

Approval number :

Effective date of approval :

Customer :

Product : HK 4 in 1 90°High-Bay Lens

Material Code : 1.01.6868

PN: HK-50@10-90-5050-20-1g-4

Manufacturer : Chengdu HercuLux Photoelectric Technology Co.,Ltd



	Supplier confirmation			Client confirmation			
Proposed		DATE		Qualified□		D 4 75	
Project manager		DATE		Unqualified□		DATE	
Audit		DATE		Audit		DATE	
Approved		DATE		Approved		DATE	
Stamp		DATE		Stamp		DATE	

(Confirmation of acceptance by both parties must be signed and sealed)

Factory: Chengdu Shuangliu District, Iot industrial park 2 road HercuLux Photoelectric ParkPhone : 028-85887727 (801)028-85887990 (801)Fax : 028-85887730www.hkoptics.comSales Dept: Shenzhen NanshanDistrict Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building,TEL: 0755-2937 1541FAX: 0755-2907 5140

*Approval In duplicate, for both supplier and customer.



FAX: 0755-2907 5140

TEL: 0755-2937 1541

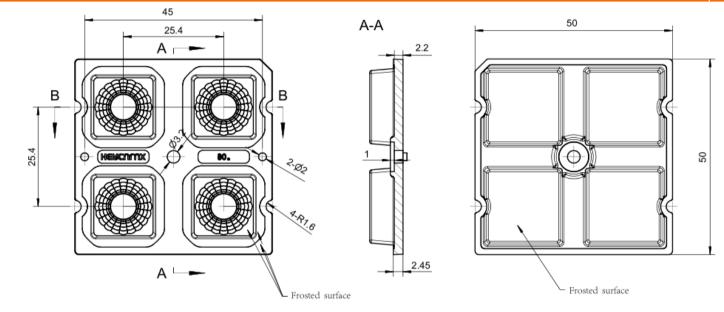
Product Picture:Image: Constraint of the second of the second

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Date updated: 2018/6/21

Product 2D drawings







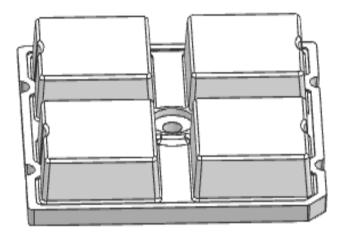


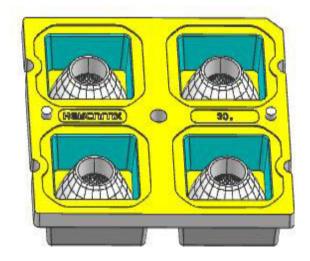
Technical Requirement:

- 1. The surface don't have any defects of flash, shrink and bubble.
- 2. The uncharted fillet and pattern draft subject to the 3D drawing.
- 3. The uncharted dimensional tolerance subject to the 3D drawing.

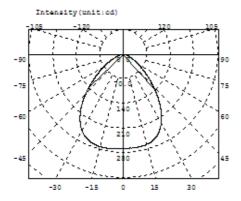
ptical Design	1			HK-50@10-90-50)50-20-1g-4	1.01.6868	
ructure Desig	ructure Design		HK 4 in 1 90° High-Bay Lens	Pages	Qty	Weight	
Assess				2			
Authorized			Material:PC	СДНК			

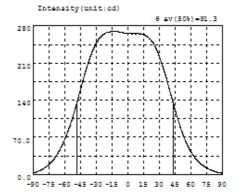












Intensity data:(deg , cd) CO-180

A	I	Α	I	A	I	A	I	A	I	λ	I
-90.0	3.095	-58.5	72.57	-27.0	256.1	4.5	265.1	36.0	185.9	67.5	23.35
-88.5	3.772	-57.0	80.28	-25.5	259.6	6.0	265.6	37.5	175.6	69.0	20.58
-87.0	4.654	-55.5	88.44	-24.0	262.6	7.5	265.2	39.0	164.1	70.5	18.17
-85.5	5.777	-54.0	97.14	-22.5	264.5	9.0	265.6	40.5	153.6	72.0	15.92
-84.0	6.904	-52.5	106.4	-21.0	266.4	10.5	265.4	42.0	142.9	73.5	13.90
-82.5	8.350	-51.0	116.3	-19.5	268.0	12.0	264.5	43.5	131.8	75.0	12.15
-81.0	9.947	-49.5	126.5	-18.0	268.7	13.5	263.9	45.0	121.0	76.5	10.54
-79.5	11.72	-48.0	137.2	-16.5	2 69 .0	15.0	262.8	46.5	111.1	78.0	9.125
-78.0	13.78	-46.5	148.4	-15.0	270.0	16.5	262.7	48.0	101.6	79.5	7.868
-76.5	16.01	-45.0	159.6	-13.5	270.0	18.0	260.7	49.5	92.00	81.0	6.724
-75.0	18.62	-43.5	170.2	-12.0	2 69 . 9	19.5	258.8	51.0	83.37	82.5	5.750
-73.5	21.39	-42.0	181.0	-10.5	269.3	21.0	255.7	52.5	74.99	84.0	4.849
-72.0	24.52	-40.5	191.6	-9.0	269.0	22.5	252.1	54.0	67.50	85.5	4.073
-70.5	28.12	-39.0	201.3	-7.5	268.5	24.0	248.1	55.5	60.43	87.0	3.206
- 69.0	32.07	-37.5	210.6	-6.0	268.1	25.5	242.5	57.0	54.01	88.5	2.653
- 67.5	36.49	-36.0	219.4	-4.5	267.2	27.0	236.8	58.5	48.18	90.0	2.118
-66.0	41.34	-34.5	227.6	-3.0	266.8	28.5	230.1	60.0	42.95		
-64.5	46.61	-33.0	235.0	-1.5	266.4	30.0	222.4	61.5	38.15		
-63.0	52.40	-31.5	241.5	0.0	265.7	31.5	213.4	63.0	33.82		
-61.5	58.71	-30.0	247.2	1.5	265.8	33.0	205.3	64.5	29.90		
- 60.0	65.33	-28.5	252.0	3.0	266.0	34.5	196.3	66.0	26.47		

Electricity Parameter:

Current I:	0.1000A	Power:	2.180W
Voltage V:	21.79V	PF:	1.000

Optical Parameter(Distance=2.559m):

Equivalent Luminous flux: Φ eff= 583.81m Efficiency: Eff=267.811m/W Diffuse angle: 0(25%): 113.4deg0(50%): 91.3deg0(75%): 72.1deg0(50%): 91.3deg Diffuse angle: 0(25%): 113.9deg0(50%): 91.9deg0(75%): 73.2deg0(50%): 91.9deg Imax=270.0cd (C=0.0deg,G=-15.0deg) C0-180Plane Imax= 270.0cd (G=-15.0deg) C0-180Plane I0= 265.7cd

HK 4 in 1 90°High-Bay Lens Sample size test report



			Standard size	Upper Size limit	Lower siz	e limit	Test result1	Test result2	Test result3	Judgment
	OW		50	50.15	49.8	5	50.06	50.04	50.05	OK
1.01	S of loca	ting	45	45.1	44.9)	44.95	44.97	45.05	OK
1.Size	D of loca	iting	2	2.05	1.9		1.92	1.91	1.96	OK
	TH		2.2	2.3	2		2.04	2.03	2.04	OK
				Gate shear can	not affect t	he appe	arance of the	lamp		
			See attachment "Appearance Inspection Standards"							
		e attachment Appearance	_	No bi	ırr	No burr	No burr	No burr	— ок	
Quality		I	Inspection Standards"	E	No sta	iins	No stains	No stains	s No stains	
3.Materia	al			PC			Color	Tra	nsparent	ОК
	Testing I	ED	D LUXEON 5050							
	FWHM				See ligh	t distribu	ution curve			
4.Optica I index	Angle					90.2°	9	1.3°		\nearrow
	Effiency					92.40%	% 92	.50%		\nearrow
	Facula	See t	he signature sa	mple		•				
	ehensive Iment					C	Qualified			
Remarks 1、Tool Caliper 2 Height G Microsco Thick Ga Gauge E 2、Test °C -25 °C achieve t after the temperat	S: Number: V 2D-Quadra auge M-To pe P-Need auge R-Ra 2-Visual. environme tenvironme thermal eq test. (Amb ture on the uct refer to	tic H- col die T- dius nt: In ent to uilibriu ient size o	20 um	th 1	ct size cha	inges w	rith temperar		Size: 50mm Size: 100mi Size: 150mi Size: 200mi Size: 250mi Size: 300mi	n n n

 Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 Take the lens try to avoid touching the total reflection surface.
 When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.

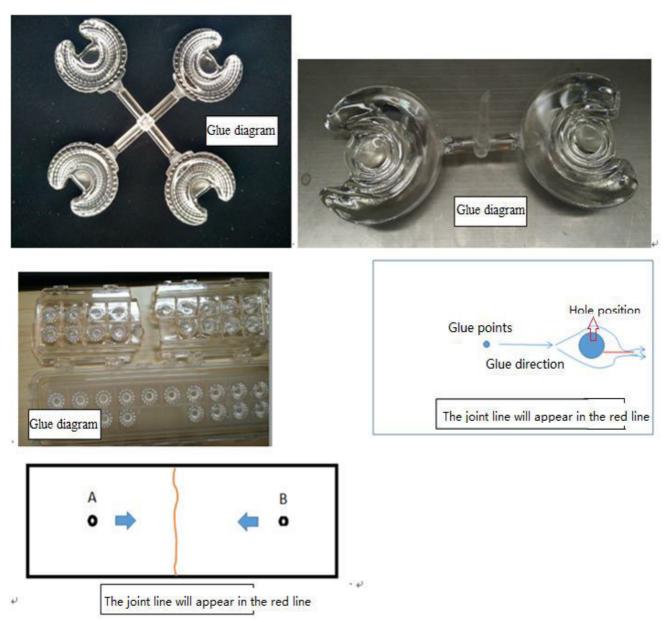
Packaging Information



PI	N	HK-50@10-90-5050-	-20-1g-4	Product Name	HK 4 in 1 90°H	igh-Bay I	_ens		
Product	material	PC		Customer					
Package diagram				Dackage	}	$^{<}$			
Product	nacking	12	A/ Box	4	Box/Floor				
TTOQUEL	packing	14	Floor/Carton	672	A/ Carton				
	NO.	Part No	Part name	Size	Dosage	Unit	Remar ks		
	1	2.07.0049	Blister box	23cm*21cm	56	BAG			
	2	2.08.0001	PE film	30cm*30cm	56	PCS			
Packagin	3	2.06.0005	Reel label	6.2cm*8cm	56	PCS			
g Materials	4	2.06.0005	Box label	6.2cm*9.2cm	1	PCS			
	5	2.06.0003	big plate	46.8cm*42.8cm	15	PCS			
	6	2.06.0001	big carton	46.8cm*42.8cm*3	⁶ 1	PCS			
Remarks	Scattered packaging is not subject to this specification								

Special notice

When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:



Please note :

The appearance of lines in the structure of the product as well as at the screw hole is a normal phenomenon, will not affect the actual use of the product, and can not be avoided at this stage.



Appearance inspection standards

1 Operating procedures

1.1.1Sampling standards, sampling plan and AQL

Test level : GB/T2828.1-2012The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level Π level, CR class defect coefficient 0, MA defect rejection level AQL = 0.65, MI class defect rejection level AQL = 1.0; defect level please see 5.4.

2 Code table

Code	Code description	Unit	Code	Code description	Unit
N	Amount/pcs	pcs	D	Diameter	mm
L	Length	mm	Н	Depth	mm
W	Width	mm	DS	Distance	mm
S	Proportion	mm²	SS	Offset	mm

3 Test conditions

3.1 Sight distance and working hours: Sight distance should be 30-35cm, each side of the inspection time does not exceed 12s, the visual angle of 45-135 degrees;

3.2 Light: 2x40w cool white fluorescent lamp, chip should be from the lens surface 500-550mm, in order to make the bad appearance can be correctly found, the illumination should not be less than 500Lux ;

3.3 Visual inspection staff should be 1.0 (including corrected visual acuity) above, no color blindness, color weakness.

4 Appearance inspection standards

Test items	ludging standard	Inspection equipment	Defect level		
restilents	Judging standard	Testing method	МІ	MA	CR
	When start the machine and process, all products have to check the appearance of the sample, the appearance of the sample is divided into qualified samples and limited samples.				
Check the sample	1: Qualified sample refers to the appearance and structure standard of the product which recognized by the client, the sample size should be confirmed before mass production;	Sample comparison , visual			V

	2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm; The priority is higher than the other criteria in this table. When there is a limited sample, the limit sample shall prevail.			
Raw edge	Not allowed to affect the size and assembly	Visual, point card	V	
Scratch	1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.	Visual, point card, calipers	V	
Fingerprint	Fingerprints are not allowed on all products	Visual	V	
Foreign things, impurities	The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on			V
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler		√
Poor ejection	Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side. Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, and the structural surface does not allow visual obvious strain.	Visual, point card	V	
Insufficient filling	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces, The signature sample shall prevail.	Visual, point card	V	
Shrink	When the entire surface of the product shrinks, the optical properties and dimensions must meet the requirements, and the visual will not significantly affect the appearance.Part shrink reference point defects	Visual, point card	V	
Flow marks、Welding line	 Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided; The remaining flow marks shall not appear in the optical surface, a single L ≤ 10mm, no more than two 	Visual	V	

Bubble	No bubbles are allowed	Visual		\checkmark	
Foreign matter、Dark spots	spots more than 1; Exceeded foreign matter black spots is judged bad.		\checkmark		
Damaged	No damage is allowed	Visual			\checkmark
Cold glue	Optical surface may not have cold glue, non- optical surface cold glue should meet the visual is not obvious.	Visual	\checkmark		
	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;				
Bad incision	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation	Visual			V
	3: Three molds and hot runner gate shall not appear residue.				
Scrub	Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires $D \le 1$ mm and no more than 1 area within a 50x50 mm area	Visual		V	



Approval number :

Customer :

Product : HK 4 in 1 90° Lens

Material Code : 1.01.6868

PN: HK-50@10-90-5050-20-1g-4

Manufacturer : Chengdu HercuLux Photoelectric Technology Co.,Ltd



	Supplier confirmation				Client confirmation			
Proposed		DATE		Qualified□		D.4.75		
Project manager		DATE		Unqualified□		DATE		
Audit		DATE		Audit		DATE		
Approved		DATE		Approved		DATE		
Stamp		DATE		Stamp		DATE		

(Confirmation of acceptance by both parties must be signed and sealed)

Factory: Chengdu Shuangliu District, Iot industrial park 2 road HercuLux Photoelectric ParkPhone : 028-85887727 (801)028-85887990 (801)Fax : 028-85887730www.hkoptics.comSales Dept: Shenzhen NanshanDistrict Nanshan Cloud Valley Innovation Industrial Park Comprehensive Service Building,TEL: 0755-2937 1541FAX: 0755-2907 5140

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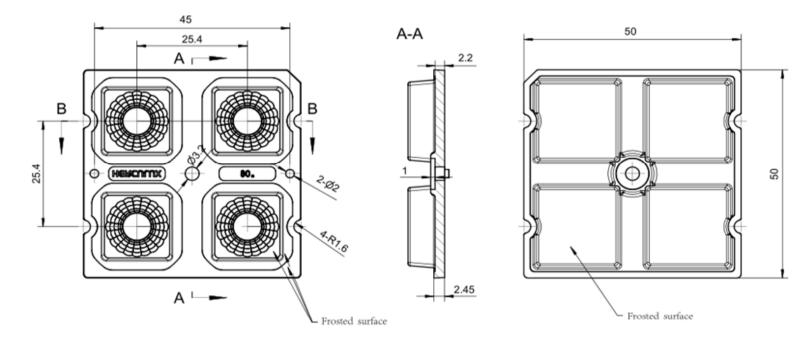
Product Picture:Image: Constraint of the state of the stat

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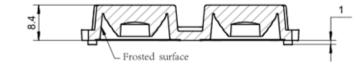
Date updated: 2018/12/17

Product 2D drawings





B-B



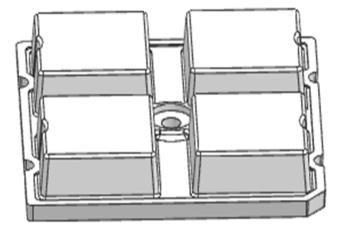
Technical Requirement:

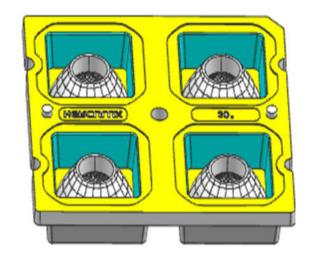
- 1. The surface don't have any defects of flash, shrink and bubble.
- 2. The uncharted fillet and pattern draft subject to the 3D drawing.
- 3. The uncharted dimensional tolerance subject to the 3D drawing.

Optical Design		HK 4 in 1 90° Lens		HK-50@10-	-90-5050-20-1g-4	1.01.6868
Structure Design				Pages	Qty	Weight
Assess			Lens			
Authorized		Material: F	PMMA		CDHK	

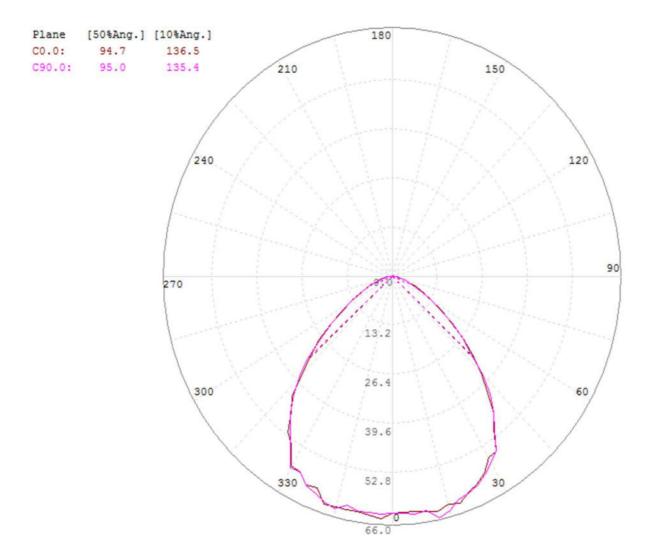
Image illustration











Sample size test report HK 4 in 1 90° Lens

HERCULUX ^{恒坤光电}

						1					1	
			Standard size	Upper Size limit	Lower size limit	Test result1		est sult2	Test result3	Test result4	Jud gme nt	Remarks
1.Size	OW		50			50.06	50	.04	50.05	50.04	\bigwedge	Test environment:
	S of locating		45			44.95	44	.97	45.05	44.97	\bigwedge	In 20 ℃ -25 ℃
	D of loca	iting	2			1.92	1.	91	1.96	1.91	\bigwedge	environment to achieve thermal
	тн		2.2			2.04	2.	03	2.04	2.03	\square	equilibrium after the test
				Gate she	ar can not	affect the	appear	rance	of the lamp)		
				See atta	chment "A	ppearanc	e Inspe	ction	Standards"			
2.Appearance		nce See attachment "Appearance				No burr		burr	No burr	No burr No burr		ок
Quality	Ap In		spection andards"		Ν	No stains		stains	No stains	No stains		
3.Materia	ıl			PMMA	4		Co	olor	Transparent Oł			ОК
	Testing	Testing LED LUXEON 5050										
	FWHM			See light distribution curve								
4.Optica I index	angle							/				
	Efficiency						\square		/	\backslash		
	Facula	See t	the signatu	re sample		`						
	hensive ment							Q	ualified			
					РММА	product	size cł	hange	es with ter	nperatur	9	
				Length table								
Remarks	: Number: \	/-Verr	nier	changes (mm)					-	Size:	50mm	
Caliper 2	D-Quadra	tic H-		(1111)	0.8					Size:		
	auge M-T pe P-Nee			0.6 100mm 0.4 Size: 150mm					ı			
Thick Ga	uge R-Ra											
Gauge E-Visual. 2、 Ambient temperature on				0.2 Size:								
the size of the product refer				0			-		200mn	1		
to the table on the right					0	10	20	30	40			
									(°C)			
Precautio	ne.		I									
		ves di	uring lens a	assembly to	nrevent c	ontamina	ion of t	he ler	is surface			

Wear clean gloves during lens assembly to prevent contamination of the lens surface.
 Take the lens try to avoid touching the total reflection surface.
 When the lens surface contamination, you can only gently wipe with soft cotton sticky neat neutral solvent, not allowed to wipe with industrial solvents.

Packaging Information

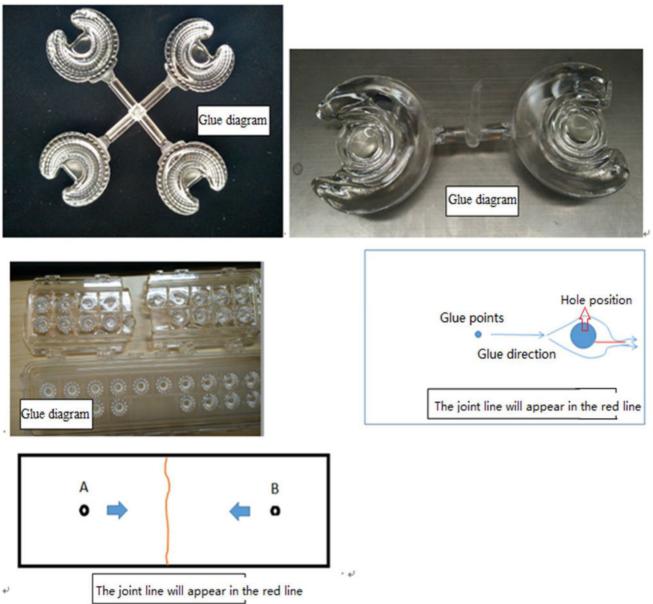


PN HK-50@10-90-5050-20-1g-4)-1g-4	Product Name	HK 4 in 1 90° Lens			
Product material		РММА		Customer			
Package diagram		Single Vacuu	im package	Box pack	age	>	
Product packing		12	A/ Box	4	Box/Floor		
		14	Floor/Carton	672	A/ Carton		
	NO.	Part No	Part name	Size	Dosage	Unit	Remarks
	1	2.07.0049	Blister box	23cm*21cm	56	BAG	
Packagin	2	2.08.0001	PE film	30cm*30cm	56	PCS	
g Materials	3	2.06.0005	Reel label paper	6.2cm*8cm	56	PCS	
Materials	4	2.06.0005	Box label paper	6.2cm*9.2cm	1	PCS	
	5	2.06.0003	big plate	46.8cm*42.8cm	15	PCS	
	6	2.06.0001	big carton	46.8cm*42.8cm*36 cm	1	PCS	
Remarks	The loose packing is not subject to this specification. Customer's requirements shall prevail (There are three layers of 24 bags for each layer and 5 bags for the top layer)						

Special notice

When gule pass through holes, columns and other structures, or part of the thin structure, will form a weld line. The product which uses multi-point injection welding line will appear because of the combination of sol, as shown below:

Syntneti



Please note :

The appearance of lines in the structure of the product as well as at the screw hole is a normal phenomenon, will not affect the actual use of the product, and can not be avoided at this stage.



Appearance inspection standards

1 Operating procedures

1.1.1Sampling standards, sampling plan and AQL

Test level : GB/T2828.1-2012The first part is according to the acceptance quality limit (AQL) retrieval batch inspection sampling plan, general inspection level Π level, CR class defect coefficient 0, MA defect rejection level AQL = 0.65, MI class defect rejection level AQL = 1.0; defect level please see 5.4.

2 Code table

Code	Code description	Unit	Code	Code description	Unit
N	Amount/pcs	pcs	D	Diameter	mm
L	Length	mm	Н	Depth	mm
W	Width	mm	DS	Distance	mm
S	Proportion	mm²	SS	Offset	mm

3 Test conditions

3.1 Sight distance and working hours: Sight distance should be 30-35cm, each side of the inspection time does not exceed 12s, the visual angle of 45-135 degrees;

3.2 Light: 2x40w cool white fluorescent lamp, the light source is 500-550mm away from the lens surface; in order to make the appearance defect can be correctly recognized, the illumination should be 500-1000Lux, and the observation time is 10 seconds.3.3 Visual inspection staff should be 1.0 (including corrected visual acuity) above, no color blindness, color weakness.

4 Appearance inspection standards

Test items	Judging standard	Inspection equipment	Defect level		
restitents		Testing method	МІ	MA	CR
	When start the machine and process, all products have to check the appearance of the sample, the appearance of the sample is divided into qualified samples and limited samples.				
Check the sample	1: Qualified sample refers to the appearance and structure standard of the product which recognized by the client, the sample size should be confirmed before mass production;	Sample comparison , visual			v

	2: The limited sample refers to the limit of a particular exceptionally developed sample. Limit the sample only for its specific point of exception to confirm; The priority is higher than the other criteria in this table. When there is a limited sample, the limit sample shall prevail.			
Raw edge	Not allowed to affect the size and assembly	Visual, point card	V	
Scratch	1: Non-optical surface and non-exposed surface scratches should be visually insignificant and the length is less than 1/10 of the maximum surface size.	Visual, point card, calipers	V	
Fingerprint	Fingerprints are not allowed on all products	Visual	V	
Foreign objects, black spots, white spots	The product may not be attached to foreign objects, including oil, fiber, dregs of water gap and so on			V
Deformation	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces.	Visual, feeler		V
Poor ejection	Products may not appear bad ejection, including no convex top, thimble printed on the assembly surface shall not be higher than the product surface, non-assembled surface thimble height should not exceed the product size tolerances; thimble printing should be less than the product surface and no more than 0.3; thimble surface treatment should be consistent with the product side. Ejection strain: the optical surface and the appearance of the exposed surface after assembly are not allowed to have a strain, and the structural surface does not allow visual obvious strain.	Visual, point card	~	
Insufficient filling	Insufficient filling shall not affect the appearance of the assembly and the exposed surfaces, The signature sample shall prevail.	Visual, point card	V	
Shrink	When the entire surface of the product shrinks, the optical properties and dimensions must meet the requirements, and the visual will not significantly affect the appearance.Part shrink reference point defects	Visual, point card	V	
Flow marks、Welding line	 Product does not allow the presence of flow marks and welding lines unless the structure can not be avoided; The remaining flow marks shall not appear in the optical surface, a single L ≤ 10mm, no more than two 	Visual	v	

Bubble	No bubbles are allowed	Visual		\checkmark	
Foreign objects, black spots, white spots	Not obvious or D ≤ 0.3mm black spots and foreign bodies in the area of 100x100mm not more than 1; Exceeded foreign matter black spots is judged bad.	Visual, point card	V		
Damaged	No damage is allowed	Visual			\checkmark
Cold glue	Optical surface may not have cold glue, non- optical surface cold glue should meet the visual is not obvious.	Visual	\checkmark		
	1: Do not affect the product size, shall not penetrate the optical surface, the cut should be smooth;				
Bad incision	2: Laser cutting products, the optical surface burns shall not occur after the processing is completed. Beading must not affect product installation	Visual			V
	3: Three molds and hot runner gate shall not appear residue.				
Scrub	Scrub surface should be uniform, off the scrub phenomenon should not be obvious , A single off scrub imprint requires $D \le 1$ mm and no more than 1 area within a 50x50 mm area	Visual		V	