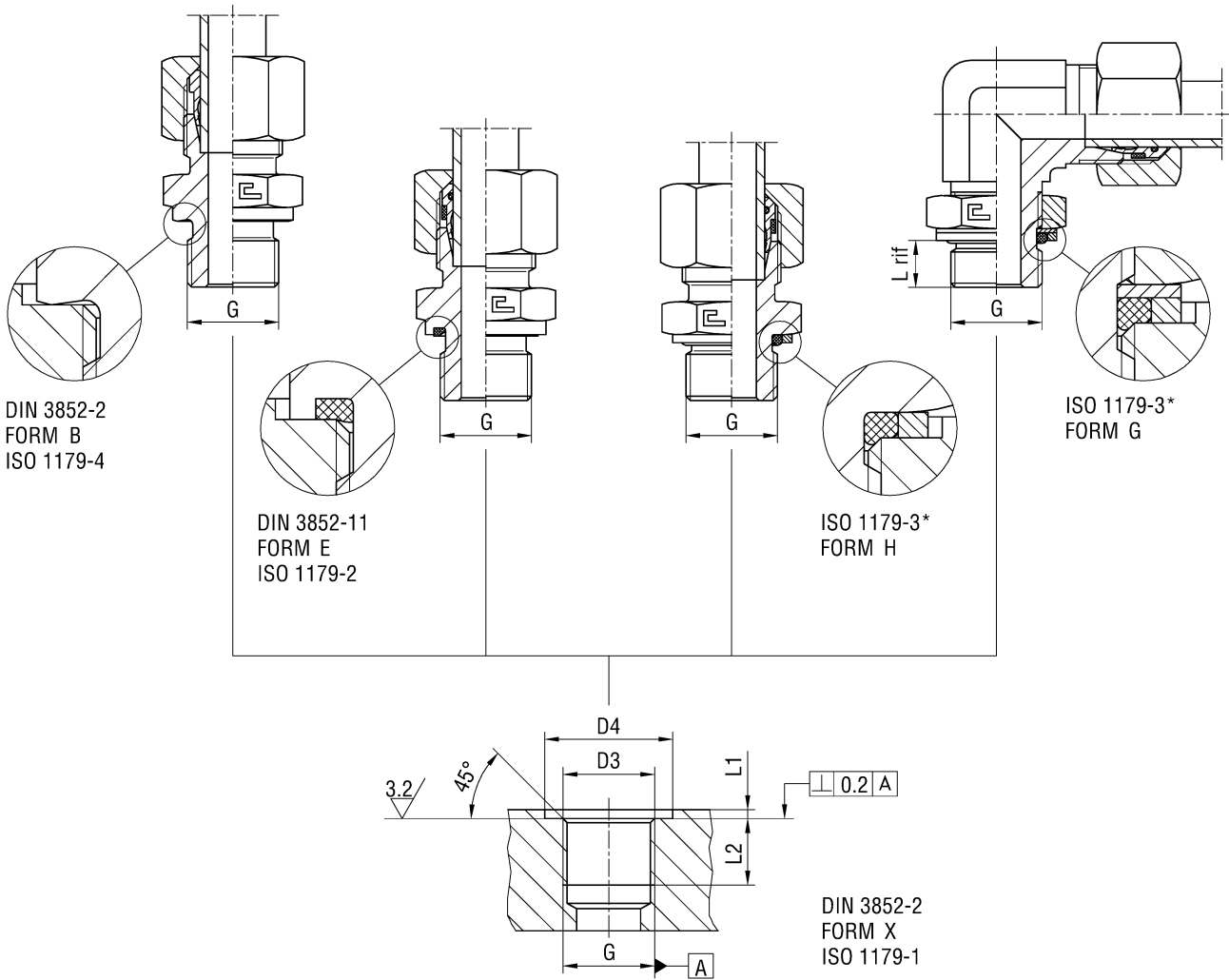


## STUD ENDS DIN 2353 WITH BSPP THREAD



Serie	ØTube	BSPP Thread	D3	D4 min form B/E	D4 min form G/H	L1 max	L2 min	L rif	Torque (Nm) form B	Torque (Nm) form E	Torque (Nm) form H	Torque (Nm) form G
L	6	G 1/8	9,8	15	17,2	1	8	7,5	20	20	20	20
	8	G 1/4	13,2	20	20,7	1,5	12	10,2	45	45	45	45
	10	G 1/4	13,2	20	20,7	1,5	12	10,2	45	45	45	45
	12	G 3/8	16,7	23	24,5	2	12	10,4	70	70	70	70
	15	G 1/2	21	28	29,6	2,5	14	13,1	130	85	85	85
	18	G 1/2	21	28	29,6	2,5	14	13,1	130	85	85	85
	22	G 3/4	26,5	33	36,9	2,5	16	13,5	170	170	170	170
	28	G 1	33,3	41	46,1	2,5	18	14,7	330	330	330	330
S	35	G 1 1/4	42	51	54	2,5	20	14,7	510	430	430	430
	42	G 1 1/2	47,9	56	60,5	2,5	22	14,7	600	510	510	510
	6	G 1/4	13,2	20	20,7	1,5	12	10,2	55	55	55	55
	8	G 1/4	13,2	20	20,7	1,5	12	10,2	55	55	55	55
	10	G 3/8	16,7	23	24,5	2	12	10,4	85	80	80	80
	12	G 3/8	16,7	23	24,5	2	12	10,4	85	80	80	80
	14	G 1/2	21	28	29,6	2,5	14	13,1	150	110	110	110
	16	G 1/2	21	28	29,6	2,5	14	13,1	150	110	110	110
20	G 3/4	26,5	33	36,9	2,5	16	13,5	280	170	170	170	
25	G 1	33,3	41	46,1	2,5	18	14,7	330	330	330	330	
30	G 1 1/4	42	51	54	2,5	20	14,7	510	430	430	430	
38	G 1 1/2	47,9	56	60,5	2,5	22	14,7	680	510	510	510	

### Performances:

- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

### Sealing form B:

Good  
Good  
no  
2,5:1

### Sealing form E:

Excellent  
Excellent  
no  
4:1

### Sealing form H:

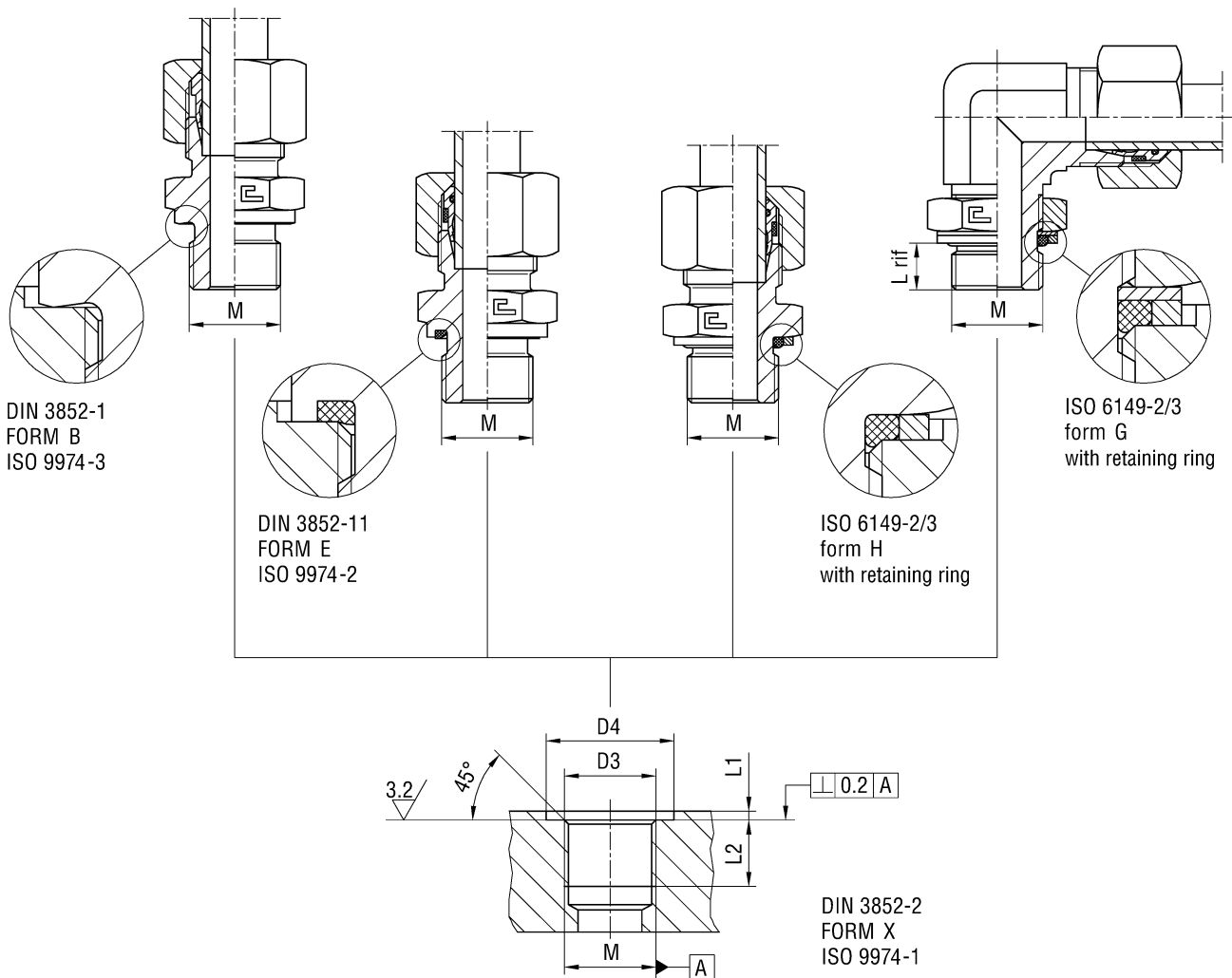
Excellent  
Excellent  
no  
4:1

### Sealing form G:

Excellent  
Excellent  
no  
4:1

\*In revision phase

**STUD ENDS DIN 2353 WITH METRIC THREAD**



Serie	ØTubo	Metric Thread	D3	D4 min form B/E	D4 min form G/H	L1 max	L2 min	L rif	Torque (Nm) form B	Torque (Nm) form E	Torque (Nm) form H	Torque (Nm) form G
L	6	M10x1	10	15	16	1	8	7,6	20	20	20	20
	8	M12x1,5	12	18	19	1,5	12	9,7	30	30	30	30
	10	M14x1,5	14	20	21	1,5	12	9,7	45	45	50	50
	12	M16x1,5	16	23	24	1,5	12	10,2	60	55	55	55
	15	M18x1,5	18	25	26	2	12	10,9	80	70	70	70
	18	M22x1,5	22	28	29	2,5	14	12	130	120	120	120
	22	M26x1,5	26	33	-	2,5	16	-	180	170	-	-
	22	M27x2	27	33	34	2,5	16	13,8	-	-	170	170
	28	M33x2	33	41	43	2,5	18	13,8	330	330	330	330
S	35	M42x2	42	51	52	2,5	20	13,8	470	430	430	430
	42	M48x2	48	56	57	2,5	22	15,3	600	510	510	510
	6	M12x1,5	12	18	19	1,5	12	9,7	40	40	40	40
	8	M14x1,5	14	20	21	1,5	12	9,7	55	55	55	55
	10	M16x1,5	16	23	24	1,5	12	10,2	80	70	70	70
	12	M18x1,5	18	25	26	2	12	10,9	105	85	85	85
	14	M20x1,5	20	27	27	2	14	12	150	120	120	120
	16	M22x1,5	22	28	29	2,5	14	12	170	130	130	130
	20	M27x2	27	33	34	2,5	16	13,8	200	170	170	170
25	M33x2	33	41	43	2,5	18	13,8	390	330	330	330	
30	M42x2	42	51	52	2,5	20	13,8	510	430	430	403	
38	M48x2	48	56	57	2,5	22	15,3	680	510	510	510	

**Performances:**

- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

**Sealing form B:**

Good  
Good  
no  
2,5:1

**Sealing form E:**

Excellent  
Excellent  
no  
4:1

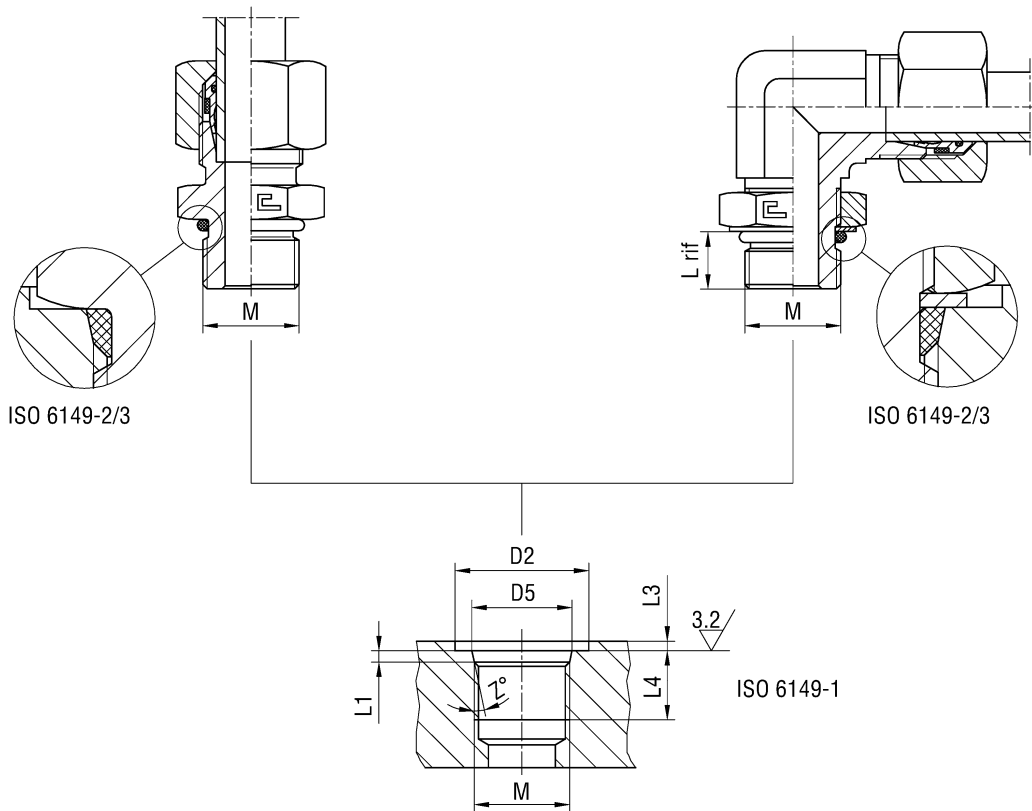
**Sealing form H:**

Excellent  
Excellent  
no  
4:1

**Sealing form G:**

Excellent  
Excellent  
no  
4:1

## STUD ENDS DIN 2353 WITH METRIC THREAD (ISO 6149)



Serie	P max ISO 6149 STRAIGHT	P max ISO 6149 ADJUSTABLE	ØTube	Metric Thread	D2 min	D5	L1	L3 max	L4 min	L rif	Z°	Torque (Nm) ISO 6149 STRAIGHT	Torque (Nm) ISO 6149 ADJUSTABLE
L	315	315	6	M10x1	16	11,1	1,6	1	10	8,6	12	15	15
	315	315	8	M12x1,5	19	13,8	2,4	1,5	11,5	11,1	15	25	25
	315	315	10	M14x1,5	21	15,8	2,4	1,5	11,5	11,1	15	30	30
	315	250	12	M16x1,5	24	17,8	2,4	1,5	13	11,6	15	35	35
	315	250	15	M18x1,5	26	19,8	2,4	2	14,5	12,3	15	40	40
	315	250	18	M22x1,5	29	23,8	2,4	2	15,5	13,4	15	55	55
	160	160	22	M27x2	34	29,4	3,1	2	19	15,8	15	85	85
	160	160	28	M33x2	43	35,4	3,1	2,5	19	15,8	15	140	140
	160	160	35	M42x2	52	44,4	3,1	2,5	19,5	15,8	15	180	180
160	160	42	M48x2	57	50,4	3,1	2,5	22	17,3	15	230	230	
S	630	400	6	M12x1,5	19	13,8	2,4	1,5	11,5	11,1	15	30	30
	630	400	8	M14x1,5	21	15,8	2,4	1,5	11,5	11,1	15	40	40
	630	400	10	M16x1,5	24	17,8	2,4	1,5	13	11,6	15	50	50
	630	400	12	M18x1,5	26	19,8	2,4	2	14,5	12,3	15	60	60
	400	400	14	M20x1,5	27	21,8	2,4	2	14,5	13,4	15	70	70
	400	400	16	M22x1,5	29	23,8	2,4	2	15,5	13,4	15	85	85
	400	400	20	M27x2	34	29,4	3,1	2	19	15,8	15	150	150
	400	315	25	M33x2	43	35,4	3,1	2,5	19	15,8	15	260	260
	250	250	30	M42x2	52	44,4	3,1	2,5	19,5	15,8	15	280	280
	250	200	38	M48x2	57	50,4	3,1	2,5	22	17,3	15	360	360

### Performances:

- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

### STRAIGHT sealing:

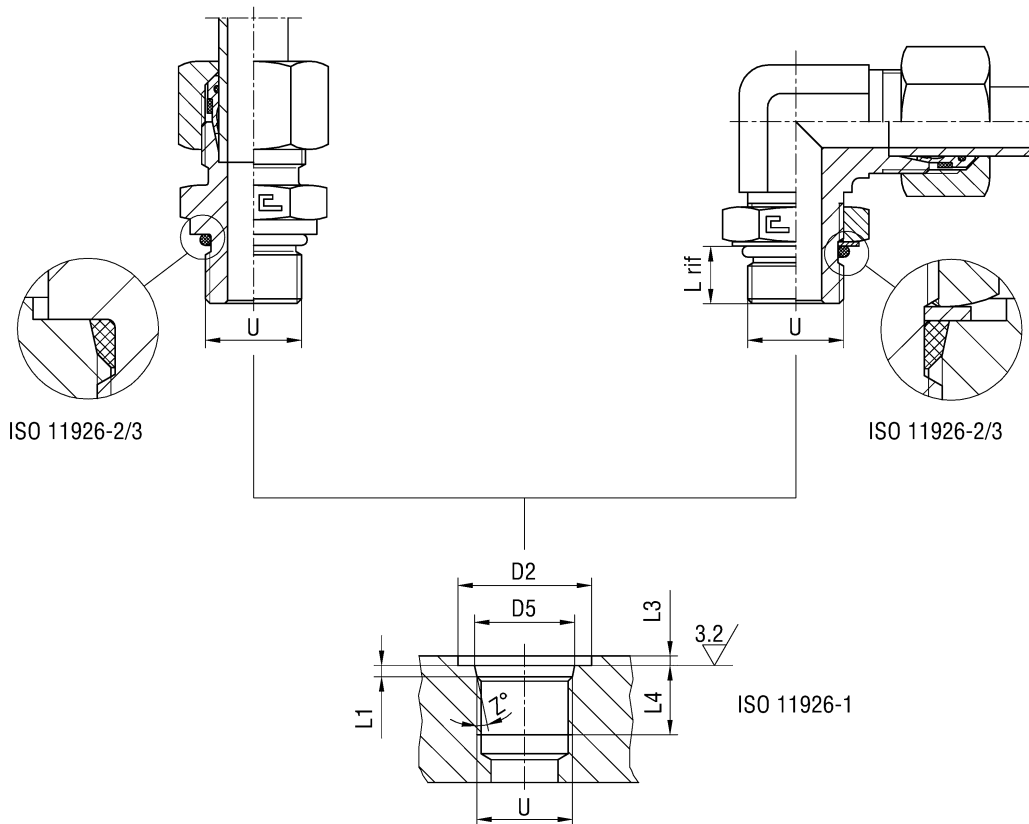
Excellent  
Excellent  
no  
4:1

### ADJUSTABLE sealing:

Excellent  
Excellent  
no  
4:1

N.B. To obtain the ISO 6149 type of sealing please take out the retaining ring from the standard fitting.

**STUD ENDS DIN 2353 WITH UNF/UN-2A THREAD**



Serie	ØTube	UNF/UN-2A Thread	D2 min	D5	L1	L3 max	L4 min	L rif	Z°	Torque (Nm) STRAIGHT	Torque (Nm) ADJUSTABLE
L	6	7/16-20 UNF-2A	21	12,45	2,4	1,6	11,5	9,9	12	20	20
	8	1/2-20 UNF-2A	23	14,05	2,4	1,6	11,5	9,9	12	25	25
	10	1/2-20 UNF-2A	23	14,05	2,4	1,6	11,5	9,9	12	25	25
	12	9/16-18 UNF-2A	25	15,7	2,5	1,6	12,7	11,1	12	30	30
	15	3/4-16 UNF-2A	30	20,65	2,5	2,4	14,3	12,5	15	45	45
	18	3/4-16 UNF-2A	30	20,65	2,5	2,4	14,3	12,5	15	45	45
	18	7/8-14 UNF-2A	34	24	2,5	2,4	16,7	14,5	15	55	55
	22	1 1/16-12 UN-2A	41	29,2	3,3	2,4	19	16,8	15	85	85
	28	1 5/16-12 UN-2A	49	35,55	3,3	3,2	19	16,8	15	130	130
	35	1 5/8-12 UN-2A	58	43,55	3,3	3,2	19	16,8	15	170	170
42	1 7/8-12 UN-2A	65	49,9	3,3	3,2	19	16,8	15	180	180	
S	6	1/2-20 UNF-2A	23	14,05	2,4	1,6	11,5	9,9	12	25	25
	8	1/2-20 UNF-2A	23	14,05	2,4	1,6	11,5	9,9	12	25	25
	10	9/16-18 UNF-2A	25	15,7	2,5	1,6	12,7	11,1	12	35	35
	12	9/16-18 UNF-2A	25	15,7	2,5	1,6	12,7	11,1	12	35	35
	14	3/4-16 UNF-2A	30	20,65	2,5	2,4	14,3	12,5	15	60	60
	16	3/4-16 UNF-2A	30	20,65	2,5	2,4	14,3	12,5	15	60	60
	16	7/8-14 UNF-2A	34	24	2,5	2,4	16,7	14,5	15	85	85
	20	1 1/16-12 UN-2A	41	29,2	3,3	2,4	19	16,8	15	150	150
	25	1 5/16-12 UN-2A	49	35,55	3,3	3,2	19	16,8	15	230	230
	30	1 5/8-12 UN-2A	58	43,55	3,3	3,2	19	16,8	15	250	250
38	1 7/8-12 UN-2A	65	49,9	3,3	3,2	19	16,8	15	320	320	

**Performances:**

- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

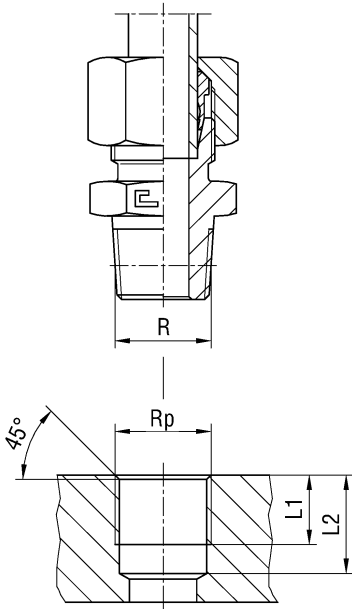
**STRAIGHT sealing:**

- Excellent
- Excellent
- no
- 4:1

**ADJUSTABLE sealing:**

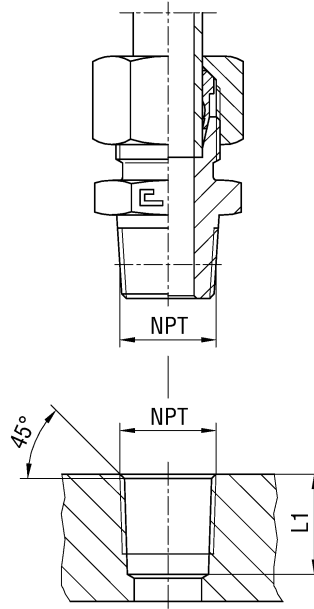
- Excellent
- Excellent
- no
- 4:1

**STUD ENDS DIN 2353 WITH BSPT THREAD**  
**STUD ENDS DIN 2353 WITH NPT THREAD**



DIN 3852-2  
FORM C

DIN 3852-2  
FORM Z



ANSI/ASME B1.20.1

ANSI/ASME B1.20.1

Serie	ØTube	BSPT Thread	L1	L2
L	6	R 1/8	5,5	9,5
	8	R 1/4	8,5	13,5
	10	R 1/4	8,5	13,5
	12	R 3/8	8,5	13,5
	15	R 1/2	10,5	16,5
	18	R 1/2	10,5	16,5
	22	R 3/4	13	19
	28	R 1	-	-
	35	R 1 1/4	-	-
42	R 1 1/2	-	-	
S	6	R 1/4	8,5	13,5
	8	R 1/4	8,5	13,5
	10	R 3/8	8,5	13,5
	12	R 3/8	8,5	13,5
	14	R 1/2	10,5	16,5
	16	R 1/2	10,5	16,5
	20	R 3/4	13	19
	25	R 1	-	-
	30	R 1 1/4	-	-
38	R 1 1/2	-	-	

Serie	ØTube	NPT Thread	L1
L	6	1/8-27 NPT	11,6
	8	1/4-18 NPT	16,4
	10	1/4-18 NPT	16,4
	12	3/8-18 NPT	17,4
	15	1/2-14 NPT	22,6
	18	1/2-14 NPT	22,6
	22	3/4-14 NPT	23,1
	28	1-11,5 NPT	27,8
	35	1 1/4-11,5 NPT	28,3
	42	1 1/2-11,5 NPT	28,3
S	6	1/4-18 NPT	16,4
	8	1/4-18 NPT	16,4
	10	3/8-18 NPT	17,4
	12	3/8-18 NPT	17,4
	14	1/2-14 NPT	22,6
	16	1/2-14 NPT	22,6
	20	3/4-14 NPT	23,1
	25	1-11,5 NPT	27,8
	30	1 1/4-11,5 NPT	28,3
	38	1 1/2-11,5 NPT	28,3

**Performances:**

- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

**Sealing form C:**

- Low-Medium
- Low-Medium
- yes
- 2,5:1

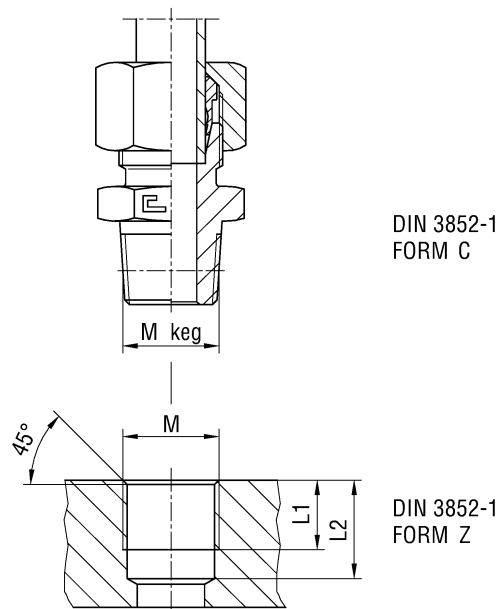
**Performances:**

- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

**Taper sealing:**

- Low-Medium
- Low-Medium
- yes
- 2,5:1

## STUD ENDS DIN 2353 WITH METRIC TAPER THREAD



Serie	Ø Tube	Metric Taper Thread	L1	L2
L	6	M10x1 keg	5,5	10
	8	M12x1,5 keg	8,5	13,5
	10	M14x1,5 keg	8,5	13,5
	12	M16x1,5 keg	8,5	13,5
	15	M18x1,5 keg	8,5	13,5
	18	M22x1,5 keg	10,5	15,5
S	6	M12x1,5 keg	8,5	13,5
	8	M14x1,5 keg	8,5	13,5
	10	M16x1,5 keg	8,5	13,5
	12	M18x1,5 keg	8,5	13,5
	14	M20x1,5 keg	10,5	15,5
	16	M22x1,5 keg	10,5	15,5

**Performances:**

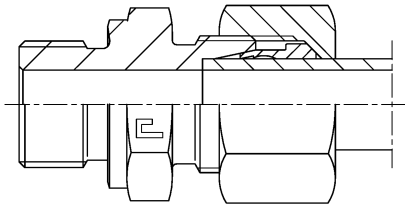
- Pressure capacity
- Sealing characteristics
- Additional sealing required
- Safety factor

**Sealing form C:**

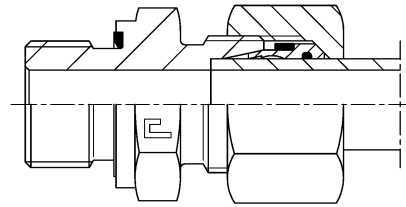
- Low-Medium
- Low-Medium
- yes
- 2,5:1

## TIGHTENING TORQUES FOR B3 AND B4 CUTTING RINGS

DIN 3861 cone for carbon and stainless steel



Assembly of B3 cutting ring



Assembly of B4 cutting ring

Serie	ØTube	Metric Thread	Manual Carbon (Nm)	Manual Stainless (Nm)	Machine Carbon (Kg)	Machine Stainless (Kg)
L	6	M12x1,5	20	30	1200	1400
	8	M14x1,5	25	55	1400	1700
	10	M16x1,5	30	85	2000	2200
	12	M18x1,5	40	120	2100	2400
	15	M22x1,5	60	130	2400	3300
	18	M26x1,5	90	220	2500	3600
	22	M30x2	170	320	2600	3800
	28	M36x2	210	500	3000	6900
	35	M45x2	360	970	5500	10000
	42	M52x2	490	1110	6700	12500
S	6	M14x1,5	25	45	1200	1400
	8	M16x1,5	30	55	1400	1700
	10	M18x1,5	40	90	2000	2200
	12	M20x1,5	50	105	2100	2400
	14	M22x1,5	70	150	2400	3300
	16	M24x1,5	80	180	2500	3600
	20	M30x2	140	340	2600	6400
	25	M36x2	230	530	5000	9300
	30	M42x2	300	610	5500	10000
	38	M52x2	430	850	6700	12500

### Notes:

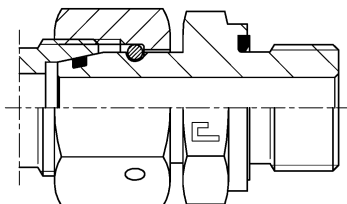
All the values reported in the above tightening tables are mere indication, and come from a series of practical tests carried out in the technical laboratory of Volpiano (TO). These may vary according to the materials and to the tolerances of the employed components.

All the values express in Newton Meters (Nm) for the tightening torques on the cone DIN 3861 threads represent the torquing moment necessary to have the correct incision of the pre-assembly of the tube, lifting the required 80% of the front of the edge of the cutting ring.

All the values expressed in Kilograms (Kg) for the linear push on the preassembly machine, represent the right strength necessary to have the correct incision of the preassembly lifting the required 80% of the front of the edge of the cutting ring.

Once done properly the preassembly and checked that all the components are conforming to the requirements of the system, finish the assembly on the system itself, first closing by wrench until you feel a certain resistance, and then doing the last 1/4 of a turn to close the fitting completely.

## SERIES 60... SWIVEL NUT



According to DIN 2353 standards, 24° sealing head as per DIN 2861 and O-Ring seal as per DIN 3865.

This series of fittings with revolving nut and seal on the 24° sealing cone guaranteed by an o-ring, meets customers requirements when asking for high pressure, absolute tightness low tightening torque.

Because of its technical characteristics this type of fitting is suitable for demanding applications such as assembly on heavy machinery. The result is a safe fastening of the nut to the body improving the whole sealing system.

The limit of this series was given by the fact that the preformed sealing with o-ring was limited to a single connection, leaving all the others with the old solutions.

A new step forward was needed to improve the research and find a solution that could grant a double sealing system on all the connections involved, metal to metal plus the elastomeric sealing.

This problem has been solved by CAST S.p.A. with the new B4 ring guaranteeing a double sealing, metal to metal plus the elastomeric sealing on all the connections of the fitting.

### TIGHTENING TORQUES FOR SWIVEL NUT FITTINGS

DIN 3861 cone for carbon and stainless steel

Serie	ØTube	Metric Thread	Torque (Nm)
L	6	M12x1,5	20
	8	M14x1,5	35
	10	M16x1,5	40
	12	M18x1,5	45
	15	M22x1,5	55
	18	M26x1,5	110
	22	M30x2	130
	28	M36x2	200
	35	M45x2	220
	42	M52x2	240
S	6	M14x1,5	40
	8	M16x1,5	45
	10	M18x1,5	50
	12	M20x1,5	60
	14	M22x1,5	80
	16	M24x1,5	100
	20	M30x2	160
	25	M36x2	240
	30	M42x2	260
	38	M52x2	350

#### Notes:

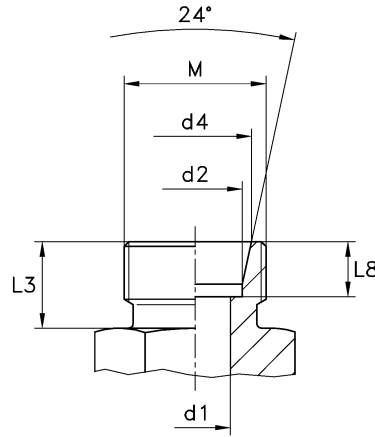
All the values reported in the above tightening tables and mere indication, and come from a series of practical tests carried out in the technical laboratory of Volpiano (TO). These may vary according to the materials and to the tolerances of the employed components.

All the values express in Newton Meters (Nm) for the tightening torques, represent the torquing moment necessary to have the correct tightness.



## DEFINITION OF CONE SIZE TO DIN 3861 STANDARDS THREAD DIAMETERS TO DIN 3853 STANDARDS

Allowed for B3 and B4 rings



Serie	Bar	ØTube	Metric Thread	d1	d2 <sup>B11</sup>	d4 <sup>+0,1</sup>	L3	L8 <sup>+0,3</sup>
LL	100	4	M8x1	3	4	5	8	4
		6	M10x1	4,5	6	7,5	8	5,5
		8	M12x1,5	6	8	9,5	9	5,5
L	250	6	M12x1,5	4	6	8,1	10	7
		8	M14x1,5	6	8	10,1	10	7
		10	M16x1,5	8	10	12,3	11	7
		12	M18x1,5	10	12	14,3	11	7
		15	M22x1,5	12	15	17,3	12	7
	160	18	M26x1,5	15	18	20,3	12	7,5
		22	M30x2	19	22	24,3	14	7,5
	100	28	M36x2	24	28	30,3	14	7,5
		35	M45x2	30	35	38	16	10,5
		42	M52x2	36	42	45	16	11
S	630	6	M14x1,5	4	6	8,1	12	7
		8	M16x1,5	5	8	10,1	12	7
		10	M18x1,5	7	10	12,3	12	7,5
		12	M20x1,5	8	12	14,3	12	7,5
		14	M22x1,5	10	14	16,3	14	8
	400	16	M24x1,5	12	16	18,3	14	8,5
		20	M30x2	16	20	22,9	16	10,5
		25	M36x2	20	25	27,9	18	12
	250	30	M42x2	25	30	33	20	13,5
		38	M52x2	32	38	41	22	16