POWER ABSORBED

The power (kW) necessary to carry out the phase regulating operation essentially depends on the load (MTe) required by the use and the rotation speed (nD2) of the worm screw.

Consequently:

$$N = \left(\frac{MTe}{135 \cdot \mu} \cdot nD2\right) \cdot \frac{1}{973} \text{ kW}$$

Where:

MTe = nominal torque
nD_2 = rotations/min. of work screw
μ = 0,4 (theoretical performance of the whole screw/crown/driving gear)

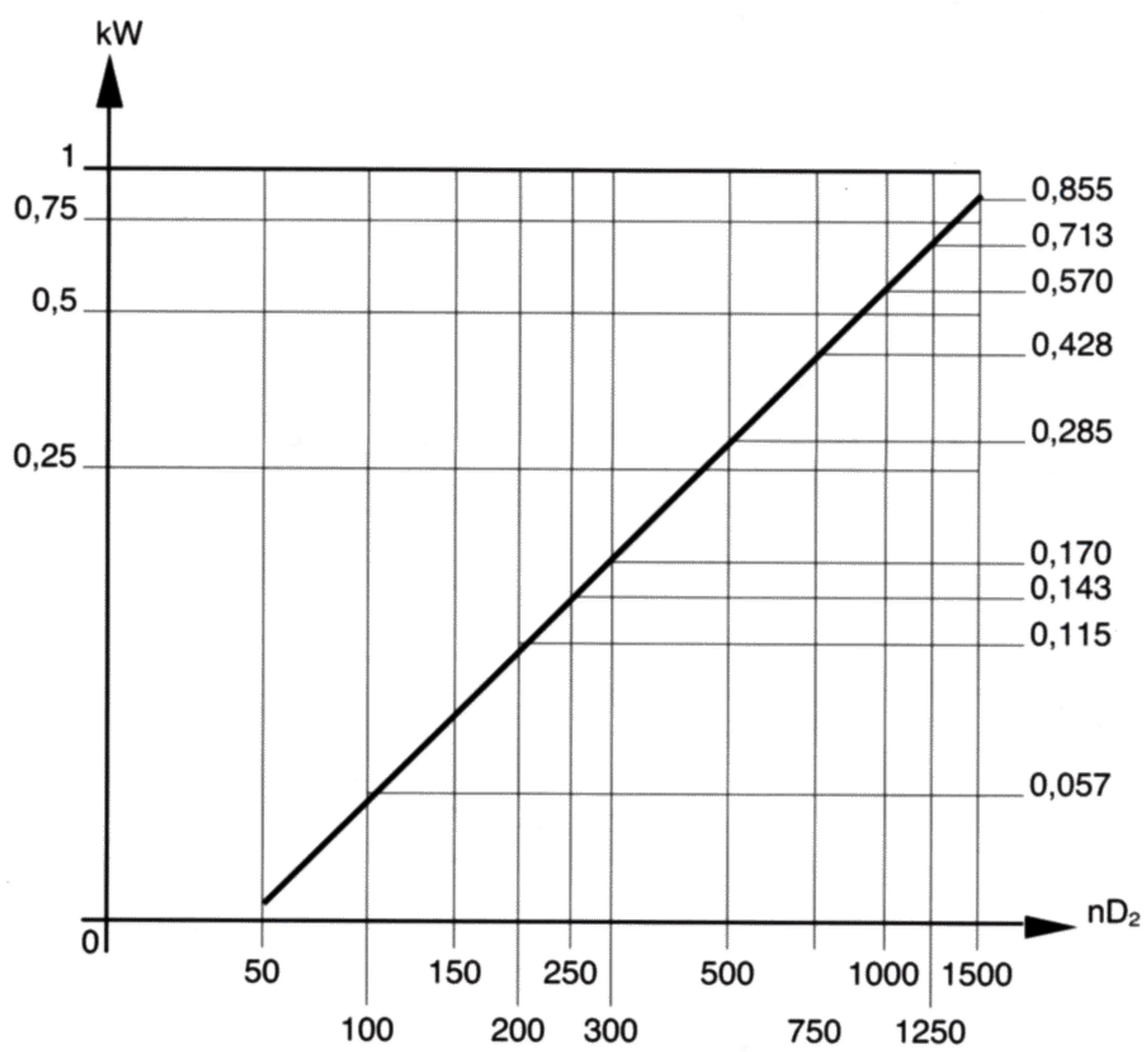
EXAMPLE OF CALCULATION:

For an RDS 170 phase regulating unit as per chapter "Design data and selection procedure":

MTe = 10,7 daNm

with screw control nD_2 = 1450 rotations/min.:

$$N = \left(\frac{10.7}{135 \cdot 0,4} \cdot 1450\right) \cdot \frac{1}{973} = 0,29 \text{ kW}$$



The here reproduced diagram shows the curve of absorbed power in function of the max. catalogue torque, relevant to the dimension RD...170 (30 daNm).
As to know the corresponding values of the RD...125 and RD...150 dimensions, multiply the value (kW) taken from the diagram for the correction factor 0,25 (for RD...125) and 0,5 (for RD...150).

EXAMPLE:

RD...170 (30 daNm);
nD_2 1500 rotations/min. = 0,855 kW

RD...125 (7,5 daNm);
nD_2 1500 rotations/min. = 0,855 kW × 0,25 = 0,213 kW

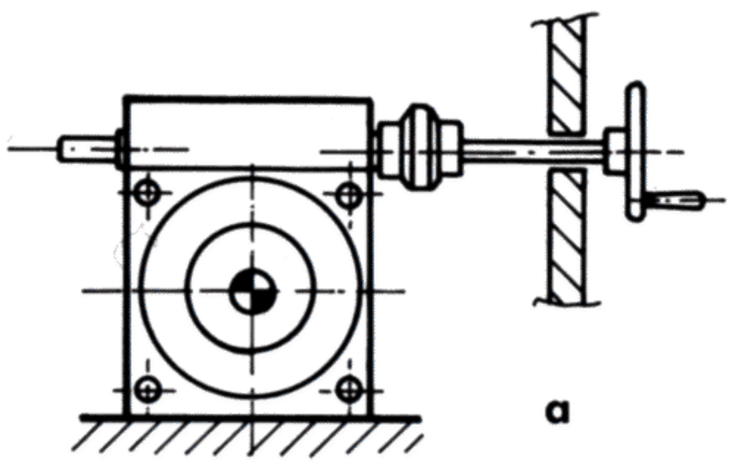
RD...150 (15 daNm);
nD_2 1500 rotations/min. = 0,855 kW × 0,5 = 0,427 kW

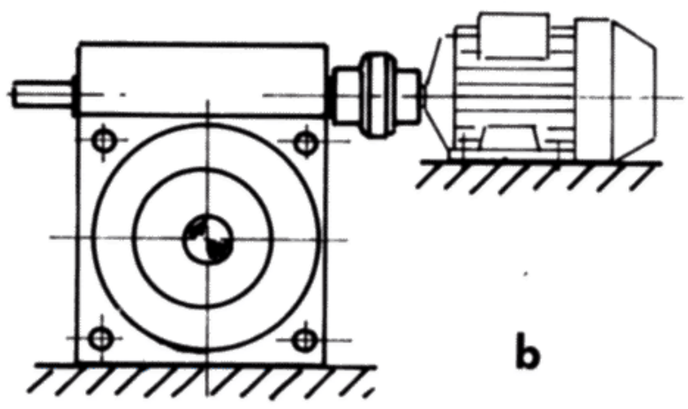
REMOTE CONTROL

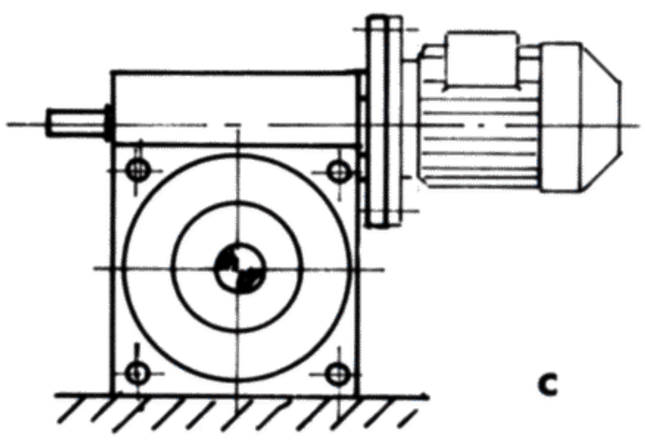
The differential can be operated as follows:

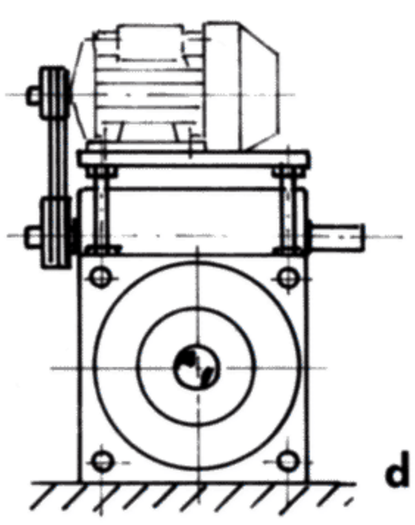
manually (by hand-wheel operations) (fig. **a**)

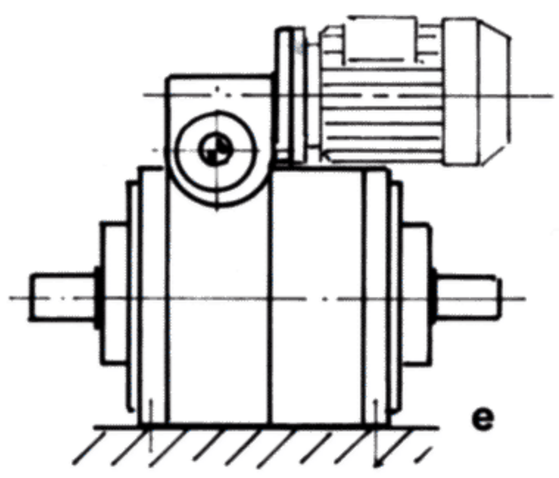
motor driven:
- — motor direct coupled to worm screw (see example **b** and **c**)
- — motor mounted on support (see example **d**)
- — motorgear direct coupled to worm screw (see example **e**)
- — motorgear mounted on support (see example **f**)
- — control motor unit mounted separate from gear unit (see example **g**)

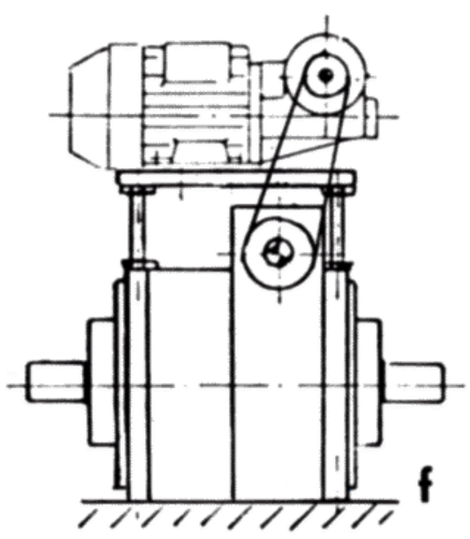


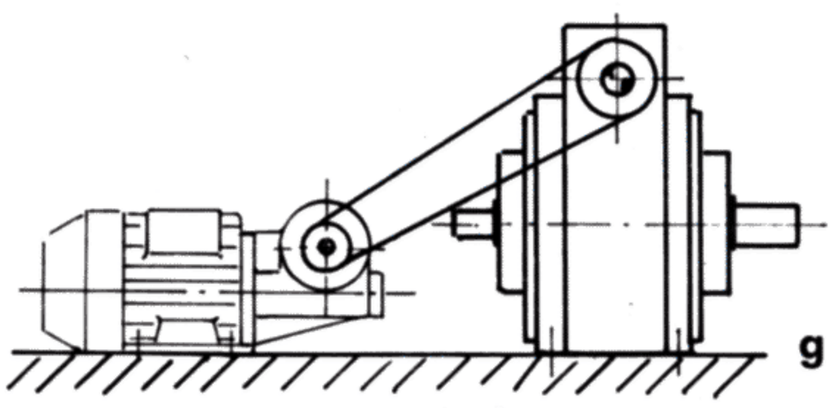




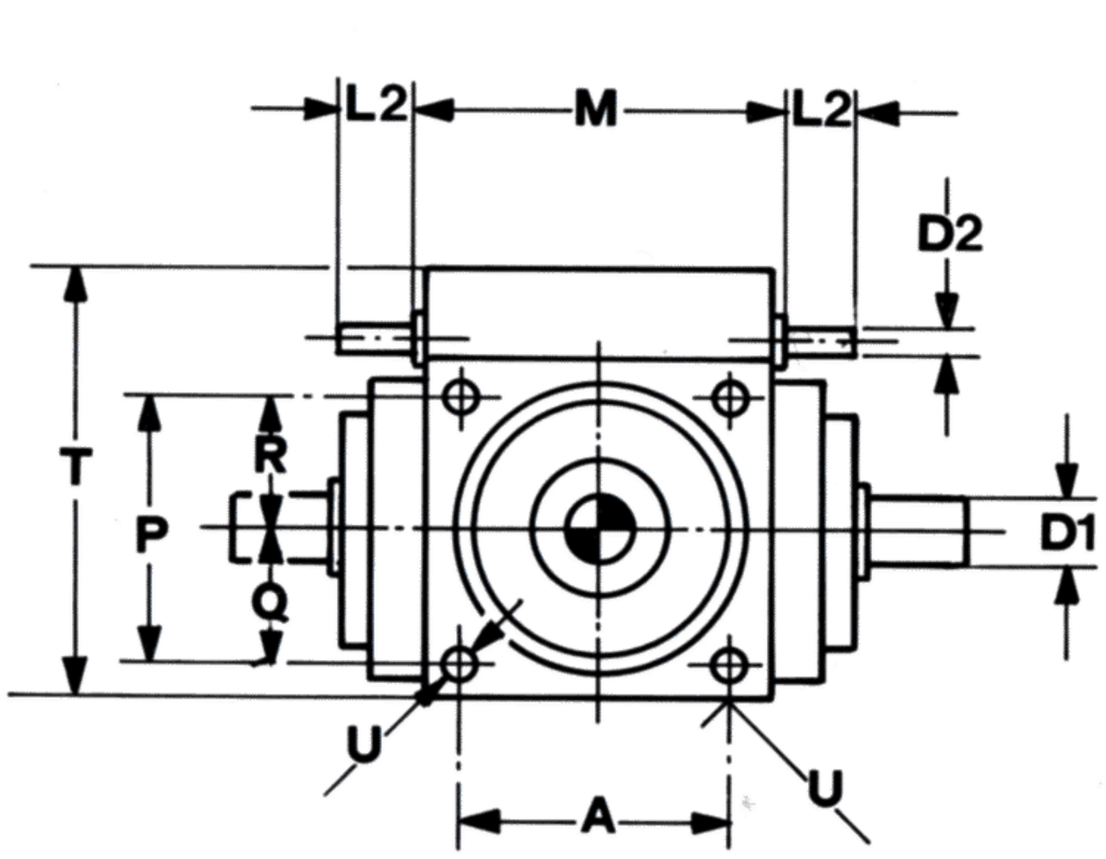


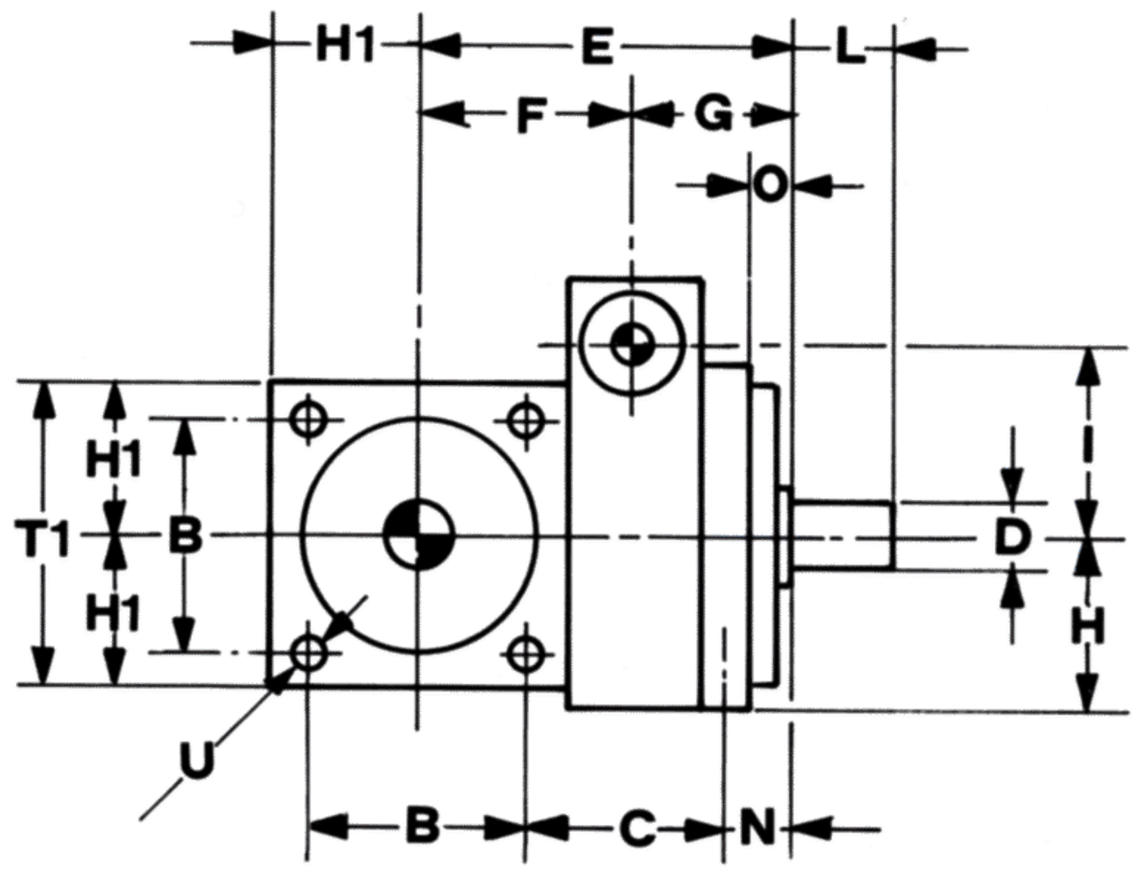


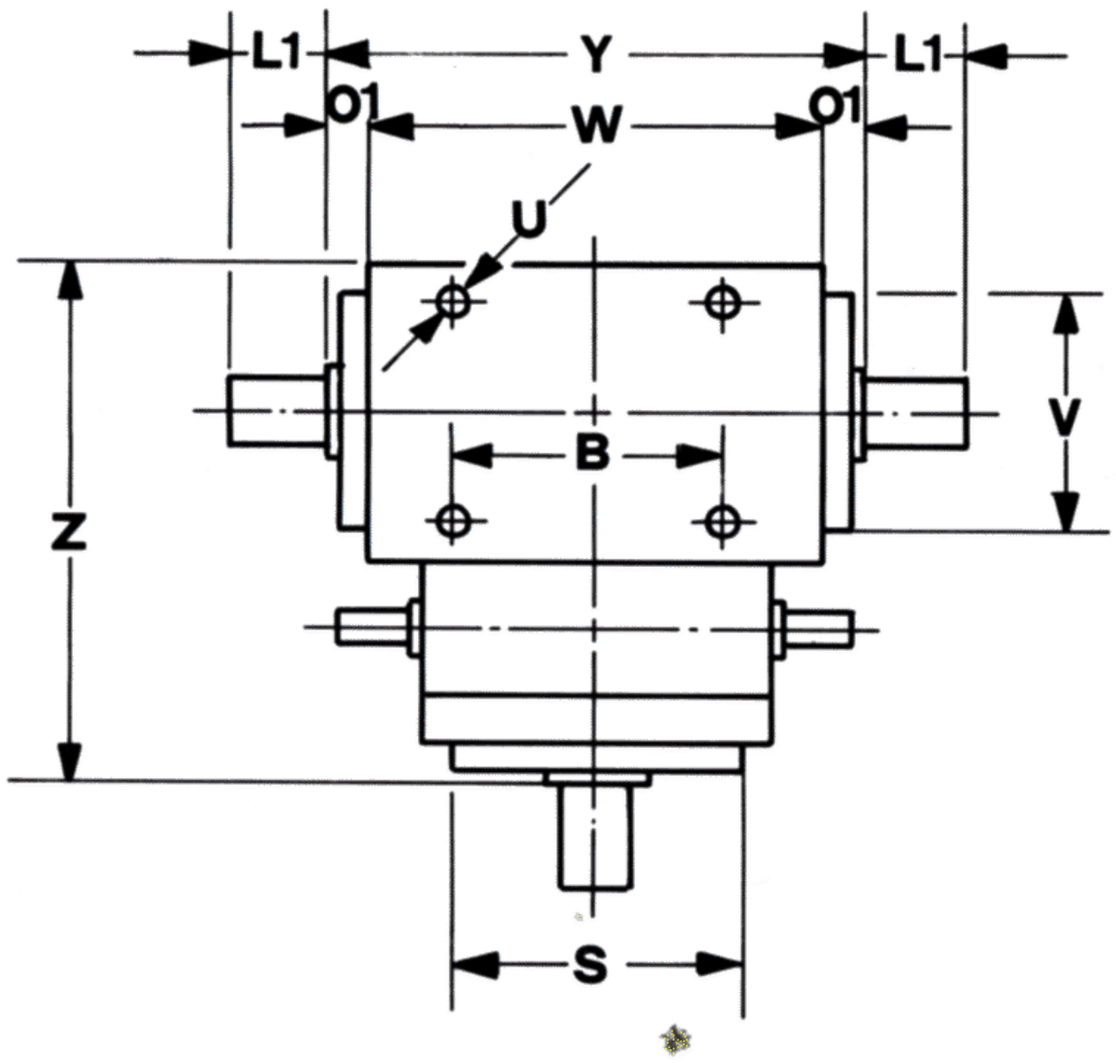




DIMENSIONS AND TECHNICAL CHARACTERISTICS







TYPE	A	B	C	D	D_1	D_2	E	F	G	H	H_1	I	L	L_1	L_2	M	N	O	O_1	P	Q	R	S	T	T_1	U	V	W	Y	Z	WEIGHT KG.
RDA 125	100	82	82	22	22	14	139	89	50	62,5	55	72	35	35	30	129	16	6	3,5	100	50	50	116	160	110	M8	102	145	152	194	18
RDA150	110	105	93	32	32	14	169	110,5	58,5	75	70	81,5	45	45	30	152	23,5	6	4,5	110	55	55	130	182	140	M10	130	175	184	239	30
RDA170	145	130	98	42	42	14	192	132	60	85	85	93	60	60	30	128	29	6	4,5	118	65	53	155	204	170	M12	160	215	224	277	50

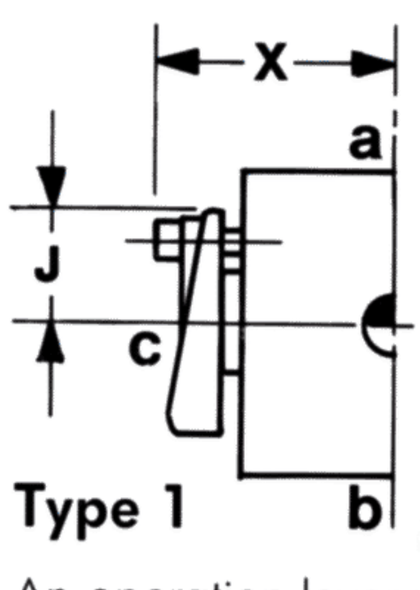
Shafts tolerance: J6 - Key and keyseat UNI6604-69

Direction of rotation: see INTERNAL GEAR ARRANGEMENTS

RDH

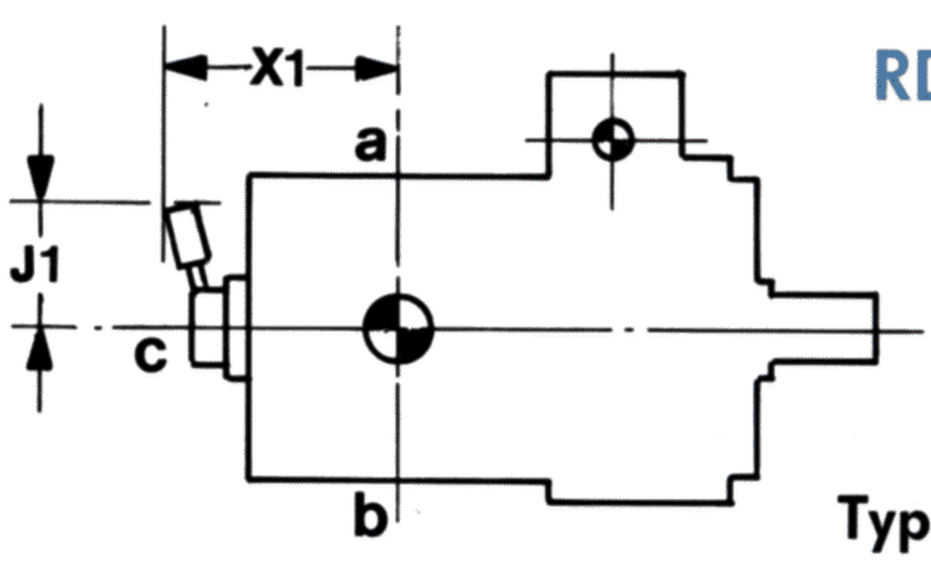
The RDH units have the same characteristics and dimensions as shown for RDA types with mechanical inversion obtained through a lever (normal = type 1, type 2 at request) placed in pos. C (pos. A or B at request).

TYPE	J	J_1	X	X_1	WEIGHT KG.
RDH 125	47,5	85	92	110	20
RDH 150	55	85	113	125	33
RDH 170	55	85	128	140	53



Type 1

An operation lever with free rotation on 360° and a screw safety clamp.



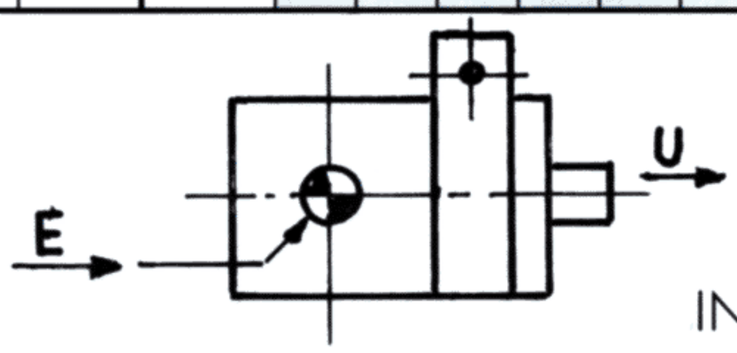
Type 2

An operating lever with free rotation on 360° and release positioning.

ATTENTION: operate from a standstill-position only.

TECHNICAL CHARACTERISTICS

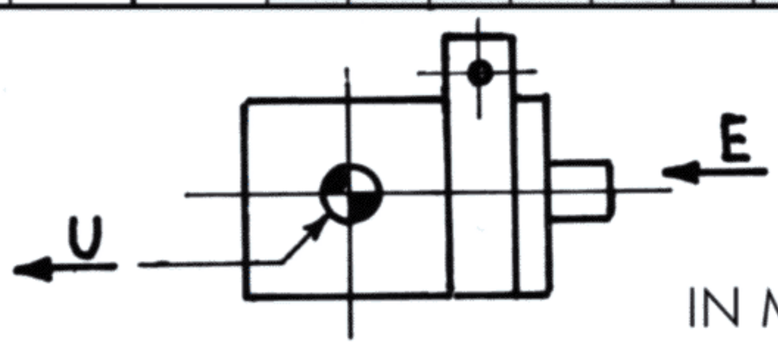
	TYPE	INPUT rotation/min.	10	20	30	40	60	80	100	120	180	200	240	300	400	500	600	700	800	900	1000	1200	1500	1800	2100	2400	2700	3000
1 : 1	RDA 125	E:kW	0,09	0,17	0,25	0,30	0,48	0,62	0,71	0,84	1,23	1,36	1,53	1,78	2,26	2,70	2,93	3,32	3,20	3,45	3,65							
		U: daNm	7,5	7,5	7,48	7,45	6,9	6,7	6,2	6,13	6	5,95	5,58	5,2	4,95	4,72	4,27	4,15	3,5	3,36	3,2							
	RDA 150	E: Kw	0,18	0,34	0,50	0,61	0,95	1,23	1,42	1,68	2,46	2,72	3,05	3,56	4,52	5,40	5,85	6,64	6,40	6,90	7,30							
		U: daNm	15	15	14,9	14,9	13,8	13,4	12,4	12,3	12	11,9	11,2	10,4	9,9	9,45	8,55	8,3	7	6,72	6,4							
	RDA 170	E: Kw	0,36	0,68	1,0	1,22	1,90	2,46	2,84	3,36	4,93	5,43	6,11	7,12	9,09	10,8	11,7	13,3	12,8	13,8	14,6							
		U: daNm	30	30	29,8	29,8	27,6	26,8	24,8	24,6	24	23,8	22,3	20,8	19,8	18,8	17,1	16,6	14	13,4	12,8							



IN REDUCTION

The phase regulating units with a ratio of 1 : 1 can bed employed with D as well as with D_1 input. The D-shaft is conventionally indicated as a slow shaft.

1 : 1,5	RDA 125	E: Kw	0,06	0,12	0,17	0,22	0,30	0,44	0,52	0,62	0,84	0,93	1,10	1,33	1,68	2,01	2,26	2,64	3,01	2,93	3,0	3,20	3,65					
		U: daNm	7,5	7,5	7,5	7,5	7,45	7,1	6,8	6,7	6,13	6,1	6,03	5,8	5,48	5,3	4,96	4,96	4,96	4,27	3,95	3,5	3,2					
	RDA 150	E: Kw	0,12	0,24	0,34	0,44	0,61	0,88	1,04	1,23	1,68	1,86	2,20	2,66	3,35	4,02	4,52	5,28	6,02	5,85	6,0	6,40	7,30					
		U: daNm	15	15	15	15	14,9	14,2	13,6	13,4	12,3	12,2	12	11,6	10,9	10,6	9,91	9,91	9,91	8,55	7,9	7	6,4					
	RDA 170	E: Kw	0,24	0,48	0,68	0,88	1,22	1,76	2,08	2,46	3,36	3,72	4,40	5,32	6,70	8,04	9,05	10,6	12,0	11,7	12,0	12,8	14,6					
		U: daNm	30	30	30	30	28,8	28,4	27,2	26,8	24,6	24,4	24	23,2	21,8	21,2	19,8	19,8	19,8	17,1	15,8	14	12,8					
1 : 2	RD 125	E: Kw	0,05	0,09	0,13	0,17	0,25	0,30	0,43	0,48	0,66	0,71	0,84	1,04	1,36	1,53	1,78	1,99	2,26	2,48	2,70	2,93	3,27	3,45	3,65			
		U: daNm	7,5	7,5	7,5	7,5	7,48	7,45	7,45	6,9	6,45	6,2	6,13	6,06	5,95	5,35	5,2	5	4,95	4,83	4,72	4,27	3,82	3,36	3,2			
	RD 150	E: Kw	0,10	0,18	0,26	0,34	0,50	0,60	0,86	0,95	1,32	1,42	1,68	2,07	2,72	3,06	3,56	3,99	4,52	4,96	5,40	5,85	6,54	6,90	7,30			
		U: daNm	15	15	15	15	14,9	14,9	14,9	13,8	12,9	12,4	12,3	12,1	11,9	10,7	10,4	10	9,9	9,66	9,45	8,55	7,65	6,72	6,4			
	RD 170	E: Kw	0,20	0,36	0,52	0,68	1,0	1,20	1,72	1,90	2,64	2,84	3,36	4,14	5,43	6,12	7,12	7,99	9,04	9,92	10,8	11,7	13,1	13,8	14,4			
		U: daNm	30	30	30	30	29,8	29,8	29,8	27,6	25,8	24,8	24,6	24,67	24,2	23,8	21,4	20,8	20	19,8	19,3	18,9	17,1	15,3	13,4			
1 : 3	RD 125	E: Kw	0,03	0,06	0,09	0,15	0,17	0,23	0,28	0,30	0,48	0,52	0,62	0,71	0,93	1,16	1,36	1,49	1,64	1,78	1,96	2,26	2,70	2,93	3,32	3,20	3,45	3,65
		U: daNm	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,45	6,9	6,8	6,7	6,2	6,1	6,06	5,95	5,67	5,39	5,2	5,15	4,95	4,72	4,27	4,15	3,5	3,36	3,2
	RD 150	E: Kw	0,06	0,12	0,18	0,30	0,34	0,46	0,57	0,61	0,95	1,04	1,23	1,42	1,86	2,32	2,72	2,97	3,28	3,56	3,92	4,52	5,4	5,85	6,64	6,40	6,90	7,30
		U: daNm	15	15	15	15	15	15	15	14,9	13,8	13,6	13,4	12,4	12,2	12,1	11,9	11,3	10,8	10,4	10,3	9,9	9,45	8,55	8,30	7	6,72	6,4
	RD 170	E: Kw	0,12	0,24	0,36	0,60	0,68	0,92	1,14	1,22	1,90	2,08	2,46	2,84	3,72	4,64	5,44	5,94	6,56	7,12	7,84	9,04	10,8	11,7	13,3	12,8	13,8	14,6
		U: daNm	30	30	30	30	30	30	30	29,8	27,6	27,2	26,8	24,8	24,4	24,2	23,8	22,6	21,6	20,8	20,6	19,8	18,9	17,1	16,6	14	13,4	12,8



IN MULTIPLICATION

The phase regulating units with reverse gear type RDH are produced exclusively in the ratios 1 : 2 and 1 : 3 (in reduction), 2 : 1 and 3 : 1 (in multiplication). The technical characteristics correspond to those of type RDA.

1,5 : 1	RDA 125	E:kW	0,09	0,17	0,25	0,33	0,48	0,62	0,73	0,84	1,23	1,33	1,50	1,84	2,26	2,82	2,93	3,05	3,20	3,45	3,65							
		U: daNm	5	5	4.86	4,85	4,67	4,52	4,26	4,08	4,05	3,88	3,64	3,59	3,29	3,28	2,85	2,54	2,33	2,22	2,13							
	RDA 150	E: Kw	0,18	0,34	0,50	0,66	0,96	1.23	1,46	1,68	2,46	2,66	3,00	3,69	4,52	5,65	5,85	6,10	6,40	6,90	7,30							
		U: daNm	10	10	9,72	9,72	9,34	8,97	8,52	8,17	8,1	2,76	7,29	7,18	6,59	6,56	5,69	5,08	4,66	4,45	4,26							
	RDA 170	E: Kw	0,36	0,68	1,00	1,32	1,92	2,46	2,92	3,37	4,92	5,32	6,00	7,38	9,05	11,3	11,7	12,2	12,8	13,8	14,6							
		U: daNm	20	20	19,4	19,4	18,6	17,9	17	16,3	16,2	15,5	14,6	14,3	13,2	13,2	11,3	10,1	9,32	8,9	8,52							
2 : 1	RD 125	E: Kw	0,08	0,17	0,25	0,34	0,46	0,60	0,70	0,84	1,23	1,35	1,45	1,78	2,26	2,70	2,93	3,10	3,35	3,45	3,65							
		U: daNm	3,75	3,75	3,72	3,72	3,35	3,28	3,07	3,06	2,99	3,28	2,64	2,59	2,47	2,36	2,13	1,94	1,83	1,67	1,59							
	RD 150	E: Kw	0,17	0,34	0,51	0,68	0,94	1,20	1,41	1,68	2,46	2,71	2,90	3,56	4,52	5,40	5,85	6,20	6,70	6,90	7,30							
		U: daNm	7,5	7,5	7,44	7,44	6,85	6,56	6,13	6,12	5,98	6,56	5,29	5,2	4,94	4,72	4,26	3,87	3,66	3,35	3,19							
	RD 170	E: Kw	0,34	0,68	1,02	1,36	1,89	2,41	2,82	3,37	4,92	5,42	5,80	7,12	9,04	10,8	11,7	12,4	13,4	13,8	14,6							
		U: daNm	15	15	14,8	14,8	13,7	13,2	12,3	12,3	11,9	13,1	10,6	10,4	9,89	9,45	8,53	7,75	7,33	6,7	6,4							
3 : 1	RD 125	E: Kw	0,08	0,17	0,25	0,34	0,46	0,60	0,70	0,84	1,23	1,35	1,57	1,78	2,26	2,70	2,92	3,30	3,18	3,45	3,65							
		U: daNm	2,5	2,5	2,5	2,48	2,3	2,22	2,06	2,05	2	1,98	1,91	1,73	1,65	1,58	1,42	1,38	1,16	1,12	1,06							
	RD 150	E: Kw	0,17	0,34	0,51	0,68	0,94	1,22	1,41	1,68	2,46	2,71	3,14	3,56	4,52	5,41	5,84	6,61	6,38	6,90	7,30							
		U: daNm	5	5	5	4,96	4,6	4,45	4,12	4,1	4	3,96	3,82	3,46	3,3	3,16	2,84	2,76	2,33	2,24	2,12							
	RD 170	E: Kw	0,34	0,68	1,02	1,36	1,89	2,44	2,82	3,37	4,93	5,42	6,28	7,12	9,04	10,8	11,7	13,2	12,7	13,8	14,6							
		U: daNm	10	10	10	9,93	9,2	8,9	8,24	8,2	8	7,92	7,64	6,92	6,6	6,33	5,68	5,53	6,66	4,48	4,24							

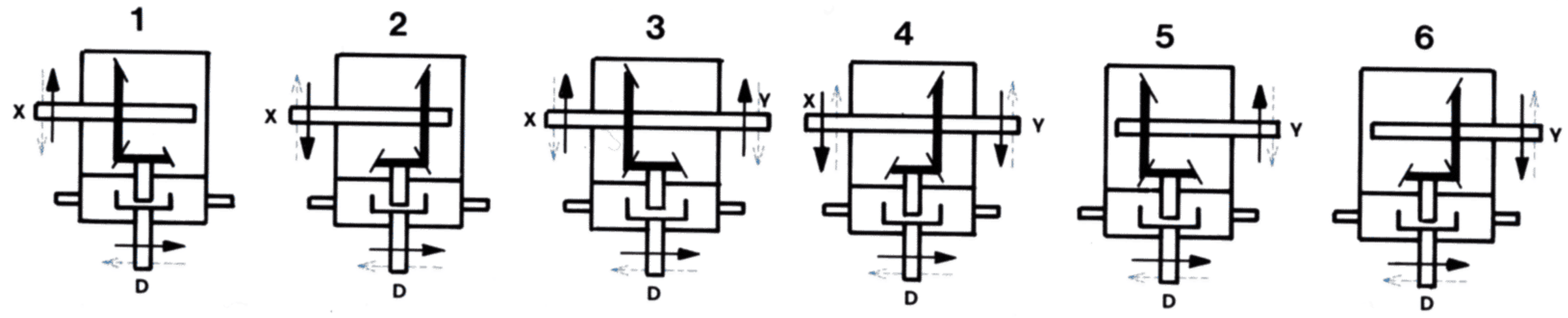
Average theoretical performance: 0,9

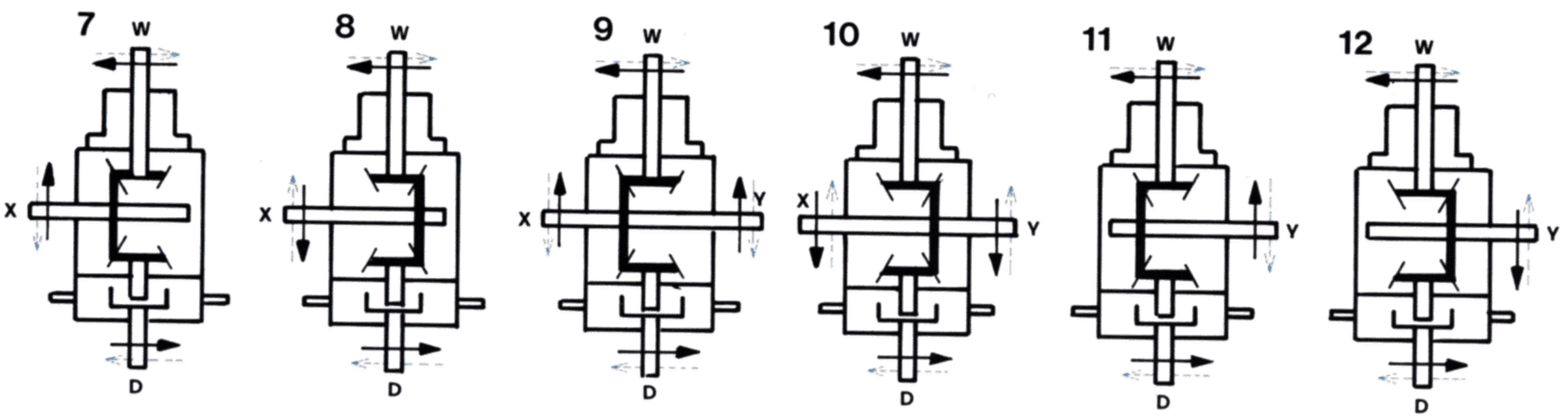
Average quantity of lubrification levels
RDA 125 : 0,9 KG. **RDH 125 :** 0,8 KG.
RDA 150 : 1,2 KG. **RDH 150 :** 1,0 KG.
RDA 170 : 2,0 KG. **RDH 170 :** 1,8 KG.

The shaded zone of the technical characteristics table indicates a utilization field, where it is advisable to evaluate application scrupulously, and, if the case, consult our technical office.

INTERNAL GEAR ARRANGEMENTS - PLAN VIEW

As the RDA unit has at its disposal an internal arrangement of 3-4-9 and 10 (double protusion of D_1-shaft) and an operating position NV, IV or BV (vertical D_1-shaft) it is advisible to complete the coding indicating which end of the D_1-shaft points downwards (X or Y as per INTERNAL GEAR ARRANGEMENT DIAGRAMS).



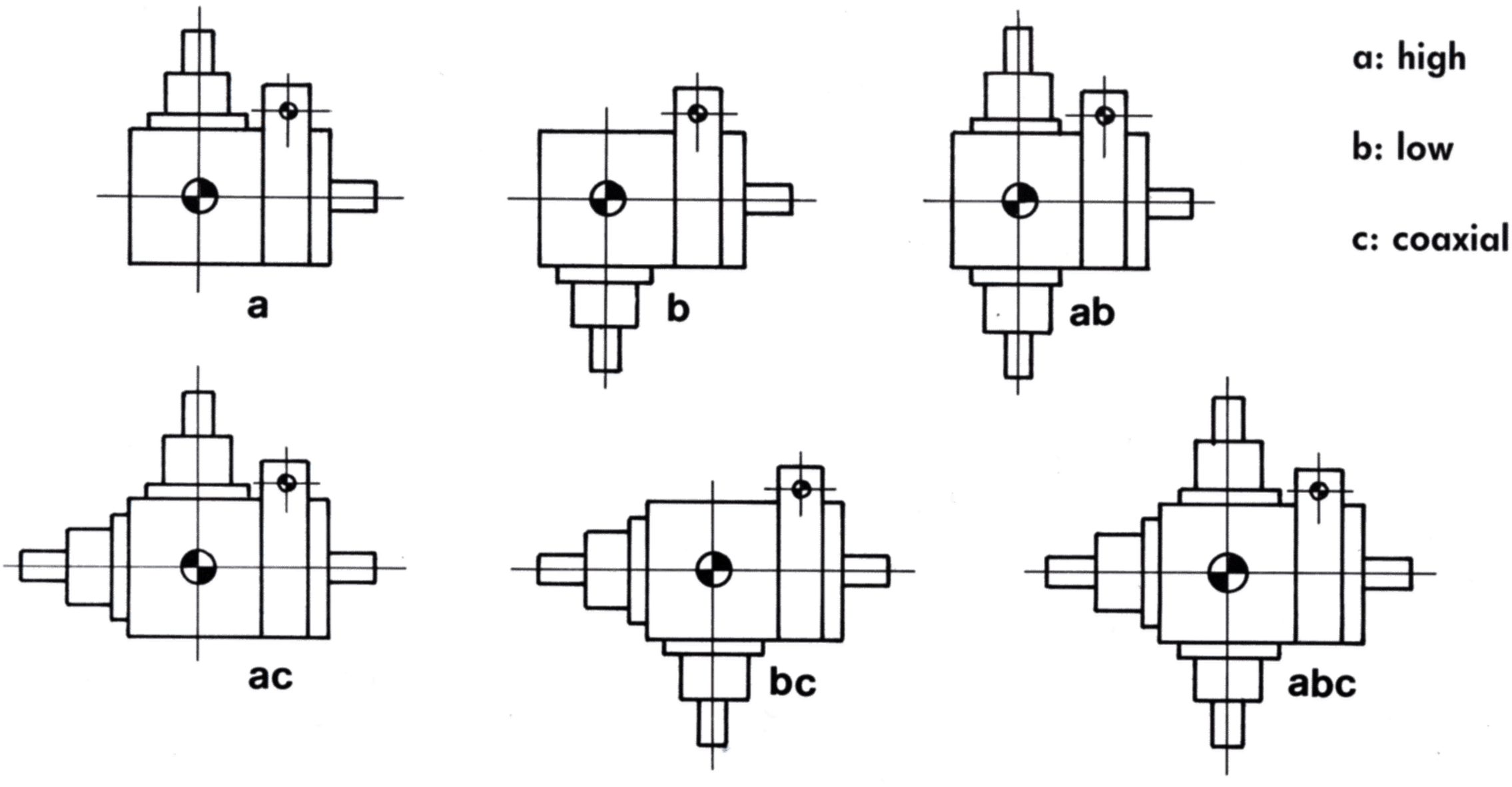


DIRECTIONS OF ROTATION

The RDA type direction of rotation can be **CONSISTENT or UNCONSISTENT**; the choice has to be made according to schematics given in table "INTERNAL GEAR ARRANGEMENTS - PLAN VIEW".
The RDH type permits to reverse (due to a positive clutch) the direction of rotation thus being able to act as **CONSISTENT or UNCONSISTED** indifferently.

THREE-DIRECTIONAL UNITS

The phase-regulators types RDA and RDH are called three-directional units with internal gear arrangements from 7 to 12 and shaft W placed orthogonally in respect to shafts X/Y or D. The position of shaft W is identified with apex a, b, c placed according to the numbers of internal gear arrangements (see illustrations).
The nominal ratio of 1 : 3 cannot be produced. The W-shaft has a fixed ratio of 3 : 1 in respect to the slow shaft D.

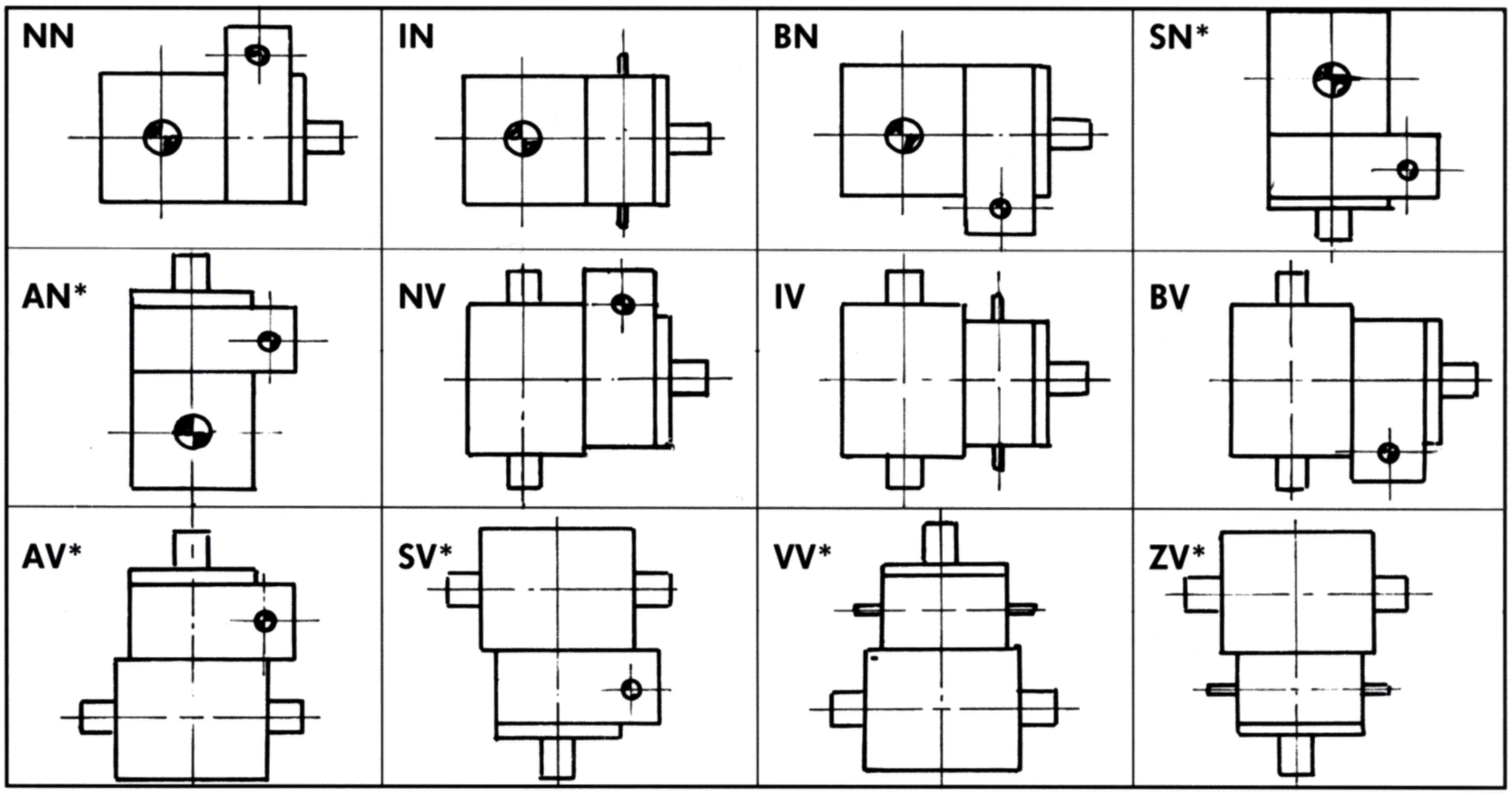


a: high

b: low

c: coaxial

OPERATING POSITIONS - ELEVATING VIEW

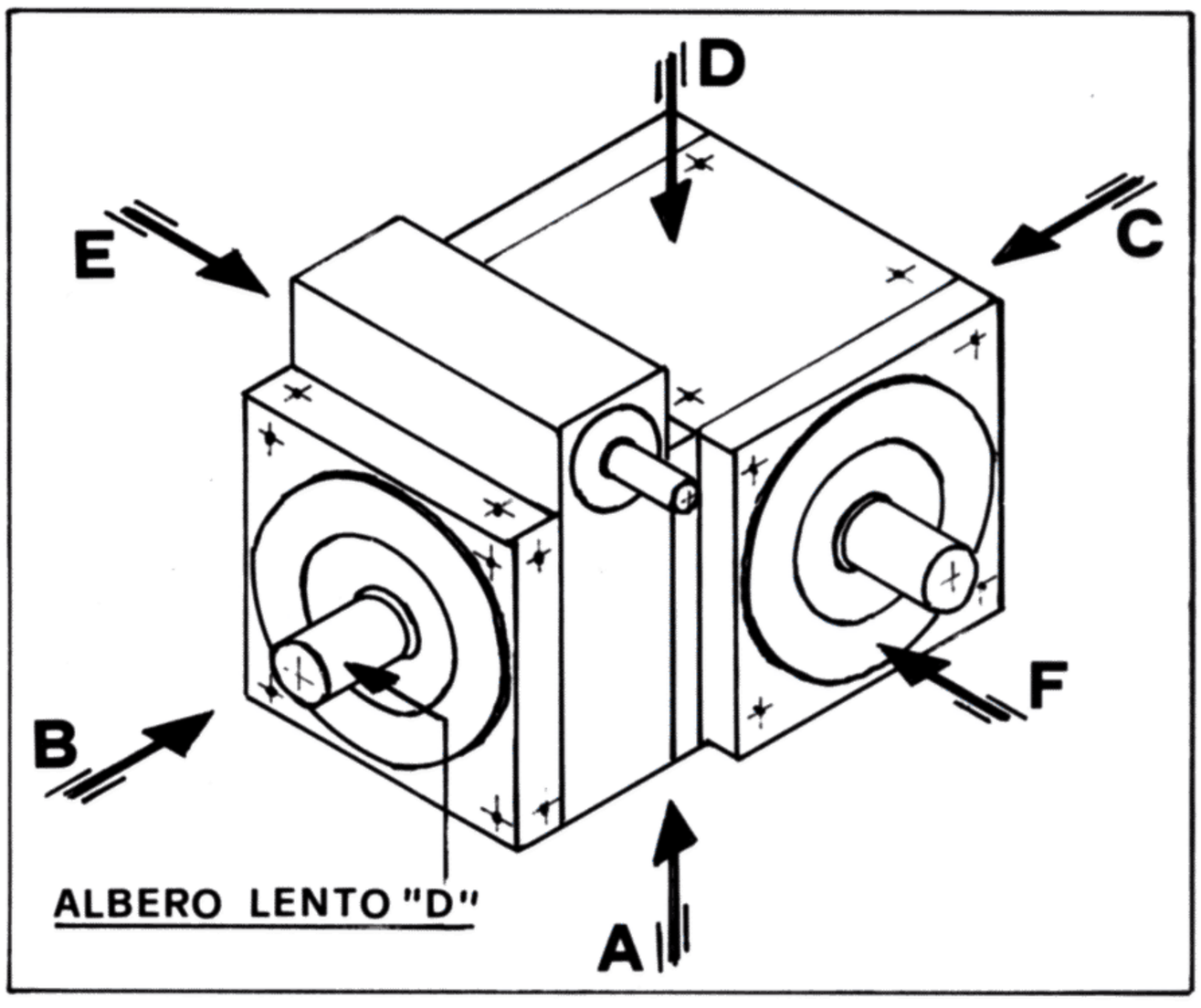


With positions IN and IV (vertical D_2 shaft), the side should be indicated the D_2 shaft assumes:
for right (d) - for left (s) having as an observation point the front-face side protusion of the D shaft.

* The operating positions indicated by an asterisk need a forced pump-operated lubrication circuit. Consult our technical office.

FASTENING SURFACE

It is extremely useful to obtain the indications regarding the surface to be used for fixing the unit, as to be able to define, while assembling it, the most suitable position for the lubrication inlet and drainage plugs. For the RDH types, it is necessary to consider also the position of the operating lever (see fig. at page 12).



EXAMPLE OF CODING

RDA 170	1:2	IN (d)	3	A
Dimensions and types	Ratio	Operating position	Internal arrangement	Fasting

ATTENTION: the sequence of letters and numbers expressed in the name-code defines the exact version and application modalities of the units. Possible particularities requested, must be described in detail in addition to the name-code.
Should such indications be missing, units will be supplied in their STANDARD version.