	
			Ø 14	1/3	A	C-D	18	R3141318	
			Ø 14	1/1	A	B-C-D	19	R3141119	
			Ø 14	1/2	A	B-C-D	20	R3141220	
Ø 14	1/3	A	B-C-D	21	R3141321				
5			Ø 19	1/1	A	B	1	R3191101	4.5
			Ø 19	1/1	A	C	2	R3191102	
			Ø 19	1/2	A	B	3	R3191203	
			Ø 19	1/2	A	C	4	R3191204	
			Ø 19	1/3	A	B	5	R3191305	
			Ø 19	1/3	A	C	6	R3191306	
			Ø 19	1/1	A	B-C	7	R3191107	
			Ø 19	1/2	A	B-C	8	R3191208	
			Ø 19	1/3	A	B-C	9	R3141309	
6			Ø 19	1/1	A	B-C	10	R3191110	4.4
			Ø 19	1/2	A	B-C	11	R3191211	
			Ø 19	1/3	A	B-C	12	R3191312	
7			Ø 24	1/1	A	B	1	R3241101	4.6
			Ø 24	1/1	A	C	2	R3241102	
			Ø 24	1/2	A	B	3	R3241203	
			Ø 24	1/2	A	C	4	R3241204	
			Ø 24	1/3	A	B	5	R3241305	
			Ø 24	1/3	A	C	6	R3241306	
			Ø 24	1/1	A	B-C	7	R3241107	
			Ø 24	1/2	A	B-C	8	R3241208	
			Ø 24	1/3	A	B-C	9	R3241309	

# DETERMINAZIONE DEL RINVIO DA IMPIEGARE

## HOW TO SELECT THE CORRECT RIGHT-ANGLE BEVEL GEAR DRIVE FOR YOUR APPLICATION

### AVVERTENZE DATI TECNICI

Nella determinazione del rinvio da impiegare oltre alle esigenze puramente tecniche delle potenze in funzione del numero di giri e delle coppie da trasmettere, bisogna tenere conto della gravosità dell'impiego che dipende da molteplici fattori: Ciclo di funzionamento (intermittente, costante, ecc.), carichi radiali e assiali gravanti sulla estremità degli alberi, temperature max e min., ambiente (polveroso ecc.) tipo lubrificante.

- 1) Determinare il fattore di servizio  $F_s$  indicato nella tabella 2.
- 2) Calcolare la potenza nominale  $P_n = \text{Potenza effettiva } P_e \times F_s$
- 3) Con la velocità in uscita e la potenza effettiva  $P_n$  scegliere la dimensione ed il rapporto del rinvio da ordinare.
- 4) Controllare che i carichi radiali e assiali applicati al centro della sporgenza di ogni singolo albero non superi valori riportati a tabella 1.
- 5) Verificare che la temperatura di esercizio non superi i valori da  $-20^\circ\text{C} \div 80^\circ\text{C}$
- 6) Nel caso di rapporto 1/2 o 1/3 non usare il rinvio in moltiplicazione entrando oltre 750 giri/1' nel rapporto 1:2 e 500 giri/1' nel rapporto 1:3
- 7) In presenza di ambienti particolarmente polverosi e conseguentemente abrasivi evitare l'esposizione diretta del paraolio onde preservarlo per consentire una durata maggiore dello stesso.

### TECHNICAL NOTES

Selecting the correct type of angle bevel gear is not simply a question of defining the power required in relation to R.P.M. and the torque to be transmitted. It also involves defining the conditions under which the angle bevel gear will be used. Defining operating conditions involves taking into consideration a number of factors such as the type of operating cycle (intermittent, continuous), radial and axial loads on the shaft ends, maximum and minimum temperatures, ambient conditions (e.g. dust and dirt levels) and the type of lubricant used. To decide the type and size of angle bevel gear required, proceed as follows.

- 1) Use table 2 to define the Service Factor for your application.
- 2) Calculate the Rated Power ( $P_n$ );  $P_n = P_e$  (Horsepower)  $\times F_s$ .
- 3) Use the output speed and the rated power ( $P_n$ ) to select the angle gear size and transmission ratio required for your application.
- 4) Check that the radial and axial load at the midpoint of the exposed shaft end does not exceed the values shown in table 1.
- 5) Check that the operating temperature does not exceed  $-20^\circ\text{C} \div 80^\circ\text{C}$
- 6) If you require a 1/2 or 1/3 ratio, do not use a speed multiplier with an input more than 750 R.P.M. and 500 R.P.M. in ratio 1/2 and 1/3, respectively.
- 7) If the unit is to be used in very dusty conditions, protect the oil seal against direct exposure to dust to prevent abrasive damage which might shorten the working life of the unit.

TABELLA 1 - TABLE 1

### SPINTE RADIALI ASSIALI MAX SOPPORTABILE MAX RADIAL AND AXIAL LOADS

RINVIO/MISURA SIZE	MAX SPINTA ASSIALE IN Kg. MAX AXIAL LOAD IN Kg.	MAX SPINTA RADIALE IN Kg. MAX RADIAL LOAD IN Kg.
RB1	21	11
RB2	41	20
RB3	76	43
RB4	88	49
RP1	28	15
RP2-3/4	53	30
RP5-6	65	45
RP7	80	60

TABELLA 2 - TABLE 2

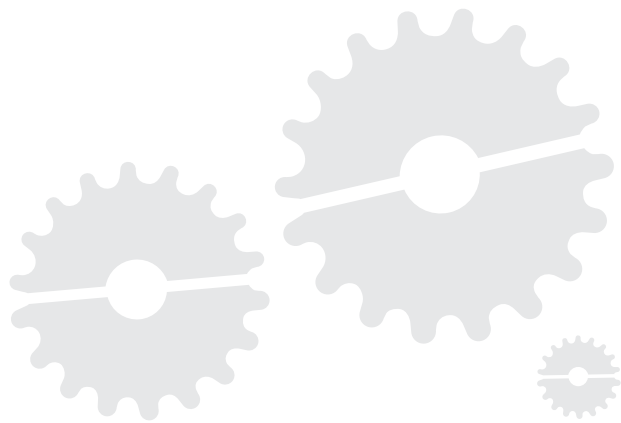
### FATTORE DI SERVIZIO $F_s$ SERVICE FACTOR $F_s$

	ore di funzionamento al giorno hours of operation for day			
	3	8	12	24
carico uniforme uniform load	0.7	0.9	1	1.3
carico con urti modesti load with moderate shocks	0.9	1	1.3	1.8
carico con urti load with shocks	1.3	1.6	1.8	2.3



# POTENZE APPLICABILI (Pn) Momento torcente max in uscita T (albero entrata/ input shaft A) INPUT POWER (Pn) Output torque T

Giri in uscita Output speed		50 rpm	100 rpm	200 rpm	400 rpm	800 rpm	1400 rpm	2000 rpm	3000 rpm		
Coppia in uscita Output torque		T potenza power		T potenza power		T potenza power		T potenza power		T potenza power	
Tipo Type	Rapporto Ratio	Nm Kw	Nm Kw	Nm Kw	Nm Kw	Nm Kw	Nm Kw	Nm Kw	Nm Kw	Nm Kw	
RB 1-1/2- RB 1-5	R 1:1	4,7 0,02	3,9 0,04	3,3 0,07	2,8 0,12	2,3 0,19	2,0 0,30	1,8 0,39	1,7 0,53		
RP 1-1/2- RP 1-5		9,1 0,05	7,6 0,08	6,4 0,13	5,4 0,23	4,5 0,38	4,0 0,58	3,6 0,76	3,3 1,03		
RB 2-1/2- RB 2-5		16,5 0,09	13,9 0,15	11,7 0,24	9,8 0,41	8,2 0,69	7,2 1,05	6,6 1,37	5,9 1,86		
RP 3-10		28,8 0,15	24,2 0,25	20,3 0,43	17,1 0,72	14,4 1,20	12,5 1,83	11,4 2,39	10,3 3,25		
RP 2-1/2		34,5 0,18	29,0 0,30	24,4 0,51	20,5 0,86	17,2 1,44	15,0 2,20	13,7 2,87	12,4 3,89		
RP 4-13/14											
RP 2-7											
RP 4-19											
RB 3-1/2		53,1 0,28	44,6 0,47	37,5 0,79	31,6 1,32	26,5 2,22	23,1 3,38	21,1 4,42	19,1 5,99		
RB 3-5											
RP 6-10											
RP 5-7-7											
RB 4-1/2 - RP 5-1/2	87,3 0,46	73,4 0,77	61,8 1,29	51,9 2,17	43,7 3,66	38,0 5,56	34,7 7,27	31,4 9,86			
RP 7-1/2- RB 4-5											
RP 5-7-7											
RP 7-7											
RB 1-3/4- RB 1-6	R 1:2	4,0 0,02	3,4 0,04	2,8 0,06	2,4 0,10	2,0 0,17	1,7 0,26	1,6 0,33	1,4 0,45		
RP 1-3/4- RP 1-6		8,9 0,05	7,5 0,08	6,3 0,13	5,3 0,22	4,4 0,37	3,9 0,57	3,5 0,74	3,2 1,00		
RB 2-3/4- RB 2-6		14,6 0,08	12,3 0,13	10,3 0,22	8,7 0,36	7,3 0,61	6,3 0,93	5,8 1,21	5,2 1,65		
RP 3-11		28,1 0,15	23,7 0,25	19,9 0,42	16,7 0,70	14,1 1,18	12,2 1,79	11,2 2,34	10,1 3,17		
RP 2-3/4		33,8 0,18	28,5 0,30	23,9 0,50	20,1 0,84	16,9 1,42	14,7 2,16	13,5 2,82	12,2 3,82		
RP 4-15/16											
RP 2-8											
RP 4-20											
RB 3-3/4- RB 3-6		42,5 0,22	35,7 0,37	30,1 0,63	25,3 1,06	21,3 1,78	18,5 2,71	16,9 3,54	15,3 4,80		
RP 6-11											
RP 6-11											
RP 6-11											
RB 4-3/4 - RP 4-6	82,3 0,43	69,2 0,72	58,2 1,22	48,9 2,05	41,1 3,44	35,8 5,24	32,7 6,85	29,6 9,28			
RP 7-3/4- RB 4-6											
RP 5-8- RP 7-8											
RP 7-8											
RP 2-5/6	R 1:3	27,5 0,14	23,1 0,24	19,4 0,41	16,3 0,68	13,7 1,15	12,0 1,75	10,9 2,29	9,9 3,10		
RP 2-9											
RP 3-12											
RP 4-17/18											
RP 4-21	63,4 0,33	53,3 0,56	44,9 0,94	37,7 1,58	31,7 2,66	27,6 4,04	25,2 5,28	22,8 7,16			
RP 5-5/6											
RP 5-9											
RP 6-12											
RP 7-5/6											
RP 7-9											



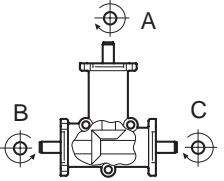
# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

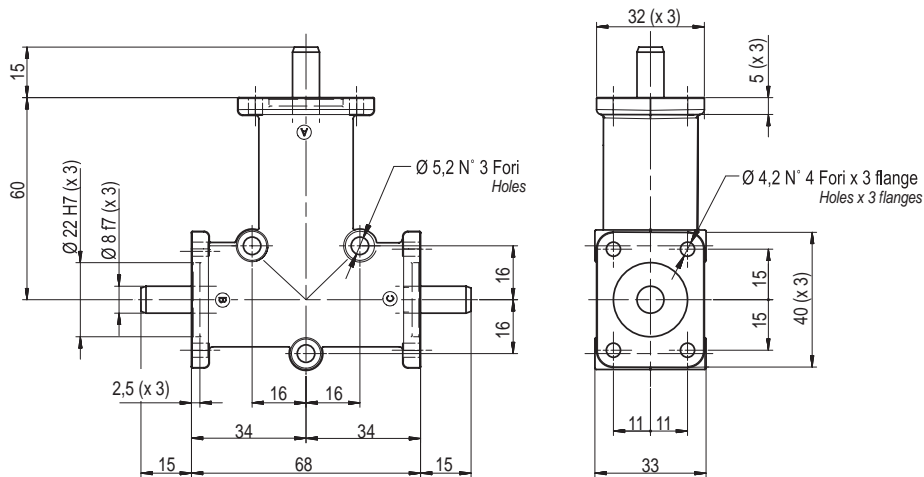
CARICHI ESTERNI APPLICABILI IN RELAZIONE ALLE VELOCITA' Fr = forza radiale Fa = forza assiale  
EXTERNAL LOADS IN CONNECTION WITH SPEED Fr = radial load Fa = axial load

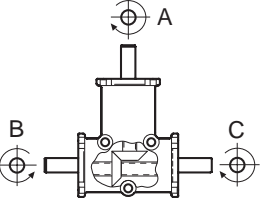
Giri in uscita Output speed		50 rpm		100 rpm		200 rpm		400 rpm		800 rpm		1400 rpm		2000 rpm		3000 rpm	
Carichi radiali - assiali Radial - axial load		Fr	Fa	Fr	Fa	Fr	Fa	Fr	Fa	Fr	Fa	Fr	Fa	Fr	Fa	Fr	Fa
Tipo Type	Rapporto Ratio	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RB 1-1/2- RB 1-5	R 1:1	139	94	117	79	98	66	83	56	70	47	60	41	55	37	50	34
RP 1-1/2- RP 1-5		195	158	164	133	138	112	116	94	98	79	85	69	78	63	70	57
RB 2-1/2- RB 2-5		328	220	276	185	232	156	195	131	164	110	142	96	130	87	118	79
RP 3-10		430	348	361	293	304	246	256	207	215	174	187	151	171	139	154	125
RP 2-1/2		516	418	434	351	365	295	307	248	258	209	224	182	205	166	185	150
RP 4-13/14																	
RP 2-7																	
RP 4-19																	
RB 3-1/2		684	458	575	385	484	324	407	273	342	229	297	199	272	182	246	165
RB 3-5																	
RP 6-10	826	554	695	465	584	391	491	329	413	277	359	241	329	220	297	199	
RB 4-1/2 - RP 5-1/2	953	639	802	537	674	452	567	380	477	319	414	278	379	254	342	229	
RP 7-1/2- RB 4-5																	
RP 5-7- RP 7-7																	
RB 1-3/4- RB 1-6	R 1:2	107	76	90	64	76	54	64	45	54	38	47	33	43	30	39	27
RP 1-3/4- RP 1-6		182	110	153	93	129	78	108	66	91	55	79	48	73	44	66	40
RB 2-3/4- RB 2-6		276	168	232	141	195	119	164	100	138	84	120	73	110	67	99	60
RP 3-11		370	263	311	221	262	186	220	157	185	132	161	114	147	105	133	95
RP 2-3/4		445	316	374	266	315	224	265	188	223	158	194	137	177	126	160	114
RP 4-15/16																	
RP 2-8																	
RP 4-20																	
RB 3-3/4- RB 3-6		548	361	461	303	387	255	326	214	274	180	238	157	218	143	197	130
RP 6-11		696	422	585	355	492	299	414	251	348	211	303	184	277	168	250	152
RB 4-3/4 - RP 4-6	803	483	675	406	568	341	478	287	402	241	349	210	319	192	289	173	
RP 7-3/4- RB 4-6																	
RP 5-8- RP 7-8																	
RP 2-5/6	R 1:3	357	199	301	167	253	141	213	118	179	99	155	86	142	79	128	71
RP 2-9																	
RP 3-12																	
RP 4-17/18																	
RP 4-21	619	346	521	291	438	245	368	206	310	173	269	151	246	138	222	124	
RP 5-5/6																	
RP 5-9																	
RP 6-12																	
RP 7-5/6																	
RP 7-9																	

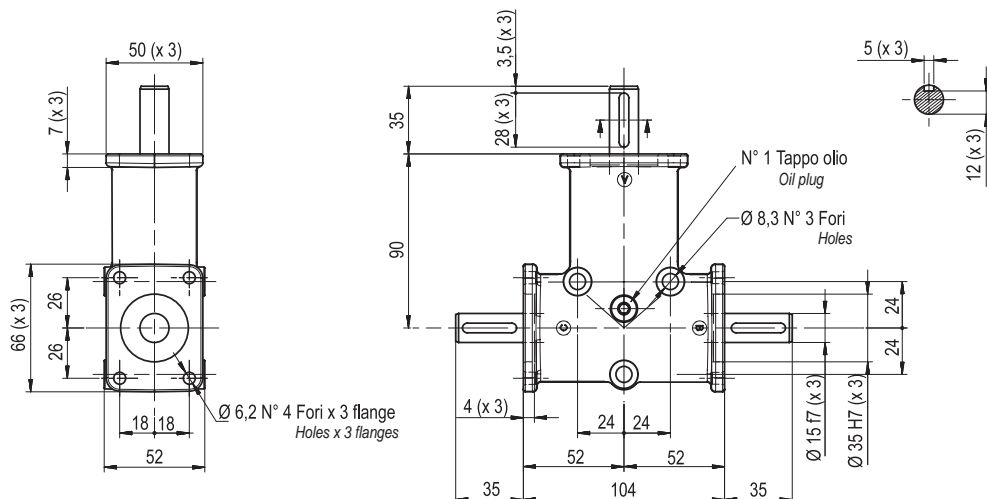


# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA 1 SIZE 1 MOD. RB	CHT				
	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R1081101	0.3
	1/1	A	C	R1081102	
	1/2	A	B	R1081203	
	1/2	A	C	R1081204	
	1/1	A	B-C	R1081105	
	1/2	A	B-C	R1081206	



MISURA 2 SIZE 2 MOD. RB	CHT				
	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R1151101	1.1
	1/1	A	C	R1151102	
	1/2	A	B	R1151203	
	1/2	A	C	R1151204	
	1/1	A	B-C	R1151105	1.2
	1/2	A	B-C	R1151206	

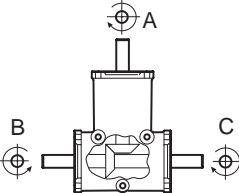


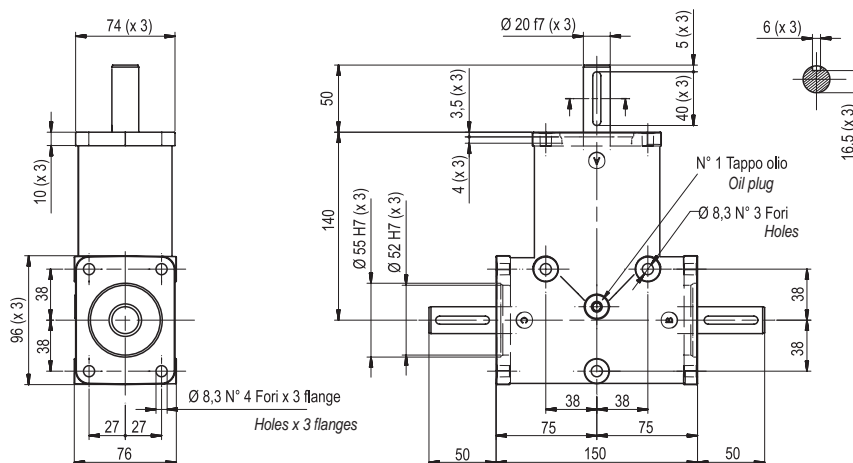
# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA 3 SIZE 3

MOD. RB

CHT

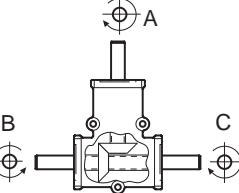
	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R1201101	3.4
	1/1	A	C	R1201102	
	1/2	A	B	R1201203	
	1/2	A	C	R1201204	
	1/1	A	B-C	R1201105	3.5
	1/2	A	B-C	R1201206	

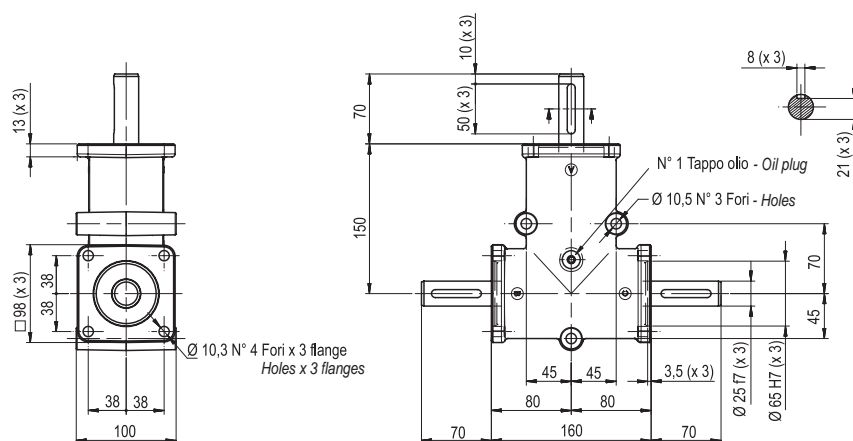


MISURA 4 SIZE 4

MOD. RB

CHT

	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R1251101	5.5
	1/1	A	C	R1251102	
	1/2	A	B	R1251203	
	1/2	A	C	R1251204	
	1/1	A	B-C	R1251105	5.8
	1/2	A	B-C	R1251206	



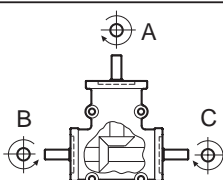


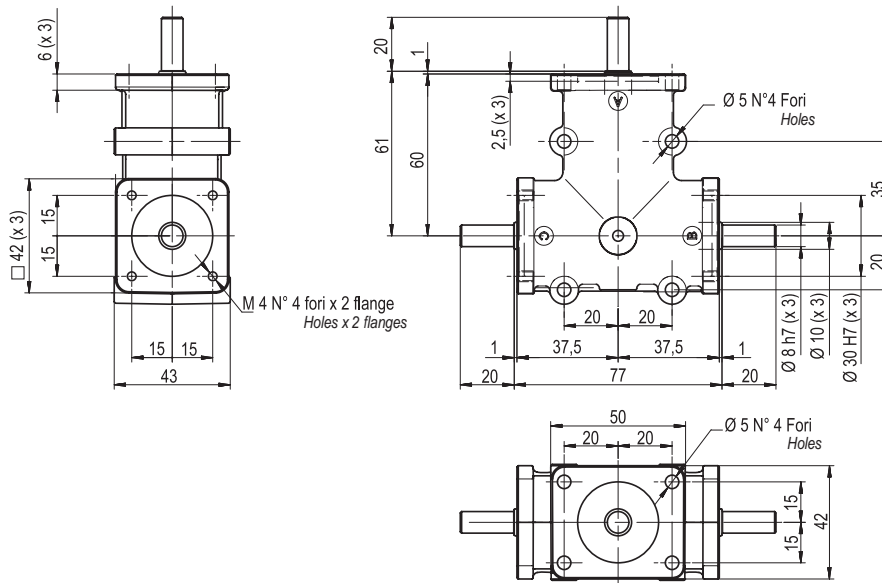
# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA 1 SIZE 1

MOD. RP

CHT

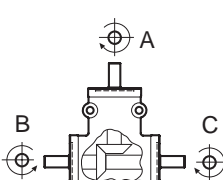
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	1/1	A	B	R3081101	0.6
	1/1	A	C	R3081102	
	1/2	A	B	R3081203	
	1/2	A	C	R3081204	
	1/1	A	B-C	R3081105	
	1/2	A	B-C	R3081206	

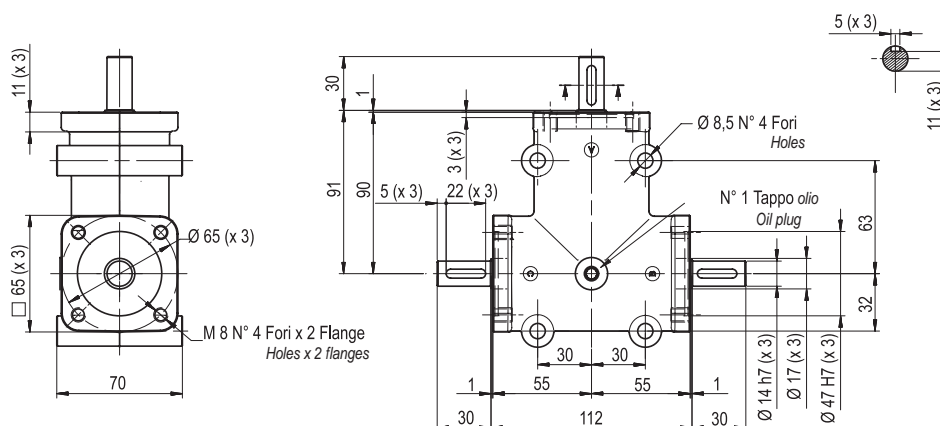


MISURA 2 SIZE 2

MOD. RP

CHT

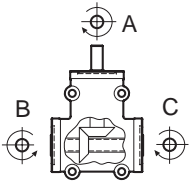
	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R3141101	2
	1/1	A	C	R3141102	
	1/2	A	B	R3141203	
	1/2	A	C	R3141204	
	1/3	A	B	R3141305	
	1/3	A	C	R3141306	
	1/1	A	B-C	R3141107	
	1/2	A	B-C	R3141208	
	1/3	A	B-C	R3141309	

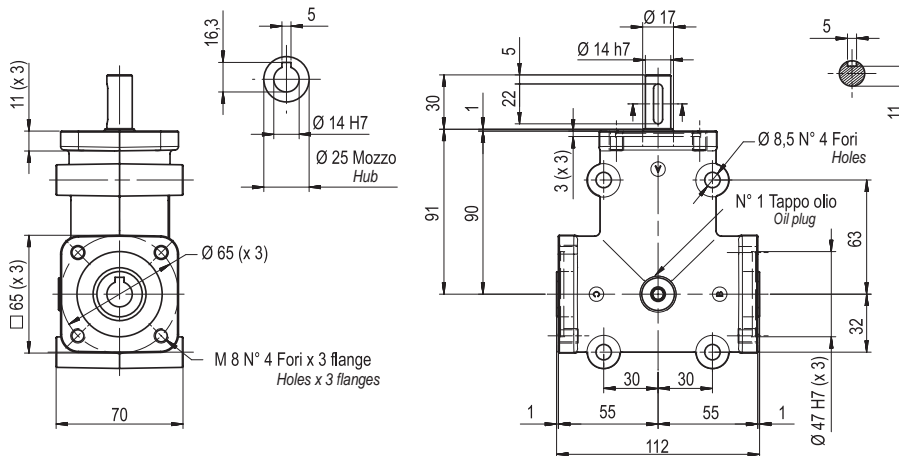


# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA 3 SIZE 3 MOD. RP

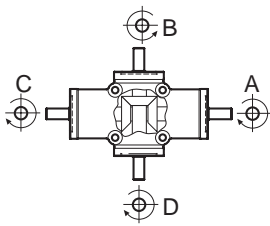
CHT

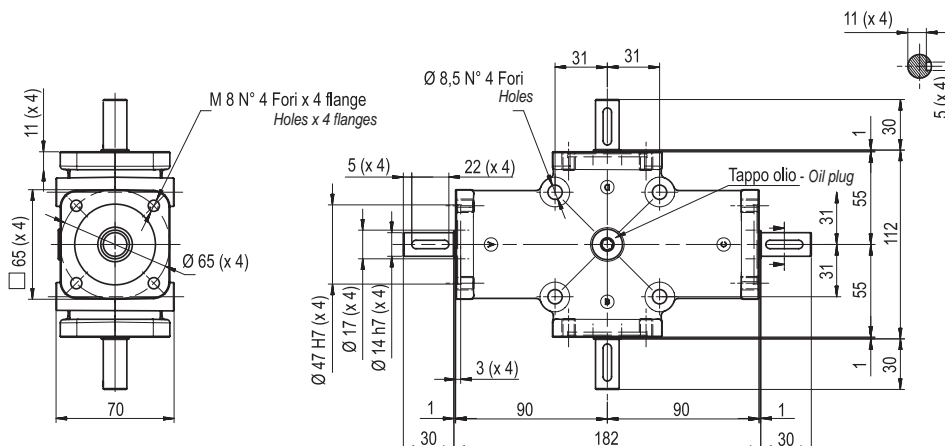
	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B-C	R3141110	2
	1/2	A	B-C	R3141211	
	1/3	A	B-C	R3141312	



MISURA 4 SIZE 4 MOD. RP

CHT

	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B-C	R3141113	3.2
	1/1	A	C-D	R3141114	
	1/2	A	B-C	R3141215	
	1/2	A	C-D	R3141216	
	1/3	A	B-C	R3141317	
	1/3	A	C-D	R3141318	
	1/1	A	B-C-D	R3141119	
	1/2	A	B-C-D	R3141220	
	1/3	A	B-C-D	R3141321	

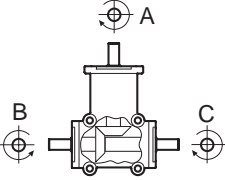


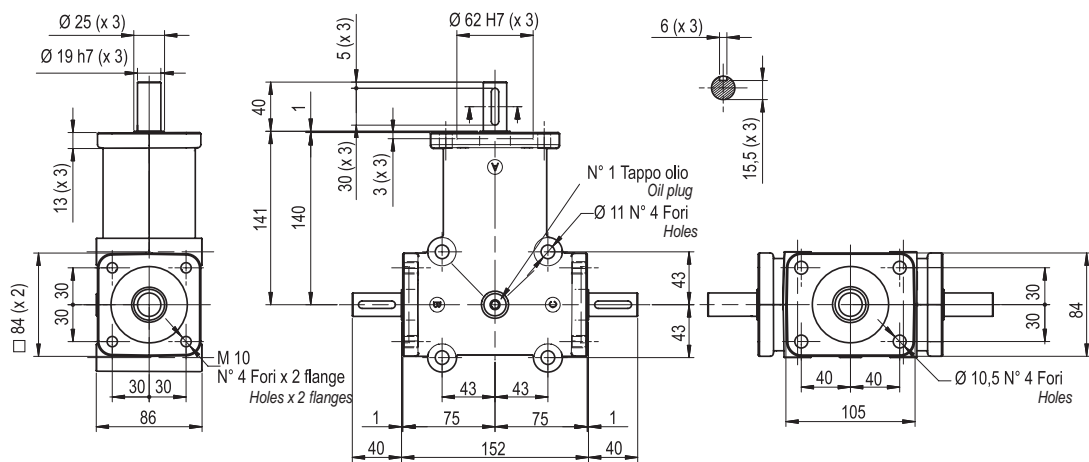
# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA 5 SIZE 5

MOD. RP

CHT

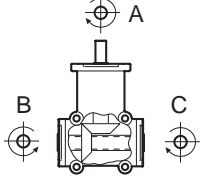
	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R3191101	4.5
	1/1	A	C	R3191102	
	1/2	A	B	R3191203	
	1/2	A	C	R3191204	
	1/3	A	B	R3191305	
	1/3	A	C	R3191306	
	1/1	A	B-C	R3191107	
	1/2	A	B-C	R3191208	
	1/3	A	B-C	R3191309	

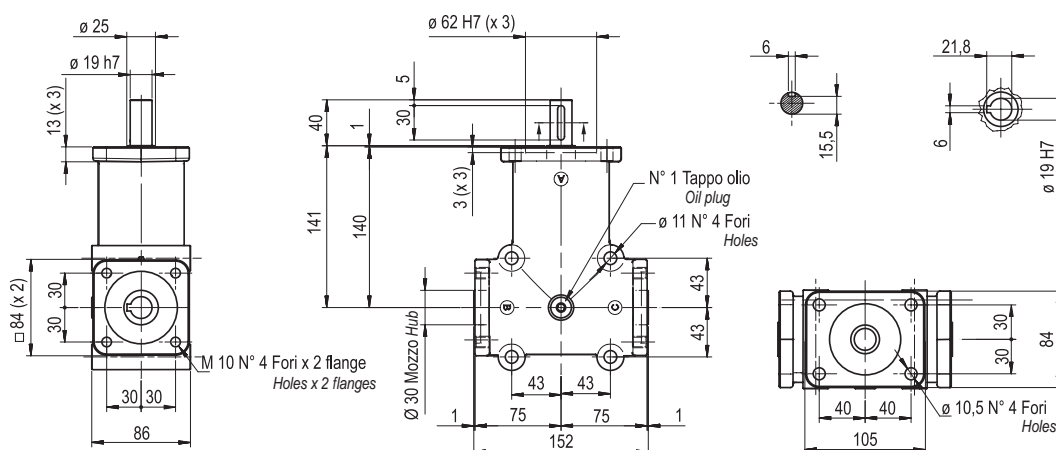


MISURA 6 SIZE 6

MOD. RP

CHT

	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B-C	R3191110	4.5
	1/2	A	B-C	R3191211	
	1/3	A	B-C	R3191312	

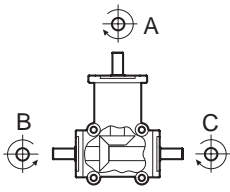


# RINVII ANGOLARI DI PRECISIONE RIGHT-ANGLE PRECISION BEVEL GEAR DRIVES

MISURA 7 SIZE 7

MOD. RP

CHT

	RAPPORTO RATIO	ENTRATA INPUT	USCITA OUTPUT	CODICE CODE	PESO Kg. WEIGHT Kg
	1/1	A	B	R3241101	4.5
	1/1	A	C	R3241102	
	1/2	A	B	R3241203	
	1/2	A	C	R3241204	
	1/3	A	B	R3241305	
	1/3	A	C	R3241306	
	1/1	A	B-C	R3241107	
	1/2	A	B-C	R3241208	
	1/3	A	B-C	R3241309	

