节能铝合金门窗

—— 蓝光系列

国家建筑标准设计参考图

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总 说 明

1 编制依据

本图集依据下列规范、标准:

《铝合金门》GB/T 8478-2003

《铝合金窗》GB/T 8479-2003

《建筑结构荷载规范》GB 50009-2001

《民用建筑热工设计规范》GB 50176-93

《公共建筑节能设计标准》GB 50189-2005

《住宅性能评定技术标准》GB 50362-2005

《绿色建筑评价标准》GB 50378-2006

《民用建筑节能设计标准(采暖居住建筑部分)》JGJ 26-95

《夏热冬暖地区居住建筑节能设计标准》JGJ 75-2003

《夏热冬冷地区居住建筑节能设计标准》JGJ 134-2001

2 适用范围及特点

2.1 本图集适用于一般工业与民用建筑有节能要求的外门窗。

2.2 蓝光系列铝合金门窗具有下列特点，并均已取得国家专利。

2.2.1 蓝光无框节能铝合金门窗:其推拉窗的窗扇不用框料，由中空玻璃与封边扣条采用硅酮结构胶连接,一次性加工成窗扇。

2.2.2 蓝光全无框节能铝合金门窗: 采用上、下滑道型材与墙体直接固定，各边之间不连接。其推拉窗的窗扇不用框料,由中空玻璃与封边扣条采用硅酮结构胶连接，一次性加工成窗扇。

3 图集内容

3.1 说明、各系列门窗立面图。

3.2 蓝光无框、有框系列铝合金门窗性能表和其有代表性的节点构造。同时提供玻璃性能指标表，供设计人员选用。

4 设计规定

4.1 门窗编号: 采用拼音符号表示门或窗的开启形式，将门窗洞口的宽和高组成代号，前两位数字表示门窗洞口的宽度尺寸，后两位数表示门窗洞口的高度尺寸。

例: NPC1-2115 内平开窗——NPC1-2115——洞口宽

编号——NPC1-2115——洞口高

4.2 门窗类别及代号见表4.2。

表4.2 门窗类别及代号

代 号	类 别	备 注
W P C	外平开窗	中空玻璃、带纱扇
N P C	内平开窗	中空玻璃、带纱扇
X N P	下悬内平开窗	中空玻璃、带纱扇
T C (TCG)	推拉窗 （智能推拉窗）	中空玻璃、带纱扇
T M	推拉门	中空玻璃、带纱扇

4.3 有框多功能铝合金门、窗产品有推拉门、内平开窗、外平开窗、

推拉窗、上悬窗、下悬窗和下悬平开窗等。无框多功能铝合金门窗产品有推拉门窗。

4.4 本图集以中空玻璃表示，也可装单层玻璃、夹层玻璃，其性能应经检测后根据工程需要确定。

4.5 铝型材表面处理分为氟碳树脂漆喷涂、粉末喷涂，电泳涂漆、阳极氧化着色。

4.6 基本门、窗是以单樘构件组合而成，组合门、窗是以单樘门、窗加拼樘料组装而成的条型窗、带型窗等。

4.7 门、窗构造尺寸由门、窗生产厂家按工程设计图纸和工程实际需要进行调整。

5 选用注意事项

5.1 窗的强度应能满足所在地区的最大正、负风压作用时的要求。尤其是风力较大的地区（如沿海地区等）及高层建筑。

5.2 窗的气密性。

5.2.1 在冬季室外平均风速大于或等于3.0m/s的地区，多层建筑不应低于3级，高层建筑不应低于4级。

5.2.2 在冬季室外平均风速小于3.0m/s的地区，多层建筑不应低于2级，高层建筑不应低于3级。

5.3 窗的水密性。位于大风区且多雨的地区时，窗的水密性不应低于3级。

5.4 沿街的住宅或环境噪声较大时，应采用隔声性能较好的外窗。其隔声性能应不小于30dB。

5.5 在寒冷及严寒地区，应使用隔热型材。

5.6 窗的保温性能等级应按当地的节能要求确定。

6 物理性能指标要求

建筑外窗的抗风压、气密、水密、保温、隔声及采光六大性能分级指标（国家标准）见表6-1～表6-6。

表6-1 建筑外窗抗风压性能分级表(安全检测压力差P_3)(GB/T 7106-2002)

分 级	1	2	3	4	5	6	7	8	**
指标值 P_3(kPa)	≥1.0 <1.5	≥1.5 <2.0	≥2.0 <2.5	≥2.5 <3.0	≥3.0 <3.5	≥3.5 <4.0	≥4.0 <4.5	≥4.5 <5.0	≥5.0

注：1.表中**表示用≥5.0kPa的具体值取代分级代号。

2.定级监测和工程所在地为非热带风暴和台风地区时，采用稳定加压法；如工程所在地为热带风暴和台风地区时，应采用波动加压法。

表6-2 建筑外窗气密性能分级表 （GB/T 7107-2002）

分 级	3	4	5
单位缝长指标值 q_1 [$m^3/(m\cdot h)$]	>1.5 ≤2.5	>0.5 ≤1.5	≤0.5
单位面积指标值 q_2 [$m^3/(m^2\cdot h)$]	>4.5 ≤7.5	>1.5 ≤4.5	≤1.5

表6-3 建筑外窗水密性能分级表 （GB/T 7108-2002）

分 级	3	4	5	****
指标值 ΔP(Pa)	≥250 <350	≥350 <500	≥500 <700	≥700

注：表中****表示用≥700Pa的具体值取代分级代号。适用于热带风暴和台风袭击地区的建筑。

表6-4 建筑外窗保温性能分级表 （GB/T 8484－2002）

分 级	4	5	6	7	8	9	10
指标值 K值 [W/(m²·K)]	<4.5 ≥4.0	<4.0 ≥3.5	<3.5 ≥3.0	<3.0 ≥2.5	<2.5 ≥2.0	<2.0 ≥1.5	<1.5

表6-5 建筑外窗空气隔声性能分级表（计权隔声量）（GB/T 8485－2002）

分 级	2	3	4	5	6
指标值 R_w(dB)	≥25 <30	≥30 <35	≥35 <40	≥40 <45	≥45

表6-6 建筑外窗采光性能分级表 （GB/T 11976－2002）

分 级	1	2	3	4	5
透光折减系数 Tr	≥0.20 <0.30	≥0.30 <0.40	≥0.40 <0.50	≥0.50 <0.60	≥0.60*

注：*表示Tr（透射光折减系数）值大于0.60时，应给出具体数值。

7 技术要求

7.1 门、窗产品使用新材料应符合相关标准的要求。

7.2 铝合金型材表面处理应符合下列规定：

(1) 粉末涂层厚度为 40～120 μm;

(2) 阳极氧化膜厚度不低于AA15级;

(3)电泳涂漆型材复合膜局部膜厚不小于16 μm。(其中阳极氧化膜平均膜厚≥10 μm,局部膜厚≥8 μm。)

(4)氟碳喷涂漆膜平均厚度：二涂层≥30 μm,三涂层≥40 μm,四涂层≥65 μm。

7.3 玻璃

品种：浮法玻璃、着色玻璃、钢化玻璃、半钢化玻璃、阳光控制镀膜玻璃、低辐射镀膜玻璃、夹层玻璃、夹丝玻璃、中空玻璃等。

常用厚度(mm)：单层玻璃为 4、5、6、8、10、12;夹层玻璃为 4+4 5+5、6+6;中空玻璃为 4+A+4 、4+A+5 、5+A+5、6+A+6等（空气间隔层厚度 A =6、9、12 ）。

颜色：按建筑设计的要求。

要求：

(1)Low-E镀膜玻璃用于中空玻璃时，镀膜面应在第2、3 面上。

(2)门、窗玻璃应用要符合《建筑玻璃应用技术规程》的要求。

7.4 纱窗采用涂塑玻璃纤维纱网.

7.5 密封材料应按功能要求、密封材料特性、型材特点选用。

7.6 装配要求：门、窗连接应牢固。

7.7 防雷连接:门、窗构件按GB 50057规定与主体结构的防雷系统连接。

7.8 门、窗产品尺寸允许偏差应符合 GB/T 8478-2003和 GB/T 8479-2003的规定。

表7.8-1 窗尺寸允许偏差（mm）

项 目	尺 寸 范 围	偏 差 值
窗框槽口高度、宽度	≤2000	±2.0
	>2000	±2.5
窗槽口对边尺寸之差	≤2000	≤2.0
	>2000	≤3.0

表7.8-2 门尺寸允许偏差（mm）

项　目	尺　寸　范　围	偏　差　值
门框槽口高度、宽度	≤2000	±2.0
	>2000	±3.0
门窗槽口对边尺寸之差	≤2000	≤2.0
	>2000	≤3.0
门框对角线尺寸之差	≤3000	≤3.0
	>3000	≤4.0
门框与门扇搭接宽度	-	±2.0
同一平面高低差	-	≤0.3
装配间隙	-	≤0.2
窗框对角线尺寸之差	≤2000	≤2.5
	>2000	≤3.5
窗框与窗扇搭接宽度	-	±1.0
同一平面高低差	-	≤0.3
装配间隙	-	≤0.2

8 门窗的安装

8.1 本图集有外框系列一律采用后塞口的施工安装方法。

表8.2 门窗边框和上框与洞口间隙

墙体饰面材料	洞口与门窗框间隙（mm）
清水墙	10
墙体外饰面抹水泥砂浆或贴马赛克	15～20
墙体外饰面贴釉面瓷砖	20～25
墙体外饰面贴大理石或花岗岩板	40～50

注：以饰面层厚度能盖过缝隙5～10mm左右为度。

8.2 接口尺寸：门窗的宽、高实际尺寸应根据预留洞口尺寸和墙体饰面材料的厚度确定。门窗边框和上框与洞口间隙应符合表8.2的要求。门窗下框与洞口间隙可根据设计要求选定。宜采用附框的安装形式。

8.3 门窗的最大外形尺寸和立面应由以下因素确定：门窗的建筑物理性能要求；门窗的力学性能要求；型材断面结构尺寸；外墙饰面材料要求；洞口安装的具体要求。

8.4 门窗开启扇的最大尺寸应根据门窗框料的抗压强度计算结果、扇的自重、选用五金件的承载能力和五金件与门窗框扇的连接强度确定。

8.5 门窗安装位置、开启方向与安装连接方式应符合本图集规定和建筑工程设计要求。

8.6 门、窗框与墙体需用保温材料填充时，应连接牢固。

8.7 门、窗抹灰工程及滴水线应按《建筑装饰装修工程质量验收规范》GB 50210-2001中第4.2.10条的规定施工。

8.8 门、窗安装后，按《建筑装饰装修工程质量验收规范》GB 50210-2001中第5.5.3条进行验收。

9 包装、运输、贮存

包装、运输、贮存应符合GB/T 8478-2003、GB/T 8479-2003的规定。

10 保养与养护

10.1 门、窗如有油污、砂浆等杂物，可用水溶性清洗剂清洗，禁止用丙酮和硬物刮、擦。门、窗每年应进行三至四次清洗。

10.2 需定期加润滑剂的附件应加注润滑油（普通机油）。

蓝光节能铝合金门窗性能表

项目 / 门窗型号	玻璃配置(白玻)	抗风压性能P (kPa)	水密性能△P (Pa)	气密性能 q_1 [$m^3/(m \cdot h)$]	气密性能 q_2 [$m^3/(m^2 \cdot h)$]	保温性能K [$W/(m^2 \cdot K)$]	隔声性能 (dB)	遮阳系数 Sc	框窗比 %	2007年参考价格 (元)
BLPL150系列外平开窗	5+12A+5	5.0 (加强处理)	≥500	≤0.5	≤1.5	3.4	32≤Rw≤34	0.89	25	438 (含纱窗)
	5+12A+5Low-E					2.8		0.60	25	528 (含纱窗)
BLPL160系列内平开窗	5+12A+5	3.68	≥500	≤0.5	≤1.5	3.2	35≤Rw≤38	0.89	25	598 (含纱窗)
	5+12A+5Low-E					2.3		0.60	25	688 (含纱窗)
BLT370系列推拉窗	5+6A+5	2.8	350>△P≥250	≤1.5	≤4.5	3.4	26≤Rw≤30	0.89	8	368 (含纱窗)
	5+6A+5Low-E					2.8		0.60	8	458 (含纱窗)
BLT2008系列推拉窗	5+12A+5	5.0 (加强处理)	500>△P≥350	≤0.5	≤1.5	3.4	28≤Rw≤30	0.89	12	468 (含纱窗)
	5+12A+5Low-E					2.6		0.60	12	568 (含纱窗)
BLT-W全无框推拉窗	5+12A+5	5.0 (加强处理)	500>△P≥350	≤1.5	≤4.5	3.1	30≤Rw≤32	0.89	2	418 (含纱窗)
	5+12A+5Low-E					2.4		0.60	2	478 (含纱窗)
BLPF-75系列铝木平开窗	5+12A+5	3.5	≥500	≤0.5	≤1.5	2.8	35≤Rw≤38	0.89	30	1268 (含纱窗)
	5+12A+5Low-E					1.9		0.60	30	1358 (含纱窗)

注：1.以上数据按1500×1500标准窗测试。 2.加强处理是将玻璃封边改成厚壁加强型材。

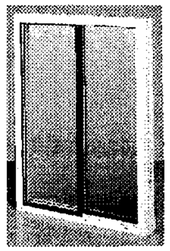
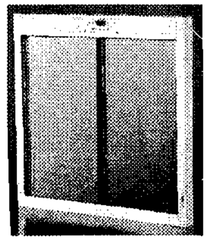
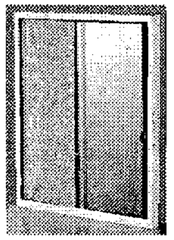
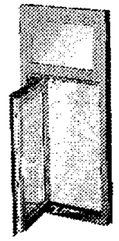
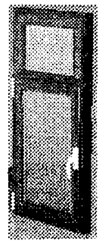
蓝光节能铝合金门窗反复启闭性能

检验项目	技术指标	试验结果
反复启闭性能	反复启闭应不少于一万次，启闭无异常，使用无障碍。	反复启闭三万次，启闭无异常，使用无障碍。

采光性能对比表

类别	窗框窗洞面积比%	备注
钢、铝窗(单框双玻)	20~30	同样的洞口，蓝光无框窗采光效率高
木、塑窗(单框双玻)	30~40	
蓝光无框窗(双玻)	≤14	

蓝光节能铝合金门窗选用表

项目 \ 门窗型号	BLT2008系列推拉窗	BLT2008系列智能推拉窗	BLT370系列推拉窗	BLT-W全无框推拉窗	BLPL150系列外平开窗	BLPL160系列内平开窗(BLPF-75系列铝木复合内平开窗)
窗外观						
特点	窗扇的设计上取消了传统的厚重边框来固定玻璃的结构方式，采用了无框形式。	窗扇的设计上取消了传统的厚重边框来固定玻璃的结构方式，采用了无框形式。	窗扇的设计上取消了传统的厚重边框来固定玻璃的结构方式，采用了无框形式。	窗扇为无框形式 不用另行加工铝合金外框，其上、下滑道在墙 体上直接安装。		
	隐藏式纱窗	隐藏式纱窗	隐藏式纱窗	隐藏式纱窗	隐藏式纱窗	隐藏式纱窗
		智能控制				
1500×1500标窗耗材	4.49kg/m²	4.77kg/m²	2.85kg/m²	1.80kg/m²	5.98kg/m²	8.50kg/m²

注:

1 无框推拉窗特点:

(1) 窗扇采用铝合金封边硅酮结构胶与中空玻璃粘接的形式，达到无框的效果。

(2) 隐藏式纱窗和纱窗脱扣装置: 纱窗隐藏于窗框料中，安装方便，外观整洁，纱窗由开窗动作带出时自动清除尘垢; 按下脱扣装置，纱窗可不随窗扇启闭，方便擦窗。

(3) 左右扇中封边齿型扣合结构，中封边采用多种加强型截面的设计形式，满足和提高抗风压的要求;

(4) 底框四道密封和挡水硅胶条的结构; 采用硅胶密封条、夹片密封毛条 来加强水密性和气密性，高低型防水截面设计，底框四道密封 条加强型设计，扣合处回旋截面设计，使推拉窗产品的 水密性和气密性达到平开窗的效果。

(5) 无框窗锁。

(6) 可选用插接式组装 。

2 智能窗特点:

(1) 电控门窗启闭:

智能推拉门窗启闭用遥控器控制门窗启闭或手控开关控制门窗启闭。

(2) 防盗报警功能:

窗户安装有微波传感器，当三米外的人接近时，窗户会自动关闭。如遇强行突入，会以高分贝声音报警、手机报警或向社区保安报警。

(3) 遇风雨自动关闭功能:

在窗外侧安装防雨传感器，当雨水落在传感器上时，窗户立即关闭。

(4) 童锁功能: 在童锁启动的情况下，可以防止儿童开启窗户。

(5) 活氧净化空气功能:

内置臭氧发生器，能够根据室内空气质量情况，向室内释放氧气。

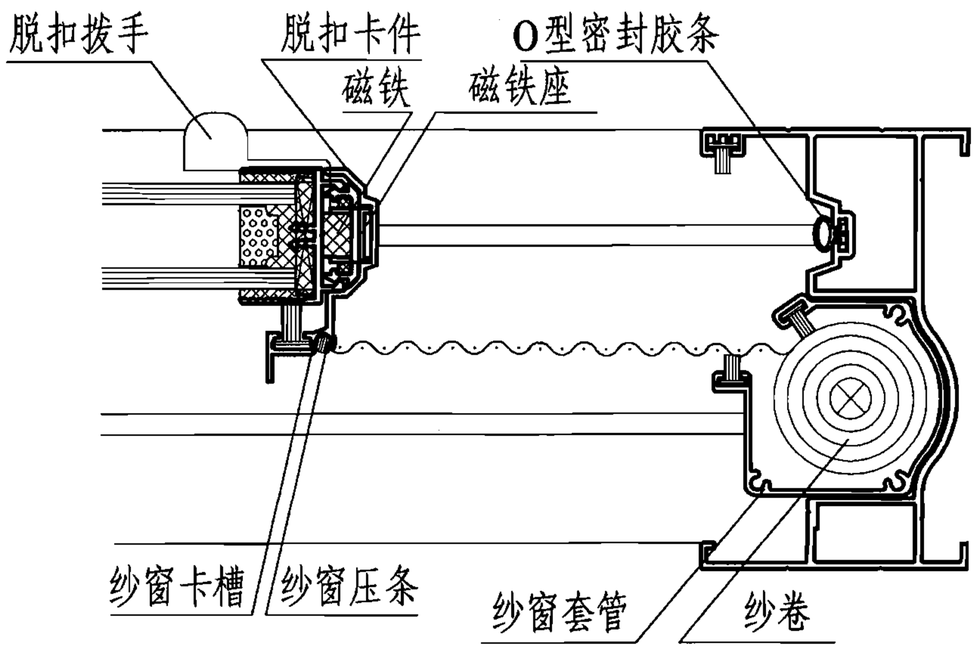
BLT2008系列无框推拉门窗说明

1 本系列型材框厚度构造尺寸为83，采用90度开榫对合，螺栓连接。

2 本图集绘制了组合门窗拼接节点图。根据工程需要，可做窗，可做门(包括阳台门和室内推拉门)，同时此系列还有隔热型材产品；可利用拼樘料组合成其他形式的固定窗、带型窗、条型窗或门连窗。

3 本系列推拉窗主要功能：

3.1 可安装隐形纱窗，实现开关窗扇时纱窗自动带出和自动收卷功能。



纱窗开启示意

3.2 可安装智能机系统，实现下列功能：

①遥控器电控启闭窗扇；　②手控按钮启闭窗扇；

③防风雨；　④防盗报警；

⑤童锁自动锁闭；　⑥活氧净化空气

4 下框（BLT-200801）有5 × 30的泄水孔。

5 本系列推拉窗的特点：

5.1 节能、节材、环保。

5.2 中空玻璃与封边扣条采用硅酮结构胶连接一次性加工成窗扇，提高了气密、水密性能。

5.3 本产品选用中空玻璃最大厚度为22，中空玻璃有各种组合方式，如：5+12A +5; 8+9 A +5; 8+6 A+8; 6+9A+6。

5.4 本产品有防止从外面拆卸的防盗块装置，保证使用的安全性。

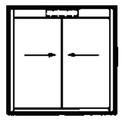
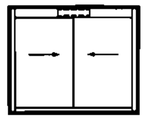
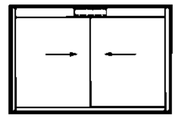
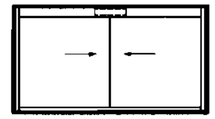
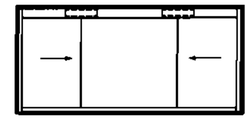
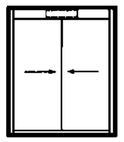
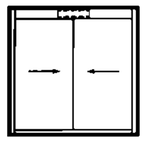
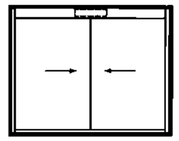
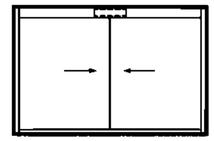
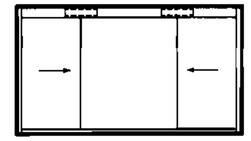
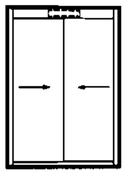
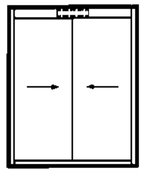
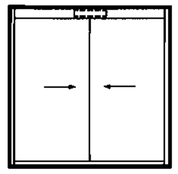
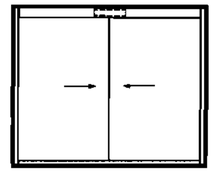
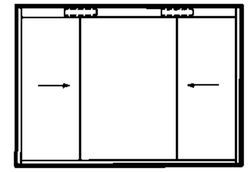
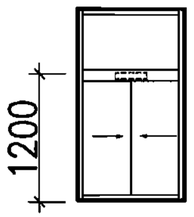
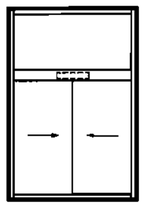
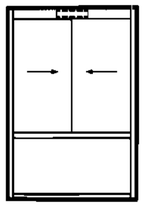
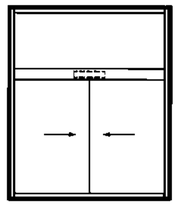
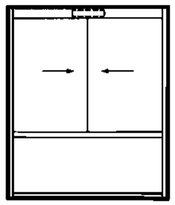
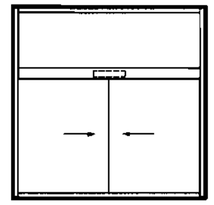
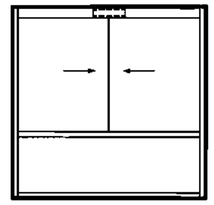
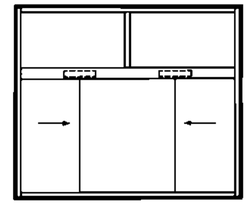
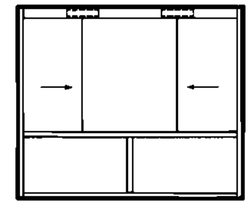
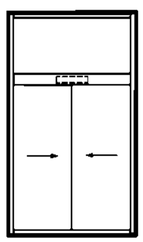
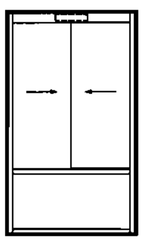
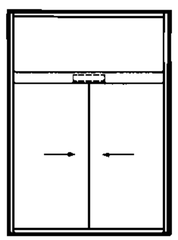
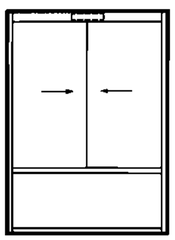
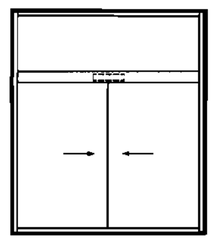
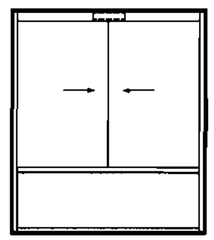
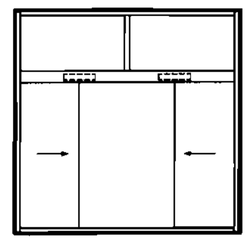
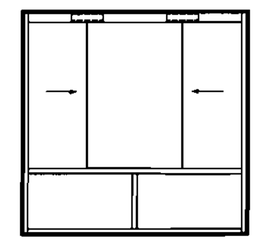
5.5 结构新颖，使用框包扇和扇包框相结合的密封方式，夹片毛条和三元乙丙胶条相结合的密封方式，下框设有排水和中间挡水筋，较低的框窗比，从而提高了窗的采光效果。从实测值可看出各方面性能均非常优异。

5.6 本产品具备了更好的采光性能，外观效果近似幕墙。

5.7 采用自主研发并拥有知识产权的窗锁，当关窗时，窗扇到位时自动锁上，开锁时只要按住手柄，锁勾自动脱开。

5.8 设置安装隐形纱窗，整个机构隐藏在窗框料内，关窗后看不到纱窗的任何构件，扣上挂钩装置，开窗时自动拉开纱网，按下脱扣装置，纱窗可随时脱开，便于擦窗。

5.9 门窗与洞口安装见本图集第45页。

洞高 \ 洞宽	1000	1200	1500	1800	2100
900	 TCG-1009	 TCG-1209	 TCG-1509	 TCG-1809	 TCG1-2109
1200	 TCG-1012	 TCG-1212	 TCG-1512	 TCG-1812	 TCG1-2112
1500	 TCG-1015	 TCG-1215	 TCG-1515	 TCG-1815	 TCG1-2115
1800	1200  TCG-1018	 TCG1-1218  TCG2-1218	 TCG1-1518  TCG2-1518	 TCG1-1818  TCG2-1818	 TCG1-2118  TCG2-2118
2100	1500	 TCG1-1221  TCG2-1221	 TCG1-1521  TCG2-1521	 TCG1-1821  TCG2-1821	 TCG1-2121  TCG2-2121

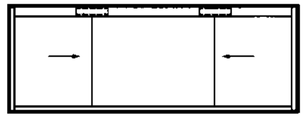
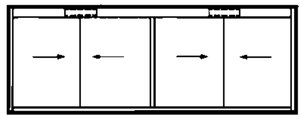
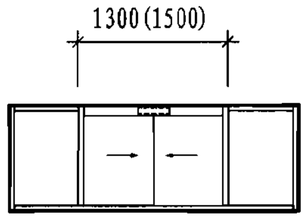
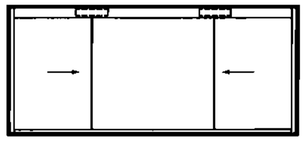
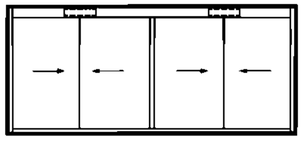
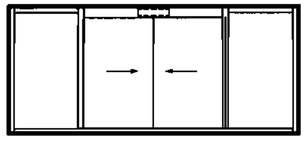
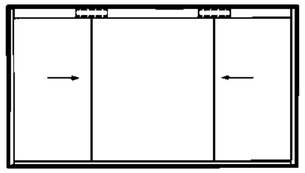
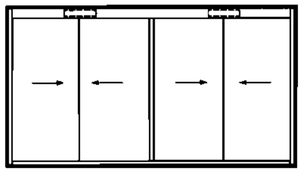
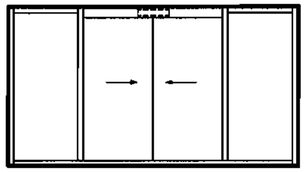
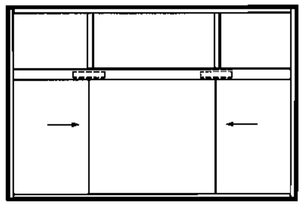
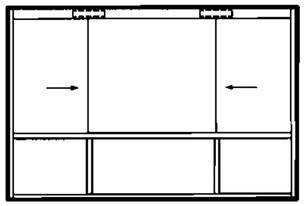
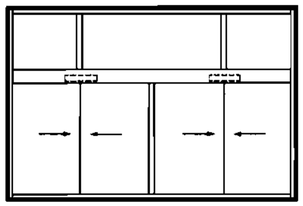
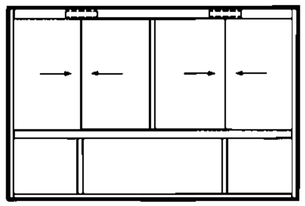
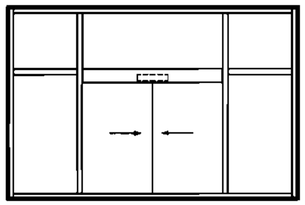
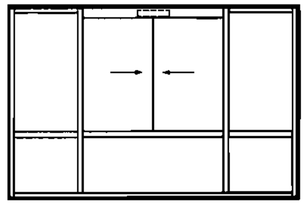
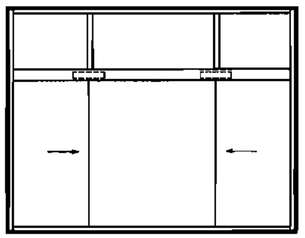
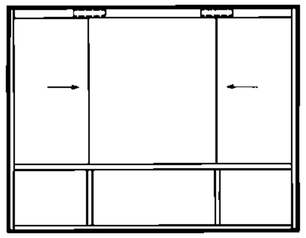
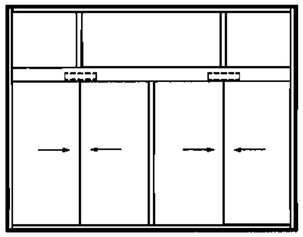
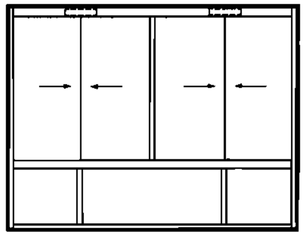
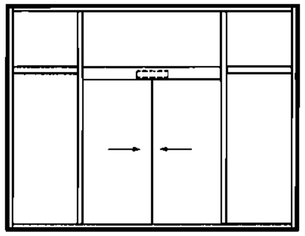
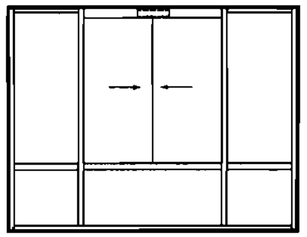
注：1. 非智能推拉窗立面图同智能推拉窗立面图，只需将放置智能机之型材换为普通型材即可。
2. 活动窗扇宽度不宜大于900，高度不宜大于1500。

BLT2008系列无框智能推拉窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	10

洞高 \ 洞宽	2100	2400
900	≤900 TCG2-2109	TCG1-2409 TCG2-2409
1200	TCG2-2112	TCG1-2412 TCG2-2412
1500	TCG2-2115	TCG1-2415 TCG2-2415
1800	1200 TCG3-2118 TCG4-2118	TCG1-2418 TCG2-2418 TCG3-2418 TCG4-2418
2100	≤1500 TCG3-2121 TCG4-2121	TCG1-2421 TCG2-2421 TCG3-2421 TCG4-2421

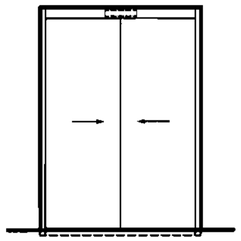
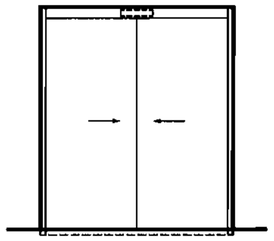
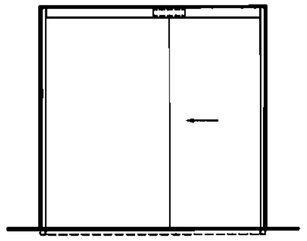
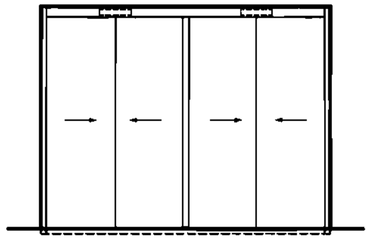
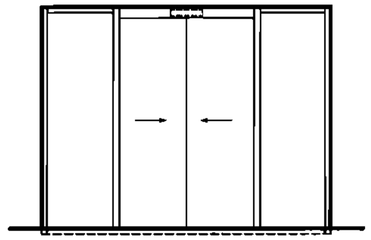
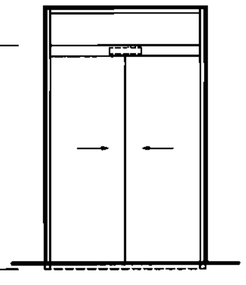
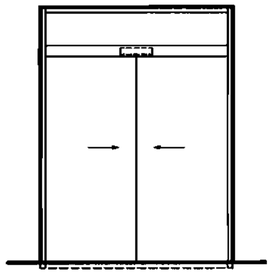
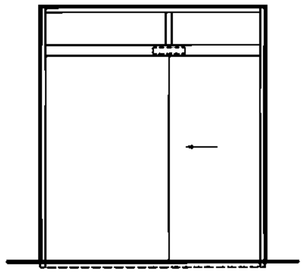
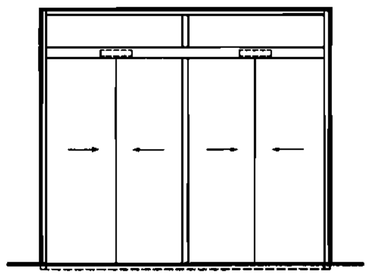
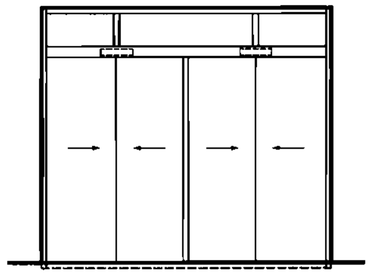
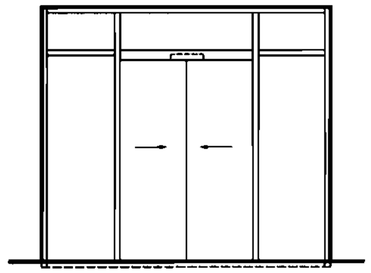
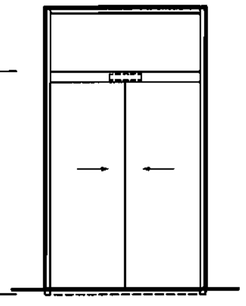
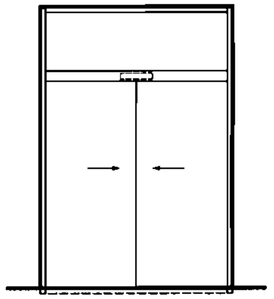
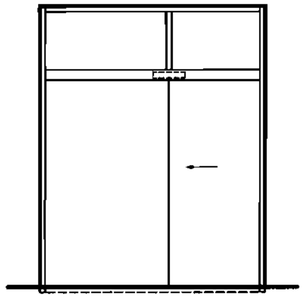
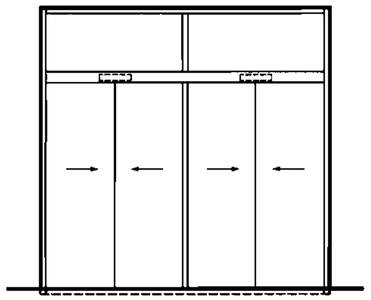
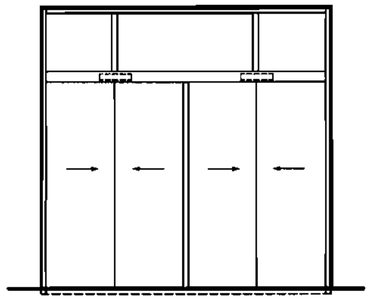
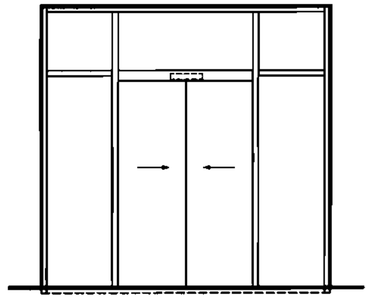
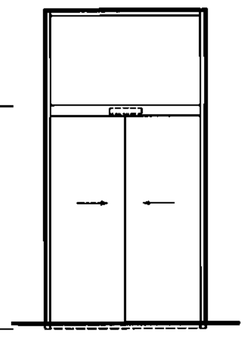
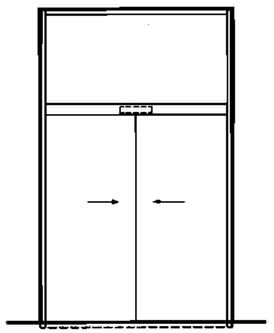
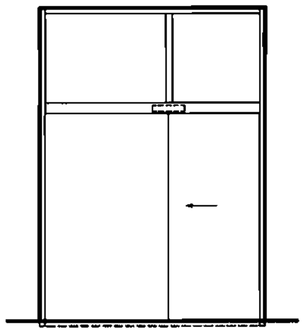
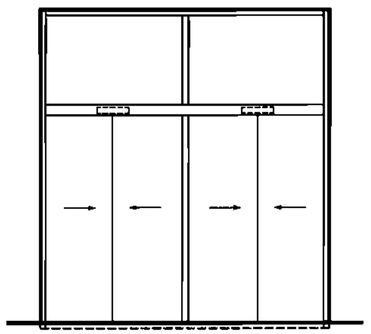
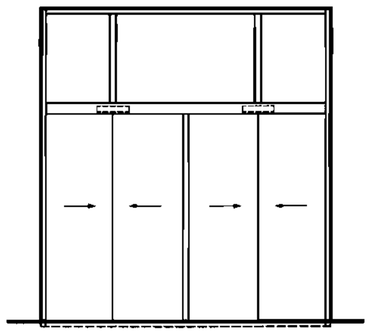
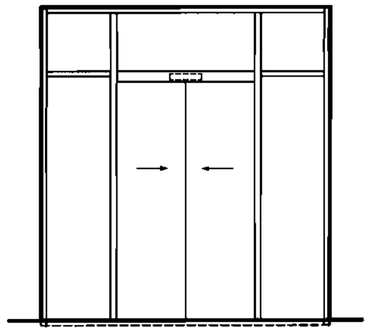
注:1.四扇推拉窗可安装一套智能控制系统（控制中间两扇）或两套智能控制系统（同时控制四个推拉扇）。
2.不能制作三扇三等分窗型。活动窗扇重量不宜大于50Kg。宽度不宜大于900,高度不宜大于1500。

BLT2008系列无框智能推拉窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	11

洞宽 / 洞高	2700(3000宽洞口立面相同)		
900	 TCG1-2709	 TCG2-2709	 TCG3-2709
1200	 TCG1-2712	 TCG2-2712	 TCG3-2712
1500	 TCG1-2715	 TCG2-2715	 TCG3-2715
1800	1200  TCG1-2718	 TCG2-2718	 TCG3-2718
	 TCG4-2718	 TCG5-2718	 TCG6-2718
2100	≤1500  TCG1-2721	 TCG2-2721	 TCG3-2721
	 TCG4-2721	 TCG5-2721	 TCG6-2721

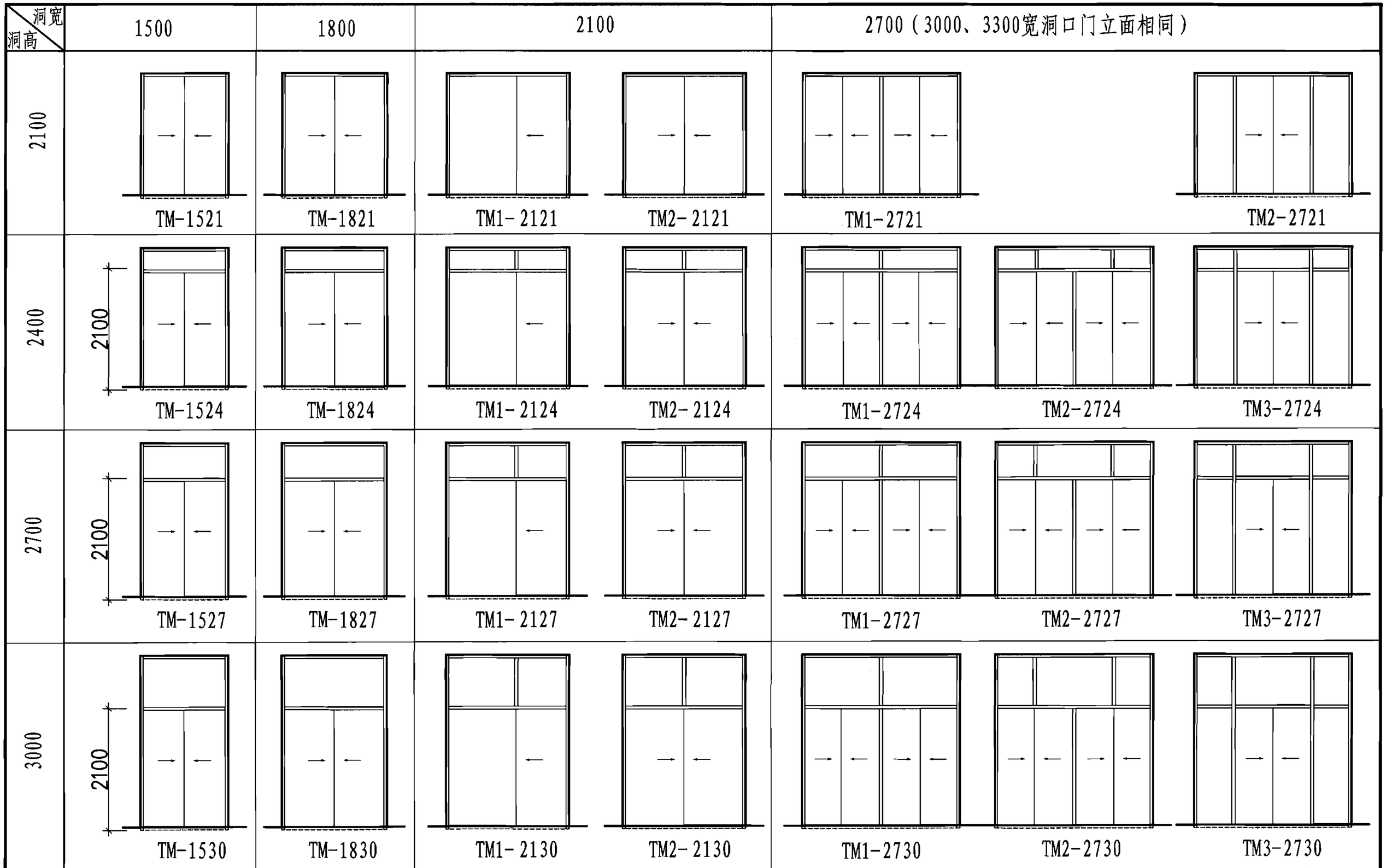
注:1.四扇推拉窗可安装一套智能控制系统（控制中间两扇）或两套智能控制系统（同时控制四个推拉扇）
2.不能制作三扇三等分窗型。活动窗扇重量不宜大于50Kg。宽度不宜大于900,高度不宜大于1500。

BLT2008系列无框智能推拉窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	12

洞高 \ 洞宽	1500	1800	2100	2700（3000、3300宽洞口门立面相同）		
2100	 TMG-1521	 TMG-1821	 TMG-2121	 TMG1-2721		 TMG2-2721
2400	2100  TMG-1524	 TMG-1824	 TMG-2124	 TMG1-2724	 TMG2-2724	 TMG3-2724
2700	2100  TMG-1527	 TMG-1827	 TMG-2127	 TMG1-2727	 TMG2-2727	 TMG3-2727
3000	2100  TMG-1530	 TMG-1830	 TMG-2130	 TMG1-2730	 TMG2-2730	 TMG3-2730

注:1.四扇推拉门可安装一套智能控制系统（控制中间两扇）或两套智能控制系统（同时控制四个推拉扇）。
2.最大活动门扇不宜大于100Kg，带纱扇时最大门扇宽度不大于880,高度不宜大于2100。

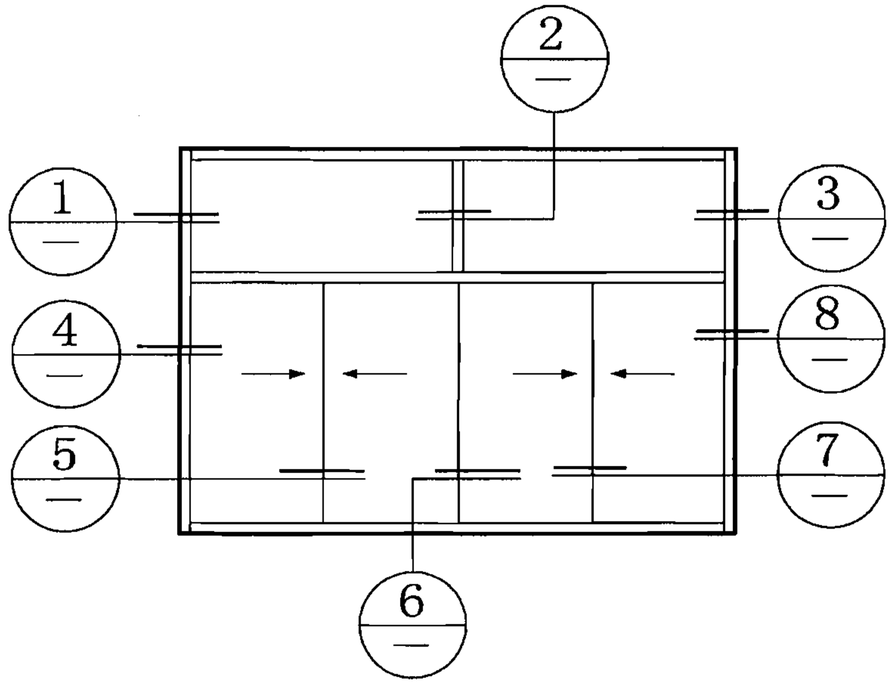
BLT2008系列无框智能推拉门立面图								图集号	07CJ12
审核	焦冀曾	校对	杨兴义	设计	余金璋			页	13



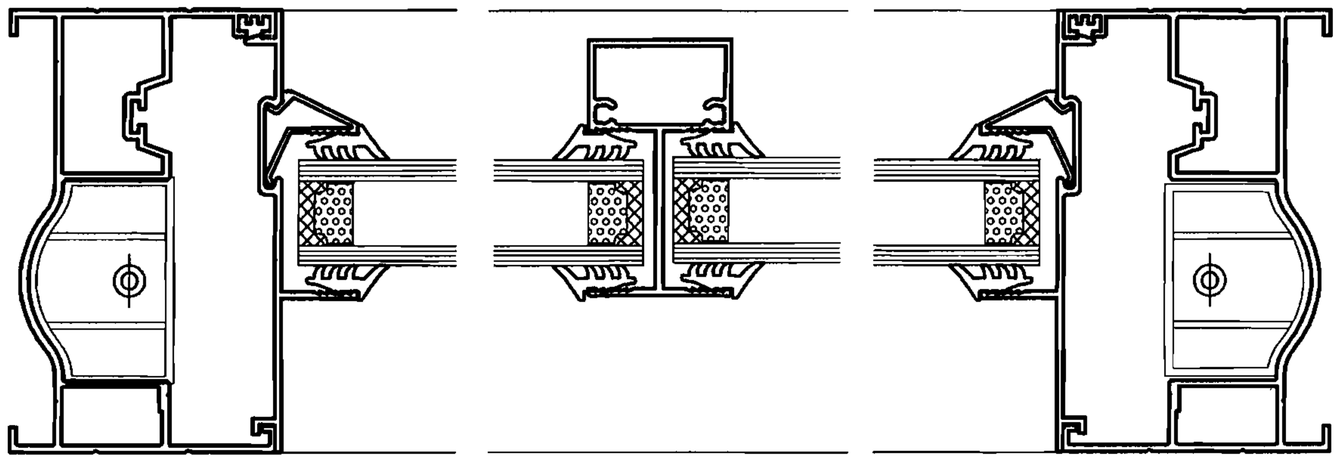
注:1.两扇推拉门纱扇可安装于左侧，也可安装于右侧。

2.最大活动门扇不宜大于100Kg。带纱扇时最大门扇宽度不大于880,高度不宜大于2100。

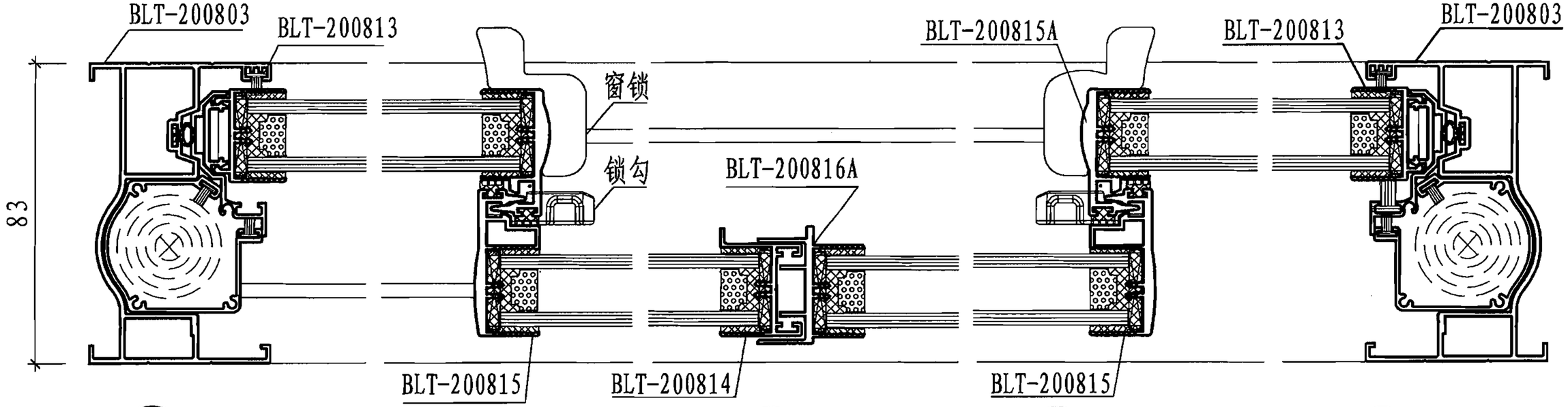
BLT2008系列无框基本推拉门立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	14



窗立面图

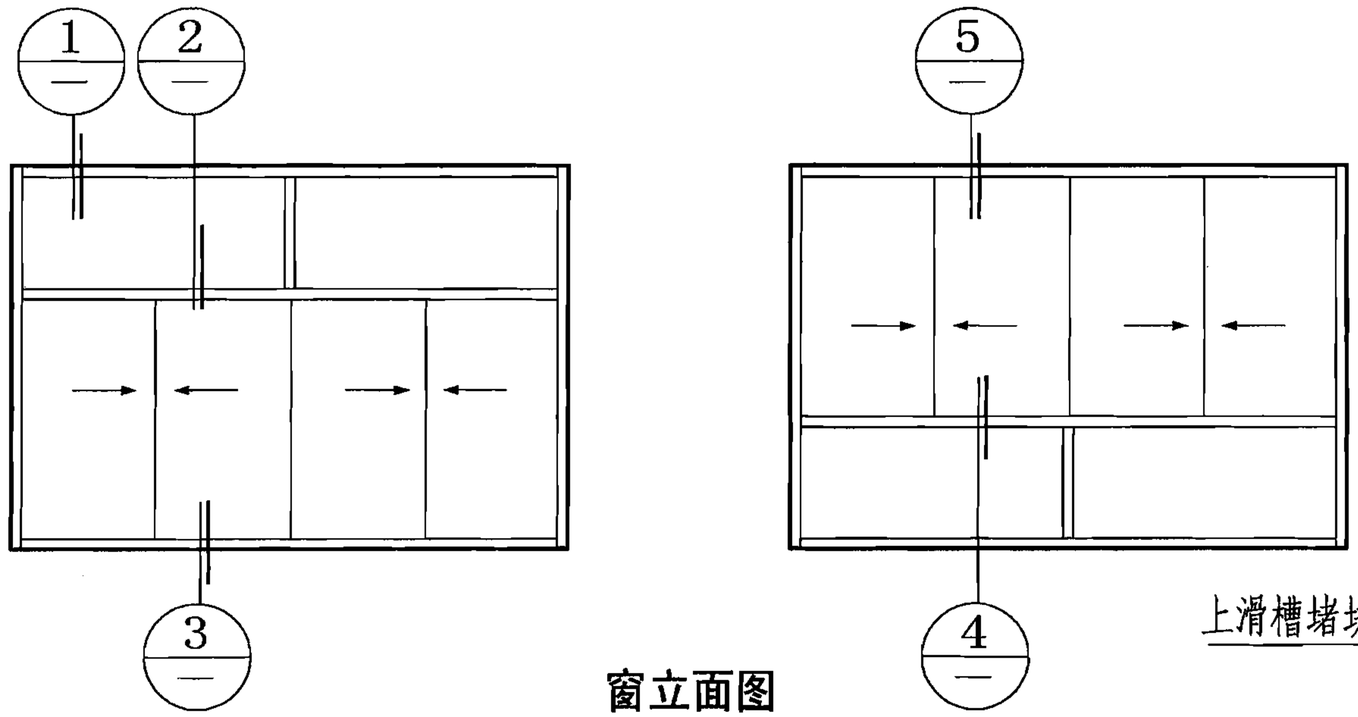


1 2 3

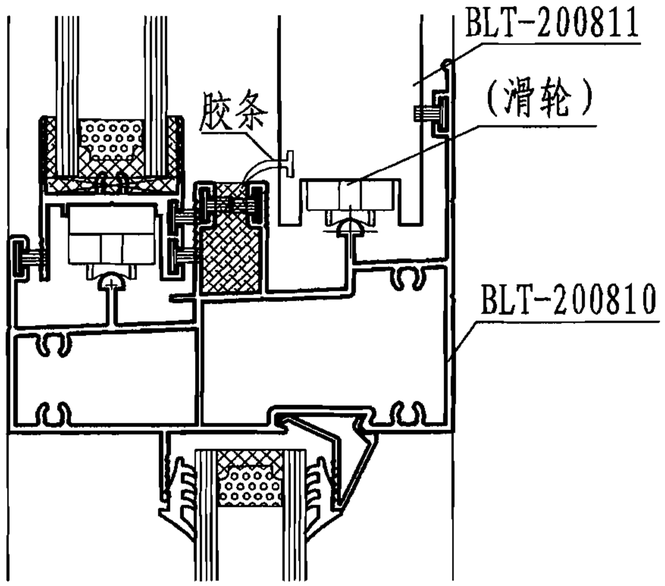


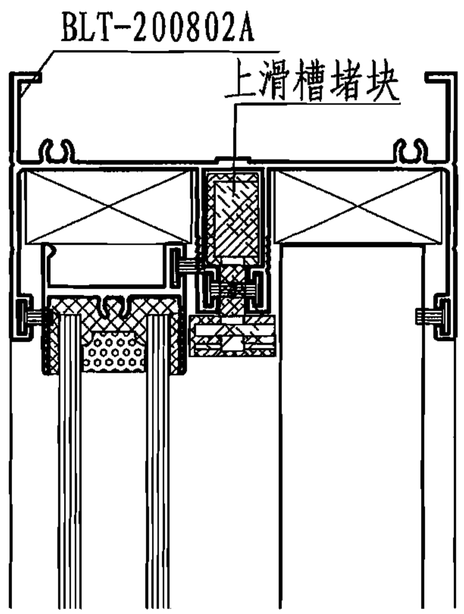
4 5 6 7 8

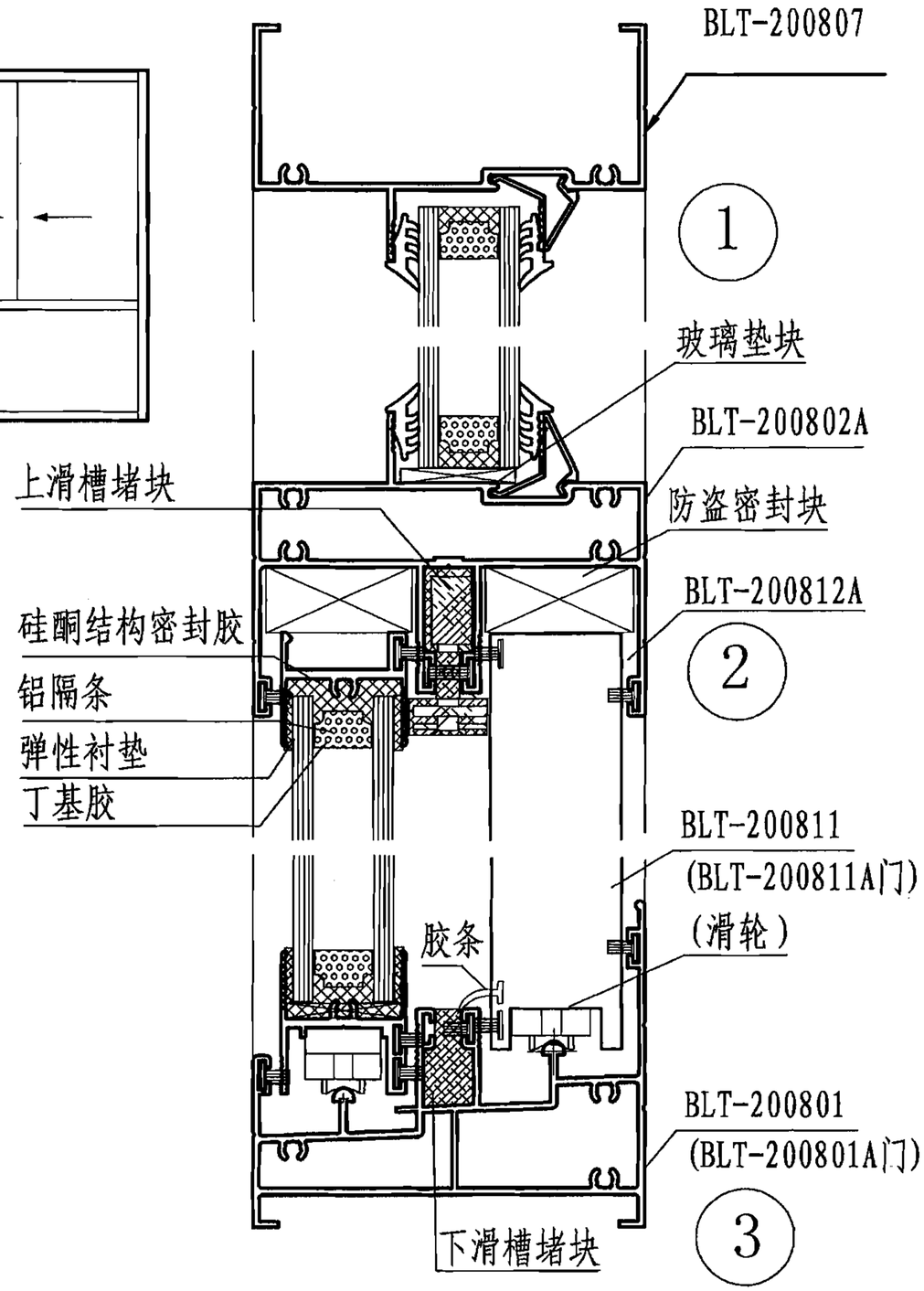
BLT2008系列无框推拉窗(门)节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	15



窗立面图



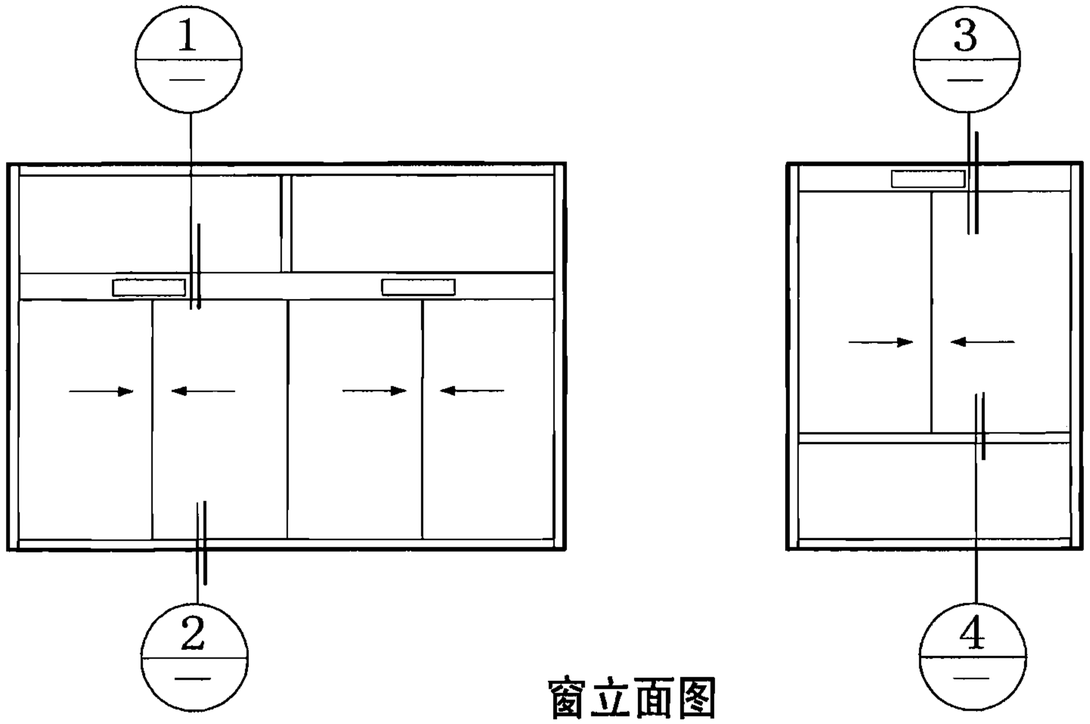




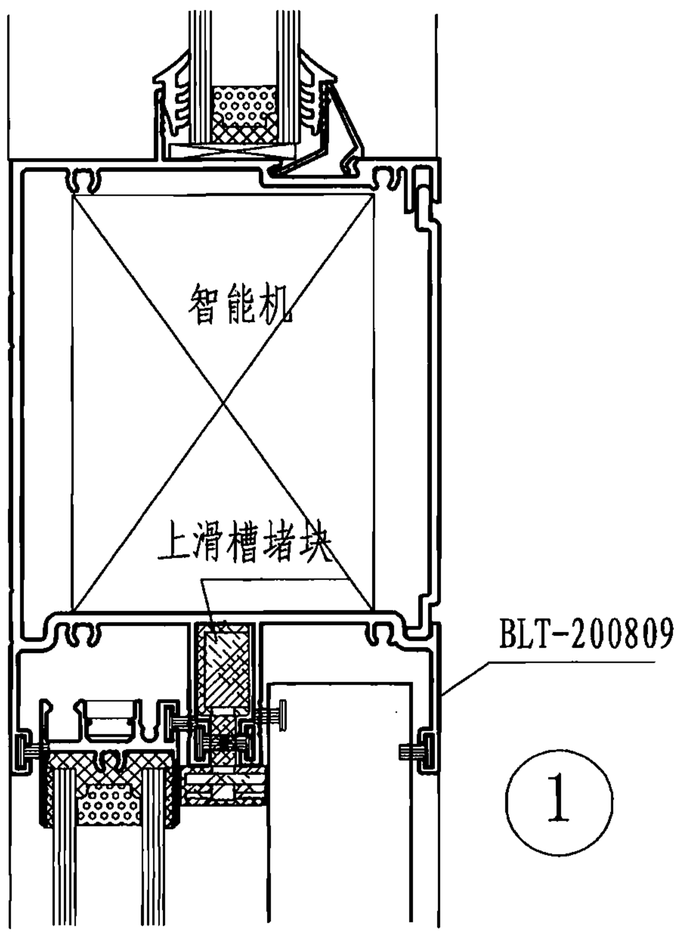
4

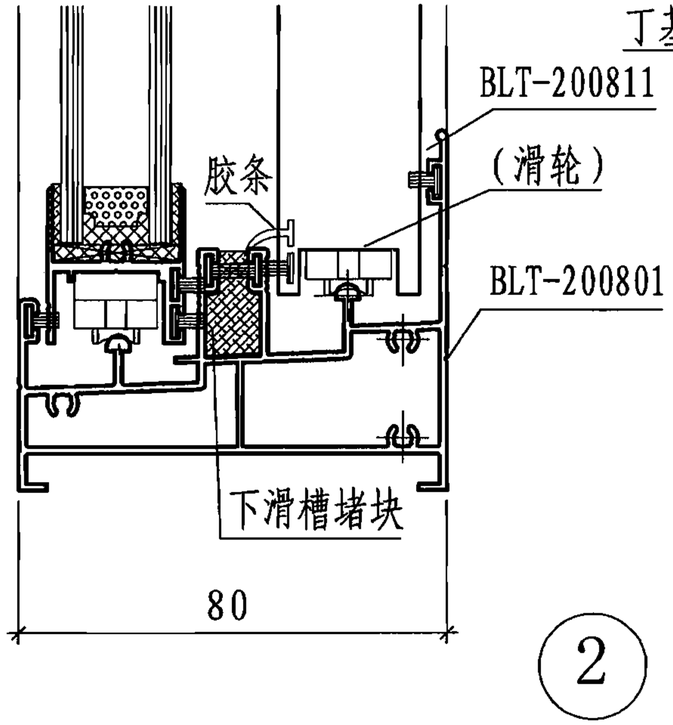
5

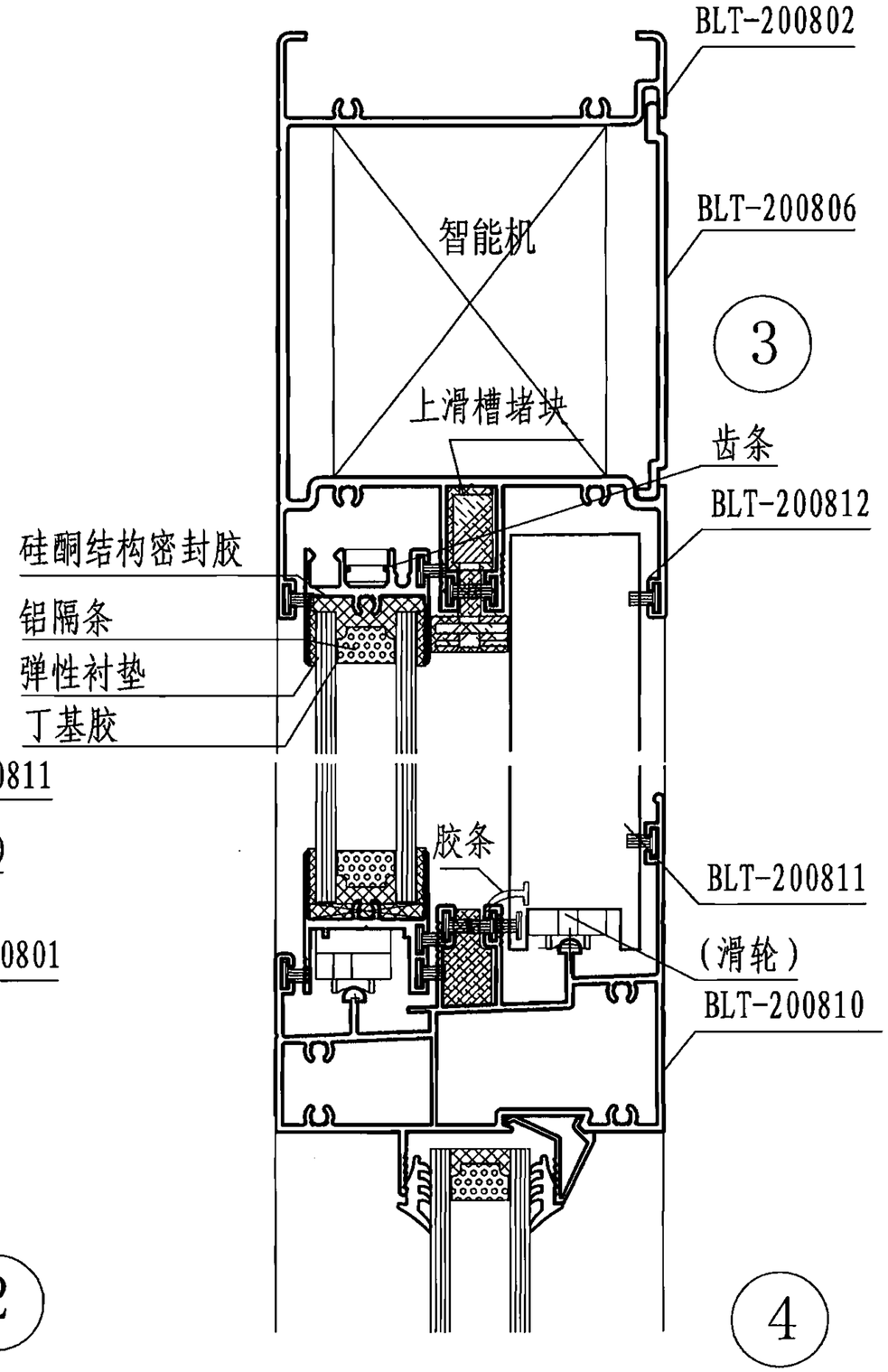
BLT2008系列无框推拉窗(门)节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	16



窗立面图

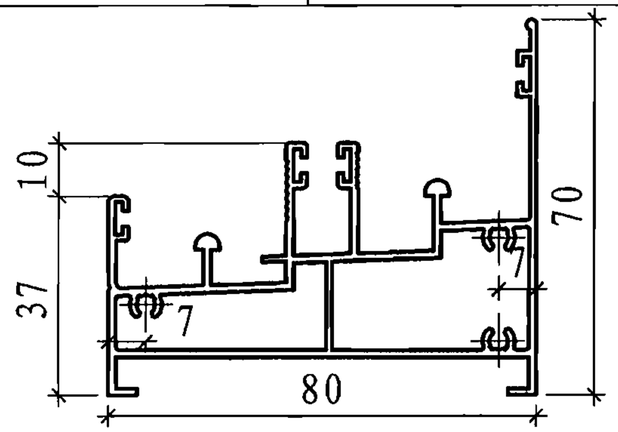






BLT2008系列无框推拉窗(门)节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	17

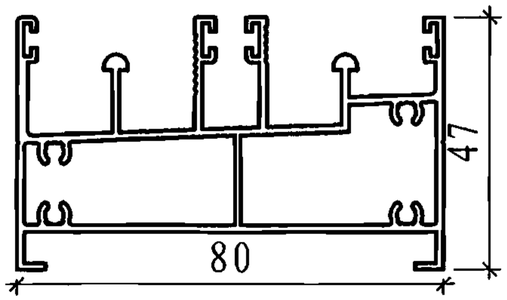
代号 BLT-200801	线密度 1.465(kg/m)



基本壁厚 1.4mm

代号BLT-200801A	线密度 1.53(kg/m)

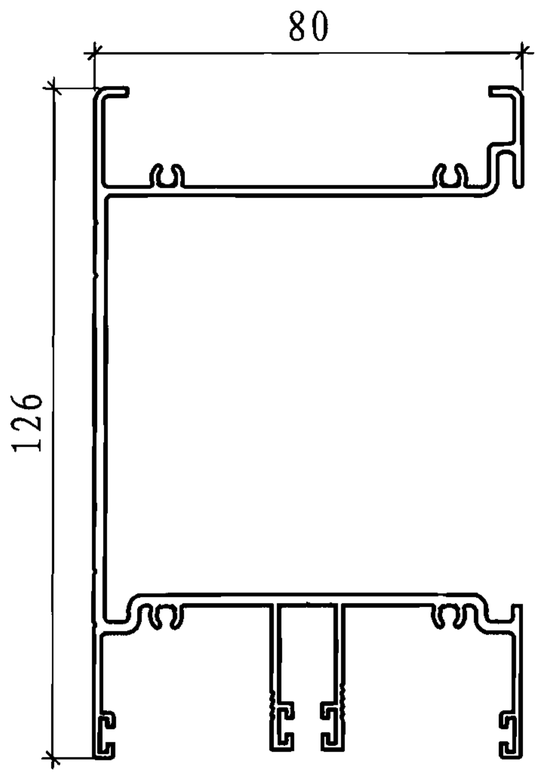
阳台门用



基本壁厚 2.0mm

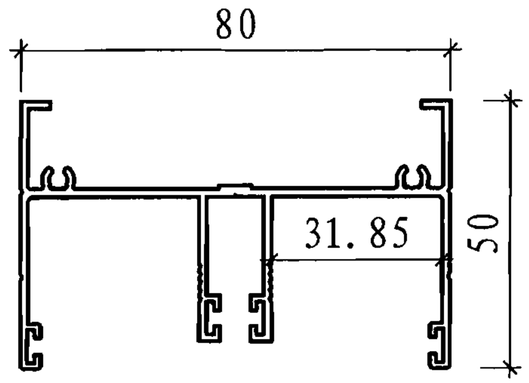
代号 BLT-200802	线密度 2.106(kg/m)

智能窗用



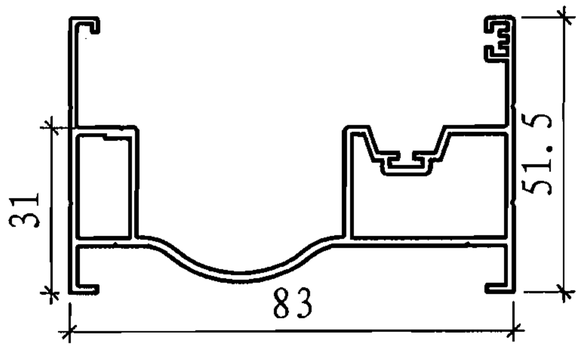
基本壁厚 2.0mm

代号 BLT-200802A	线密度 1.04(kg/m)



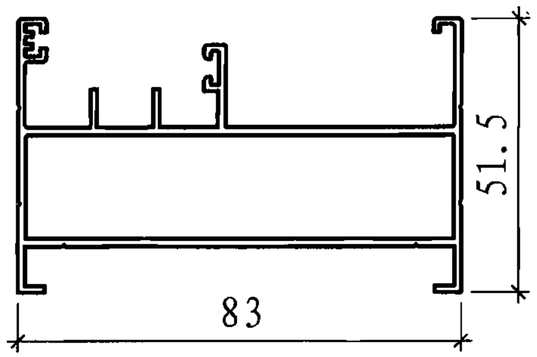
基本壁厚 1.4mm

代号 BLT-200803	线密度 1.14(kg/m)



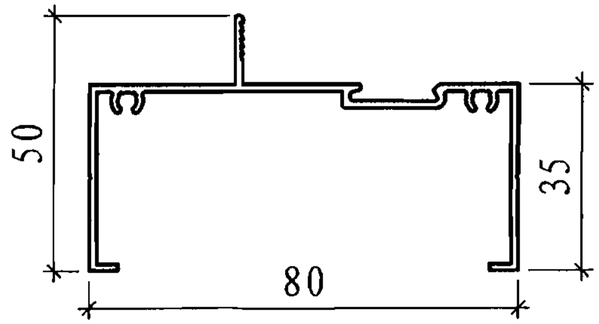
基本壁厚 1.4mm

代号 BLT-200804	线密度 1.20(kg/m)



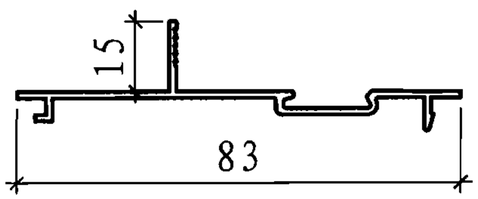
基本壁厚 1.4mm

代号 BLT-200807	线密度 0.710(kg/m)



基本壁厚 1.4mm

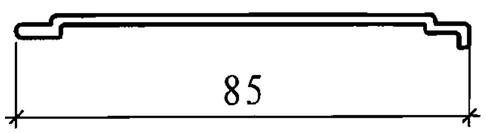
代号 BLT-200808	线密度 0.383(kg/m)



基本壁厚 1.2mm

代号 BLT-06	线密度 0.502(kg/m)

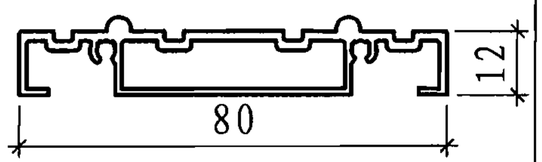
智能窗用



基本壁厚 1.8mm

代号BLT-200801B	线密度 0.834(kg/m)

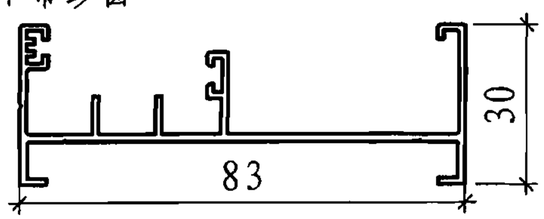
室内移门用



基本壁厚 1.8mm

代号 BLT-200804A	线密度 0.716(kg/m)

不带纱窗

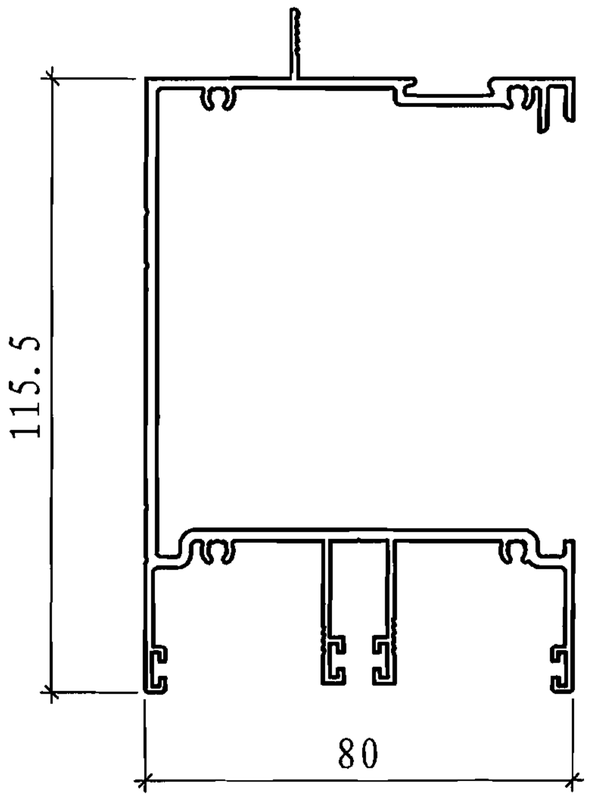


基本壁厚 1.4mm

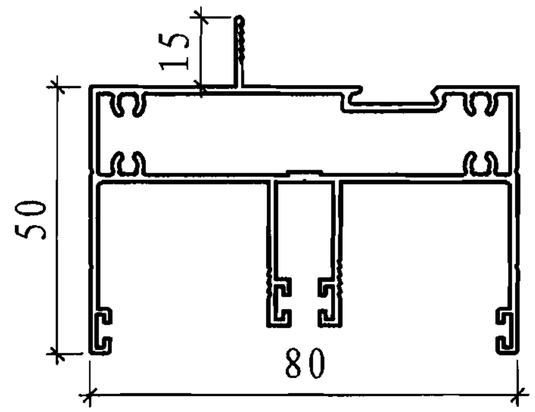
BLT2008系列普通型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	18

代号 BLT-200809	线密度 2.086(kg/m)	代号 BLT-200809A	线密度 1.445(kg/m)	代号 BLT-200810	线密度 1.62(kg/m)	代号 BLT-200824	线密度 1.029(kg/m)

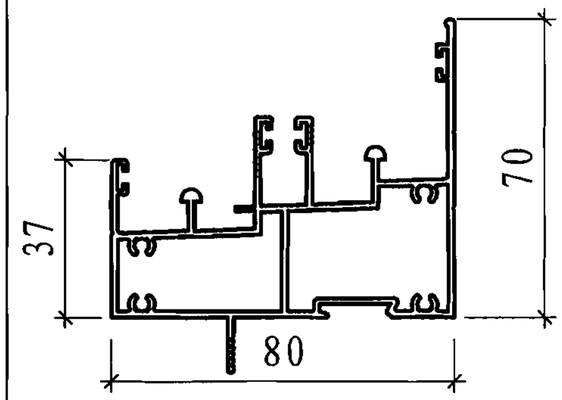
智能窗用



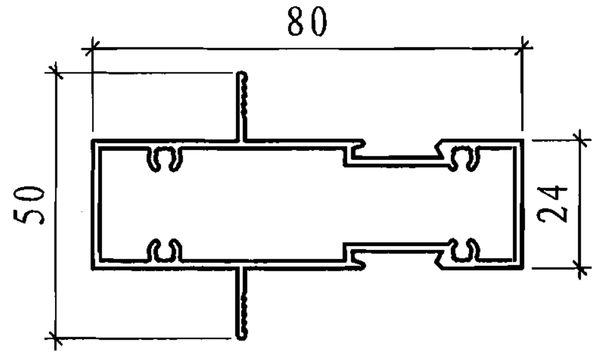
基本壁厚2.0mm



基本壁厚1.4mm

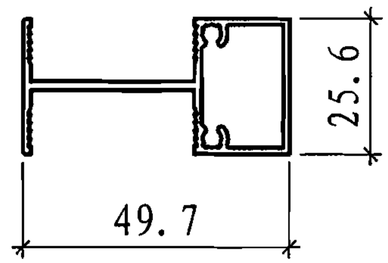


基本壁厚1.4mm

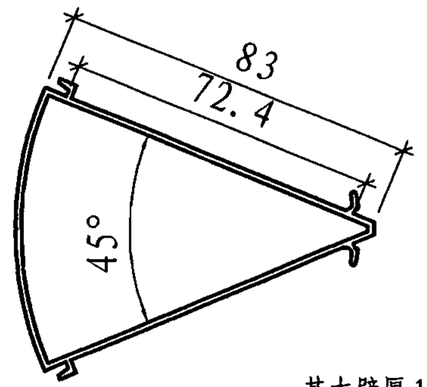


基本壁厚1.4mm

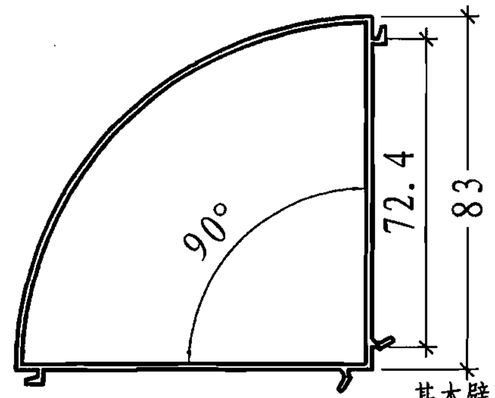
代号 BLT-200824A	线密度 0.524(kg/m)	代号 BLT-200826	线密度 0.954(kg/m)	代号 BLT-200827	线密度 1.178(kg/m)



基本壁厚1.4mm

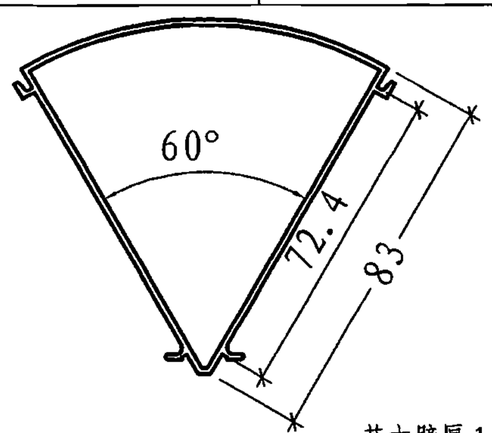


基本壁厚1.4mm

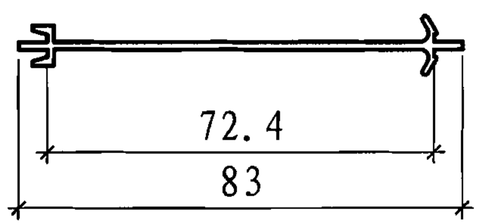


基本壁厚1.4mm

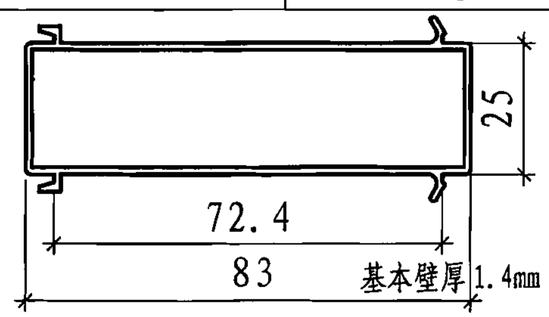
代号 BLT-200828	线密度 1.037(kg/m)	代号 BLT-200821	线密度 0.360(kg/m)	代号 BLT-200829	线密度 0.847(kg/m)	代号 BLT-200805	线密度 0.350(kg/m)



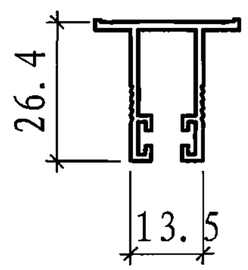
基本壁厚1.4mm



基本壁厚1.4mm



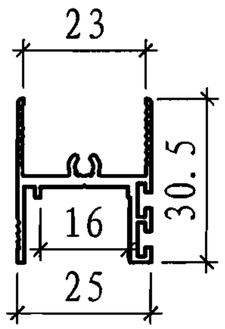
基本壁厚1.4mm



基本壁厚1.4mm

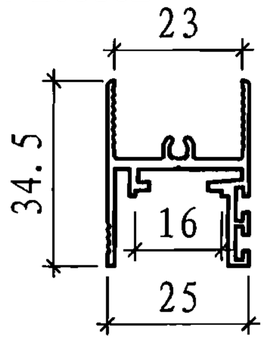
BLT2008系列普通型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	19

代号 BLT-200811	线密度 0.38(kg/m)	代号 BLT-200811A	线密度 0.464(kg/m)	代号 BLT-200812	线密度 0.37(kg/m)	代号 BLT-200815	线密度 0.510(kg/m)



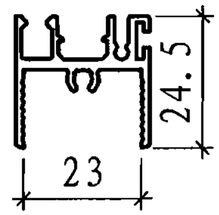
基本壁厚 2.0mm

配滑轮BLT-200862

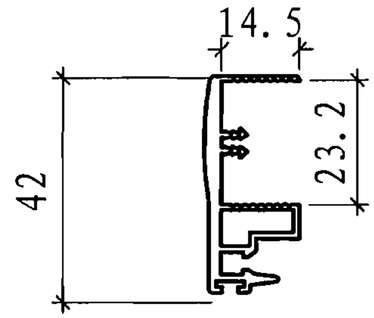


基本壁厚 2.0mm

智能窗用

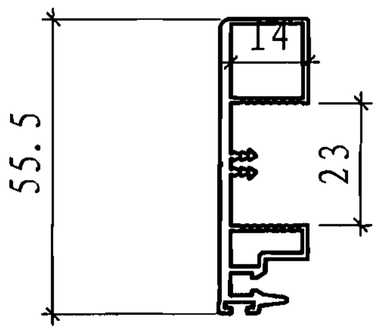


基本壁厚 1.4mm

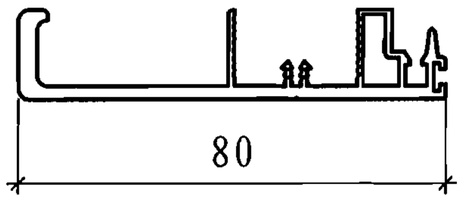


基本壁厚 2.3mm

代号 BLT-200815D	线密度 0.733(kg/m)	代号 BLT-200815E	线密度 0.905(kg/m)	代号 BLT-200816B	线密度 1.049(kg/m)	代号 BLT-200860-20	线密度 0.43(kg/m)

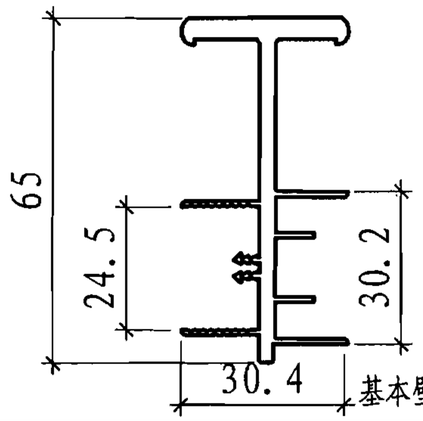


基本壁厚 2.0mm

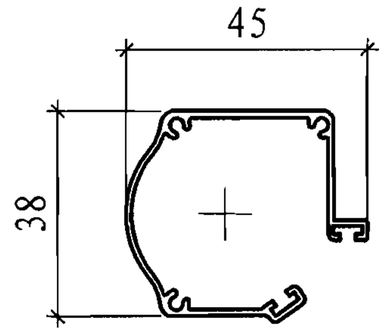


基本壁厚 2.5mm

加强型

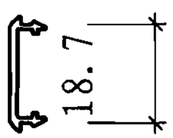


基本壁厚 3.0mm

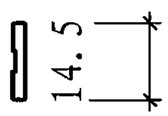


基本壁厚 1.0mm

代号 BLT-200817	线密度 0.108(kg/m)	代号 BLT-200818	线密度 0.084(kg/m)	代号 BL-3013	线密度 0.23(kg/m)	代号 BL-2320	线密度 0.32(kg/m)

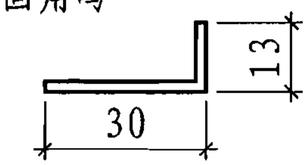


基本壁厚 1.4mm



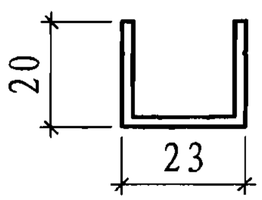
基本壁厚 1.4mm

制作中固角码



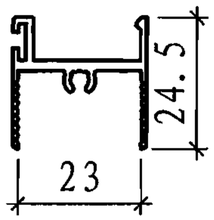
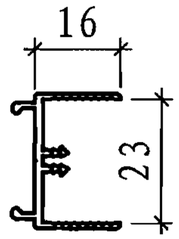
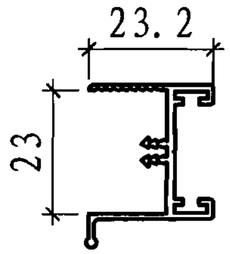
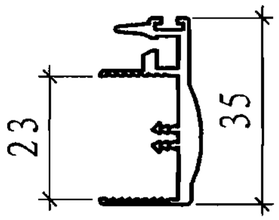
基本壁厚 2.0mm

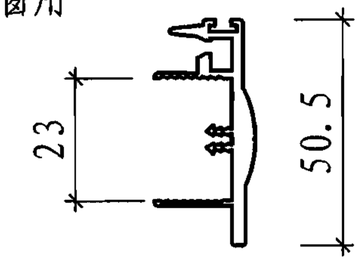
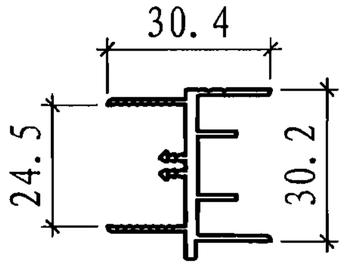
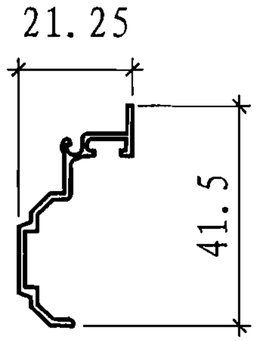
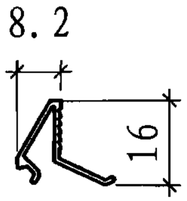
制作隐中固角码

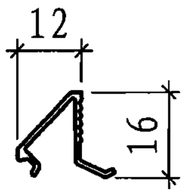


基本壁厚 2.0mm

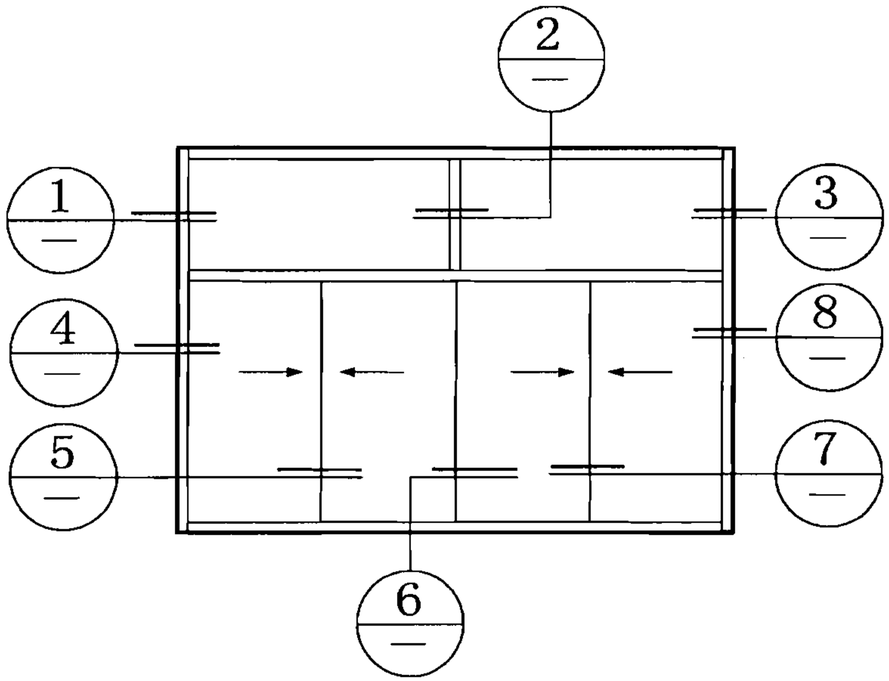
BLT2008系列普通型材断面图	图集号	07CJ12
审核 焦冀曾 校对 杨兴义 设计 余金璋	页	20

代号 BLT-200812A	线密度 0.29(kg/m)	代号 BLT-200813	线密度 0.227(kg/m)	代号 BLT-200814	线密度 0.297(kg/m)	代号 BLT-200815A	线密度 0.454(kg/m)
 基本壁厚 1.5mm		 基本壁厚 1.5mm		 基本壁厚 1.5mm		纱窗用  基本壁厚 2.0mm	

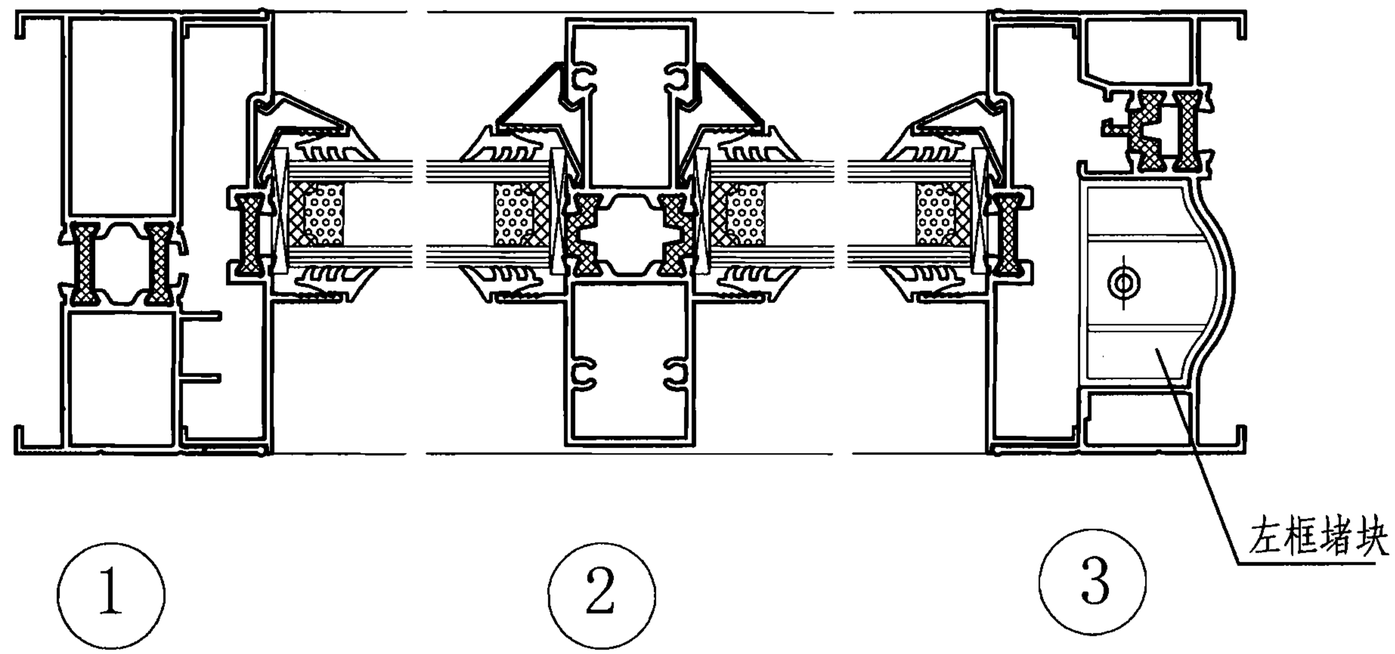
代号 BLT-200815C	线密度 0.64(kg/m)	代号 BLT-200816A	线密度 0.413(kg/m)	代号 BLT-200819	线密度 0.224(kg/m)	代号 BLT-31	线密度 0.012(kg/m)
智能窗用  基本壁厚 2.0mm		 基本壁厚 2.3mm		 基本壁厚 1.2mm		 基本壁厚 0.9mm	

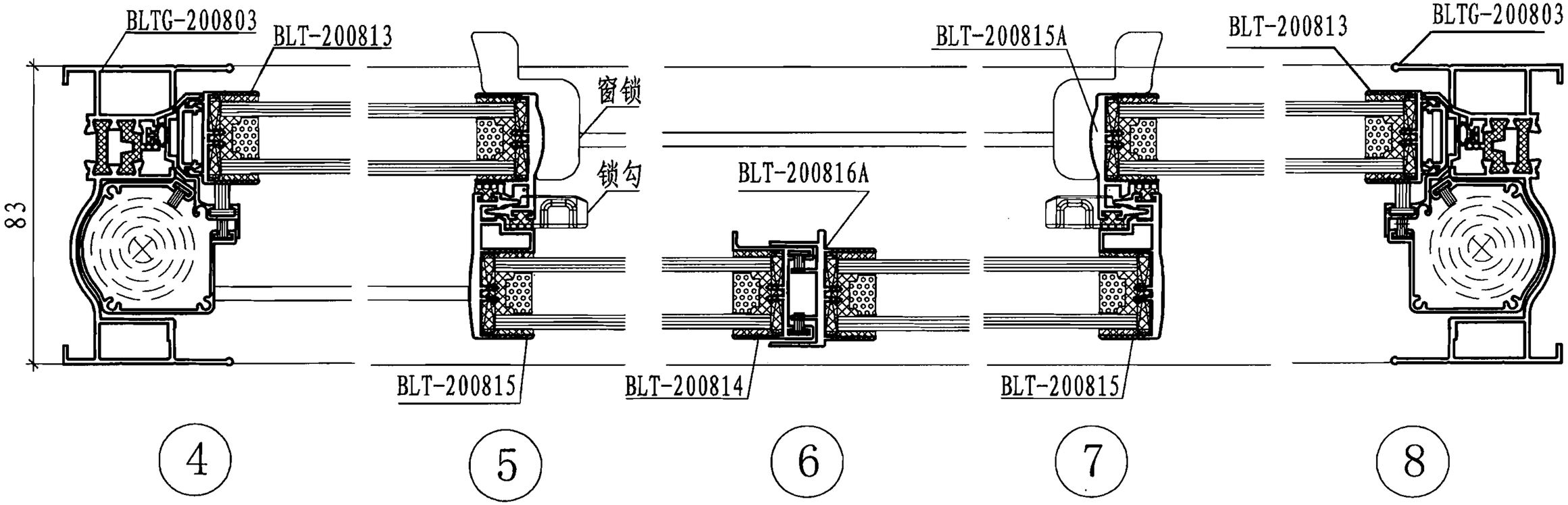
代号 BLT-31A	线密度 0.012(kg/m)						
 基本壁厚 0.9mm							

BLT2008系列普通型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	21

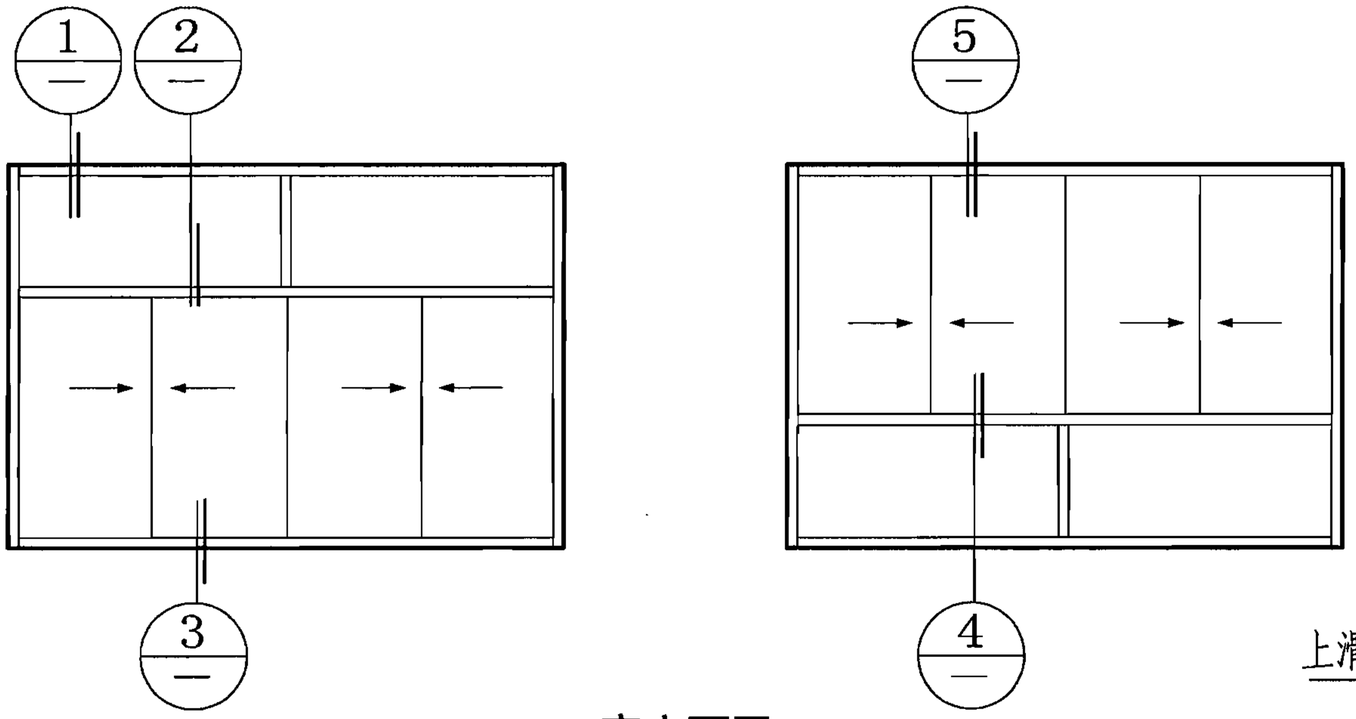


窗立面图

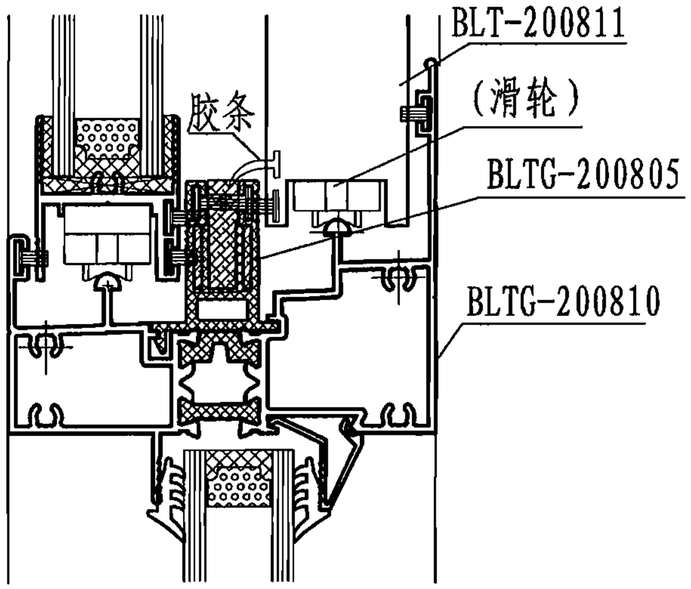




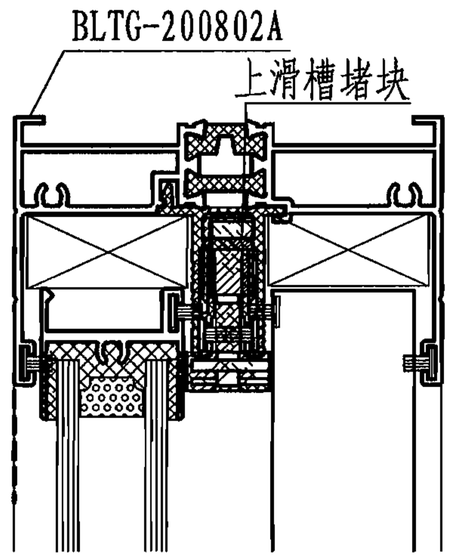
BLT2008系列断桥无框推拉窗（门）节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	22



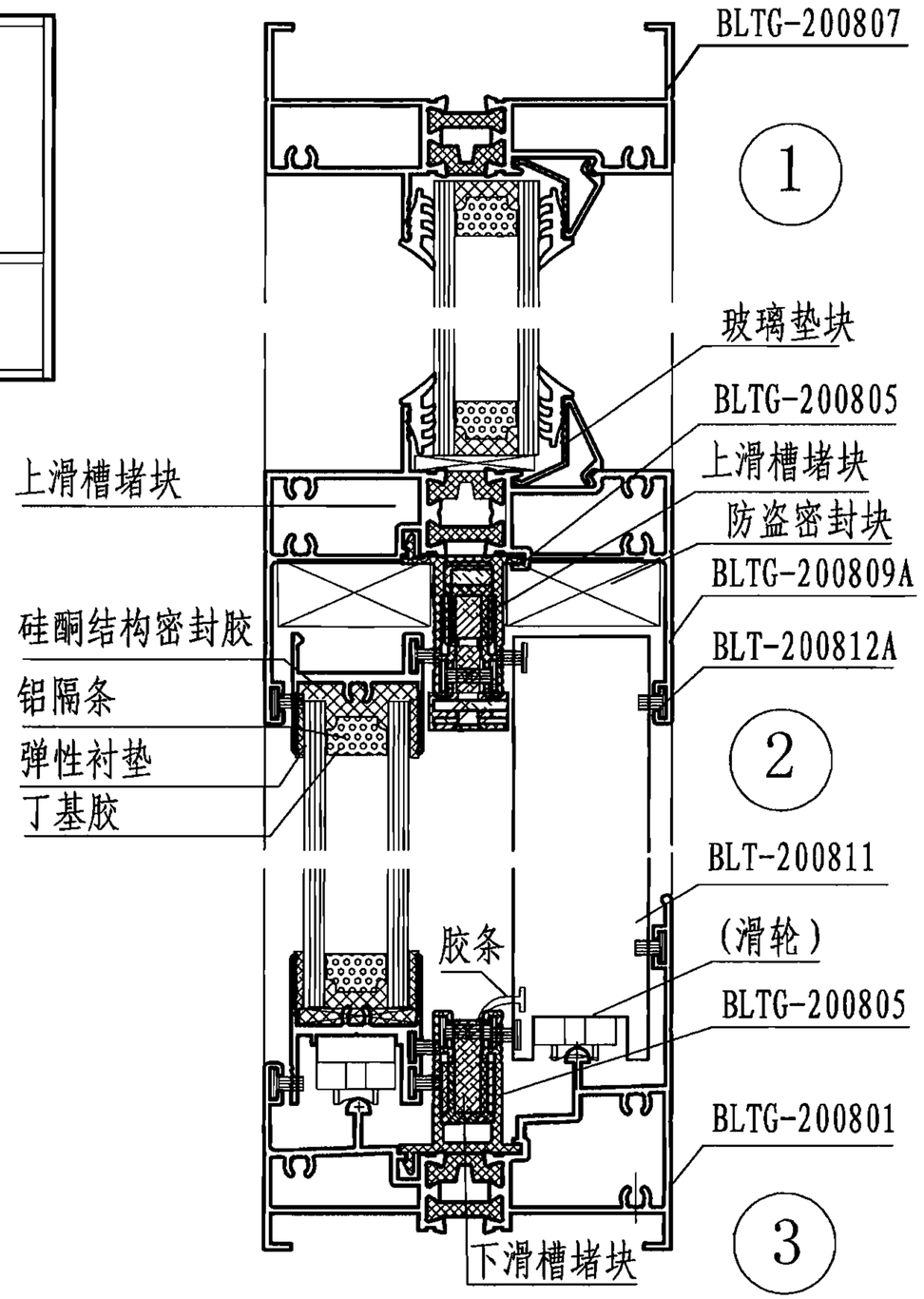
窗立面图



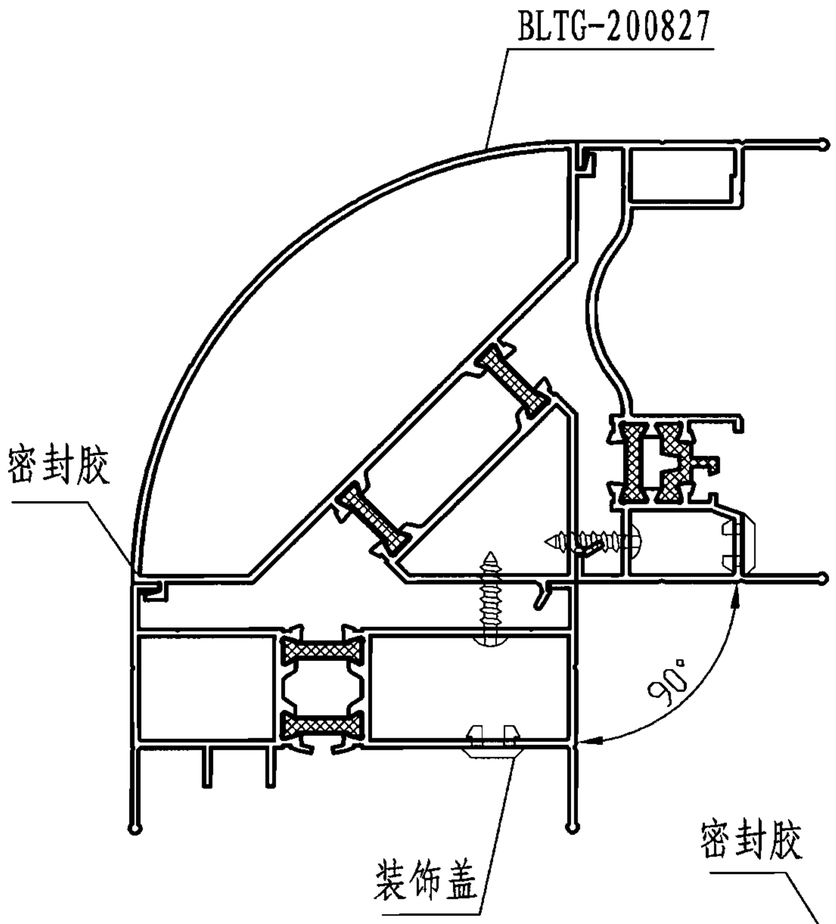
4



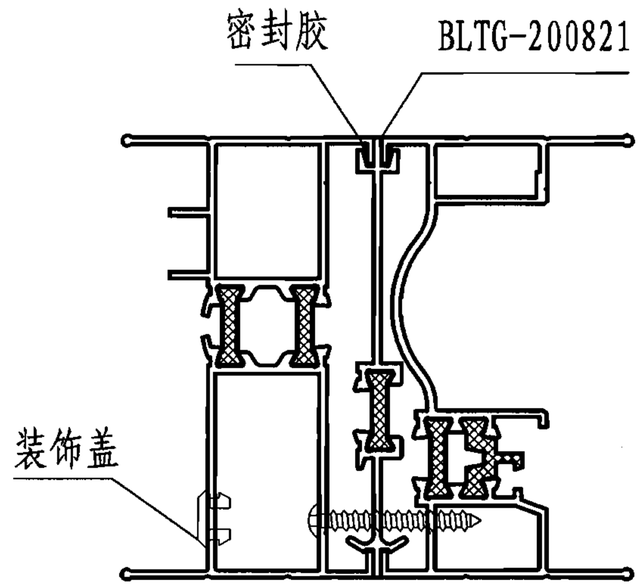
5

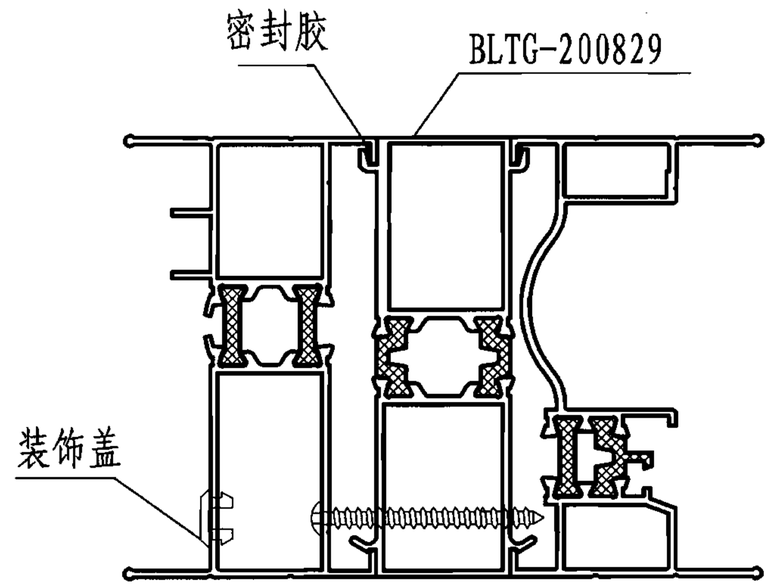


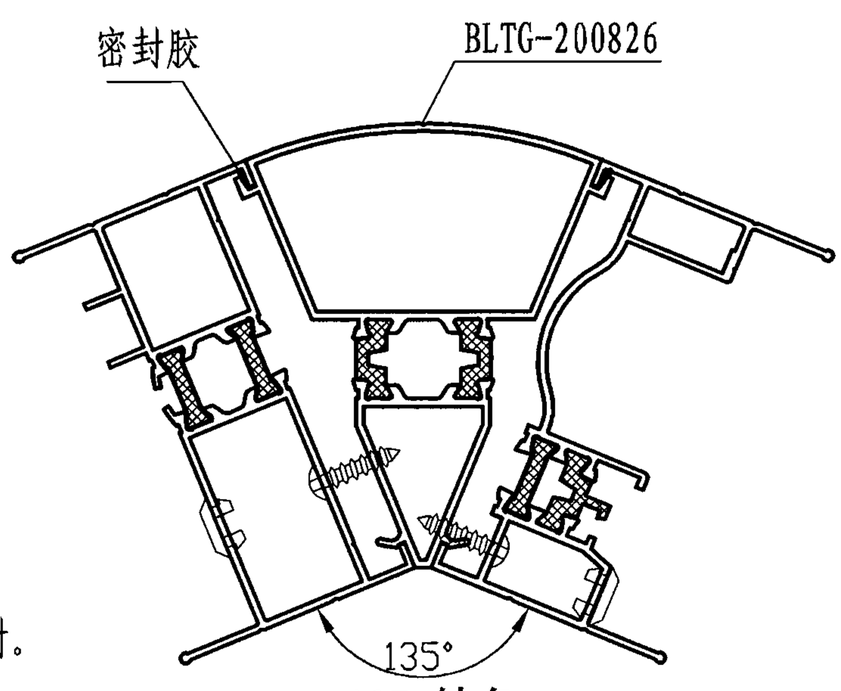
BLT2008系列断桥无框推拉窗（门）节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	23



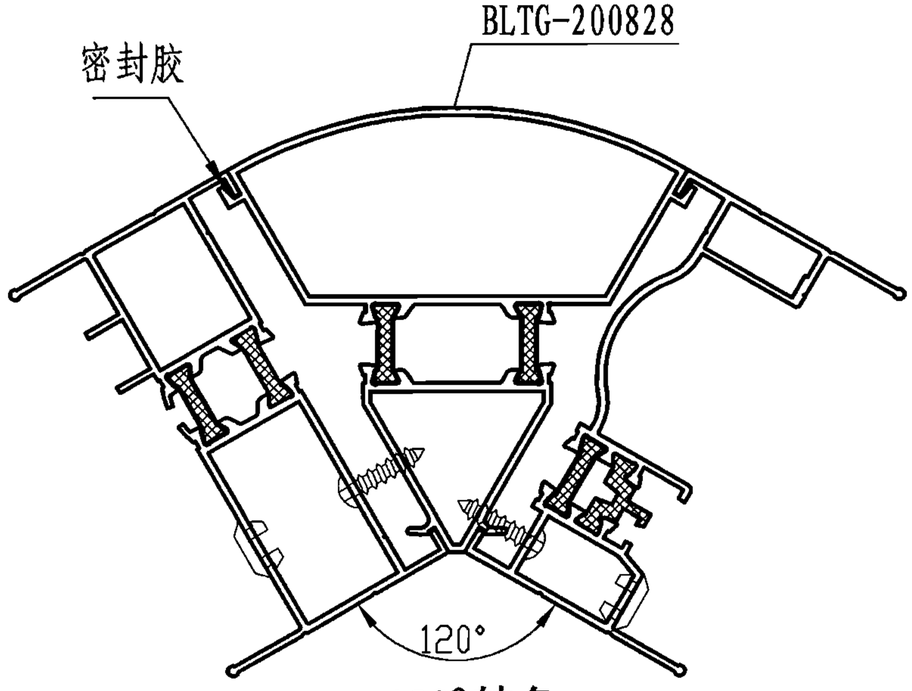
90°转角







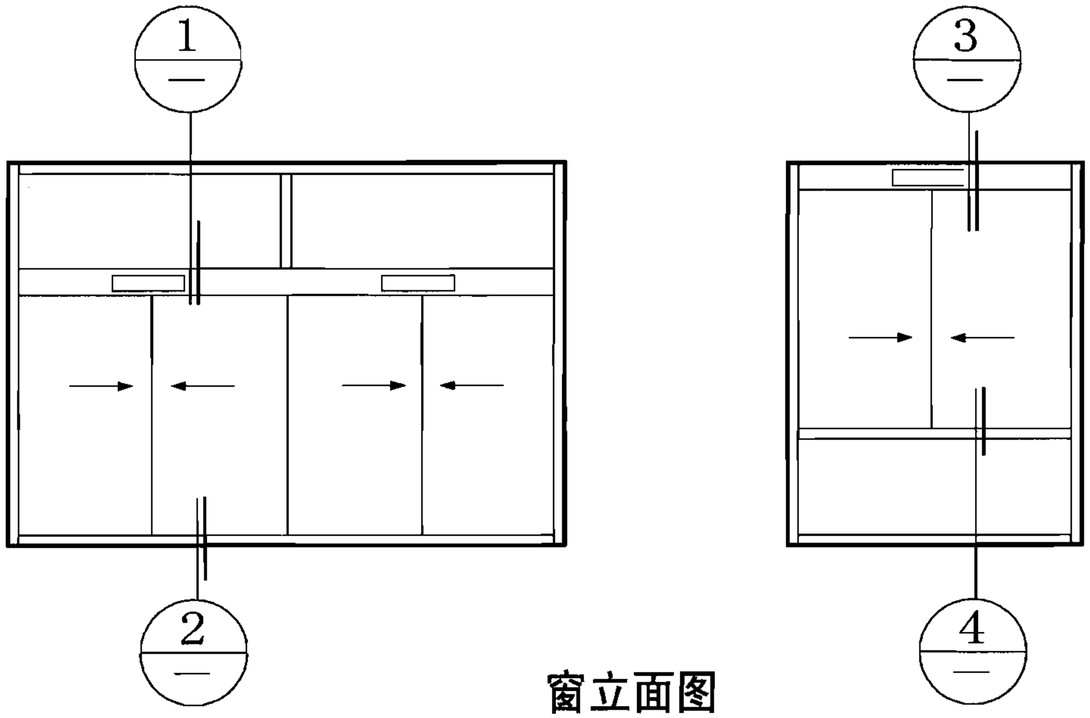
135°转角



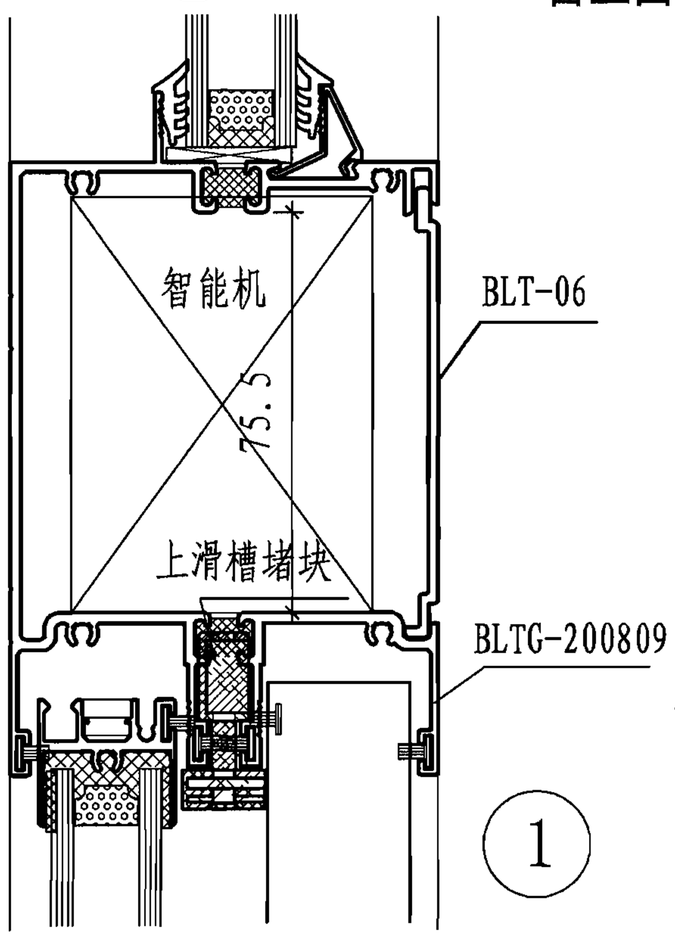
120°转角

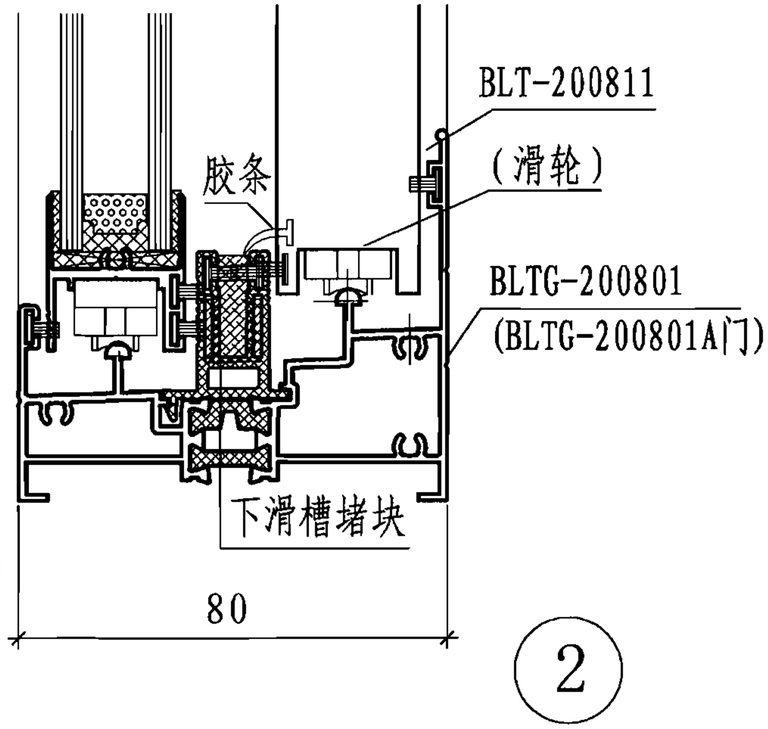
注：1.各窗之间应联结牢固，不得松动。
2.各拼接间隙应用弹性密封材料密封。
3.各连接处螺钉不得外露。
4.各拼接件抗风压性能应经计算；满足当地抗风压要求，

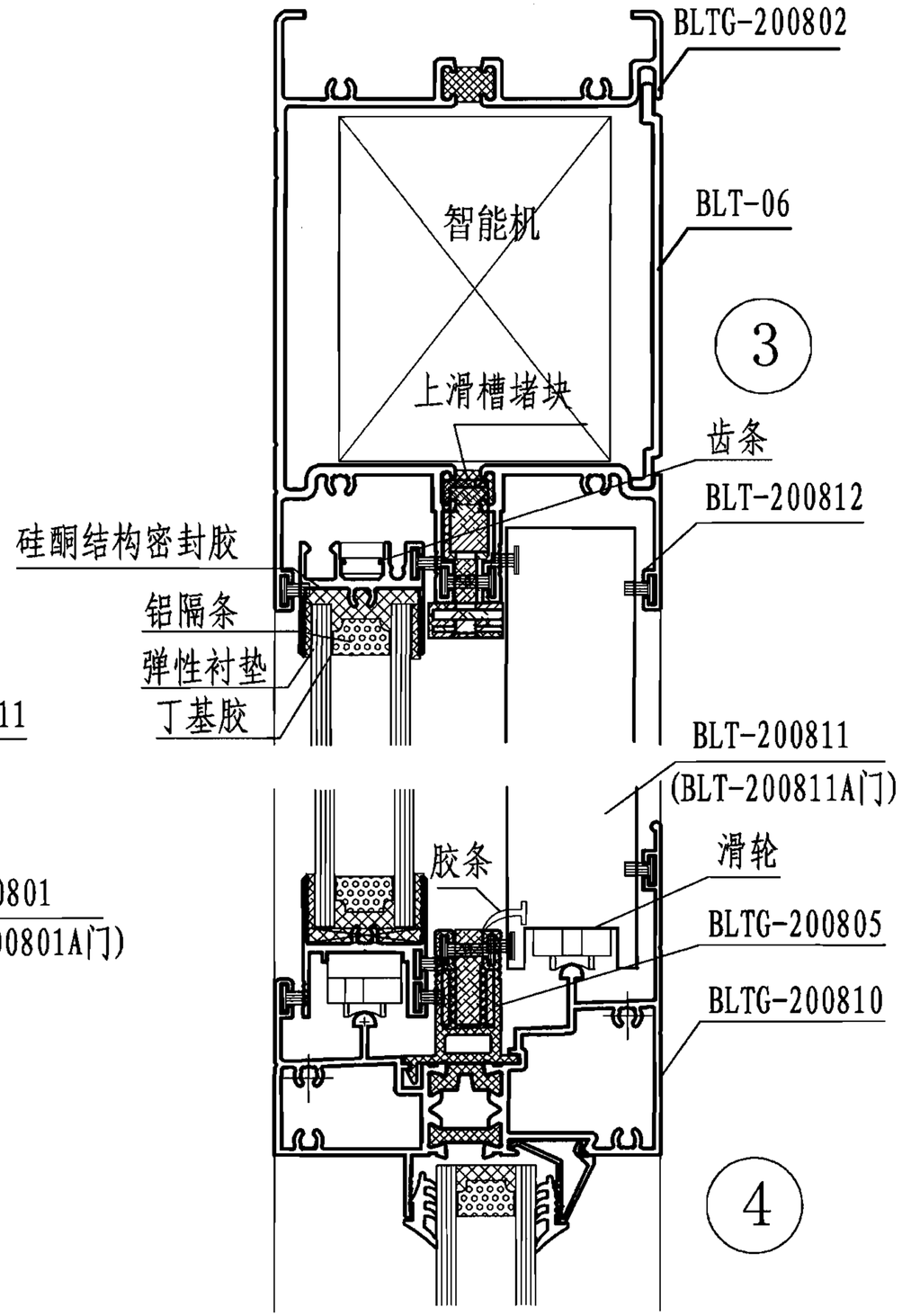
BLT2008系列断桥无框推拉窗（门）节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	24



窗立面图



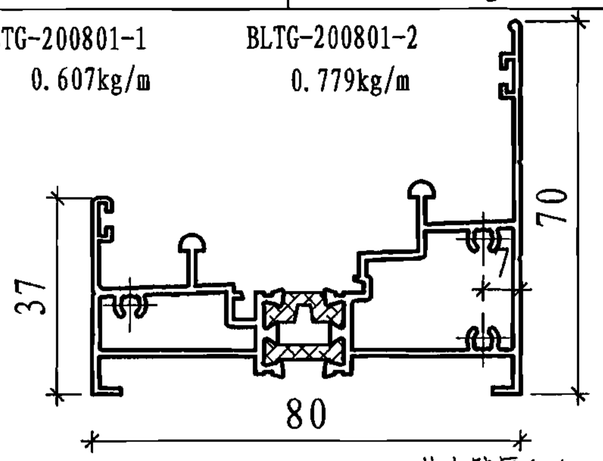




BLT2008系列智能断桥无框推拉窗(门)节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	25

代号 BLTG-200801	线密度 1.537(kg/m)

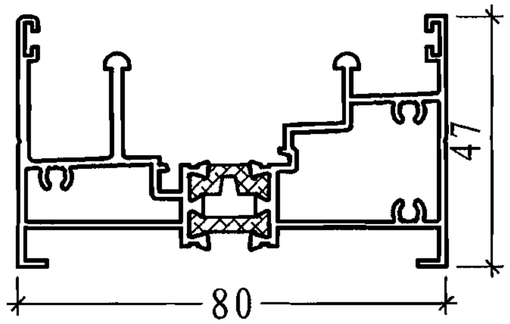
BLTG-200801-1 0.607kg/m　BLTG-200801-2 0.779kg/m



基本壁厚 1.4mm

代号BLTG-200801A	线密度 1.60(kg/m)

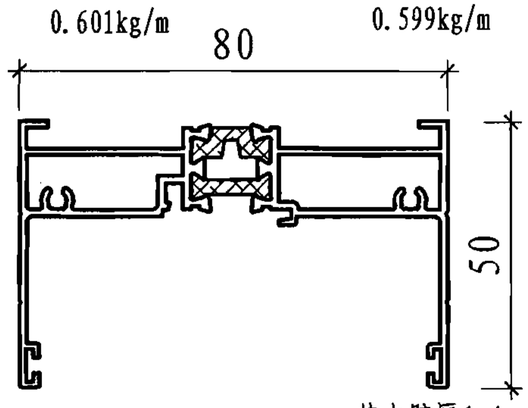
BLTG-200801A-1 0.747kg/m　BLTG-200801A-2 0.707kg/m



基本壁厚 2.0mm

代号BLTG-200802A	线密度 1.354(kg/m)

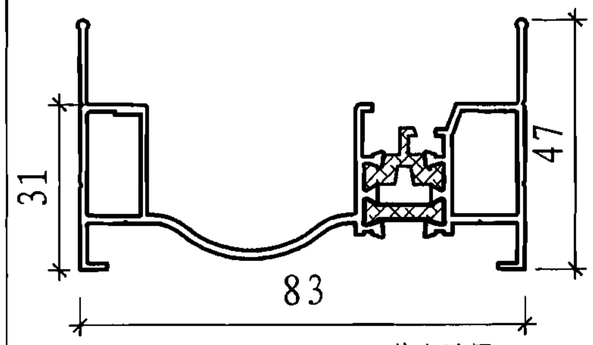
BLTG-200802A-1 0.601kg/m　BLTG-200802A-2 0.599kg/m



基本壁厚1.4mm

代号 BLTG-200803	线密度 1.266(kg/m)

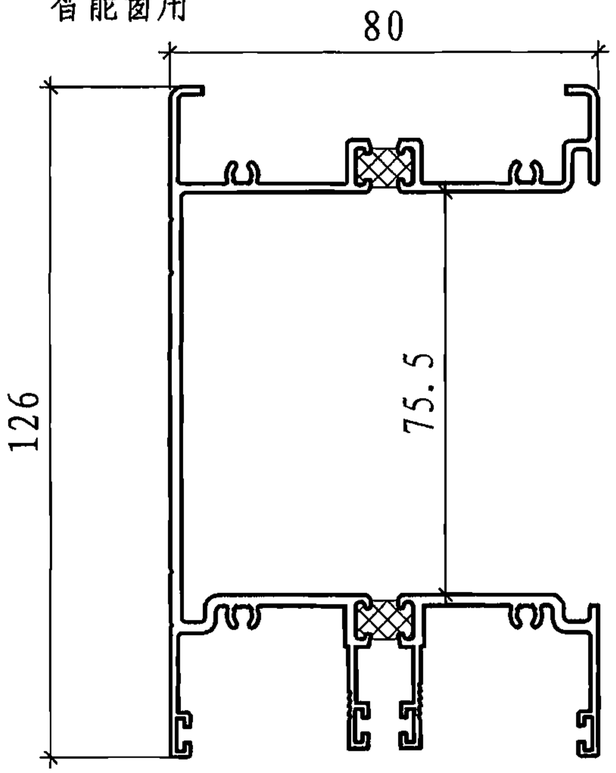
BLTG-200803-1 0.677kg/m　BLTG-200803-2 0.438kg/m



基本壁厚 1.4mm

代号BLTG-200802	线密度 2.413(kg/m)

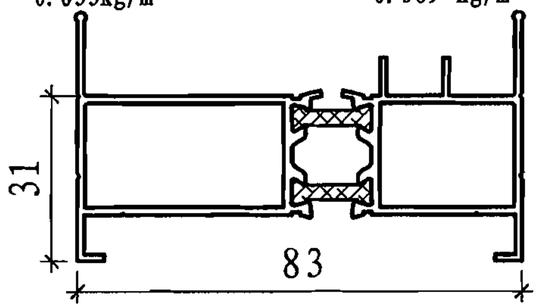
智能窗用



基本壁厚 2.1mm

代号 BLT-200804	线密度 1.359(kg/m)

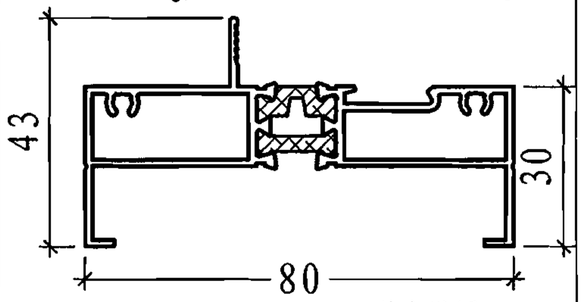
BLTG-200804-2 0.633kg/m　BLTG-200804-1 0.589 kg/m



基本壁厚

代号 BLTG-200807	线密度 1.177(kg/m)

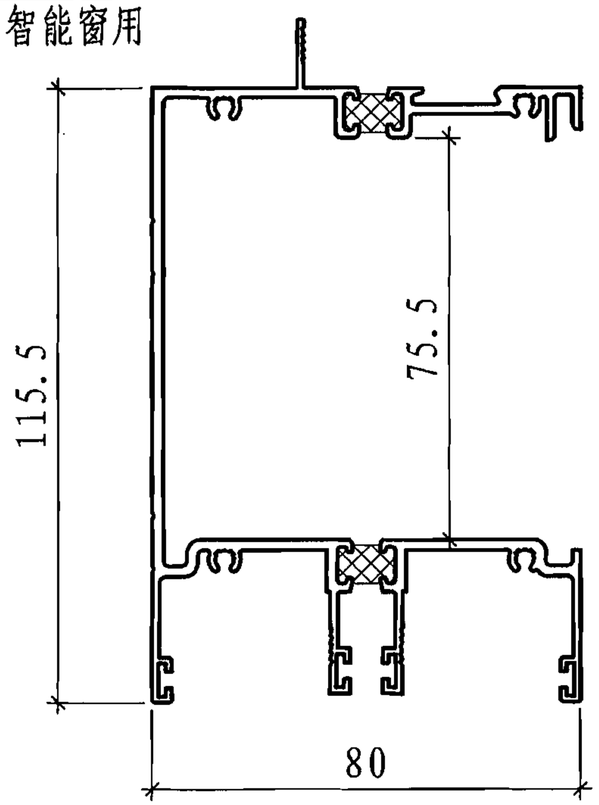
BLTG-200807-1 0.523kg/m　BLTG-200807-2 0.501kg/m



基本壁厚 1.4mm

代号 BLTG-200809	线密度 2.313(kg/m)

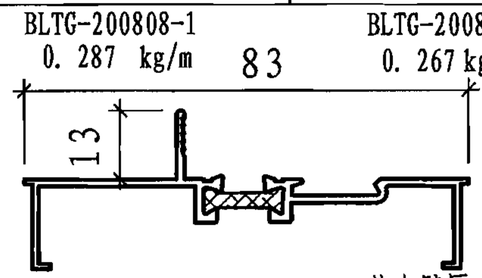
智能窗用



基本壁厚

代号 BLTG-200808	线密度 0.624(kg/m)

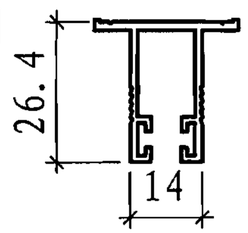
BLTG-200808-1 0.287 kg/m　BLTG-200808-2 0.267 kg/m



基本壁厚 1.2mm

代号 BLT-200805	线密度 0.350(kg/m)

智能窗用



基本壁厚 1.4mm

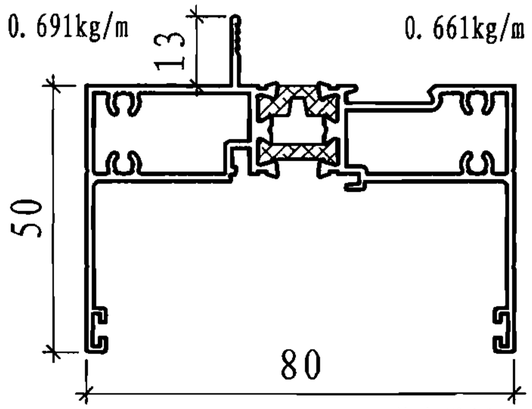
BLT2008系列断桥型材断面图

图集号	07CJ12
页	26

审核	焦冀曾		校对	杨兴义		设计	余金璋	

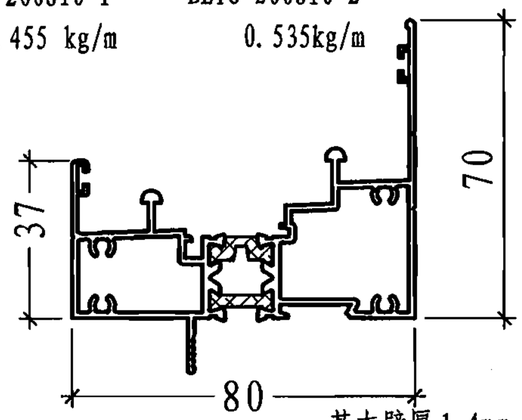
代号 BLTG-200809A	线密度 1.505(kg/m)	代号 BLTG-200810	线密度 1.701(kg/m)	代号BLTG-200821	线密度 0.603(kg/m)	代号BLTG-200824	线密度 1.384(kg/m)

BLTG-200809A-1 0.691kg/m　BLTG-200809A-2 0.661kg/m



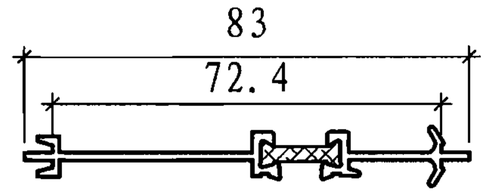
基本壁厚1.4mm

BLTG-200810-1 0.455 kg/m　BLTG-200810-2 0.535kg/m



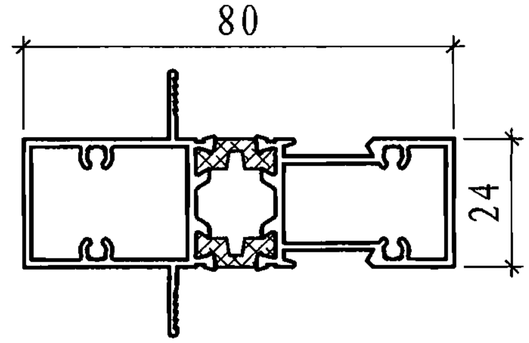
基本壁厚1.4mm

BLTG-200821-1 0.271kg/m　BLTG-200821-2 0.196kg/m



基本壁厚1.4mm

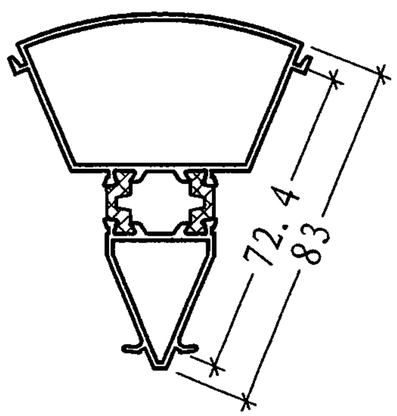
BLTG-200824-1 0.630kg/m　BLTG-200824-2 0.586kg/m



基本壁厚1.4mm

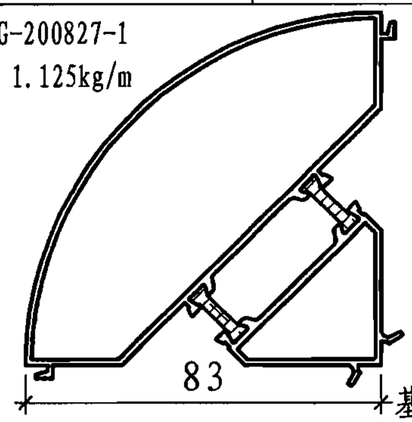
代号 BLTG-200826	线密度 1.374(kg/m)	代号BLTG-200827	线密度 1.824(kg/m)	代号BLTG-200828	线密度 1.559(kg/m)	代号 BLT-200829	线密度 1.318(kg/m)

BLTG-200826-1 0.777kg/m　BLTG-200826-2 0.461kg/m



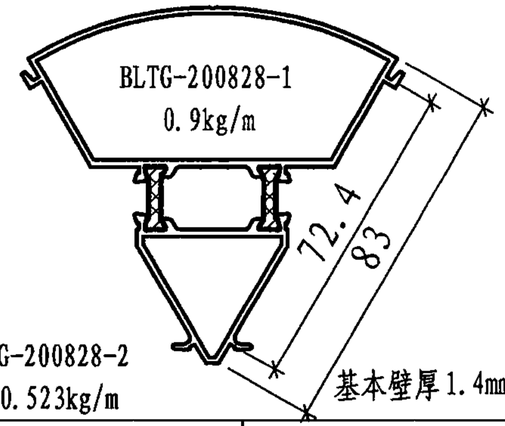
基本壁厚1.4mm

BLTG-200827-1 1.125kg/m



基本壁厚

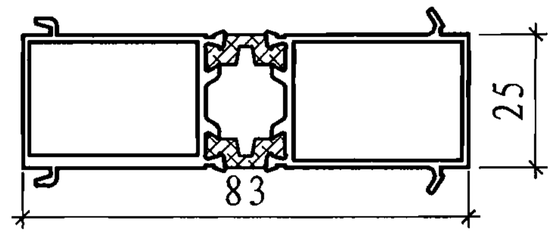
BLTG-200828-1 0.9kg/m



BLTG-200828-2 0.523kg/m

基本壁厚1.4mm

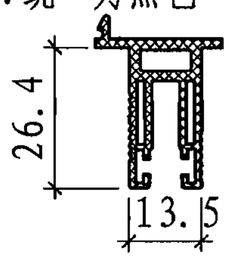
BLTG-200829-1 0.620kg/m　BLTG-200829-2 0.532 kg/m



基本壁厚1.4mm

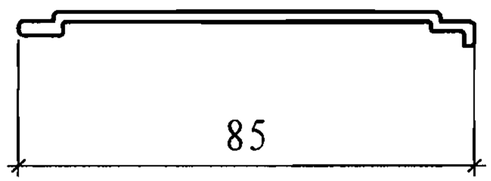
代号 BLTG-200805	线密度 0.260(kg/m)	代号 BLT-06	线密度 0.502(kg/m)

塑钢型材:统一为黑色



基本壁厚1.6mm

智能窗用



基本壁厚1.8mm

BLT2008系列断桥型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	27

BLT370系列节能无框推拉窗说明

1. 本系列型材框厚度构造尺寸为62，采用90度开榫对合，螺接结构。

2. 本图集绘制了组合门窗拼接节点图。根据工程需要，可利用拼樘料组合成其他形式的固定窗、带型窗、条型窗或门连窗。

3. 本系列推拉窗主要的功能有：可安装隐形纱窗，实现开关窗扇时纱窗自动带出和自动收缩功能。根据需要可选装在左侧或右侧。安装清洗方便，纱窗不用时可随时脱开。（见图示）

4. 本系列使用的最大两扇(不带固定扇)的洞口尺寸为1800×1500；最大开启 扇尺寸为900×1450。

5. 本系列铝合金窗可根据不同地区、不同环境、不同建筑构造选择不同的结构形式。

6. 下框（BLW-3701）加工有5×30的泄水孔。

7. 本系列推拉窗的特点有：

7.1 节能、节材、环保；

7.2 中空玻璃和窗扇一次性加工，采用硅酮结构胶连接，提高了气密性、水密性。

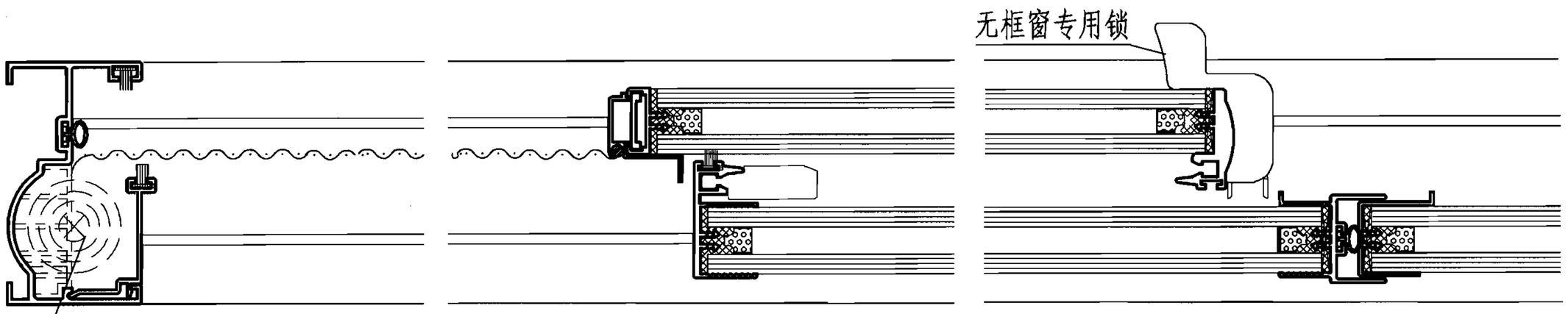
7.3 本产品选用中空玻璃采用5+6 A +5，最大厚度为16 。

7.4 本产品有防止从外面拆卸的安全装置，保证使用的安全性。

7.5 使用框包扇和扇包框相结合的密封方式，夹片毛条和三元乙丙胶条相结合的密封方式，下框设有排水和中间挡水筋，较低的框窗比，从而提高了窗的采光性能。

7.6 本产品外观效果近似幕墙，同时又具备了更好的采光性能。

7.7 采用自主研发的窗锁，当关窗时，窗扇到位时自动锁上，开锁时只要按住手柄，锁勾自动脱开。



隐形纱窗，实现开关窗扇时纱窗自动带出和自动收缩功能。

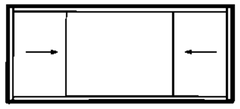
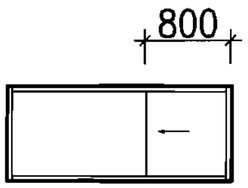
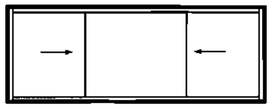
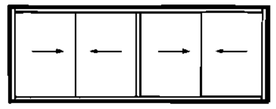
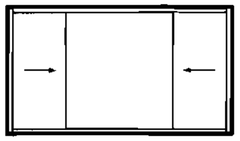
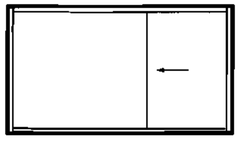
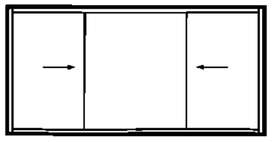
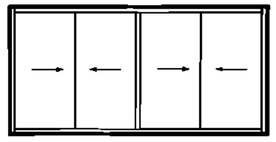
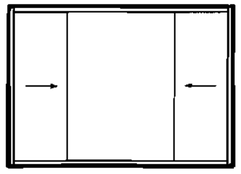
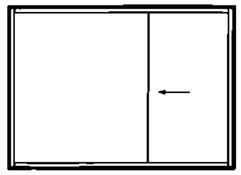
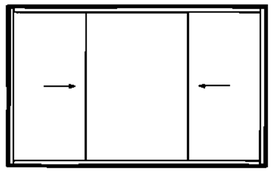
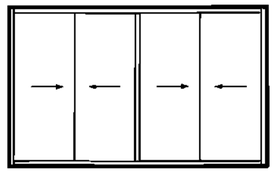
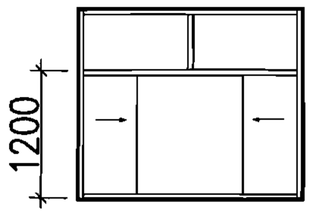
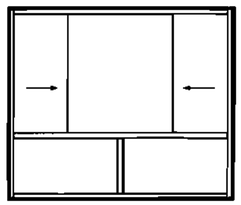
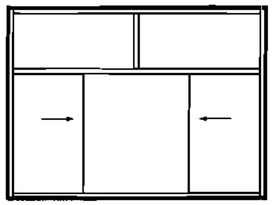
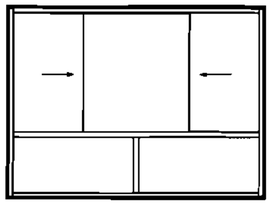
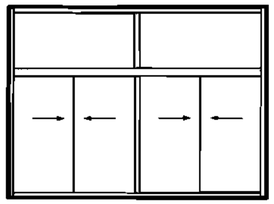
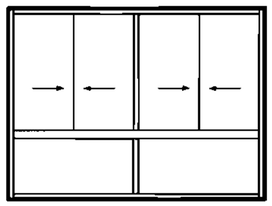
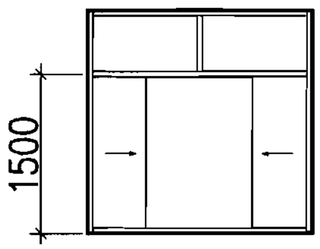
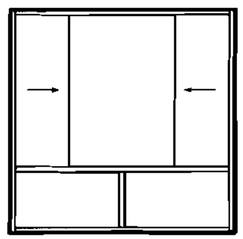
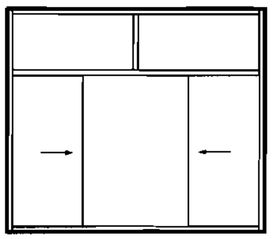
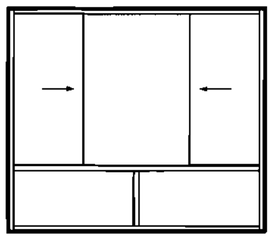
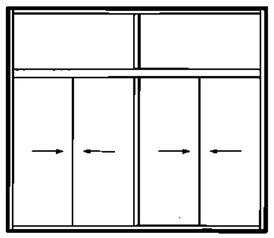
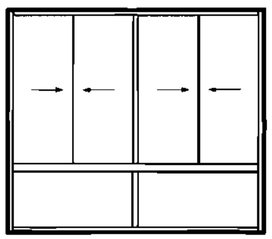
隐形纱窗开关窗扇示意图

BLT370系列无框推拉窗说明									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	28

洞高 \ 洞宽	800	900	1200	1500	1800
800	TC-0808	TC-0908	TC-1208	TC-1508	TC-1808
1200	TC-0812	TC-0912	TC-1212	TC-1512	TC-1812
1500	1000 TC-0815	TC1-0915 TC2-0915	TC1-1215 TC2-1215	TC-1515	TC-1815
1800		1200 TC1-0918 TC2-0918	TC1-1218 TC2-1218	TC1-1518 TC2-1518	TC1-1818 TC2-1818
2100		≤1500 TC1-0921 TC2-0921	TC1-1221 TC2-1221	TC1-1521 TC2-1521	TC1-1821 TC2-1821

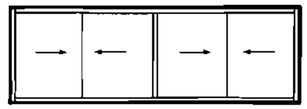
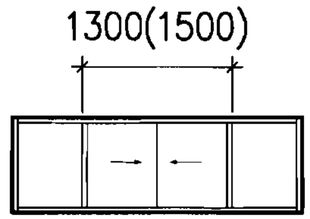
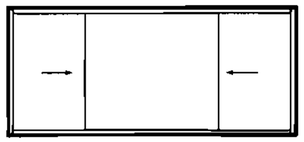
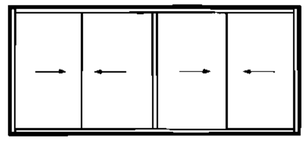
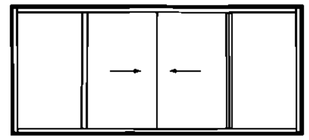
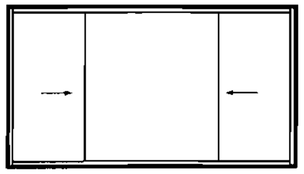
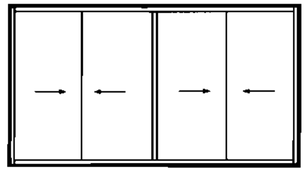
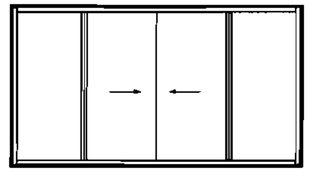
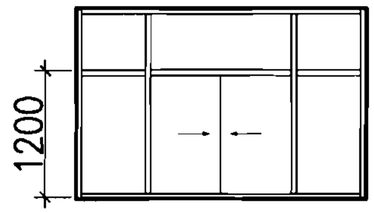
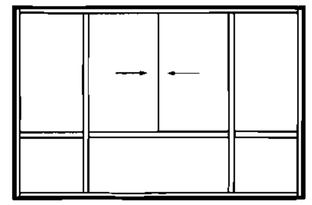
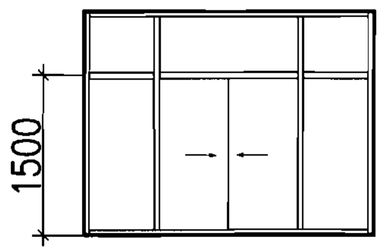
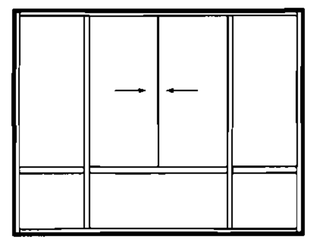
注:活动窗扇宽度不宜大于900,高度不宜大于1500。

BLT370系列无框推拉窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	29

洞高 \ 洞宽	2100		2400			
800	 TC1-2108	 TC2-2108	 TC1-2408	 TC2-2408		
1200	 TC1-2112	 TC2-2112	 TC1-2412	 TC2-2412		
1500	 TC1-2115	 TC2-2115	 TC1-2415	 TC2-2415		
1800	 TC-2118	 TC-2118	 TC1-2418	 TC2-2418	 TC3-2418	 TC4-2418
2100	 TC-2121	 TC-2121	 TC1-2421	 TC2-2421	 TC3-2421	 TC4-2421

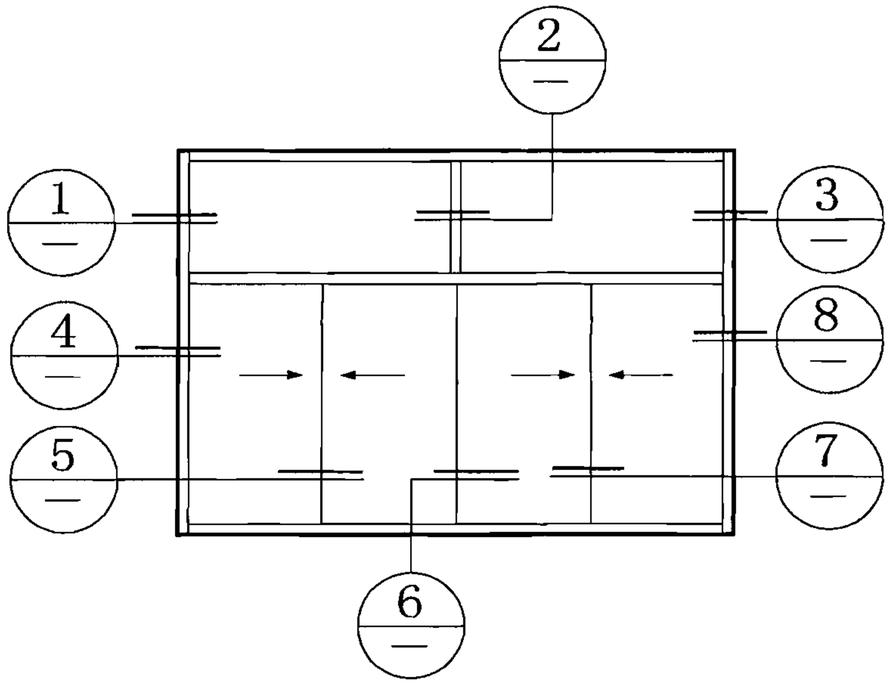
注：活动窗扇宽度不宜大于900，高度不宜大于1500。

BLT370系列无框推拉窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	30

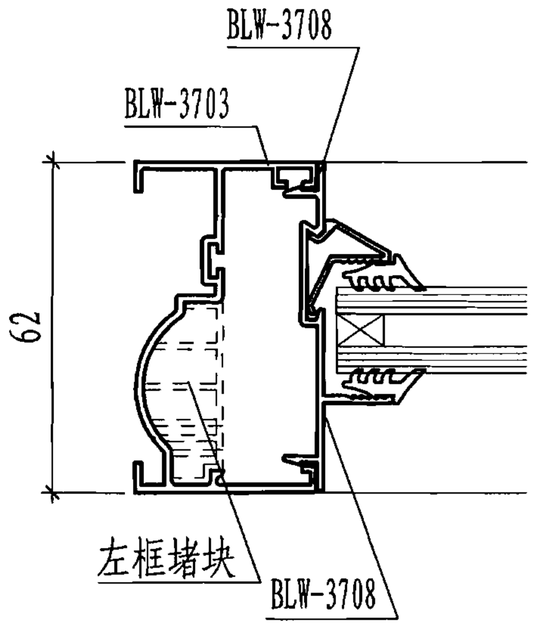
洞宽 / 洞高	2700(3000宽洞口立面相同)
800	TC1-2708  TC2-2708  TC3-2708
1200	 TC1-2712  TC2-2712  TC3-2712
1500	 TC1-2715  TC2-2715  TC3-2715
1800	 TC1-2718  TC2-2718
2100	 TC1-2721  TC2-2721

注:活动窗扇宽度不宜大于900,高度不宜大于1500。

BLT370系列无框推拉窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	31



窗立面图



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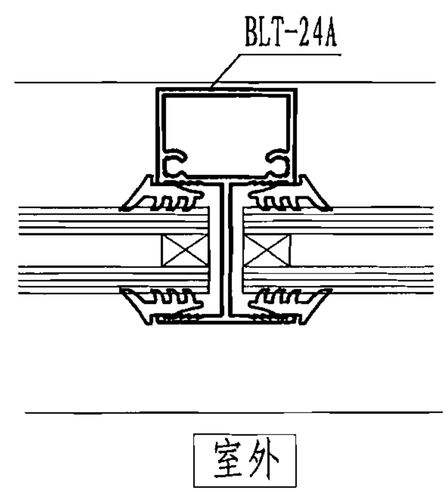

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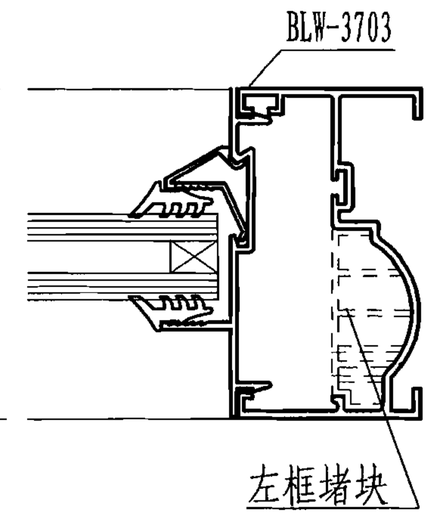
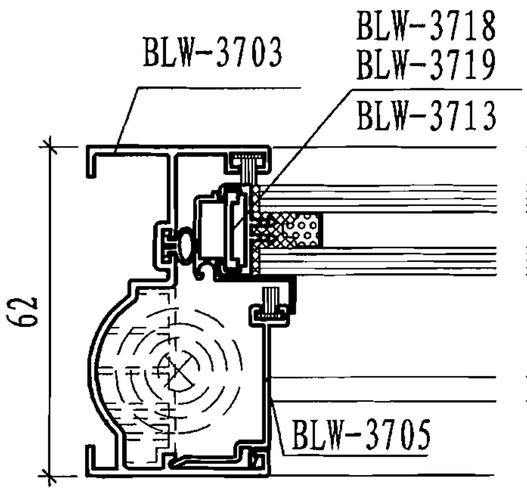


3



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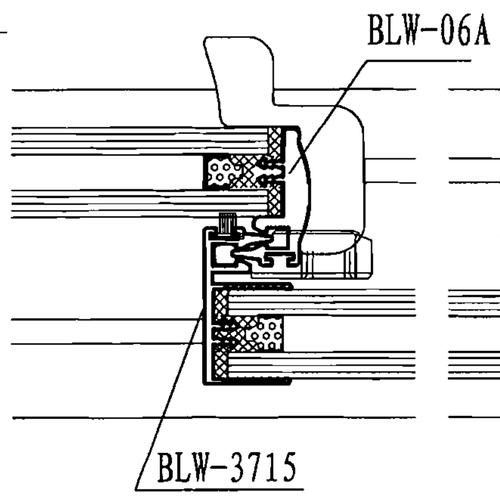

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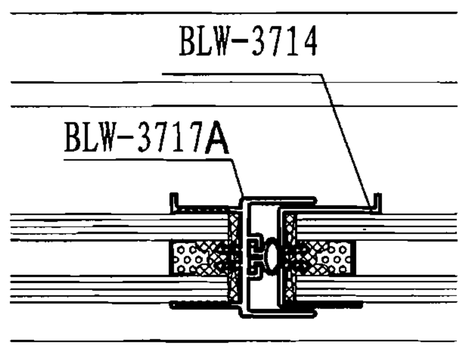

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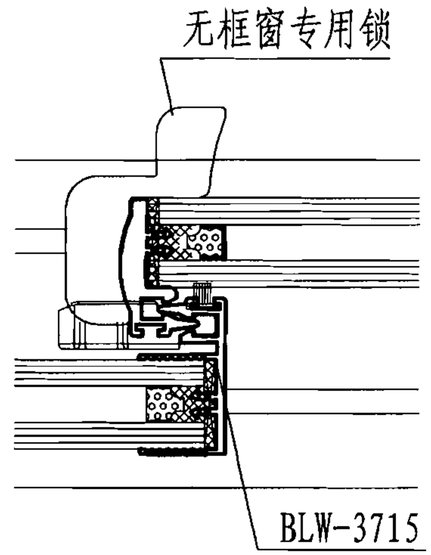

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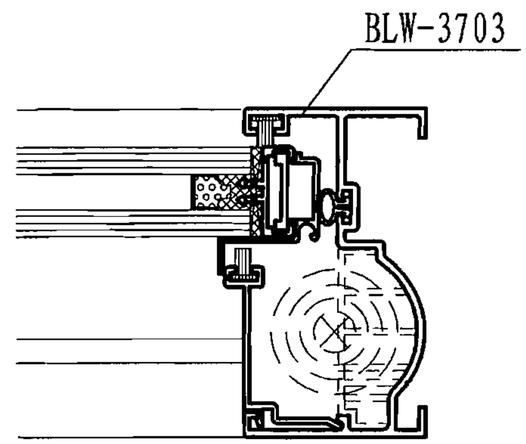
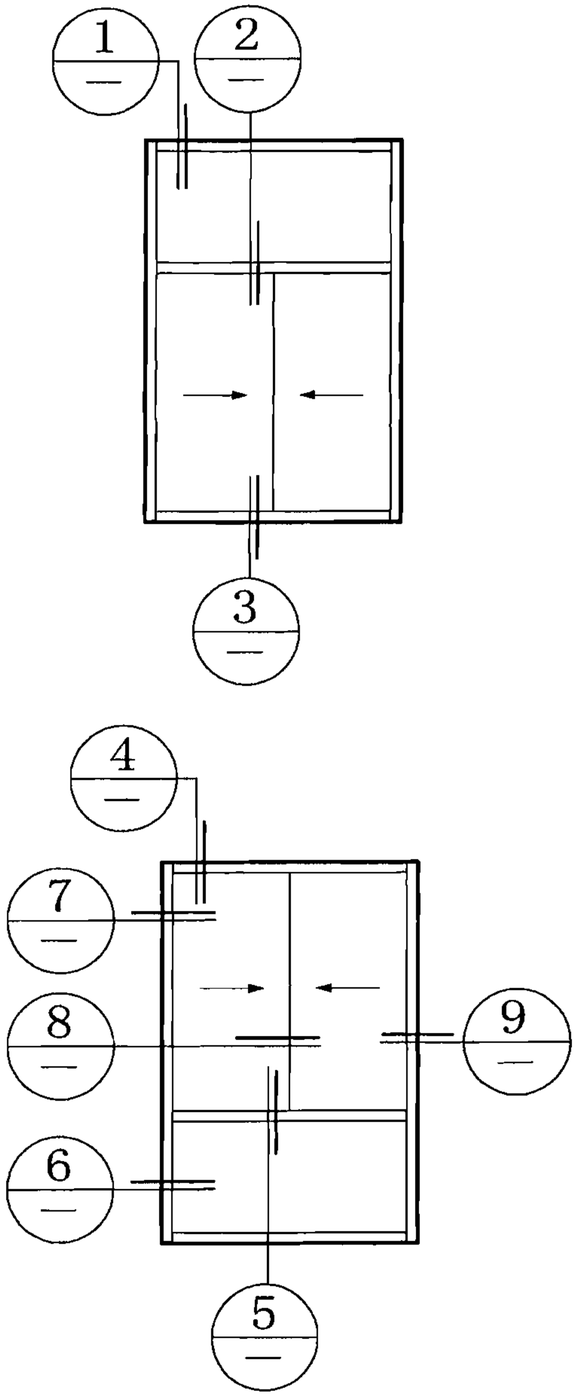
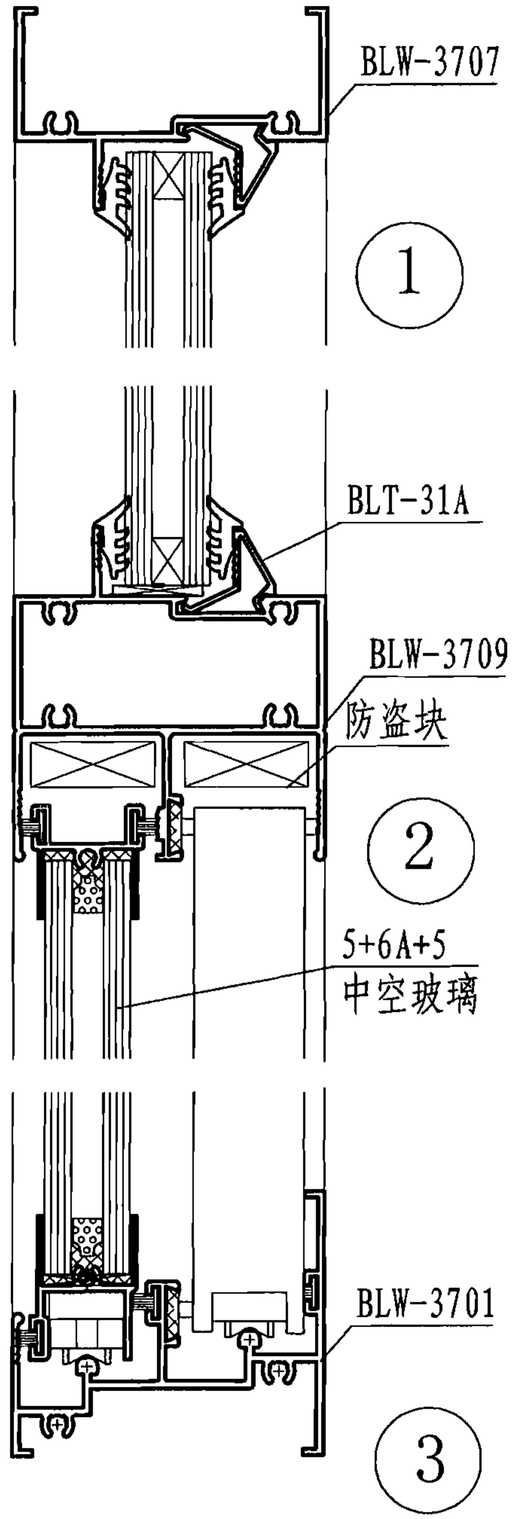


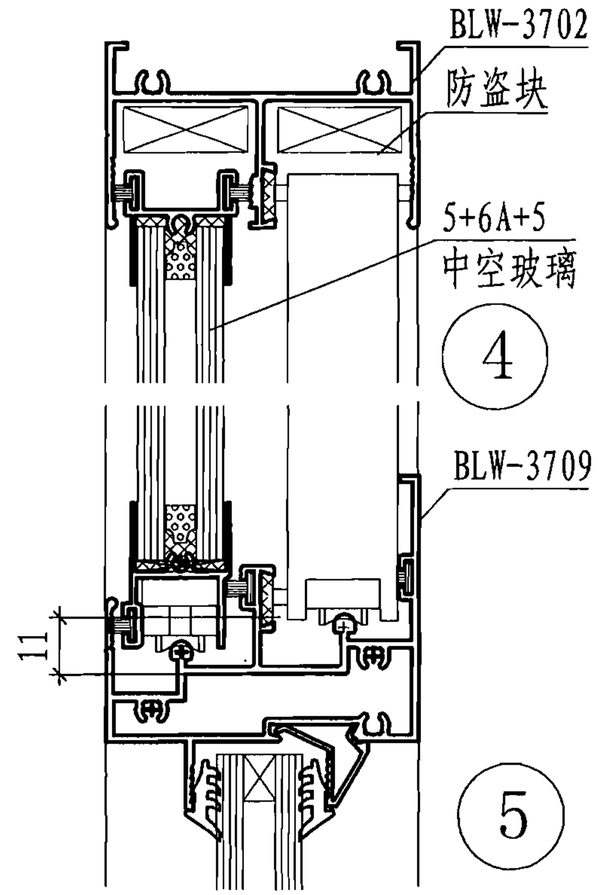
8

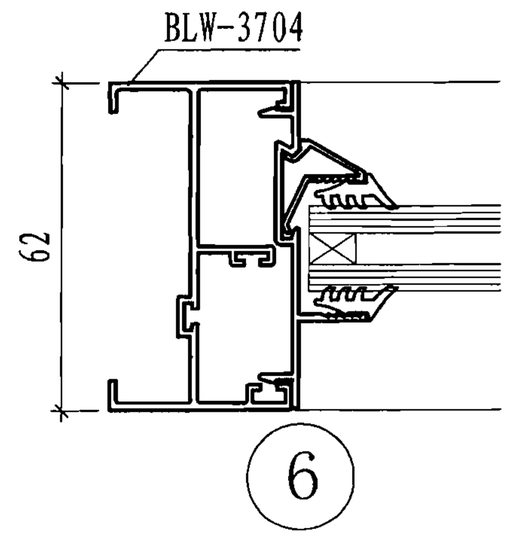
BLT370系列无框推拉窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	32

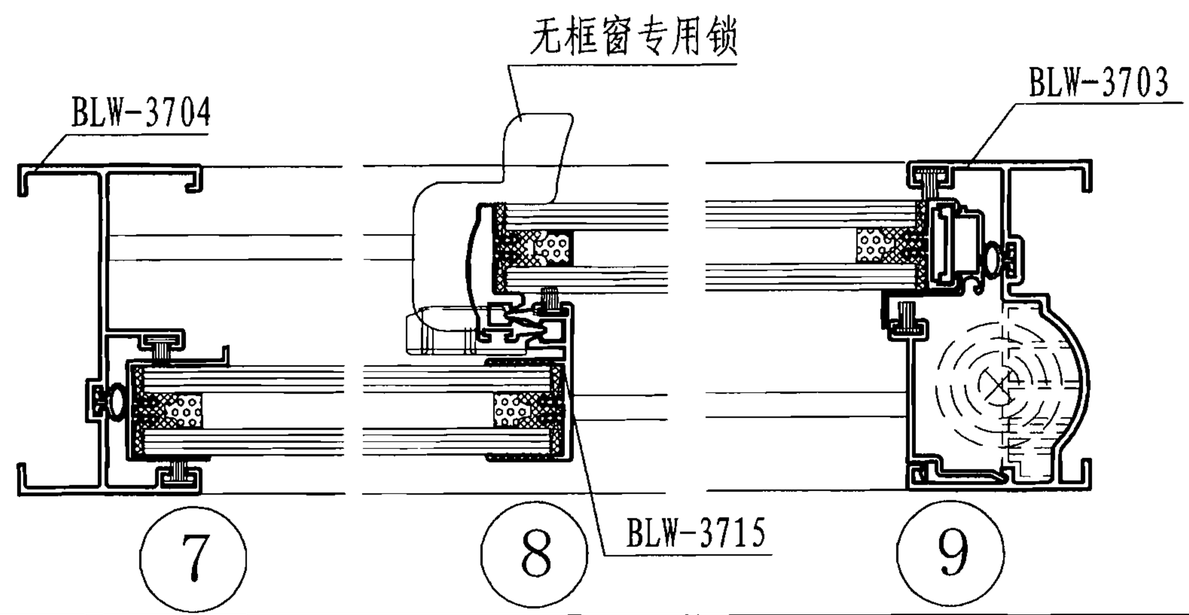


窗立面图

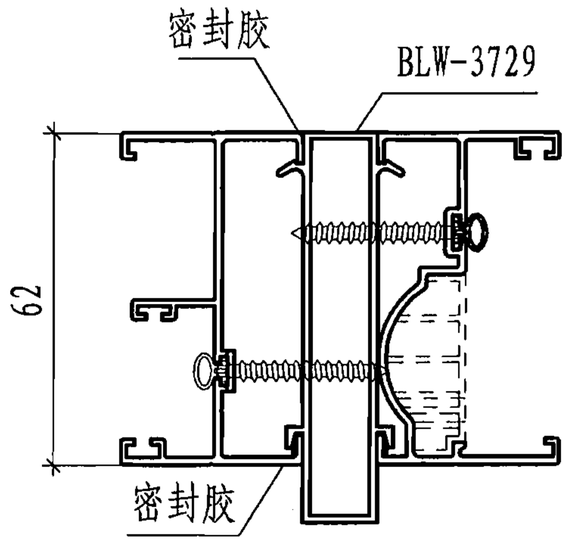




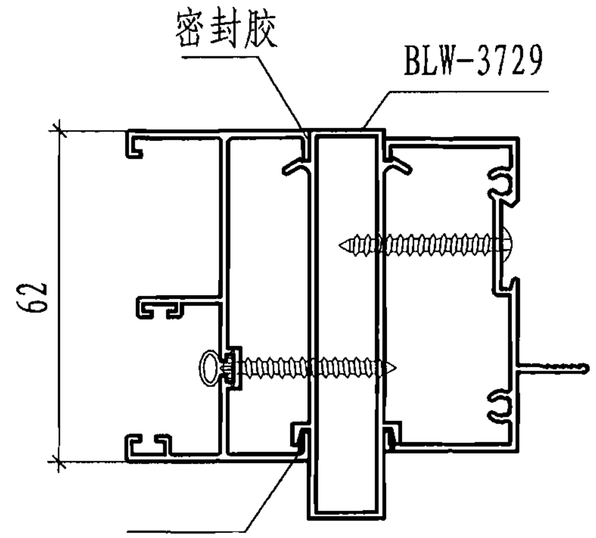




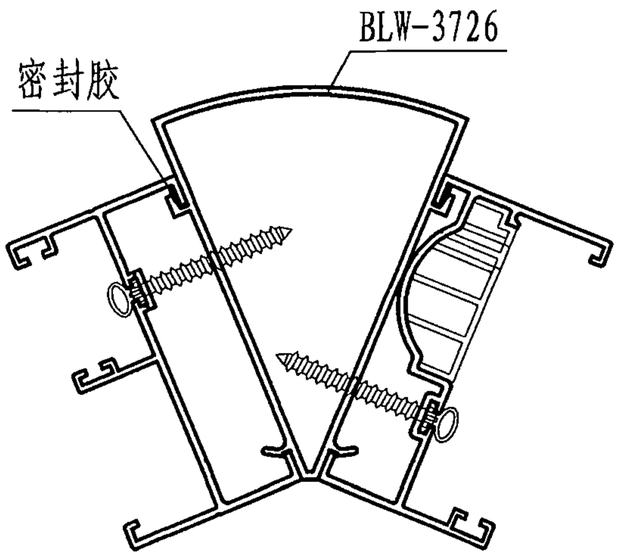
BLT370系列无框推拉窗节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	33



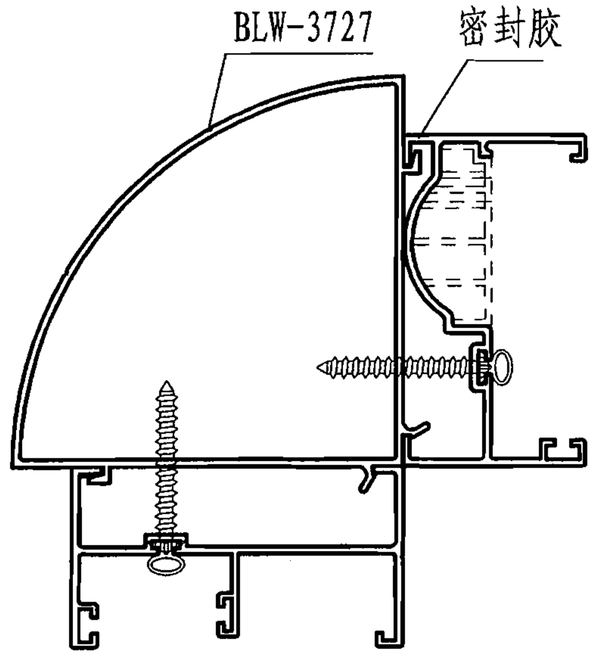
1 拼樘图1



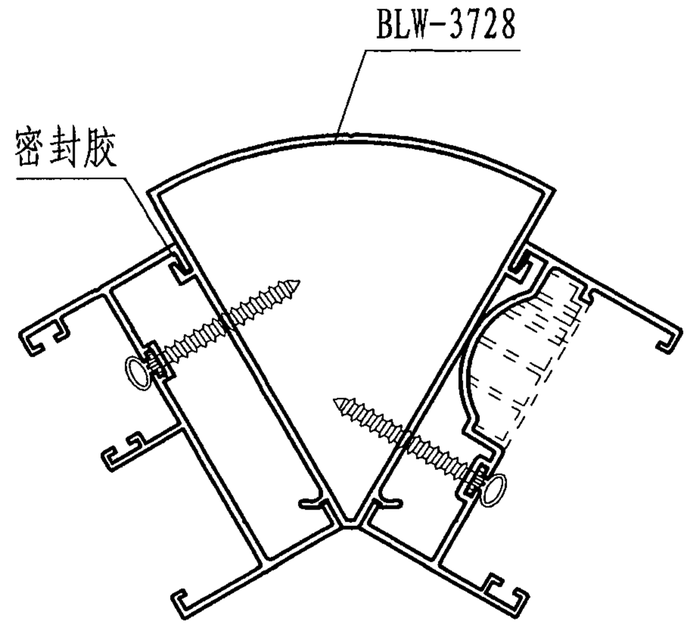
2 拼樘图2



3 135°转角



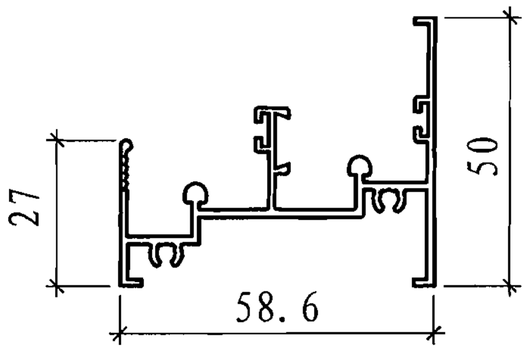
4 90°转角



5 120°转角

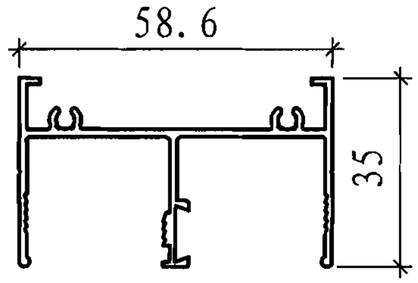
BLT370系列无框推拉窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	34

代号	线密度
BLW-3701	0.801(kg/m)



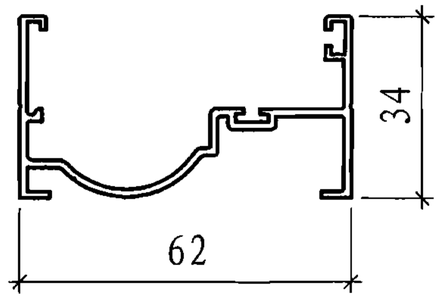
基本壁厚 1.4mm

代号	线密度
BLW-3702	0.656(kg/m)



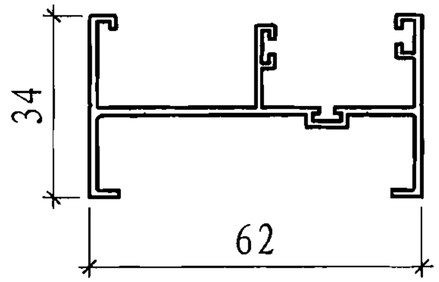
基本壁厚 1.4mm

代号	线密度
BLW-3703	0.628(kg/m)



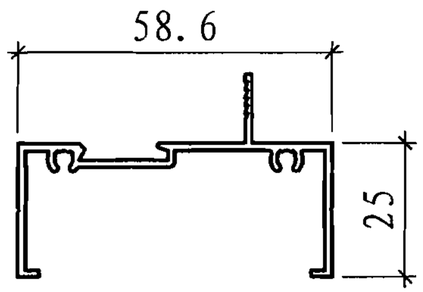
基本壁厚 1.4mm

代号	线密度
BLW-3704	0.643(kg/m)



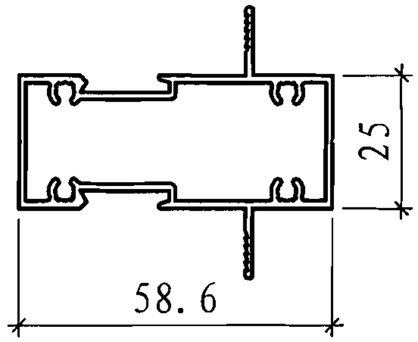
基本壁厚 1.4mm

代号	线密度
BLW-3707	0.535(kg/m)



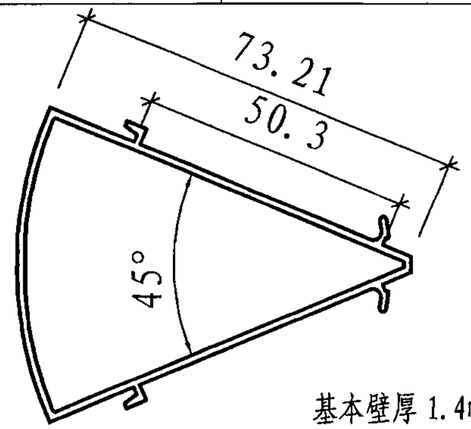
基本壁厚 1.4mm

代号	线密度
BLW-3724	0.824(kg/m)



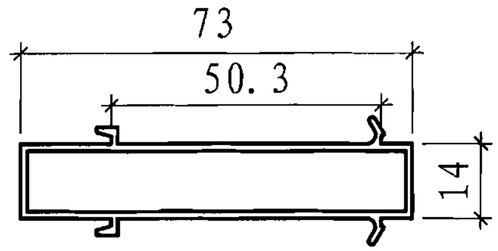
基本壁厚 1.4mm

代号	线密度
BLW-3726	0.852(kg/m)



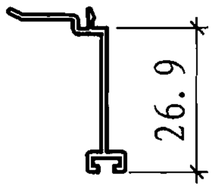
基本壁厚 1.4mm

代号	线密度
BLW-3729	0.702(kg/m)



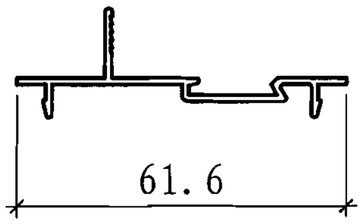
基本壁厚 1.4mm

代号	线密度
BLW-3705	0.167(kg/m)



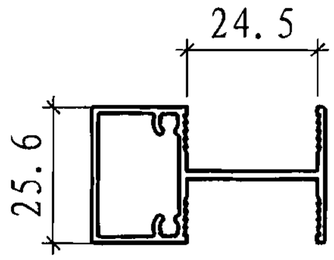
基本壁厚 1.4mm

代号	线密度
BLW-3708	0.313(kg/m)



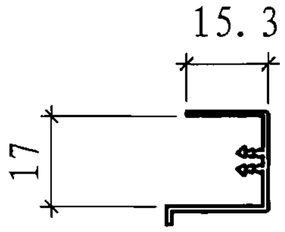
基本壁厚 1.4mm

代号	线密度
BLW-3724A	0.500(kg/m)



基本壁厚 1.4mm

代号	线密度
BLW-3714	0.166(kg/m)



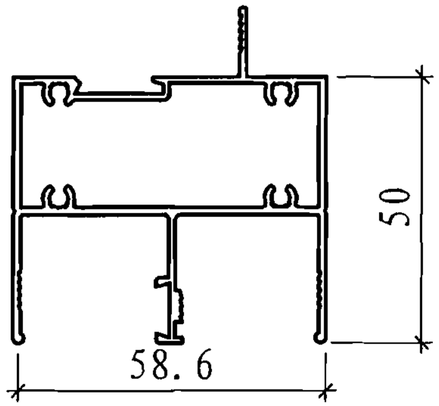
基本壁厚 1.2mm

BLT370系列型材断面图

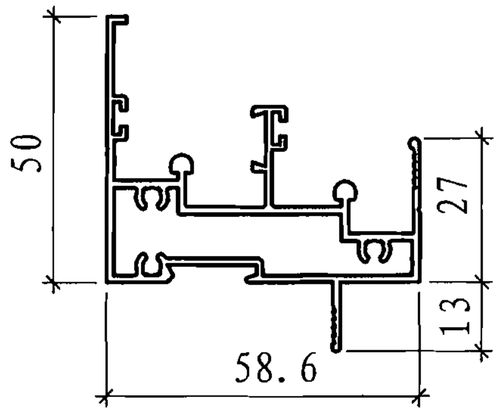
图集号	07CJ12
页	35

审核	焦冀曾		校对	杨兴义		设计	余金璋	

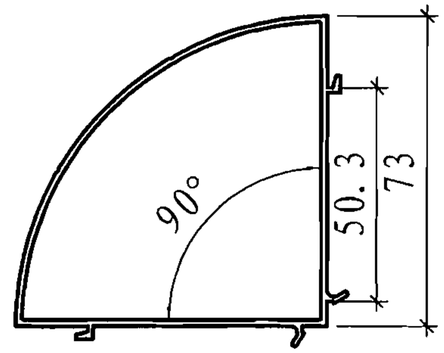
代号 BLW-3709	线密度 1.053(kg/m)	代号 BLW-3710	线密度 1.055(kg/m)	代号 BLW-3727	线密度 1.042(kg/m)	代号 BLW-3728	线密度 0.923(kg/m)



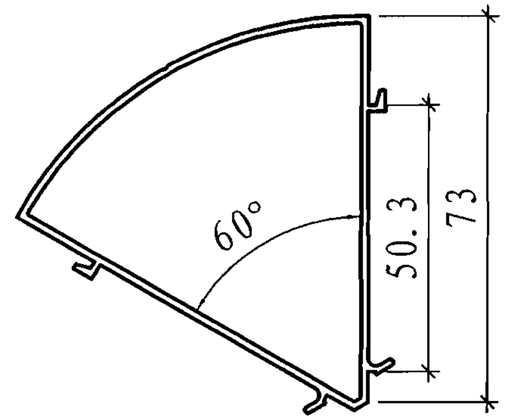
基本壁厚 1.4mm



基本壁厚 1.4mm



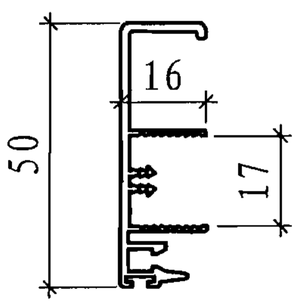
基本壁厚 1.4mm



基本壁厚 2.0mm

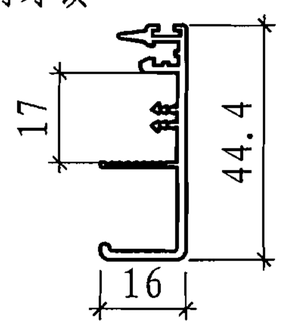
代号 BLW-3715A	线密度 0.464(kg/m)	代号 BLW-3716A	线密度 0.416(kg/m)	代号 BLW-17A	线密度 0.539(kg/m)	代号 BLW-3711	线密度 0.245(kg/m)

加强型



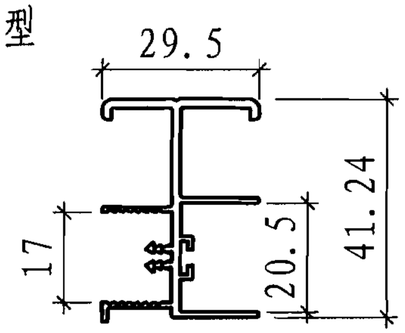
基本壁厚 1.7mm

加强型配月牙锁

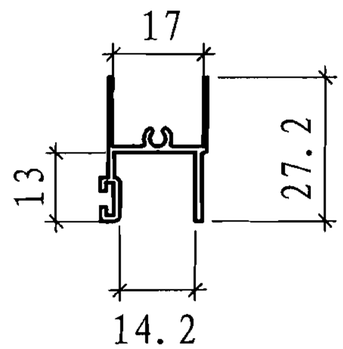


基本壁厚 1.7mm

加强型

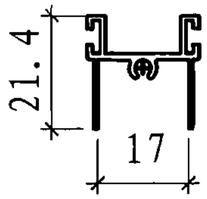


基本壁厚 1.7mm

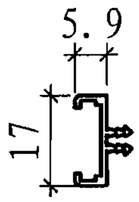


基本壁厚 1.2mm

代号 BLW-3712	线密度 0.216(kg/m)	代号 BLW-3713	线密度 0.109(kg/m)	代号 BLW-3716	线密度 0.26(kg/m)	代号 BLW-06A	线密度 0.363(kg/m)

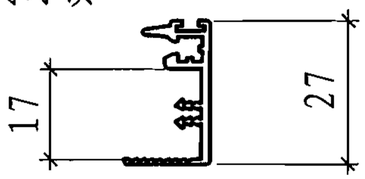


基本壁厚 1.2mm



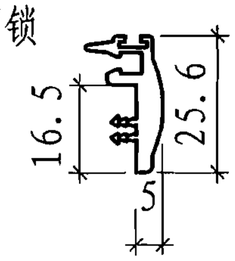
基本壁厚 1.2mm

配月牙锁



基本壁厚 1.6mm

配无框窗锁



基本壁厚 3mm

BLT370系列型材断面图	图集号	07CJ12
审核 焦冀曾 校对 杨兴义 设计 余金璋	页	36

BLT-W全无框推拉窗说明

1 本系列窗采用边框型材与墙体直接固定,减少各边框之间固定。

2 墙体做法有二种：一种为凹式，一种为平面（同正常做法）。

3 本图集绘制了单个窗二扇，三扇和四扇窗节点图。

4 本系列推拉窗可安装隐形纱窗,实现开关窗扇时纱窗自动带出和自动收缩功能。

5 本系列使用的最大两扇(不带固定扇)的洞口尺寸为1800×1800;最大开启扇尺寸为900×1800。

6 本系列铝合金窗可根据不同地区、不同环境、不同建筑构造选择不同的结构形式。

7 下框（BLT-W2801）加工有5×30的排泄水孔。具体加工位置按蓝光总部发放的《加工工艺图》。

8 本系列推拉窗的特点有:

8.1 节能、节材、环保;

8.2 中空玻璃和窗扇一次性加工，采用硅酮结构胶连接，提高了气密性、水密性。

8.3 本产品选用中空玻璃最大厚度为为22，中空玻璃组合方式有:5+12A+5; 8+9A+5; 8+6A+8; 6+9A+6。

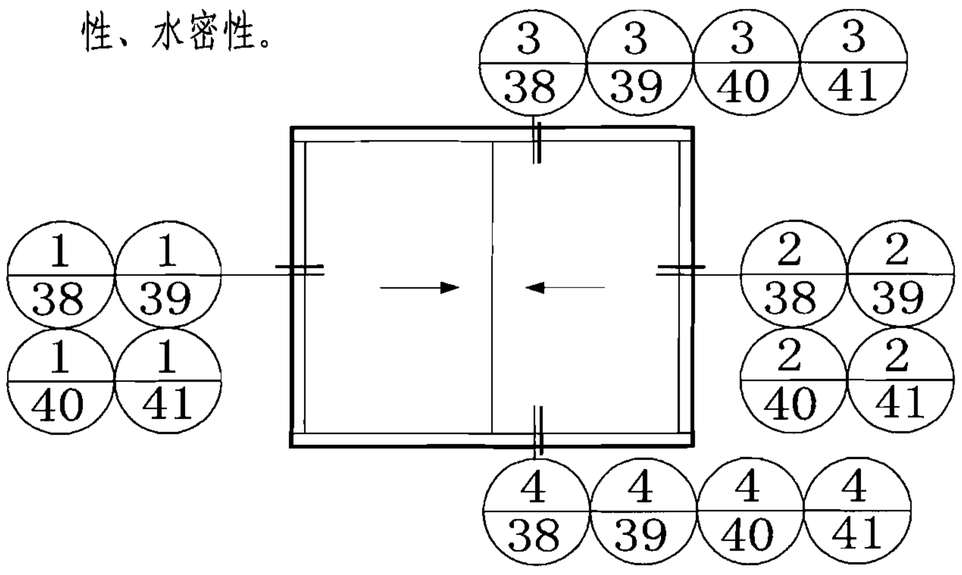
8.4 本产品有防止从外面拆卸的安全装置，保证使用的安全性。

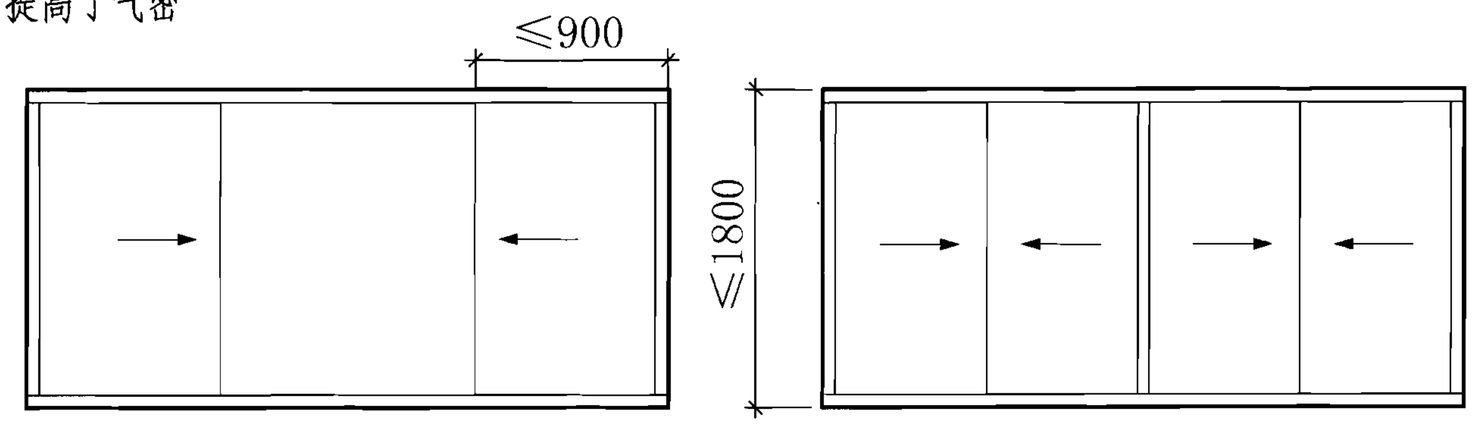
8.5 结构新颖，使用框包扇和扇包框相结合的密封方式，夹片毛条和三元乙丙胶条相结合的密封方式，下框高低排水和中间挡水筋，较低的框窗比，从而提高了窗的整体性能。

8.6 本产品外观效果近似幕墙，同时又具备了更好的采光性能。

8.7 采用自主研发的窗锁，当关窗时，窗扇到位时自动锁上，开锁时只要按住手柄，锁勾自动脱开。

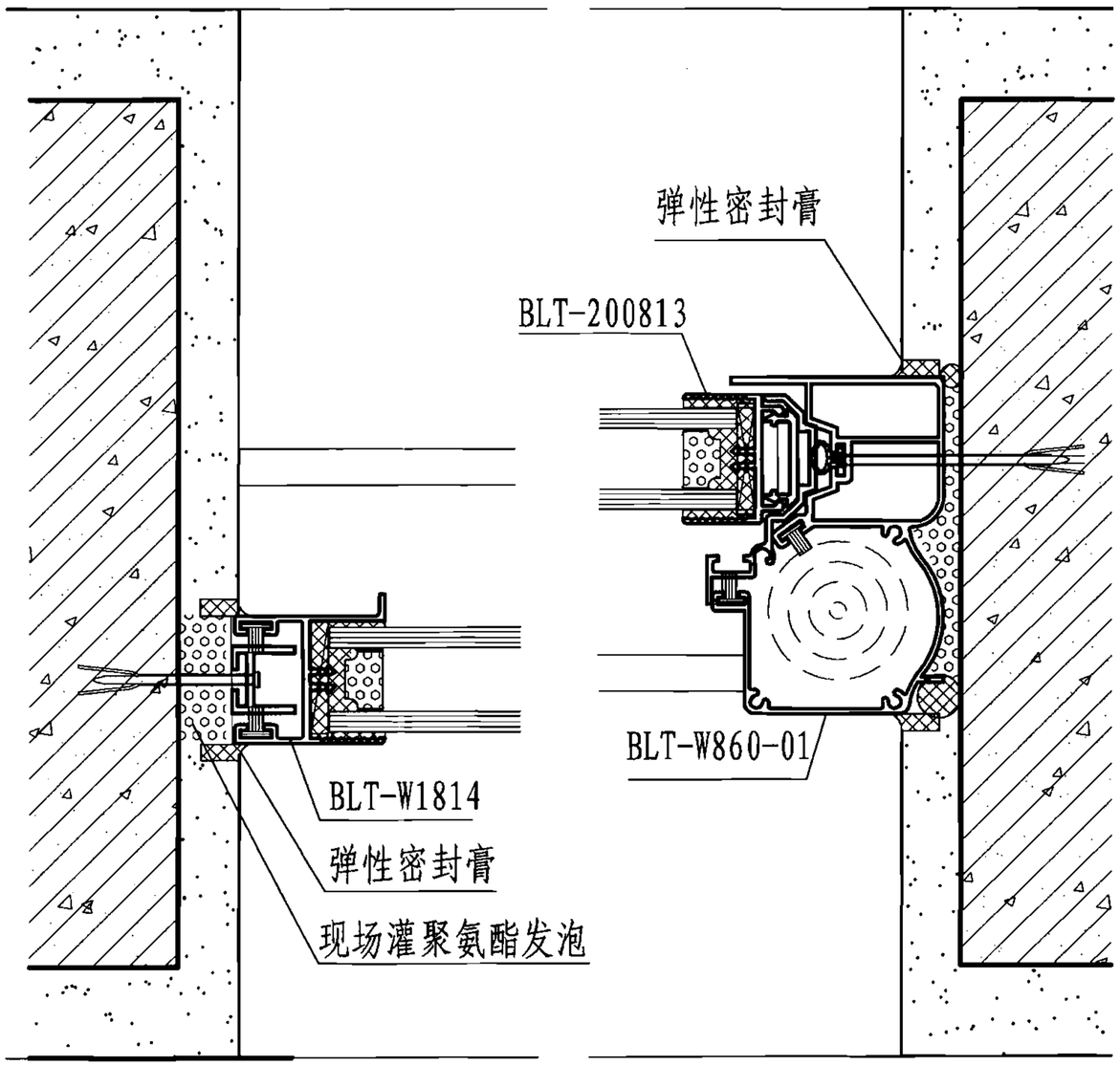
8.8 安装有隐形纱窗，整个机构隐藏在窗框内，关窗后看不到纱窗的任何构件，开窗时自动拉开纱网，且安装清洗方便，纱窗不用时可随时脱开。





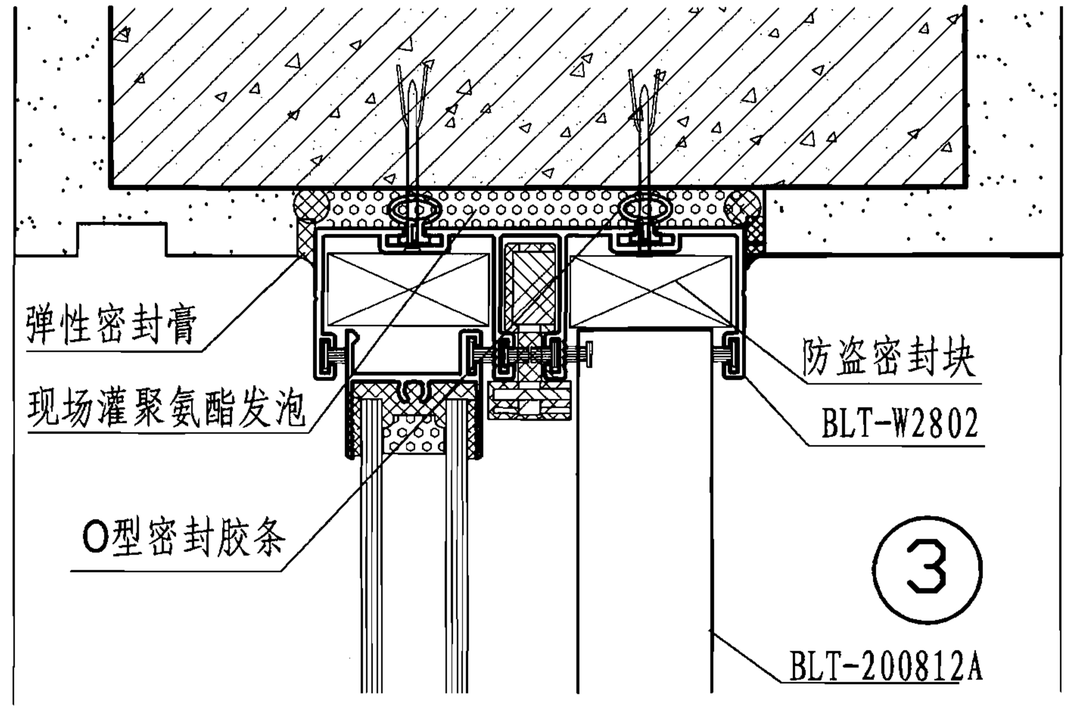
窗立面图

BLT-W全无框推拉窗说明								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	37

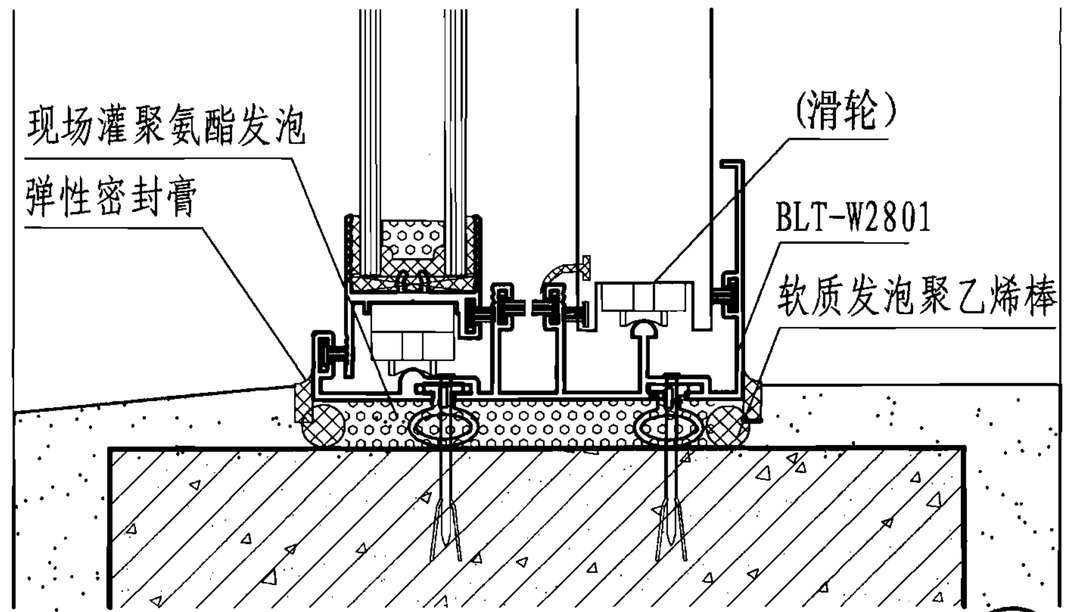


1

2



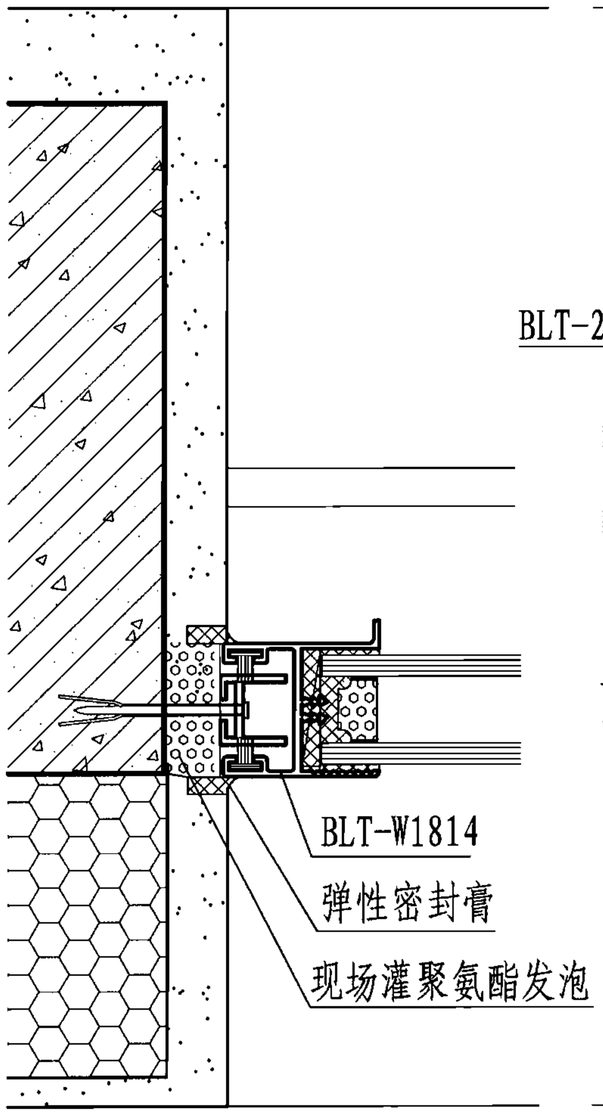
3



4

注:金属膨胀螺栓≥M6×65;
尼龙锚栓套管外径7~10mm;

BLT-W全无框推拉窗节点图(平式)								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	38



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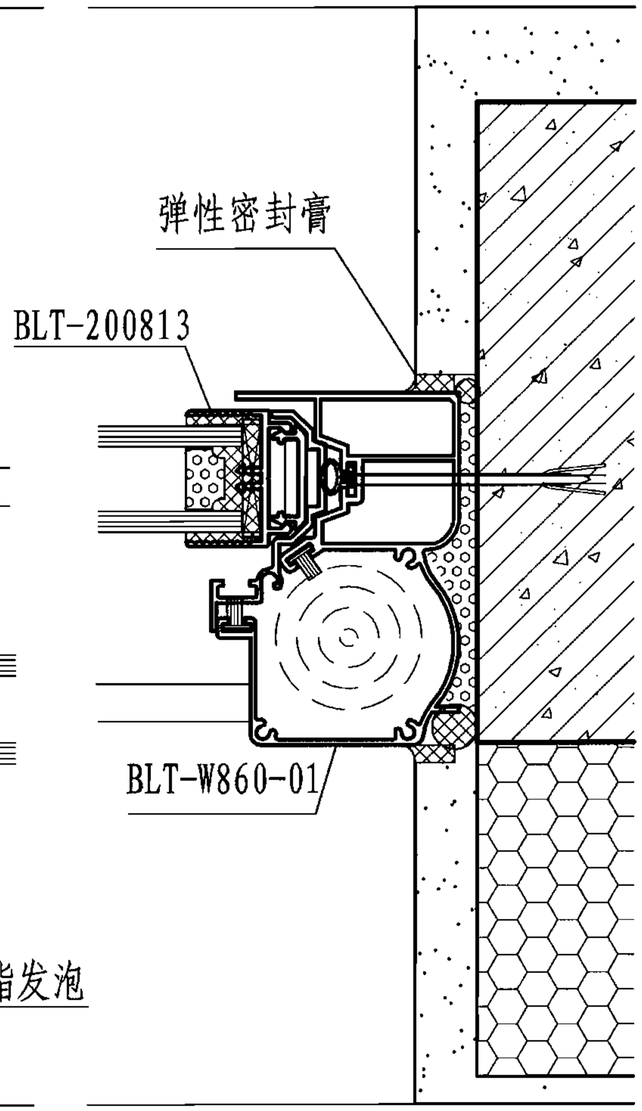

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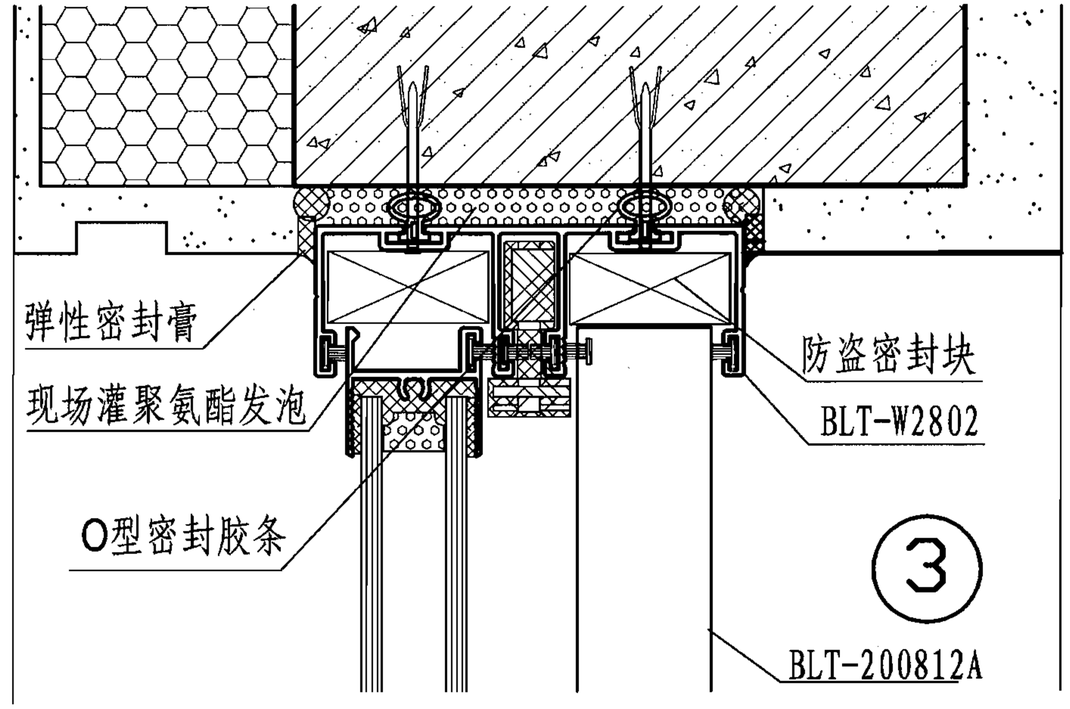

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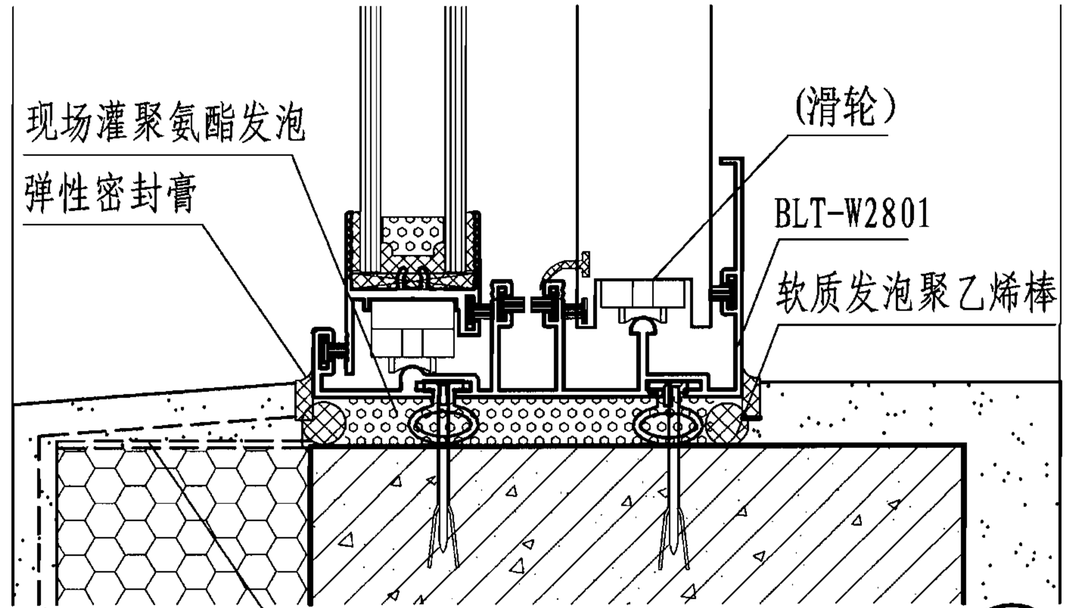
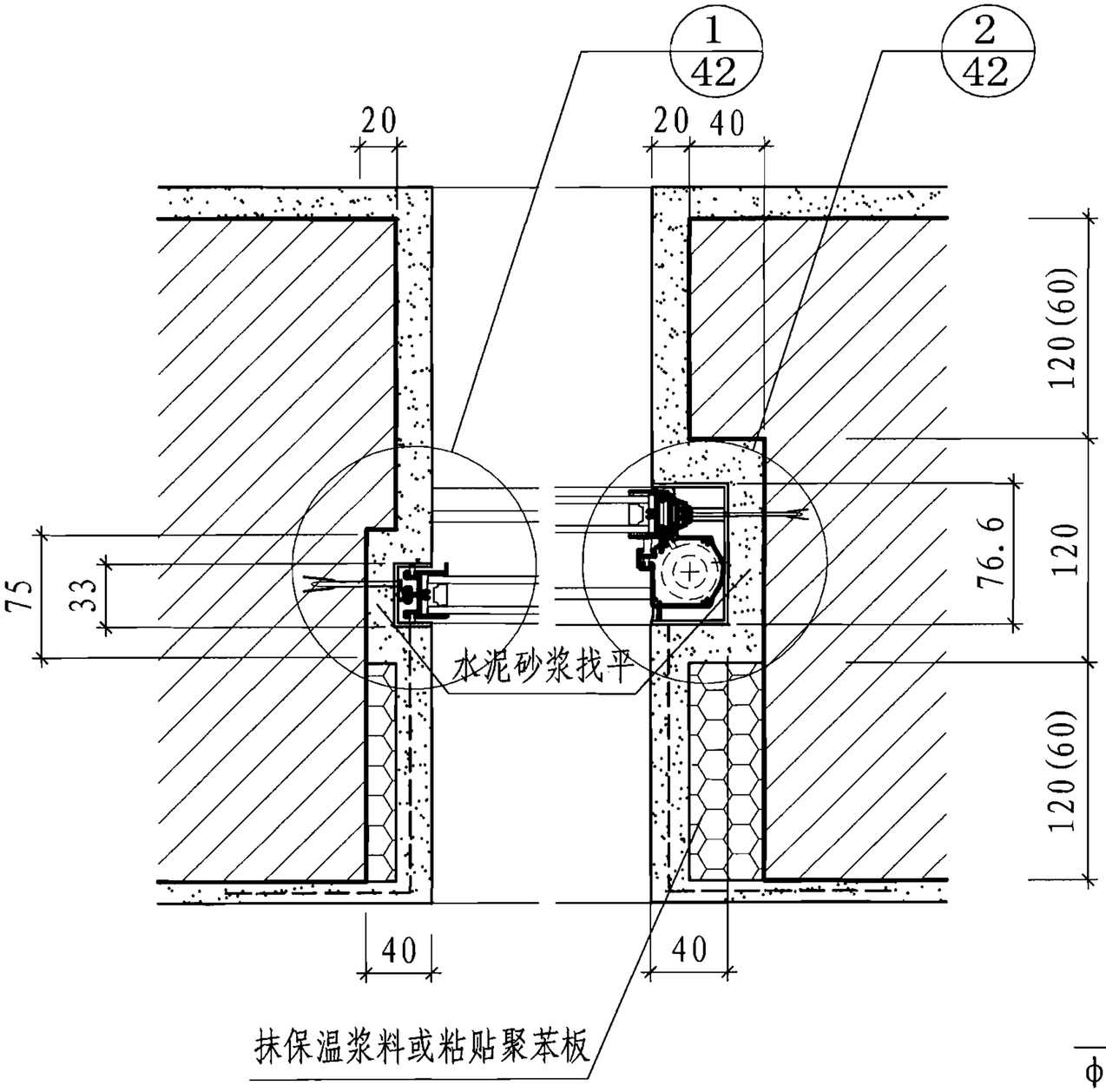


扁铁护边(见外墙保温图集)

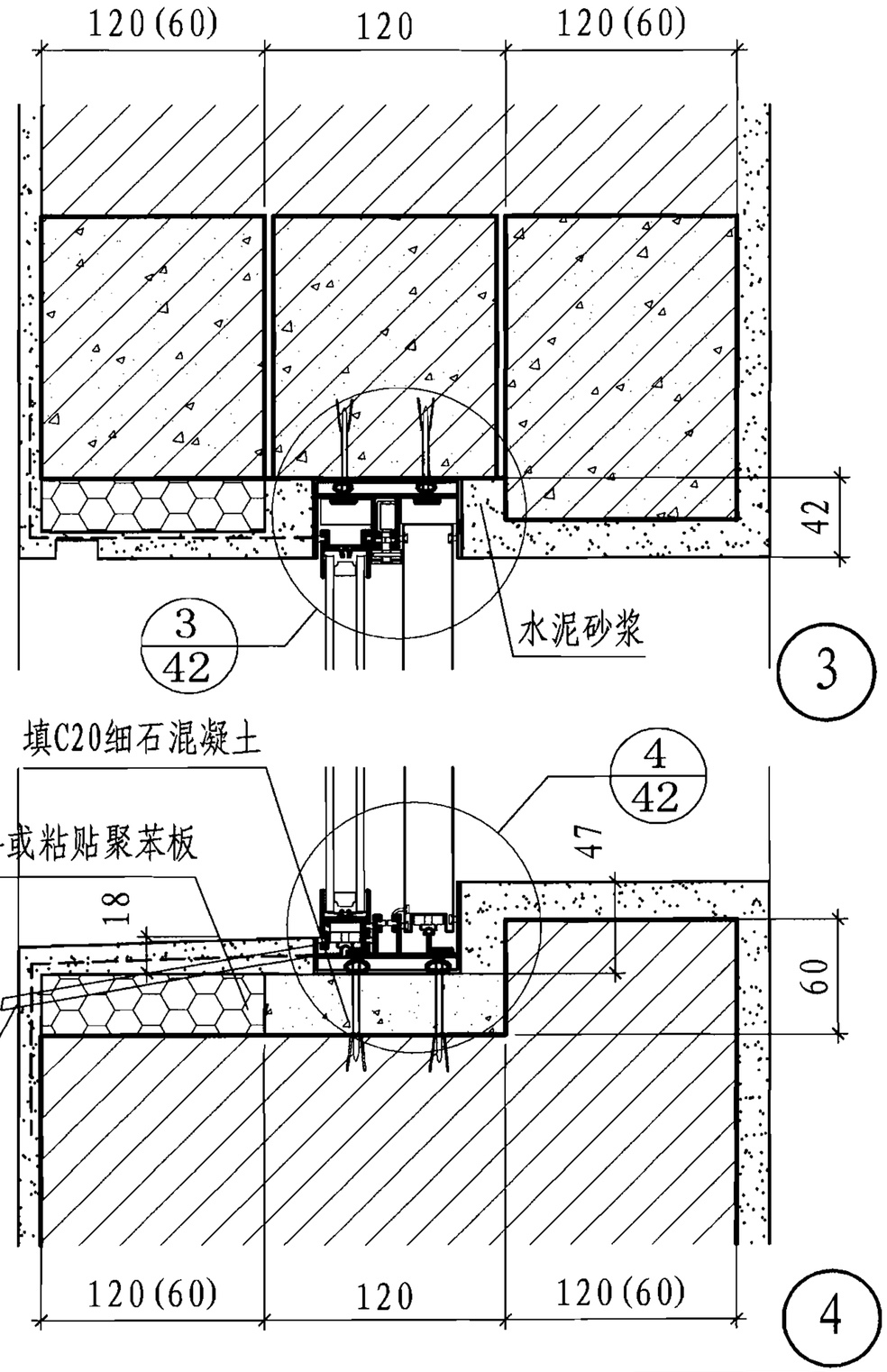
4

注:金属膨胀螺栓≥M6×65;
尼龙锚栓套管外径7~10mm;

BLT-W全无框推拉窗节点图(平式)								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	39



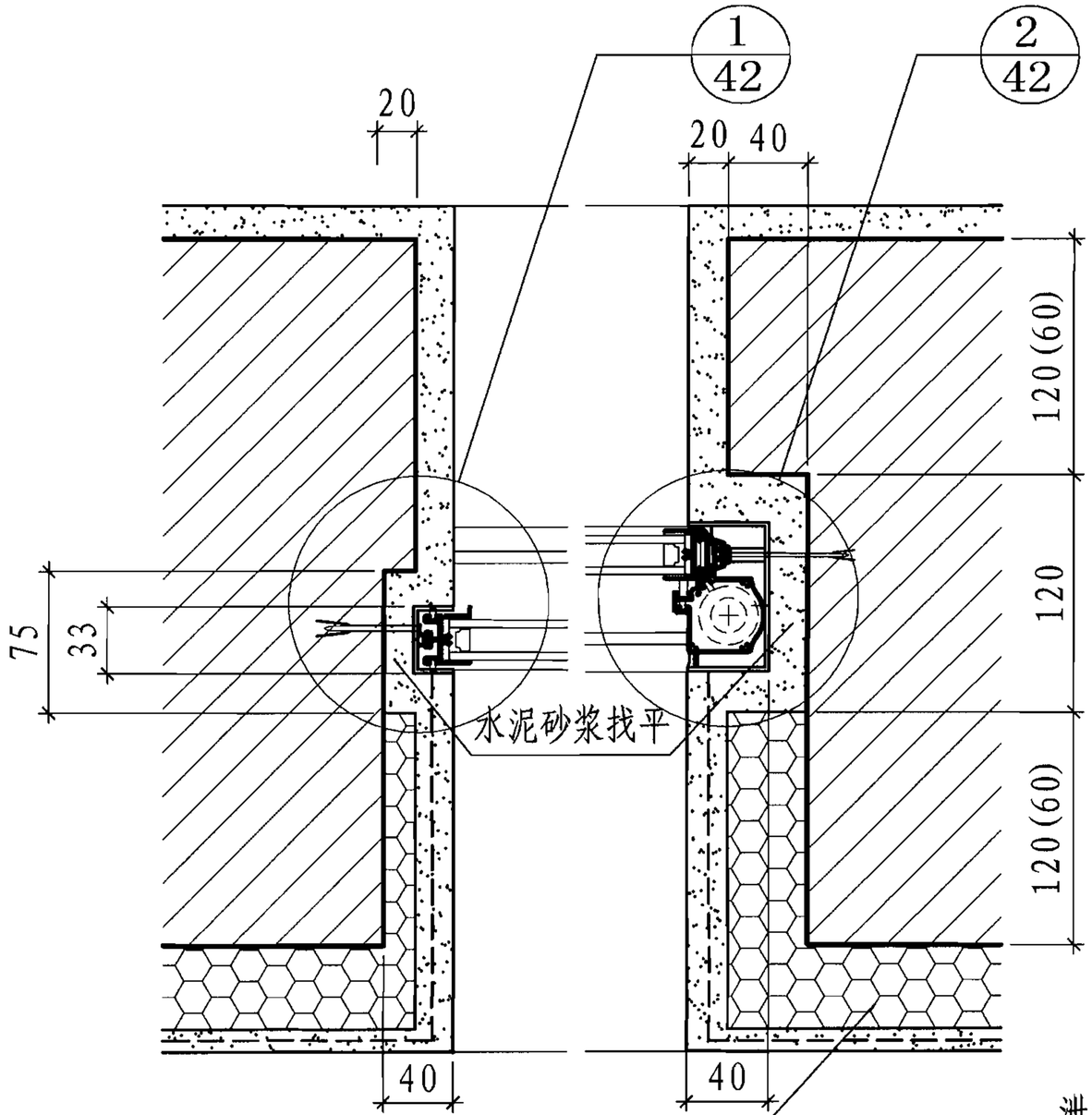
1　　2



3　　4

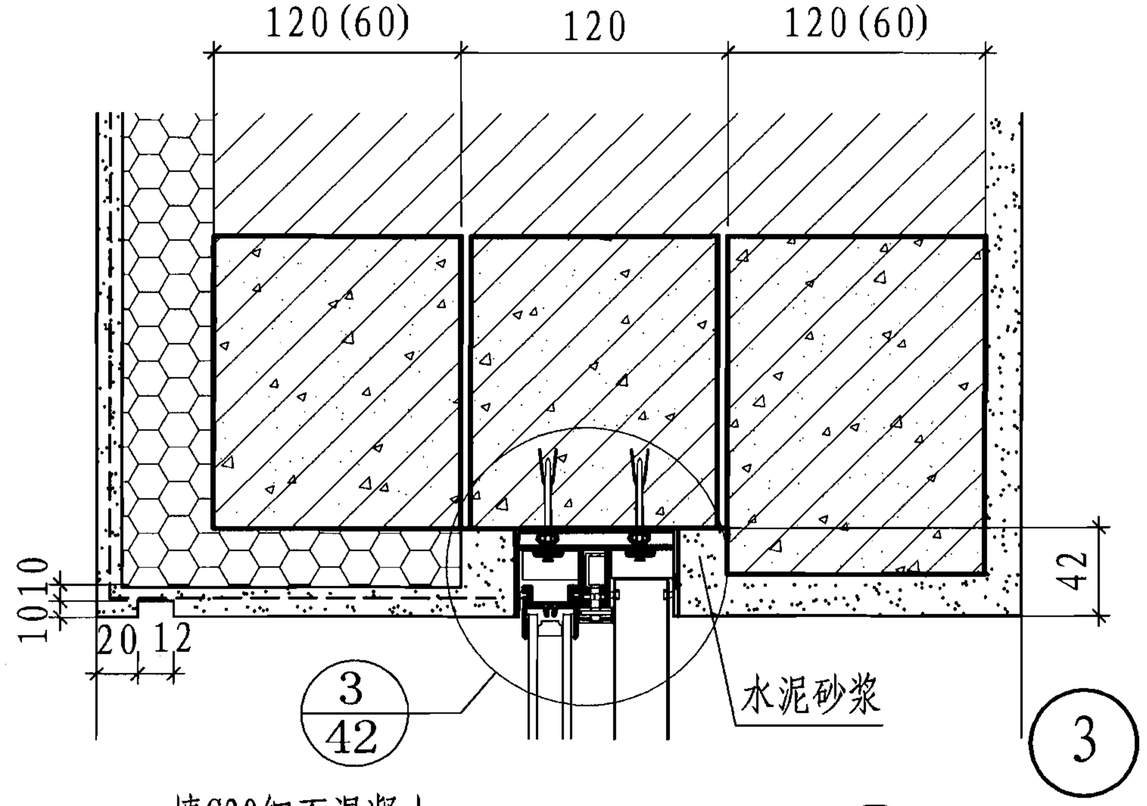
注：金属膨胀螺栓≥M6×65;
尼龙锚栓套管外径7~10mm;

BLT-W全无框推拉窗节点图（凹式）									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	40



1

2



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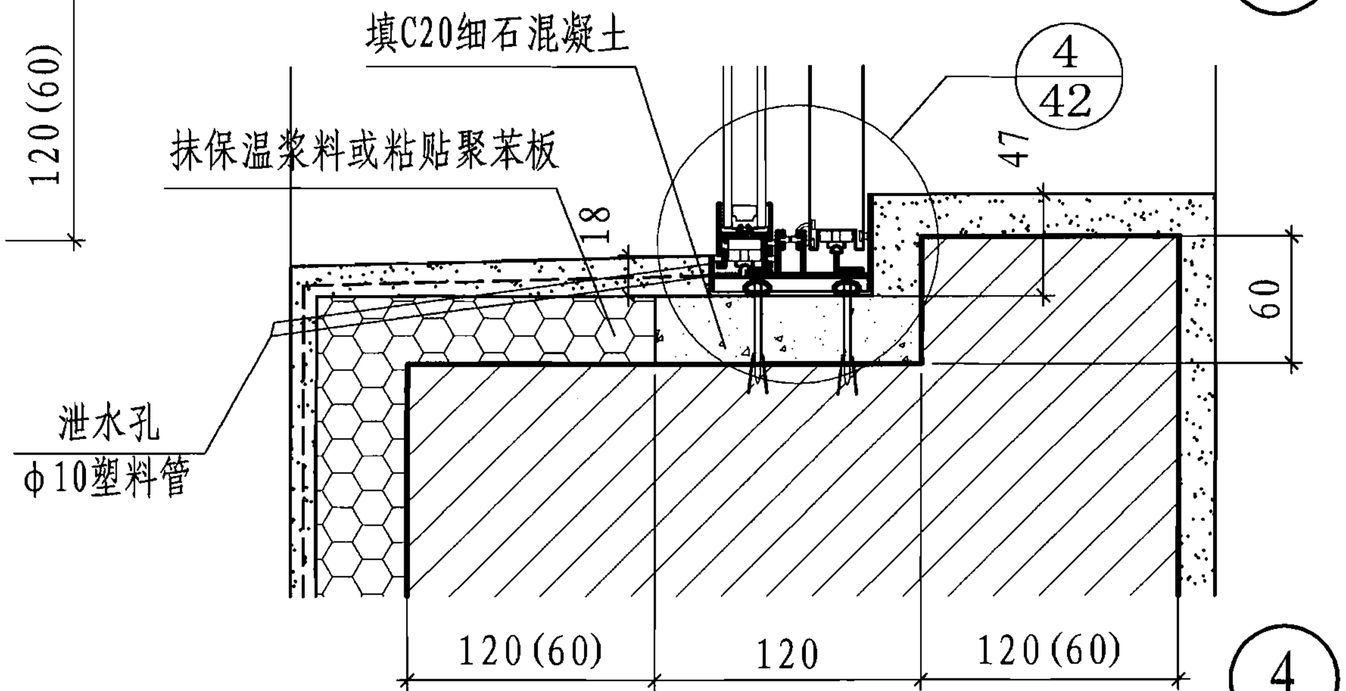
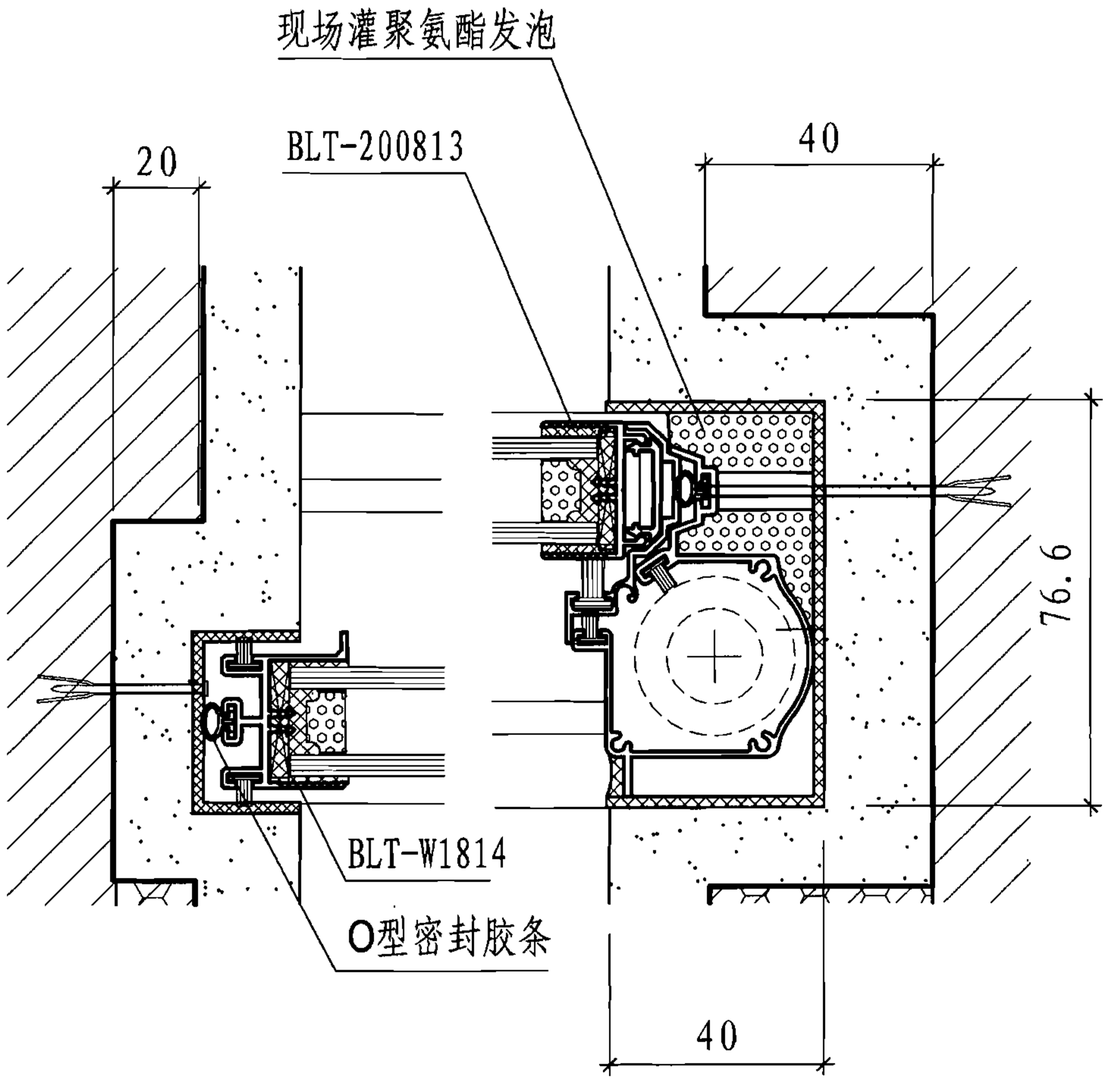


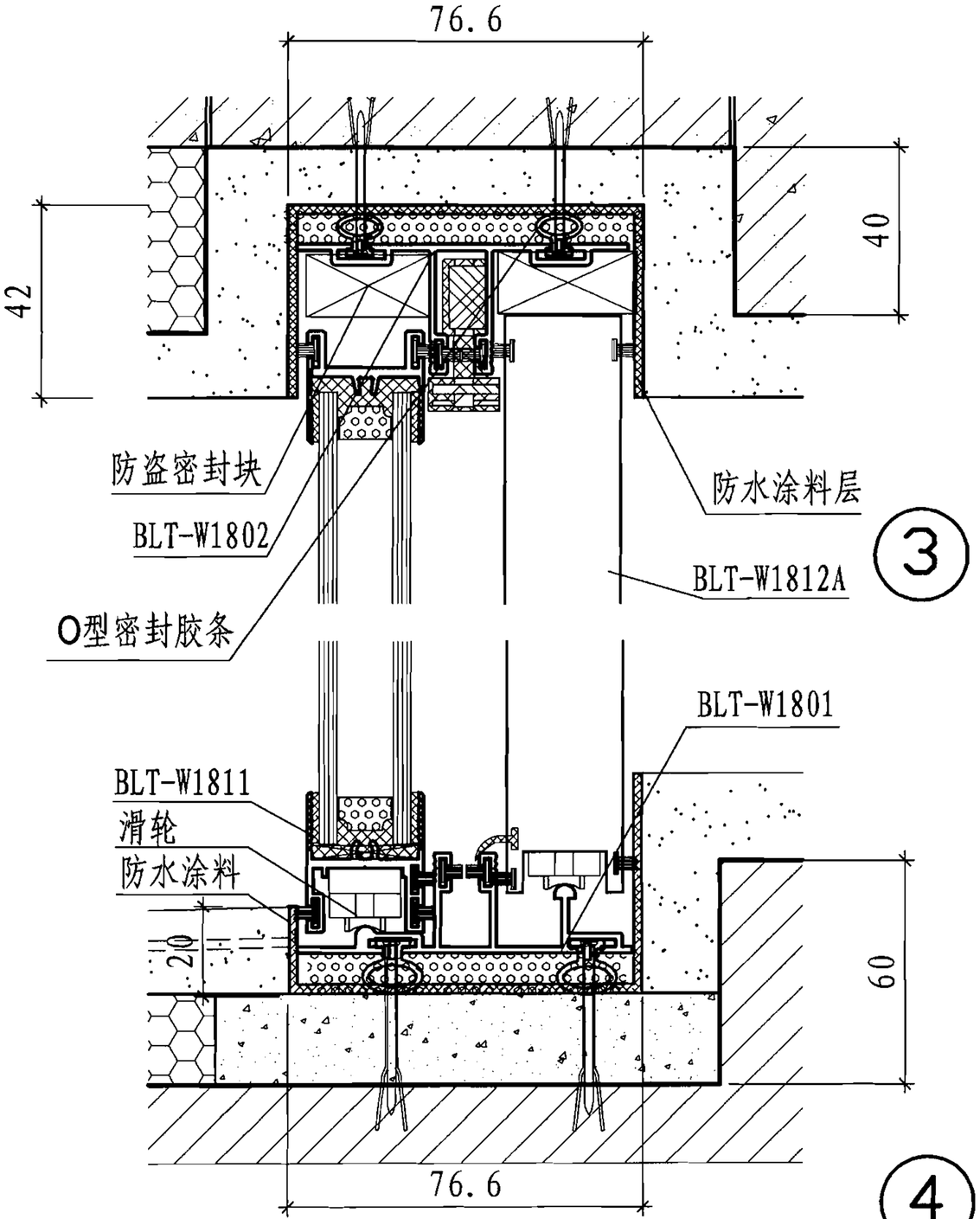
4

注:金属膨胀螺栓≥M6×65;
尼龙锚栓套管外径7~10mm;

BLT -W 全无框推拉窗节点图（凹式）								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	41



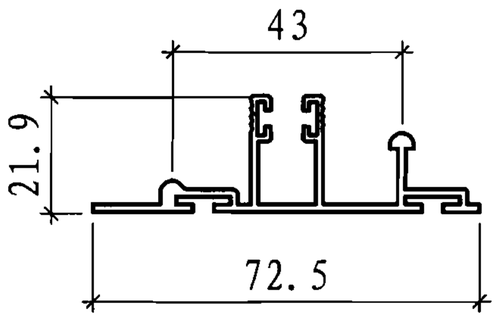
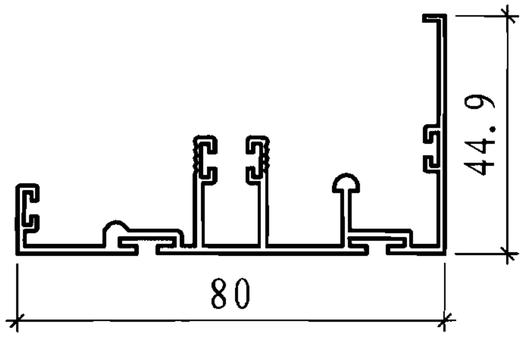
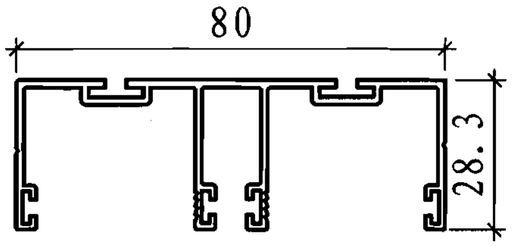
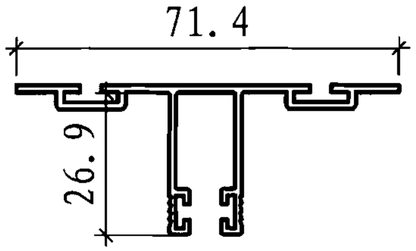
①　　②

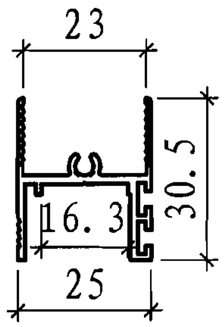
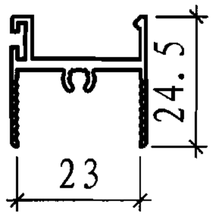
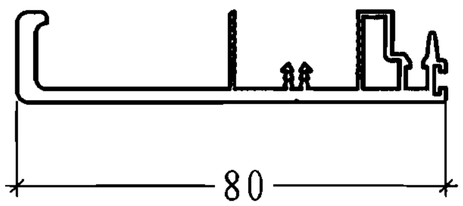
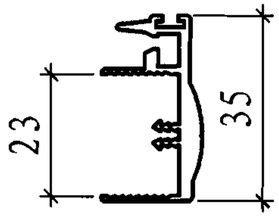


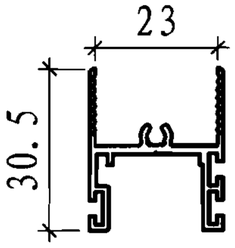
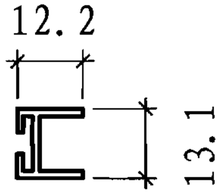
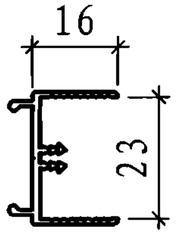
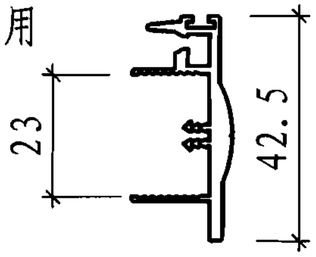
③　　④

注:金属膨胀螺栓≥M6×65;
尼龙锚栓套管外径7~10mm;

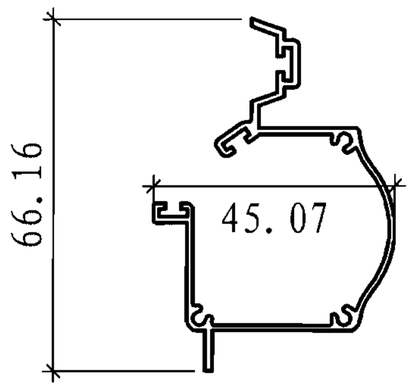
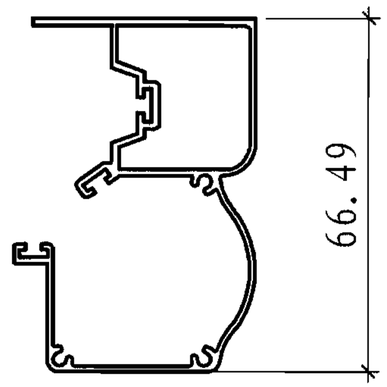
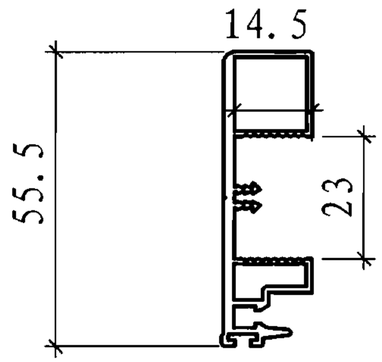
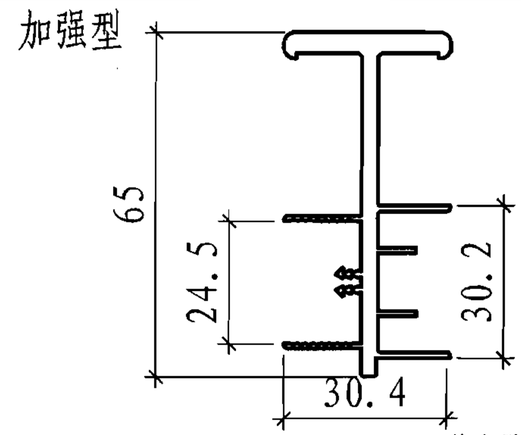
BLT-W全无框推拉窗安装节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	42

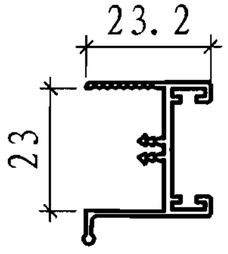
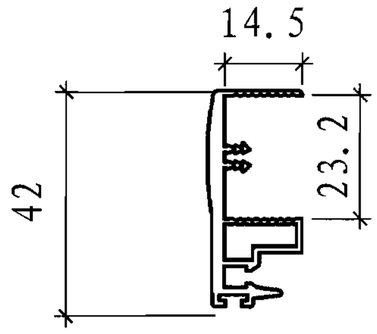
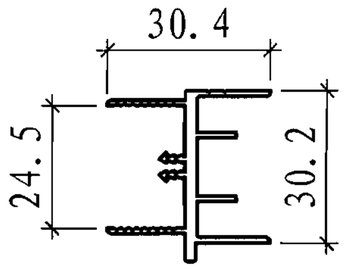
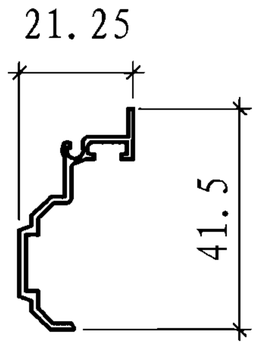
代号 BLT-W1801	线密度 0.571(kg/m)	代号 BLT-W2801	线密度 0.906(kg/m)	代号 BLT-W2802	线密度 0.858(kg/m)	代号 BLT-W1802	线密度 0.521(kg/m)
 基本壁厚 1.4mm		 基本壁厚 1.4mm		 基本壁厚 1.4mm		 基本壁厚 1.4mm	

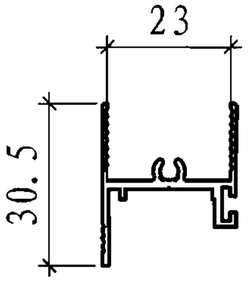
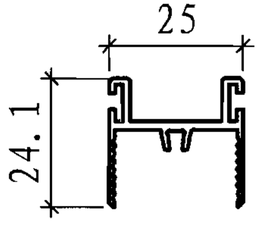
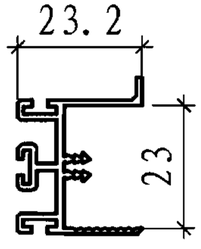
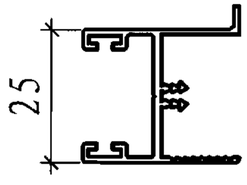
代号 BLT-200811	线密度 0.347(kg/m)	代号 BLT-200812A	线密度 0.29(kg/m)	代号BLT-200815E	线密度 0.905(kg/m)	代号 BLT-200815A	线密度 0.454(kg/m)
 基本壁厚 1.6mm		 基本壁厚 1.5mm		 基本壁厚 2.5mm		纱窗用  基本壁厚 2.0mm	

代号 BLT-W1811	线密度 0.360(kg/m)	代号 BLT-W2804	线密度 0.148(kg/m)	代号 BLT-200813	线密度 0.227(kg/m)	代号 BLT-200815C	线密度 0.64(kg/m)
 基本壁厚		 基本壁厚		 基本壁厚 1.5mm		智能窗用  基本壁厚 2.0mm	

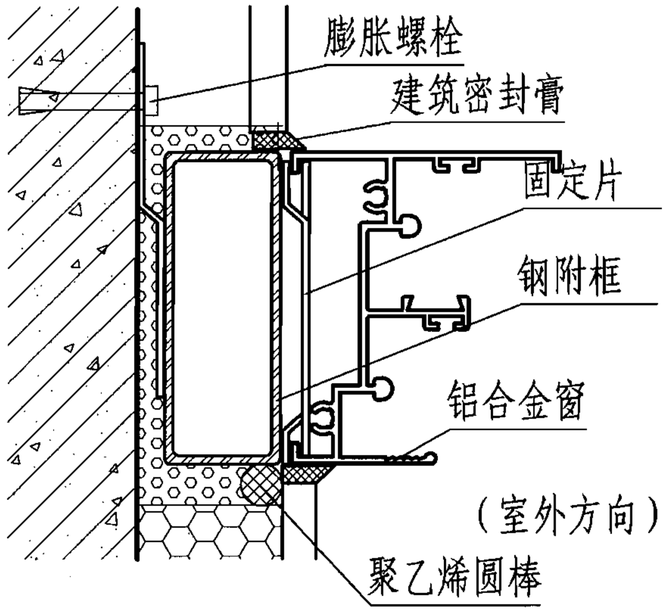
BLT-W无框系列型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	43

代号 BLT-W1860-01	线密度 0.598(kg/m)	代号BLT-W2860-01	线密度 0.833(kg/m)	代号BLT-200815D	线密度 0.733(kg/m)	代号 BLT-200816B	线密度 1.049(kg/m)
 基本壁厚		 基本壁厚		 基本壁厚 2.0mm		 基本壁厚 3.0mm	

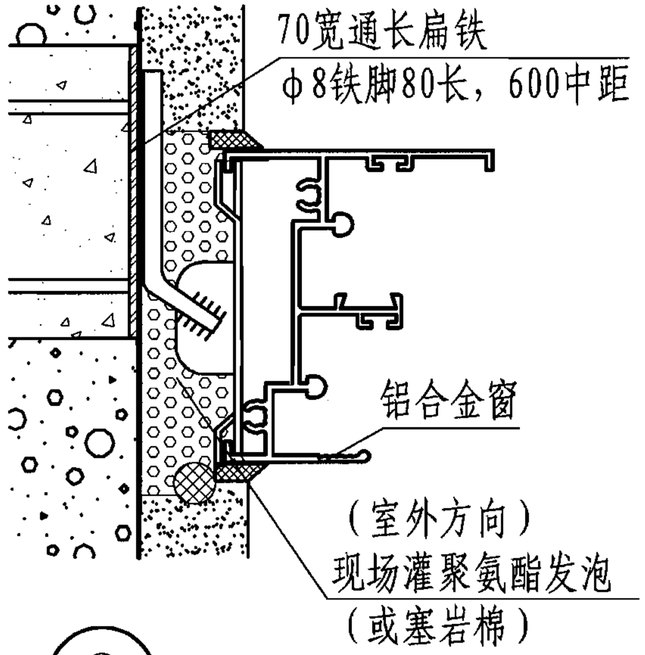
代号 BLT-200814	线密度 0.297(kg/m)	代号 BLT-200815	线密度 0.510(kg/m)	代号BLT-200816A	线密度 0.413(kg/m)	代号 BLT-200819	线密度 0.224(kg/m)
 基本壁厚 1.5mm		 基本壁厚 2.3mm		 基本壁厚 2.3mm		 基本壁厚 1.2mm	

代号 BLT-W2811	线密度 0.301(kg/m)	代号 BLT-W1812	线密度 0.300(kg/m)	代号 BLT-W1814	线密度 0.355(kg/m)	代号 BLT-W2814	线密度 0.340(kg/m)
 基本壁厚		 基本壁厚		 基本壁厚		 基本壁厚	

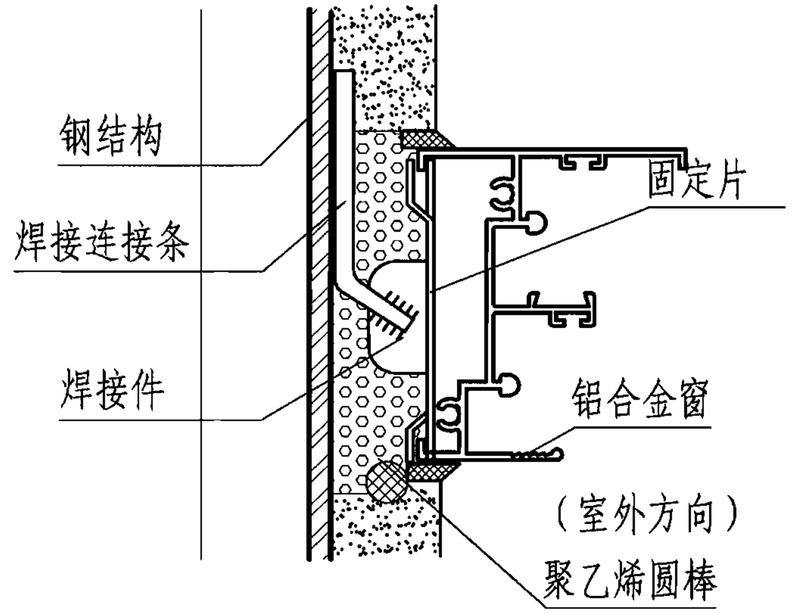
BLT-W无框系列型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	44



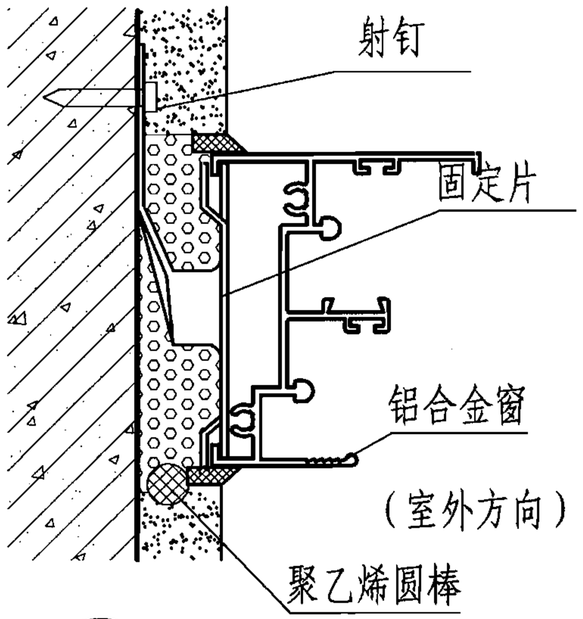
1 附框安装



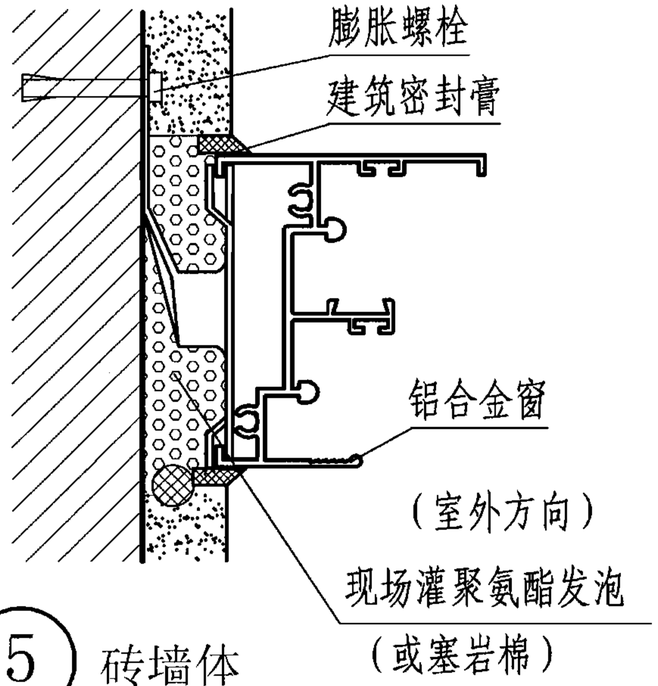
2 轻质墙体



3 钢结构



4 钢筋混凝土墙体

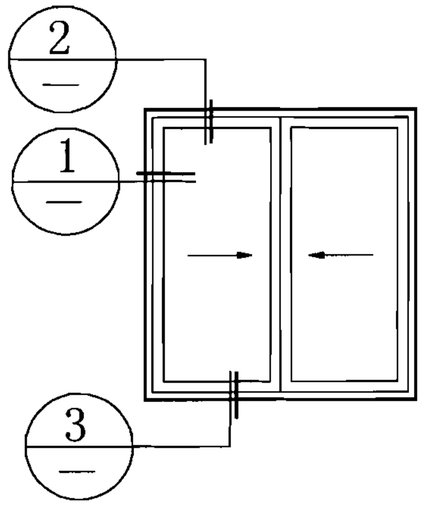


5 砖墙体

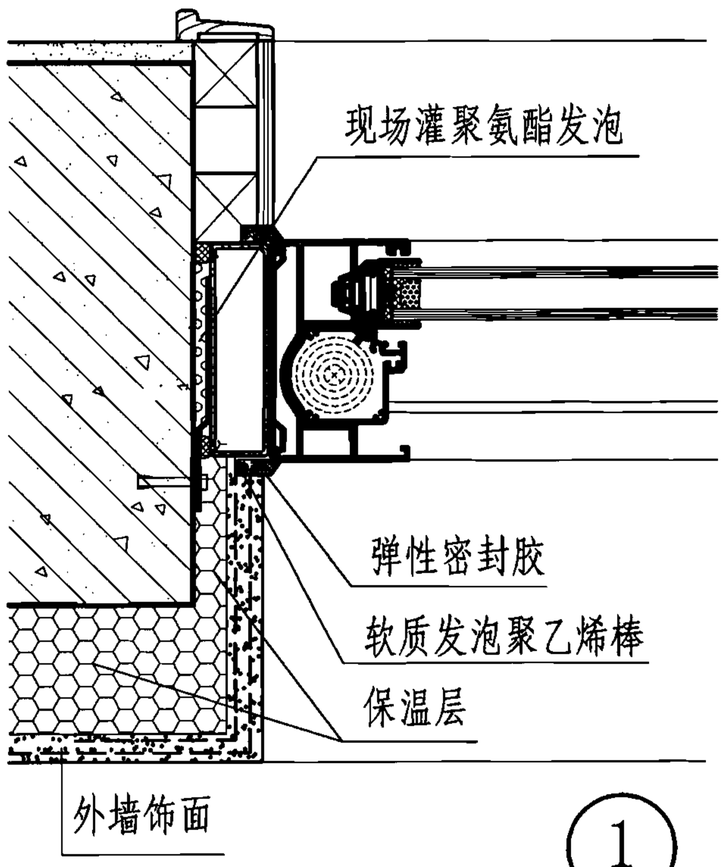
注：

1. 连接件尺寸≥140×20×1.5；
2. 焊接板尺寸≥80×80×5；
3. 金属膨胀螺栓≥M6×65；
   尼龙锚栓套管外径7～10mm；
4. 射钉≥3.7×42。

有框门窗安装通用节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	45



窗口立面示意图



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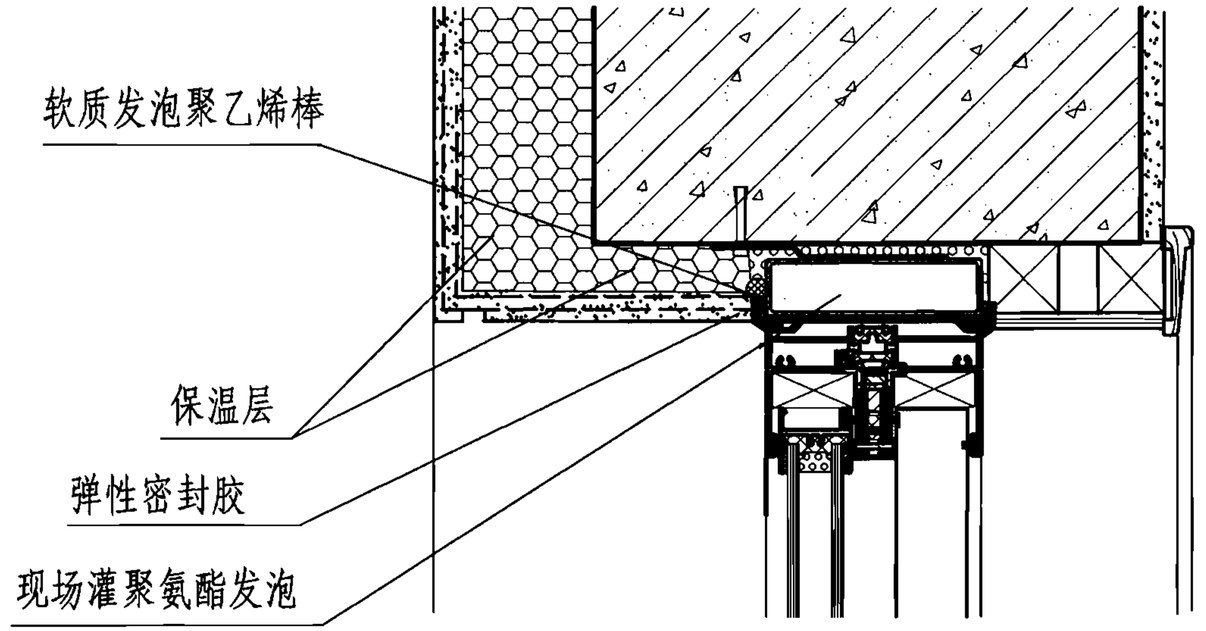

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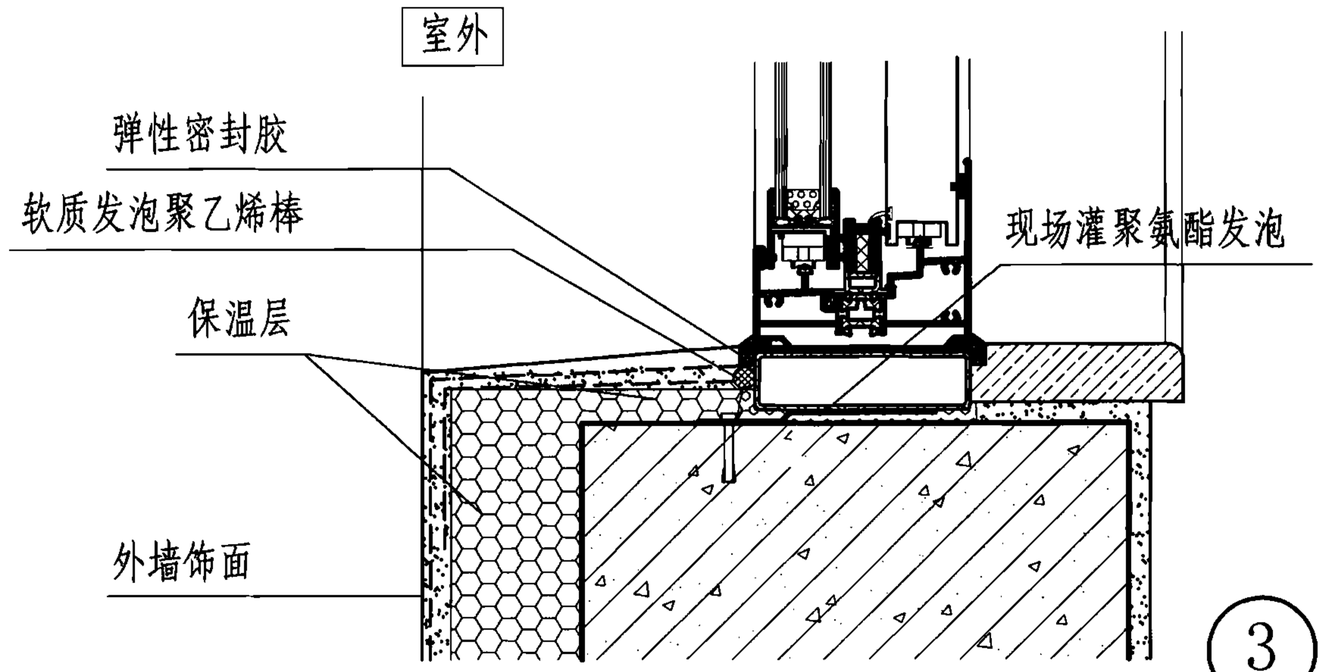
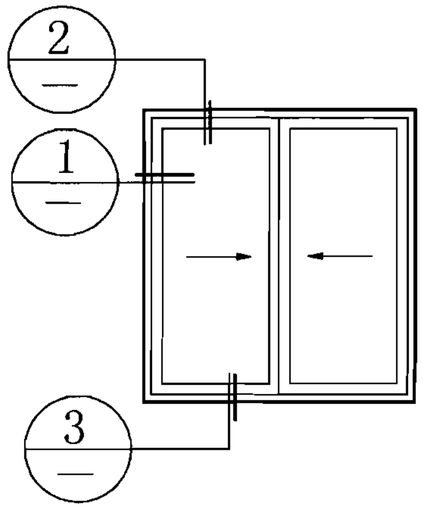
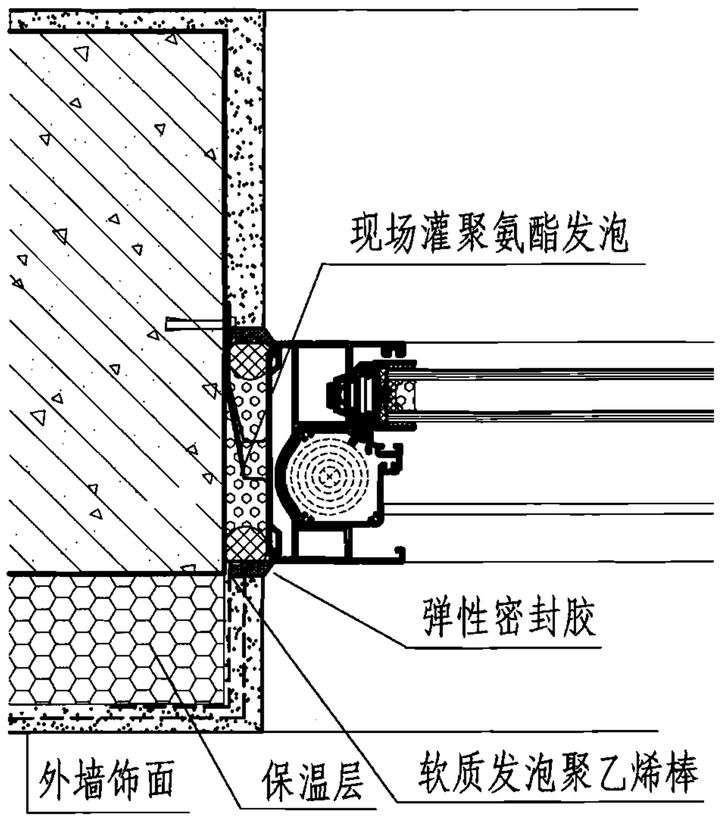


3

窗框与墙体连接-沿墙居中安装节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	46



窗口立面示意图



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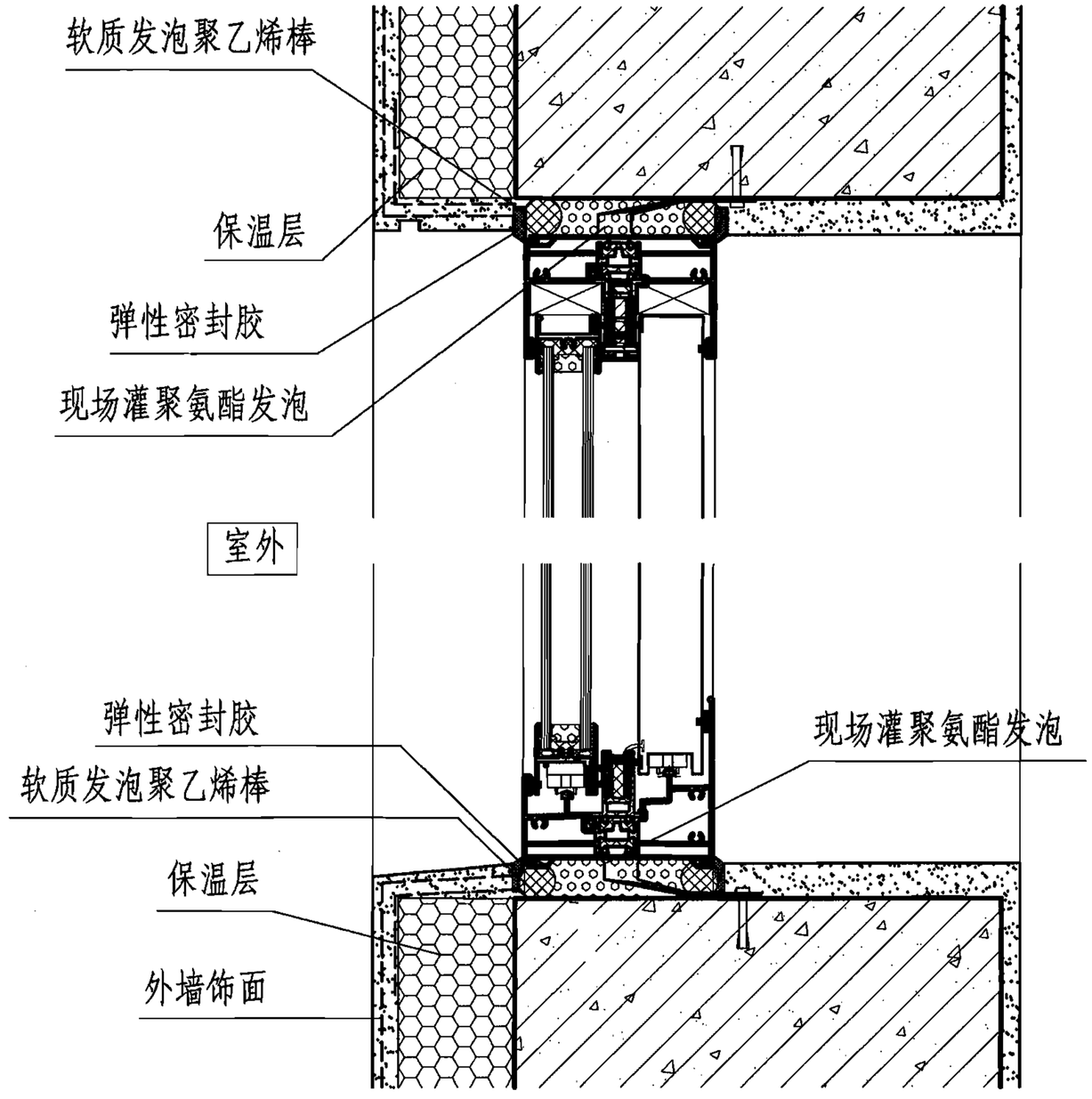


2

3

窗框与墙体连接-沿墙外侧安装节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	47

BLPL150系列外平开窗说明

1 本系列型材框厚度构造尺寸为50，采用45度角码连接。

2 本图集绘制了组合门窗拼接节点图。根据工程需要，可利用拼樘料组合成其他形式的固定、带窗、条窗或门连窗。

3 本系列平开窗主要的功能有:

3.1 外开;

3.2 可安装隐形纱窗,纱窗构件隐藏于窗框内,开窗后能方便地开启纱窗功能。（见图示）

4 本系列使用的最大基本窗尺寸一般为2100×1800(宽×高);
最大开启扇尺寸一般为600×1200(宽×高)。

5 本系列平开窗的特点:

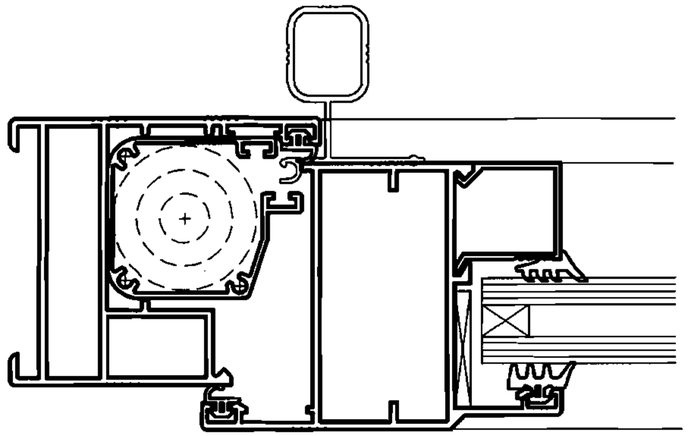
5.1 为外开窗。

5.2 产品构件采用45度对接式角码连接结构。

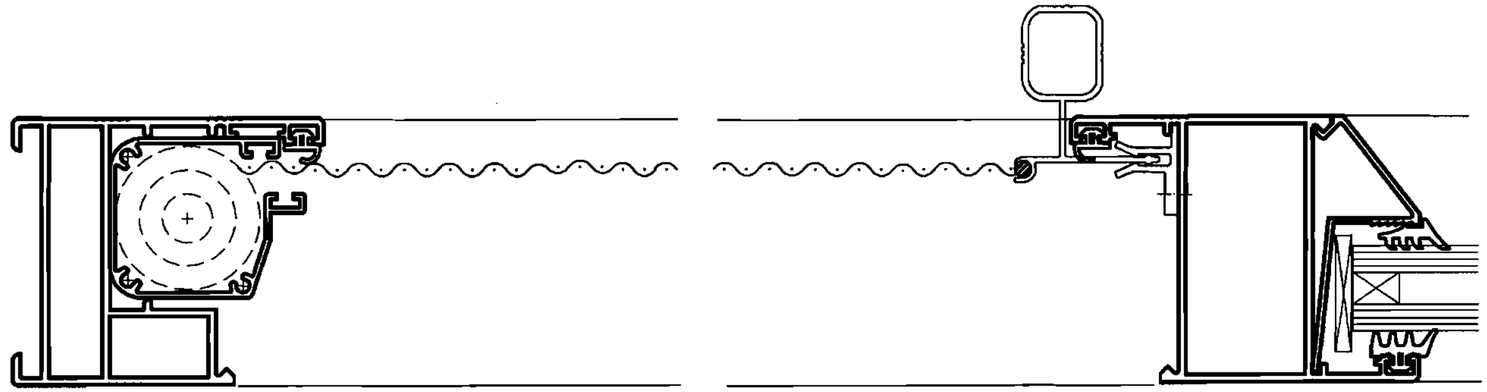
5.3 中空玻璃可采用(5+6 A+5)mm和(5+9A+5)mm(压条不同)。

5.4 安装有隐形纱窗，整个机构隐藏在窗框内。

5.5 选用高档不锈钢五金配件。



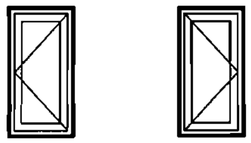
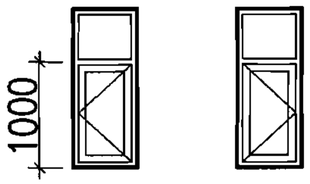
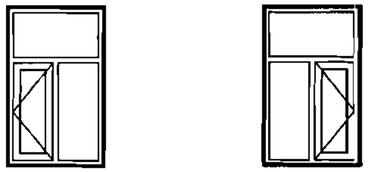
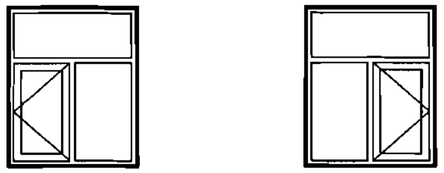
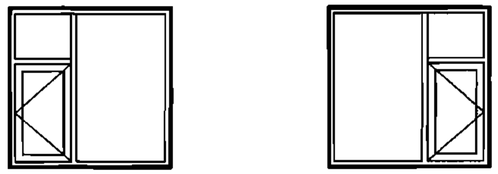
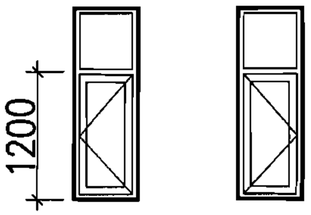
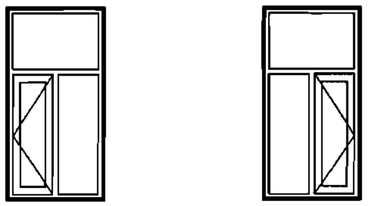
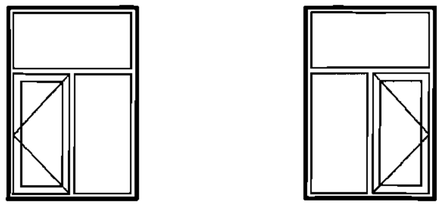
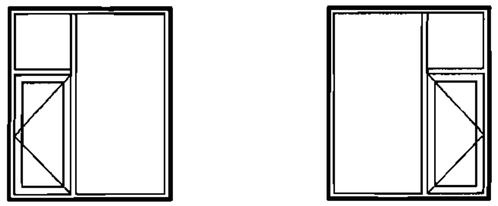
a.安装有隐形纱窗，整个机构隐藏在窗框内。



b.开窗后能方便地开启纱窗。

隐形纱窗示意图

BLPL150系列外平开窗说明									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	48

洞高 \ 洞宽	600	900	1200	1500
600	WPC1-0606 WPC2-0606	WPC1-0906 WPC2-0906	WPC1-1206 WPC2-1206	WPC1-1506 WPC2-1506
900	WPC1-0609 WPC2-0609	WPC1-0909 WPC2-0909	WPC1-1209 WPC2-1209	WPC1-1509 WPC2-1509
1200	 WPC1-0612 WPC2-0612	WPC1-0912 WPC2-0912	WPC1-1212 WPC2-1212	WPC1-1512 WPC2-1512
1500	 WPC1-0615 WPC2-0615	 WPC1-0915 WPC2-0915	 WPC1-1215 WPC2-1215	 WPC1-1515 WPC2-1515
1800	 WPC1-0618 WPC2-0618	 WPC1-0918 WPC2-0918	 WPC1-1218 WPC2-1218	 WPC1-1518 WPC2-1518

注：平开窗的开启扇，其净宽不宜大于600，净高不宜大于1200。

BLPL150系列外平开窗立面图

图集号	07CJ12
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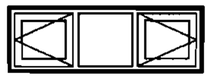
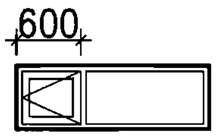
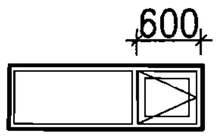
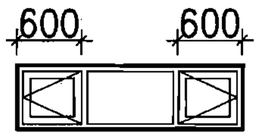
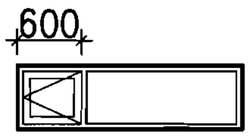
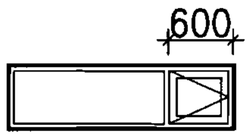
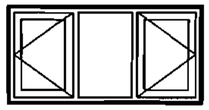
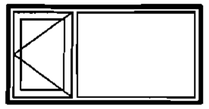
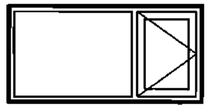
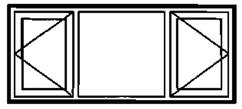
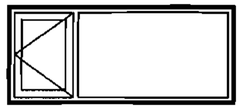
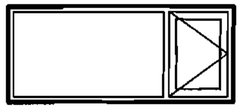
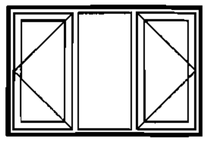
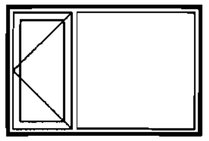
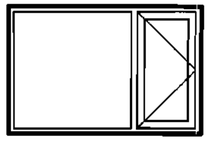
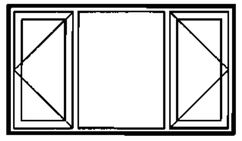
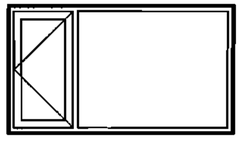
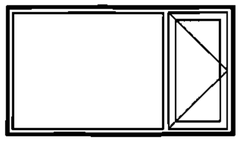
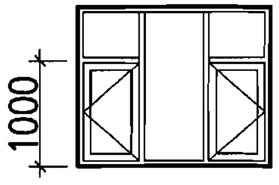
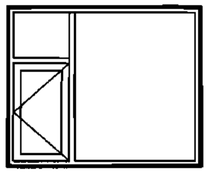
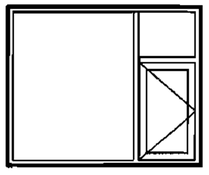
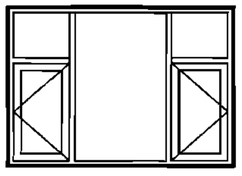
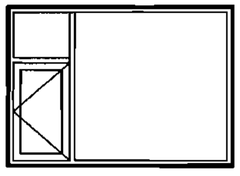
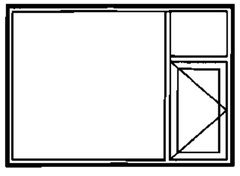
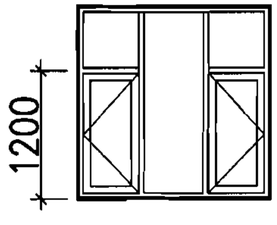
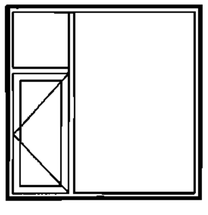
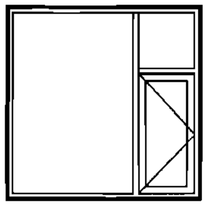
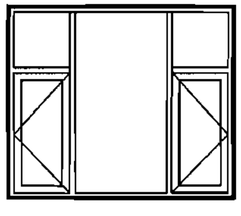
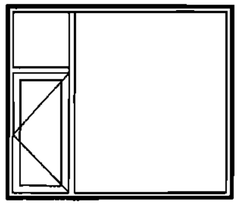
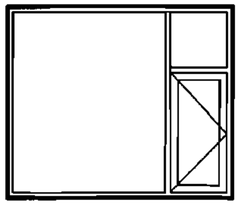
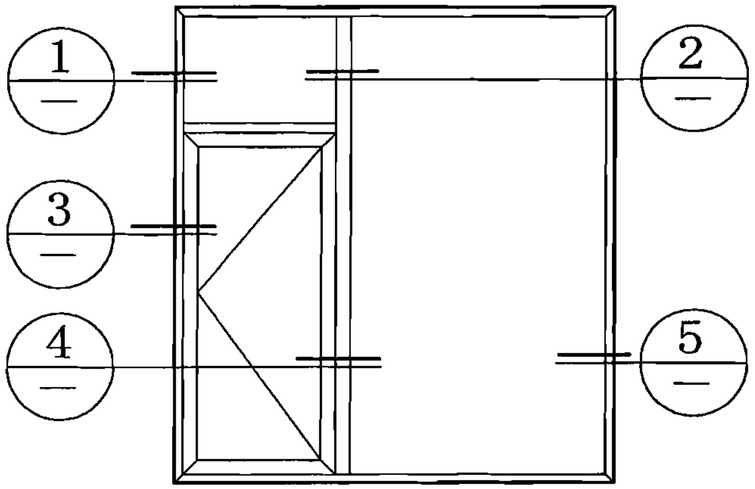
审核	焦冀曾	校对	杨兴义	设计	余金璋

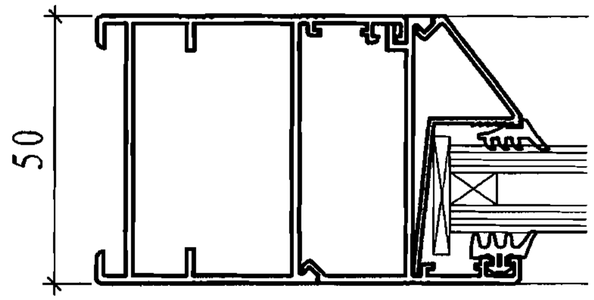
洞高 \ 洞宽	1800			2100		
600	 WPC1-1806	 WPC2-1806	 WPC3-1806	 WPC1-2106	 WPC2-2106	 WPC3-2106
900	 WPC1-1809	 WPC2-1809	 WPC3-1809	 WPC1-2109	 WPC2-2109	 WPC3-2109
1200	 WPC1-1812	 WPC2-1812	 WPC3-1812	 WPC1-2112	 WPC2-2112	 WPC3-2112
1500	 WPC1-1815	 WPC2-1815	 WPC3-1815	 WPC1-2115	 WPC2-2115	 WPC3-2115
1800	 WPC1-1818	 WPC2-1818	 WPC3-1818	 WPC1-2118	 WPC2-2118	 WPC3-2118

注：平开窗的开启扇，其净宽不宜大于600，净高不宜大于1200。

BLPL150系列外平开窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	50



窗立面图



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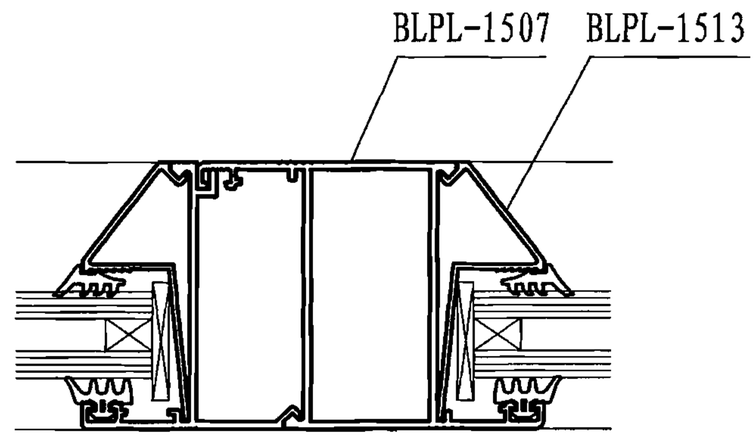

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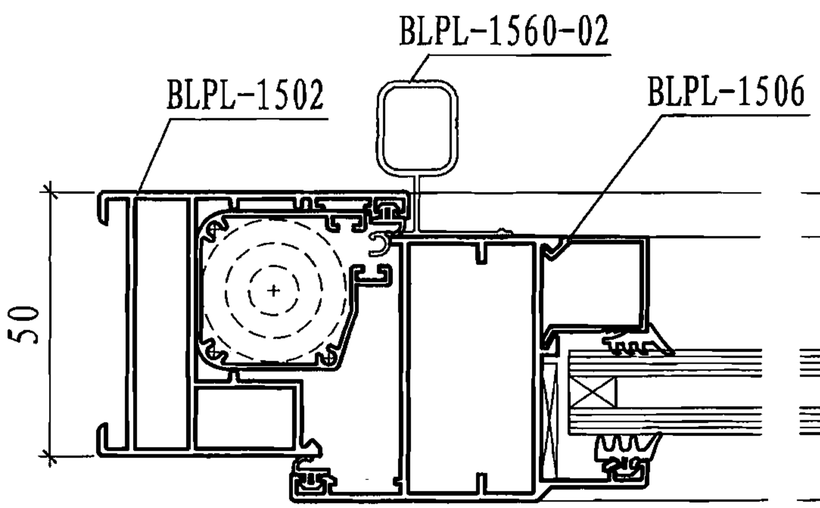

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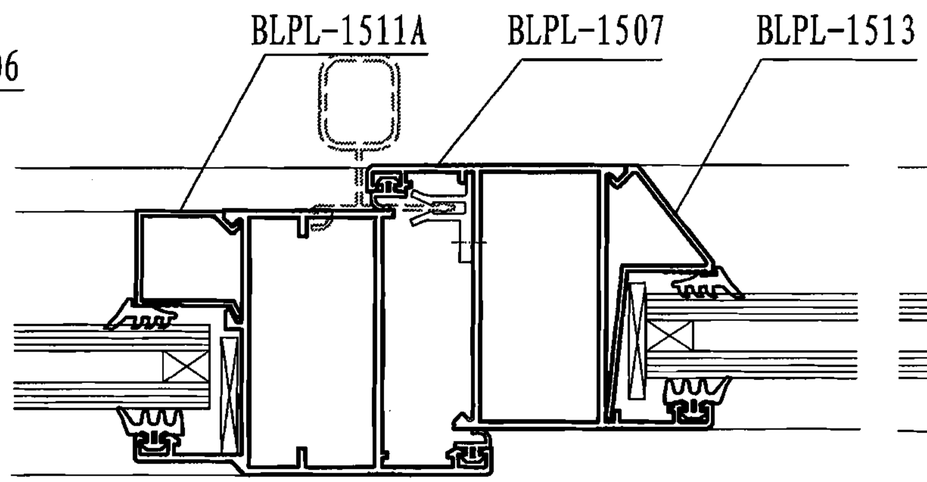

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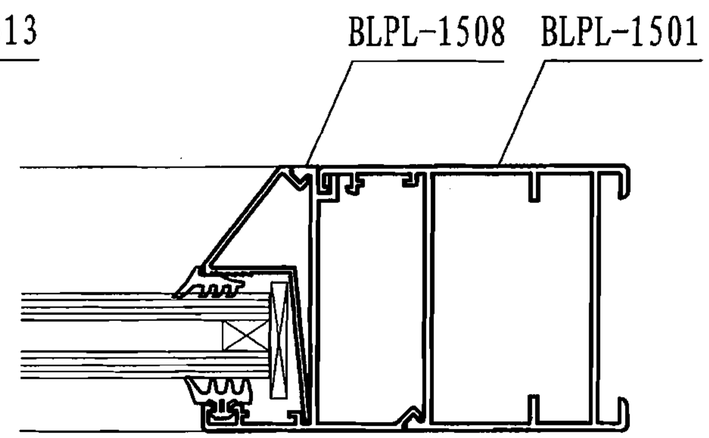
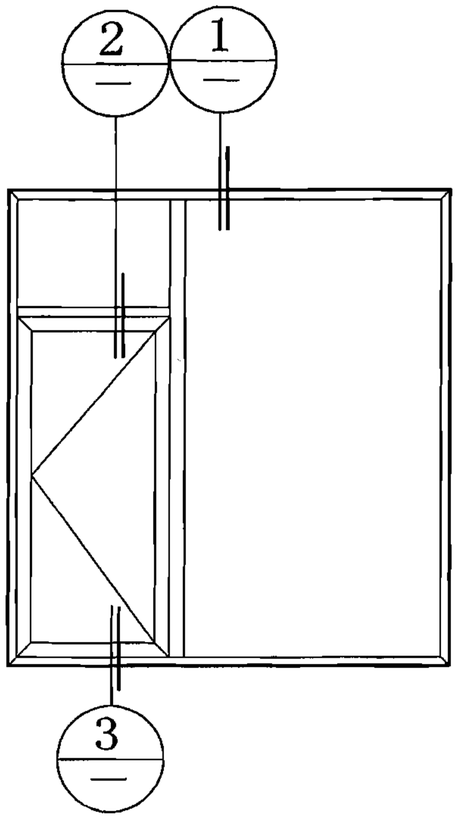
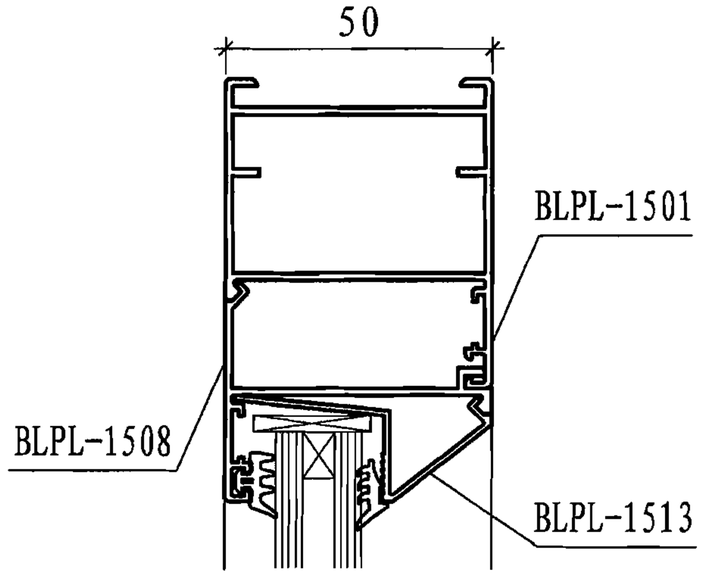


5

BLPL150系列外平开窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	51



窗立面图



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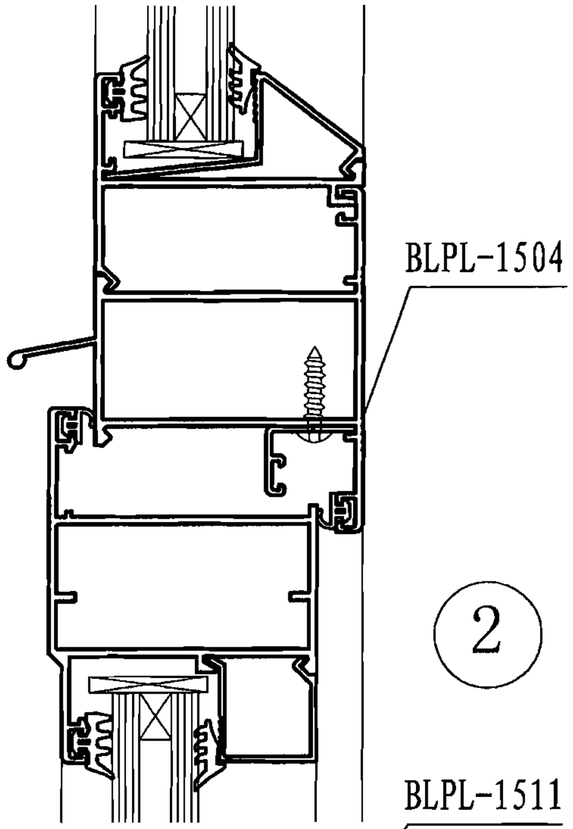

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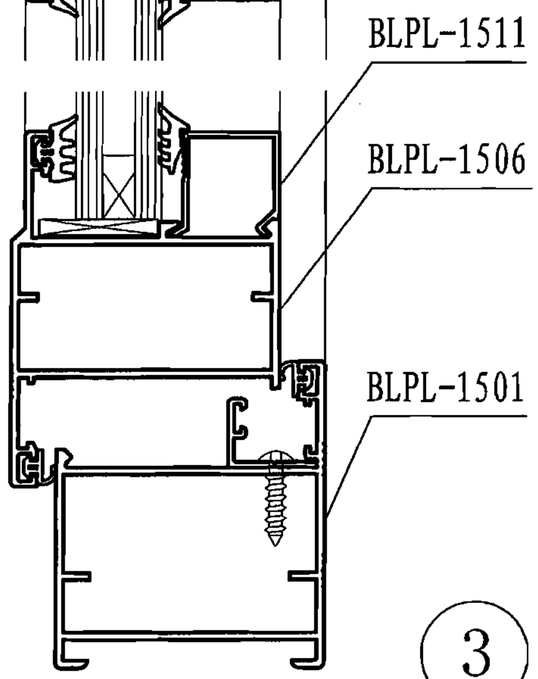

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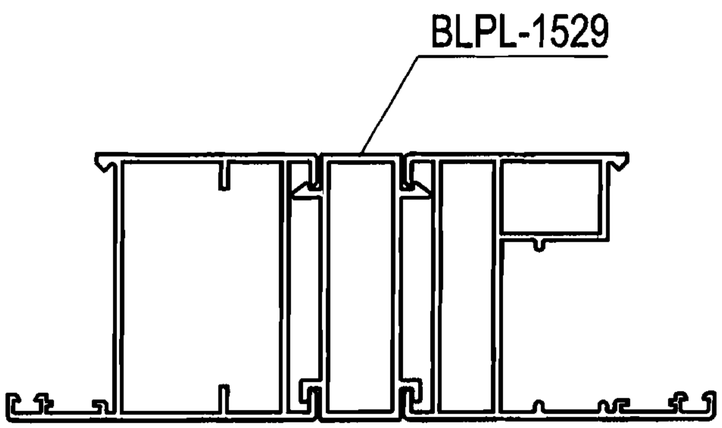
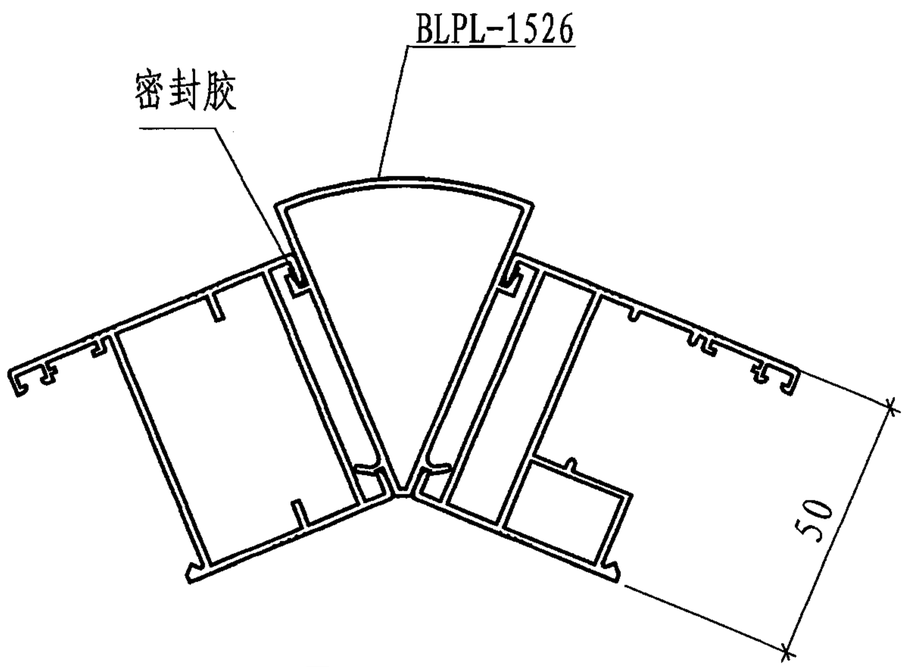
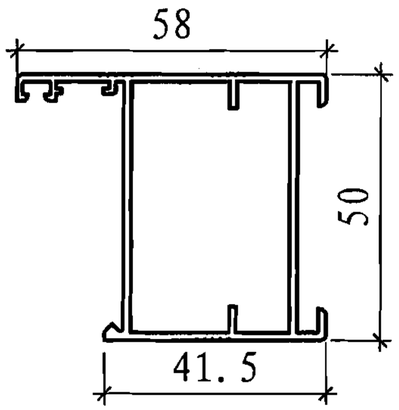
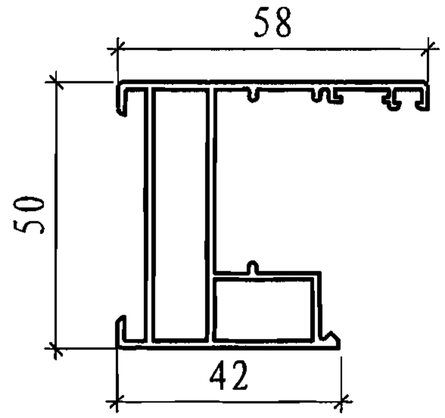
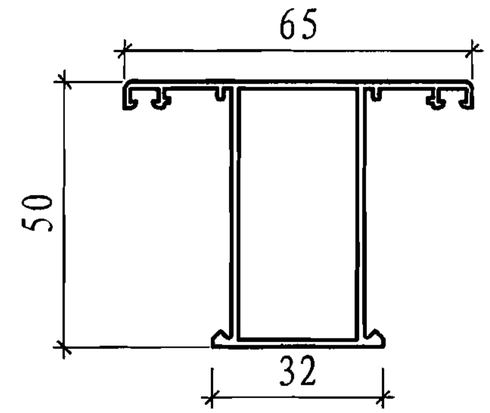
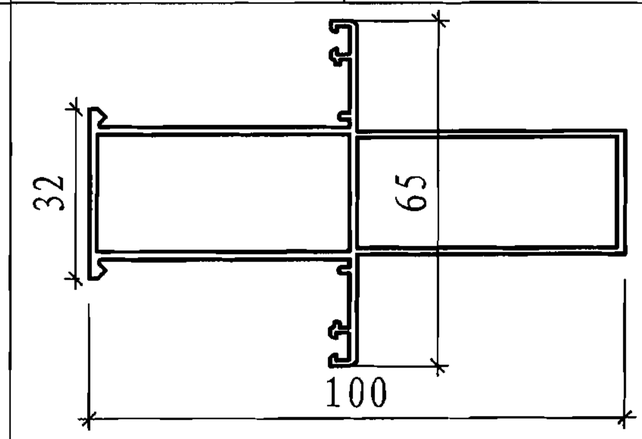


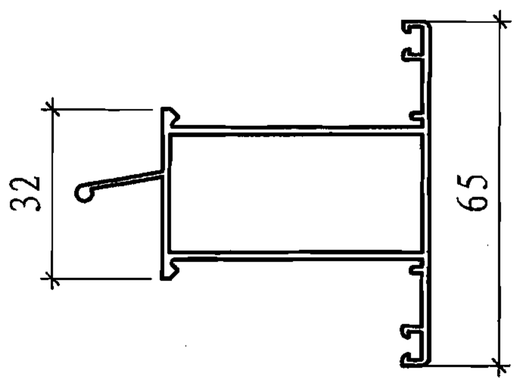
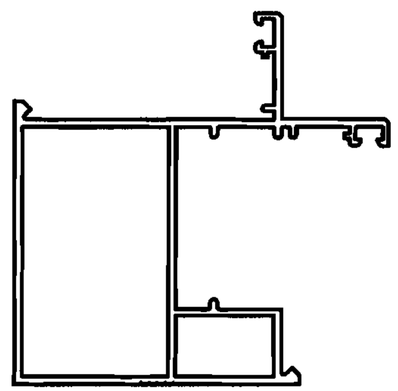
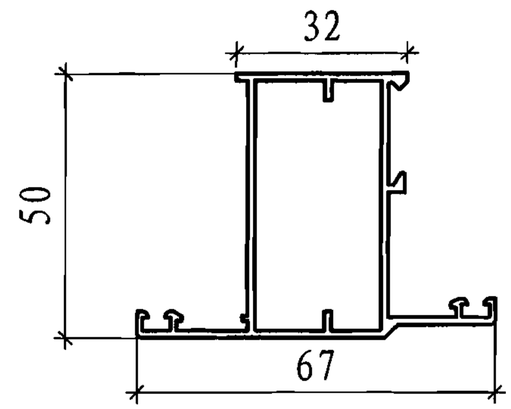
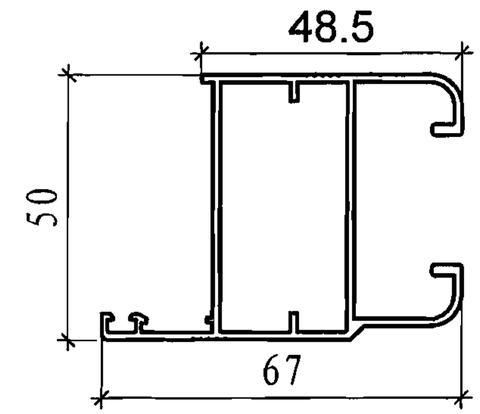
4 拼樘图

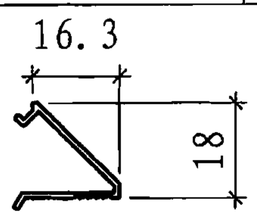
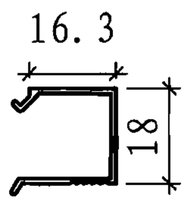
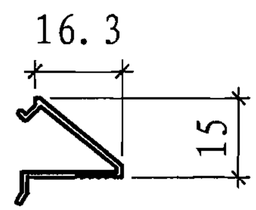
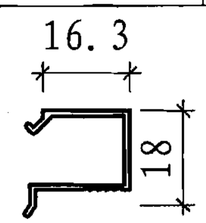


5 窗转角图

BLPL150系列外平开窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	52

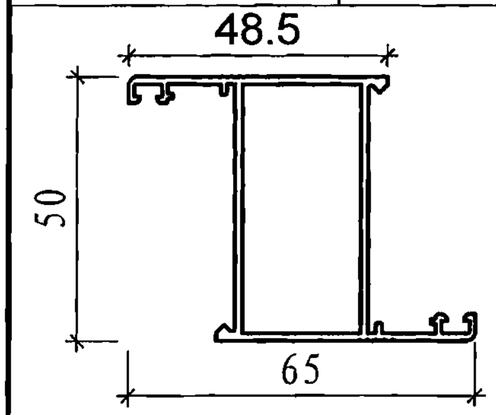
代号 BLPL-1501	线密度 0.845(kg/m)	代号 BLPL-1502	线密度 0.936(kg/m)	代号 BLPL-1503	线密度 0.802 (kg/m)	代号 BLPL-1503A	线密度 1.218 (kg/m)
 基本壁厚 1.4mm		 基本壁厚 1.4mm		 基本壁厚 1.4mm		 基本壁厚 1.4mm	

代号 BLPL-1504	线密度 0.855 (kg/m)	代号 BLPL-1505	线密度 1.123(kg/m)	代号 BLPL-1506	线密度 0.846 (kg/m)	代号 BLPL-1506A	线密度 0.957 (kg/m)
 基本壁厚 1.4mm		 基本壁厚 1.4mm		 基本壁厚 1.4mm		 基本壁厚 1.4mm	

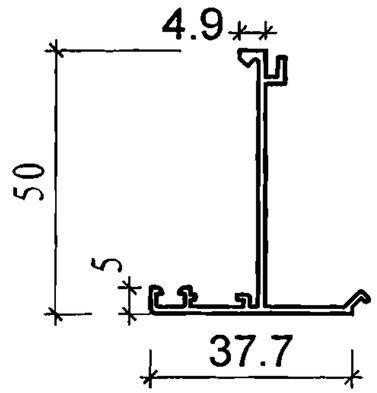
代号 BLPL-1511	线密度 0.13(kg/m)	代号 BLPL-1511A	线密度 0.155(kg/m)	代号 BLPL-1512	线密度 0.13(kg/m)	代号 BLPL-1512A	线密度 0.155(kg/m)
 基本壁厚 1.0mm		 基本壁厚 1.0mm		 基本壁厚 1.0mm		 基本壁厚 1.0mm	

BLPL150系列型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	53

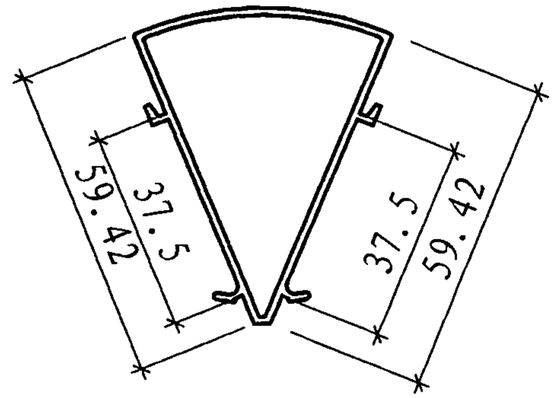
代号 BLPL-1507	线密度 0.803(kg/m)	代号 BLPL-1508	线密度 0.425(kg/m)	代号 BLPL-1526	线密度 0.706(kg/m)	代号 BLPL-1527	线密度 0.923(kg/m)



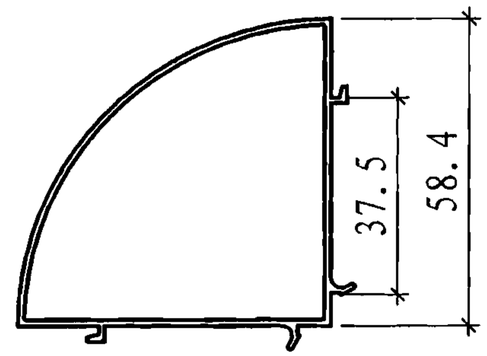
基本壁厚 1.4mm



基本壁厚 1.4mm

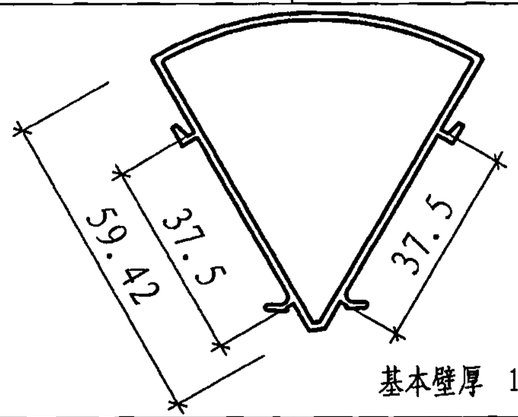


基本壁厚 1.4mm

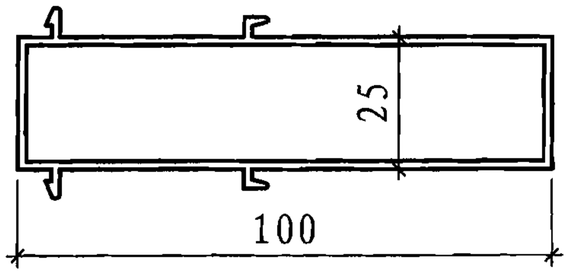


基本壁厚 1.4mm

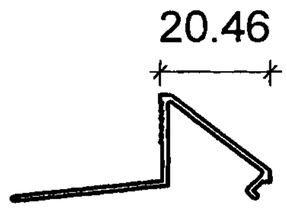
代号 BLPL-1528	线密度 0.764(kg/m)	代号 BLPL-1529A	线密度 1.092(kg/m)	代号 BLPL-1513	线密度 0.212(kg/m)	代号 BLPL-1514	线密度 0.214(kg/m)



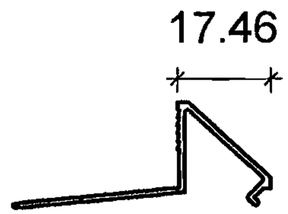
基本壁厚 1.4mm



基本壁厚 1.5mm

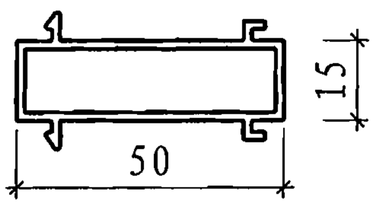


基本壁厚 1.0mm

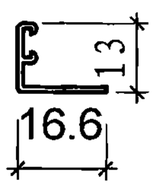


基本壁厚 1.0mm

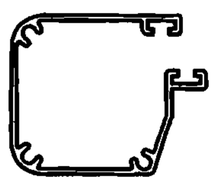
代号 BLPL-1529	线密度 0.604(kg/m)	代号 BLPL-1515	线密度 0.088(kg/m)	代号BLPL-1660-01	线密度 0.355(kg/m)	代号BLPL-1560-02	线密度 0.290(kg/m)



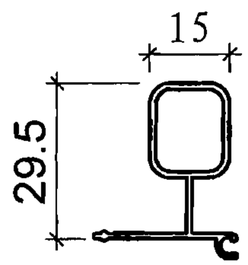
基本壁厚 1.5 mm



基本壁厚



基本壁厚



基本壁厚

BLPL150系列型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	54

BLPL160系列下悬内平开铝合金窗说明

1. 本系列型材框厚度构造尺寸为60,采用穿条式断桥铝合金结构,称为60系列断桥铝合金窗。

2. 本图集绘制了组合门窗拼接节点图.根据工程需要,可利用拼樘料组合成其他形式的固定、带窗、条窗或门连窗。

3. 本系列平开窗主要的功能有:

3.1 下悬内平开功能。

3.2 可安装隐形纱窗,关窗后看不到任何纱窗构件,开窗后能方便地开启纱窗功能。

4. 本系列铝合金窗可根据不同地区、不同环境、不同建筑构造选择不同的结构形式.

5. 本系列使用的最大基本窗尺寸为2100×1800(宽×高);最大开启扇尺寸为600×1200(宽×高)。

6. 本系列平开窗的特点有:

6.1 本系列产品为内开内倒窗,外立面上看不窗扇,整窗结构象幕墙玻璃。

6.2 产品构件采用45度对接式角码连接结构。

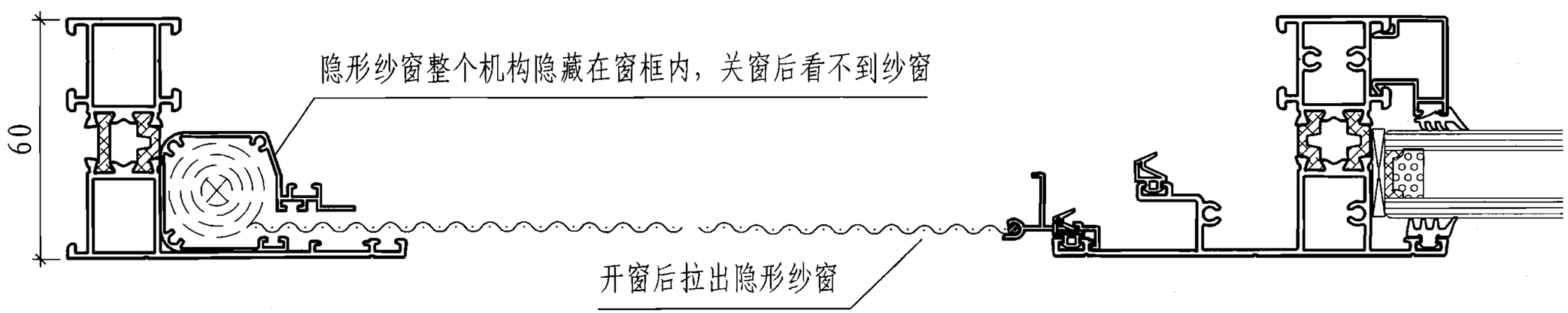
6.3 本产品中空玻璃采用5+12 A+5,最大厚度为22 。

6.4 设计了三道橡胶胶条密封,密封性能优异。

6.5 较低的框窗比，从而提高了窗的采光性能。

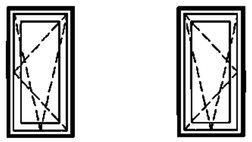
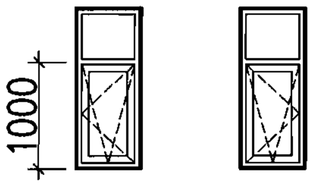
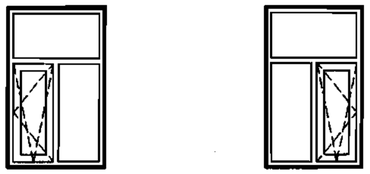
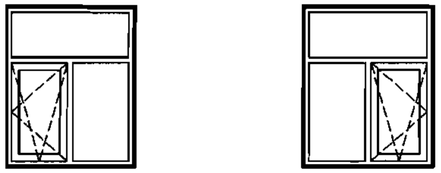
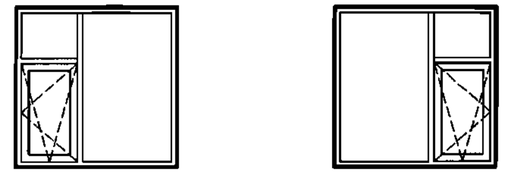
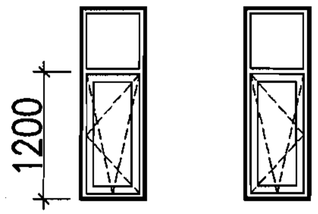
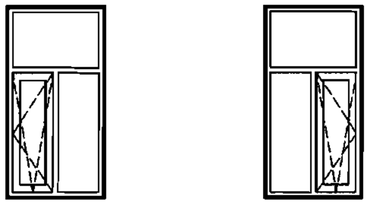
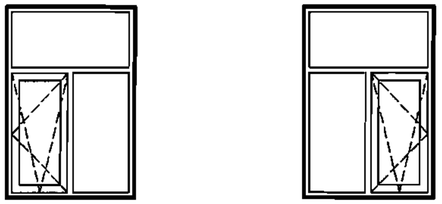
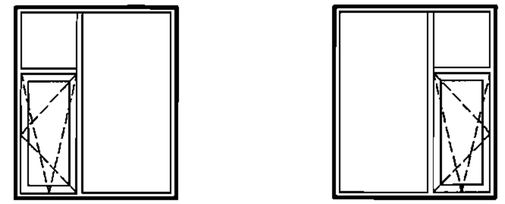
6.6 安装有隐形纱窗，整个机构隐藏在窗框内，关窗后看不到纱窗的任何构件.（见下图）

6.7 欧标槽设计,五金件通用。



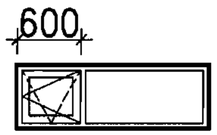
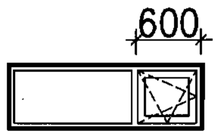
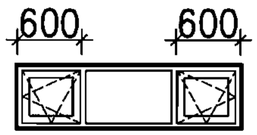
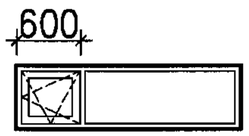
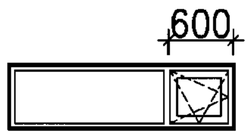
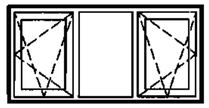
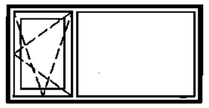
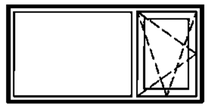
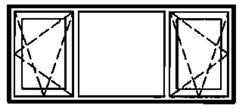
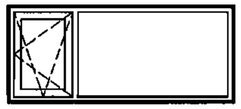
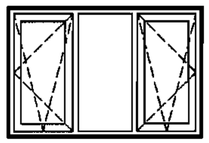
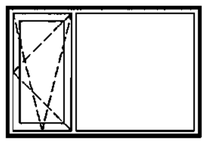
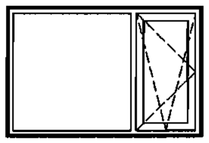
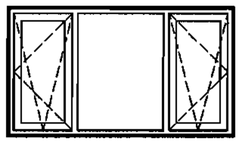
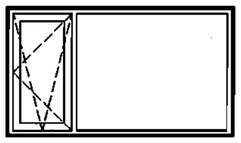
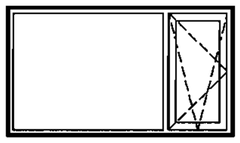
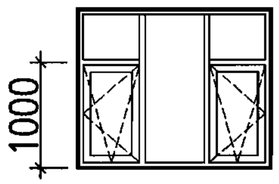
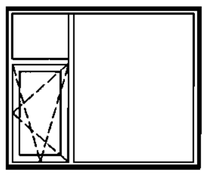
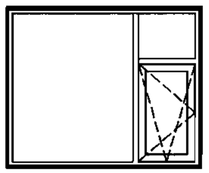
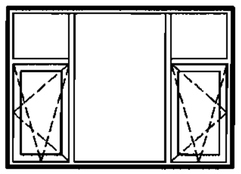
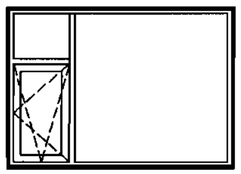
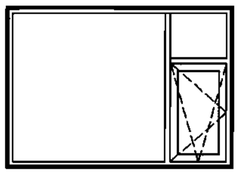
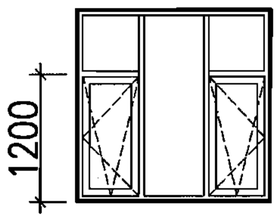
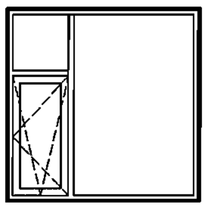
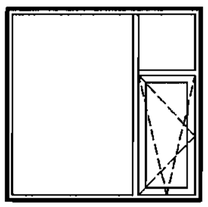
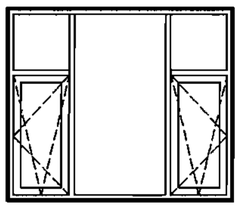
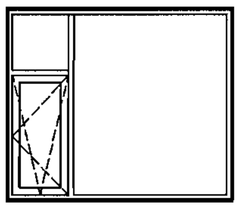
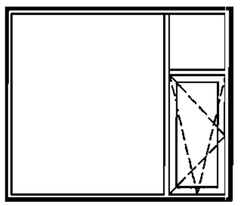
隐形纱窗示意图

BLPL160系列内平开、下悬内平开窗说明									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	55

洞高 \ 洞宽	600	900	1200	1500
600	XNP1-0606 XNP2-0606	XNP1-0906 XNP2-0906	XNP1-1206 XNP2-1206	XNP1-1506 XNP2-1506
900	XNP1-0609 XNP2-0609	XNP1-0909 XNP2-0909	XNP1-1209 XNP2-1209	XNP1-1509 XNP2-1509
1200	 XNP1-0612 XNP2-0612	XNP1-0912 XNP2-0912	XNP1-1212 XNP2-1212	XNP1-1512 XNP2-1512
1500	 XNP1-0615 XNP2-0615	 XNP1-0915 XNP2-0915	 XNP1-1215 XNP2-1215	 XNP1-1515 XNP2-1515
1800	 XNP1-0618 XNP2-0618	 XNP1-0918 XNP2-0918	 XNP1-1218 XNP2-1218	 XNP1-1518 XNP2-1518

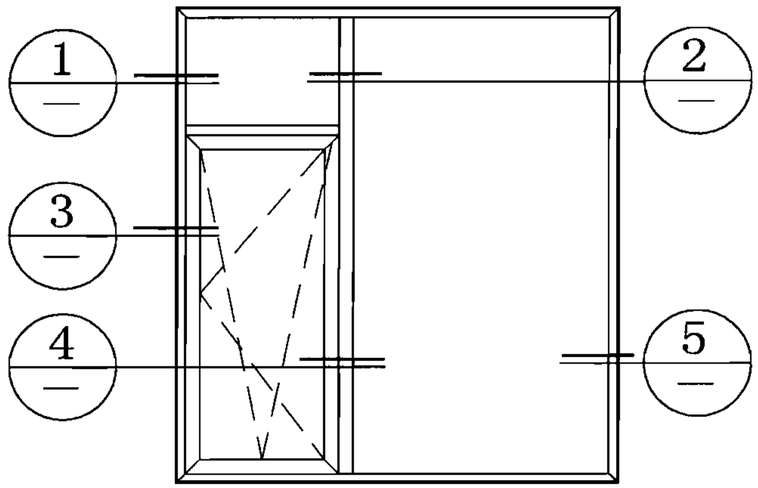
注：平开窗的开启扇，其净宽不宜大于600，净高不宜大于1200。

BLPL160系列内平开、下悬内平开窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	56

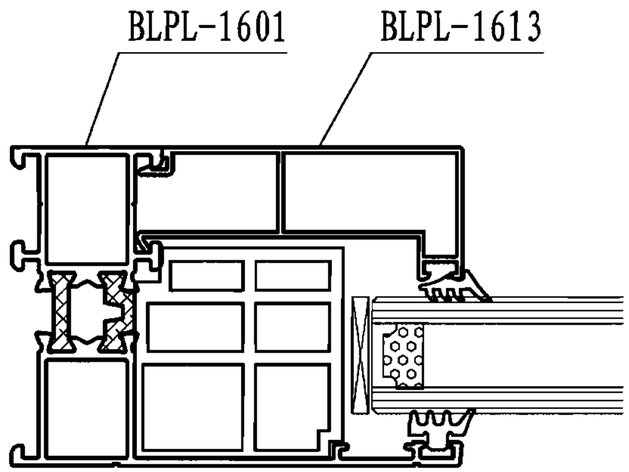
洞高 \ 洞宽	1800			2100		
600	XNP1-1806	 XNP2-1806	 XNP3-1806	 XNP1-2106	 XNP2-2106	 XNP3-2106
900	 XNP1-1809	 XNP2-1809	 XNP3-1809	 XNP1-2109	 XNP2-2109	XNP3-2109
1200	 XNP1-1812	 XNP2-1812	 XNP3-1812	 XNP1-2112	 XNP2-2112	 XNP3-2112
1500	 XNP1-1815	 XNP2-1815	 XNP3-1815	 XNP1-2115	 XNP2-2115	 XNP3-2115
1800	 XNP1-1818	 XNP2-1818	 XNP3-1818	 XNP1-2118	 XNP2-2118	 XNP3-2118

注：平开窗的开启扇，其净宽不宜大于600，净高不宜大于1200。

BLPL160系列内平开、下悬内平开窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	57



窗立面图



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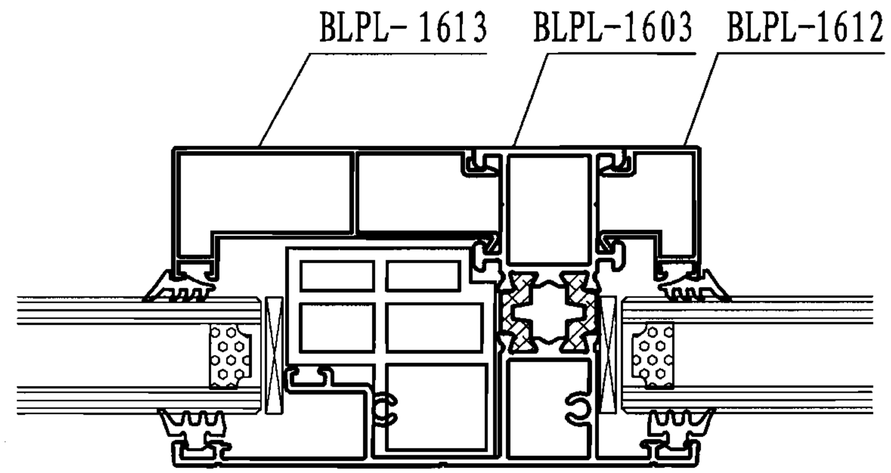

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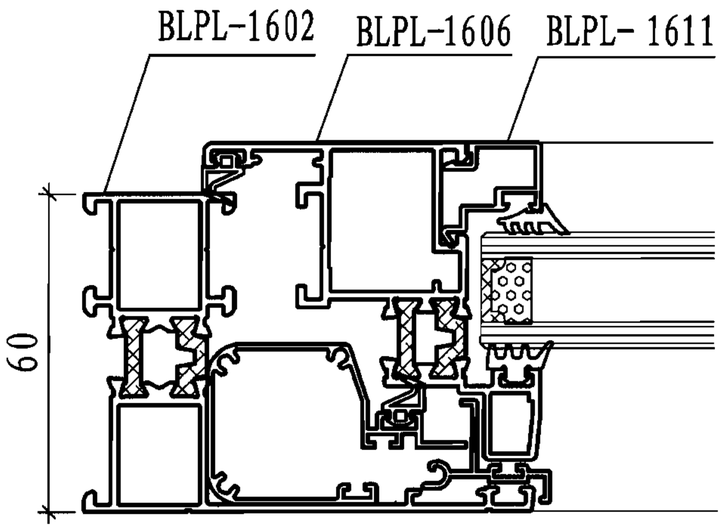

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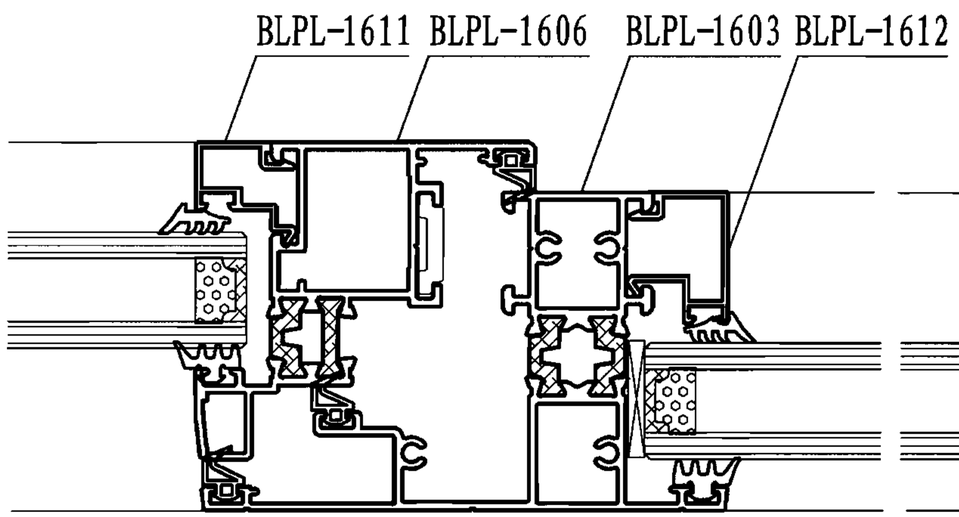

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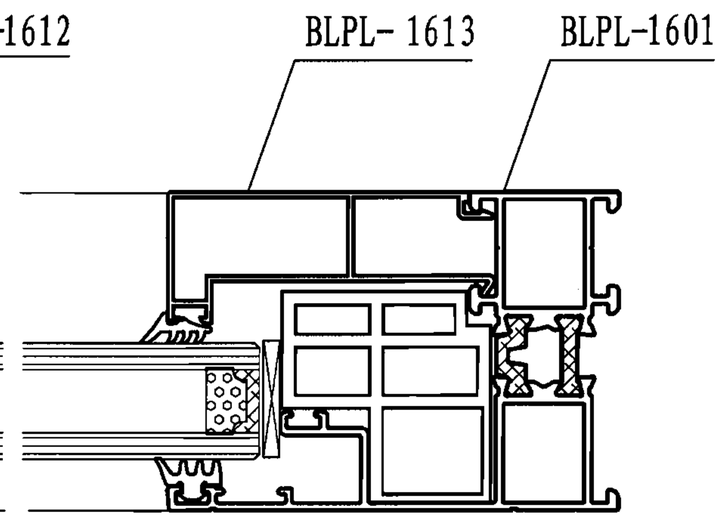
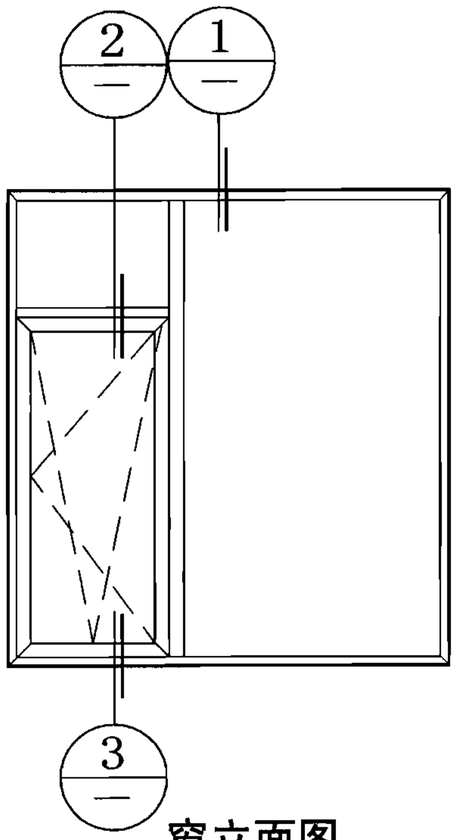
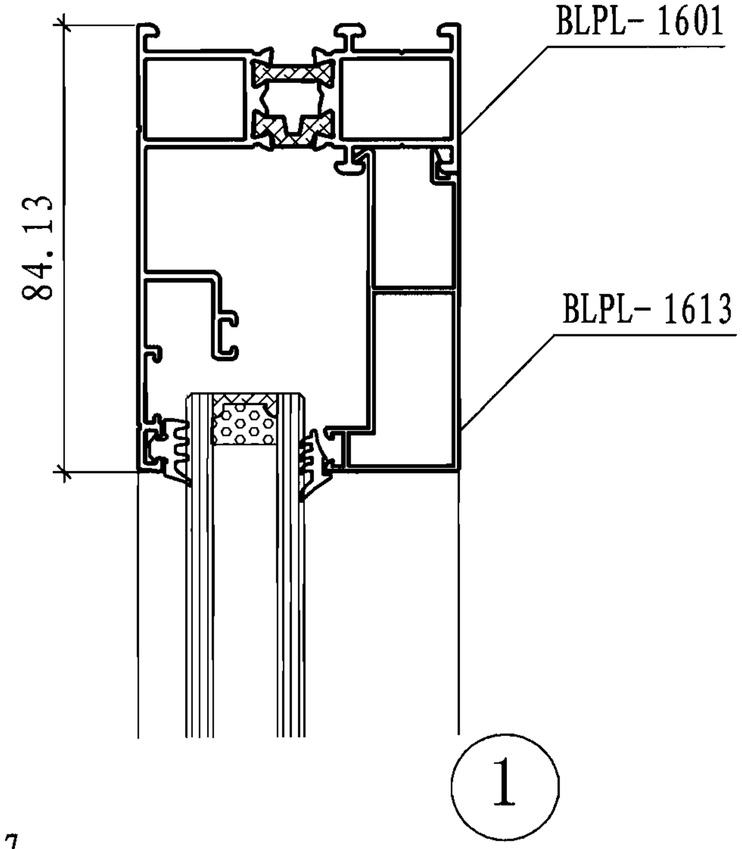


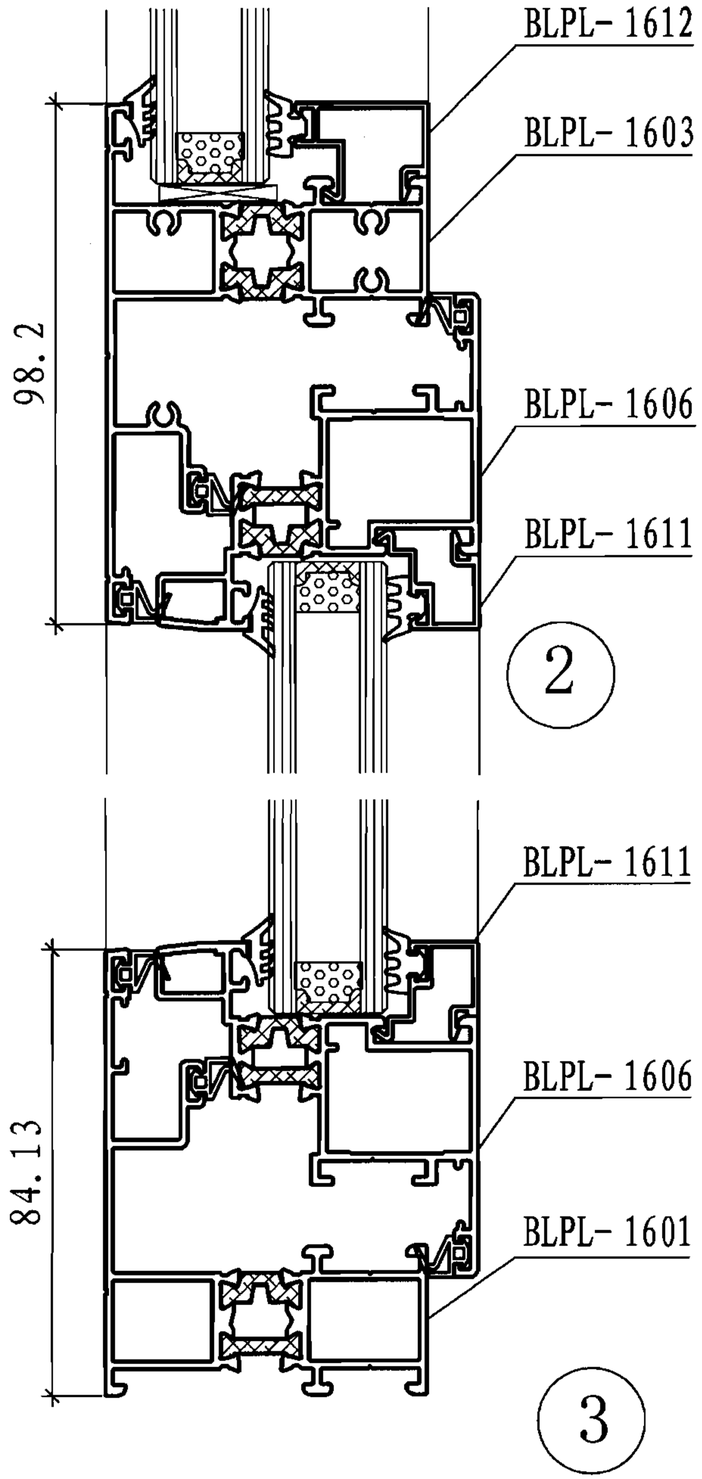
5

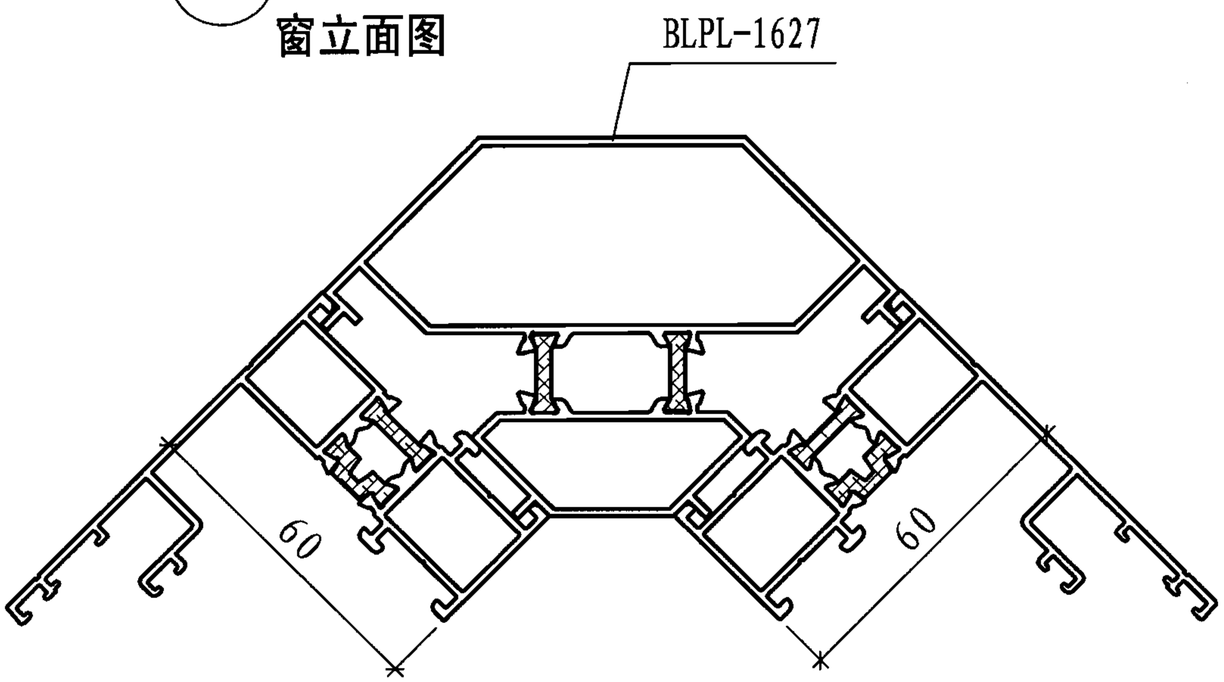
BLPL160系列内平开、下悬内平开窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	58



窗立面图



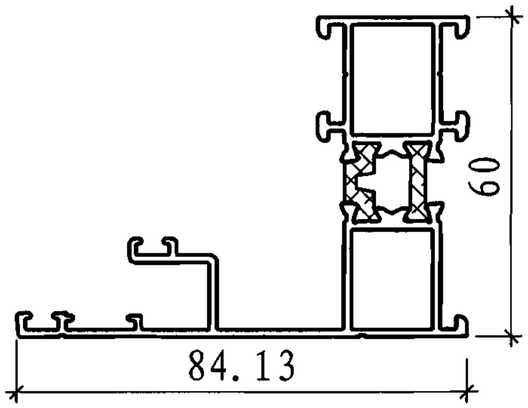




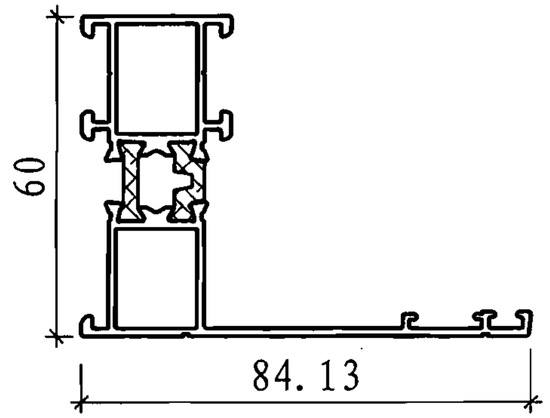
窗转角

BLPL160系列内平开、下悬内平开窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	59

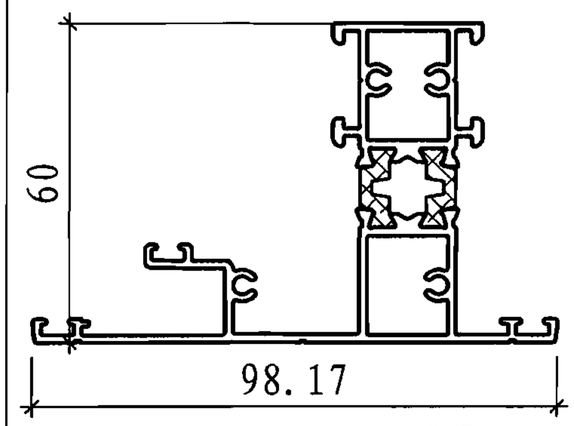
代号 BLPL-1601	线密度 1.460(kg/m)	代号 BLPL-1602	线密度 1.32(kg/m)	代号 BLPL-1603	线密度 1.688(kg/m)	代号 BLPL-1627	线密度 1.826(kg/m)



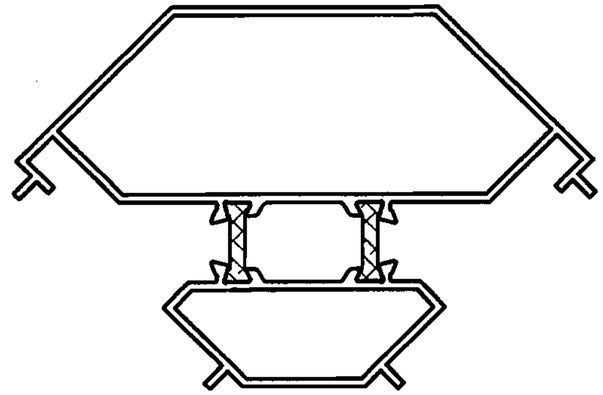
基本壁厚 1.4mm



基本壁厚 1.4mm

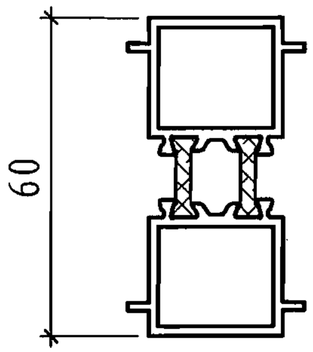


基本壁厚 1.4mm

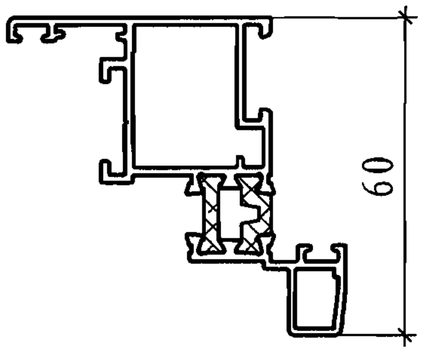


基本壁厚 1.4mm

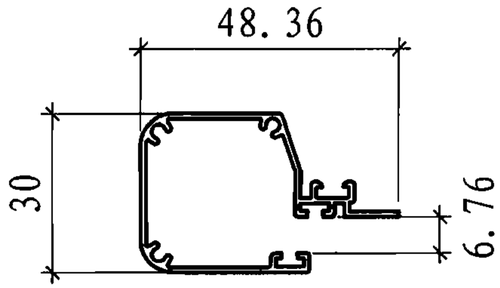
代号 BLPL-1604	线密度 1.192(kg/m)	代号 BLPL-1606	线密度 1.184(kg/m)	代号 BLPL-1660-01	线密度 0.456(kg/m)	代号 BLPL-1660-02	线密度 0.156(kg/m)



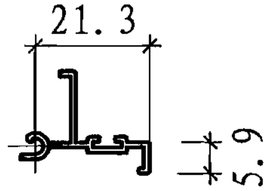
基本壁厚 1.4mm



基本壁厚 1.4mm

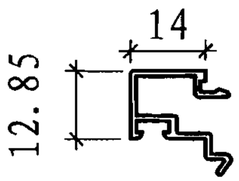


基本壁厚 1.0mm

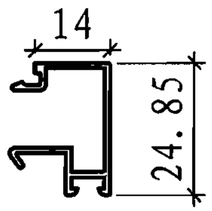


基本壁厚 1.0mm

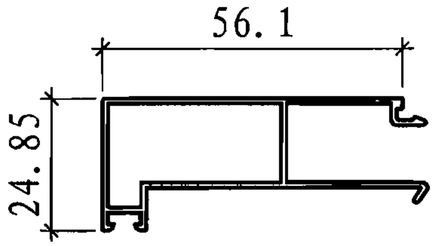
代号 BLPL-1611	线密度 0.184(kg/m)	代号 BLPL-1612	线密度 0.215(kg/m)	代号 BLPL-1613	线密度 0.482(kg/m)	代号 BLPL-1615	线密度 0.163(kg/m)



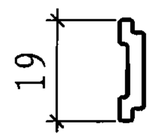
基本壁厚 1.0mm



基本壁厚 1.0mm



基本壁厚 1.0mm



基本壁厚

BLPL160系列型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	60

BLPF-75 系列断桥铝木复合内平开窗说明

1. 本系列型材框厚度构造尺寸为73.5 mm，采用穿条式断桥铝合金复合木或竹结构，名称"BLPF-75系列断桥铝木（竹）复合内平开窗"。

2. 本图集绘制了组合门窗拼接节点图。根据工程需要，可利用拼樘料组合成其他形式的固定、带窗、条窗或门连窗。

3. 本系列平开窗主要特点有:

3.1 产品构件采用45度切角，采用铝合金角码撞角连接;

3.2 本产品标配中空玻璃为（5+12A+5）mm或（5+20A+5）mm，可配用同样标称厚度的其它配置中空玻璃、夹胶玻璃等。

3.3 设计了三道橡胶胶条密封,密封性能优异;

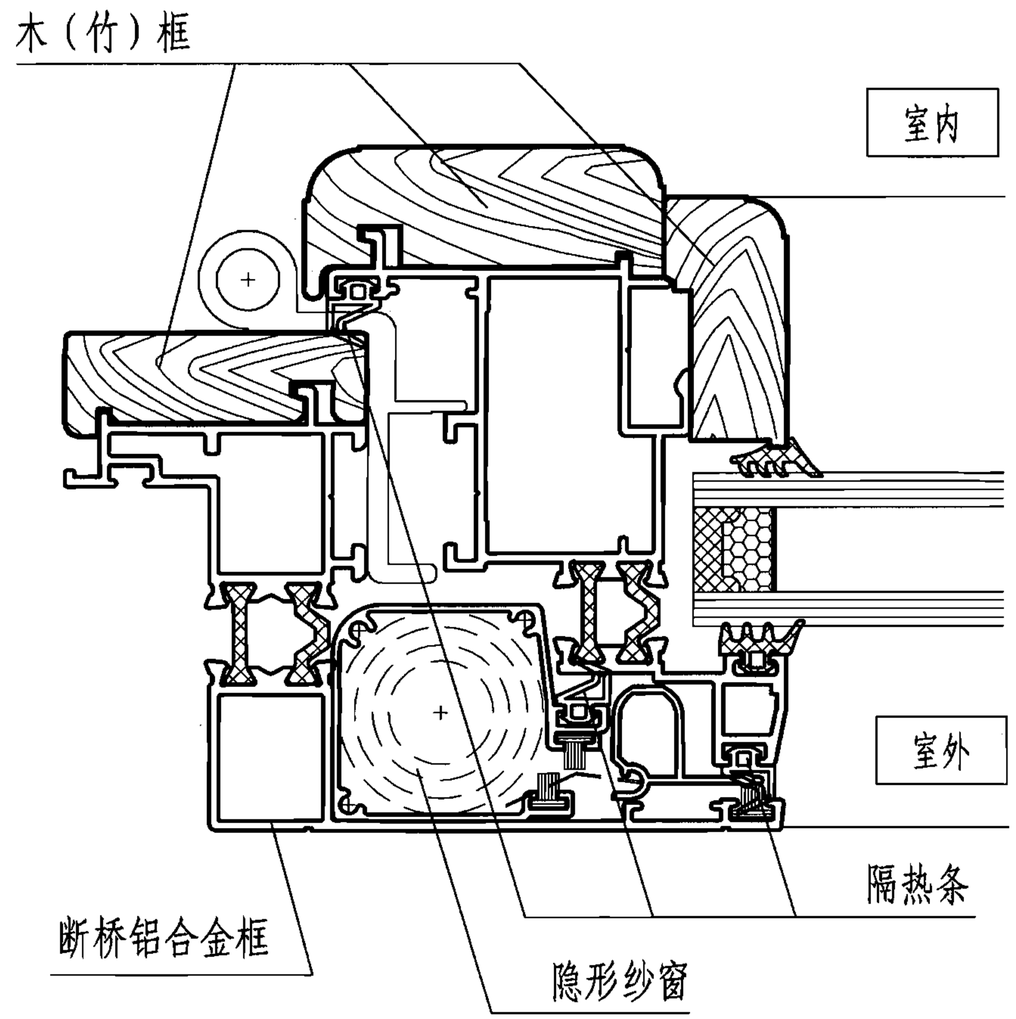
3.4 高节能独特设计，隔热条、木（竹）同时作用，且三道橡胶胶条密封，完全隔断冷、热腔，保温隔热性能卓越;

3.5 可安装隐形纱窗,关窗后看不到任何纱窗构件，开窗后能方便地开启纱窗功能;

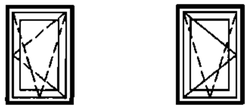
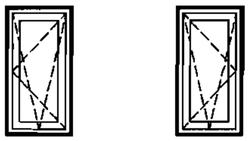
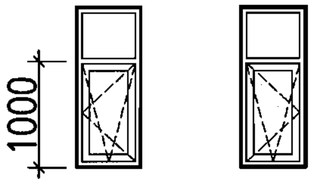
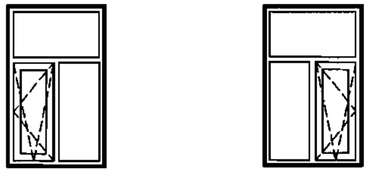
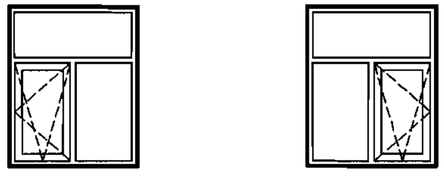
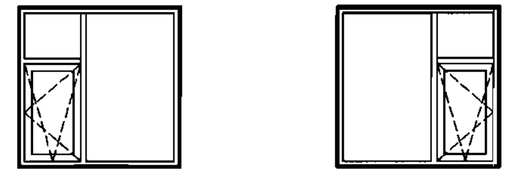
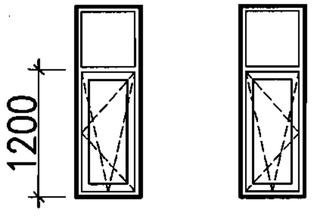
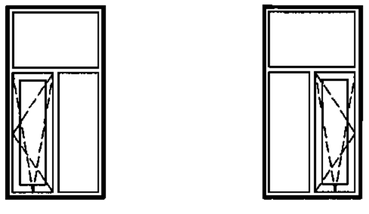
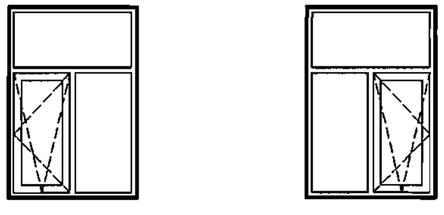
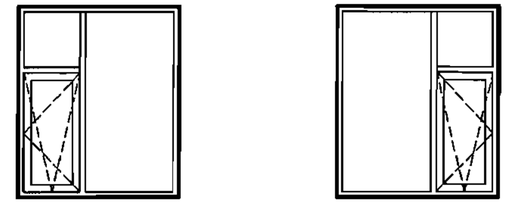
3.6 窗扇隐于框内，立面效果固定、开启部分线条一致。

4. 本系列使用的开启扇尺寸规格视五金件承重能力而定，窗扇宽度不得小于450 mm，一般不大于900 mm，推荐600 mm；窗扇高度一般最小600 mm ，最大1800mm ，推荐1000～1200mm。

5. 本系列铝合金窗可根据不同地区、不同环境、不同建筑构造选择不同的配置。标准窗（1500×1500）的抗风压实测值可达到3500Pa以上，空气渗透性能q1实测值低于0.5m^3/（m .h）；不同配置保温性能实测值可达1.6～2.8W/(m^2.K)。

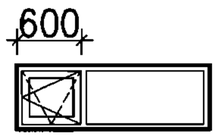
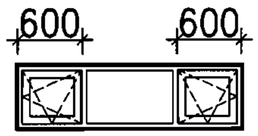
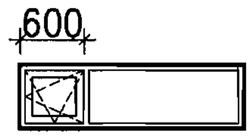
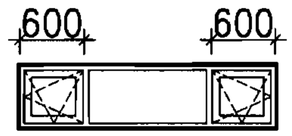
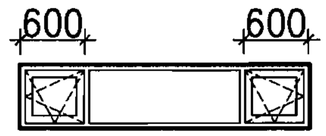
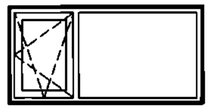
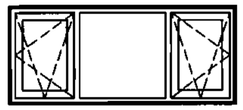
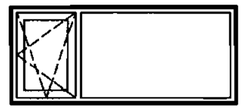
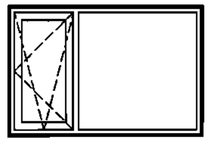
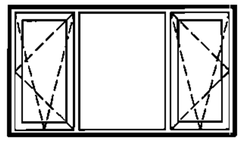
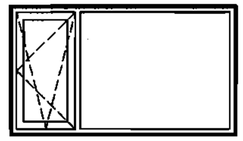
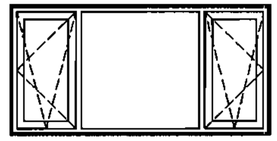
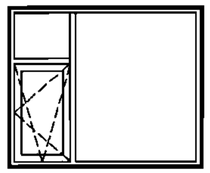
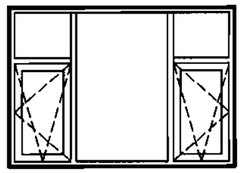
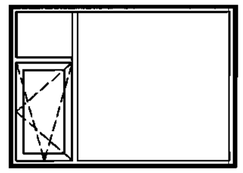
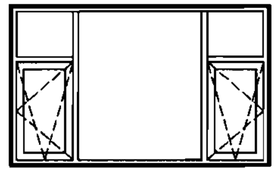
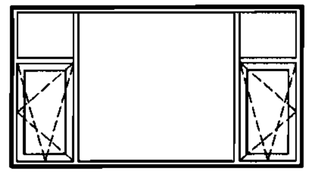
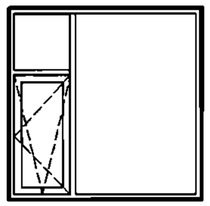
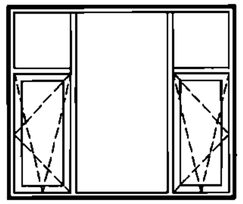
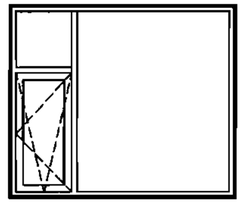
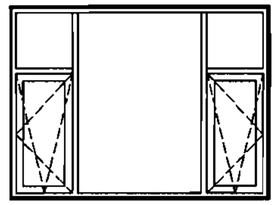
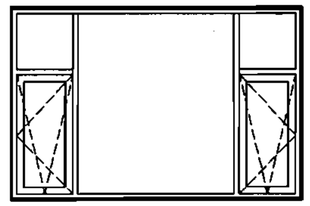


BLPF-75系列断桥铝木复合内平开窗说明								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	61

洞高 \ 洞宽	600	900	1200	1500
600	XNP1-0606 XNP2-0606	XNP1-0906 XNP2-0906	XNP1-1206 XNP2-1206	XNP1-1506 XNP2-1506
900	 XNP1-0609 XNP2-0609	XNP1-0909 XNP2-0909	XNP1-1209 XNP2-1209	XNP1-1509 XNP2-1509
1200	 XNP1-0612 XNP2-0612	XNP1-0912 XNP2-0912	XNP1-1212 XNP2-1212	XNP1-1512 XNP2-1512
1500	 XNP1-0615 XNP2-0615	 XNP1-0915 XNP2-0915	 XNP1-1215 XNP2-1215	 XNP1-1515 XNP2-1515
1800	 XNP1-0618 XNP2-0618	 XNP1-0918 XNP2-0918	 XNP1-1218 XNP2-1218	 XNP1-1518 XNP2-1518

注：平开窗的开启扇，其净宽不宜大于600，净高不宜大于1200。

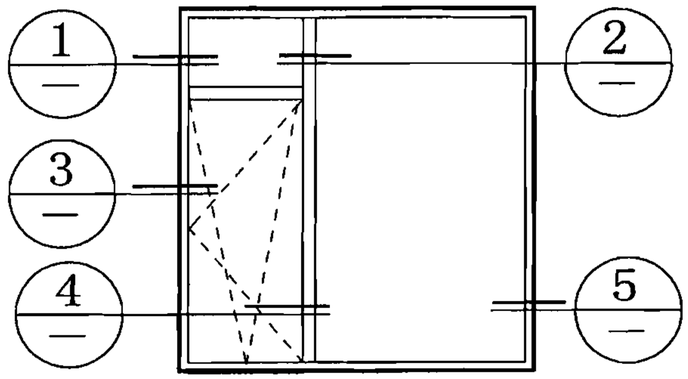
BLPF-75系列断桥铝木复合内平开窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	62

洞宽 / 洞高	1800	2100		2400	2700
600	 XNP-1806	 XNP1-2106	 XNP2-2106	 XNP-2406	 XNP-2706
900	 XNP-1809	 XNP1-2109	 XNP2-2109	XNP-2409	XNP-2709
1200	 XNP-1812	 XNP1-2112	 XNP2-2112	 XNP-2412	XNP-2712
1500	 XNP-1815	 XNP1-2115	 XNP2-2115	 XNP-2415	 XNP-2715
1800	 XNP-1818	 XNP1-2118	 XNP2-2118	 XNP-2418	 XNP-2718

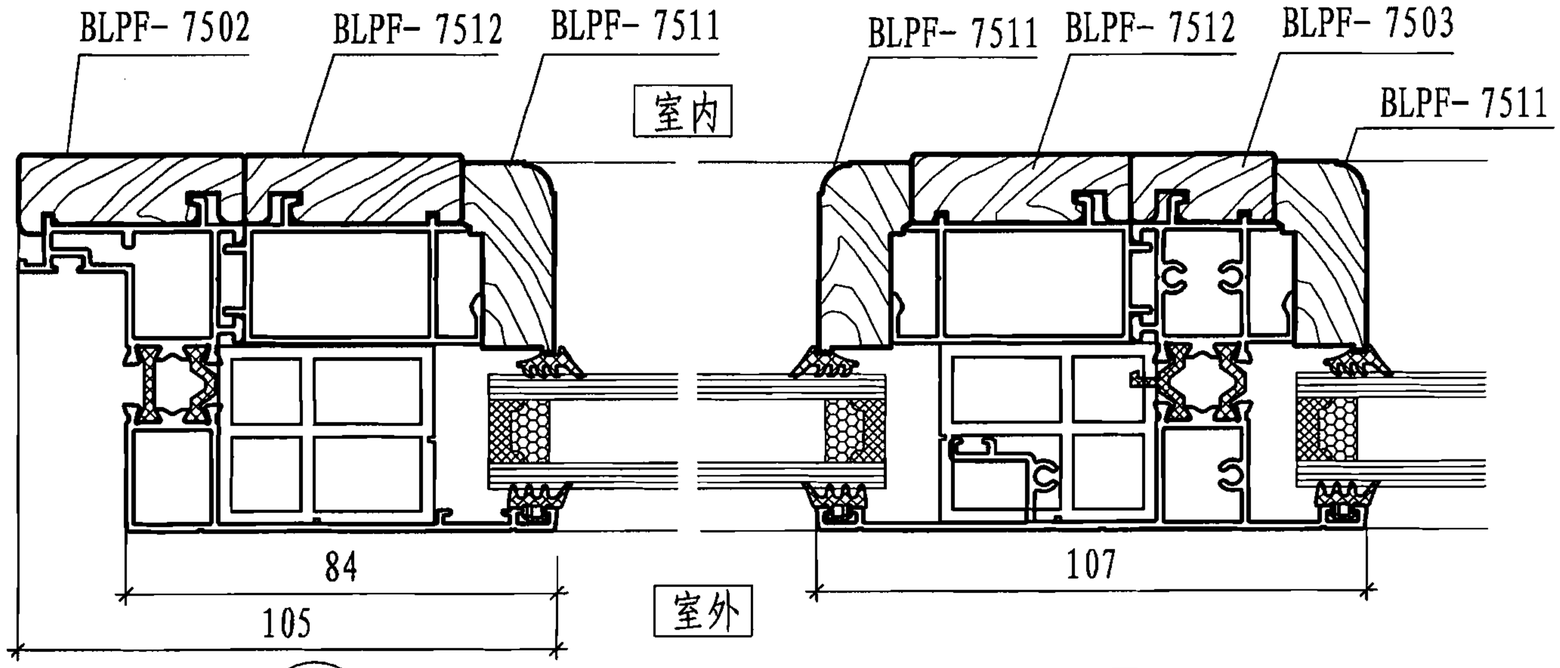
注：1，平开窗的开启扇，其净宽不宜大于600，净高不宜大于1200。

2，窗扇可内开内倒，也可只内平开，上图为内开内倒窗窗型图。

BLPF-75系列断桥铝木复合内平开窗立面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	63

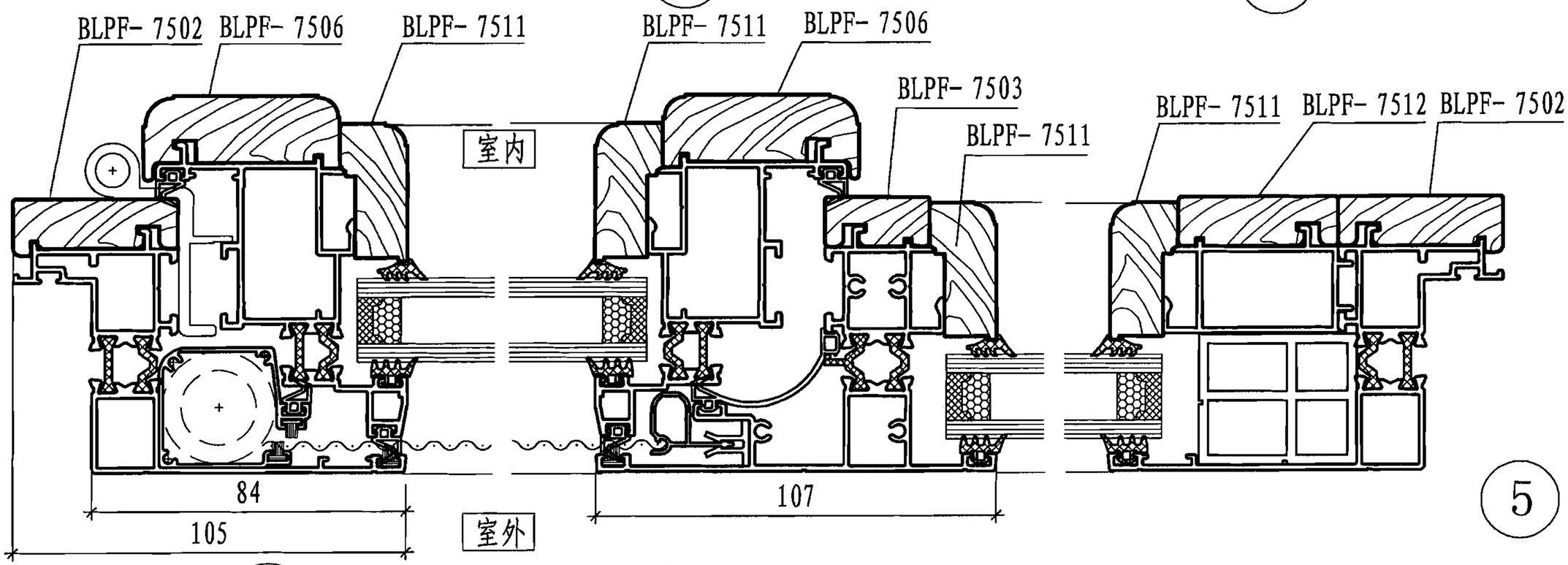


窗立面图



1

2

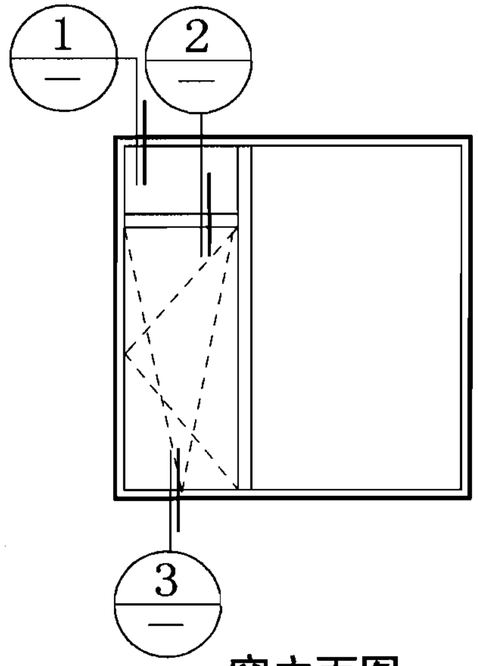


3

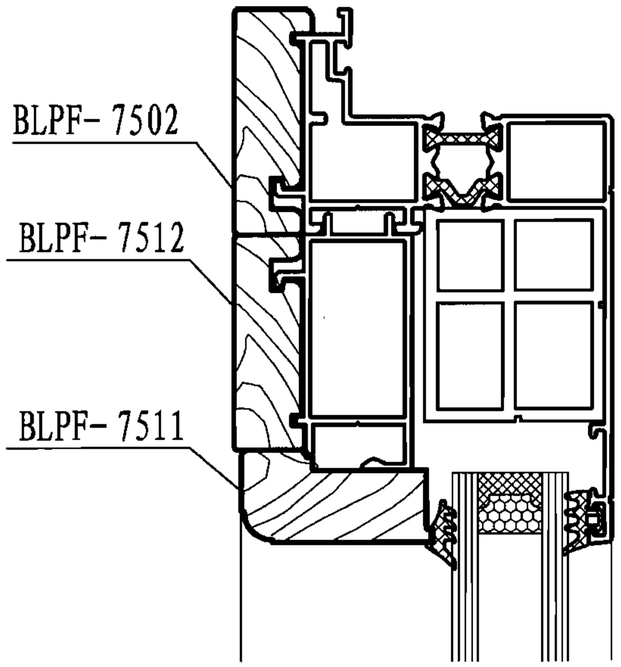
4

5

BLPF-75系列断桥铝木复合内平开窗节点图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	64



窗立面图



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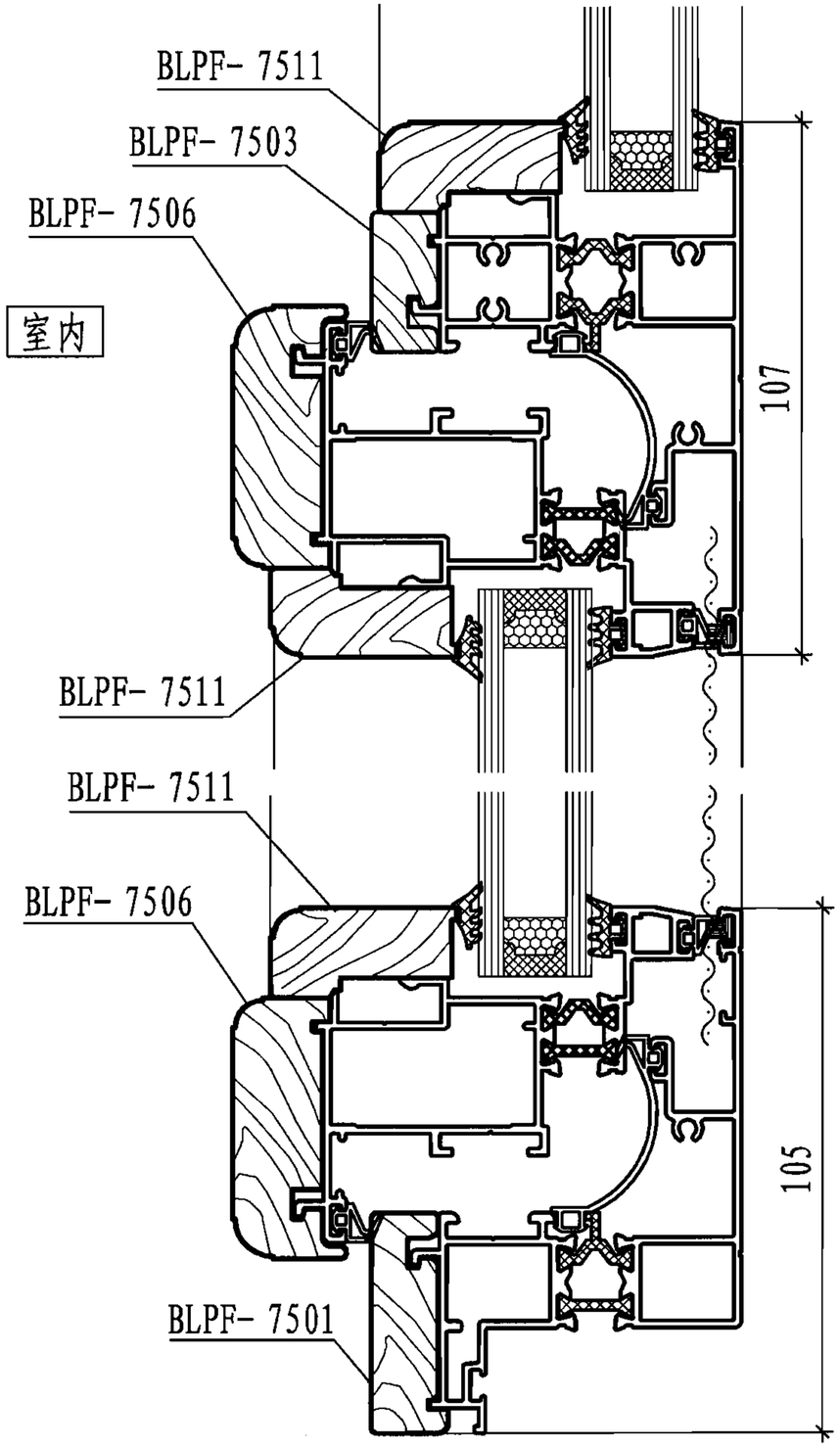
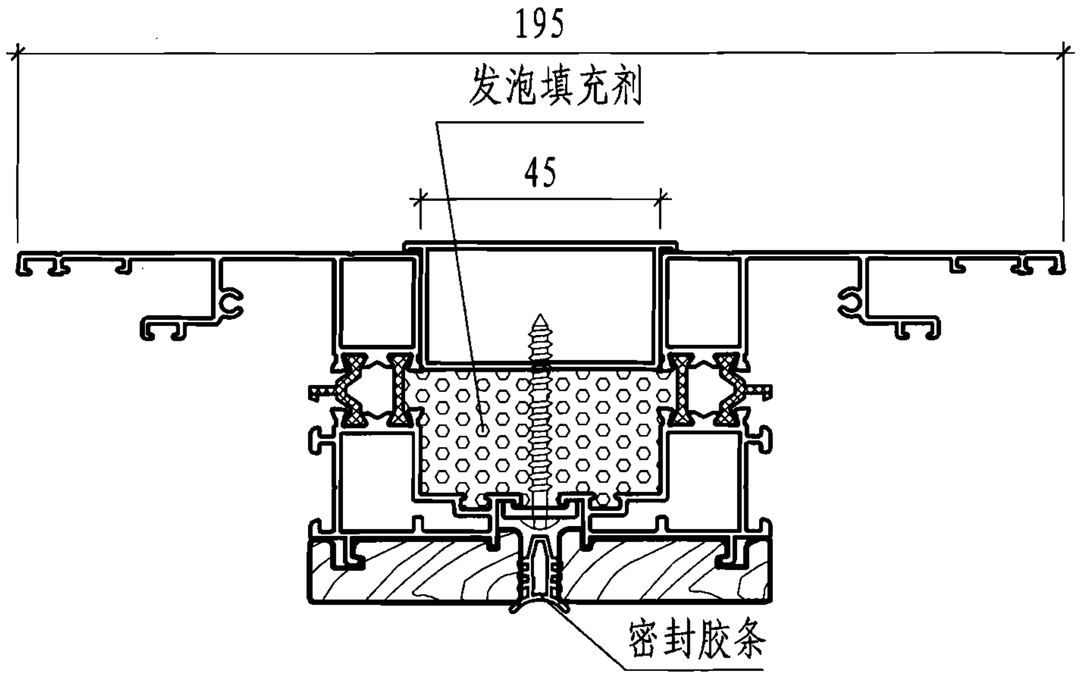


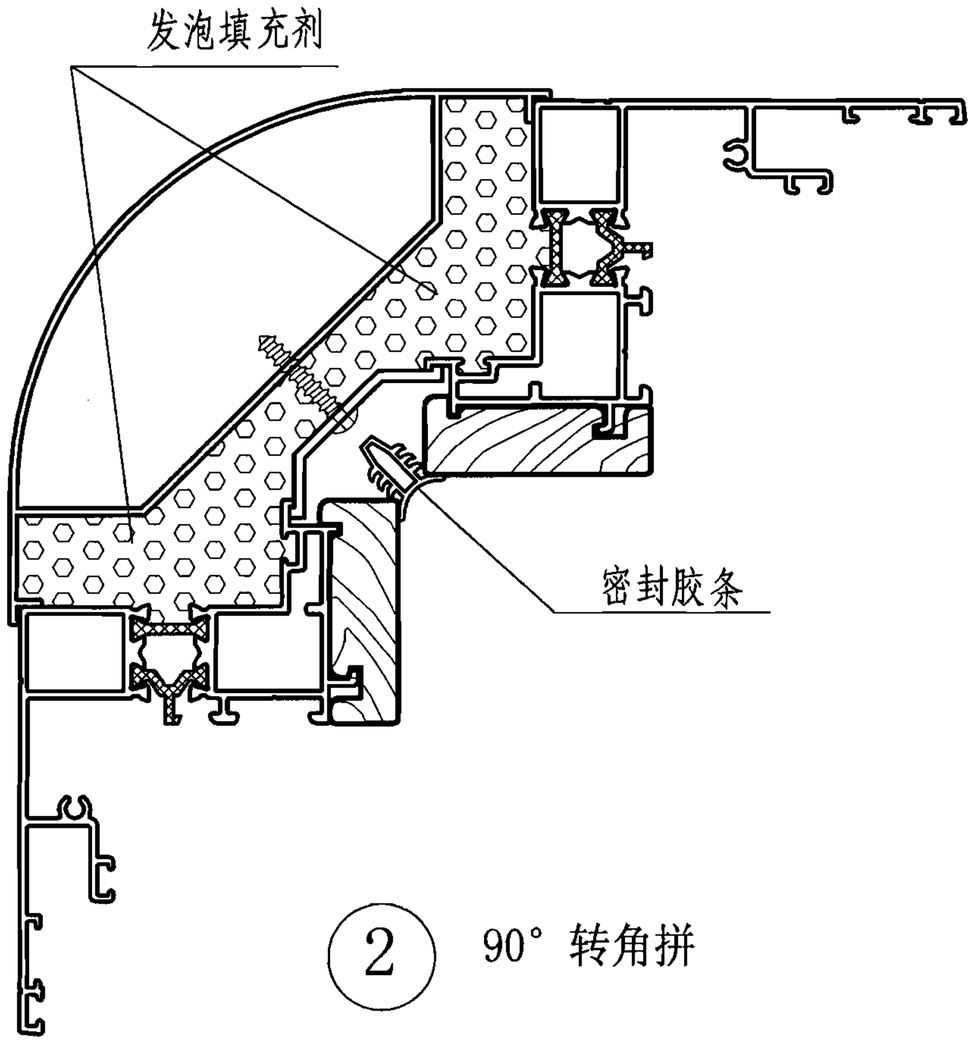
2

3

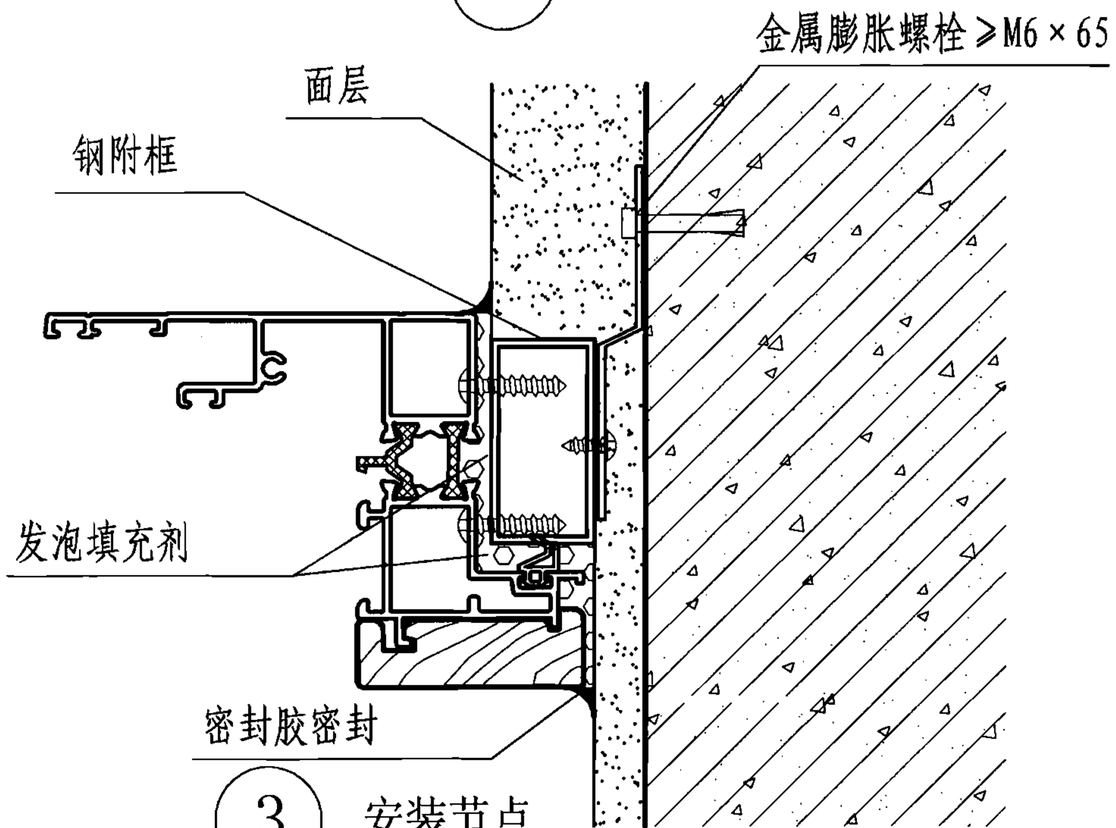
BLPF-75系列断桥铝木复合内平开窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	65



1 180° 拼框



2 90° 转角拼



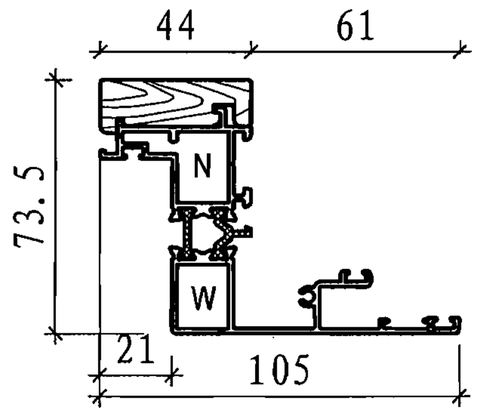
3 安装节点

注：1、为在施工过程中更好地保护成品，本系列窗建议使用钢附框安装方式，不推荐其它安装方式。

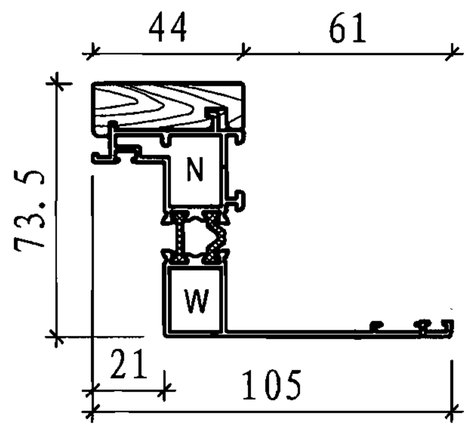
2、对于有避雷要求的铝合金门窗，应用 M8 不锈钢螺栓将避雷引线与窗框可靠连接，避雷引线与预埋接地线焊接。

BLPF-75系列断桥铝木复合内平开窗节点图									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	66

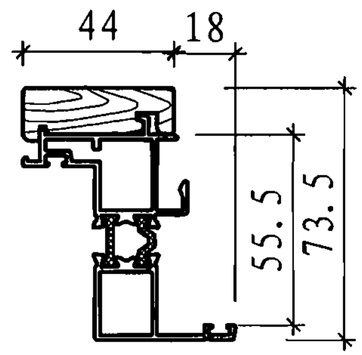
代号 BLPF-7501	线密度 1.910(kg/m)	代号 BLPF-7502	线密度 1.734(kg/m)	代号BLPF-7502A	线密度 1.578(kg/m)	代号 BLPF-7503	线密度 1.906(kg/m)



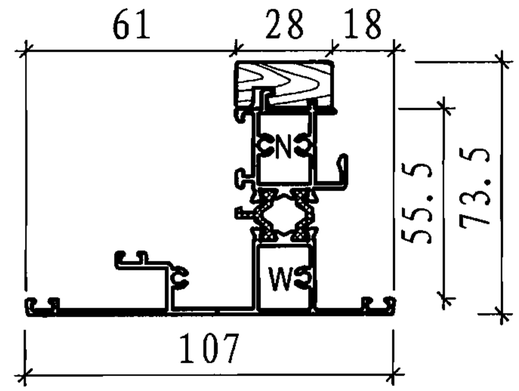
基本壁厚 1.4mm



基本壁厚 1.4mm

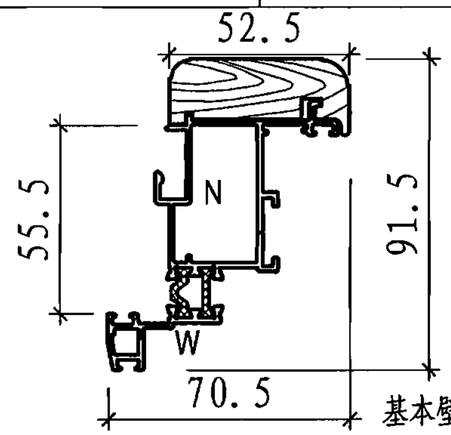


基本壁厚 1.4mm

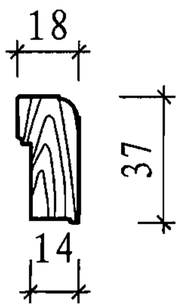


基本壁厚 1.4mm

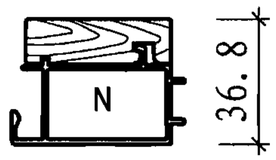
代号 BLPF-7506	线密度 1.867(kg/m)	代号 BLPF-7511	线密度 0.328(kg/m)	代号 BLPF-7512	线密度 0.910(kg/m)	代号 BLPF-7513	线密度 0.257(kg/m)



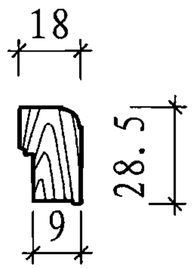
基本壁厚 1.4mm



竹、木

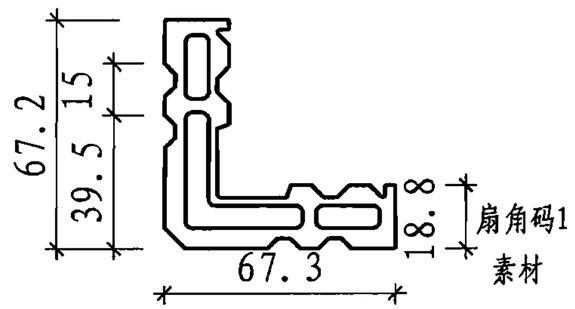


基本壁厚 1.4mm

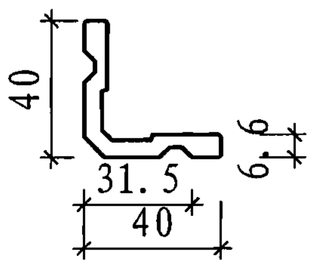


竹、木

代号 BLPL-1642	线密度 3.278(kg/m)	代号 BLPFL-1643	线密度 1.050(kg/m)	代号 BLPL-1655		代号 BLPL-1656	



扇角码1
素材

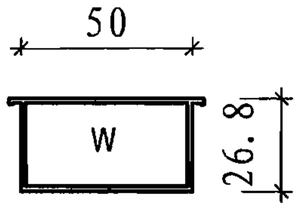
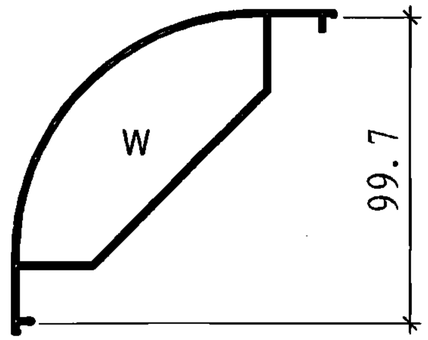
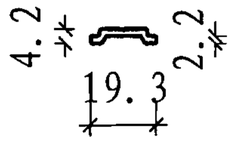
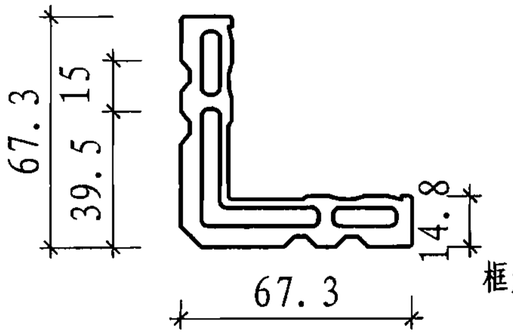


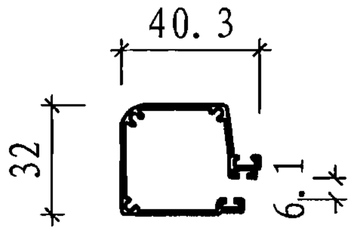
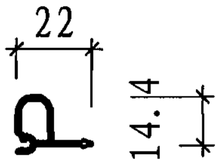
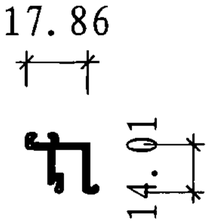
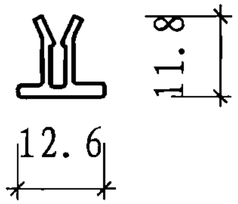
扇角码2
素材

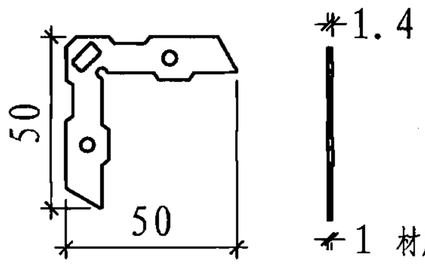
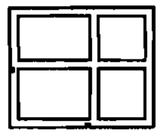
材质：橡胶

材质：橡胶

BLPF-75 系列断桥铝木复合型材断面图								图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋	页	67

代号 BLPF-7521	线密度 0.588(kg/m)	代号 BLPF-7527	线密度 1.771(kg/m)	代号 BLPL-1631	线密度 0.122(kg/m)	代号 BLPL-1641	线密度 2.964(kg/m)
 基本壁厚 1.4mm		 基本壁厚 1.4mm		 素材		 框角码 素材	

代号 BLPL-1660-01	线密度 0.456(kg/m)	代号 BLPL-1660-02	线密度 0.75(kg/m)	代号BLPL-1660-03	线密度 0.187(kg/m)	代号 BLPL-1654	
 基本壁厚 1.0mm		 基本壁厚 1.0mm		 基本壁厚 1.2mm		 材质：工程塑料	

代号 BL-57		代号 BLPL-1658		代号 BLPF-7559		代号 BL-61	
 塞条 材质：橡胶		 平整钢片 材质：钢、铝		 玻璃垫块 材质：塑料		 排水孔盖 材质：塑料	

BLPF-75系列断桥铝木复合型材断面图								图集号	07CJ12
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常用整窗K值计算表

玻璃				普通铝窗框			断桥铝窗框		木窗框			塑料窗框		
				K= 6.66 W/(m²·K)			K= 4.0 W/(m²·K)		K= 1.8 W/(m²·K)			K= 1.9 W/(m²·K)		
种类	结构	遮阳系数 SC	K值 W/(m²·k)	窗框窗洞面积比			窗框窗洞面积比		窗框窗洞面积比			窗框窗洞面积比		
				15%	20%	30%	20%	30%	30%	35%	40%	30%	35%	40%
单片	5mm 白玻	0.99	5.5	5.7	5.7	5.8	5.2	5.1	4.4	4.2	4.0	4.4	4.2	4.1
	5mm 绿玻	0.7	5.5	5.7	5.7	5.8	5.2	5.1	4.4	4.2	4.0	4.4	4.2	4.1
白玻中空	5mm+6A+5mm	0.89	3.2	3.7	3.9	4.2	3.4	3.4	2.8	2.7	2.6	2.8	2.7	2.7
	5mm+9A+5mm	0.89	3.0	3.5	3.7	4.1	3.2	3.3	2.6	2.6	2.5	2.7	2.6	2.6
	5mm+12A+5mm	0.89	2.8	3.4	3.6	4.0	3.0	3.2	2.5	2.5	2.4	2.5	2.5	2.4
	6mm+6A+6mm	0.87	3.2	3.7	3.9	4.2	3.4	3.4	2.8	2.7	2.6	2.8	2.7	2.7
	6mm+9A+6mm	0.87	2.9	3.5	3.7	4.0	3.1	3.2	2.6	2.5	2.5	2.6	2.6	2.5
	6mm+12A+6mm	0.87	2.8	3.4	3.6	4.0	3.0	3.2	2.5	2.5	2.4	2.5	2.5	2.4
Low-E中空 Super SE-I	5mm+6A+5mm	0.6	2.5	3.1	3.3	3.7	2.8	3.0	2.3	2.3	2.2	2.3	2.3	2.3
	5mm+9A+5mm	0.6	2	2.7	2.9	3.4	2.4	2.6	1.9	1.9	1.9	2.0	2.0	2.0
	5mm+12A+5mm	0.6	1.9	2.6	2.9	3.3	2.3	2.5	1.9	1.9	1.9	1.9	1.9	1.9
	6mm+6A+6mm	0.6	2.5	3.1	3.3	3.7	2.8	3.0	2.3	2.3	2.2	2.3	2.3	2.3
	6mm+9A+6mm	0.6	2	2.7	2.9	3.4	2.4	2.6	1.9	1.9	1.9	2.0	2.0	2.0
	6mm+12A+6mm	0.59	1.8	2.5	2.8	3.3	2.2	2.5	1.8	1.8	1.8	1.8	1.8	1.8
Low-E中空 SuperSE-III	5mm+6A+5mm	0.5	2.5	3.1	3.3	3.7	2.8	3.0	2.3	2.3	2.2	2.3	2.3	2.3
	5mm+9A+5mm	0.49	2	2.7	2.9	3.4	2.4	2.6	1.9	1.9	1.9	2.0	2.0	2.0
	5mm+12A+5mm	0.49	1.9	2.6	2.9	3.3	2.3	2.5	1.9	1.9	1.9	1.9	1.9	1.9
	6mm+6A+6mm	0.49	2.5	3.1	3.3	3.7	2.8	3.0	2.3	2.3	2.2	2.3	2.3	2.3
	6mm+9A+6mm	0.48	2	2.7	2.9	3.4	2.4	2.6	1.9	1.9	1.9	2.0	2.0	2.0
	6mm+12A+6mm	0.48	1.8	2.5	2.8	3.3	2.2	2.5	1.8	1.8	1.8	1.8	1.8	1.8

注：1. 断桥铝合金窗框，以常用的桥厚为14.8mm为例；木框，以美国AV68系列为例，厚度为68mm；塑料窗，以60系列为例，厚度60mm。
2. 本表仅计算整窗的保温性能指标—K值，遮阳系数SC影响到夏季空调的能耗和舒适性指标，设计中也应予以考虑。
3. 窗框窗洞面积比：按GB50176-93《民用建筑热工设计规范》表4.4.1的规定。
4. 玻璃参数由南玻集团根据Window5.02软件测量计算得出，窗框参数由广东省建筑科学研究院提供。
5. 本表参数由中国建筑玻璃与工业玻璃协会提供。
6. 本表供设计选用时参考。

5mm玻璃性能指标表

玻璃种类	玻璃及膜层代号	反射颜色	单 片			中空5颜色+6A+5白			中空5颜色+9A+5白			中空5颜色+12A+5白		
			可见光透射比 Tvis (%)	传热系数 K [W/(m²·K)]	遮阳系数 SC	可见光透射比 Tvis (%)	传热系数 K [W/(m²·K)]	遮阳系数 SC	可见光透射比 Tvis (%)	传热系数 K [W/(m²·K)]	遮阳系数 SC	可见光透射比 Tvis (%)	传热系数 K [W/(m²·K)]	遮阳系数 SC
白玻	5Cl	–	89	5.86	0.95	79	3.28	0.83	79	3.01	0.83	79	2.85	0.83
茶玻	5Br	浅茶	58	5.86	0.74	52	3.30	0.62	52	3.03	0.62	52	2.87	0.61
灰玻	5Gr	浅灰	50	5.86	0.71	45	3.30	0.58	45	3.03	0.58	45	2.87	0.58
绿玻	5Gre	绿	79	5.86	0.73	71	3.30	0.61	71	3.03	0.60	71	2.87	0.60
蓝波	5Bl	海蓝	61	5.86	0.71	55	3.30	0.59	55	3.03	0.59	55	2.87	0.59
Sun-E	5Sunlite65	蓝灰	64.4	4.11	0.62	58	2.29	0.54	58	1.97	0.54	58	1.85	0.53
Low-E	5Low-E	高透	80.5	3.78	0.81	73	2.15	0.73	73	1.79	0.73	73	1.68	0.73

注：1. 计算标准条件采用JGJ 151《建筑幕墙、门窗和玻璃的热工性能计算方法》规定的中国标准条件；

2. 本表在线Low-E玻璃的数据引用秦皇岛耀华在线Low-E、Sun-E的数据；实际选用时，应以产品的实测数据为准。

3. 中空5颜色+A+5白(A=6、9、12)，其中“颜色”由设计选定。

4. 本表参数由中国建筑玻璃与工业玻璃协会提供。

6mm玻璃性能指标表

玻璃种类	玻璃及膜代号	反射颜色	单片			中空6+6A+6			中空6+9A+6			中空6+12A+6		
			可见光透射比 Tvis(%)	传热系数 K	遮阳系数 SC	可见光透射比 Tvis(%)	传热系数 K	遮阳系数 SC	可见光透射比 Tvis(%)	传热系数 K	遮阳系数 SC	可见光透射比 Tvis(%)	传热系数 K	遮阳系数 SC
白 玻	6C	-	89	5.98	0.98	80	3.15	0.87	80	2.87	0.87	80	2.73	0.87
绿 玻	6F	-	74	5.98	0.66	67	3.15	0.54	67	2.87	0.54	67	2.73	0.53
热反射镀膜	CCS108	蓝灰色	10	4.46	0.25	9	2.78	0.20	9	2.40	0.19	9	2.23	0.18
	CSY120	灰色	18	5.13	0.38	17	2.96	0.29	17	2.63	0.28	17	2.47	0.28
	CMG165	银灰色	64	5.97	0.80	59	3.15	0.71	59	2.87	0.71	59	2.73	0.71
单银 Low-E	CEB12-48/TS	银灰色	-	-	-	39	2.43	0.37	39	1.96	0.36	39	1.75	0.36
	CEB14-50/TS	浅灰色	-	-	-	47	2.54	0.42	47	2.10	0.42	47	1.90	0.41
	CEB12-60/TS	银灰色	-	-	-	53	2.45	0.45	53	1.98	0.44	53	1.78	0.44
	CEB14-60/TS	浅灰色(冷)	-	-	-	53	2.50	0.47	53	2.04	0.46	53	1.84	0.46
	CEB13-63/TS	蓝色	-	-	-	54	2.52	0.51	54	2.08	0.51	54	1.88	0.50
	CEF11-38/TS	银灰色	-	-	-	36	2.43	0.31	36	1.96	0.30	36	1.75	0.29
	CEF16-50/TS	蓝灰色	-	-	-	42	2.46	0.37	42	1.99	0.36	42	1.79	0.36
	CEF13-69/TS	浅蓝色	-	-	-	60	2.46	0.50	60	1.99	0.49	60	1.79	0.49
	CES11-70/TS	无色	-	-	-	63	2.51	0.56	63	2.05	0.55	63	1.85	0.55
	CES11-80/TS	无色	-	-	-	69	2.50	0.59	69	2.04	0.58	69	1.84	0.58
	CES11-85/TS	无色	-	-	-	75	2.49	0.63	75	2.04	0.62	75	1.83	0.62
住宅 Low-E	SuperSE-Ⅰ	无色	-	-	-	77	2.50	0.68	77	2.05	0.68	77	1.85	0.68
	SuperSE-Ⅲ	灰色	-	-	-	57	2.42	0.47	57	1.95	0.47	57	1.83	0.46
双银 Low-E	CED13-58S/TS	蓝灰色	-	-	-	52	2.40	0.37	52	1.91	0.37	52	1.71	0.36
	CED12-68S/TS	无色	-	-	-	61	2.42	0.38	61	1.95	0.38	61	1.74	0.37
	CED12-78S/TS	无色	-	-	-	69	2.44	0.47	69	1.96	0.46	69	1.78	0.46

注：1.以上数据由Window5.02软件计算得出，计算值均依据ASHRAE标准条件得出。
镀膜面均位于中空玻璃的外层玻璃的内面。
2.本表数据由南玻集团提供。实际选用时，应以提供产品企业的实测数据为准。

连云港市政中心大楼

张家港第一人民医院

宁波星光中心高层住宅

盐城碧水豪苑

浙江第一豪宅

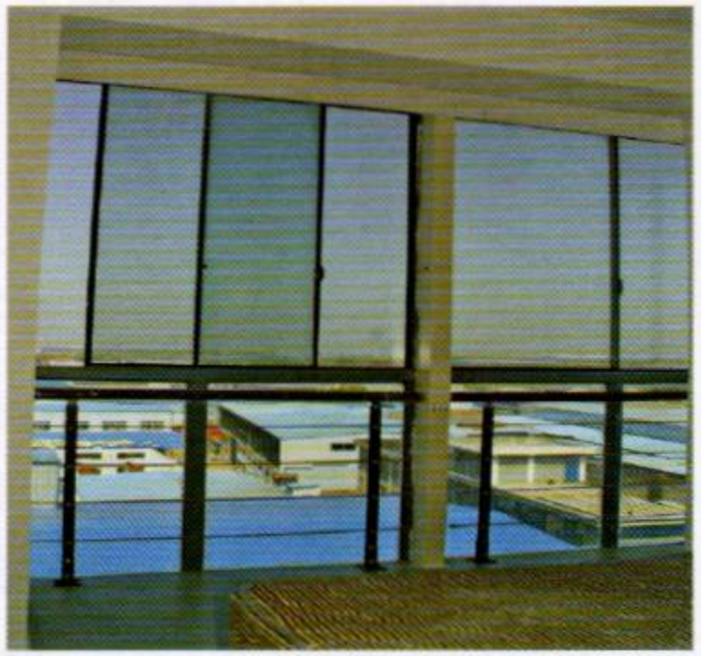
宁波钱隆山庄

工程应用实例									图集号	07CJ12
审核	焦冀曾		校对	杨兴义		设计	余金璋		页	72

浙江第一豪宅内景

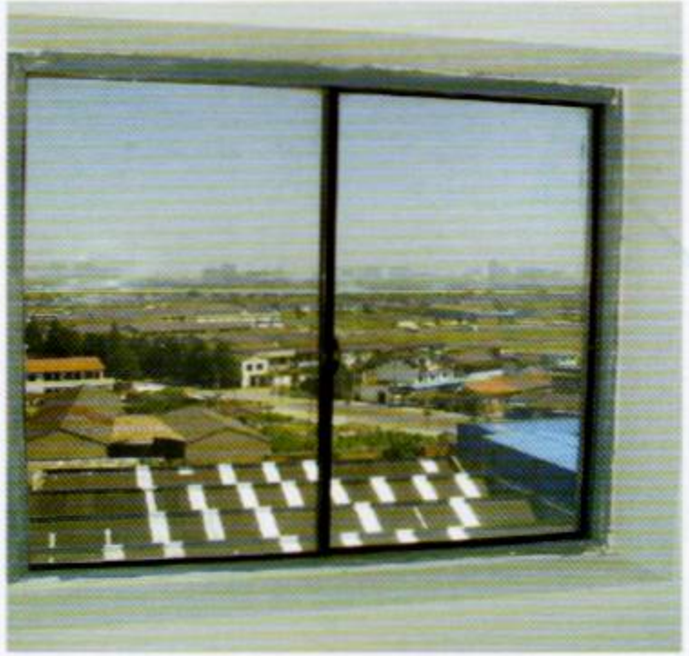
浙江第一豪宅内景

工程内景



工程内景

工程内景



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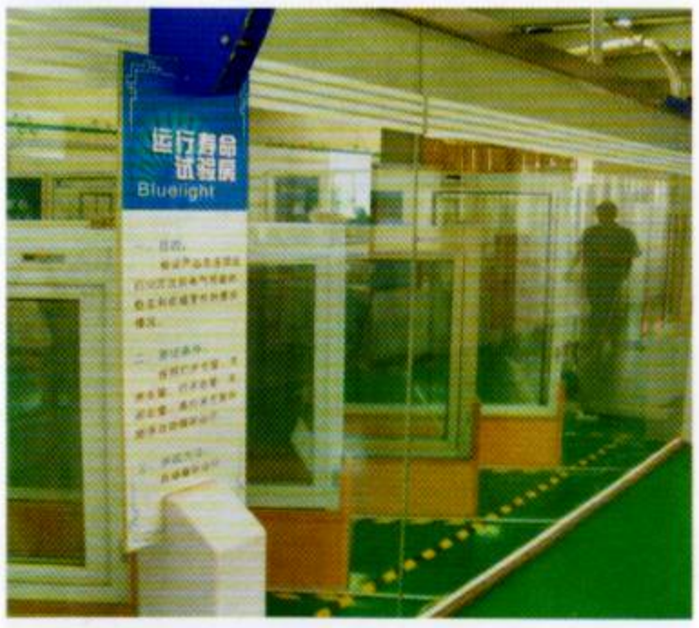
运行寿命试验

高温老化试验

低温试验

水密性能试验

中框防水试验



运行寿命试验

注：此页检测设备均为宁波蓝光实业股份有限公司研制新产品的实验室。

门窗性能测试实验室								图集号	07CJ12
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