

Bore Expanding Test



Deep Drawing Cup Test

Universal Sheet Metal Testing Machine Model 142-Basic



Square Deep Drawing Cup Test



testing equipment for quality management

ERICHSEN
since 1910

Technical Description

**Extensive
Tools / Accessories**

**With
electro-hydraulic Drive
Programme Logic Control**

Product

Universal Sheet Metal Testing Machine with electro-hydraulic drive, fully automatic test sequence and switch off at specimen failure, max. drawing forces 200 kN or 400 kN - **Model 142-20-Basic** and **Model 142-40-Basic**.

Application

This Testing Machine can be used not only to perform effortlessly, quickly and accurately all important and known deep drawing tests for ferrous and non-ferrous metals, but it is also designed for a large number of additional technological investigations:

ERICHSEN Cupping Test in accordance with

EN ISO 20482	JIS Z-2247
NF A 03-602	
NF A 03-652	
ASTM 643-09	UNE 7080
GB 415607	GOST 10510

ERICHSEN Deep Drawing Cup Test

in accordance with

DIN EN 1669
ISO 11 531
JIS Z 2249
GB/T 15825

on sheet and strips.

Square Cup Test (40 x 40 mm)

Bore Expanding Test (KWI Test)

Bore Expanding Test (ISO 16630)

Determination of the Forming Limit Curves (FLC) (not available for 142-20-Basic)

Deep Drawing Test with Blankholder Quick Release (for Earing Test)

Deep Drawing Test with Preselected Punch Stroke

Deep Drawing Test at High Temperatures up to 550 °C

ERICHSEN Cupping Test for Lacquer and Paint in accordance with DIN ISO 1520

Stamping Lacquer Test and Deep Drawing Cup Test on Coil Coatings

Special Requirements on request.

Description

The **Universal Sheet Metal Testing Machine, Model 142-Basic**, consists of a solid housing made of high-strength steel into which the test aggregate (test cylinder with work piston, sheet holder plate and die) are integrated.



All components are easily accessible from outside the machine, and thus the tools for the individual tests can be changed quickly, too. The operator's controls are well arranged on the control panel. The operating sequence of the testing machine has been designed in such a comfortable manner that cutting of the blank as well as drawing and ejecting of the cup are executed in one single operation.

The Testing Machine is driven electro-hydraulically. The test sequence can be controlled automatically or manually, as desired. A programmable logic controller is used to control the functions of the machine. The testing machine is equipped with digital displays for indicating the sheet holder force, the drawing force, as well as the drawing punch stroke.

The triple-acting hydraulic system in conjunction with the general design results in the following cost saving simplifications:

- ◆ Blanking press in the test head
- ◆ Hydraulic cup ejector
- ◆ Fully-automatic test sequence with stop at specimen failure (as of 0.3 mm sheet thickness).

Further technical advantages:

- ◆ *Cylinder head with bayonet lock* permitting direct access to drawing dies, blanking rings, blank holders etc. and quick and convenient changing of the drawing and blanking tools.
- ◆ *Cardanic retention* ensures the consistent, parallel clamping of the specimen, independent of variations in thickness.

The Sheet Metal Testing Machine, **Model 142-Basic**, was developed for testing as a means for continuous production control using standardised and other established methods.

**Selection table for drawing dies C1
(#01410132)**

valid for **ferrous and non-ferrous** material
(material type necessary for order)

Norm: ERICHSEN

Var.	Thickness s / mm	Var.	Thickness s / mm
1	0,076	28	0,85
2	0,100	29	0,90
3	0,127	30	0,95
4	0,13	31	1,00
5	0,14	32	1,10
6	0,15	33	1,15
7	0,18	34	1,20
8	0,20	35	1,25
9	0,21	36	1,30
10	0,23	37	1,40
11	0,24	38	1,50
12	0,25	39	1,60
13	0,26	40	1,70
14	0,27	41	1,80
15	0,28	42	1,90
16	0,30	43	2,00
17	0,32	44	2,10
18	0,35	45	2,20
19	0,40	46	2,30
20	0,45	47	2,40
21	0,50	48	2,50
22	0,55	49	2,60
23	0,60	50	2,65
24	0,65	51	2,70
25	0,70	52	2,8
26	0,75	53	2,9
27	0,80	54	3,0

**Selection table for drawing dies B2/C3
(#01430132)**

valid for **ferrous and non-ferrous** material
(material type necessary for order)

Norm: ERICHSEN

Var.	Thickness s / mm	Var.	Thickness s / mm
1	0,076	43	2,00
2	0,100	44	2,10
3	0,127	45	2,20
4	0,13	46	2,30
5	0,14	47	2,40
6	0,15	48	2,50
7	0,18	49	2,60
8	0,20	50	2,65
9	0,21	51	2,70
10	0,23	52	2,8
11	0,24	53	2,9
12	0,25	54	3,0
13	0,26	55	3,1
14	0,27	56	3,2
15	0,28	57	3,3
16	0,30	58	3,4
17	0,32	59	3,5
18	0,35	60	3,6
19	0,40	61	3,7
20	0,45	62	3,8
21	0,50	63	3,9
22	0,55	64	4,0
23	0,60	65	4,1
24	0,65	66	4,2
25	0,70	67	4,3
26	0,75	68	4,4
27	0,80	69	4,5
28	0,85	70	4,6
29	0,90	71	4,7
30	0,95	72	4,8
31	1,00	73	4,9
32	1,10	74	5,0
33	1,15	75	5,1
34	1,20	76	5,2
35	1,25	77	5,3
36	1,30	78	5,4
37	1,40	79	5,5
38	1,50	80	5,6
39	1,60	81	5,7
40	1,70	82	5,8
41	1,80	83	5,9
42	1,90	84	6,0

Selection table for drawing dies for square cups 40x40 (#01530132)

valid for **ferrous and non-ferrous** material
(material type necessary for order)

Norm: ERICHSEN

Var.	Blechdicke s / mm	Var.	Blechdicke s / mm
1	0,10	20	0,85
2	0,15	21	0,90
3	0,20	22	0,95
4	0,22	23	1,00
5	0,23	24	1,10
6	0,24	25	1,20
7	0,25	26	1,25
8	0,26	27	1,30
9	0,30	28	1,40
10	0,35	29	1,50
11	0,40	30	1,60
12	0,45	31	1,70
13	0,50	32	1,80
14	0,55	33	1,90
15	0,60	34	2,00
16	0,65	35	2,30
17	0,70	36	2,50
18	0,75	37	2,60
19	0,80	38	3,00

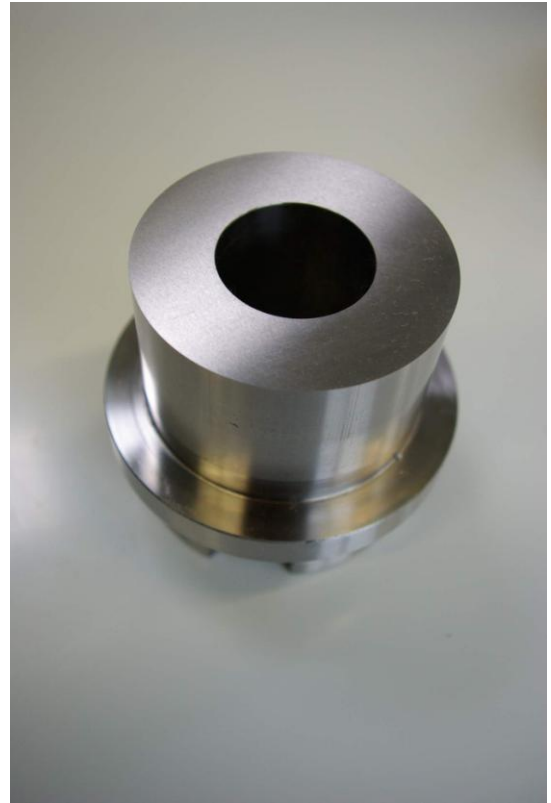
Selection table for blanking die ring (#08690132)

valid for **ferrous and non-ferrous** material

Norm: ISO 16630

Var.	Blechdicke s / mm	Var.	Blechdicke s / mm
1	$1,2 \leq s < 1,5$	7	$3,6 \leq s < 4,0$
2	$1,5 \leq s < 1,9$	8	$4,0 \leq s < 4,4$
3	$1,9 \leq s < 2,3$	9	$4,4 \leq s < 4,8$
4	$2,3 \leq s < 2,7$	10	$4,8 \leq s < 5,2$
5	$2,7 \leq s < 3,1$	11	$5,2 \leq s < 5,7$
6	$3,1 \leq s < 3,6$	12	$5,7 \leq s < 6,0$

Selection table for blanking tools



Blanking tool for deep-drawing cups blank cut with punch dia 33 mm (B1):

- consists of blanking die ring (# 01380132) and blanking punch (01390132)

for ferrous material:

- 55 – 80 mm
- 64 mm recommended
- ISO 11531 approx. 60 mm

for non-ferrous material:

- DIN EN 1669 / 60 or 64 mm

Punching areas for sheet thicknesses of ferrous materials:

- 0,2 – 1,0 mm
- 1,1 – 2,5 mm

Punching areas for sheet thicknesses of non-ferrous materials:

- 0,1 – 0,59 mm
- 0,6 – 1,69 mm
- 1,7 – 3,0 mm

Blanking tool for deep-drawing cups blank cut with punch dia 50 mm (B2):

- **consists of blanking die ring (# 01440132) and blanking punch (01450132)**

for ferrous material:

- 81 - 120 mm
- 90 mm recommended
- Square cups 40 x 40 approx. 85 mm (blanking punch # 04190132)

Punching areas for sheet thicknesses of ferrous materials:

- 0,2 – 1,0 mm
- 1,1 – 2,0 mm
- 2,1 – 4,0 mm
- 4,1 – 6,0 mm

Punching areas for sheet thicknesses of non-ferrous materials:

- 0,1 – 0,59 mm
- 0,6 – 1,69 mm
- 1,7 – 3,0 mm

**Blanking tool for deep-drawing cups blank cut with punch dia 75 mm (B3):
(only for model 142-40 Basic)**

- **consists of blanking die ring (# 01490132) and blanking punch (01500132)**

for ferrous material:

- 121 - 170 mm
- 90 mm recommended
- Square cups 40 x 40 approx. 85 mm (blanking punch # 04190132)

Punching areas for sheet thicknesses of ferrous materials:

- 0,2 – 1,0 mm
- 1,1 – 2,0 mm
- 2,1 – 4,0 mm
- 4,1 – 6,0 mm

Punching areas for sheet thicknesses of non-ferrous materials:

- 0,1 – 0,59 mm
- 0,6 – 1,69 mm
- 1,7 – 3,0 mm

Further Universal Sheet Metal Testing Machines supplied by ERICHSEN:

**Electro-hydraulically driven Sheet Metal Testing Machine
with Automatic Controls – Model 134
(drawing force 120 kN)**



**Universal Sheet Metal Testing Machine with Automatic
Test Sequence - Model 142
(drawing force 200 kN or 400 kN)**



**Universal Sheet Metal Testing Machine for Research
and Development - Model 145
(drawing force 600 kN or 1000 kN)**



**Universal Sheet Metal Testing Machine for Research,
Development and In-process Testing - Model 146
(drawing force 600 kN or 1000 kN)**