

TECHNICAL HANDBOOK

ISC INDUSTRIAL HARDWARE SYSTEM



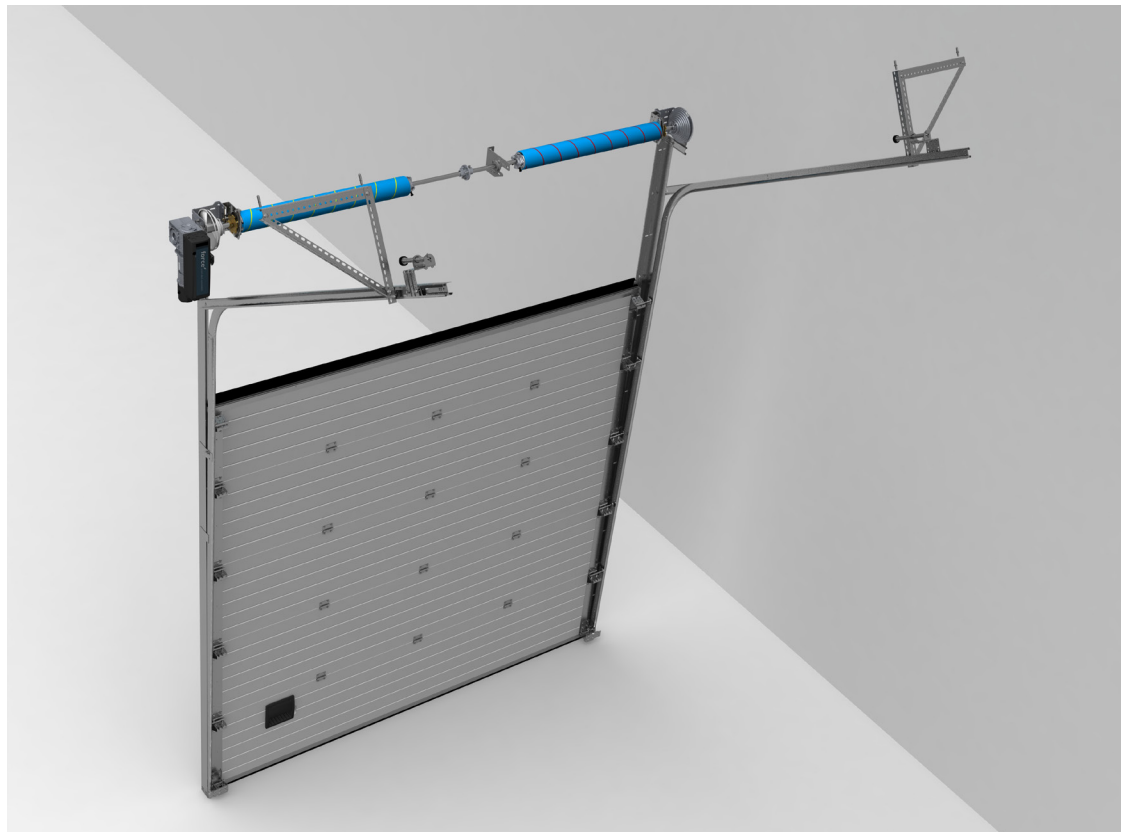
INTRODUCTION

This technical handbook is a tool to assist you with understanding all the technical features, dimensions and application of the FlexiForce ISC hardware system for industrial doors. For customers that either produce hardware sets in their own door production. But also for customers that outsource the hardware set production to their nearest FlexiForce subsidiary. In this booklet you will find a description of our set-up for complete hardware sets. The different available lift systems, possibilities and built-in situations.

We have added also some basic explanations on industrial overhead doors and building specifications.

For actual pricing and ordering information, we refer to our separate price list for ISC industrial hardware sets. If you have any questions, please do not hesitate to contact our sales team for assistance or find more details on:

www.flexiforce.com



INTRODUCTION

There are 4 types of track systems, low head room (LHR), normal lift (NL), high lift (HL) and vertical lift (VL). The parts used in these systems determine the application range and the configuration of the track set. In order to determine which System Configuration to use 4 building parameters plus the door weight need to be checked carefully.

These building parameters are; opening width (OPW), opening height (OPH), free head space (CLH) and the pitch of the roof. Of these parameters Free Head Space determines the type of system. More Free head space means that more systems will fit. The other parameters need to fit within their application range. As a rule of thumb the door weight can be calculated by multiplying the OPW times OPH times the average panel weight per m2 (WGHT: 11 – 12 kg/m2).

Below an overview of the systems and their configurations. Each system has at least 2 configurations, 1 for a PITCH of 0° and 1 for a PITCH bigger than 0°. For High Lift and VL systems there are more configurations. This is done for two reasons:

1. Maximizing the longest one piece track to 7000mm
2. Avoiding contact between the cable and the door leaf in case of a FFHL164 drum.

Introduction - A1:A2

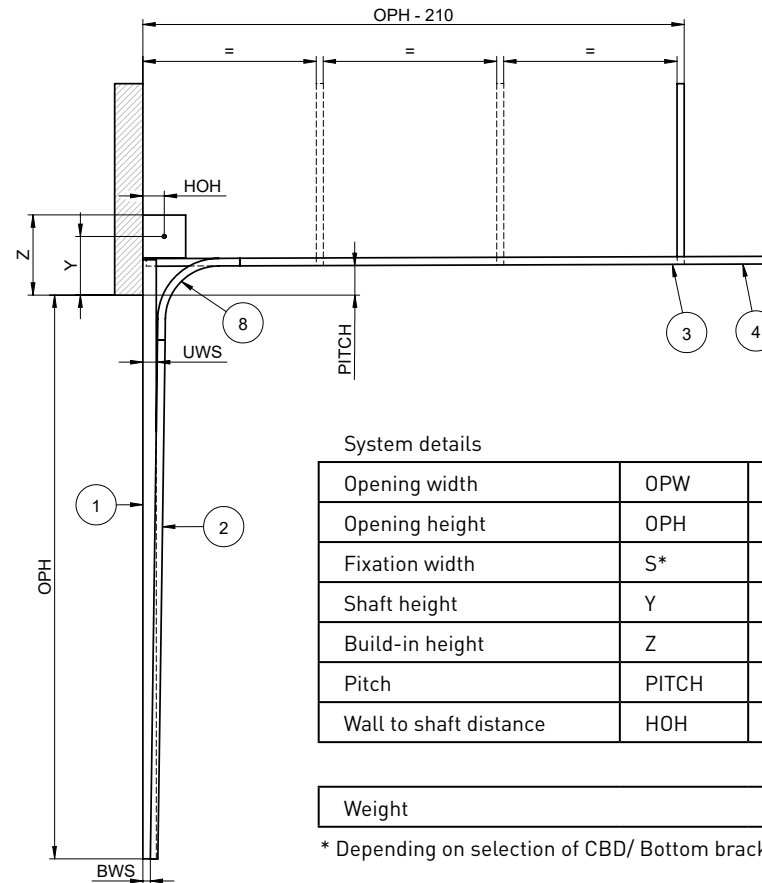
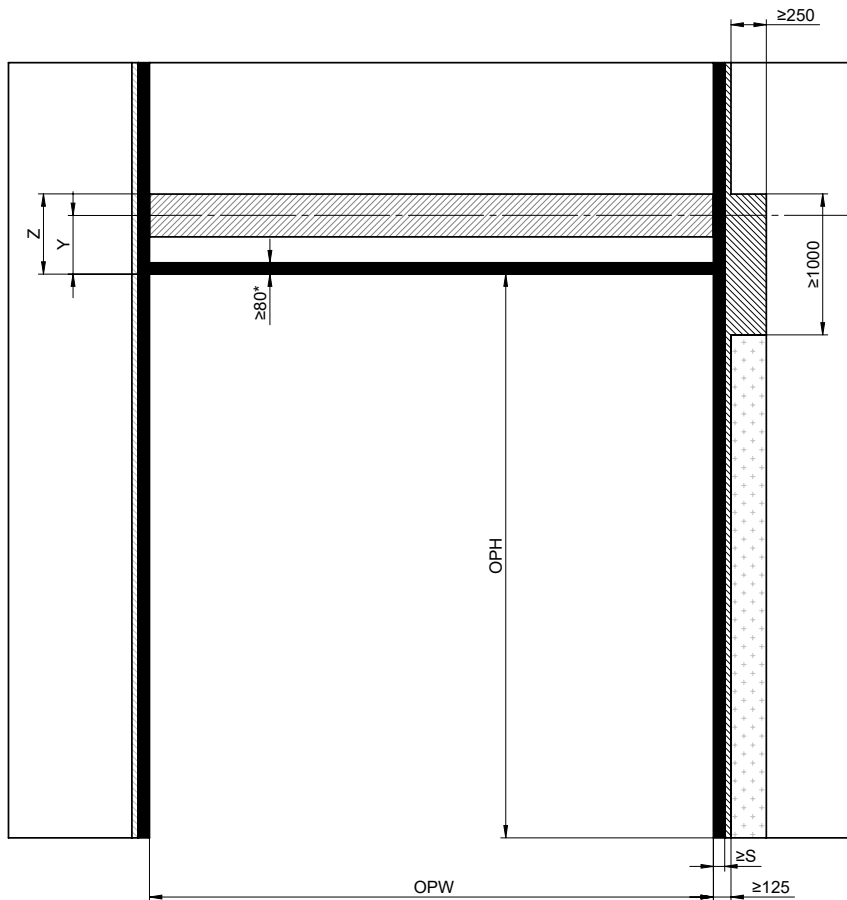
System Name	Application Range per Parameter				No. of track pieces*	System Configurations	
	Free Head Space	Opening width	Opening height	Weight		PITCH = 0°	PITCH > 0°
Low Head Room	200 < CLH < 436	1500 ≤ OPW ≤ 5000	OPH ≤ 5000	WGHT ≤ 400kg	One piece track	LHR	FLH
Normal Lift	436 < CLH < 518	1500 ≤ OPW ≤ 8500	OPH ≤ 7000	WGHT ≤ 700kg	One piece track	NL	FTR
High Lift	438 < CLH < (OPH + 658)	1500 ≤ OPW ≤ 8500	OPH + HL - 528 ≤ 7000 & OPH ≤ 6645	WGHT ≤ 500kg	One piece track	HL1	FHL1
			OPH + HL - 528 ≥ 7000 & OPH ≤ 6645	WGHT ≤ 500kg	Two piece track	HL2	FHL2
			OPH + HL - 528 ≥ 7000 & 6645 ≤ OPH ≤ 7000	WGHT ≤ 575kg	Two piece track	HL2 (FFHL164)	FHL2 (FFHL164)
Vertical Lift	CLH > (OPH + 658)	1500 ≤ OPW ≤ 8500	OPH ≤ 3300	WGHT ≤ 500kg	One piece track	VL1	
			OPH ≤ 6000		Two piece track	VL2	

* Vertical track only

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ISC - NL

With a Normal Lift (NL) system, the door moves through the curve directly above the daylight opening (OPH, lintel). Depending on the opening height, a head room between 436mm and 518mm needs to be available. If there is more available head room, selection of a High Lift (HL) is preferable. Less available head room requires to select a Low Head Room (LHR) system.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	7000mm
Fixation width	S*	68mm	78mm
Shaft height	Y	350mm	391mm
Build-in height	Z	436mm	518mm
Pitch	PITCH	-	0°
Wall to shaft distance	HOH	111mm	127mm

Weight	700kg
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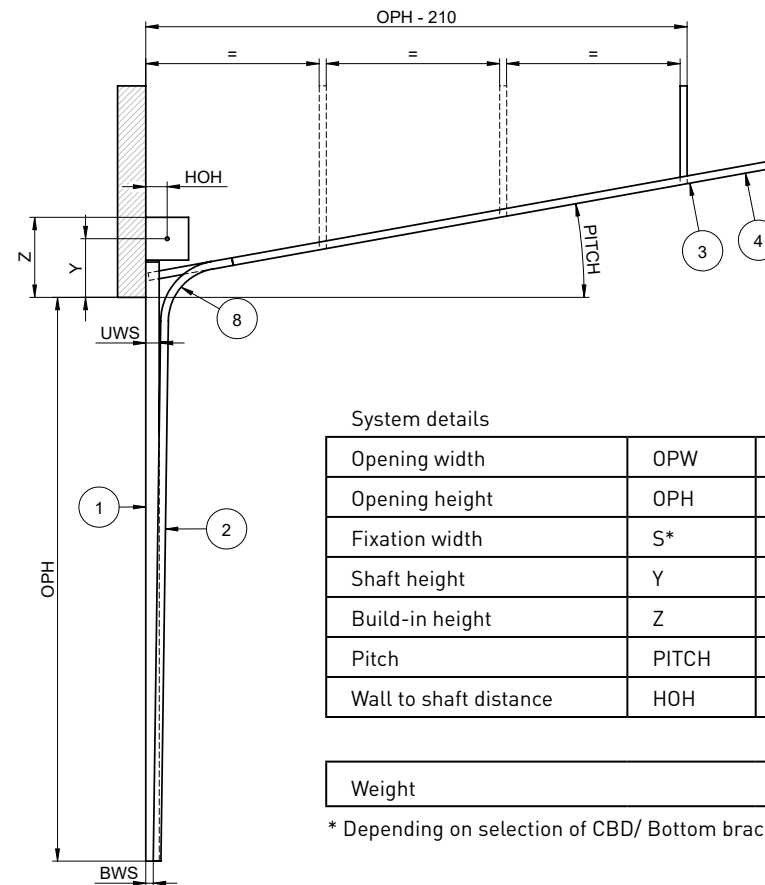
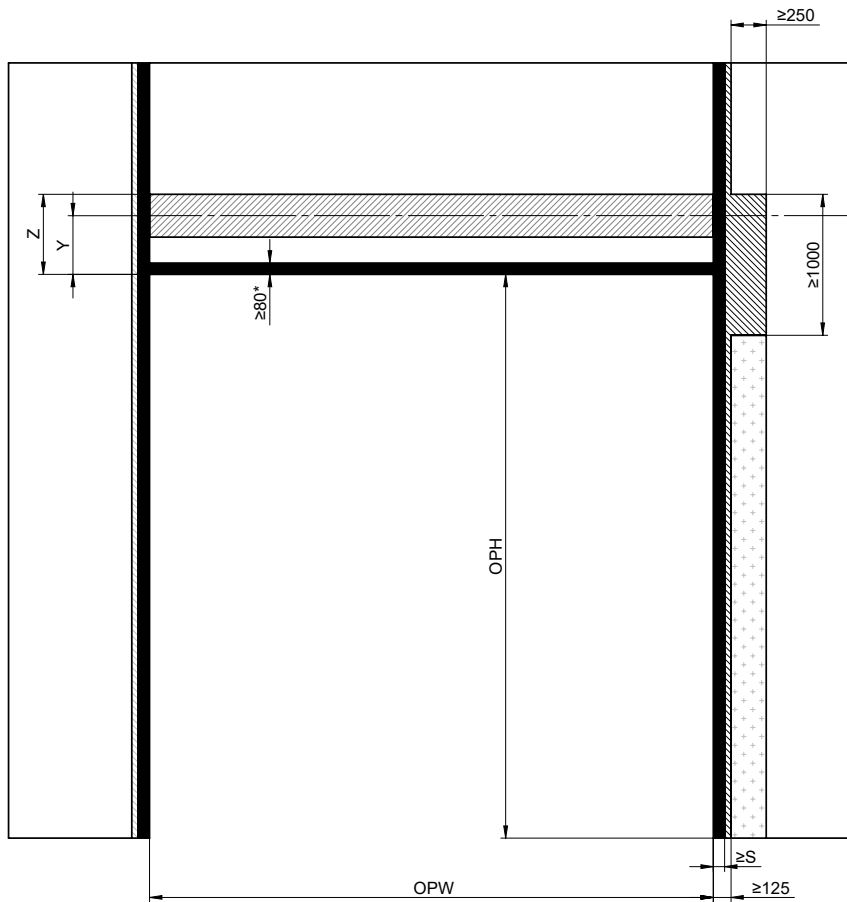
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Requirements & Technical Data - A2:D16

For all data per desired construction dimensions,
see our online product configurator ISC CREATE at www.flexiforce.com

ISC - FTR

With a Normal Lift (NL) system, the door moves through the curve directly above the daylight opening (OPH, lintel). Depending on the opening height, a head room between 436mm and 518mm needs to be available. If there is more available head room, selection of a High Lift (HL) is preferable. Less available head room requires to select a Low Head Room (LHR) system.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	7000mm
Fixation width	S*	68mm	78mm
Shaft height	Y	350mm	391mm
Build-in height	Z	436mm	518mm
Pitch	PITCH	5°	45°
Wall to shaft distance	HOH	111mm	127mm

Weight	700kg
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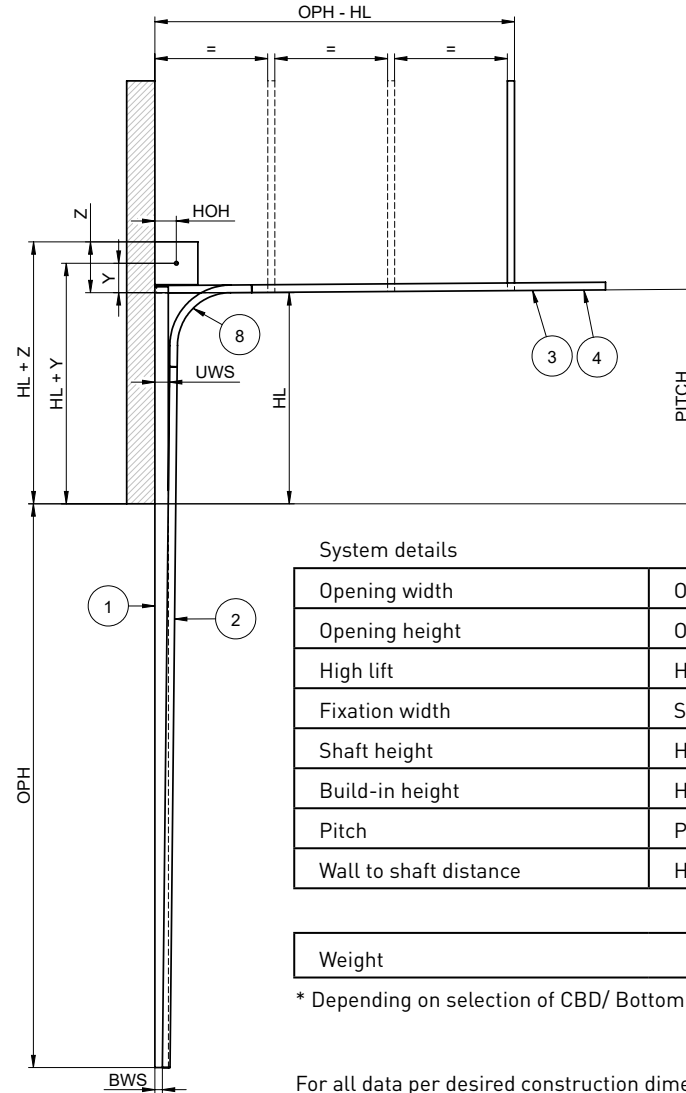
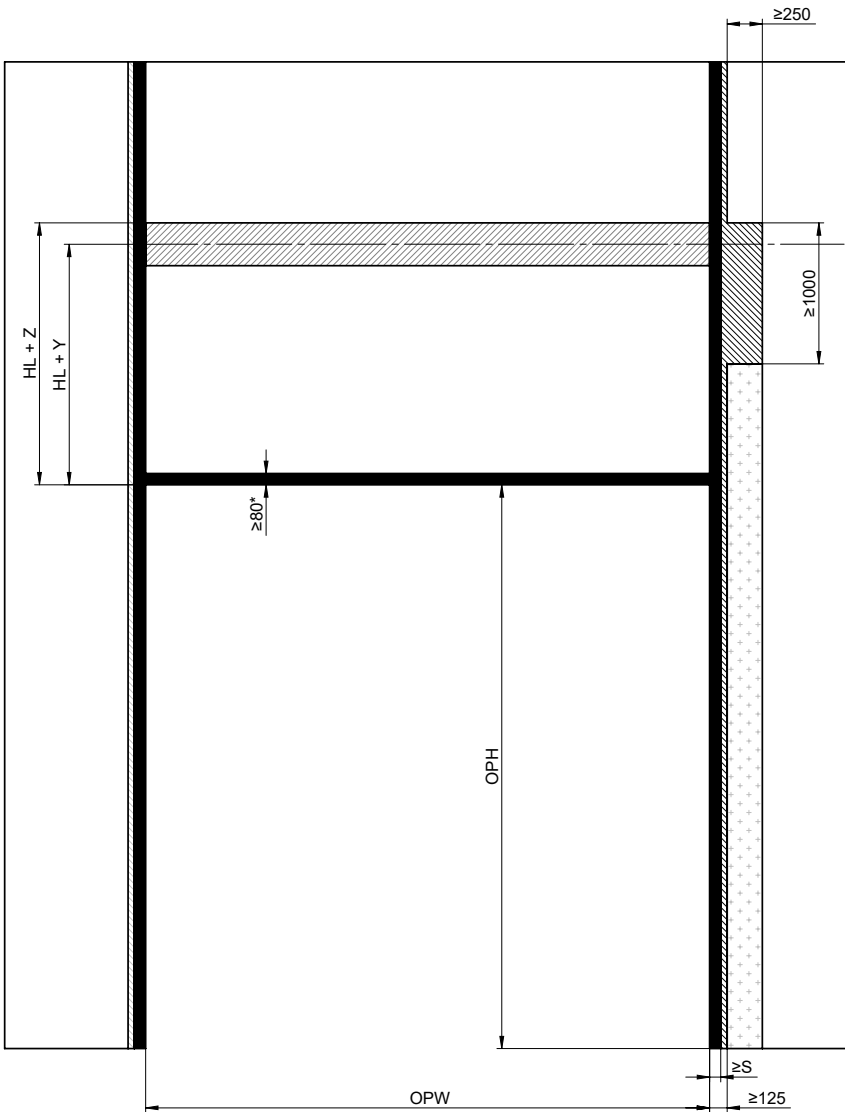
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Requirements & Technical Data - G2-J16

For all data per desired construction dimensions,
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ISC - HL One Piece

With a High Lift system, the door rises vertically above the daylight opening height (lintel), after which the panel moves through the curve, higher in the building. The High Lift size is always the distance between the daylight opening height (lintel) and the underside of the horizontal tracks. Depending on the opening height and high lift size, an extra head room of 308mm to 358mm is required for positioning the shaft system with cable drums.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	7000mm
High lift	HL	210mm	3010m
Fixation width	S*	68mm	78mm
Shaft height	HL + Y	-	HL + 181mm
Build-in height	HL + Z	-	HL + 308mm
Pitch	PITCH	-	0°
Wall to shaft distance	HOH	-	127mm

Weight	500kg
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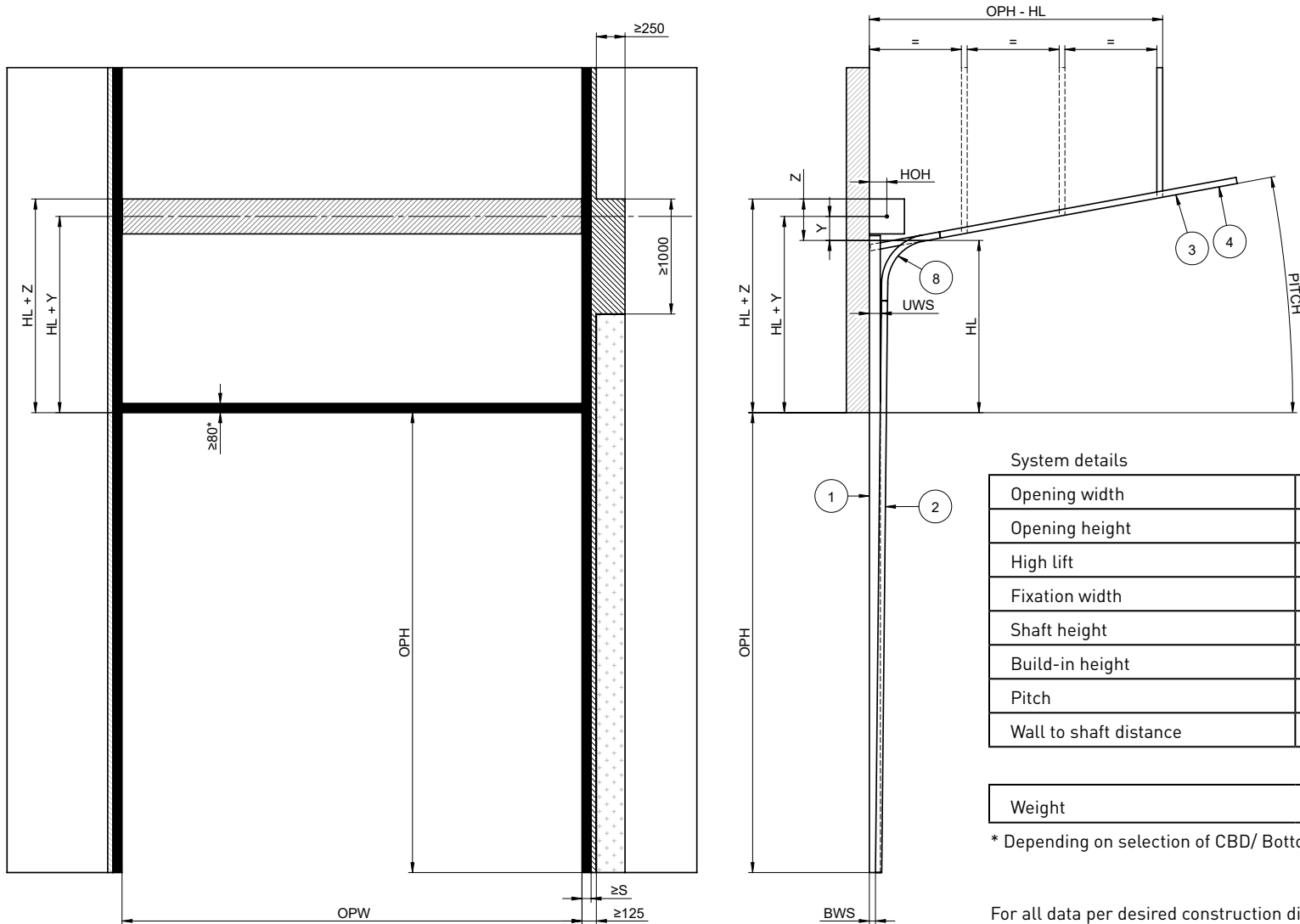
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Requirements & Technical Data - A20:D35

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ISC - FHL One Piece

With a High Lift system, the door rises vertically above the daylight opening height (lintel), after which the panel moves through the curve, higher in the building. The High Lift size is always the distance between the daylight opening height (lintel) and the underside of the horizontal tracks. Depending on the opening height and high lift size, an extra head room of 308mm to 358mm is required for positioning the shaft system with cable drums.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	7000mm
High lift	HL	210mm	3010mm
Fixation width	S*	68mm	78mm
Shaft height	HL + Y	HL + 181mm	HL + 206mm
Build-in height	HL + Z	HL + 308mm	HL + 358mm
Pitch	PITCH	5°	45°
Wall to shaft distance	HOH	-	127mm

Weight	500kg
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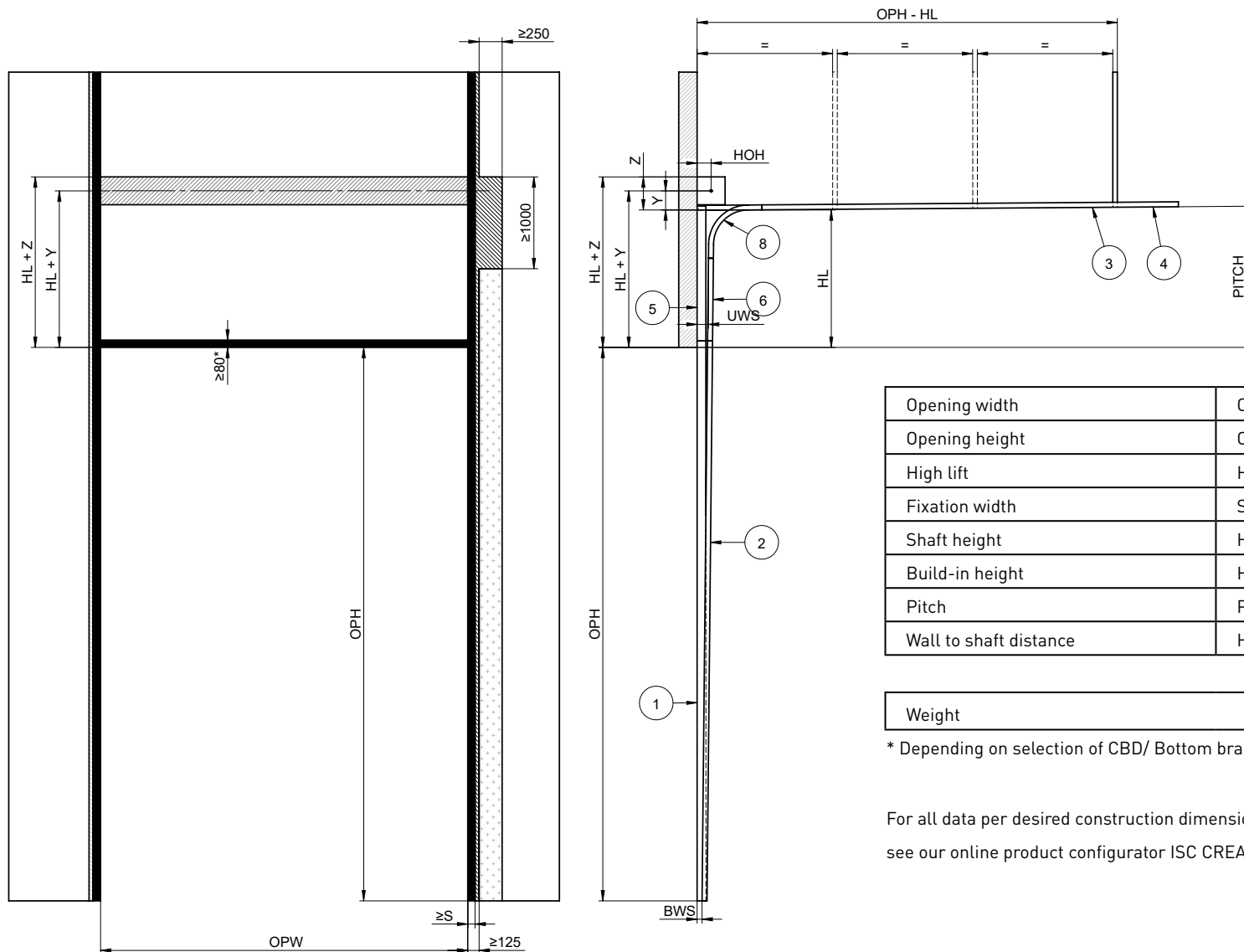
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Requirements & Technical Data - G20-J35

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ISC - HL Two Pieces

With a High Lift system, the door rises vertically above the daylight opening height (lintel), after which the panel moves through the curve, higher in the building. The High Lift size is always the distance between the daylight opening height (lintel) and the underside of the horizontal tracks. Depending on the opening height and high lift size, an extra head room of 308mm to 358mm is required for positioning the shaft system with cable drums.



Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	6645mm
High lift	HL	210mm	3010mm
Fixation width	S*	68mm	78mm
Shaft height	HL + Y	-	HL + 181mm
Build-in height	HL + Z	-	HL + 308mm
Pitch	PITCH	-	0°
Wall to shaft distance	HOH	-	127mm

Weight	500kg
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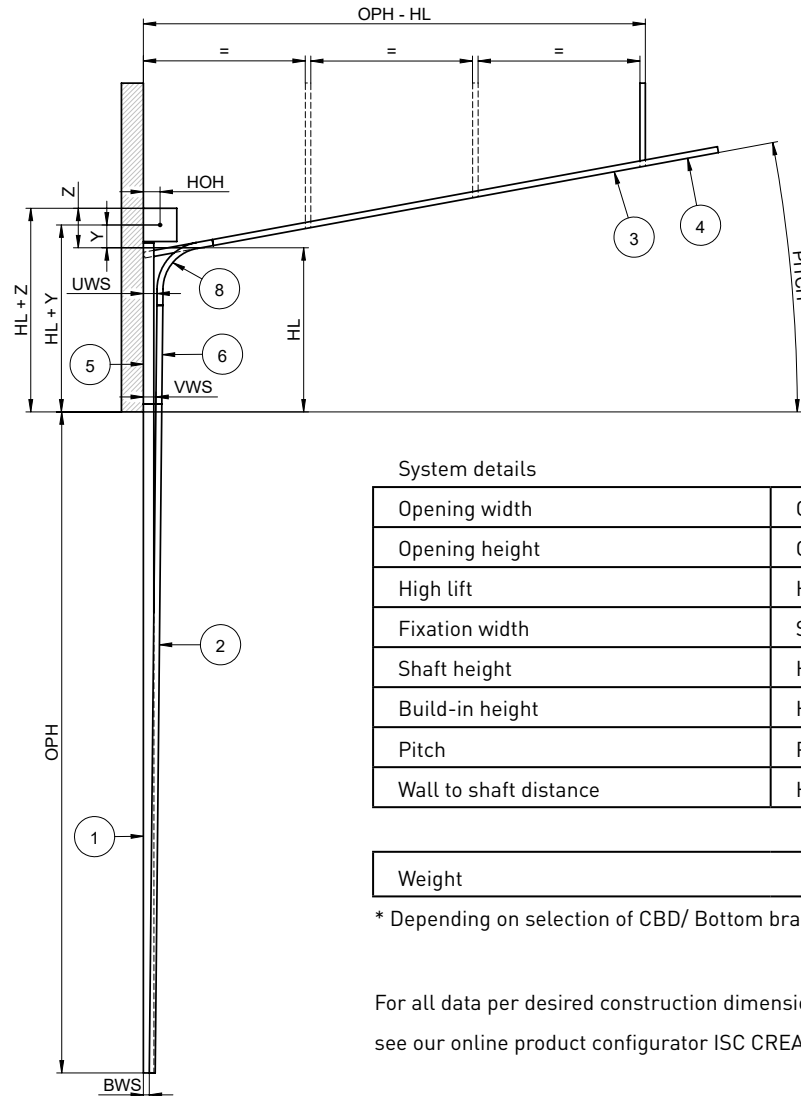
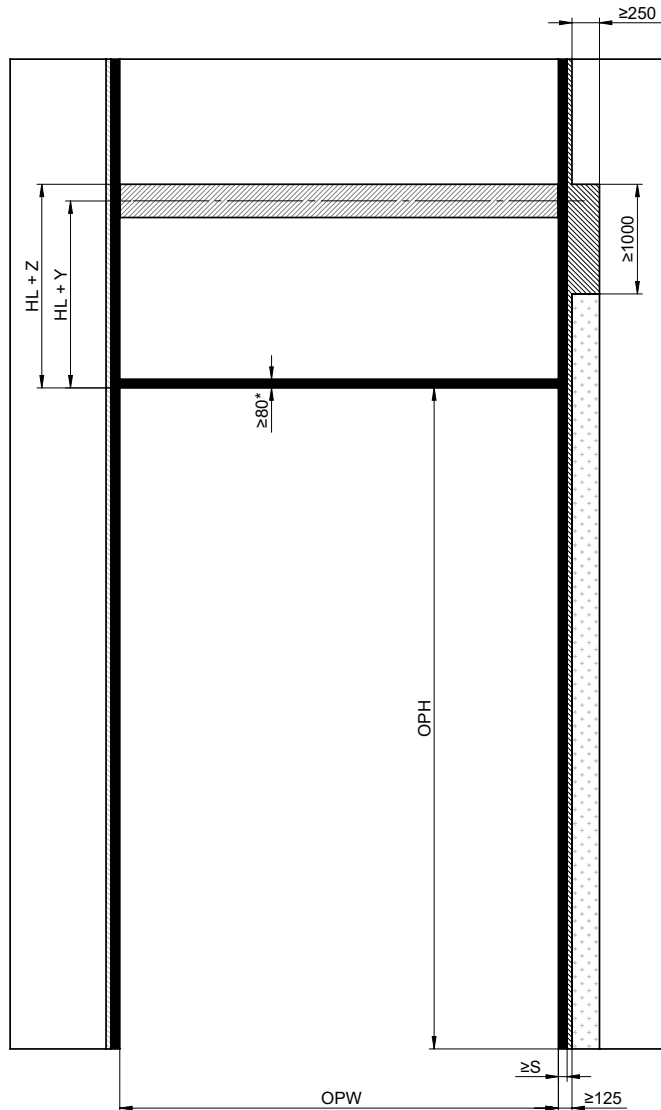
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Requirements & Technical Data - A40:D55

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ISC - FHL Two Pieces

With a High Lift system, the door rises vertically above the daylight opening height (lintel), after which the panel moves through the curve, higher in the building. The High Lift size is always the distance between the daylight opening height (lintel) and the underside of the horizontal tracks. Depending on the opening height and high lift size, an extra head room of 308mm to 358mm is required for positioning the shaft system with cable drums.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	6645mm
High lift	HL	210mm	3010mm
Fixation width	S*	68mm	78mm
Shaft height	HL + Y	HL + 181mm	HL + 206mm
Build-in height	HL + Z	HL + 308mm	HL + 358mm
Pitch	PITCH	5°	45°
Wall to shaft distance	HOH	-	127mm

Weight	500kg
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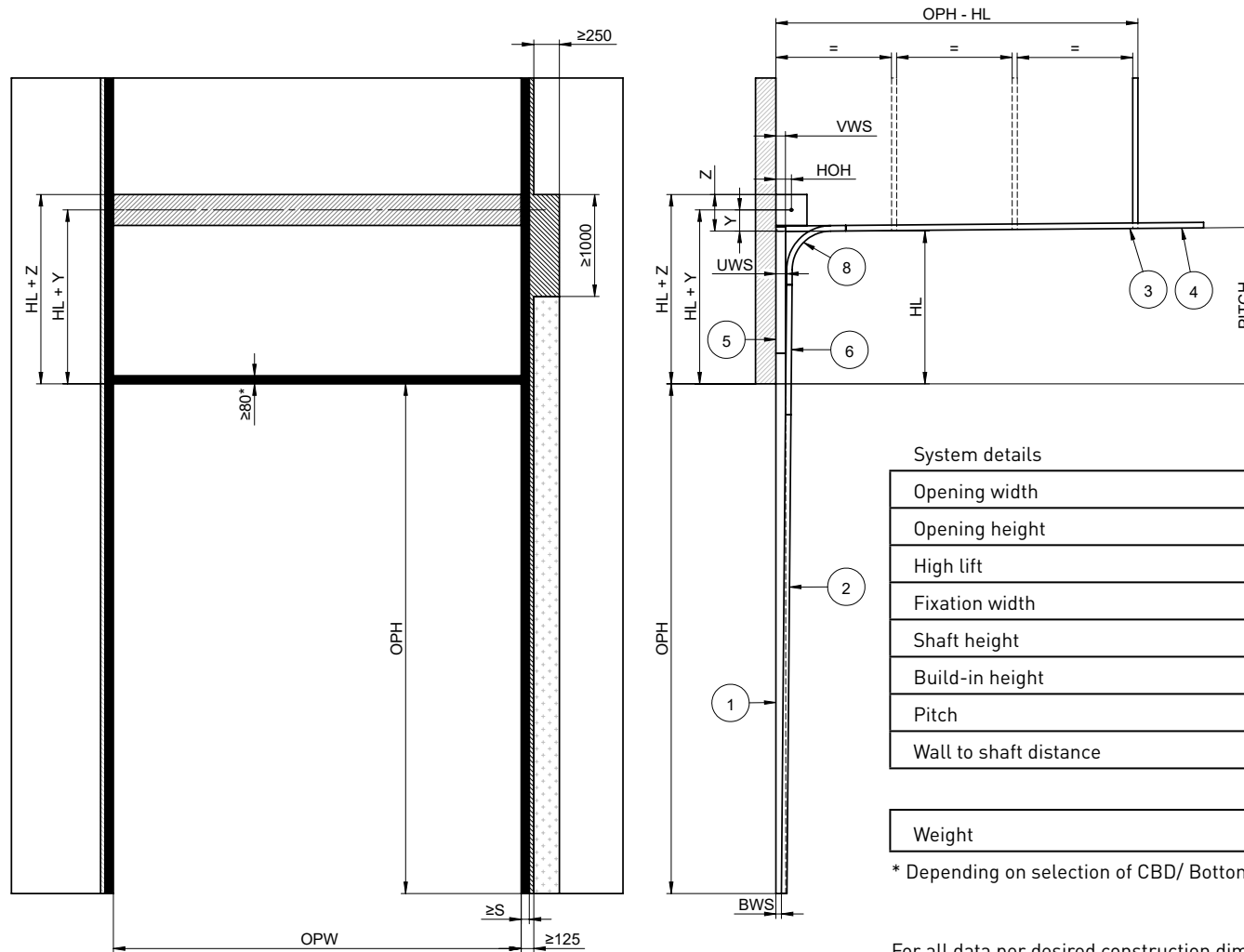
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Requirements & Technical Data - G39:J55

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ISC - HL Two Pieces FFHL164

With a High Lift system, the door rises vertically above the daylight opening height (lintel), after which the panel moves through the curve, higher in the building. The High Lift size is always the distance between the daylight opening height (lintel) and the underside of the horizontal tracks. Depending on the opening height and high lift size, an extra head room of 308mm to 358mm is required for positioning the shaft system with cable drums.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	7000mm
High lift	HL	210mm	4100mm
Fixation width	S*	68mm	78mm
Shaft height	HL + Y	-	HL + 206mm
Build-in height	HL + Z	-	HL + 358mm
Pitch	PITCH	-	0°
Wall to shaft distance	HOH	-	127mm

Weight	575kg
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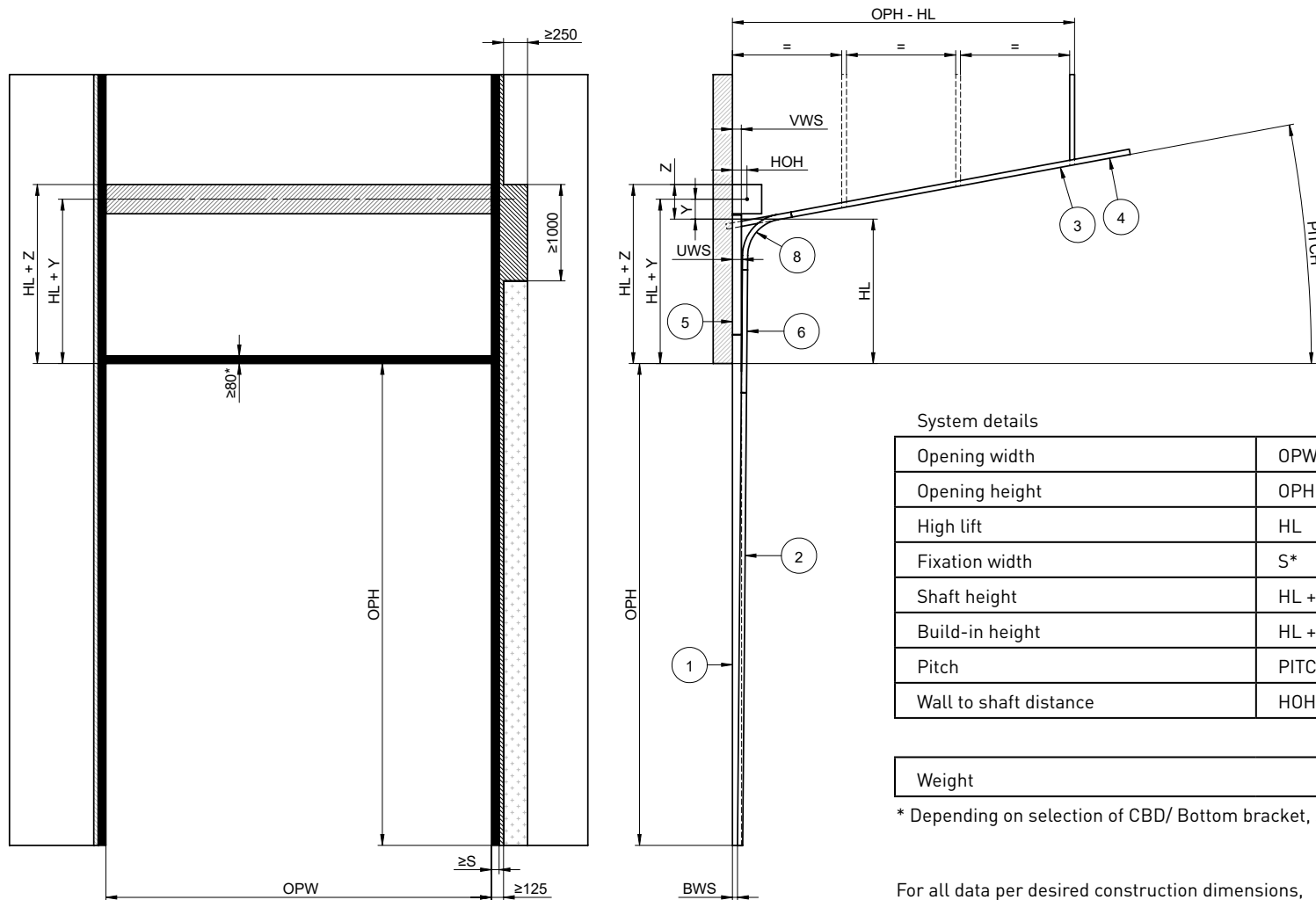
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Requirements & Technical Data - A59:D75

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ISC - FHL Two Pieces FFHL164

With a High Lift system, the door rises vertically above the daylight opening height (lintel), after which the panel moves through the curve, higher in the building. The High Lift size is always the distance between the daylight opening height (lintel) and the underside of the horizontal tracks. Depending on the opening height and high lift size, an extra head room of 308mm to 358mm is required for positioning the shaft system with cable drums.



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	7000mm
High lift	HL	210mm	4100mm
Fixation width	S*	68mm	78mm
Shaft height	HL + Y	-	HL + 206mm
Build-in height	HL + Z	-	HL + 358mm
Pitch	PITCH	5°	35°
Wall to shaft distance	HOH	-	127mm

Weight	575kg
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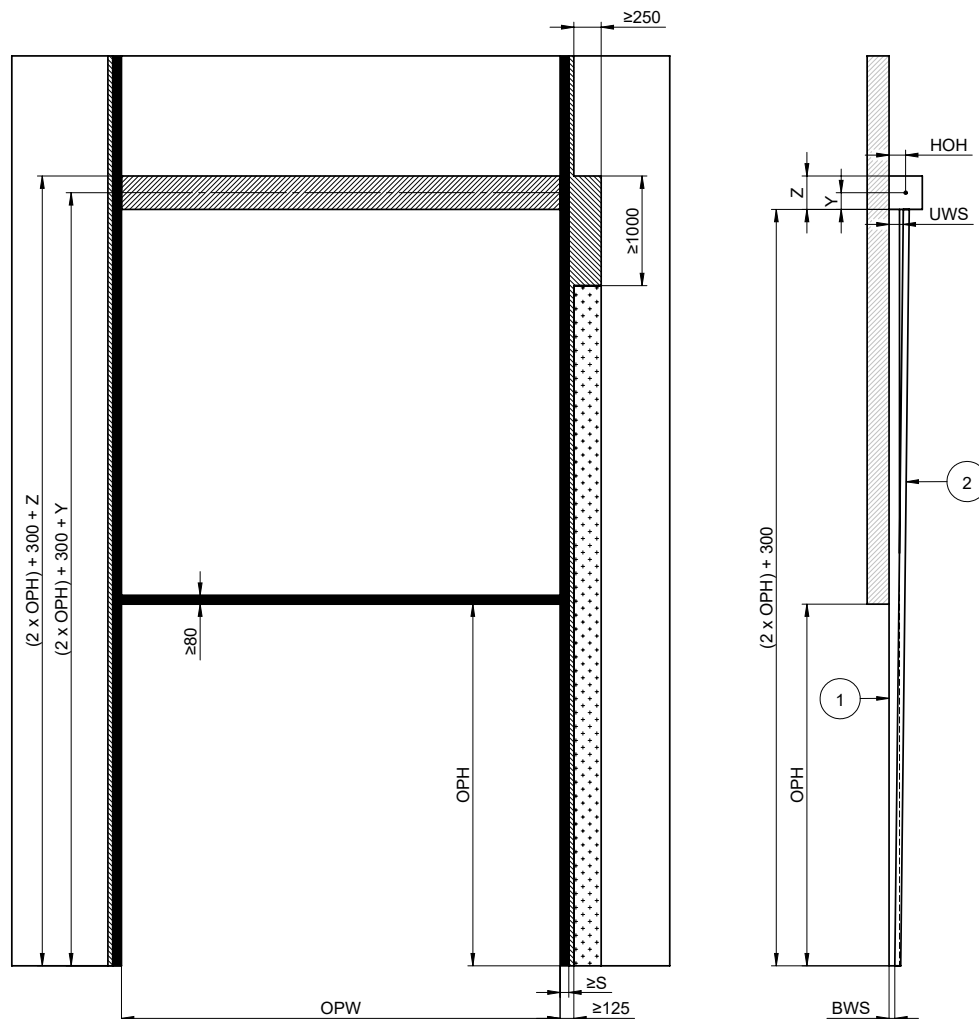
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Requirements & Technical Data - G59:J75

For all data per desired construction dimensions,
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ISC - VL One Piece

With a Vertical Lift system, the door moves straight upwards from the daylight opening height (OPH), implying that there is sufficient head room available for at least the total door height. The system has no curve. In Vertical Lift systems the full door weight hangs in the lifting cables, in any position of the door



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	3300mm
Fixation width	S*	68mm	78mm
Shaft height	Y	127mm	152mm
Build-in height	Z	254mm	304mm

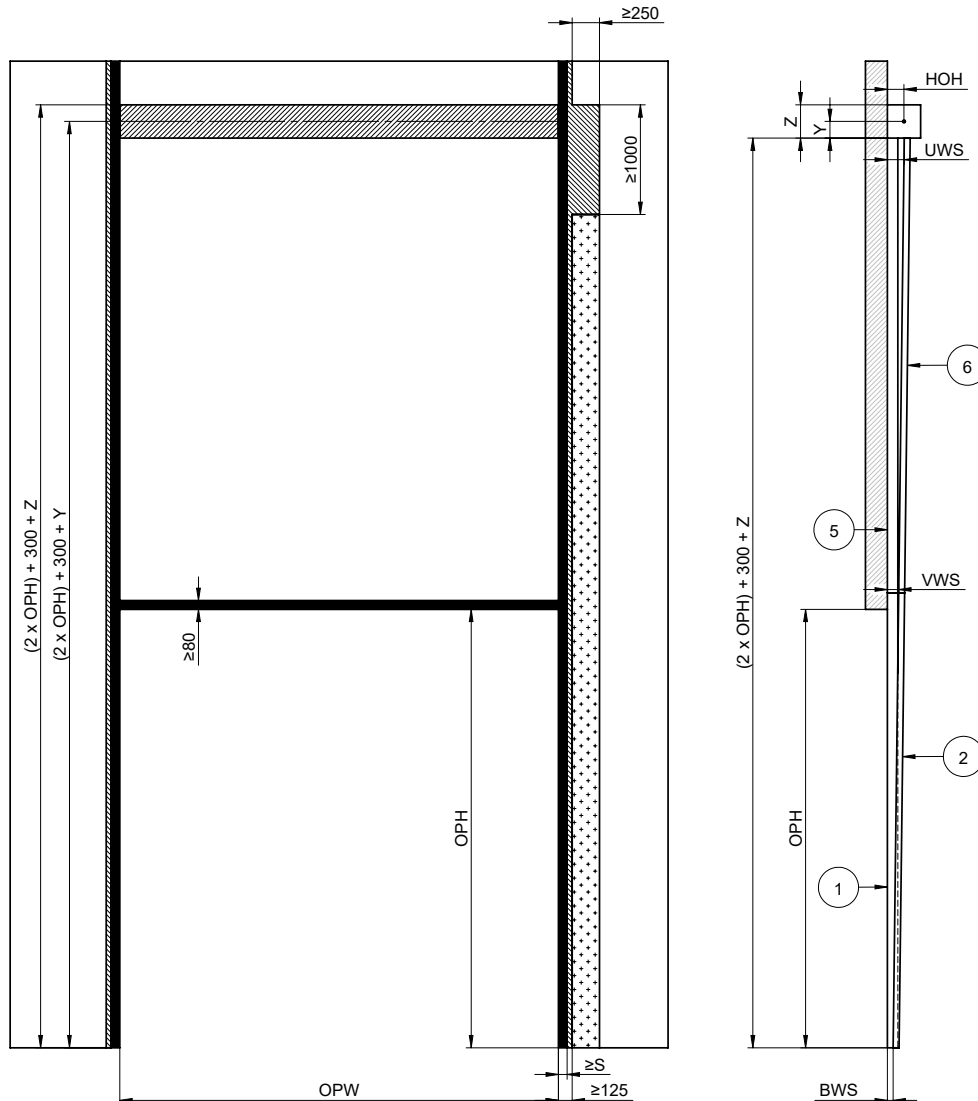
Upper Wedge Size	UWS	See table
Bottom Wedge Size	BWS	See table

Weight	500kg
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* Depending on selection of CBD/ Bottom bracket, see page bottom brackets

ISC - VL Two Pieces

With a Vertical Lift system, the door moves straight upwards from the daylight opening height (OPH), implying that there is sufficient head room available for at least the total door height. The system has no curve. In Vertical Lift systems the full door weight hangs in the lifting cables, in any position of the door



System details		Min.	Max.
Opening width	OPW	1500mm	8500mm
Opening height	OPH	1830mm	6000mm
Fixation width	S*	68mm	78mm
Shaft height	Y	-	152mm
Build-in height	Z	-	304mm

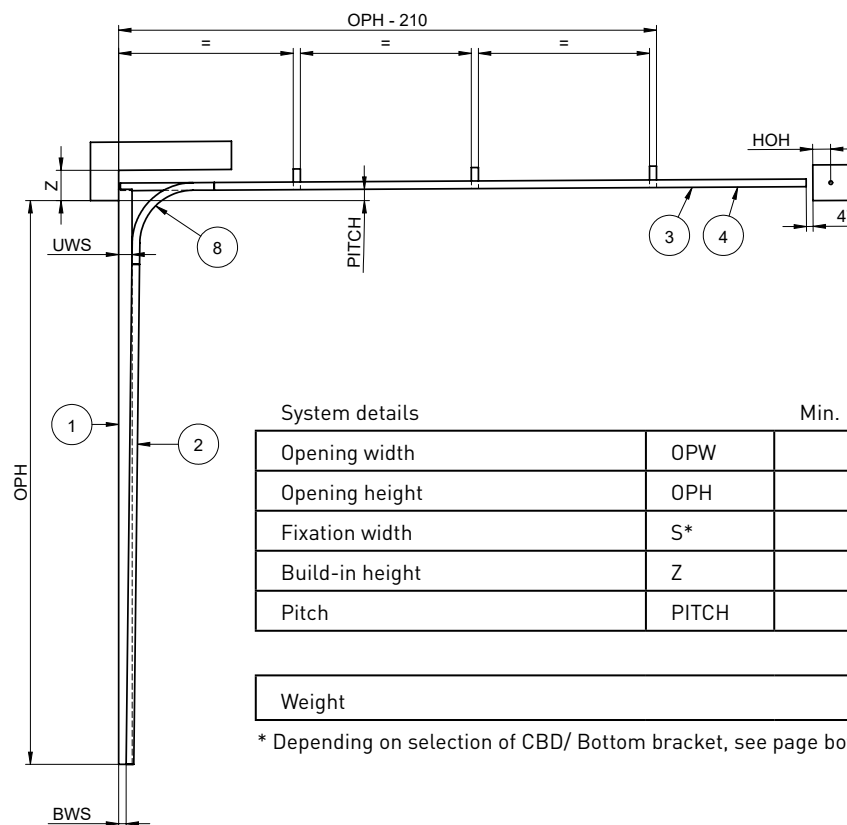
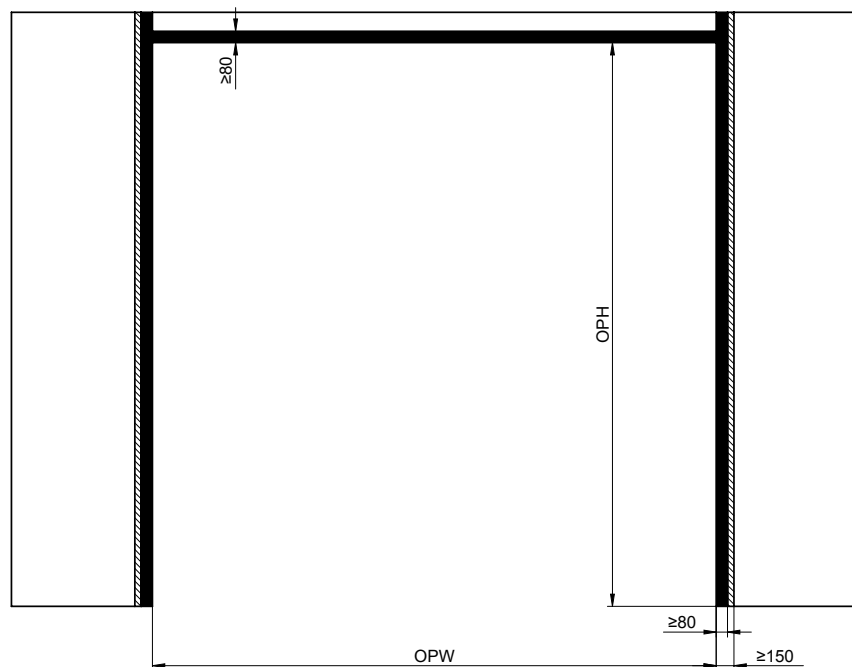
Weight	500kg
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* Depending on selection of CBD/ Bottom bracket, see page bottom brackets

Requirements & Technical Data - A95:D104

ISC - LHR

With a Low Head Room system, the door moves through the curves into the horizontal tracks. Thanks to the geometry of the curves and tracks, this system needs minimal low headroom space. For doors up to a door height of 5.500mm and a maximum door weight of 500kg, the needed minimal headroom is 200mm. For situations with more headroom a Normal Lift system can be applied.



System details		Min.	Max.
Opening width	OPW	1500mm	5000mm
Opening height	OPH	1830mm	5500mm
Fixation width	S*	68mm	78mm
Build-in height	Z	200mm	215mm
Pitch	PITCH	-	0°

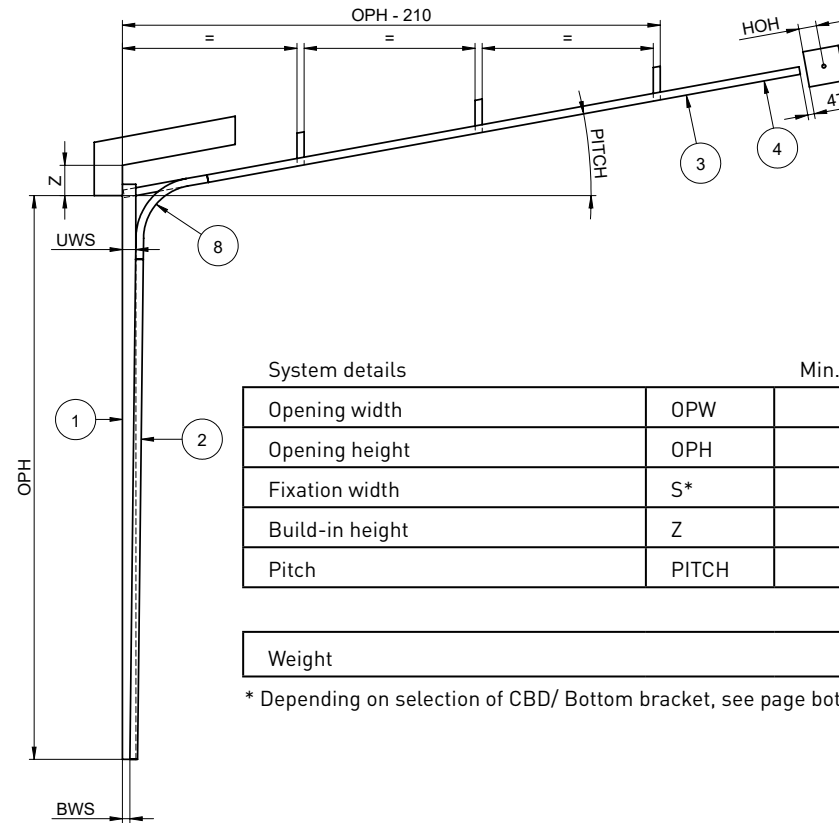
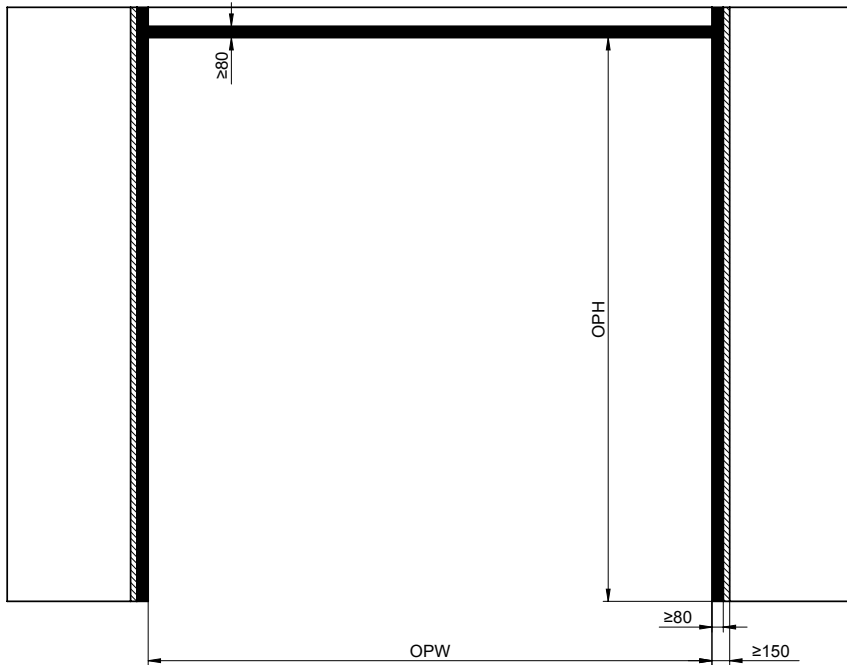
Weight	400kg
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* Depending on selection of CBD/ Bottom bracket, see page bottom brackets

Requirements & Technical Data - A108:D120

ISC - FLH

With a Low Head Room system, the door moves through the curves into the horizontal tracks. Thanks to the geometry of the curves and tracks, this system needs minimal low headroom space. For doors up to a door height of 5.500mm and a maximum door weight of 500kg, the needed minimal headroom is 200mm. For situations with more headroom a Normal Lift system can be applied.



System details		Min.	Max.
Opening width	OPW	1500mm	5000mm
Opening height	OPH	1830mm	5500mm
Fixation width	S*	68mm	78mm
Build-in height	Z	200mm	215mm
Pitch	PITCH	5°	35°

Weight	400kg
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* Depending on selection of CBD/ Bottom bracket, see page bottom brackets

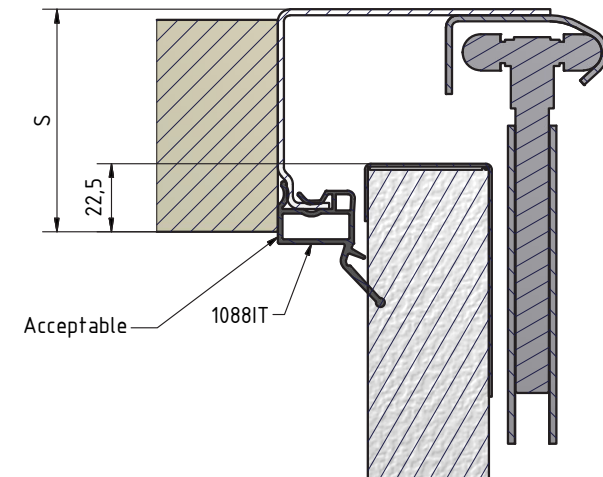
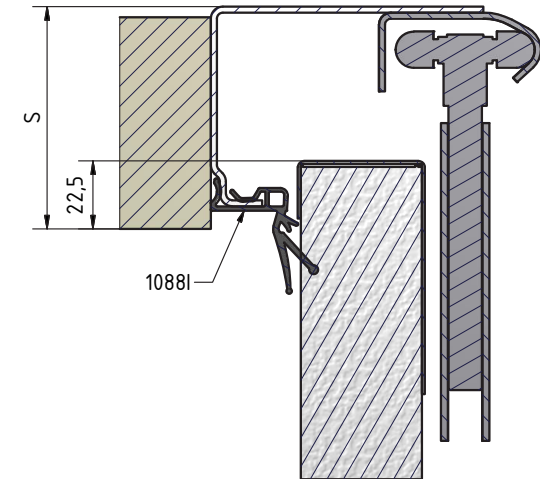
Requirements & Technical Data - G108-J120

BOTTOM BRACKET INFORMATION

Art. Code	NL / HL / VL	LHR	Add to achieve play of 5mm between track & bracket*
	Side Seal	Side Seal	
	1088I / 1088ITC	1088ITC	
S [mm]	S [mm]	S [mm]	
425HD	76	-	2066-10
427SX	68	78	2066-07
428TAI	72	78	-
429	68	78	2066-05
429S	68	78	2066-10
440-REGL	76	78	-
440HD	76	-	-
440-600	74	78	-
440S	74	78	-
440	74	78	-
444	78	-	-

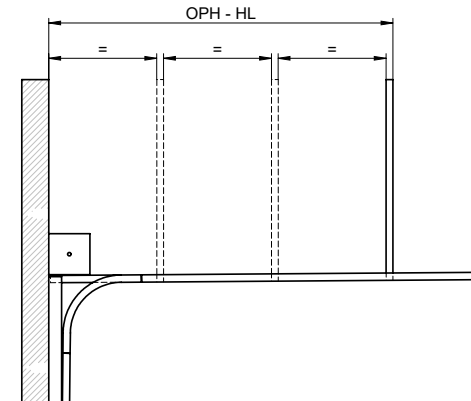
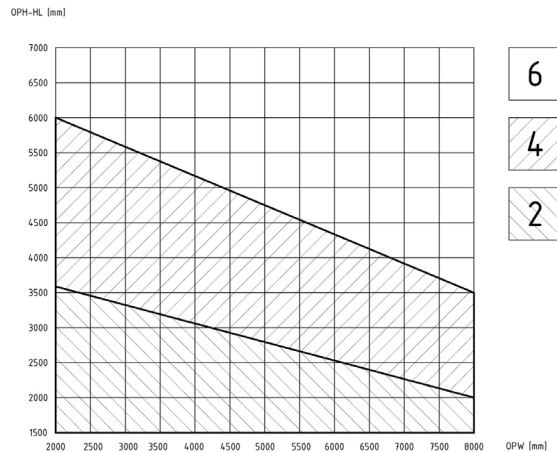
* The play of 5mm is needed for the required movement of $\pm 5\text{mm}$

Bottom Brackets - A3:D19



HORIZONTAL TRACK SUSPENSION

Use chart to determine the required number of suspension profiles.
Distribute these profiles evenly over a distance of the Opening Height minus the High Lift (OPH - HL)



In case of a Low Head Room system (LHR & FLH), the box beam needs to be suspended as well

BOX BEAM:

OPW < 3500mm = 60K40

OPW > 3500mm = 60K403

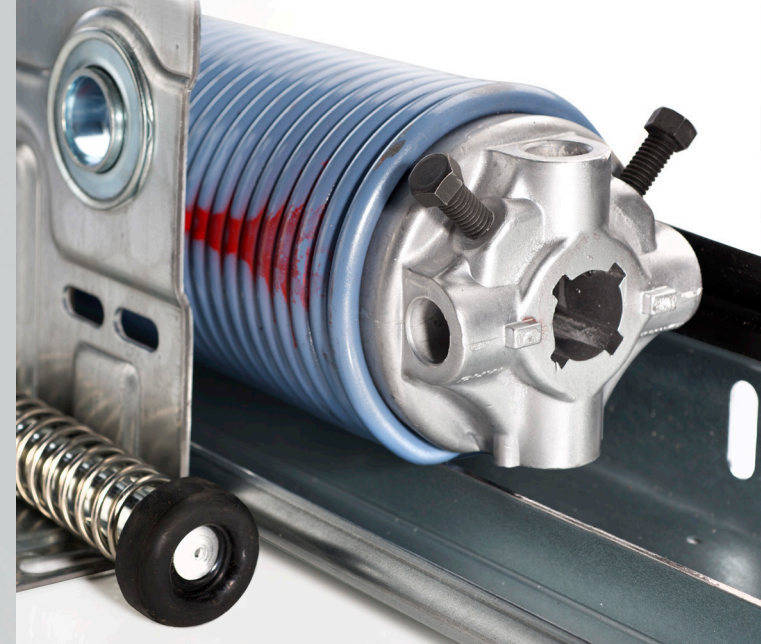
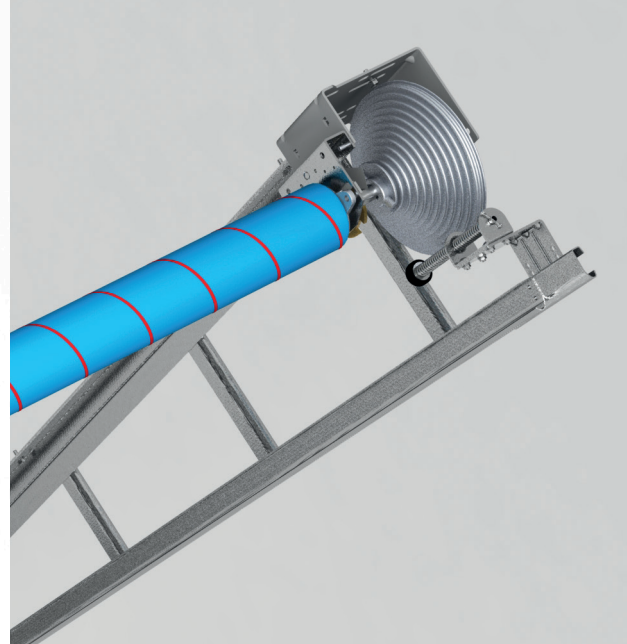
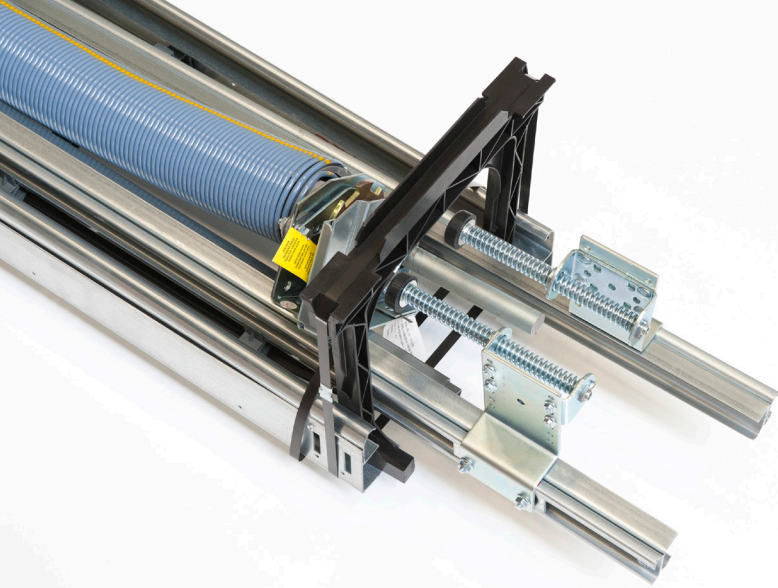
See the list below to determine the number of suspension profiles for the box beam

Distribute these profiles evenly over the Opening Width (OPW) of the door.

OPW < 3000: 0

OPW < 5000: 1

OPW < 7000: 2



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