TESTCENTRUM

VOOR

GEVELELEMENTEN

TEST REPORT NR. 363/2093

TEST CARRIED OUT IN ACCORDANCE WITH

STS 52.0

ON AN ALUMINIUM DOUBLE TURN IN WINDOW
(WITH A TURN AND TILT OPENING LIGHT FRAME)
WITH THERMAL BREAK.

UNIVERSITEIT GENT
ESTCENTRUM VOOR GEVELELEMENTEN
DIENST: PROF. DR. IR. CH. VAN AKEN
.....

9000 GENT, 92-02-26
SINT-PIETERSNIEUWSTRAAT 41
TEL (091) 64 33 59
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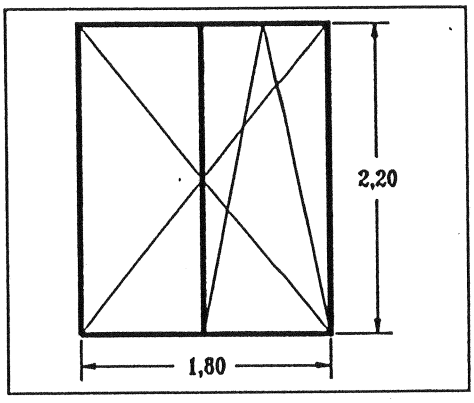
TEST REPORT NR: 363/2093

TEST CARRIED OUT ON
AN ALUMINIUM DOUBLE TURN IN WINDOW
(WITH A TURN AND TILT OPENING LIGHT FRAME)
WITH THERMAL BREAK

OF THE COMPANY:
ALIPLAST N.V.



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1 APPLICANT:

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ALIPLAST N.V.

Dijkstraat 20
9160 LOKEREN

Phone: (091) 48 52 22

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2 MANUFACTURER:

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ALIPLAST N.V.

Dijkstraat 20
9160 LOKEREN

Phone: (091) 48 52 22

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3 DESTINATION: not indicated

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4 MATERIAL SENT FOR TEST:

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4.1. Identification of the test element:

Test element supplied by the applicant on 92-02-24 and in accordance with the included drawing with ref. nr: 363/ 2093
Drawing certified with the stamp:

4.2. Dimensions of the test element:

width : 1.80 m
height : 2.20 m
total surf.: 3.96 m^2
length of the opening joints: 9.62 m
surface of the opening light frame: 3.53 m^2

4.3. Description of the parts of the test element:

Sections:

material : aluminium with thermal break
type : Aliplast, see drawing 363/2093
type of connection: screwed and glued

Tightening strips:

material: epdm
type : ACVL 30A, ACVL 31, ACVG 31, ACVG 34
place : center and inside

Glass:

thickness : double 4 + 15 + 4 mm
type : not indicated
way of glazing: pre-fabricated profils

Fittings:

hinges: mark : Siegenia
type : LM 3100
number: 4

closing fittings: mark: Siegenia
type: LM 3100
number and place of the locking points:
see drawing 363/2093

Drainage:
of the glazing : see drawing 363/2093
of the opening joint: see drawing 363/2093

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5 INSTALLATION IN THE TEST CENTER:

The element to test is fixed on the test chamber in accordance with the included drawing nr.: 363/2093 and scheme 363/1/1.
Air temperature in the test chamber: 20.0 °C
Air temperature in the test center : 20.0 °C

TESTS CARRIED OUT: see sheme 363/1/2

6.1. Air permeability in accordance withNBN B 25-204:

6.1.1. Positive pressure see fig. 363/2093 /1

Pressure. Pa	Air permeability m^3/h	Per m opening joint m^3/hm	Per m^2 opening surf. m^3/hm^2	Per m^2 tot. surface. m^3/hm^2
50.	1.52	0.16	0.43	0.38
100.	2.49	0.26	0.71	0.63
150.	3.41	0.35	0.97	0.86
200.	4.13	0.43	1.17	1.04
300.	5.35	0.56	1.52	1.35
400.	6.47	0.67	1.83	1.63
500.	7.47	0.78	2.12	1.89
600.	8.49	0.88	2.40	2.14
500.	7.47	0.78	2.12	1.89
400.	6.47	0.67	1.83	1.63
300.	5.35	0.56	1.52	1.35
200.	4.13	0.43	1.17	1.04
150.	3.41	0.35	0.97	0.86
100.	2.49	0.26	0.71	0.63
50.	1.52	0.16	0.43	0.38

6.1.2. Negative pressure see fig. 363/2093 /1

Pressure. Pa	Air permeability m^3/h	Per m opening joint m^3/hm	Per m^2 opening surf. m^3/hm^2	Per m^2 tot. surface. m^3/hm^2
50.	1.52	0.16	0.43	0.38
100.	2.49	0.26	0.71	0.63
150.	3.29	0.34	0.93	0.83
200.	3.94	0.41	1.11	0.99
300.	5.13	0.53	1.45	1.30
400.	6.03	0.63	1.71	1.52
500.	7.04	0.73	1.99	1.78
600.	7.67	0.80	2.17	1.94
500.	6.87	0.71	1.95	1.74
400.	6.03	0.63	1.71	1.52
300.	4.98	0.52	1.41	1.26
200.	3.94	0.41	1.11	0.99
150.	3.05	0.32	0.86	0.77
100.	2.49	0.26	0.71	0.63
50.	1.52	0.16	0.43	0.38

REMARKS: none.

6.2. Testing the wind resistance in accordance with NBN B 25-205:

6.2.1. Deformation test by positive pressure measured over a length of 2.00 m in point B see fig. 363/2093 /2:

Pressure Pa	Deformation point B mm	Relative deformation	
50.	0.2	1./10000.	
100.	0.5	1./ 4000.	
150.	0.7	1./ 2857.	
200.	1.0	1./ 2000.	
300.	1.4	1./ 1429.	
400.	2.0	1./ 1000.	
500.	2.5	1./ 800.	
600.	3.1	1./ 645.	
750.	3.8	1./ 526.	
1000.	5.4	1./ 370.	O

Permanent deformation: 0.0 mm

REMARK: Can only be classified as "PV2 " when accompanied with a calculation note showing the confirmity of the window to paragraph 52.04.1 of the STS 52.0, or providing the window is glazed with glass of a type having an agreement for such a bending arrow.

6.2.2. Deformation test by negative pressure measured over a lenght of 2.00 m in point B see fig. 363/2093 /2

Pressure Pa	Deformation point B mm	Relative deformation	
50.	0.2	1./10000.	
100.	0.4	1./ 5000.	
150.	0.6	1./ 3333.	
200.	0.9	1./ 2222.	
300.	1.4	1./ 1429.	
400.	2.0	1./ 1000.	
500.	2.5	1./ 800.	
600.	3.0	1./ 667.	
750.	3.8	1./ 526.	
1000.	5.2	1./ 385.	O

Permanent deformation: 0.0 mm

REMARK: Can only be classified as "PV2 " when accompanied with a calculation note showing the confirmity of the window to paragraph 52.04.1 of the STS 52.0, or providing the window is glazed with glass of a type having an agreement for such a bending arrow.

6.3. Control of the air permeability in accordance with NBN B 25-204:
(After test 6.2. the wind resistance.)

6.3.1. Positive pressure see fig 363/2093 /1:
Difference in air permeability expressed in percentage and in m^3/hm opening joint in relation to test 6.1.1.

Pressure Pa	Difference air permeability %	per m opening joint m^3/hm
50.	0.0	0.00
100.	0.0	0.00
150.	0.0	0.00
200.	0.0	0.00
300.	0.0	0.00
400.	0.0	0.00
500.	0.7	0.01
600.	1.1	0.01
500.	1.4	0.01
400.	0.0	0.00
300.	0.0	0.00
200.	0.0	0.00
150.	0.0	0.00
100.	0.0	0.00
50.	0.0	0.00

6.3.2. Negative pressure see fig 363/2093 /1:
Difference in air permeability expressed in percentage and in m^3/hm opening joint in relation to test 6.1.2.

Pressure Pa	Difference air permeability %	per m opening joint m^3/hm
50.	0.0	0.00
100.	0.0	0.00
150.	0.0	0.00
200.	0.0	0.00
300.	0.0	0.00
400.	0.0	0.00
500.	0.0	0.00
600.	0.0	0.00
500.	0.0	0.00
400.	0.0	0.00
300.	0.0	0.00
200.	0.0	0.00
150.	0.0	0.00
100.	0.0	0.00
50.	0.0	0.00

6.3.3. Conservation of the qualities:

The air permeability measured after the wind resistance test may not be higher than 20 % (with a minimum of 0.3 m^3/hm opening joint) of the air permeability measured before the wind resistance test.

RESULT: the element is satisfactory.

6.4. Watertightness test in accordance with NBN B 25-209:

6.4.1. Under static air pressure:

Pressure Pa	Duration min.	Remarks
0	15	no infiltration
50	5	no infiltration
100	5	no infiltration
150	5	no infiltration
200	5	no infiltration
300	5	no infiltration
400	5	no infiltration
500	5	no infiltration
600	5	no infiltration
700	5	no infiltration
800	5	no infiltration
900	5	no infiltration
1000	5	no infiltration

6.4.2. Under dynamic air pressure:

50 pulsations are carried out between 0 + 50 Pa and 250 + and - 50 Pa:

no infiltration

6.5. Mechanical tests in accordance with NBN B 25-210:

6.5.1. Locking power : 149.4 N

6.5.2. Unlocking power: 103.2 N

6.5.3. Power necessary to start moving the opening light frame: 6.0 N

6.5.4. Power necessary to move the opening light frame: 3.8 N

6.5.5. Warp test:
The fittings are unlocked and at the handle side a corner of the opening light frame is blocked. At the height of the handle a horizontal power of 400 N is put on
RESULT:
There was no damage or faulty operation after the test.

6.5.6. Vertical load on the opening light frame:
A vertical power of 500 N is put on the opening light frame corner during 5 min.
RESULT:
There was no damage or faulty operation after the test.

6.5.7. Testing the link arm and hinges:
The fall open of the opening light frame is simulated.
RESULT:
There was no damage or faulty operation after the test.

.6. Test for wind resistance in accordance with NBN B 25-205:

6.6.1. Safety test with a positive pressure of: 2000. Pa
RESULT:
There was no damage or faulty operation after the test.

6.6.2. Safety test with a negative pressure of: 2000. Pa
RESULT:
There was no damage or faulty operation after the test.

7 EVALUATION:
.....

7.1. In accordance with STS 52.0:
results for

- air permeability	:	PA3
- wind resistance	:	see remark page 4 point 6.2.
- watertightness	:	PEE 1000 Pa
- mechanical behaviour:		the element is satisfactory

7.2. In accordance with UEATC:
class for

- air permeability	:	A3
- wind resistance	:	V2
- watertightness	:	E4
- mechanical behaviour:		the element is satisfactory

8 REMARKS:
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8.1. The results are only valid under the conditions as ruling during the test.

8.2. This report is only valid when showing the reference number and stamp on all annexes.

8.3. Partial copy of this report is not allowed without written consent of Prof. Dr. Ir. Ch. VAN AKEN, director of the "Testcentrum voor Gevelelementen".

R. HUWEL
Engineer responsible for the tests.

Prof. Dr. Ir. Ch. VAN AKEN
Director.

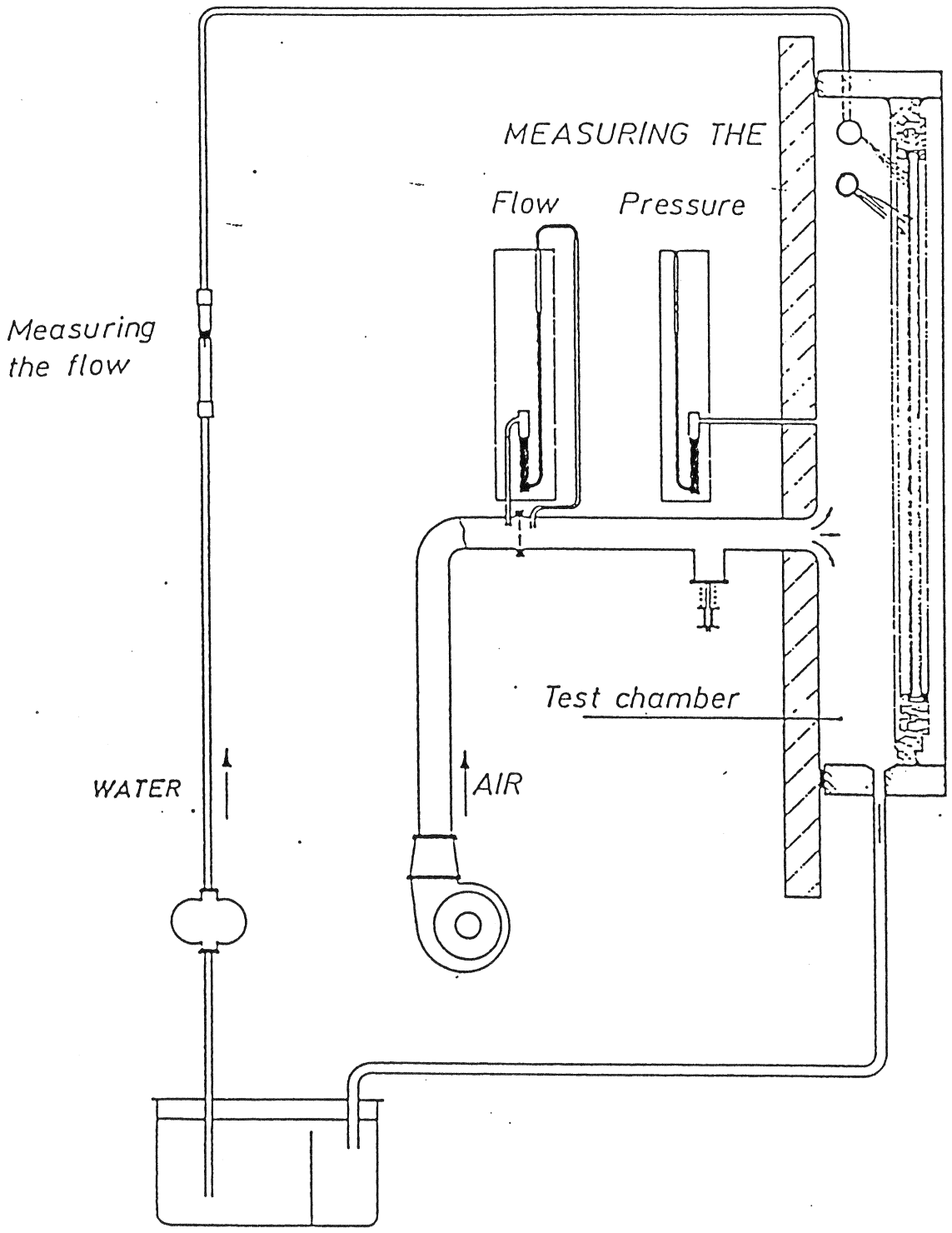
ANNEXES:
.....

with stamp

Drawings nr.
363/1/1
363/1/2
363/2093

Figures nr.
363/2093 /1
363/2093 /2

RIJKSUNIVERSITEIT GENT
TESTCENTRUM
VOOR GEVELELEMENTEN
Sint-Pietersnieuwstraat, 41
B-9000 GENT (BELGIË)



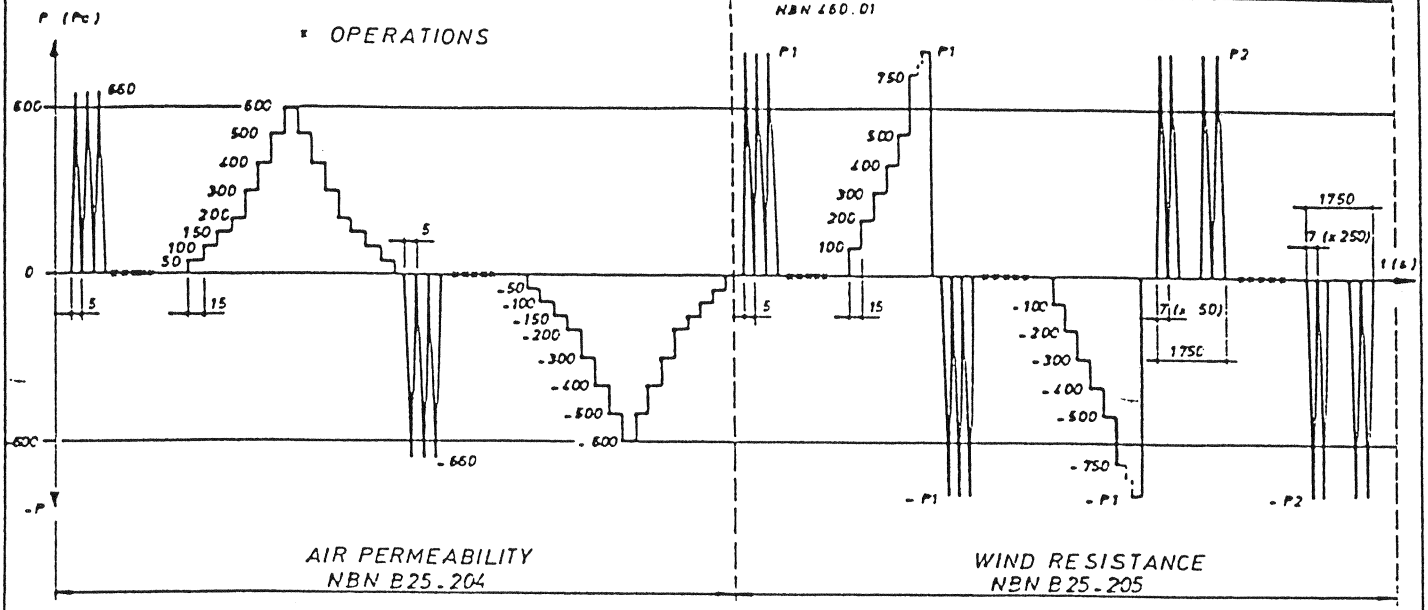
RIJKSUNIVERSITEIT GENT TESTCENTRUM VOOR GEVELELEMENTEN Sint-Pietersnieuwstraat 41 B-9000 GENT (BELGIE)	SCHEME OF THE TEST INSTALLATION	Nr. 363/1/1

STS 52

PRESTATIE-NIVEAU				
PA2	500	300	- 500	- 300
PA25	550	500	- 550	- 500
PA3	660	600	- 660	- 600

PV1	600	600 -600	- 600	450	- 450
PV1B	750	750 -750	- 750	600	- 600
PV2	1000	1000 -1000	-1000	750	- 750
PV3	1,1 (qmax)n	1,1 (qmax)n -1,1 (qmax)n	-1,1 (qmax)n	(qmax)n	- (qmax)n

NBN 460.01



AIR PERMEABILITY
NBN B25.204

TEST I

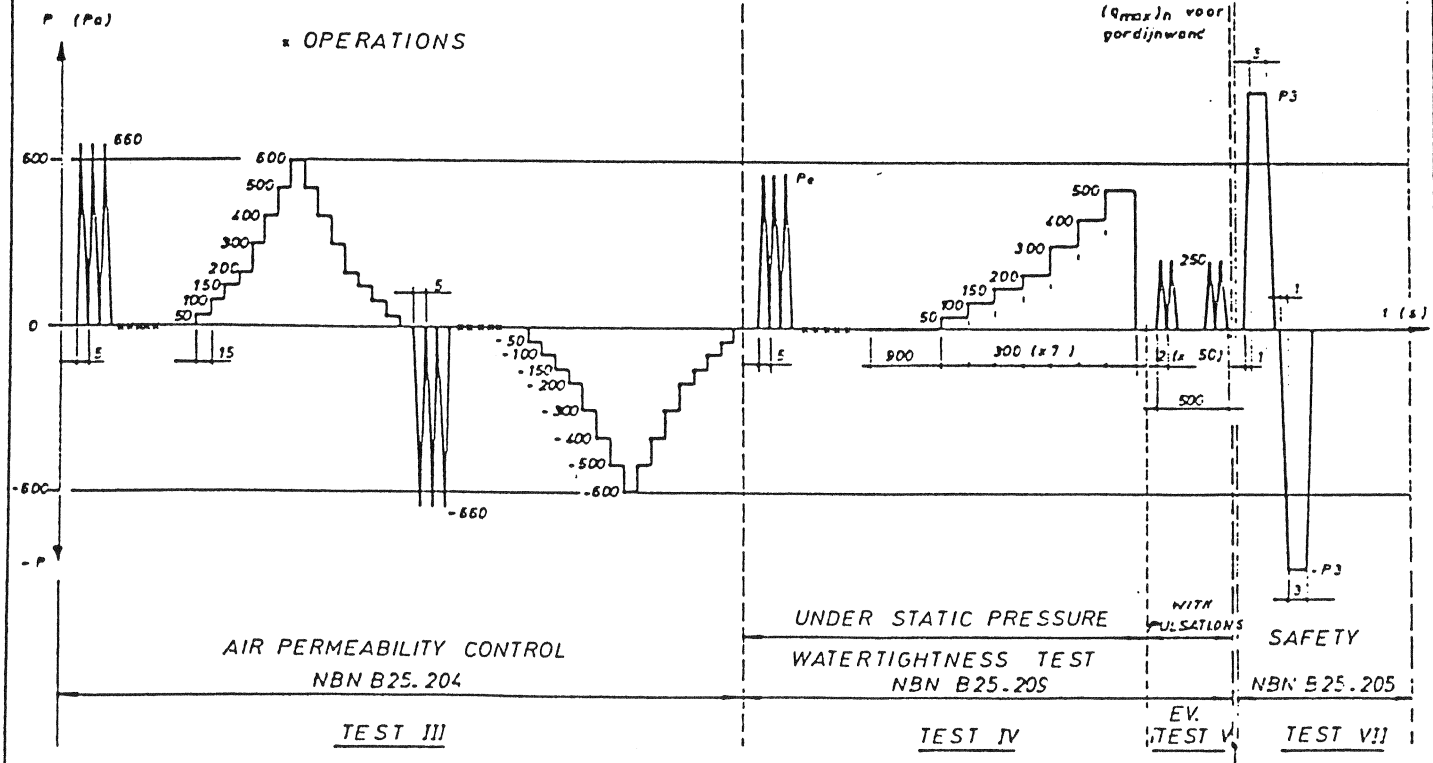
WIND RESISTANCE
NBN B25.205

TEST II

PRESTATIE-NIVEAU				
PA2	500	300	- 500	- 300
PA25	550	500	- 550	- 500
PA3	660	600	- 660	- 600

PE2	500	150	(250)
PE3	500	300	(250)
PE4	550	500	(250)
PEE	1,1 (qmax)n	(qmax)n	(250)

PV1	1000	-1000
PV2	1500	-1500
PV3	2000	-2000
PV4	1,1 (qmax)n	



AIR PERMEABILITY CONTROL
NBN B25.204

TEST III

UNDER STATIC PRESSURE
WATERTIGHTNESS TEST
NBN B25.205

TEST IV

WITH PULSATIONS

EV. TEST V

SAFETY
NBN B25.205

TEST VII

MECHANICAL TEST
NBN B25.210

TEST VI

RIJKSUNIVERSITEIT GENT
TESTCENTRUM VOOR GEVELELEMENTEN
Sint-Pietersnieuwstraat 41
B-9000 GENT (BELGIË)

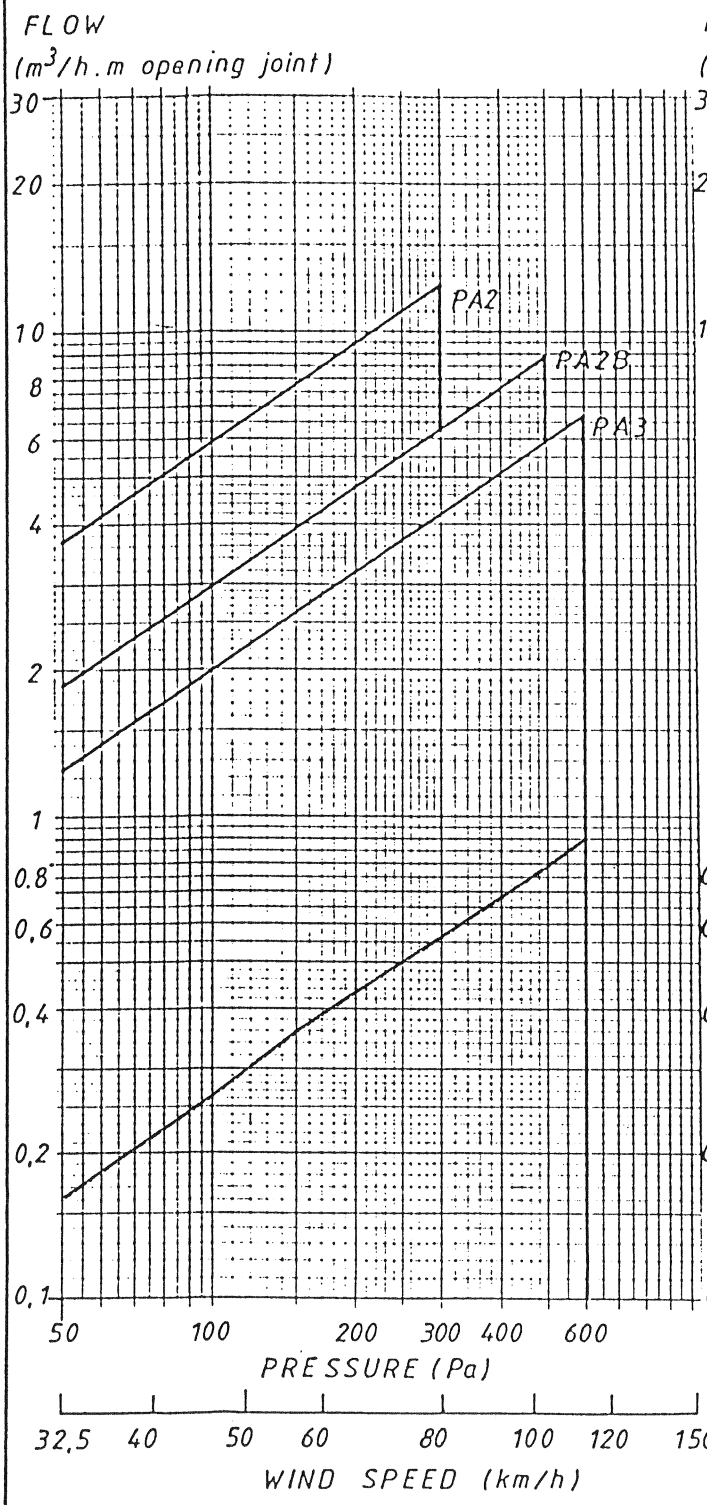
SCHEME OF THE TESTS

Nr. 363/1/2

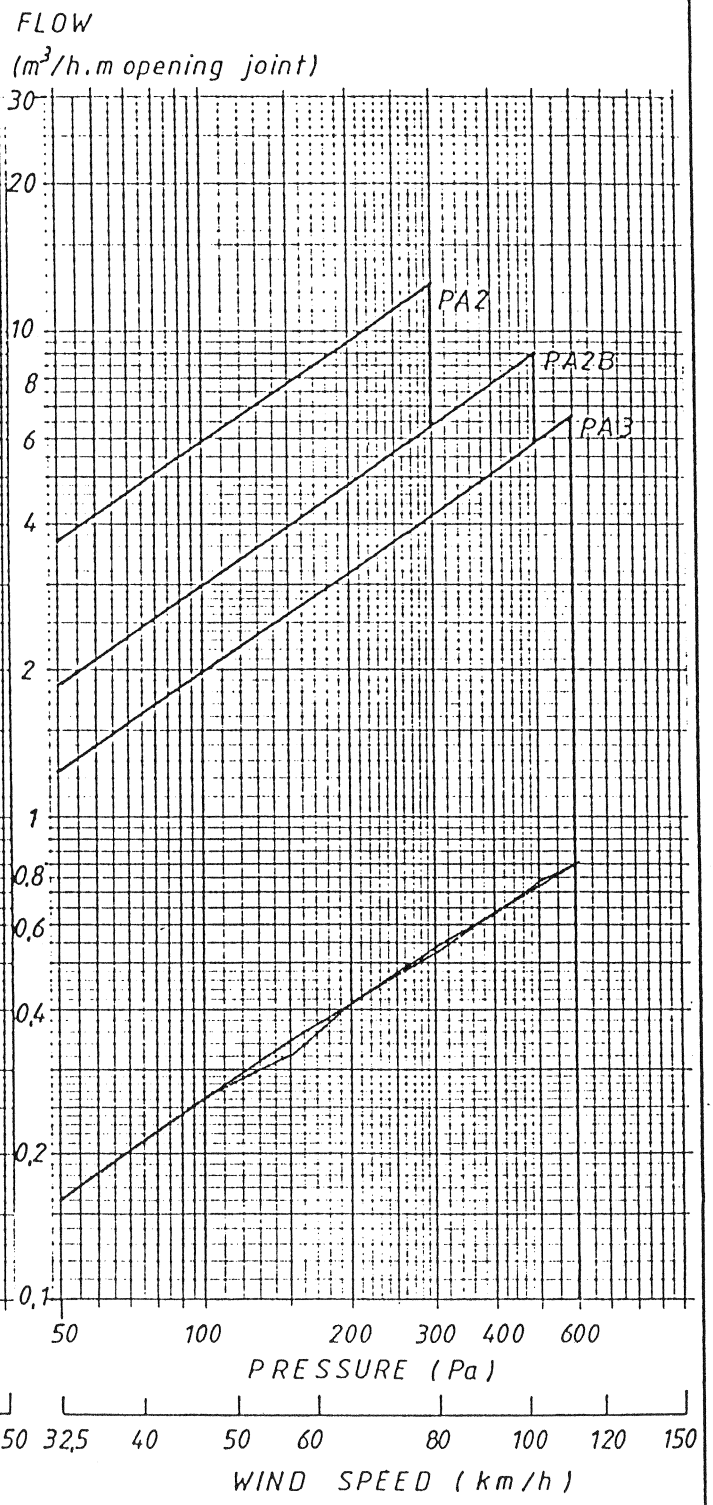
STS 52

AIR PERMEABILITY IN ACCORDANCE WITH NBN B25_204

POSITIVE PRESSURE



NEGATIVE PRESSURE

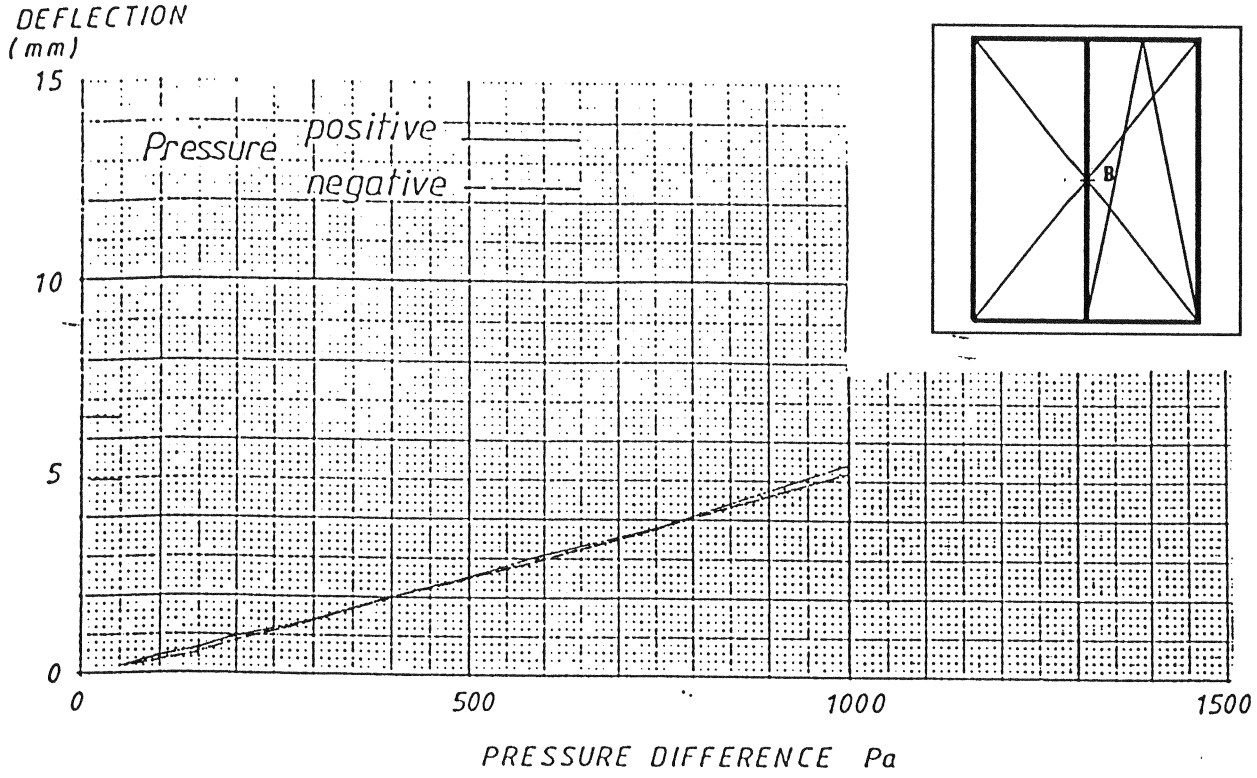


——— BEFORE TESTING WIND RESISTANCE IN ACCORDANCE WITH NBN B25_205

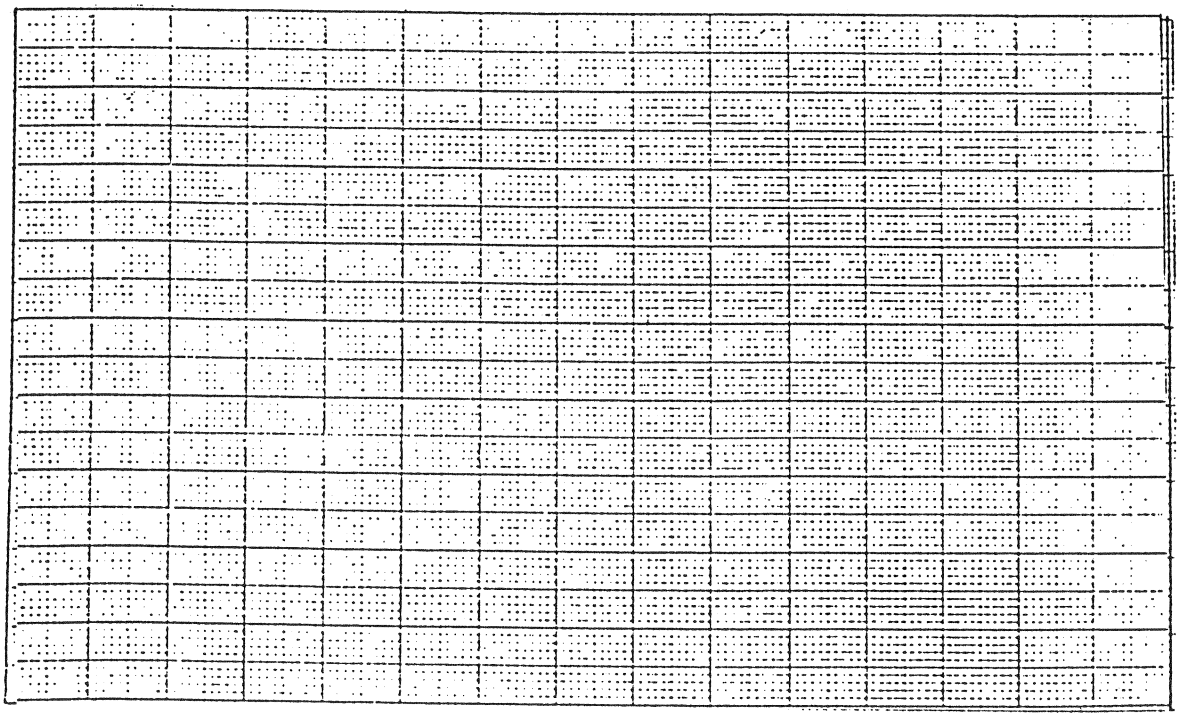
– – – – AFTER

RIJKSUNIVERSITEIT GENT TESTCENTRUM VOOR GEVELELEMENTEN Sint-Pietersnieuwstraat 41 B-9000 GENT (BELGIË)	AIR PERMEABILITY BY POSITIVE & NEGATIVE PRESSURE	Nr. 363/ 2093 /1 Date 92 02 26

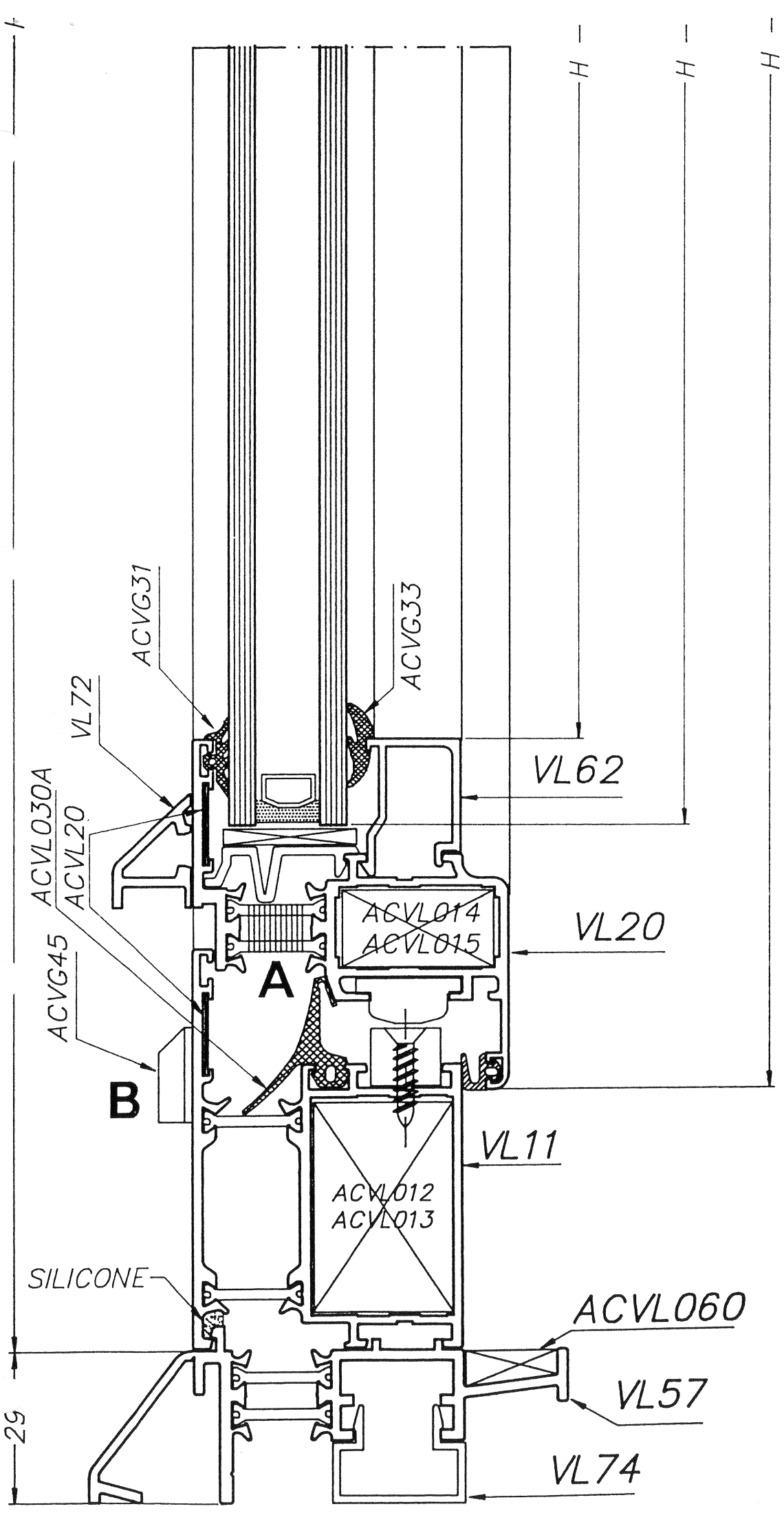
WIND RESISTANCE IN ACCORDANCE WITH NBN B25-205



WATERTIGHTNESS IN ACCORDANCE WITH NBN B25-209



RIJKSUNIVERSITEIT GENT TESTCENTRUM VOOR GEVELELEMENTEN Sint-Pietersnieuwstraat 41 B-9000 GENT (BELGIË)	WIND RESISTANCE	Nr. 363/ 2093/2
	WATERTIGHTNESS	DATE, 92 02 26


H –
H –
H –
ACVG31
ACVG33
VL72
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ACVL20
ACVG45
VL62
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VL57
VL74
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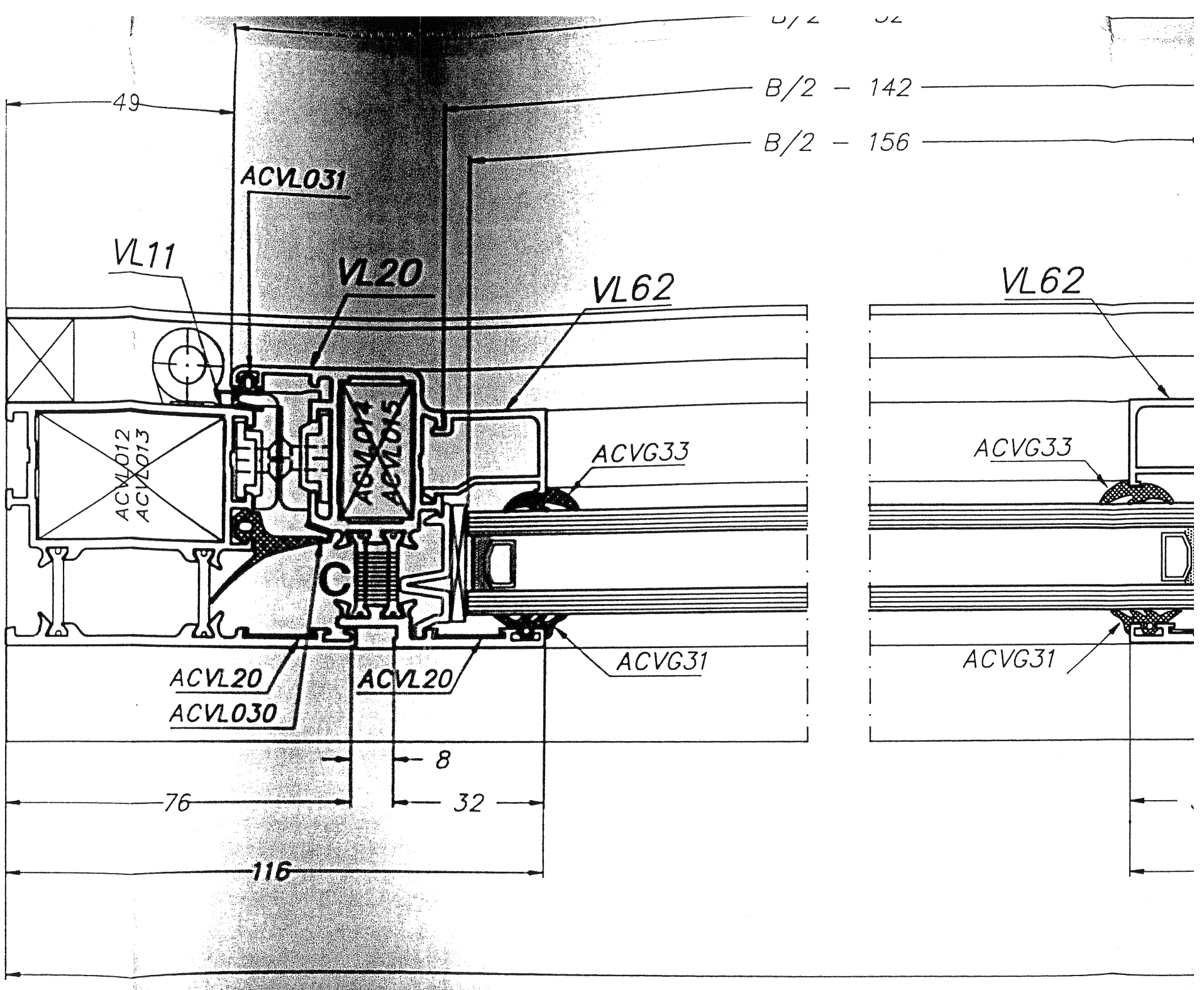
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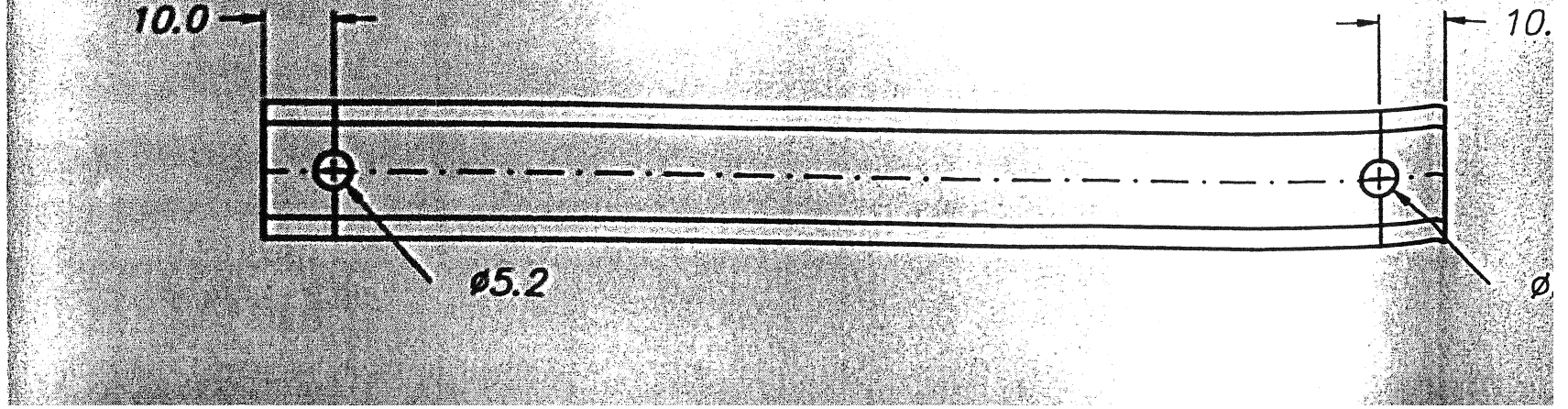
VL62
ACVG33
ACVG31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10.
ø5.2
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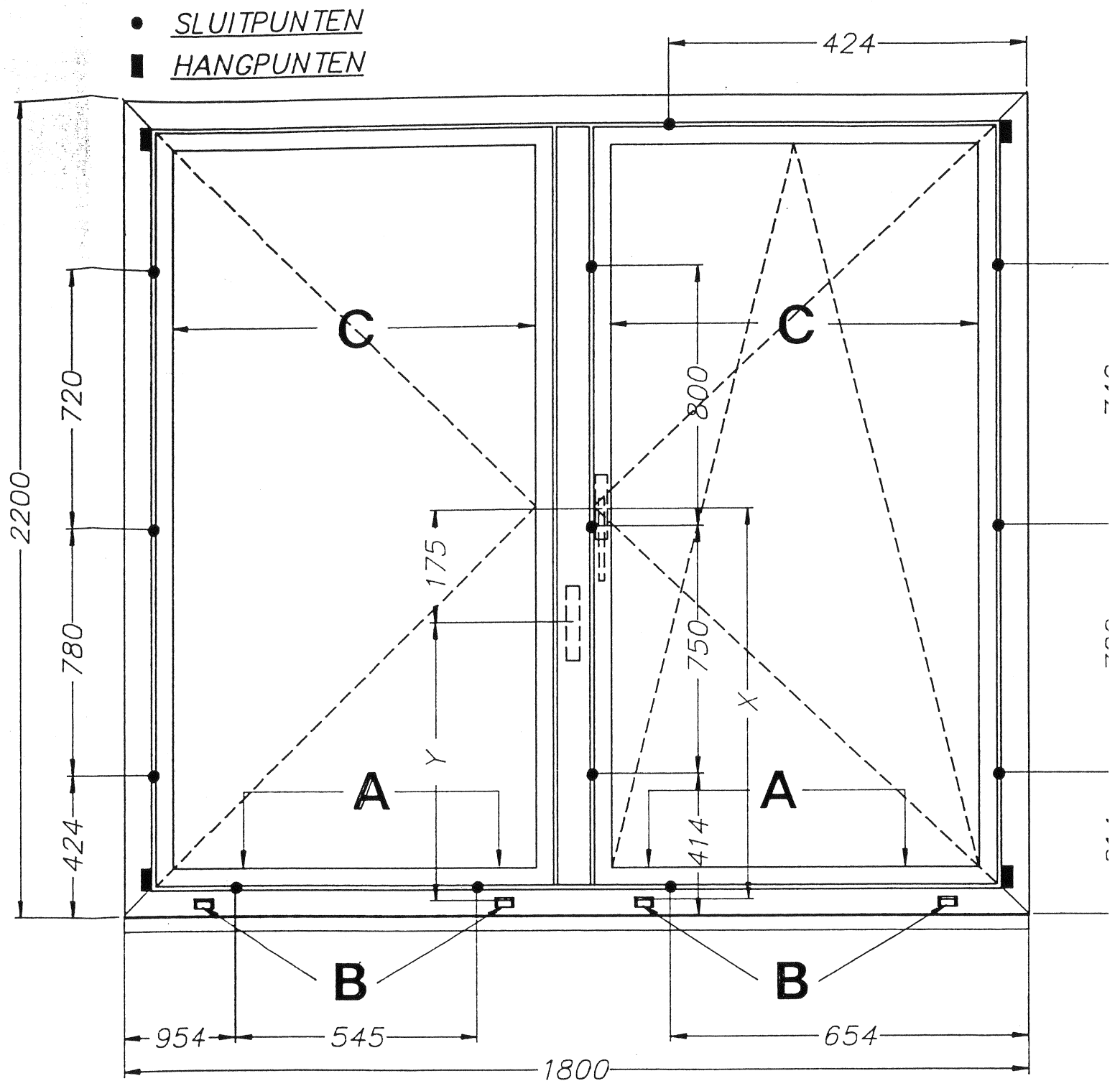
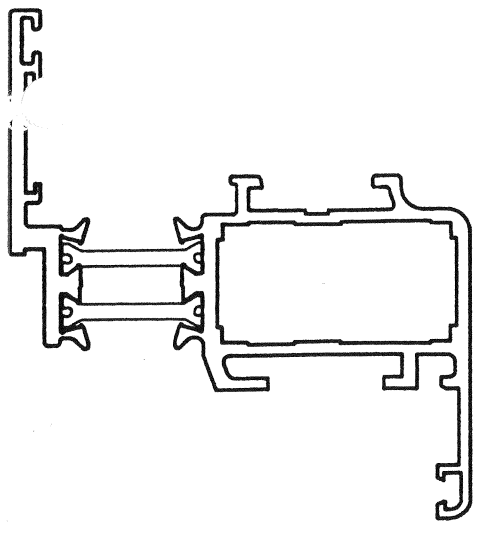
EBEHOREN ACCESSOIRES ZUBEHORTEILE ACCESSORIES

L 2/13	VERSTEKHOEK EQUERRE	4
L014/15	VERSTEKHOEK EQUERRE	8
L020	VERSTEKSLUITPLAATJE EQUERRE D'ONGLET	12
L05	GLASSTEUN SUPPORT DE CALE A VITRAGE	8
G45	AFWATERKAPJE CAPUCHON ANTI TEMPETE	2
G31	BUITENBEGLAZINGSRUBBER JOINT DE VITRAGE EXTERIEUR	4H+2B-850
G3*	BINNENBEGLAZINGSRUBBER JOINT DE VITRAGE INTERIEUR	4H+2B-850
L059	EINDKAPJE VL72 EMBOUT VL72	2L + 2R
L082	STOLPBESLAG FERRURE XX	1
L074	D.K. BESLAG FERRURE O.B.	1
L079	BIJK. SLUITP. "B" POINT FERM. SUP. "L"	1
L080	BIJK. SLUITP. "H" POINT FERM. SUP. "H"	1
L054	EINDSTUK STOLPPROFIEL EMBOUT MAUCLAIR	1 SET
L042	BIJK. SLUITP. STOLP POINT FERM. SUP. STOLP	3
L031	AANSLAGRUBBER JOINT DE FRAPPE	4H+2B-270
L030A	MIDDENDICHTING JOINT CENTRAL	3H+2B-220



VERSTEKKEN AF TE DICHTEN MET "SIKAFLEX 1A"

ONGLETS A ETANCHER AVEC "SIKAFLEX 1A"

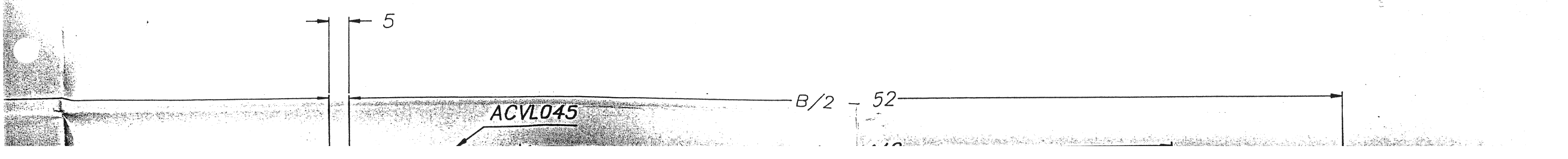


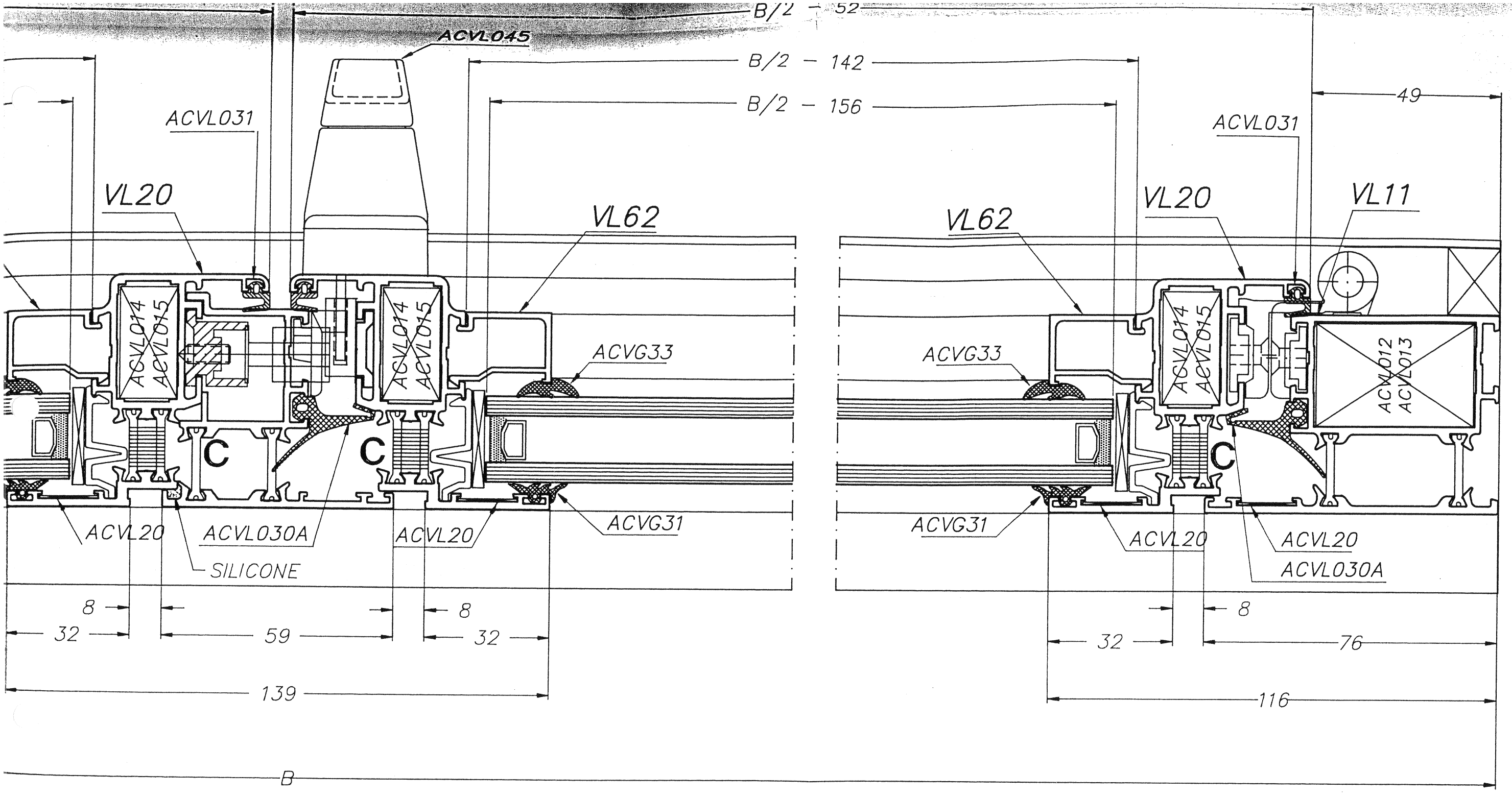
A GLASSPONNING ONTLUCHTING 4 X ø10
VENTILATION FEUILLURE 4 X ø10

B ONTWATERING KOZIJN 4 X SLEUF 20 X 13
DRAINAGE DORMANT 4 X LUMIERE 20 X 13

C GLASSPONNING ONTLUCHTING 4 X ø10
VENTIALATION FEUILLURE 4 X ø10

GLASMATEN DIMENSIONS DES VITRAGES GLASMASSE GLASS SIZES	B/2 - 156 H - 202





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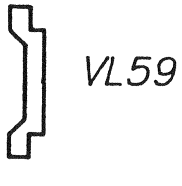

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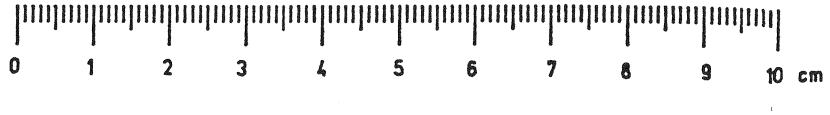


aliplast® SYSTEMS

ISO

Datum: 27–02–92

Getekend: K.NOTENBAERT

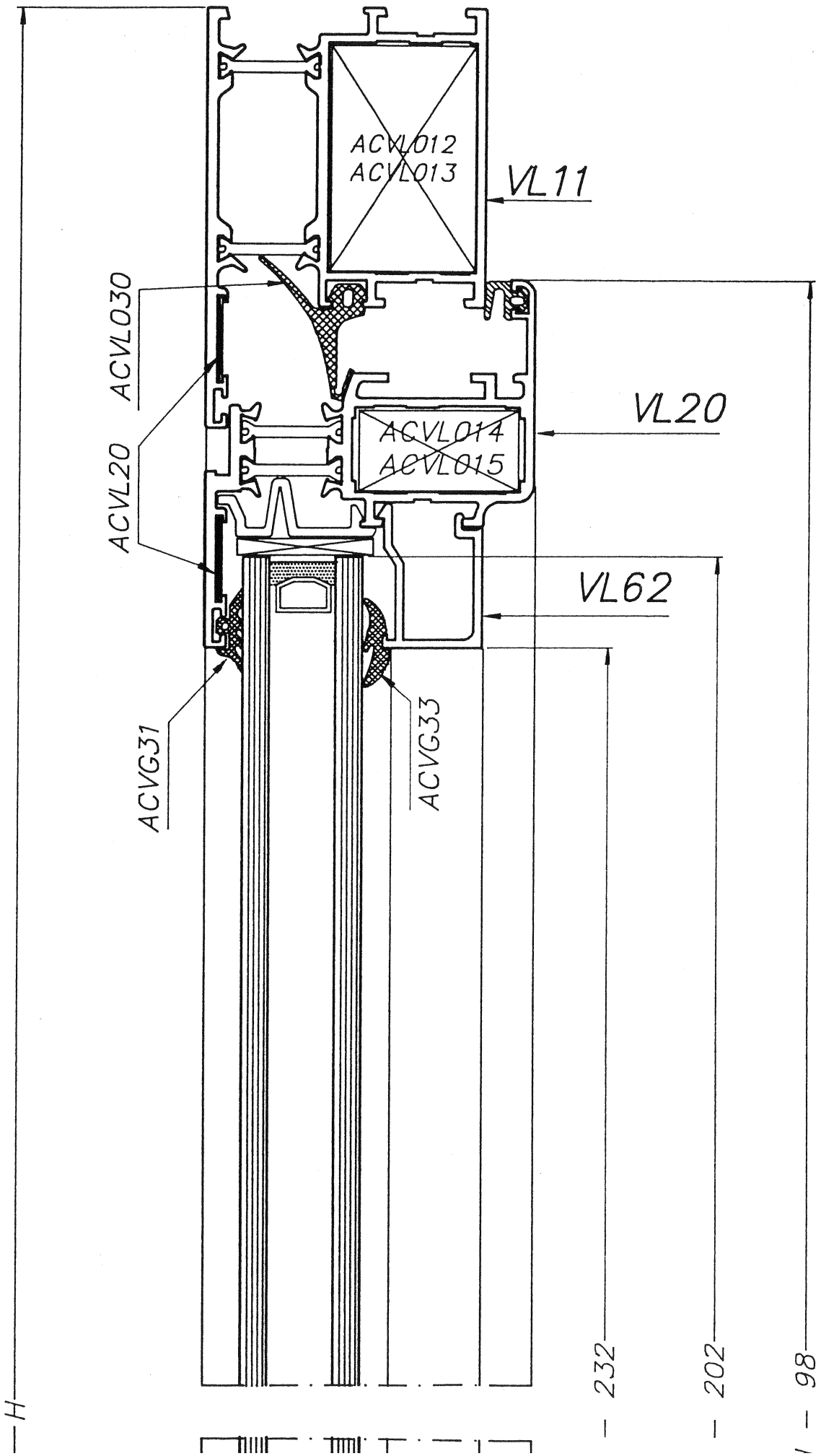
Nagezien:

N.V. ALIPLAST S.A. Dijkstraat 20 9100 LOKEREN tel: 091/48.52.22 fax: 091/48.57.92

Benaming:
STOLPRAAM DOUBLE OUVRANT A LA FRANCAISE

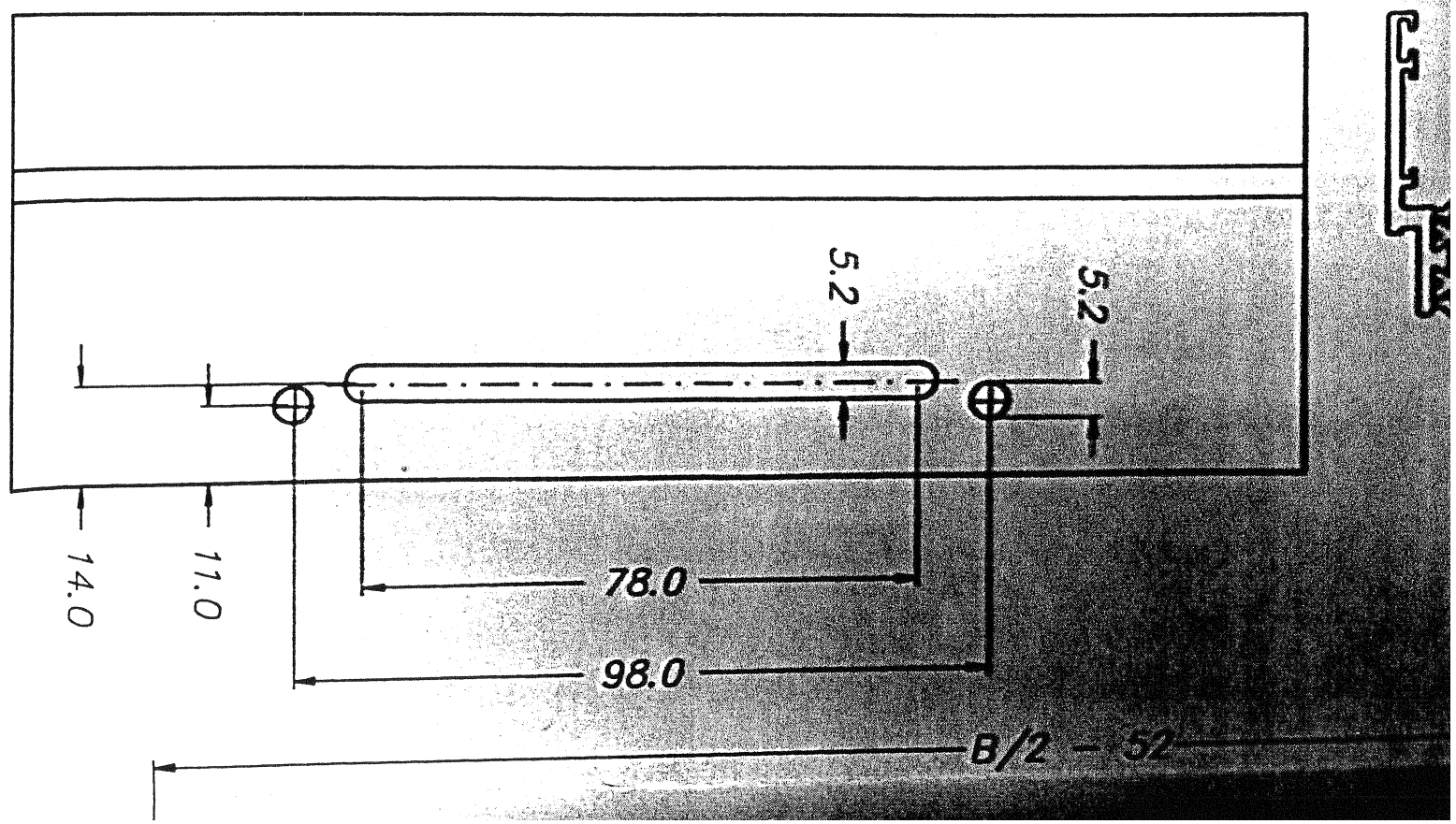
Nr.: D0260292

Schaal: 1:1



PROFIELEN PROFILES PROFILE PROFILS

VL11		2		B
VL11		2		H
VL20		4		B/2 – 52
VL20		4		H – 98
VL40		1		H – 176
VL57		1		B
VL6*		4		B/2 – 142
VL6*		4		H – 232
VL59	-	1		X – 236
VL59	-	1		H – X – 236
VL59	-	1		Y – 162
VL59	-	1		H – Y – 162
VL72		1		B/2 – 128
VL72		1		B/2 – 61



TOEBE

ACVL012
ACVL013
ACVL020
ACVL05
ACVG45
ACVG31
ACVG3*
ACVL05
ACVL08
ACVL07
ACVL07
ACVL08
ACVL05
ACVL04
ACVL03
ACVL03