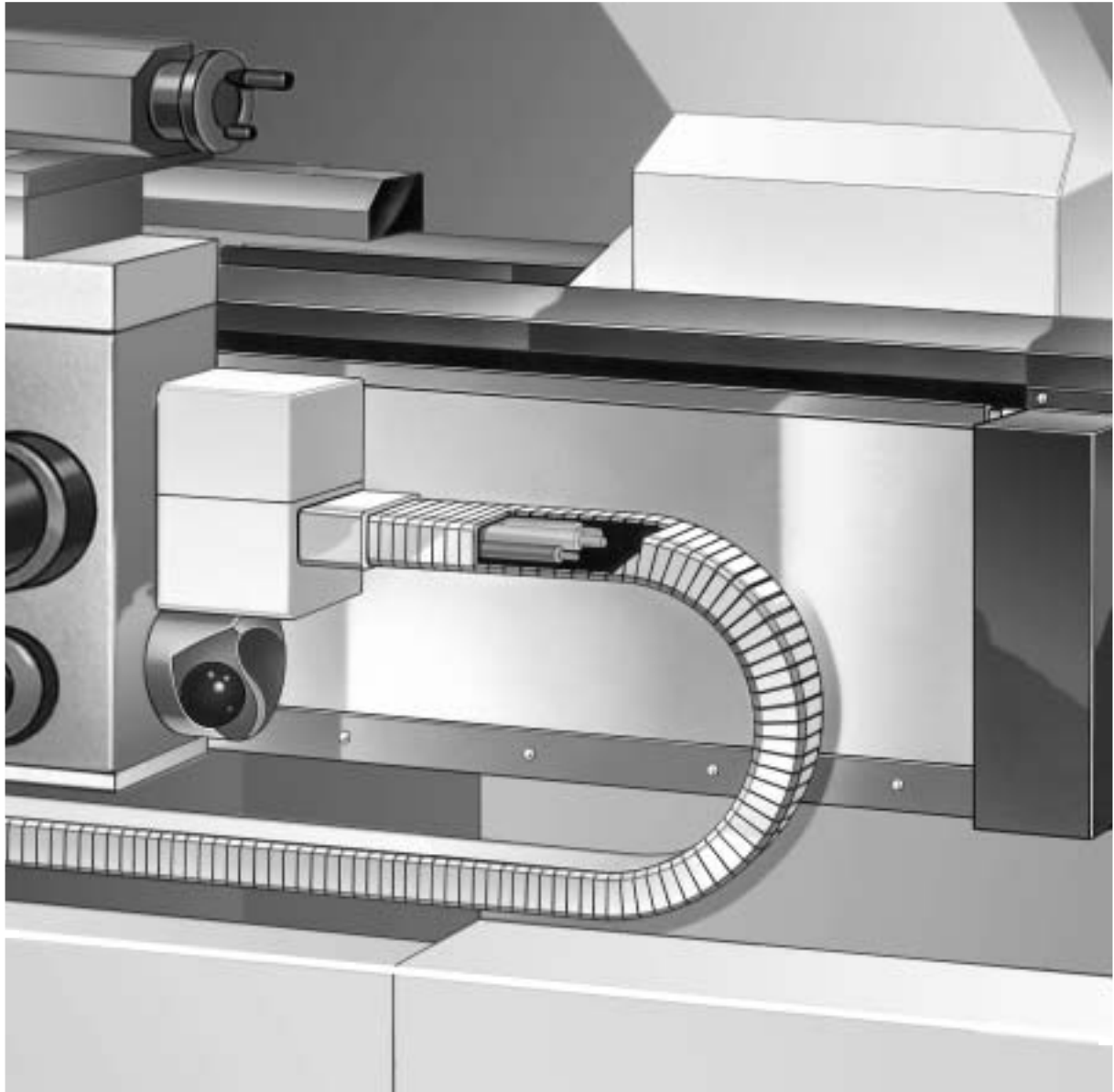


## Cable conduits



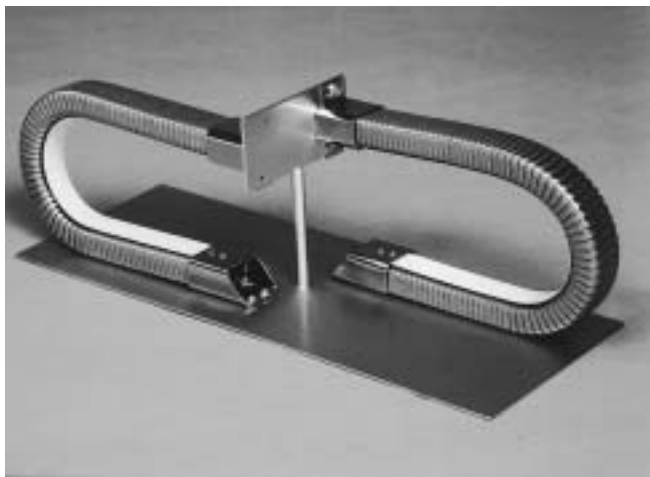
For a number of years, HEMA has been offering metal tubing for effective protection of supply lines in machine tools. HEMA protective tubing pre-

vents supply lines from being damaged by breakage, bending, abrasion or the like. This tubing offers good protection thanks to its rigid metal wall

and by having the cable routed properly through the inside.

HEMA cable tubing is called HEMAFLEX and is made from galvanised steel tubes.

The separate elements of the tubing have a spiral shape and thus form a square tube body. A stainless steel band (synthetic optional) is permanently bonded on that surface of the exterior of the tubing which lays inside of the bend. This makes the tubing perfectly stable in all directions and extremely precise when travelling or bending.



The bonding of that steel band is one of the essential quality-related factors to which we pay much attention.

### Technical data:

The excellent quality of HEMAFLEX' materials and processing show up in their extended service life and numerous areas of application. The temperature can range continuously between -40° C and +120° C, short-term ratings up to 180° C. HEMAFLEX exhibits good resistance to commonly used cooling agents.

HEMAFLEX types are to be laid out for a speed up to 90 m/min. Choose type RM up to 20 m/min, type RS up to 50 m/min and type RV for higher speed.

HEMAFLEX is available in different basic sizes, which you will find listed in the data matrix. Depending on the model, the load capacity amounts to 17 kg/m. To calculate the cables' space requirement, add about 10% to the external diameter of the cable. Always adhere to the sizes recommended by the manufacturer:

### Formula for total length

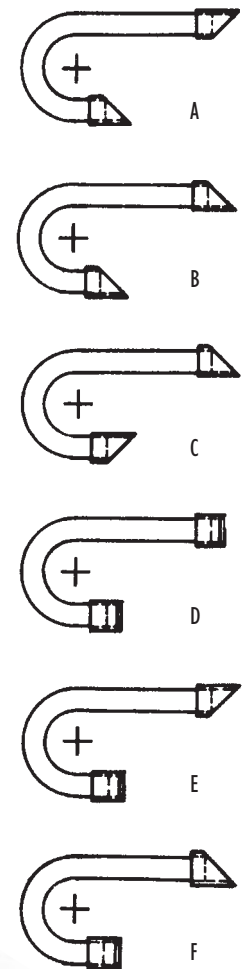
Use the following formula to calculate the total length:

$$\text{Total length } L = (0.5 \times \text{distance traversed } L_s) + (2 \times \text{TF}) + (4 \times \text{bending radius } KR) + 50 \text{ mm}$$

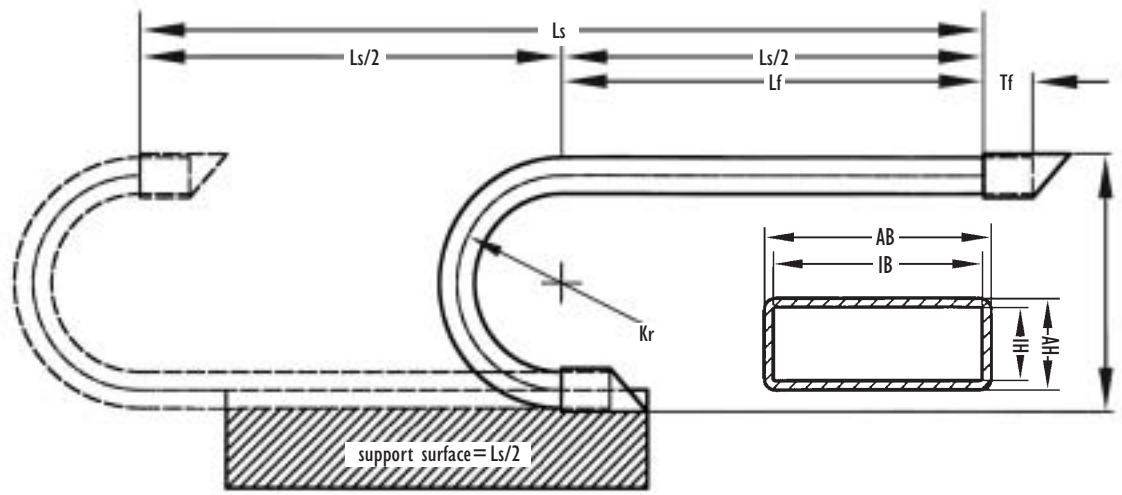
The bending radius (KR) of the cable tubing has a design- and production-related tolerance of +/- 10 %. The forces acting on the HEMAFLEX are essentially determined by its mounting height, unsupported distance and bending radius. The smaller the bending radius the greater the stress placed on the tubing and the supply lines inside it. Therefore the parameters for bending radius KR, height H and the guided length of the tubing (L-Lf) must be set as large as possible. The action of the forces can be improved with a support trough which should be half as long as the distance traversed. As an alternative for even larger traversed distances running over an unsupported distance of more than 2,500 mm, a supporting system of roll mounts can achieve even better stability, service life and traverse accuracy. Ask our engineers what would be best for your individual needs.

## Cable conduits

### Mounting positions of connecting flanges



# Cable conduits



## Design information for technical layout:

Abbreviations:

AB = external width    IB = internal width    KR = bending radius    H = maximum height  
 AH = external height    IH = internal height    Tf = length of tubing lost in flange  
 Lf = unsupported length    Ls = distance traversed    MSS = metal protection tubing    G = weight

Type	AB	AH	IB	IH	TF	KR	H	Lf	Ls*	G**
MSS 0	30	20	26	16	25	55	144	1,000	4,000 (2,000)	0.6
MSS 1	50	30	43	23	30	72	194	1,500	6,000 (3,000)	1.25
						110	269			
						165	379			
MSS 1 A	50	50	45	45	50	110	294	2,000	8,000 (4,000)	1.7
MSS 2	80	45	73	38	45	110	290	2,000	8,000 (4,000)	2.25
						220	510			
						275	620			
MSS 2 A	95	50	90	45	52	130	300	2,000	10,000 (5,000)	2.9
MSS 2 B	85	60	80	55	65	165	415	2,500	10,000 (5,000)	2.4
MSS 3	110	60	102	52	60	155	400	2,500	10,000 (5,000)	3.6
						250	590			
						330	750			
MSS 3 A	115	80	109	74	80	220	550	2,500	10,000 (5,000)	3.8
MSS 4	170	80	162	72	80	205	520	2,500	10,000 (5,000)	5.6
MSS 5 A	175	110	170	104	80	285	660	2,500	10,000 (5,000)	5.8



Note: all data in mm; \* numbers in brackets without support; \*\* in kg/m without flange  
 Type: RM (up to 20 m/min), RS (up to 20-50 m/min), RV (more than 50 m/min)

## Mounting:

The high traversing speeds and instances of sudden acceleration require a solid mount of the cable tubing on the machine. HEMA has developed four

basic types of flange which are spot-welded and riveted to the cable tubing, and screwed to the machine. Select the right flange for your con-

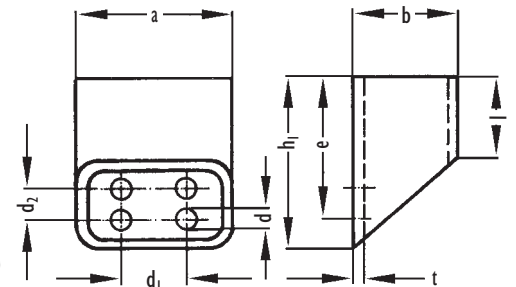
nection. The connection data are found in the matrices. You will obtain complete connection information by combining the basic data with the data related specifically to the respective type of flange. Depending on the type of flange selected,

various combinations are possible. The position at which the flange is attached to the tubing is also important. Please indicate this in the order sheet attached.

## Cable conduits

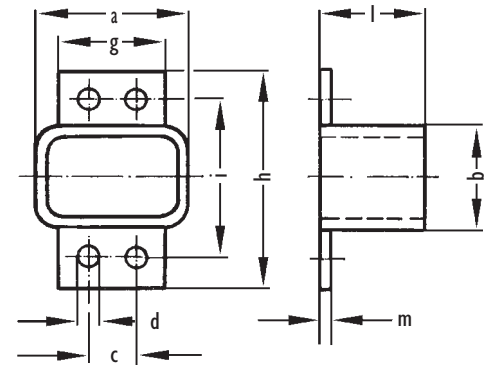
### standard flange S:

type of cable support	a	b	d <sub>1</sub>	d	e	k <sub>1</sub>	k	t	d <sub>2</sub>
MSS 0	34	24	13	6	40	50	25	1,5	
MSS 1	54	34	22	7	45	60	30	1,5	
MSS 1A	54	54	20	7	75	100	50	1,5	
MSS 2	85	50	50	7	67,5	90	45	2	
MSS 2B	90	65	50	7	118	130	65	2	40
MSS 3	115	65	70	9	90	120	120	2	
MSS 3A	120	85	80	9	143	165	165	2	40
MSS 4	175	85	100	9	120	160	160	2	
MSS 5A	182	117	140	9	158	195	195	3	40



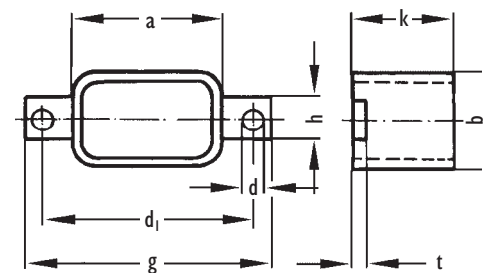
### standard flange A:

type of cable support	a	b	d <sub>1</sub>	d	g	h	d <sub>2</sub>	k	t
MSS 1	54	34	18	7	35	70	55	30	1,5
MSS 2	85	50	45	7	65	85	70	45	2
MSS 3	115	65	60	9	80	110	90	60	2
MSS 4	175	85	95	9	120	130	110	80	2



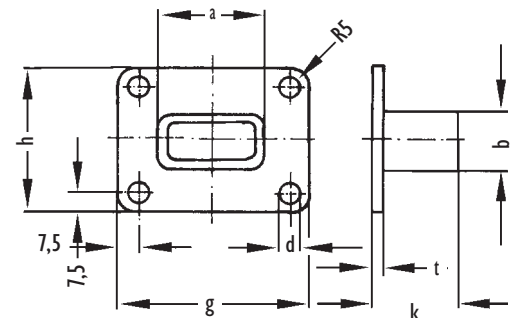
### standard flange B:

type of cable support	a	b	d <sub>1</sub>	d	g	h	k	t
MSS 1	54	34	75	7	90	15	30	1,5
MSS 2	85	50	105	7	120	30	45	2
MSS 3	115	65	140	9	160	35	60	2
MSS 4	175	85	200	9	220	40	80	2



### standard flange C:

type of cable support	a	b	d	g	h	k	t
MSS 0	34	24	6	60	50	25	1,5
MSS 1A	54	54	7	85	85	50	1,5
MSS 2A	100	55	7	130	85	60	2
MSS 2B	90	65	7	120	95	65	2
MSS 3A	120	85	9	150	115	80	2
MSS 5A	182	117	9	210	145	80	3



## MAXIFLEX Coolant hoses

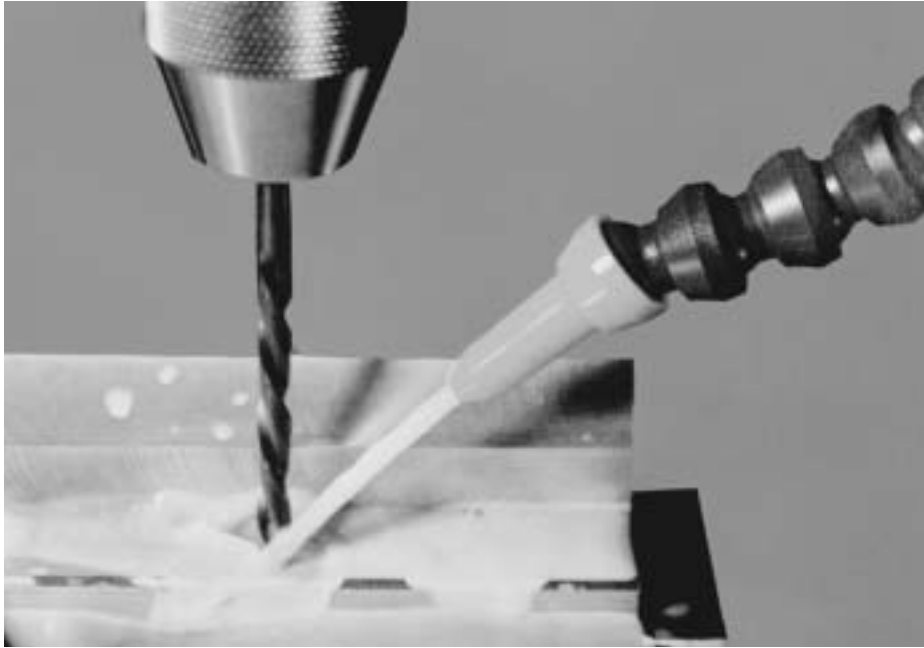
MAXIFLEX is a universal supply line system for liquid and gaseous media up to a pressure of four bars.

MAXIFLEX is made of high-quality synthetic material. This synthetic material is manufactured on modern machines in Switzerland and is extremely

resistant to chemicals and corrosion. MAXIFLEX tubing is not electrically conductive.

MAXIFLEX is extremely flexible thanks to its many standard components and can be adapted optimally to any required length, position and appli-

cation. When properly used, neither medium flow nor machine vibrations can change the set position. In addition, the flow area remains practically constant in any position and thus ensures uniform flows. You can use magnetic feet or magnetic distributor blocks to facilitate mounting.



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The MAXIFLEX system is structured on the modulare principle. There are the two standard types, 3200 and 3400, which are compatible with each other and with other manufacturers' systems. The 3200 system has a diameter of 6 mm / 1/4"; the 3400 system offers diameters of 12 mm / 1/2". The individual components are mounted or separated with the aid of special tools included at delivery (circlip pliers, separating wedge). This allows you to configure any lengths you want. Finally, you can choose from a number of flat or hole-type

