



**COSTRUZIONI
MECCANICHE
LEGNANESI S.r.l.**



MASTERGEAR

**RIDUTTORI CONICI
BEVEL GEARS OPERATORS**



**oil
gas
water**

C.M.L. ACTUATORS



These bevel gear actuators have been especially designed to operate valves and sluice gates, both in rising and non-rising stem modes.

- Pinion and gear are both lodged between pillow blocks thus allowing for maximum thrust.
- Accurate design ensures maximum performance and durability.
- By minimizing the number of parts in the product, maintenance requirements have been held to a minimum.
- Our design is such that repairs of these bevel gear actuators is possible without removing them from the valves thus keeping them operational during maintenance periods by means of handwheels or levers.
- When fitted with stem covers these actuators become fully weatherproof
- Actuators are fully lubricated with grease, with oil, upon request

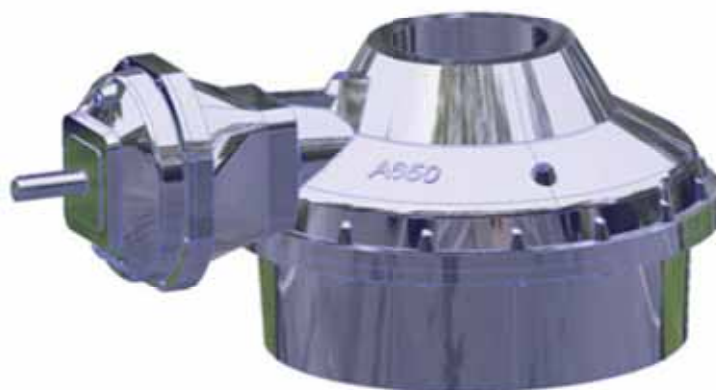
- Our actuators can be fitted with hammerblow features to operate valves, which may be seized by lack of use.

Mounting patterns are in accordance with ISO 5210/1 or, upon request special mounting patterns can be provided.

Our bevel actuators can be fitted for motorization, CML AS series actuators come with steel nuts suited for gate valves or they can be ordered in the AR series, provided with bronze nut for rising stem sluice gate applications.

As can be seen in the programs in the following pages, CML offers a wide variety of models: multiple outputs, multiple reductions, as well as dual ratios when different levels of power are required for opening and operating valves or gates. Our exclusive design features a dual speed completely concentric.

RIDUTTORI CONICI C.M.L.



Costruiti specificatamente per il comando di valvole e paratoie sia ad asta saliente che ad asta non saliente i riduttori a ingranaggi conici CML hanno le seguenti caratteristiche:

- Pignone e ruota conica sono montate tra due supporti per ottenere elevati rendimenti.
 - Componenti ben dimensionati ed in numero limitato per ridurre al minimo gli interventi di manutenzione.
 - Possibilità di asportare il gruppo riduttore lasciando applicato all'organo comandato il gruppo reggispira, consentendo quindi l'operatività dello stesso tramite apposito volantino o leva.
 - Con l'applicazione del copristelo il riduttore è a tenuta stagna.
 - Lubrificazione a grasso, a richiesta a olio.
 - Possibilità di comando di sblocco con sistema a trascinamento rigido o con sistema Hammer Blow.
 - Flangia di attacco alla valvola o paratoia secondo ISO 5210/1 (a richiesta possono essere fornite flange di attacco DIN 3210 o speciali secondo le specifiche del Cliente).
 - Predisponibili per comando motorizzato.
 - Dimensioni e capacità secondo tabelle.
- CML produce riduttori a ingranaggi conici della serie AS senza gruppo reggispira, con bussole in acciaio di adattamento alla chiocciola esistente sulla valvola o paratoia e, della serie AR con gruppo reggispira incorporato e chiocciola in

bronzo da accoppiare direttamente all'asta filettata. (A richiesta CML può fornire chiocciola in ghisa, Ni-resist, acciaio inox, etc.).

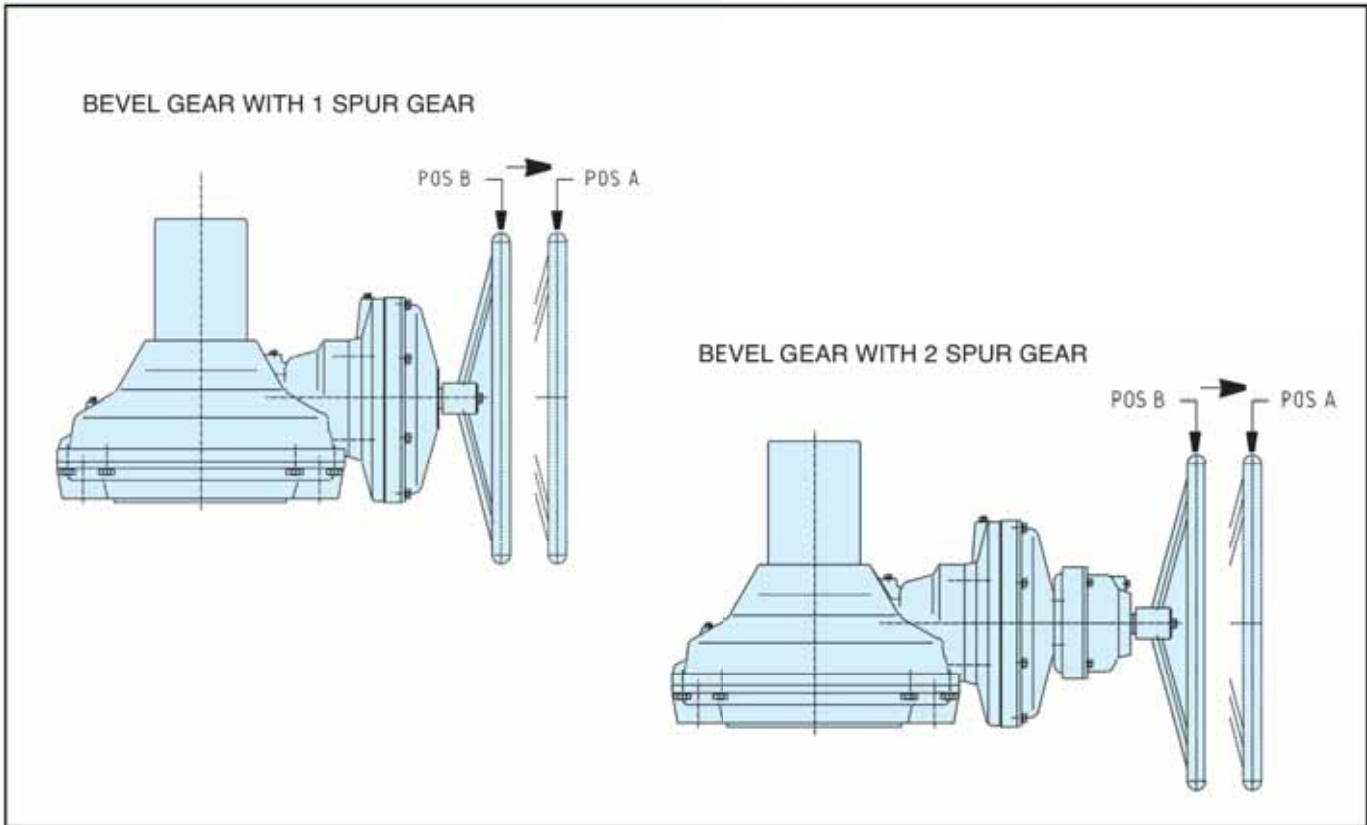
Sono prodotti nei seguenti tipi:

- AS/AR-riduttori ad un solo pignone, per il comando in singolo di valvole o paratoie.
- ASD/ARD-riduttori a due pignoni che consentono l'applicazione del volantino o della flangia di motorizzazione su un pignone e che comandano tramite il secondo pignone, uno o più riduttori per la manovra contemporanea di più aste filettate.
- AST-ART-riduttori a tre pignoni conici; possono essere utilizzati come rinvio centrale per il comando di più riduttori.

Riduttori supplementari o demoltiplicatori

Del tipo a ingranaggi cilindrici epicicloidali, sono applicabili singoli o doppi sui riduttori CML per ottenere bassi sforzi di manovra. La serie DE ha un solo rapporto di riduzione che viene utilizzato sia per lo sblocco che per il completamento della manovra. La serie DE 2 v ha due rapporti; con la maggior riduzione si effettua lo sblocco e con il secondo rapporto si può ultimare la manovra più rapidamente. La selezione dei due rapporti di riduzione si ottiene spostando assialmente il volantino.

Il volantino resta sempre montato sullo stesso albero anche al cambio del rapporto di riduzione.



I nostri riduttori possono essere forniti completi di semplice o doppio demoltiplicatore addizionale.

L'applicazione dei demoltiplicatori serve per rendere più piccolo il valore dell'input torque, così da facilitare la manovra manuale del riduttore.

I riduttori con demoltiplicatore d'altra parte necessitano di più giri di manovra per fare la corsa di chiusura o apertura della valvola.

Per ovviare a questo inconveniente **C.M.L.** ha realizzato i riduttori a doppio rapporto (2v).

La selezione fra i due rapporti si ottiene spostando assialmente il volantino per una corsa di circa 15/20 mm

Esempio

- riduttore con 1 demoltiplicatore A70R+DE90-2v
- volantino in posizione A:
rapporto corto 1:4,5
- volantino in posizione B:
rapporto lungo (4,5x8) 36:1

Esempio

- riduttore con 2 demoltiplicatori A70R+DE90+DE24-2v
- volantino in posizione A:
rapporto lungo (4,5x8) 36:1
- volantino in posizione B:
rapporto lungo (4,5x8x3,5) 126:1

Il volantino resta sempre montato sullo stesso albero anche al cambio del rapporto di riduzione.

Questo meccanismo consente di poter bloccare una valvola agendo con il rapporto più lungo per pochi giri; quando la valvola sarà sbloccata e la pressione differenziale sarà calata, si potrà agire e compiere tutta la corsa rimanente con il rapporto più corto.

Our bevel gears can be supplied with simple or double additional spur gear (DE).

The application of spur gears is needed to reduce the value of input torque, so that the manual driving of gear is easier.

With bevel gears + spur gears more turns are needed, to make the stroke of valve closing or valve opening.

In order to avoid this inconvenient, C.M.L. manufactured the bevel gears with double ratio (2v).

The selection between the two ratios is obtained, by axially moving the handwheel for a total stroke of 15 to 20 mm .

Example

- bevel gear with 1 spur gear A70R+DE90-2v
- handwheel in Pos. A:
short ratio 1:4.5
- handwheel in Pos. B:
long ratio (4.5x8) 36:1

Example

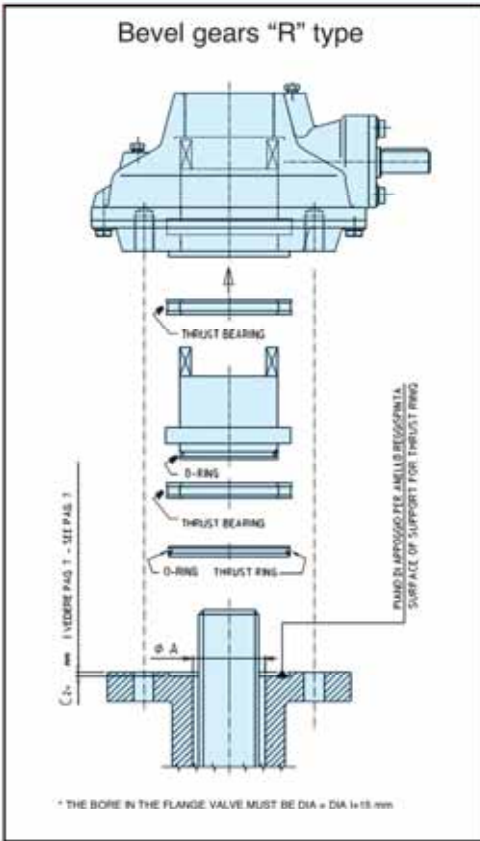
- bevel gear with 2 spur gears A70R+DE90+DE24-2v
- handwheel in Pos. A:
short ratio (4.5x8) 36:1
- handwheel in Pos. B:
long ratio (4.5x8x3.5) 126:1

The handwheel is always assembled on the same shaft, also when the reduction ratio is changed.

This mechanism permits to unlock a valve, by applying a long ratio for few turns. When the valve is unlocked and the differential pressure decreases, the remaining stroke can be made with the shorter ratio.

ISTRUZIONI

INSTRUCTIONS



Attenzione

L'anello reggispinta assiale del riduttore, deve avere un piano di appoggio sulla flangia della valvola.

Vedere le note riportate su questo catalogo alla pagina 7

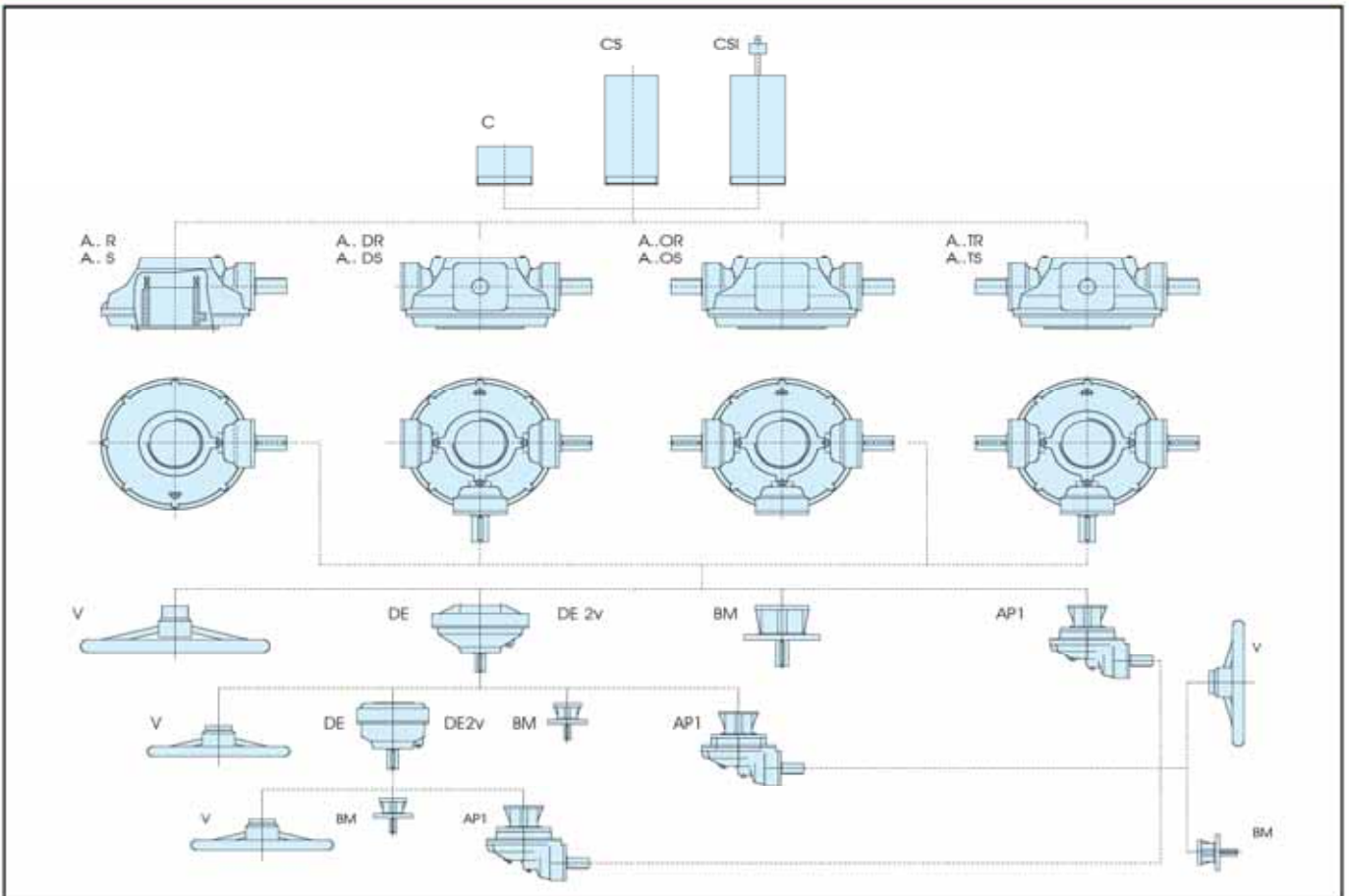
Attention

The bevel gear thrust ring must have a support plan on the top valve flange.

See the notes shown on this catalogue to the page 7

PROGRAMMA DI PRODUZIONE RIDUTTORI A INGRANAGGI CONICI

MANUFACTURING PROGRAM FOR CML BEVEL ACTUATORS



DATI TECNICI DEI RIDUTTORI CONICI CON E SENZA DEMOLTIPLICATORI

BEVEL ACTUATORS-TECHNICAL DATA

MODELLO MODEL SIZE	MAX SPINTA Solo per tipo "R" MAX THRUST Only for "R" type		MAX COPPIA USCITA MAX OUTPUT TORQUE		RAPP. RATIO	FATT. M.A. ±10%	MAX COPPIA ENTRATA MAX INPUT TORQUE		PESO WEIGHT		BASE OUTPUT FLANGE	MAX CAPACITÀ STELO MAX STEM CAPACITY				FLANGIA INPUT FLANGES	
	KN	Lbs	Nm	Ft-Lb			Nm	Ft-Lb	Kg	Lbs		mm	inc	mm	inc	mm	inc
API	-	-	310	228	1.762:1	1.50	203	152	8	18	F10	20	0.79			F10 F14	Gr 0 Gr 1/2
A03	40	9 000	300	221	2.3:1	1.95	154	113	8	18	F10	45	1.77	40	1.57	F07 F10	- Gr 0
A04	40	9 000	300	221	4.5:1	3.83	73	57	8	18	F10	45	1.77	40	1.57	F07 F10	- Gr 0
A07	70	15740	300	221	4.5:1	3.83	73	57	10	22	F10	45	1.77	40	1.57	F07 F10	- Gr 0
A11	100	22 480	500	368	1.52:1	1.29	388	285	15	33	F14	50	1.96	45	1.77	F07 F10	- Gr 0
A13	135	30 350	600	442	4.5:1	3.83	153	115	15	33	F14	65	2.56	60.5	2.38	F07 F10 F14	- Gr 0 Gr 1/2
A24	240	53 950	1100	811	4.5:1	3.83	290	211	27	60	F16	85	3.34	70	2.75	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A24+DE24	240	53 950	1100	811	15.75:1	12.08	91	67	36	80	F16	85	3.34	70	2.75	F10 F14	Gr 0 Gr 1/2
A25	250	56 200	850	627	5.8:1	4.93	172	127	27	60	F16	65	3.34	70	2.75	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A33	330	74 200	2300	1696	4.5:1	3.83	600	442	58	128	F25	118	4.64	85	3.34	F14 F16 F25	Gr 1/2 Gr 3 Gr 4
A33+DC33	330	74200	2300	1700	9:1	6.88	334	246	78	172	F25	118	4.64	85	3.35	F14 F16 F25	Gr 1/2 Gr 3 Gr 4
*A33.16	330	74200	1800	1330	4.5:1	3.83	470	347	56	124	F16	113	4.44	80	3.15	F14 F16 F25	Gr 1/2 Gr 3 Gr 4
**A36	330	74200	1800	1330	6:1	5.10	353	260	58	128	F25	118	4.64	85	3.35	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A36.16	330	74200	1800	1330	6:1	5.10	353	260	56	124	F16	113	4.45	80	3.15	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A33+DE43	330	74 200	2300	1 696	20.25:1	15.54	148	109	71	157	F25	118	4.64	85	3.34	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A33+DE43+DE24	330	74 200	2300	1 696	70.9:1	48.98	47	34	80	177	F25	118	4.64	85	3.34	F10 F14	Gr 0 Gr 1/2
A43	430	96 650	3800	2 802	4.5:1	3.83	963	732	76	168	F30	132	5.19	102	4.01	F14 F16 F25	Gr 1/2 Gr 3 Gr 4
A43+DC33	430	96690	3800	2810	9:1	6.88	552	407	96	212	F30	132	5.2	102	4.01	F14 F16 F25	Gr 1/2 Gr 3 Gr 4
A43+DE43	430	96 650	3800	2 802	20.25:1	15.54	245	181	89	196	F30	132	5.19	102	4.01	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A43+DE43+DE24	430	96 650	3800	2 802	70.9:1	48.98	73	57	99	218	F30	132	5.19	102	4.01	F10 F14	Gr 0 Gr 1/2
A70	700	157 400	6000	4 425	4.5:1	3.83	1569	1156	125	276	F35	145	5.70	115	4.52	F16-F25 F30	Gr3-Gr4 Gr 5
A70+DC70	700	157400	6000	4430	9:1	6.88	872	643	155	342	F35	145	5.71	115	4.53	F16 F25 F30	Gr 3 Gr 4 Gr 5
A70+DE90	700	157 400	6000	4 425	36:1	27.60	217	160	165	364	F35	145	5.70	115	4.52	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A70+DE90+DE24	700	157 400	6000	4 425	126:1	88.23	69	50	175	386	F35	145	5.70	115	4.52	F10 F14	Gr 0 Gr 1/2
A90	900	202 300	9000	6 638	5:1	4.25	2117	1561	160	353	F35	190	7.48	122	4.80	F16-F25 F30	Gr3-Gr4 Gr 5
A90+DC70	900	202370	9000	6640	10:1	7.65	1175	867	190	419	F35	190	7.48	122	4.8	F16 F25 F30	Gr 3 Gr 4 Gr 5

A richiesta, CML può fornire riduttori con caratteristiche tecniche diverse dallo standard. CML actuators can be customized to suit specific installa-

* Solo per A300S (senza gruppo reggispinta), fornibile con base ISO F48

A300R, con base ISO F48. Non idoneo per massima spinta e coppia.

*A33.16: quote come A33 con base ISO F16

**A33.16: quote come A33

A300R, level with output flange ISO F48. Are not suitable for max thrust and torque.

* A33.16: same dimensions of A33 - ISO F16 Output

** A33.16: same dimensions of A 33

DATI TECNICI DEI RIDUTTORI CONICI CON E SENZA DEMOLTIPLICATORI

BEVEL ACTUATORS-TECHNICAL DATA

MODELLO MODEL SIZE	MAX SPINTA Solo per tipo "R" MAX THRUST Only for "R" type		MAX COPPIA USCITA MAX OUTPUT TORQUE		RAPP. RATIO	FATT. M.A. ±10%	MAX COPPIA ENTRATA MAX INPUT TORQUE		PESO WEIGHT		BASE OUTPUT FLANGE	MAX CAPACITÀ STELO MAX STEM CAPACITY				FLANGIA INPUT FLANGES	
	KN	Lbs	Nm	ft-Lb			Nm	ft-Lb	Kg	Lbs		mm	inc	mm	inc	mm	inc
A90+DE90	900	202 300	9 000	6 638	40:1	30.6	293	214	205	452	F35	190	7.48	122	4.80	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A90+DE90+DE24	900	202 300	9 000	6 638	140:1	96.73	93	68	215	474	F35*	190	7.48	122	4.80	F10 F14	Gr 0 Gr 1/2
A110	1 100	247 300	16 000	1 1800	5:1	4.25	3760	2773	310	684	F40	210	8.26	140	5.51	F16-F25 F30-F35	Gr3-Gr4 Gr5-Gr6
A110+DC70	1100	247340	16000	11800	10:1	7.45	2091	1542	340	750	F40	210	8.27	140	5.51	F16 F25 F30	Gr 3 Gr 4 Gr 5
A110RS+DC70	1600	359760	16000	11800	10:1	7.45	2091	1542	340	750	F40	—	—	140	5.51	F16 F25 F30	Gr 3 Gr 4 Gr 5
A110+DE110	1 100	247 300	16 000	1 1800	30:1	23.82	695	512	355	783	F40	210	8.26	140	5.51	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A110+DE110+DE24	1 100	247 300	16 000	1 1800	105:1	72.73	220	162	365	805	F40	210	8.26	140	5.51	F10 F14	Gr 0 Gr 1/2
A110RS	1 600	359 700	16 000	1 1800	5:1	4.25	3760	2773	310	684	F40	—	—	140	5.51	F16-F25 F30-F35	Gr3-Gr4 Gr5-Gr6
A110RS+DE110	1 600	359 700	16 000	1 1800	30:1	23.82	695	512	355	783	F40	—	—	140	5.51	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A110RS+DE110+DE24	1 600	359 700	16 000	1 1800	105:1	72.73	220	162	365	805	F40	—	—	140	5.51	F10 F14	Gr 0 Gr 1/2
A111	1 100	247 300	12 000	8 850	5.8:1	4.33	2434	1790	310	684	F40	210	8.26	140	5.51	F16-F25 F30-F35	Gr3-Gr4 Gr5-Gr6
A111+DC70	1100	247340	12000	8850	11.6:1	8.17	1353	998	340	750	F40	210	8.27	140	5.51	F16 F25 F30	Gr 3 Gr 4 Gr 5
A111RS+DC70	1600	359760	12000	8850	11.6:1	8.17	1353	998	340	750	F40	—	—	140	5.51	F16 F25 F30	Gr 3 Gr 4 Gr 5
A111+DE110	1 100	247 300	12 000	8 850	34.8:1	26.82	450	331	355	783	F40	210	8.26	140	5.51	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A111+DE110+DE24	1 100	247 300	12 000	8 850	121.8:1	83.86	143	105	365	805	F40	210	8.26	140	5.51	F10 F14	Gr 0 Gr 1/2
A111RS	1 600	359 700	12 000	8 850	5.8:1	4.33	2434	1790	310	684	F40	—	—	140	5.51	F16-F25 F30-F35	Gr3-Gr4 Gr5-Gr6
A111RS+DE110	1 600	359 700	12 000	8 850	34.8:1	26.82	450	331	355	783	F40	—	—	140	5.51	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A111RS+DE110+DE24	1 600	359 700	12 000	8 850	121.8:1	83.86	143	105	365	805	F40	—	—	140	5.51	F10 F14	Gr 0 Gr 1/2
A120	1 800	404650	19000	14000	5:1	4.25	4470	3295	350	778	F48	210	8.26	140	5.51	F16-F25 F30-F35	Gr3-Gr4 Gr5-Gr6
** A120+DE110+DE43	1 800	404650	19000	14000	135:1	92.35	204	150	408	907	F48	210	8.26	140	5.51	—	—
A200	2500	562000	25000	18420	5:1	4.25	5880	4330	520	1156	F48	210	8.26	180	7.08	F35 F40	Gr 6 Gr 7
A200+DE450.v	2500	562000	25000	18420	30:1	22.95	1090	803	640	1422	F48	210	8.26	180	7.08	F14 F16	Gr1/2 Gr 63
A200+DE450.x	2500	562000	25000	18420	50:1	38.25	654	482	640	1422	F48	210	8.26	180	7.08	F14 F16	Gr1/2 Gr 3
A200+DE450.x+DE43	2500	562000	25000	18420	225:1	155.8	161	119	650	1422	F48	210	8.26	180	7.08	F10 F14	Gr 0 Gr1/2
A300	3 000	674 430	30 000	22127	6:1	5.1	5882	4338	730	1610	F60*	250	9.84	200	7.87	F35 F40	Gr 6 Gr 7

** A120+DE110+DE43: ONLY FOR MANUAL VERSION

*A33.16: quote come A33 con base ISO F16

**A33.16: quote come A33

*** OUTPUT FLANGE A650: N. 16 BORES M52 ON C.B. DIAMETER 764

* A33.16: same dimensions of A33 - ISO F16 Output

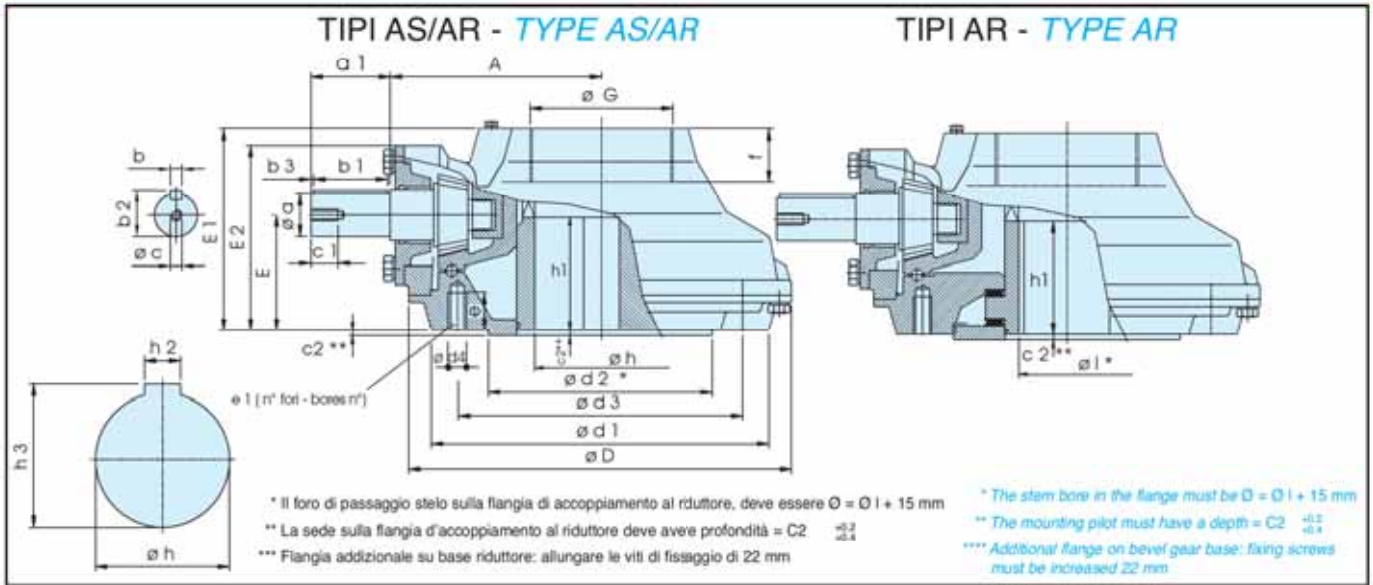
* A33.16: same dimensions of A 33

DATI TECNICI DEI RIDUTTORI CONICI CON E SENZA DEMOLTIPLICATORI

BEVEL ACTUATORS-TECHNICAL DATA

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	KN	Lbs	Nm	Ft-Lb			Nm	Ft-Lb	Kg	Lbs		mm	inc	mm	inc	ISO	DIN
A300+DE450.v	3 000	674 430	30 000	22127	36:1	27.60	1087	801	850	1874	F60°	250	9.84	200	7.87	F14 F16	Gr 1/2 Gr 3
A300+DE450.x	3 000	674 430	30 000	22127	60:1	45.9	654	482	850	1874	F60°	250	9.84	200	7.87	F14 F16	Gr 1/2 Gr 3
A300+DE450.x+DE43	3 000	674 430	30 000	22127	270:1	185.9	161	119	863	1902	F60°	250	9.84	200	7.87	F14 F16	Gr 1/2 Gr 3
A450	4500	1011780	45 000	33160	6:1	5.10	8820	6500	830	1845	F60	260	10.2	215	8.46	F35 F40	Gr 6 Gr 7
A450+DE450.v	4500	1011780	45 000	33160	36:1	27.54	1634	1205	950	2110	F60	260	10.2	215	8.46	F16 F25	Gr 3 Gr 4
A450+DE450.x	4500	1011780	45 000	33160	60:1	45.90	980	720	950	2110	F60	260	10.2	215	8.46	F16 F25	Gr 3 Gr 4
A450+DE450.x+DE43	4500	1011780	45000	33160	270:1	185.90	242	180	963	2140	F60	260	10.2	215	8.46	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A450+DE450.v+DE90	4500	1011780	45000	33160	288:1	198.30	227	167	960	2130	F60	260	10.2	215	8.46	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A450+DE450.x+DE90	4500	1011780	45000	33160	480:1	330.50	136	100	980	2178	F60	260	10.2	215	8.46	F10 F14 F16	Gr 0 Gr 1/2 Gr 3
A650	6500	1461200	70000	51590	6:1	5.10	13725	10115	900	2000	***	280	11.2	230	9.05	F35 F40	Gr 6 Gr 7
A650+DE650.8 (8.66)	6500	1461200	70000	51590	51.96:1	39.75	1761	1298	1050	2335	***	280	11.02	230	9.05	F16 F25	Gr 3 Gr 4
A650+DE650.5 (5.01)	6500	1461200	70000	51590	30.06:1	22.99	3045	2244	1050	2335	***	280	11.02	230	9.05	F16 F25	Gr 3 Gr 4
A650+DE650.4 (4.28)	6500	1461200	70000	51590	25.68:1	19.65	3563	2625	1050	2335	***	280	11.02	230	9.05	F16 F25	Gr 3 Gr 4
A650+DE650.3 (3.68)	6500	1461200	70000	51590	22.08:1	16.89	4145	3055	1050	2335	***	280	11.02	230	9.05	F16 F25	Gr 3 Gr 4
A650+DE650.8+DE90	6500	1461200	70000	51590	415.7:1	286.00	245	180	1095	2435	***	280	11.02	230	9.05	F10 F14 F16	Gr 0 Gr 1/2 Gr 3

RIDUTTORI A INGRANAGGI CONICI PER VALVOLE E PARATOIE



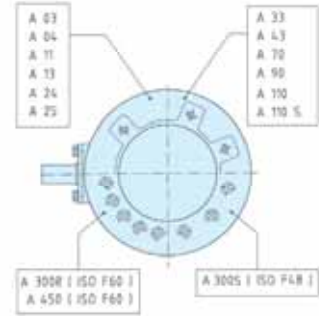
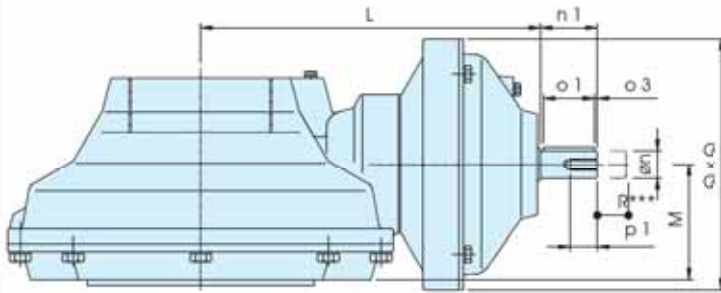
VALORI COMUNI AI RIDUTTORI TIPO AS E TIPOAR - DIMENSION CHART FOR TYPE AS AND AR

TIPO TYPE	COPPIA USCITA OUTPUT TORQUE		BASE ISO FLANGE	RAPP. RATIO	MAX COPPIA ENTRATA INPUT TORQUE		e a (e 9)	a1	A	b	b1	b2	b3	c	c1	c2	d1	d2 (f 8)	d3	d4		D	e	e1	E	E1	E2	f
	Nm	Fl-Lb			Nm	Fl-Lb														Metric	UNC							
AP1	310	228	F10 DINGr0	1,762:1	207	152	25	50	100	8	45	28	2.5	M8	18	3	125	70 60	102	M10	3/8"-16	172	18	4	78	123	-	-
A03	300	221	F10	2.3:1	154	113	25	50	117	8	45	28	2.5	M8	21	3	125	70	102	M10	3/8"-16	180	18	4	69	106	114	32
A04	300	221	F10	4.5:1	78	57	18	40	100	6	35	20.5	2.5	M8	21	3	125	70	102	M10	3/8"-16	180	18	4	56	101	87	32
A07	300	221	F10	4.5:1	78	57	18	40	100	6	35	20.5	2.5	M8	21	3	125	70	102	M10	3/8"-16	180	18	4	78	123	109	32
A11	500	368	F14	1.52:1	388	285	25	50	121	8	45	28	2.5	M8	21	4	175	100	140	M16	5/8"-11	180	26	4	95	154	153	32
A13	600	442	F14	4.5:1	156	115	18	40	123	6	35	20.5	2.5	M8	21	4	175	100	140	M16	5/8"-11	226	26	4	74	130	112	35
A24	1100	811	F16	4.5:1	290	211	25	50	144	8	45	28	2.5	M8	21	5	210	130	165	M20	3/4"-10	267	34	4	92	157	137	35
A25	850	627	F16	5.8:1	172	127	25	50	144	8	45	28	2.5	M8	21	5	210	130	165	M20	3/4"-10	267	34	4	87	157	132	35
A33	2300	1696	F25	4.5:1	600	442	38	70	186	10	65	41	2.5	M10	24	5	300	200	254	M16	5/8"-11	340	30	8	102	178	164	46
A43	3800	2802	F30	4.5:1	993	732	38	70	204	10	65	41	2.5	M10	24	5	350	230	298	M20	3/4"-10	380	34	8	115	200	177	46
A70	6000	4425	F35	4.5:1	1568	1156	50	105	241	14	100	53.5	2.5	M12	27	5	415	260	356	M30	1"-8	433	45	8	150	238	238	46
A90	9000	6638	F35	5:1	2117	1561	50	155	287	14	150	53.5	2.5	M12	27	5	415	260	356	M30	1"-8	525	50	8	155	262	243	46
A110 A110S	16000	11800	F40	5:1	3760	2773	50	155	325	14	150	53.5	2.5	M12	27	8	475	300	406	M36	1.1/4"-7	602	65	8	215	317	303	46
A111 A111S	12000	8850	F40	5.8:1	2434	1790	50	155	325	14	150	53.5	2.5	M12	27	8	475	300	406	M36	1.1/4"-7	602	65	8	215	317	303	46
A120	19000	14000	F48	5:1	4470	3295	50	155	325	14	150	53.5	2.5	M12	27	8	560	370	483	M36	1.1/4"-7	602	65	12	215	317	303	46
A200	25000	18420	F48	5:1	5880	4330	80	170	380	22	160	85	5	M16	27	8	560	370	483	M36	1.1/4"-7	705	65	12	280	395	405	46
A300	30000	22127	(F48)* F60	6:1	5882	4338	80	170	449	22	160	85	5	M16	27	8	560 686	370 470	483 603	M36	1.1/4"-7	840	65	12 20	330	470	455	49
A450	45000	33160	F60	6:1	8820	6500	100	200	502	28	190	106	5	M16	27	8	686	470	603	M36	1.1/4"-7	940	80	20	375	520	500	50
A650	70000	51590	x	6:1	13725	10115	100	200	557	28	190	106	5	M16	27	8	910	500	764	M52	2"-41/2	1060	90	16	450	660	590	100

La COSTRUZIONI MECCANICHE LEGNANESI si riserva la facoltà di apportare modifiche di perfezionamento e dimensioni, senza l'obbligo di preavviso.
 * Solo per A300S (senza gruppo reggispira), fornibile con base ISO F48

BEVEL ACTUATORS FOR VALVES AND SLUICE GATES

TIPI AS e AR con DE e DE 2v
 TYPES AS and AR with DE and DE 2v



*** R = corsa volantino per innesto 2° rapporto (solo per DE 2v)
 *** R = Handwheel travel for engagement of second speed

TIPO TYPE	Ø G		h 1	SOLO TIPO AS ONLY TYPE AS			SOLO TIPO AR ONLY TYPE AR		RIDUTTORI CON DEMOLTIPLICATORI DE / DE 2V ACTUATORS WITH MULTIPLE REDUCTIONS DE / DE 2V																				
	Gas	NPT		Ø h max	h 2 max	h 3 max	Spinta Thrust		* Φ I ₁ max	** Φ I ₂ max	Demoltiplicatore Tipo Reduction Type	Rapporto totale Total ratio	Max Coppia volantino Input torque Nm Ft-Lb		L	M	Ø n (e9)	n1	o	o1	o2	o3	Ø p	p1	Q	*** R			
				KN	Lbs	KN	Lbs	Nm					Ft-Lb																
AP1	-	-	68	20	6	22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A03	-	2"	48	45	14	48.8	40	9000	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A04	-	2"	48	45	14	48.8	40	9000	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A07	-	2"	70	-	-	-	70	15740	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A11	-	2"	62	50	14	53.8	100	22480	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A13	-	2 1/2"	68	65	18	69.4	135	30350	60.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A24	-	3"	88	85	22	90.4	240	53950	70	-	A24 + DE24	15.75:1	91	67	254	92	25	50	8	45	28	2.5	M8	18	166	19	-	-	
A25	-	3"	88	85	22	90.4	250	56200	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
A33	-	5"	100	118	32	125.4	330	74200	85	-	A33 + DE43 A33 + DE43 + DE24	20.25:1 70.9:1	148 47	109 4	300 414	102 102	25 25	50 50	8 8	45 45	28 28	2.5 2.5	M8 M8	18 18	222 166	20 19	-	-	
A43	-	5"	110	132	36	140.4	430	96650	102	-	A43 + DE43 A43 + DE43 + DE24	20.25:1 70.9:1	258 78	181 57	317 432	115 115	25 25	50 50	8 8	45 45	28 28	2.5 2.5	M8 M8	18 18	222 166	20 19	-	-	
A70	-	5"	145	145	36	153.4	700	157400	115	95	A70 + DE90 A70 + DE90 + DE24	36:1 126:1	217 68	160 50	364 474	150 150	25 25	50 50	8 8	45 45	28 28	2.5 2.5	M8 M8	18 18	310 166	25 19	-	-	
A90	-	6"	155	190	45	200.4	900	202300	122	95	A90 + DE90 A90 + DE90 + DE24	40:1 140:1	293 93	214 68	409 520	155 155	25 25	50 50	8 8	45 45	28 28	2.5 2.5	M8 M8	18 18	310 166	25 19	-	-	
A110 A110S	-	6"	205	210	50	221.4	1100 1600	247300 359700	140	102	A110 + DE110 A110S + DE110 A110 + DE110 + DE24 A110S + DE110 + DE24	30:1 105:1	695 220	512 162	451 565	215 215	38 25	70 50	10 8	65 45	41 28	2.5 2.5	M10 M8	21 18	332 166	- 19	-	-	-
A111 A111S	-	6"	205	210	50	221.4	1100 1600	247300 359700	140	102	A111 + DE110 A111S + DE110 A111 + DE110 + DE24 A111S + DE110 + DE24	34.8:1 121.8:1	450 143	331 105	451 565	215 215	38 25	70 50	10 8	65 45	41 28	2.5 2.5	M10 M8	21 18	332 166	- 19	-	-	
A120	-	6"	205	210	50	221.4	1800	404650	140	102	A120+D 110 A120+DE110+DE43	135:1	204	150	572	215	25	50	8	45	28	2.5	M8	18	222	20	-	-	
A200	11"	-	265	210	50	221.4	2500	562000	180	120	A200+DE450.v A200+DE450.x A200+DE450.x + DE43	30:1 50:1 225:1	1090 654 161	803 482 153	656 656 710	280 280 260	38 38 25	70 70 50	10 10 8	65 65 45	41 41 28	2.5 2.5 2.5	M10 M10 M10	21 21 18	490 490 166	- - 19	-	-	
A300	11"	-	306	250	56	262.4	3000	674430	200	140	A300 + DE450.v A300 + DE450.x A300 + DE450.x + DE43	36:1 60:1 270:1	1087 654 161	801 482 119	659 659 778	330 330 330	38 38 25	70 70 50	10 10 8	65 65 45	41 41 28	2.5 2.5 2.5	M10 M10 M8	21 21 18	490 490 222	- - 20	-	-	
A450	11"	-	370	260	56	272.4	4500	1011780	215	170	A450+DE450.v A450+DE450.x A450+DE450.x + DE43 A450+DE450.v + DE90 A450+DE450.x + DE90	36:1 60:1 270:1 288 480	1634 980 242 227 136	1205 720 180 167 100	707 707 840 840 826	379 375 375 375 375	38 38 25 25 25	70 70 50 50 50	10 10 8 8 8	65 65 45 45 45	41 41 28 28 28	2.5 2.5 2.5 2.5 2.5	M10 M10 M8 M8 M8	21 21 18 129 18	490 490 222 310 310	- - 20 25 25	-	-	
A650	13"	-	420	280	63	292.4	6500	1461200	230	180	A650+DE650.3 A650+DE650.4 A650+DE650.5 A650+DE650.8 A650+DE650.8+DE90	22.08:1 25.68:1 30.06:1 51.96:1 415.7:1	4145 3563 3045 1761 245	3055 2625 2244 1298 180	900 900 900 900 1036	450 450 450 450 450	50 50 50 50 25	155 155 155 155 50	14 14 14 14 8	150 150 150 150 45	53.8 53.8 53.8 53.8 28	2.5 2.5 2.5 2.5 2.5	M10 M10 M10 M10 M8	21 21 21 21 18	480 480 480 480 310	- - - - 25	-	-	

COSTRUZIONI MECCANICHE LEGNANESI continues to improve its products. As a result we reserve the right to make changes without prior notice.

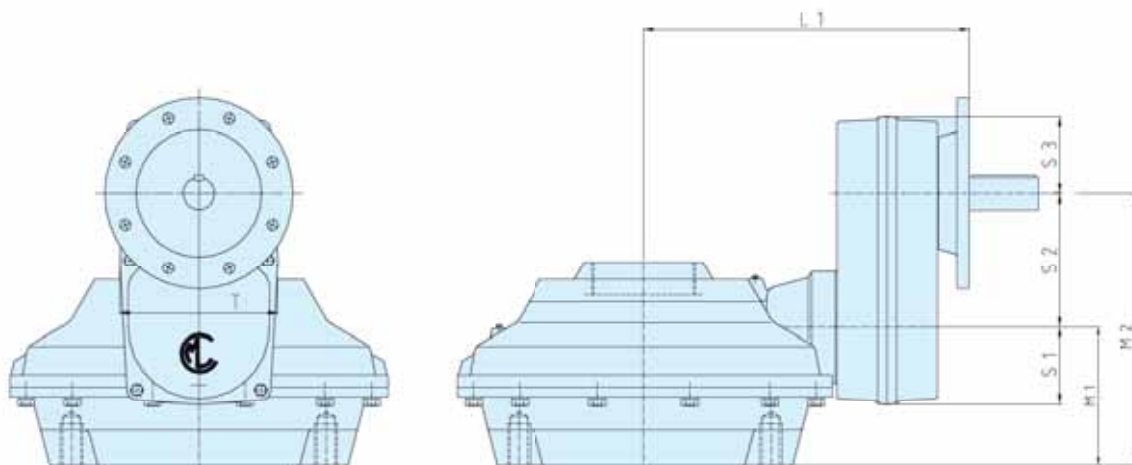
* A300S only (no thrust taking) output flange ISO F48 is available.

* Φ I₁ solid bronze stem nut - ** Φ I₂ steel stem nut with bronze in sert

DATI TECNICI DEI RIDUTTORI CONICI CON DEMOLTIPLICATORE CILINDRICO

BEVEL ACTUATORS WITH SPUR GEAR - TECHNICAL DATA

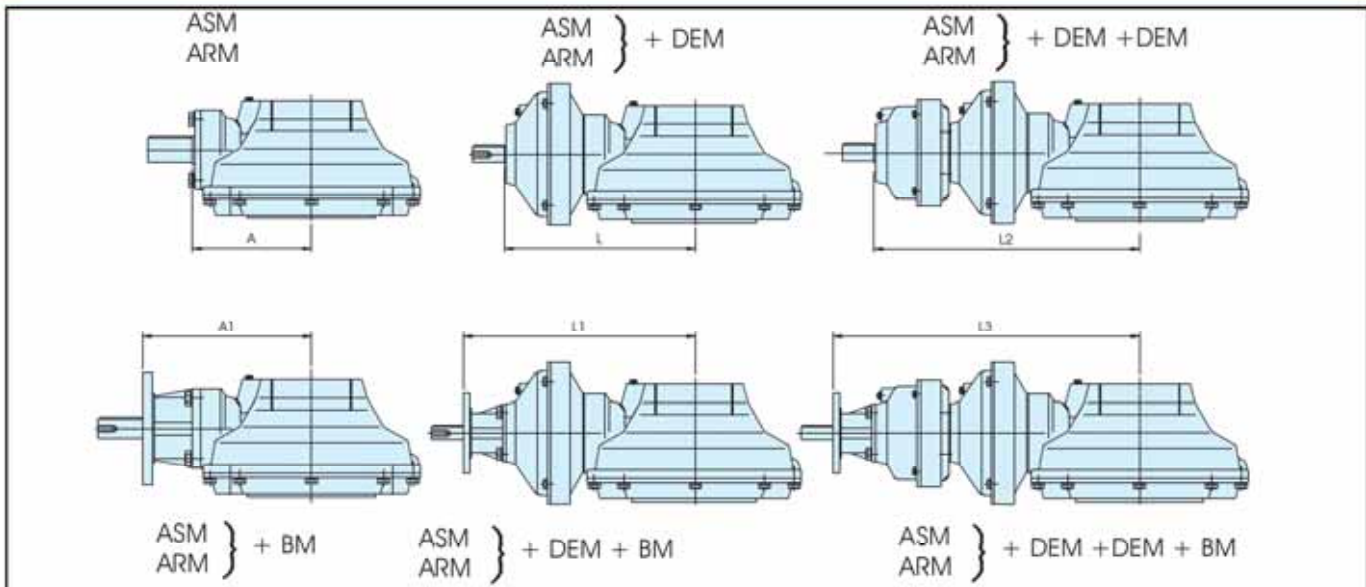
TIPI AS e AR con DC - *TYPE AS and AR with DC*



MODELLO MODEL SIZE	MAX THRUST ONLY FOR "R" TYPE		OUTPUT TORQUE		OUTPUT TORQUE ISO	TOTAL RATIO	M.A. ± 10%	INPUT TORQUE		L1	M1	M2	S1	S2	S3	T	INPUT FLANGES ISO
	KN	Lbs	Nm	Ft-Lb				Nm	Ft-Lb								
A33+DC33	330	74200	2300	1700	F25	9:1	6,88	334	246	384	102	270	90	168	90	190	F14
										398							F16
										342							F25
A43+DC33	430	96690	3800	2810	F30	9:1	6,88	552	407	402	115	283	90	168	90	190	F14
										416							F16
										360							F25
A70+DC70	700	157400	6000	4430	F35	9:1	6,88	872	643	505	150	360	120	210	120	252	F16
										436							F25
										436							F30
A90+DC70	900	202370	9000	6640	F35	10:1	7,65	1176	867	550	155	365	120	210	120	252	F16
										481							F25
										481							F30
A110+DC70	1100	247340	16000	11800	F40	10:1	7,65	2091	1542	588	215	425	120	210	120	252	F16
										519							F25
										519							F30
A110R+DC70	1600	359760	16000	11800	F40	10:1	7,65	2091	1542	588	215	425	120	210	120	252	F16
										519							F25
										519							F30
A111+DC70	1100	247340	12000	8850	F40	11,61	8,87	1353	998	588	215	425	120	210	120	252	F16
										519							F25
										519							F30
A111R+DC70	1600	359760	12000	8850	F40	11,61	8,87	1353	998	588	215	425	120	210	120	252	F16
										519							F25
										519							F30

RIDUTTORI A INGRANAGGI CONICI MOTORIZZABILI PER VALVOLE E PARATOIE

MOTORIZABLE BEVEL ACTUATOR FOR VALVES AND SLUICE GATES

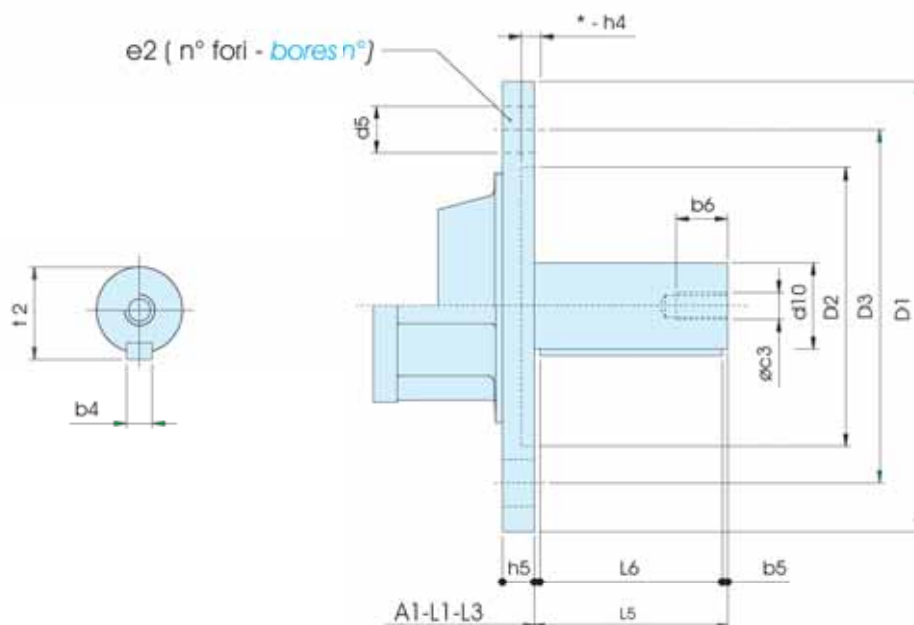


MODELLO SIZE	SENZA WITHOUT BM		Con BM – With BM												
			ISO	F 07	F 10	F 14	F 16	F 25	F 30	F 35	F 40	F 48	F 60		
			DIN	-	Gr 0	Gr 1/2	Gr 3	Gr 4	Gr 5	Gr 6	Gr 7				
AP1M	A	100	A1		157	165									
A03M	A	117	A1	174	174										
A04M - A07M	A	100	A1	143	138										
A11M	A	121	A1	174	176										
A13M	A	123	A1	173	175	145									
A24M	A	144	A1		202	210	180								
	L	254	L1		317	325									
A25M	A	144	A1		202	210	180								
A33M	A	186	A1			264	278	222							
	L	300	L1		363	371	340								
	L2	414	L3		468	483									
A43M	A	204	A1			282	296	240							
	L	313	L1		381	389	358								
	L2	425	L3		486	494									
A70M	A	241	A1				341	272	272						
	L	363	L1		426	434	404								
	L2	474	L3		537	545									
A90M	A	287	A1				386	317	317						
	L	409	L1		471	479	449								
	L2	520	L3		582	590									
A110M -A111M	A	325	A1				424	355	355	355					
	L	451	L1		513	521	491								
A110SM -A111SM	L2	564	L3		626	634									
A200M	A	379	A1					451		459					
	L	594	L1			663	689			451					
	L2	710	L3		778	786									
A300M	A	449	A1							516	524				
	L	659	L1			728	754								
	L2	778	L3		843	851									
A450M	A	502	A1							566	574				
	L	707	L1				819	749							
	L2-43 L2-90	840 826	L3-43 L3-90		889 903	897 911	867 881								
A650M	A	557	A1							633	633				
	L	900	L1				1019	950							
	L2	1041	L3		1104	1112	1082								

In questa pagina sono indicate solo le variazioni di quota per i riduttori dotati di Flangia BM e, in apposite tabelle, le quote delle flange BM ISO 5210 e DIN 3210 per attuatori multigiro. Flange per attacco speciali su disegno del cliente, possono essere fornite a richiesta. I riduttori motorizzabili si differenziano dai tipi a comando manuale per l'applicazione di cuscinetti volventi, come supporti del pignone e l'esecuzione di speciali trattamenti sulle ruote coniche, in modo da poter ottenere rendimenti e grado di sicurezza elevati. Anche nei gruppi demoltiplicatori (DEM) e dei rinvii a 90° (AP1M), tutte le ruote dentate sono sopportate da cuscinetti volventi. Gli accessori, gli optional, le alternative alla composizione standard dei riduttori motorizzabili, sono corrispondenti a quanto prescritto nelle pagine precedenti. CML può fornire i riduttori motorizzabili completi di attuatori elettromeccanici.

FLANGE DI MOTORIZZAZIONE

MOTORIZABLE FLANGES



* Il gradino di centraggio sulla flangia di accoppiamento deve avere altezza = $h4 \begin{smallmatrix} -0.5 \\ -1 \end{smallmatrix}$

* Dimension h4 must be: $\begin{smallmatrix} -0.5 \\ -1 \end{smallmatrix}$

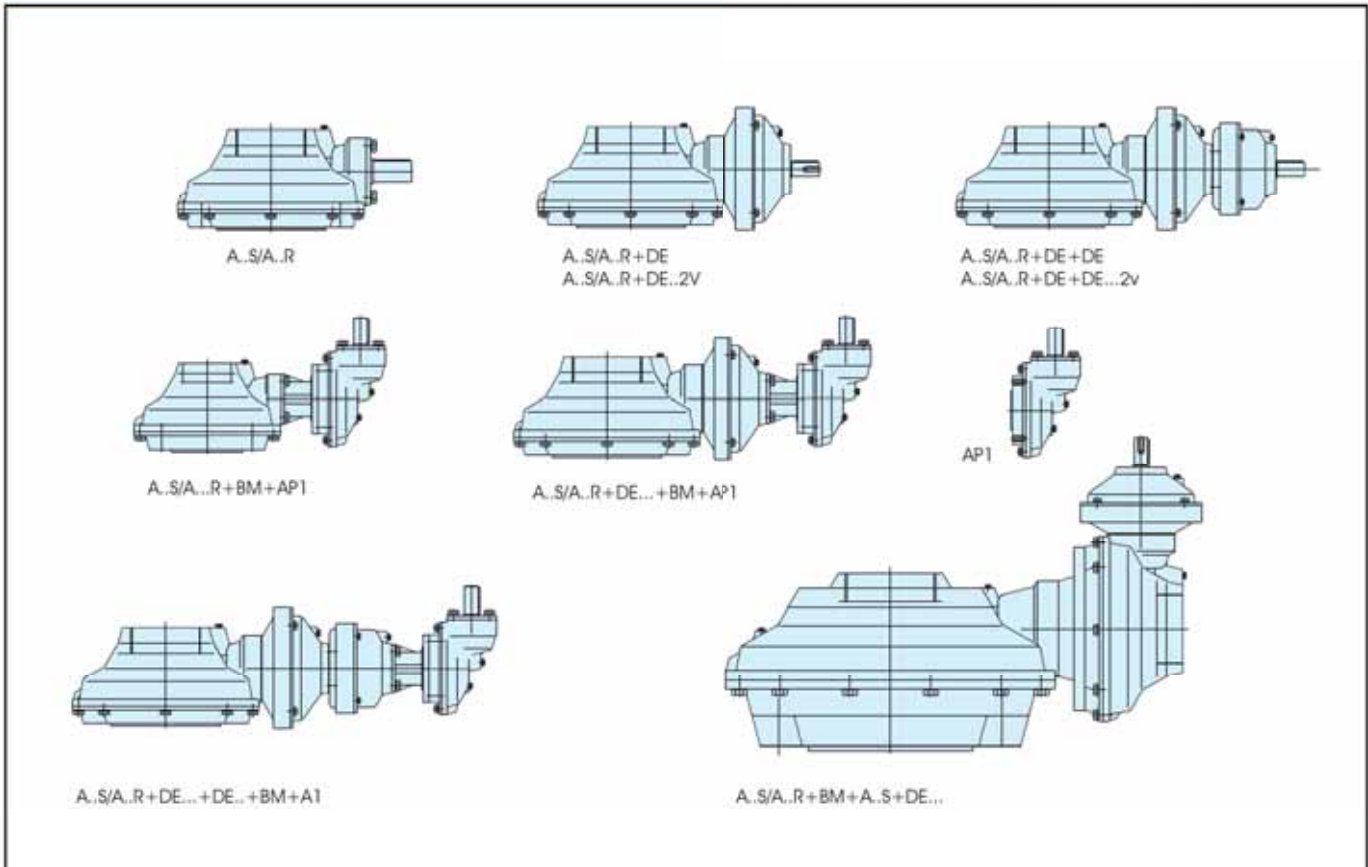
DIMENSIONI FLANGE BM SECONDO ISO 5210 E DIN 3210

BM - FLANGE SIZES ACCORDING TO ISO 5210 and DIN 3210

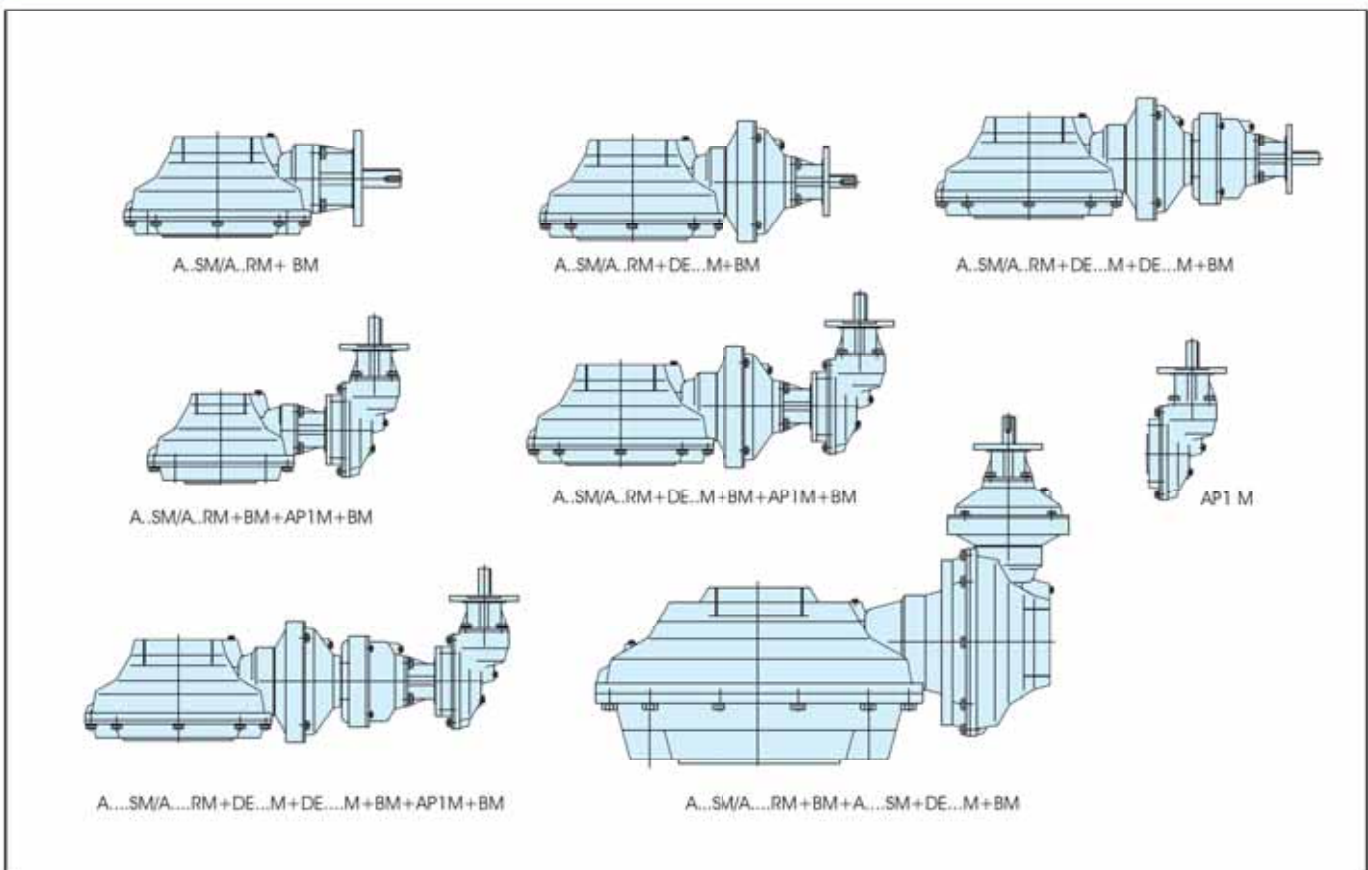
	b4	b5	b6	Ø c3	D1	D2 (H8)	D3	d5	d10 (f8)	e2	h4	h5	L5	L6	t2
ISO F07	5	2,5	21	M8	90	55	70	10	16	4	4	10	40	35	18
ISO F10	6	2,5	21	M8	125	70	102	12	20	4	4	10	50	45	22,5
DIN Gr 0	6	2,5	21	M8	125	60	102	12	20	4	4	10	50	45	22,5
ISO F14	8	2,5	24	M10	175	100	140	18	30	4	5	15	70	65	33
DIN Gr 1/2	8	2,5	24	M10	175	100	140	18	30	4	5	15	70	65	33
ISO F16	12	2,5	24	M10	210	130	165	22	40	4	6	15	90	85	43
DIN Gr 3	12	2,5	24	M10	210	130	165	22	40	4	6	15	90	85	43
ISO F25	14	5	27	M12	300	200	254	18	50	8	6	18	110	100	53,5
DIN Gr 4	14	5	27	M12	300	160	254	18	50	8	6	18	110	100	53,5
ISO F30	18	5	27	M12	350	230	298	22	60	8	6	20	120	110	64
DIN Gr 5	18	5	27	M12	350	180	300	22	60	8	6	20	120	110	64
ISO F35	22	2,5	27	M12	415	260	356	32	80	8	6	25	135	130	85
DIN Gr 6	22	2,5	27	M12	410	220	356	32	80	8	6	25	135	130	85
ISO F40	28	5	27	M12	475	300	406	38	100	8	9	28	180	170	106
DIN Gr 7	28	5	27	M12	475	230	406	38	100	8	9	28	180	170	106
ISO F48					560	370	483	38		12	9				
ISO F60						470	303	38		20					

On this page, only dimensions shown are the ones applicable to BM flanges, in accordance with ISO5210 and DIN3210 for multi-turn actuators. Special flanges can be supplied to the customer's unique requirements. Motorized actuators are provided with roller bearings and especially treated surfaces. CML can supply motorized actuators complete with electric actuators.

POSSIBILI COMBINAZIONI RIDUTTORI MANUALI
COMBINATIONS FOR MANUAL ACTUATORS



POSSIBILI COMBINAZIONI RIDUTTORI MOTORIZZABILI
COMBINATIONS FOR MOTORIZABLE ACTUATORS



ESEMPIO PER ORDINE RIDUTTORE CML

HOW TO ORDER A CML BEVEL ACTUATOR

1	2	3	4	+	5	6	+	7	8	+	9	10	+	11	+	12
A33	T	R	M		DE43	M		DE24	M		AP1	M		V 400		BM ISO F10

I riferimenti da 1 a 12 rappresentano le possibili versioni dei riduttori CML.

La tabella sotto riportata illustra il significato delle sigle.

- 1: Grandezza riduttore conico (vedere tabella di pag. 5): A...
- 2: Riduttore conico a due pignoni a 90° (vedere schema di pag. 3).....: lettera D
Riduttore conico a due pignoni a 180° (vedere schema di pag. 3).....: lettera O
Riduttore conico a tre pignoni (vedere schema di pag. 3).....: lettera T
- 3: Riduttore conico senza gruppo reggispinta.....: lettera S
Riduttore conico con gruppo reggispinta.....: lettera R
- 4: Riduttore conico manuale.....: lettera-
Riduttore conico motorizzabile.....: lettera M
- 5: Riduttore supplementare o demoltiplicatore (vedere tab. pag. 3 - 6).....: sigla DE...
- 6: Riduttore supplementare o demoltiplicatore manuale.....: lettera-
Riduttore supplementare o demoltiplicatore motorizzabile.....: lettera M...
- 7: Secondo riduttore supplementare o demoltiplicatore (vedere tab. pag. 6).....: sigla DE...
- 8: Secondo riduttore supplementare o demoltiplicatore manuale.....: lettera-
Secondo riduttore supplementare o demoltiplicatore motorizzabile.....: lettera M
- 9: Rinvio angolare manuale.....: sigla AP1
- 10: Rinvio angolare manuale.....: lettera-
Rinvio angolare motorizzabile.....: lettera M
- 11: Volantino per manovra manuale (diametro in mm)....: V...
12. Grandezza flangia BM ISO (vedere tabella di pag. 7-8).....: sigla ISO...

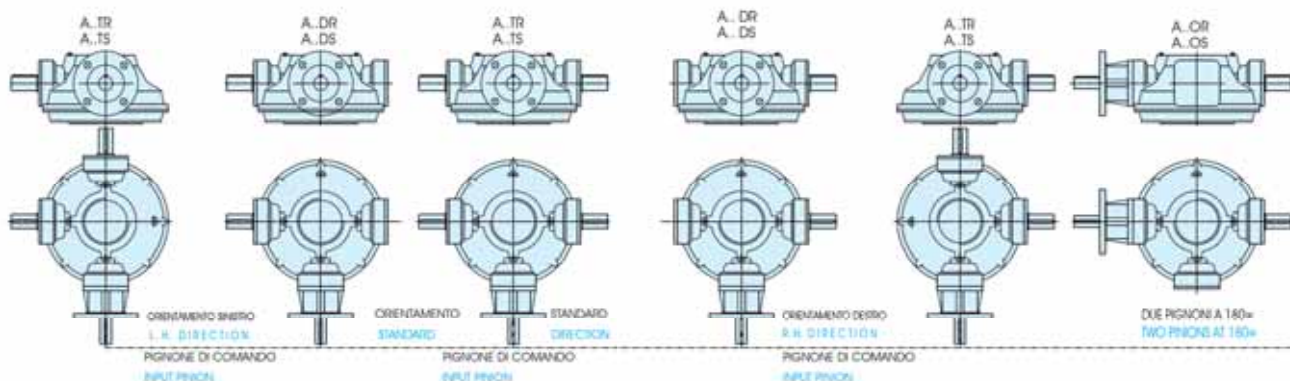
Referrals from 1 to 12 represent CML actuator versions.

Below are explanations of the letter designations.

- 1: Bevel gears model (see listing page 5).....: A...
- 2: Bevel gear, two pinions at a 90° (see diagram page 3).....: letter D
Bevel gear, two pinions at 180° (see diagram page 3).....: letter O
Bevel gear, three pinions (see diagram page 3).....: letter T
- 3: Bevel gear without thrust unit.....: letter S
Bevel gear with thrust unit.....: letter R
- 4: Manual bevel gear.....: letter-
Motorizable bevel gear.....: letter M
- 5: Additional bevel gear or manual spur gear (see listing pag. 3 - 6).....: DE...
- 6: Additional bevel gear or manual spur gear.....: letter-
Additional bevel gear or motorizable spur gear.....: letter M
- 7: Second additional bevel gear or spur gear (see listing page 6).....: DE...
- 8: Second additional bevel gear or manual spur gear.....: letter-
Second additional bevel gear or motorizable spur gear.....: letter M
- 9: Manual mitre.....: AP1
- 10: Manual mitre.....: letter-
Motorizable mitre.....: letter M
- 11: Handwheel for manual driving (diameter in mm).....: V...
12. Size of BM flange (see listing page 7-8).....: ISO...

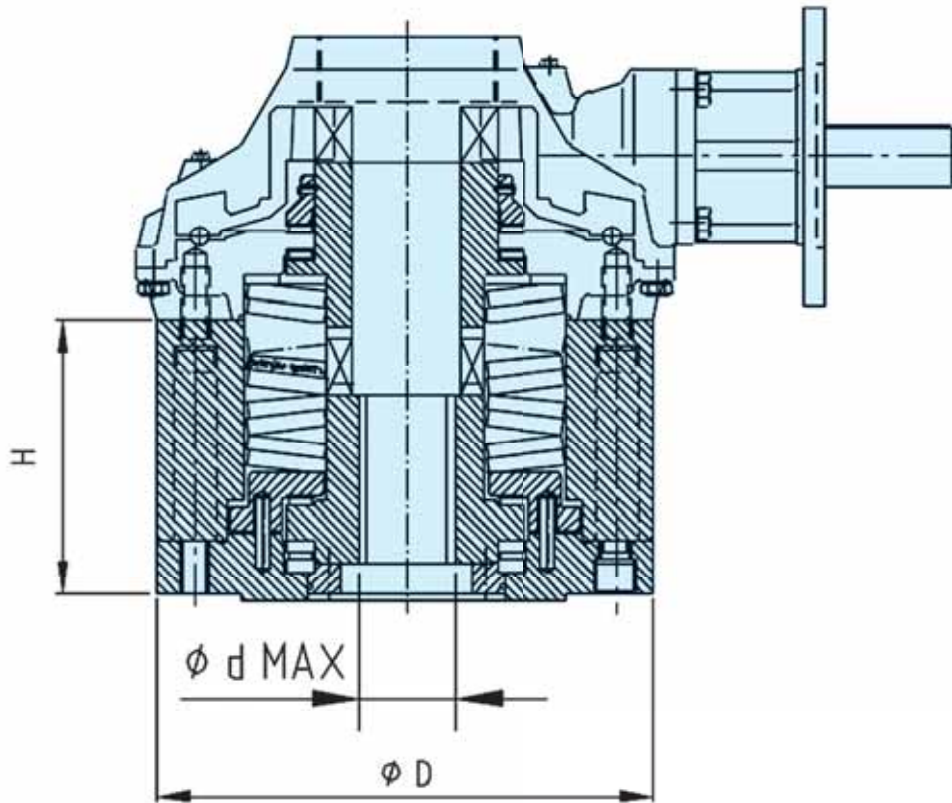
PROGRAMMA DI PRODUZIONE, COMPOSIZIONI, ORIENTAMENTI

MANUFACTURING PROGRAMME, CONFIGURATIONS LAYOUT DIRECTIONS



RIDUTTORI CON COMPENSATORE DILATAZIONE STELO SERIE SC

BEVEL GEAR WITH SPRINGS COMPENSATOR SC SERIES



UNIT SIZE	A03	A04	A11	A13	A24	A25	A33	A43	A70	A90	A110	A111	
Max coppia uscita Max output torque	Nm	300	300	500	600	1100	850	2300	3800	6000	9000	16000	16000
Rapporto Ratio		2.3:1	4.5:1	1.52:1	4.5:1	4.5:1	5.8:1	4.5:1	4.5:1	4.5:1	5:1	5:1	5:1
Vantaggio meccanico Mechanical advantage		1.95	3.83	1.29	3.83	3.83	4.93	3.83	3.83	3.83	4.25	4.25	4.25
Max coppia entrata Max input torque	Nm	154	78	388	156	290	172	600	993	1568	2117	3760	3760
Max spinta valvola Max valve thrust	kN	15	15	51	62	114	114	162	211	326	413	434	430
Max allungamento stelo Max stem elongation	mm	1.2	2	2	2	2.3	2.3	3.5	4.3	4.3	4.3	4.5	4.5
Max spinta finale Max final thrust	kN	40	40	95	125	235	235	295	390	690	890	1070	1070
Max capacità stelo Max stem capacity	mm	25	25	40	40	50	50	65	70	85	115	134	134
Base Output flange	ISO	F10	F10	F14	F14	F16	F16	F25	F30	F35	F35	F40	F40
dia. D	mm	125	125	175	175	210	210	300	350	415	415	475	475
H	mm	95	95	100	100	215	215	180	200	250	380	300	315
dia D: max	mm	25	25	40	40	55	55	65	70	75	115	135	135

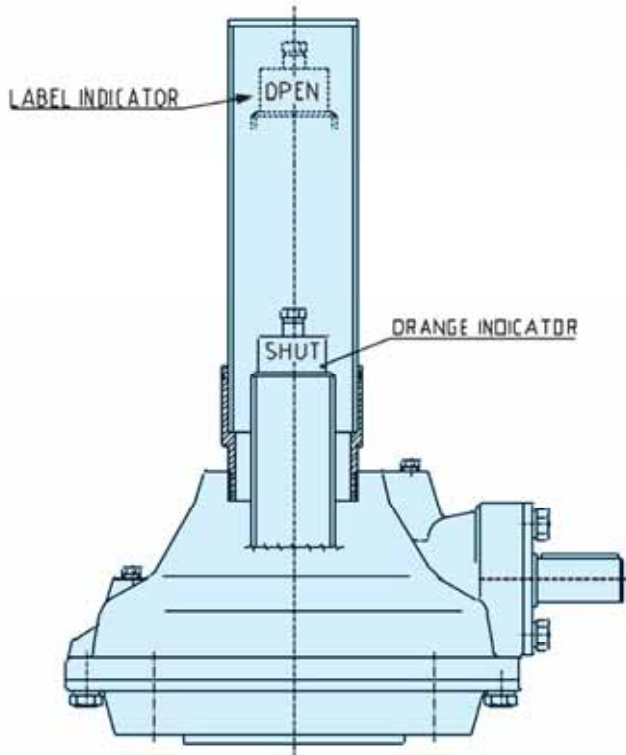
Per spinte assiali e allungamenti stelo valvola superiore a quelli indicati in tabella contattare il nostro ufficio tecnico.
For thrust and stem elongation with size higher than the ones mentioned in listing, please contact our technical department.

INDICATORI DI POSIZIONE PER RIDUTTORI CONICI: ESEMPI

BEVEL GEAR POSITION INDICATOR: EXAMPLES

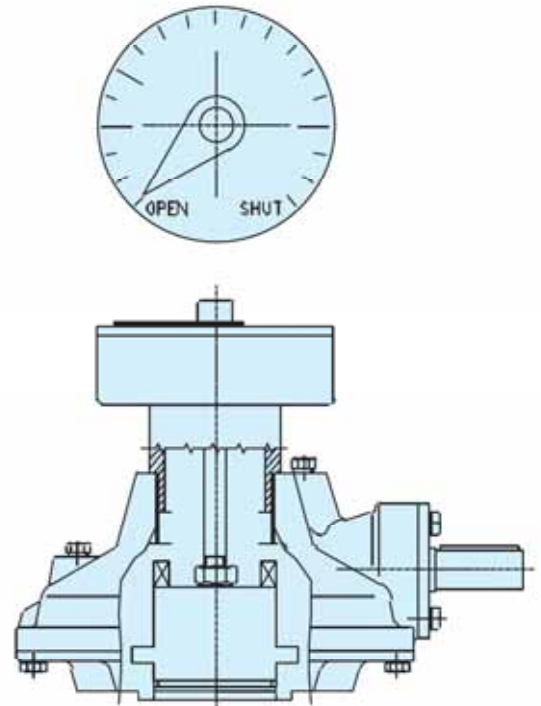
INDICATORE DI POSIZIONE LOCALE PER VALVOLE
CON STELO SALIENTE

*LOCAL POSITION INDICATOR
FOR RISING STEM VALVE*



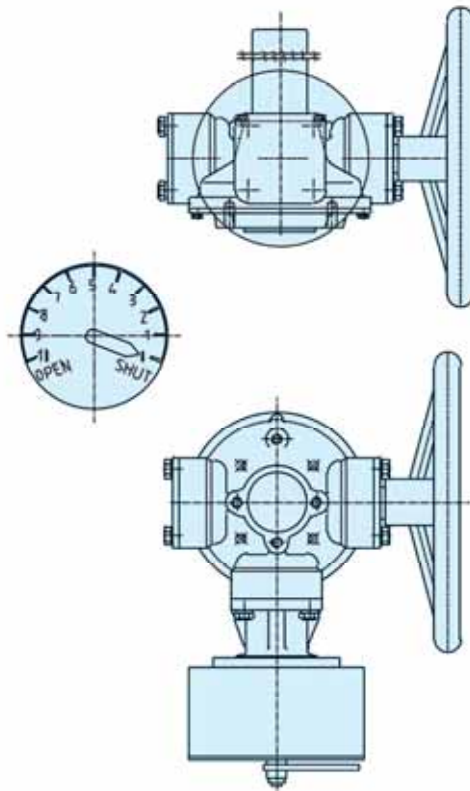
INDICATORE DI POSIZIONE LOCALE PER VALVOLE
CON STELO NON SALIENTE

*LOCAL POSITION INDICATOR
FOR NO RISING STEM VALVE*



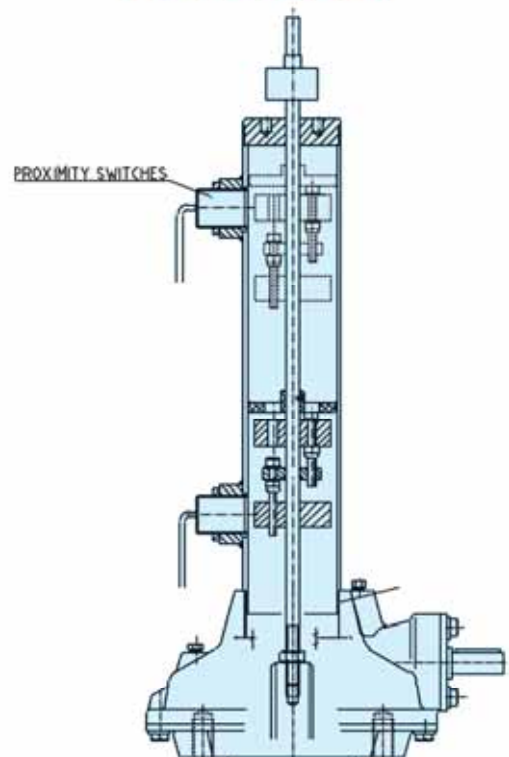
INDICATORE DI POSIZIONE LOCALE PER VALVOLE
CON QUADRANTE GRADUATO

LOCAL POSITION INDICATOR GRADED QUADRANT



INDICATORE DI POSIZIONE CON SENSORE DI FINE CORSA
PER VALVOLE CON STELO NON SALIENTE

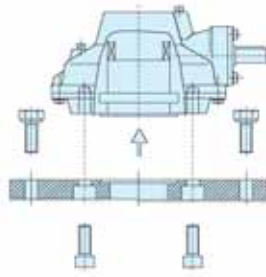
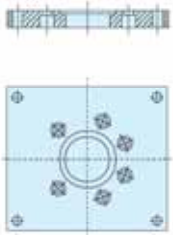
*POSITION INDICATOR WITH PROXIMITY SWITCHES
FOR RISING STEM VALVE*



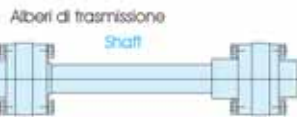
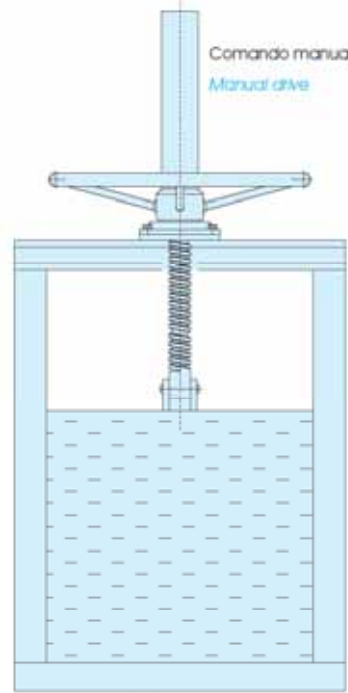
ACCESSORI PER RIDUTTORI CONICI

ACCESSORIES FOR BEVEL GEAR ACTUATORS

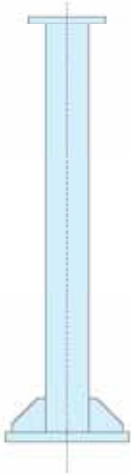
Piastre di attacco
Pates



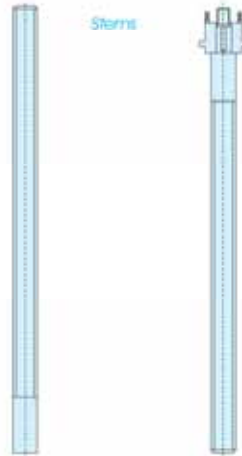
Comando manuale
Manual drive



Colonnine
Columns



Viti di sollevamento
Stems



Copristelo tipo CS
Cover tube type CS



Copristelo tipo C
Cover tube type C

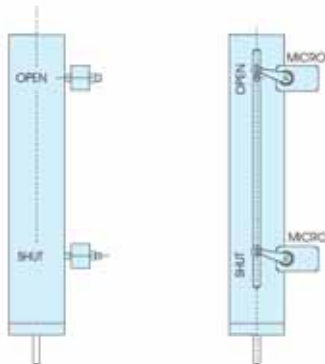


Copristelo con
indicatore locale tipo CSI
Cover tube
with position indicator
type CSI

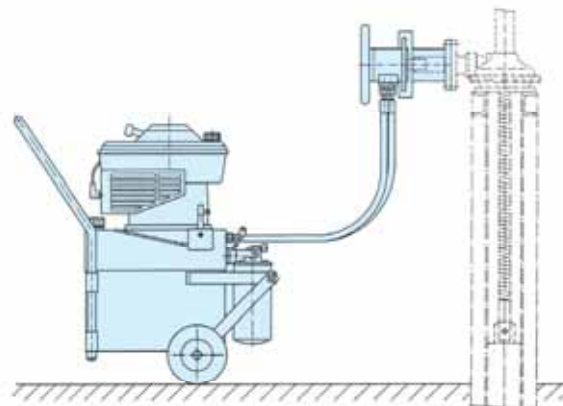


Indicatori di posizione
per valvole con
stelo non saliente

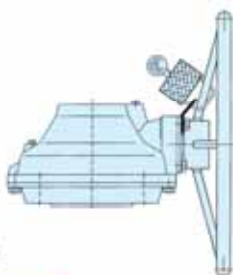
Position indicator
for valves with
no rising stem



Gruppo di comando portatile
Portable powered drive

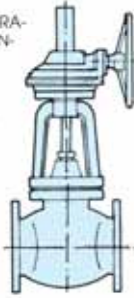


Flange
Padlock flange



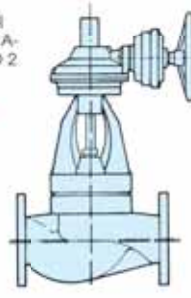
1. RIDUTTORE A INGRANAGGI A COMANDO MANUALE

BEVEL GEAR ACTUATOR FOR MANUAL OPERATION



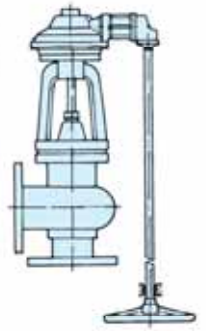
2. RIDUTTORE A INGRANAGGI CONICI CON DEMOLTIPLICATORE EPICICLOIDALE A 1 O 2 RAPPORTI DI RIDUZIONE

BEVEL-GEAR-ACTUATOR WITH ADDITIONAL REDUCTION SPUR DRIVE, WITH ONE OR TWO RATIOS



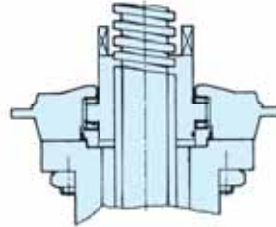
3. RIDUTTORE A INGRANAGGI CONICI CON RINVIO AD ANGOLO VERSO IL BASSO

RIGHT-ANGLE INPUT, IN THIS CASE DOWNWARDS



4. GRUPPO DI COMANDO MOTORIZZATO CON REGOLAZIONE AUTOMATICA DI COPPIA E POSIZIONE

MOTOR DRIVEN UNIT WITH AUTOMATIC TORQUE AND POSITION ADJUSTMENT



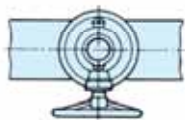
5. GRUPPO REGGISPINTA SU VALVOLA. NEL CASO DI DANNEGGIAMENTO AL RIDUTTORE, LO STESSO PUÒ ESSERE SMONTATO DALLA VALVOLA SENZA INTERRUPERE L'OPERATIVITÀ. LA MANOVRA DI APERTURA O CHIUSURA SI EFFETTUA CON APOSITO VOLANTINO

THRUST-BLOCK ON VALVE, IN CASE OF DAMAGE TO THE GEARBOX, THIS CAN BE DISASSEMBLED FROM THE VALVE WITHOUT STOPPING THE OPERATION. OPENING AND CLOSING IS CARRIED OUT BY APPROPRIATE HANDWHEEL



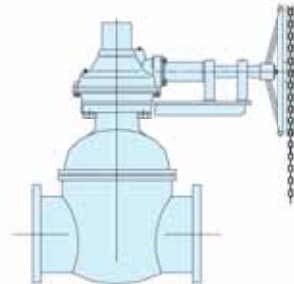
6. RIDUTTORE A INGRANAGGI CONICI CON RINVIO AD ANGOLO

RIGHT-ANGLE INPUT BEVEL GEAR ACTUATOR



7. RIDUTTORE A INGRANAGGI CONICI SU PARATOIA CON 1 VITE DI MANOVRA A COMANDO MANUALE

BEVEL GEAR ACTUATOR ON SLUICE GATE WITH CONTROL SPINDLE FOR MANUAL OPERATION



8. RIDUTTORE SU VALVOLA AZIONATO DA VOLANTINO CON CATENA.

BEVEL GEAR ACTUATOR WITH CHAINWHEEL



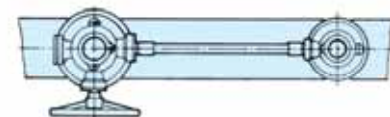
9. VITE NON SALIENTE MONTATA SU CHIOCCIOLA REGGISPINTA

NON RISING STEM



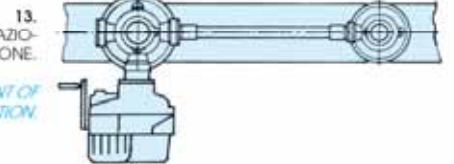
10. VITE SALIENTE CON CHIOCCIOLA REGGISPINTA

RISING STEM



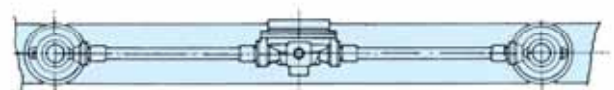
GRUPPO DI COMANDO MOTORIZZATO CON REGOLAZIONE AUTOMATICA DI COPPIA E DI POSIZIONE.

MOTOR-DRIVEN UNIT WITH AUTOMATIC ADJUSTMENT OF TORQUE AND POSITION.



11. GRUPPO DI COMANDO MANUALE CON VOLANTINO FRONTALE PER PARATOIA E DUE VITI DI MANOVRA

HAND OPERATED UNIT WITH FRONT-SIDE HANDWHEEL FOR SLUICE WITH DOUBLE CONTROL SCREWS

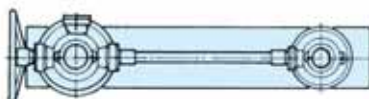


15. GRUPPO DI COMANDO MANUALE CON RINVIO CENTRALE VERSO L'ALTO PER MANOVRA DAL PIANO DI CALPESTIO.

HAND OPERATED UNIT WITH CENTRAL BACK-GEARING UPWARDS FOR OPERATION FROM PLATFORM.

12. GRUPPO DI COMANDO MANUALE CON VOLANTINO LATERALE PER PARATOIA A DUE VITI DI MANOVRA

HAND OPERATED UNIT WITH SIDE HANDWHEEL FOR SLUICE WITH DOUBLE CONTROL SCREWS



14. GRUPPO DI COMANDO MANUALE CON RINVIO CENTRALE E VOLANTINO FRONTALE PER PARATOIA A DUE VITI DI MANOVRA.

HAND OPERATED UNIT WITH CENTRAL BACK-GEARING AND FRONT-SIDE HANDWHEEL FOR DOUBLE-SCREW SLUICE.

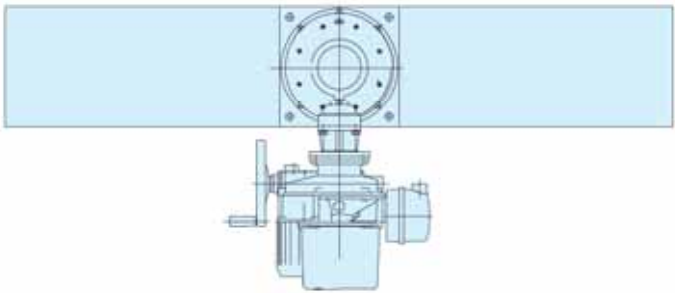
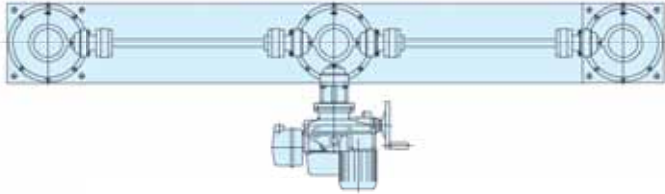
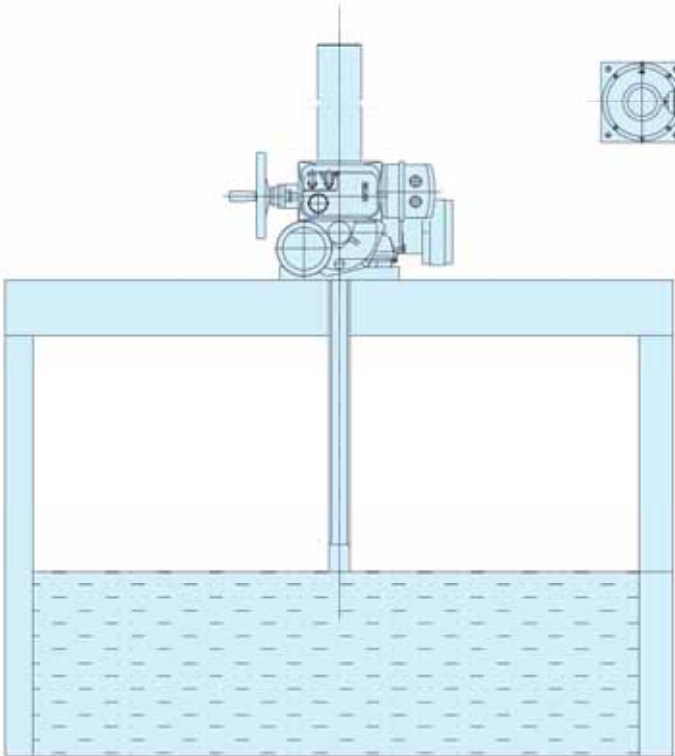
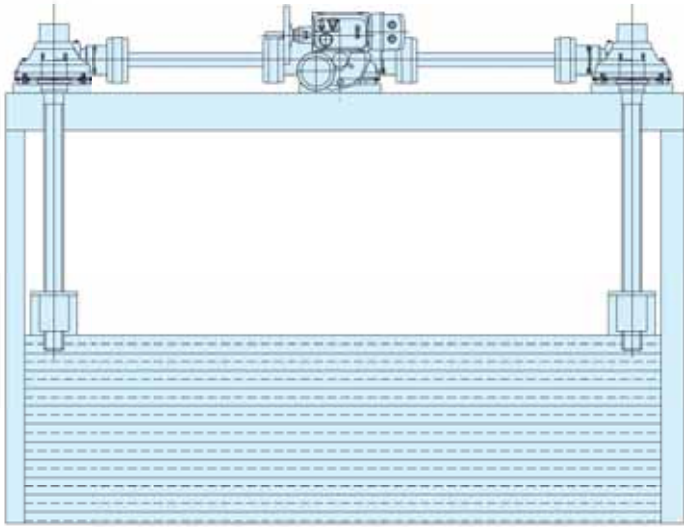
La C.M.L. può fornire oltre al riduttore, al demoltiplicatore e agli accessori standard di produzione, anche i componenti specifici per il cliente quali:

- Viti per paratoie tipo saliente e non saliente.
- Alberi per il collegamento di più riduttori, con giunti rigidi od oscillanti.
- Flange speciali per applicazione motori ai riduttori
- Gruppi di motorizzazione con regolazione di coppia, a comando elettrico, oleodinamico, pneumatico

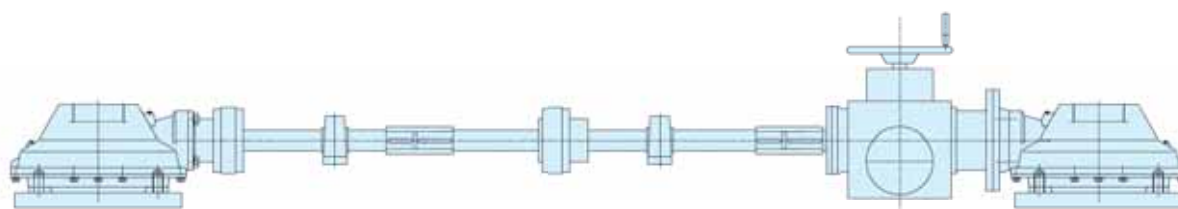
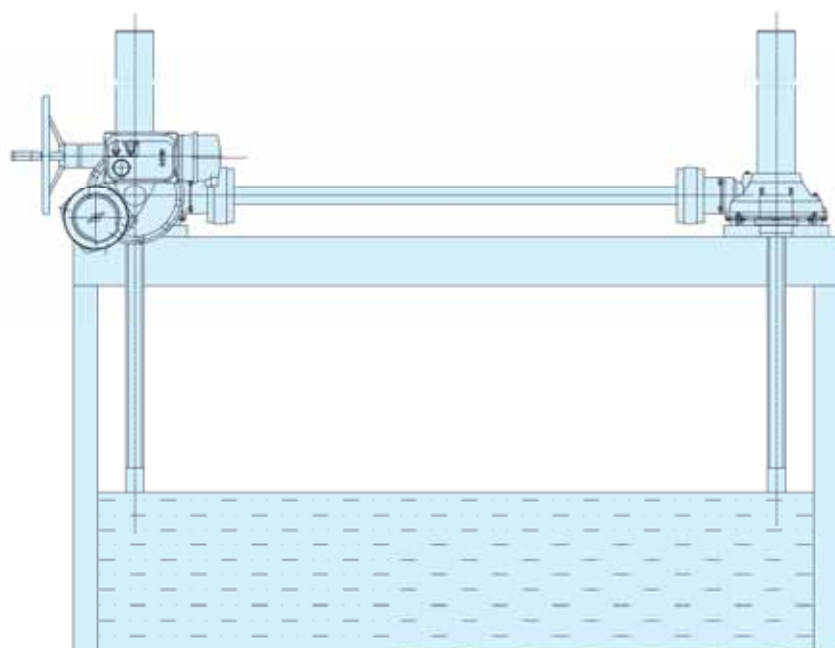
In addition to bevel gear actuators with additional reductions and other standard features CML can also provide special accessories and features:

- Threaded shafts
- Connecting drive shafts with couplings and joints
- Special flanges
- Motor-driven electric, hydraulic or pneumatic units, complete with torque adjustment capabilities

POSSIBILI APPLICAZIONI
POSSIBLE APPLICATION



POSSIBILI APPLICAZIONI
POSSIBLE APPLICATION



SPECIFICA MATERIALI - MATERIALS SPECIFICATIONS

	PART	STANDARD VERSION <i>Temperature range:</i> -20 °C + +80 °C	LOW TEMPERATURE 1 <i>Temperature range:</i> -40 °C + +120 °C	LOW TEMPERATURE 2 <i>Temperature range:</i> -60 °C + +120 °C	HIGT TEMPERATURE <i>Temperature range:</i> -10 °C + +200 °C
B E V E L	Housing Version "T"	GJS400-15UNI EN 1563 GJL250 UNI EN 1561	GJS400-15UNI EN 1563	Acciaio ASTM LCC	GJS400-15UNI EN 1563
	Bevel wheel	C30/C43 UNI EN 10083 GJS500-7 UNI EN 1563	C30/C43 UNI EN 10083 GJS500-7 UNI EN 1563	ASTM A352-93 LC-1 39NiCrMo3	C30 UNI EN 10083
	Base type "S"	GJS 500-7	GJS 500-7 UNI EN 1563	Acciaio ASTM A350E2	GJS 500-7 UNI EN 1563
	Bush type "S"	C45 UNI EN 10277 ASTM A105	C45 UNI EN 10277 ASTM A105	ASTM A350LF2	C45 UNI EN 10277 ASTM A105
	Bronze nut	G CuA1 10 Fe2	G CuA1 10 Fe2	G CuA1 10 Fe2	G CuA1 10 Fe2
	Steel nut	C45 UNI EN 10277 ASTM A105	C45 UNI EN 10277 ASTM A105	Acciaio ASTM A350LF2	C45 UNI EN 10277 ASTM A105
	Ring R	Fe 430 UNI 10233	Fe 430 UNI 10233	Fe 430 UNI 10233	Fe 430 UNI 10233
	Base type "R" steel	ASTM A350 LF2 Fe 510 UNI EN 10250	Fe 510 UNI EN 10250	Acciaio ASTM A350LF2 Acciaio ASTM A352LCC	Fe 510 UNI EN 10250
	Base type "R" cast iron	GJS 500-7 UNI EN 1563	GJS 500-7 UNI EN 1563		GJS 500-7 UNI EN 1563
	Pinion	C45 UNI EN 10083	C45 UNI EN 10083	39NiCrMo3 UNI EN 10083	C45 UNI EN 10083
G E A R	Cover	Steel ASTM WCB Steel Fe 510 Cast iron GJL 250	Steel ASTM WCB Steel Fe 510 Cast iron GJL 250	Steel ASTM WCB Steel Fe 510	Steel ASTM WCB Steel Fe 510
	Input flange	GJS500-7 UNI EN 1563	GJS500-7 UNI EN 1563	GJS500-7 UNI EN 1563 GJS350-22LT UNI EN 1563	GJS500-7 UNI EN 1563
	Stem protector	Fe 430 UNI 10233	Fe 430 UNI 10233	Fe 430 UNI 10233	Fe 430 UNI 10233
	Grease type	AGIP GR MU/EP2 -20 °C + +120 °C	FUCHS Renolit S 2 -60 °C + +120 °C	FUCHS Renolit S 2 -60 °C + +120 °C	FUCHS Renolit GHT 2 -60 °C + +180 + 220 °C
	Gasket O-Ring	NBR70 -30 °C + +100 °C	LSR070 (silicone) -60 °C + +250 °C	LSR070 (silicone) -60 °C + +250 °C	LSR070 (silicone) -60 °C + +250 °C
	Plane Gasket	Flexoid -10 °C + +120 °C	Flexoid -10 °C + +120 °C	Flexoid -10 °C + +120 °C	Tempflex 450 -10 °C + +200 °C
	DE housing	GJL 250 UNI EN 1561 GJS400-15 UNI EN 1563	GJL 250 UNI EN 1561	Steel ASTM LCC GJS400-15 UNI EN 1563	GJL 250 UNI EN 1561 GJS400-15 UNI EN 1563
	DE cover	GJS500-15 UNI EN 1563	GJS500-15 UNI EN 1563	Steel ASTM LCC	GJL 250 UNI EN 1561 GJS400-15 UNI EN 1563
	DE fork	GJS400-15 UNI EN 1563	GJS400-15 UNI EN 1563	Steel ASTM LCC	GJL 400 UNI EN 1563
	DE spur gear	CA45 UNI EN 10083	CA45 UNI EN 10083	39NiCrMo3 UNI EN 10083	CA45UNI EN 10083
DE pinion	CA45 UNI EN 10083	CA45 UNI EN 10083	39NiCrMo3 UNI EN 10083	CA45UNI EN 10083	

RIDUTTORI CONICI - SPECIFICHE AMBIENTALI BEVEL GEAR - ENVIRONMENTAL SPECIFICATONS

SPECIFICA N° SPECIFICATION N°	SPECIFICHE AMBIENTALI ENVIRONMENTAL SPECIFICATIONS	BEVEL GEARS SPECIFICATON
SL039	IP 65 Tenuta agli agenti atmosferici: standard <i>weatherproof (standard version)</i>	Guarnizione di tenuta: O-Ring <i>Seals: O-Ring</i>
	IP 67 Protetto da ingresso acqua: senza copristelo <i>Temporary immersion</i>	Guarnizione OR tra: corpo-ruota-chiocciola/chave <i>Additional O-Ring between: housing-wheel-stem nut-key</i>
SL050	IP 68 Sommergibile fino a 25 metri (senza compensatore di pressione) <i>Submersible down 25 metri depth without pressure compensator</i>	Guarnizione OR tra: corpo-base-coperchietto-BM; guarnizione composita su albero; viti e rondelle piano inox; albero in entrata inox; <i>Additional O-Ring between: housing-base-cap-input flange special gasket for input pinion screws and washer: inox input pinion: inox</i>
SL060	Resistente al fuoco <i>Fire safe</i>	OR silicone; grasso alla temperatura; viti+rondella inox <i>O-Ring silicon grease high temperature screws+washers. inox</i>
SL072	Sotterrabile <i>Buried service (wet)</i>	Guarnizione composita su albero; viti e rondelle inox; albero inox; no nitreg (solo su richiesta) <i>special gasket for input pinion screws+washers: inox input pinion: inox nitreg: only if request</i>
SL040	Protezione anticorrosione <i>Improved corrosion protection</i>	
SL150	Sommergibile a profondità oltre 25 metri (con compensatore di pressione) <i>Submersible (deep sea below 25 metri) (with pressure compensator)</i>	Come IP68 + bladder per compensazione di pressione. Olio lubrificante: IP PONTIAX 80/90 - AGIP ROTRA MP <i>See IP68 version plus pressure compensator oil lubricant: IP PONTIAX 80/90 - AGIP ROTRA MP</i>
ATEX	Riduttori speciali per ambienti con atmosfera potenzialmente esplosiva <i>Special bevel gear for use in potentially explosive atmospheres areas</i>	Cuscinetto a strascimento su ruota conica; pignone conico in acciaio speciale; guarnizioni di tenuta speciali; grasso per alta temperatura; predisposizione per messa a terra; targhetatura specifica; ingrassatori su cuscinetti reggisplinta assiali spessore vernice controllato <i>Plain borain for wheel input pinion: special steel special gasket grease for high temperature ground connection special label special lubrication point for axial thrust bearings thickness paint less 200 µm</i>

CERTIFICATI - CERTIFICATIONS

VIA DEL BRAGIO, 9 - 20025 LEGNANO (MI) - ITALY
TELEFONO 0327 548647 - 0321 546532 - TELEFAX 0321 582000
E-mail: cm@cm-mastergear.it

Leggenda - § 10-09-2000

CE Ex II 2 G c T5/T6

EC - DECLARATION OF CONFORMITY

The ATEX version of CML manual actuators of the following types :

- Direct drives B01 and B02
- Angular transmission API
- Spur gears DE ...
- Thrust takers bevel gears with 1 , 2 or 3 pinions AR... - ADR... - ATR ...
- No thrust takers bevel gears with 1 , 2 or 3 pinions AS... - ADS... - ATS ...

are designed to be fitted onto valves and sluices gate.

CML, as manufacturer , declares that all CML manual actuators , in ATEX version , comply with the requirements of the directives of the European Parliament on the approximation of the laws of the member States :

- **Equipment and protective systems intended for use in potentially explosive atmospheres (94/9 / EC) .**

The following directives have been applied to evaluate the devices :

- UNI EN 13463-1 : 2003
- UNI EN 13463-5 : 2002 (E)
- UNI en 1127-1 : 2001

Felice Pastori
Managing Director

VIA DEL BRAGIO, 9 - 20025 LEGNANO (MI) - ITALY
TELEFONO 0327 548647 - 0321 546532 - TELEFAX 0321 582000
E-mail: cm@cm-mastergear.it

Leggenda - § 10-12-2004

CE Ex II 2 G c T4

EC - DECLARATION OF CONFORMITY

The ATEX version of CML motorizable actuators of the following types :

- Thrust takers bevel gears with 1 , 2 or 3 pinions AR... - ADR... - ATR ...
- No thrust takers bevel gears with 1 , 2 or 3 pinions AS... - ADS... - ATS ...
- Angular transmission API

are designed to be fitted onto valves and sluices gate.

CML, as manufacturer , declares that all CML motorizable actuators , in ATEX version , comply with the requirements of the directives of the European Parliament on the approximation of the laws of the member States :

- **Equipment and protective systems intended for use in potentially explosive atmospheres (94/9 / EC) .**

The following directives have been applied to evaluate the devices :

- UNI EN 13463-1 : 2003
- UNI EN 13463-5 : 2002 (E)
- UNI en 1127-1 : 2001

Felice Pastori
Managing Director

VIA DEL BRAGIO, 9 - 20025 LEGNANO (MI) - ITALY
TELEFONO 0327 548647 - 0321 546532 - TELEFAX 0321 582000
E-mail: cm@cm-mastergear.it

Leggenda - § 9-01-2000

CE Ex II 2 G c T6

EC - DECLARATION OF CONFORMITY

The ATEX version of CML motorizable actuators of the following types :

- Thrust takers bevel gears with 1 , 2 or 3 pinions AR... - ADR... - ATR ...
- No thrust takers bevel gears with 1 , 2 or 3 pinions AS... - ADS... - ATS ...
- Angular transmission API

are designed to be fitted onto valves and sluices gate.

REMARK : TECHNICAL DATA OF CLASS T6 VERSION:
Max output torque is 50% of max nominal torque/included stall torque (see CML catalogue) ;
Max thrust is 50% of max nominal thrust (see CML catalogue) ;
Max input speed is 40 r.p.m

CML, as manufacturer , declares that all CML motorizable actuators , in ATEX version , comply with the requirements of the directives of the European Parliament on the approximation of the laws of the member States :

- **Equipment and protective systems intended for use in potentially explosive atmospheres (94/9 / EC) .**

The following directives have been applied to evaluate the devices :

- UNI EN 13463-1 : 2003
- UNI EN 13463-5 : 2002 (E)
- UNI en 1127-1 : 2001

Felice Pastori
Managing Director

СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р ГОСТСТАНДАРТ РОССИИ

1482357

ПРИЛОЖЕНИЕ

К сертификату соответствия № _____ РССС П.А.И.В.И.И.И.

Перечень конкретных продуктов, на которых распространяется действие сертификата соответствия

Наименование и обозначение продукции, на которой распространяется действие сертификата	Обозначение документов, на которых распространяется продукция
I) Промышленные серии B01 (см.)	
B01, B02, B03, B04, B05, B06, B07, B08, B09, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19, B20, B21, B22, B23, B24, B25, B26, B27, B28, B29, B30, B31, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43, B44, B45, B46, B47, B48, B49, B50, B51, B52, B53, B54, B55, B56, B57, B58, B59, B60, B61, B62, B63, B64, B65, B66, B67, B68, B69, B70, B71, B72, B73, B74, B75, B76, B77, B78, B79, B80, B81, B82, B83, B84, B85, B86, B87, B88, B89, B90, B91, B92, B93, B94, B95, B96, B97, B98, B99, B100, B101, B102, B103, B104, B105, B106, B107, B108, B109, B110, B111, B112, B113, B114, B115, B116, B117, B118, B119, B120, B121, B122, B123, B124, B125, B126, B127, B128, B129, B130, B131, B132, B133, B134, B135, B136, B137, B138, B139, B140, B141, B142, B143, B144, B145, B146, B147, B148, B149, B150, B151, B152, B153, B154, B155, B156, B157, B158, B159, B160, B161, B162, B163, B164, B165, B166, B167, B168, B169, B170, B171, B172, B173, B174, B175, B176, B177, B178, B179, B180, B181, B182, B183, 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DET NORSKE VERITAS

QUALITY MANAGEMENT SYSTEM CERTIFICATE

Certificato No. / Certificate No. **CERT-00396-95-AQ-MIL-SINCERT**

Si attesta che / This certifies that

Il sistema di gestione per la qualità di / the quality management system of

COSTRUZIONI MECCANICHE LEGNANESI S.r.l.

Via del Brugo, 5 - 20025 Legnano (MI) - Italy

È conforme ai requisiti della norma per i sistemi di gestione per la qualità

Conforms to the quality management systems standard

UNI EN ISO 9001:2008 (ISO 9001: 2008)

Questa certificazione è valida per il seguente campo applicativo:

This certificate is valid for the following products or services:

*(Ulteriori chiarimenti riguardanti lo scopo e l'applicabilità dei requisiti della normativa si possono ottenere consultando l'organizzazione certificata)
(Further clarifications regarding the scope and the applicability of the requirements of the standard(s) may be obtained by consulting the certified organization)*

Progettazione, produzione e vendita di attuatori per comandi valvole e paratoie.

Commercializzazione attuatori elettrici per quanto sopra

Design, manufacture and sale of bevel gearboxes for valves and sluice gates.

Trade of electrical actuators for the above

Data Prima Emissione

First Issue Date

1995-02-24

Data di scadenza

Expiry Date

2011-12-10

Luogo e data

Place and date

Agrate Brianza, (MI) 2010-01-12

SINCERT

ACCREDITAMENTO ORGANISMI DI CERTIFICAZIONE E ISPEZIONE

SGQ Registrazione N. 003A
SGA Registrazione N. 003D
PRD Registrazione N. 003B

Membro degli Accordi di Mutuo Riconoscimento EA e IAF
Signatory of EA and IAF Mutual Recognition Agreements

per l'Organismo di Certificazione

for the Accredited Unit

DET NORSKE VERITAS ITALIA S.R.L.

Settore EA : 18

Luciano Carrettoni

Lead Auditor

Vittore Marangon

Management Representative

La validità del presente certificato è subordinata a sorveglianza periodica (ogni 6, 9 o 12 mesi) e al riesame completo del sistema con periodicità triennale

The validity of this certificate is subject to periodical audits (every 6, 9 or 12 months) and the complete re-assessment of the system every three years

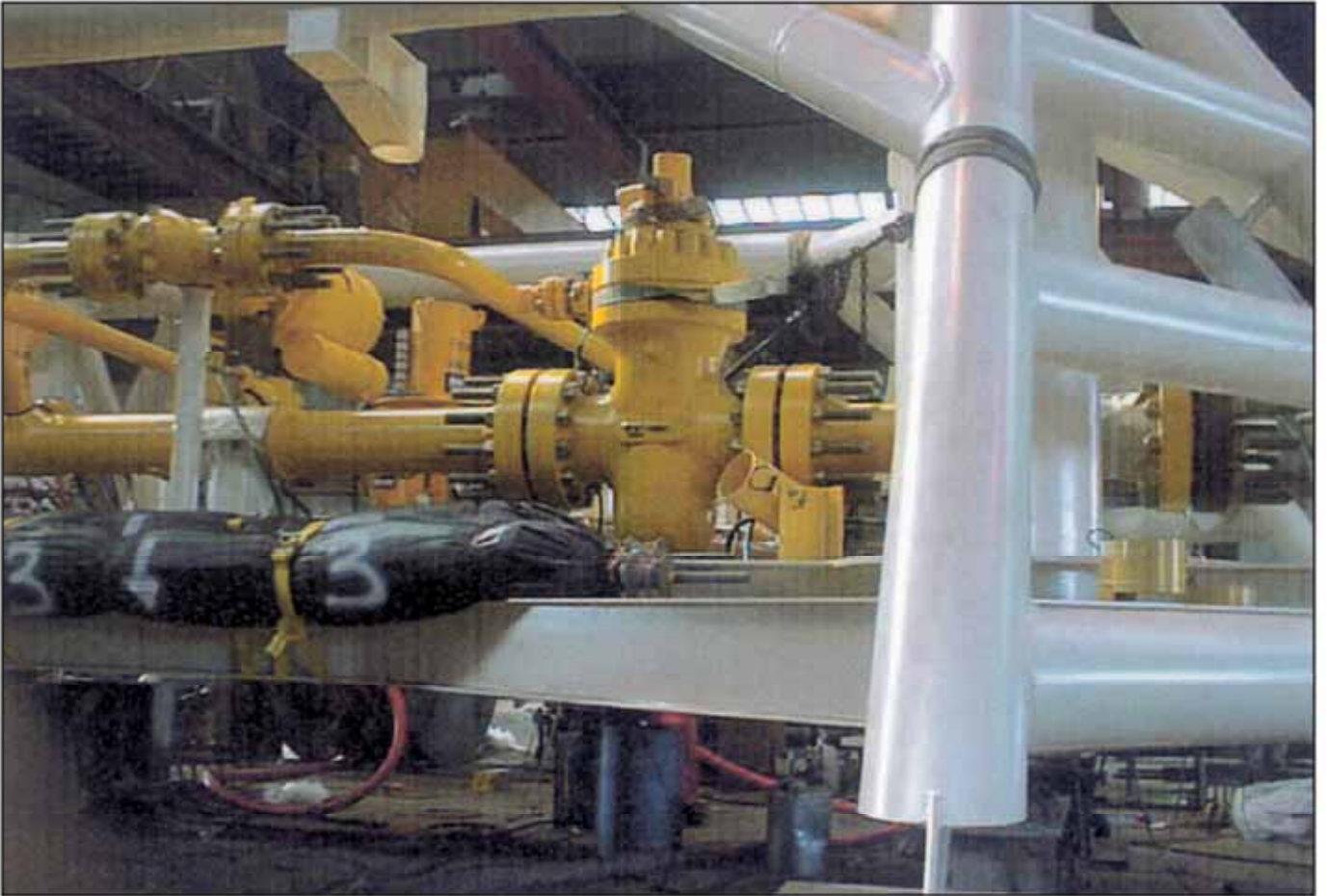
Le aziende in possesso di un certificato valido sono presenti nella banca dati sul sito www.dnv.it e sul sito Sincert (www.sincert.it) - All the companies with a valid certificate are online at the following addresses: www.dnv.it and www.sincert.it



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RIDUTTORI CML VERSIONE SOMMERSIBILE APPLICATI SU PIATTAFORME OFF SHORE
CML BEVEL GEARS, SUB SEA VERSION, FOR OFF SHORE APPLICATIONS



RIDUTTORE SOMMERSIBILE CON COMPENSATORE
DI PRESSIONE E INTERFACCIA ROV

*BEVEL GEAR SUB SEA VERSION WITH PRESSURE
COMPENSATOR AND ROV INTERFACE*



RIDUTTORE CON COMPENSATORE
DILATAZIONE STELO VALVOLA

*BEVEL GEAR WITH SPRINGS
COMPENSATOR*



CML può fornire riduttori sottomarini con compensatore di pressione con interfaccia ROV secondo le norme API-ANSI.
CML can provide sub sea bevel gear with pressure compensator with rov interface according to API-ANSI specifications.



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