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## 符号说明

1. 凡数据后有符号“\*”，表示光栏位置或其值间有光栏。

凡数据后有符号“\*\*”，表示原资料中未给出F.A.值，此系我们在计算时主观给定的值。

2. 在主要参数表中，当d值是可变的，则用符号“\*\*\*”表示。

3. 凡没有注明数值单位的，均以毫米为单位；若注明以英寸为单位，则在该镜头资料中均以英寸为单位。

4. 常用符号：

$\Sigma S_1$  球差系数和；

$\Sigma S_2$  色差系数和；

$\Sigma S_3$  象散系数和；

$\Sigma S_4$  场曲系数和；

$\Sigma S_5$  畸变系数和；

$LA'$  球差；

$\Delta H'$  绝对畸变；

$x'_1$  细光束子午场曲；

$x'_2$  细光束弧矢场曲；

$x'_3 - x'_4$  象散；

$K_{T1}$  全口径的子午彗差；

$K'_{T0.7}$  0.707口径的子午彗差；

QP 相对畸变；

Hl 理想象高；

E.F.L 焦距；

B.F.L 后截距；

FNo. 相对孔径倒数；

F.A. 视场角；

η 物高；

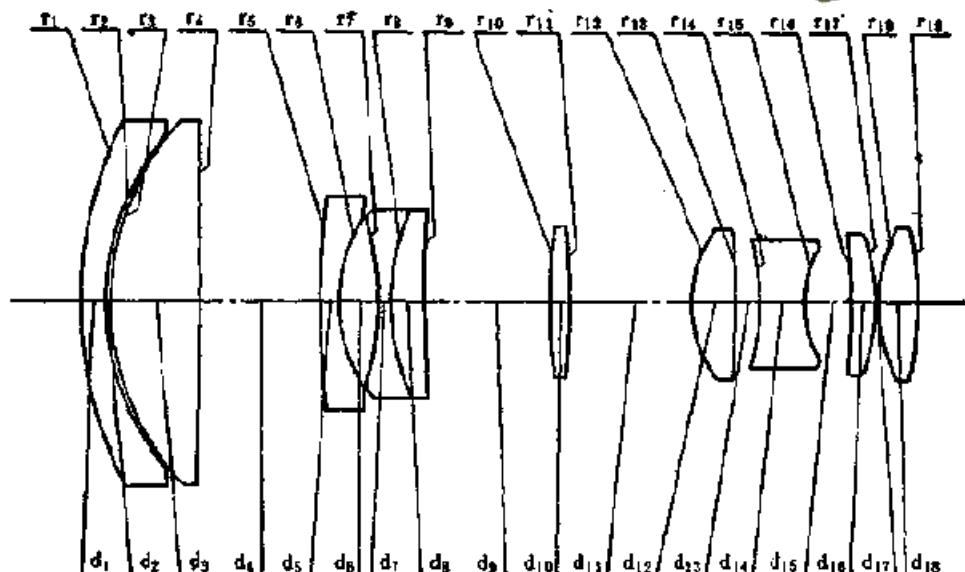
ω 镜头视场。

编号: 04-03-001

## 四组变焦距物镜

E.F.L=0.641~1.560 B.F.L=0.520 FNo.=9 F.A.=±26.0°~±10.0°

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序号	r	d	n <sub>λ</sub>	v <sub>A</sub>	序号	r	d	n <sub>λ</sub>	v <sub>A</sub>
1	1.6604	0.100	1.78470	26.08	11	-2.9979	0.505*		
2	1.0347	0.009			12	0.5052	0.177	1.71300	53.83
3	1.0682	0.364	1.71300	53.83	13	-5.8668	0.102		
4	-55.1950	***1			14	-0.9660	0.186	1.78470	26.08
5	12.9360	0.070	1.58144	40.86	15	0.4479	0.103		
6	0.6295	0.155			16	-2.7248	0.102	1.71300	53.83
7	-1.1272	0.081	1.51821	65.05	17	-0.7910	0.046		
8	0.8742	0.130	1.78470	26.08	18	0.6437	0.162	1.71300	53.83
9	6.0136	***2			19	-13.8970			
10	2.9979	0.081	1.62014	63.52					

$$0.505^* = 0.300 + 0.205$$

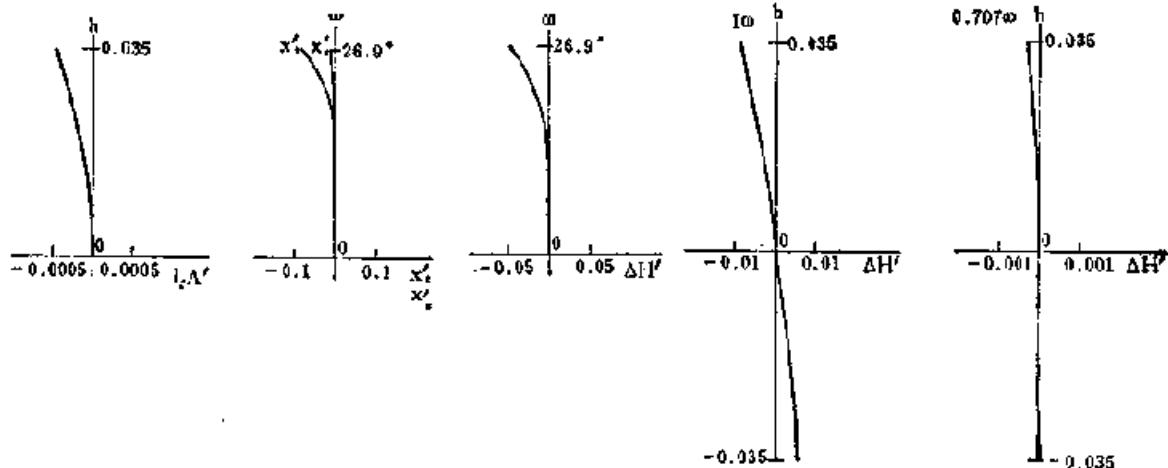
04-03-001-1

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	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP(1ω)
	- 0.0000028	- 0.0000106	0.0000228	- 0.0000455	- 0.0019261	0.325	- 13%
h 或 ω %	LA'	$\Delta H'$	$x_t$	$x_s'$	$x_t - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	- 0.00046	- 0.0442	- 0.0770	- 0.0050	- 0.0720	- 0.002060	- 0.000990
70	- 0.00024	- 0.0088	- 0.0020	0.0003	- 0.0023	- 0.00093	- 0.00046

$$E \cdot F \cdot L = 0.641 (\pm 26.9^\circ)$$

$$***1 = 0.036, ***2 = 0.816$$

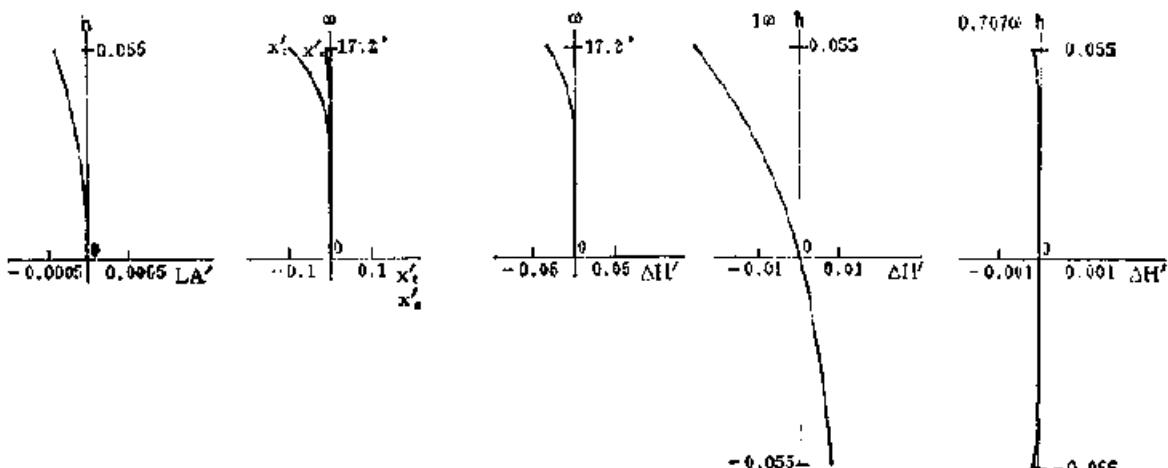


04-03-001-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP(1ω)
	- 0.0000026	- 0.0000022	0.0000383	- 0.0000479	0.0003027	0.309	- 9%
h 或 ω %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	- 0.00012	- 0.0280	- 0.0951	- 0.00430	- 0.0908	- 0.009090	- 0.004130
70	- 0.00023	0.0001	0.0004	0.00005	- 0.0001	- 0.000134	- 0.000067

$$E \cdot F \cdot L = 1.000 (\pm 17.2^\circ)$$

$$***1 = 0.501, ***2 = 0.516$$

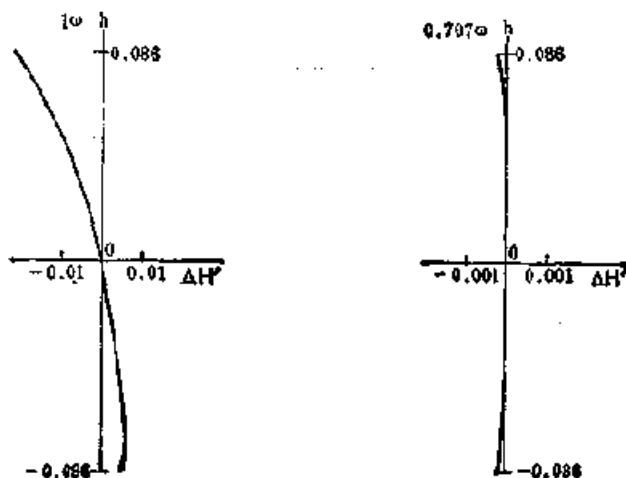
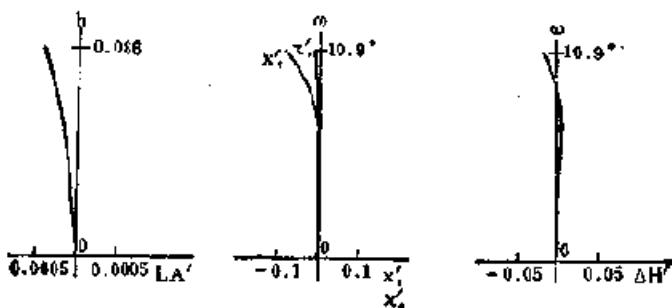


04-03-001-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 φ)
	- 0.0000027	0.0000056	- 0.0000142	- 0.0000478	0.0014143	0.300	- 6 %
b 或 φ %	LA'	ΔH'	x'_1	x'_2	x'_1 - x'_2	K'_T1	K'_T2
100	- 0.00043	- 0.0184	- 0.0854	- 0.0026	- 0.0628	- 0.008300	- 0.004020
70	- 0.00022	0.0031	- 0.0010	- 0.0009	- 0.0001	- 0.000163	- 0.000078

E·F·L = 1.560 ( $\pm 10.9^\circ$ )

\* \* \* 1 = 0.800, \* \* \* 2 = 0.049

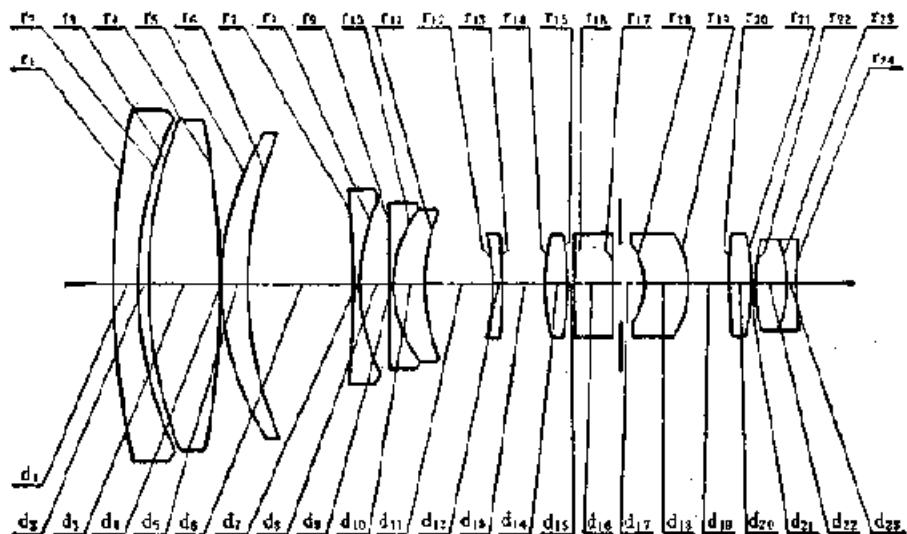


编号: 04-03-002

## 变 焦 距 物 镜

E.F.L=9.3~35.4 B.F.L=15.25 FNo.=1.9 F.A.= $\pm 21.6^\circ \pm 5.6^\circ$

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序号	r	d	$n_e$	v <sub>e</sub>	序号	r	d	$n_e$	v <sub>e</sub>
1	112.2000	3.00	1.79180	25.90	13	- 51.5820	* * * 3		
2	46.9900	1.20			14	28.7990	2.50	1.69400	54.60
3	50.1190	8.70	1.62237	60.06	15	- 36.9950	0.70		
4	- 110.6000	0.05			16	$\infty$	5.00	1.67832	41.04
5	33.9820	3.50	1.62237	60.06	17	$\infty$	4.00*		
6	47.6570	* * * 1			18	- 4.2937	5.30	1.71618	27.97
7	- 139.2400	1.00	1.69400	54.60	19	- 11.9710	5.10		
8	24.5820	3.50			20	37.8620	2.80	1.69400	54.60
9	930.5700	0.80	1.52010	55.01	21	- 24.0570	0.05		
10	14.8560	3.50	1.79180	25.90	22	20.9830	4.00	1.69660	53.18
11	24.4060	* * * 2			23	- 14.1250	1.00	1.81262	25.28
12	- 22.8760	1.30	1.66151	50.69	24	45.9730			

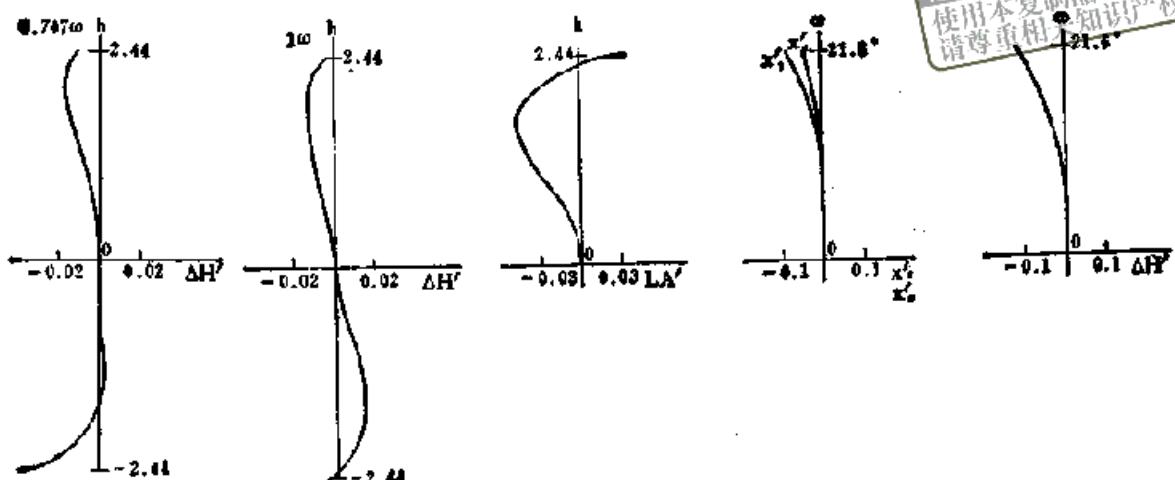
$$4.00^* = 1.50 + 2.50$$

04-03-002-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 φ)
	- 0.02495	- 0.00163	0.00217	- 0.00578	- 0.06571	3.7	- 3.1%
h 或 φ %	LA'	ΔH'	$x_i'$	$x_s'$	$x_i' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.0357	- 0.1147	- 0.0864	- 0.0406	- 0.0458	- 0.00453	- 0.00007
70	- 0.0476	- 0.0452	- 0.0214	- 0.0186	- 0.0028	- 0.02476	- 0.00814

E · F · L = 9.3 ( $\pm 21.6^\circ$ )

\*\*\*1 = 2.500; \*\*\*2 = 30.971; \*\*\*3 = 1.724

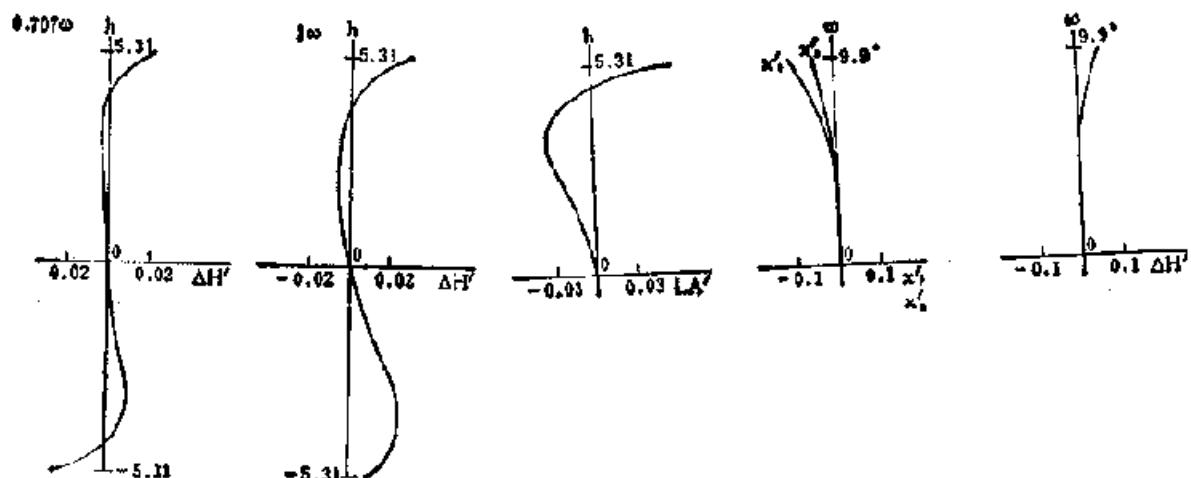


04-03-002-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 φ)
	- 0.02146	0.00742	- 0.00224	- 0.00602	0.01174	3.5	1.6%
h 或 φ %	LA'	ΔH'	$x_i'$	$x_s'$	$x_i' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.0633	0.0572	- 0.1135	- 0.0471	- 0.0664	0.01790	0.01118
70	- 0.0335	0.0120	- 0.0321	- 0.0219	- 0.0102	- 0.06240	0.00314

E · F · L = 20.2 ( $\pm 1.9^\circ$ )

\*\*\*1 = 21.650; \*\*\*2 = 8.223; \*\*\*3 = 5.322



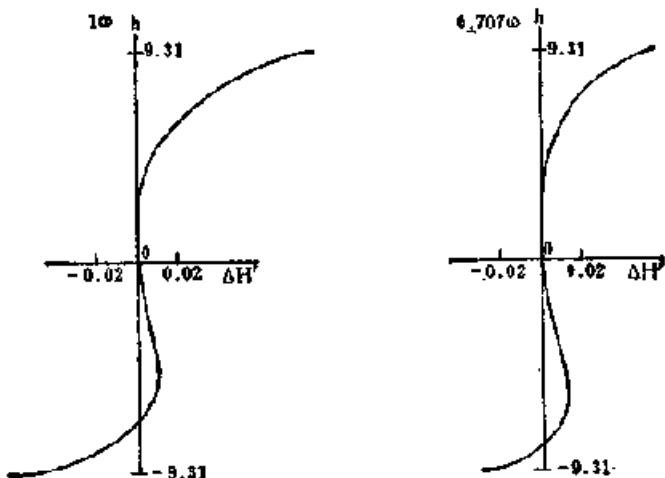
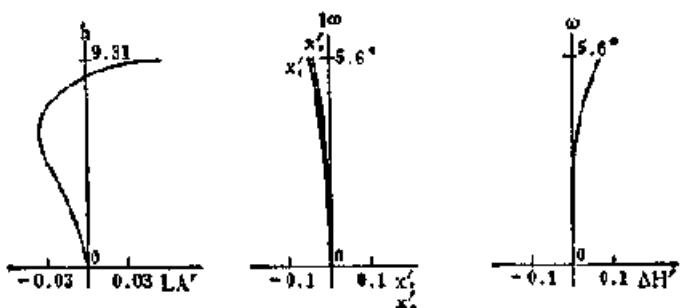
04-03-002-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	- 0.02189	0.01183	- 0.00273	- 0.00608	0.02969	3.5	1.9%
b 或 %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{t1}'$	$K_{t0.7}'$
100	0.0531	0.0694	- 0.0491	- 0.0410	- 0.0081	0.010800	0.014060
70	- 0.0357	0.0217	- 0.0277	- 0.0228	- 0.0049	0.012270	0.012808

$$E \cdot F \cdot L = 35.4 (\pm 5.6^\circ)$$

$$***1 = 31.540, ***2 = 1.910, ***3 = 1.785$$

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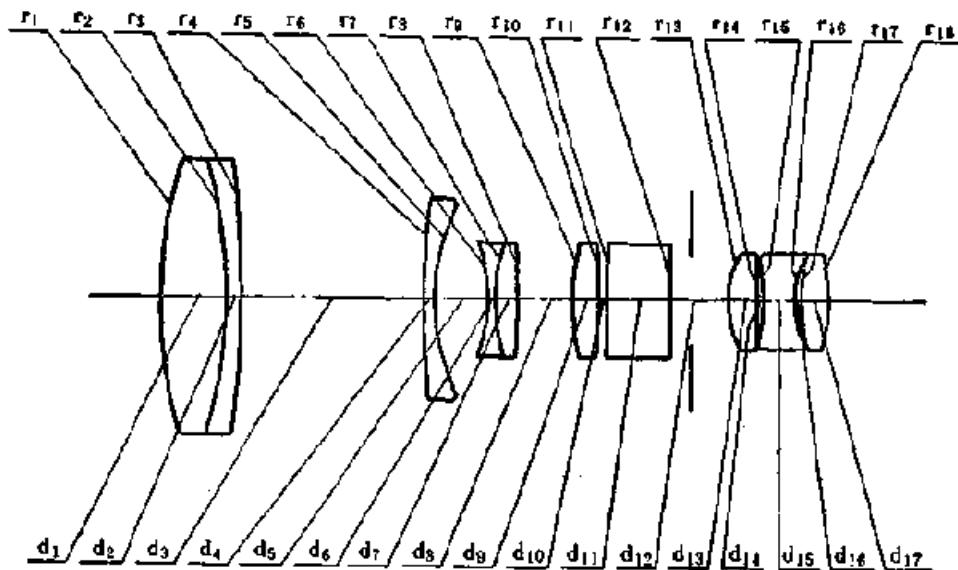


编号：04-03-003

## 变 焦 距 摄 影 物 镜

E.F.L=12.34~29.08 B.F.L=9.58 FNo.=1.8

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序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	48.3499	6.0	1.62289	58.06	10	- 64.9580	0.7		
2	- 41.8680	1.2	1.78470	28.08	11	∞	6.0	1.51680	64.17
3	- 149.6300	* * * 1			12	∞	5.2*		
4	127.7210	1.0	1.62041	60.33	13	8.9323	2.7	1.71300	53.83
5	13.1710	* * * 2			14	- 95.0200	0.4		
6	- 14.8530	0.8	1.51742	52.20	15	- 29.2410	3.2	1.78470	26.08
7	18.1710	2.0	1.71738	29.51	16	8.6340	0.6		
8	- 262.2700	* * * 3			17	18.1710	2.4	1.74400	44.77
9	24.9820	2.3	1.62041	60.33	18	- 18.1710			

$$5.2^* = 2.0 + 3.2$$

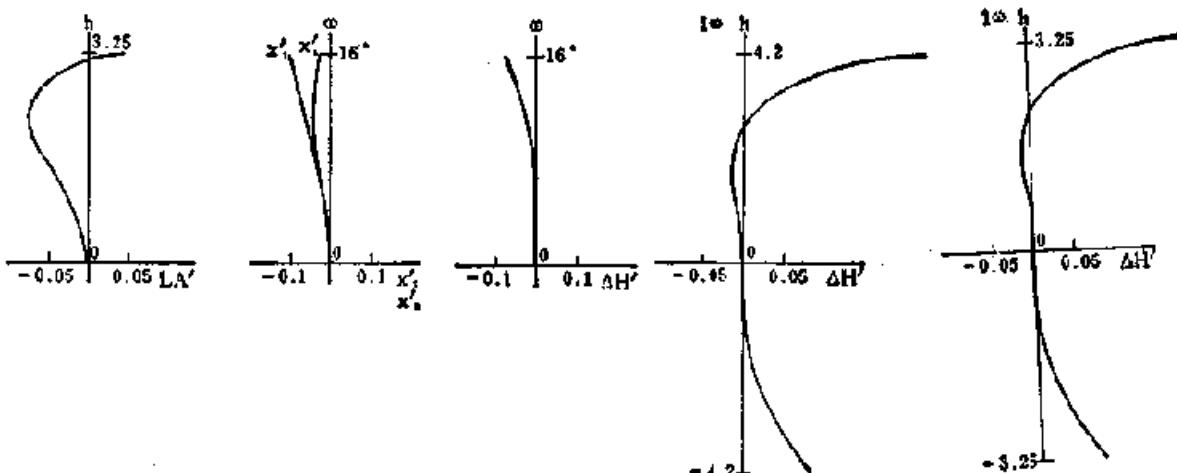
04-03-003-1

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	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	- 0.03939	- 0.00435	0.00122	- 0.01877	- 0.03310	3.5	- 1.9%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' \cdot x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	0.0456	- 0.0701	- 0.0235	- 0.1022	0.0787	0.13753	0.01633
70	- 0.0757	- 0.0240	- 0.0386	- 0.0591	0.0205	0.07779	0.00839

E · F · L = 12.34 ( $\pm 16^\circ$ )

\*\*\*1 = 1.70, \*\*\*2 = 18.14, \*\*\*3 = 8.36

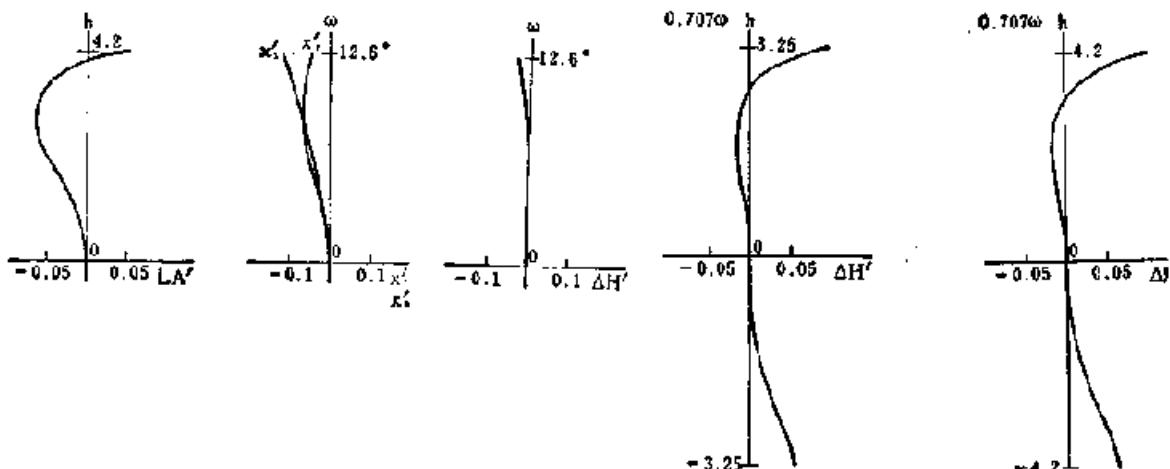


04-03-003-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	- 0.03631	- 0.00249	- 0.00197	- 0.01955	- 0.01093	3.6	- 0.8%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' \cdot x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	0.0542	- 0.0309	- 0.0441	- 0.1210	0.0769	0.15447	0.01834
70	- 0.0679	- 0.0094	- 0.0048	- 0.0715	0.0067	0.08655	0.01068

E · F · L = 16.03 ( $\pm 12.6^\circ$ )

\*\*\*1 = 9.75, \*\*\*2 = 10.86, \*\*\*3 = 7.59



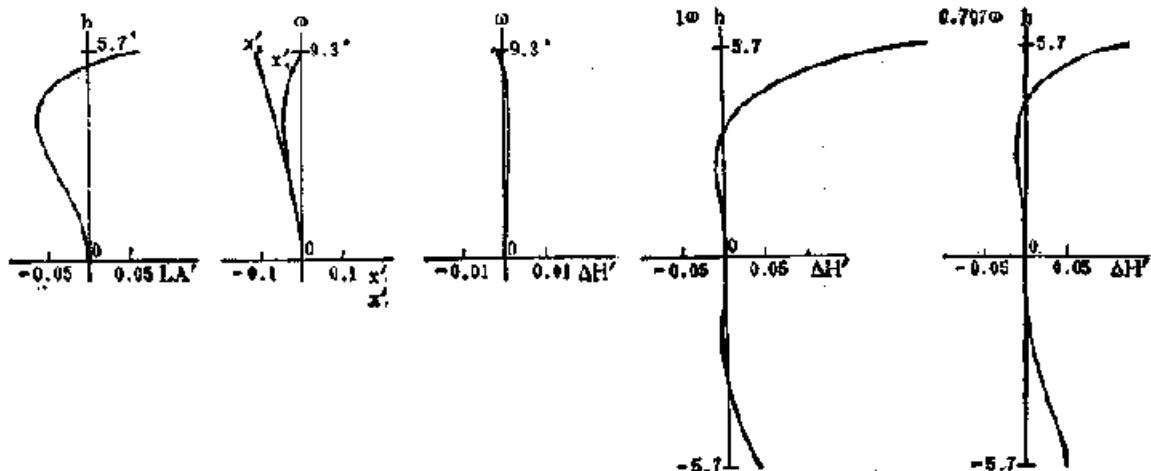
04-03-003-3

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	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\infty$ )
	-0.03636	-0.00225	-0.00152	-0.01966	0.00411	3.5	-0.04%
b 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.0664	-0.0014	0.0121	-0.1079	0.1200	0.14640	0.01037
70	-0.0646	0.0011	-0.0474	-0.0664	0.0190	0.08663	0.00973

E . F . L = 21.55 ( $\pm 9.3^\circ$ )

\*\*\*1 = 17.80, \*\*\*2 = 5.10, \*\*\*3 = 5.30

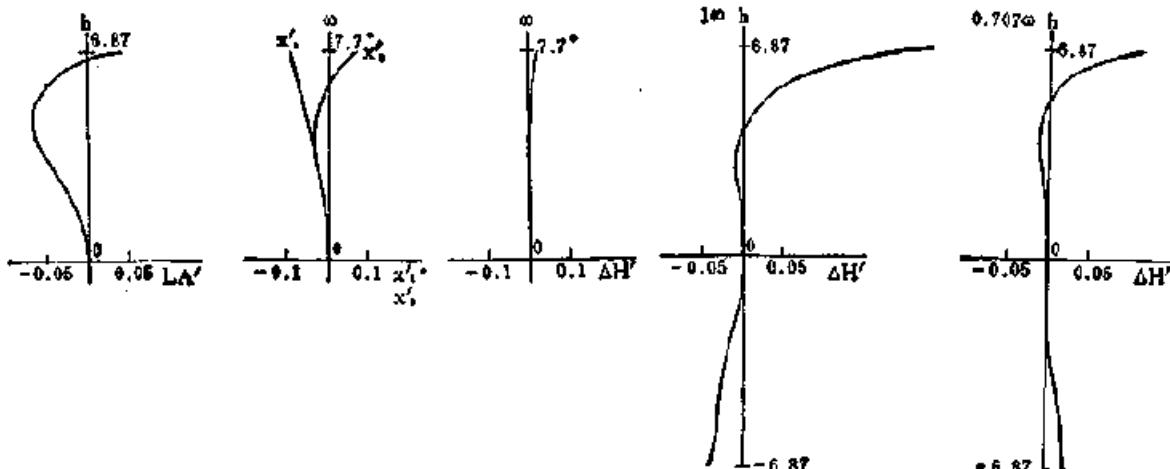


04-03-003-4

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\infty$ )
	-0.036170	-0.003650	0.000002	-0.019600	0.014525	3.5	0.57%
b 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.0465	0.0204	0.0687	-0.0955	0.1642	0.09755	-0.00697
70	-0.0693	0.0086	-0.0267	-0.0610	0.0343	0.06740	0.00266

E . F . L = 26.14 ( $\pm 7.7^\circ$ )

\*\*\*1 = 22.40, \*\*\*2 = 3.03, \*\*\*3 = 2.77



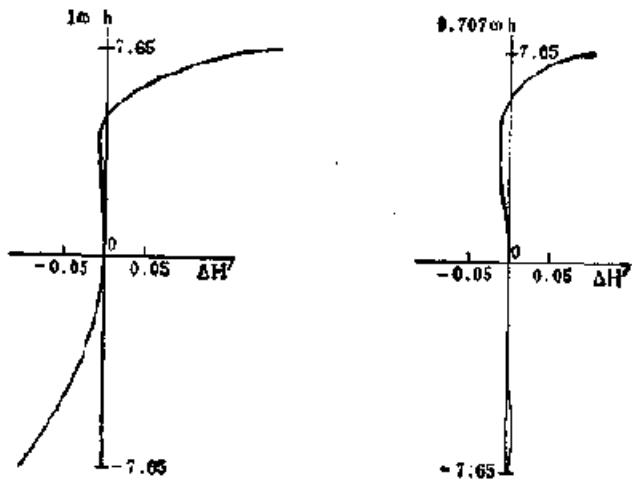
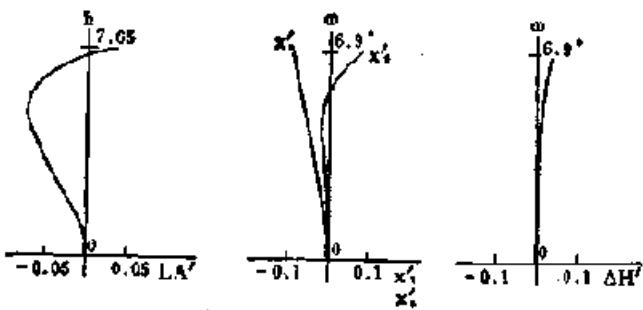
04-03-003-5

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	- 0.03737	- 0.00538	0.00041	- 0.01951	0.02101	3.5	0.98%
$h$ 或 $\alpha$ %	$LA'$	$\Delta H'$	$x'_1$	$x'_2$	$x_1 - x'_1$	$K_{\hat{r}1}$	$K_{\hat{r}0.7}$
100	0.0335	0.0345	0.0819	- 0.0929	0.1743	0.05797	- 0.02156
70	- 0.0747	0.0132	- 0.0218	- 0.0595	0.0377	0.05006	- 0.00385

$$E \cdot F \cdot L = 29.08 (\pm 6.9^\circ)$$

$$***1 = 24.70; ***2 = 2.50; ***3 = 1.00$$

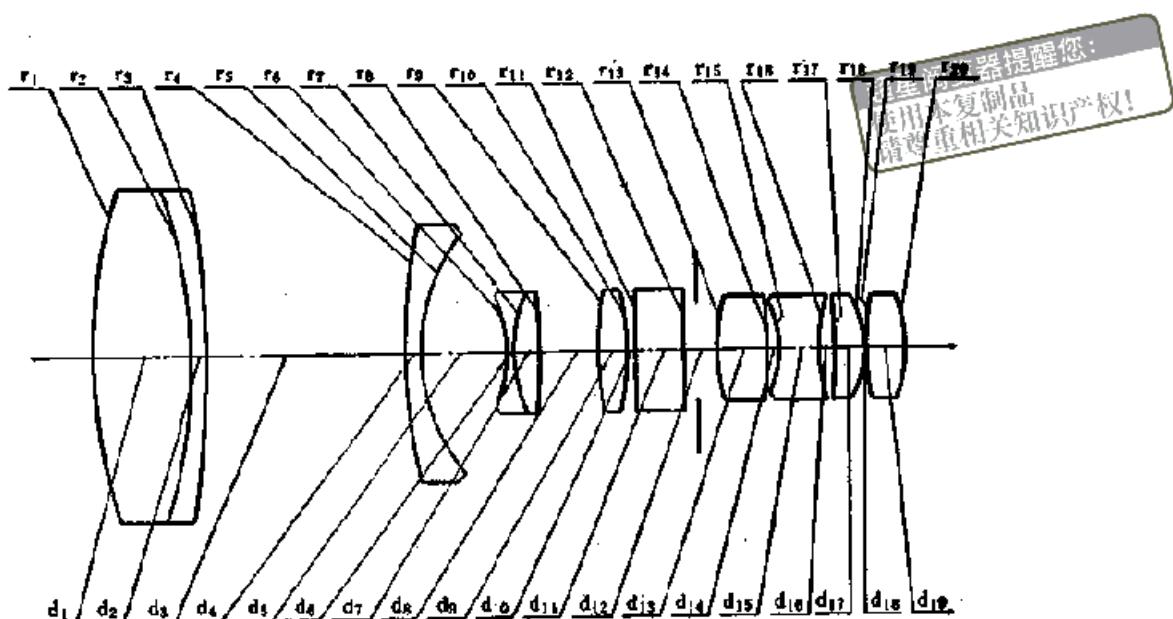
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编号：04-03-004

## 变 焦 距 摄 影 物 镜

E.F.L=10.25~34.80 B.F.L=13.28 FNo.=1.6 F.A.=±19.5°~±5.7°



序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	54.640	10.0	1.62280	56.90	11	∞	5.0	1.51680	64.17
2	-47.655	1.6	1.78470	26.08	12	∞	3.3*		
3	-170.342	***1			13	18.564	5.0	1.62041	50.33
4	76.625	1.2	1.71300	53.83	14	-62.194	1.5		
5	19.112	***2			15	-10.517	4.0	1.80518	25.43
6	-15.849	1.0	1.71300	53.83	16	16.659	1.5		
7	14.642	2.5	1.78470	26.08	17	-365.150	3.0	1.62041	60.33
8	-71.274	***3			18	-12.959	0.1		
9	33.254	3.0	1.62041	60.33	19	24.758	4.0	1.62041	60.33
10	-26.606	0.8			20	-15.178			

$$3.3^* = 1.3 + 2.0$$

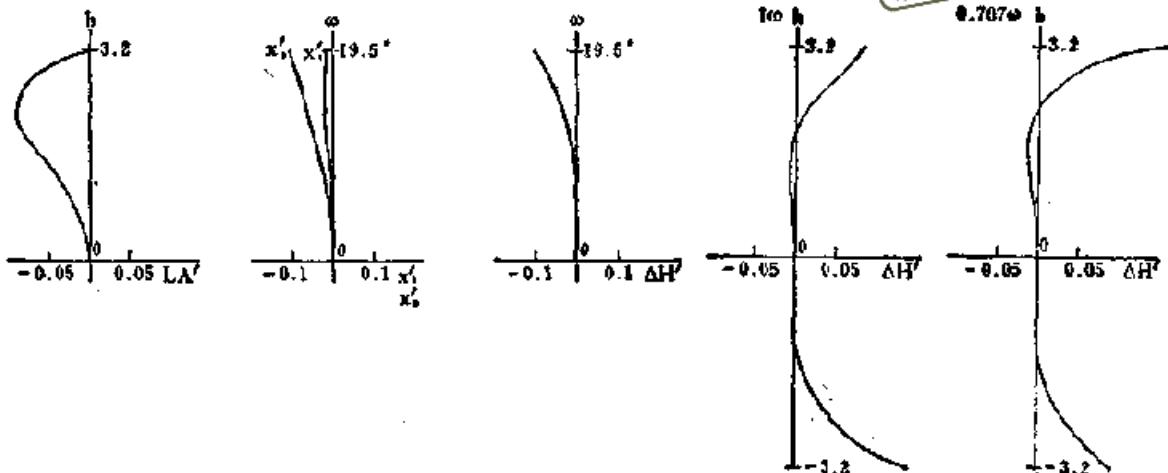
04-03-004-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 m)
	- 0.06064	- 0.00577	0.01256	- 0.02995	- 0.05659	3.5	- 2.7%
h 或 $\phi$ %	LA'	$\Delta H'$	$x'_t$	$x_s$	$x'_t - x_s$	$K_{T1}'$	$K_{T0.7}$
100	0.0142	- 0.0995	- 0.0116	- 0.1079	0.0963	0.11140	0.02165
70	- 0.0916	- 0.0340	- 0.0191	- 0.0586	0.0395	0.12688	0.00952

$$E \cdot F \cdot L = 10.25 (\pm 19.5^\circ)$$

$$***1 = 0.800, ***2 = 29.900, ***3 = 6.524$$

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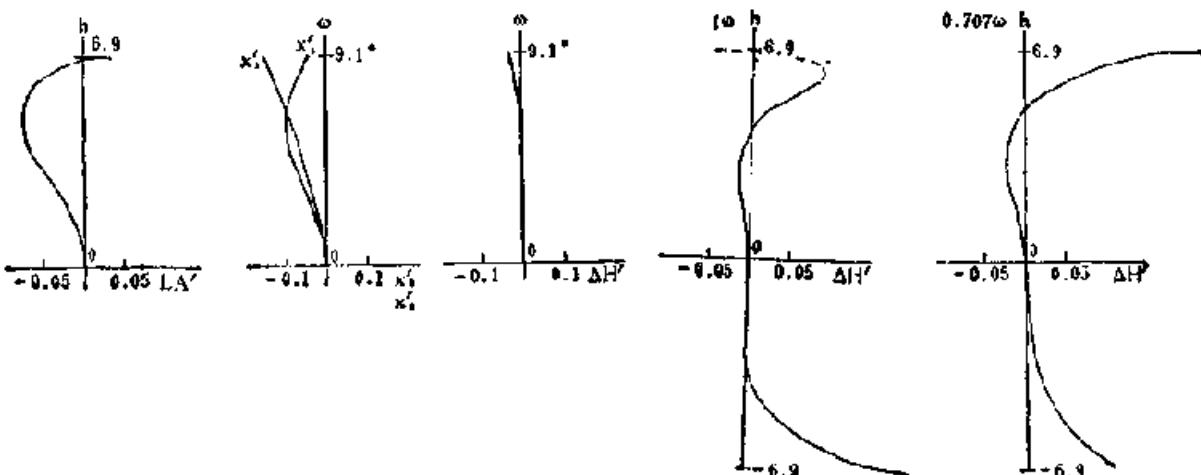


04-03-004-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 m)
	- 0.05362	- 0.00975	- 0.00728	- 0.03138	0.00639	3.5	- 0.79%
h 或 $\phi$ %	LA'	$\Delta H'$	$x'_t$	$x_s$	$x'_t - x_s$	$K_{T1}'$	$K_{T0.7}$
100	0.0408	- 0.0281	- 0.0402	- 0.1556	0.1153	- 0.42407	0.02703
70	- 0.0751	- 0.0029	- 0.0981	- 0.0931	- 0.0050	0.17227	0.01658

$$E \cdot F \cdot L = 22.07 (\pm 9.1^\circ)$$

$$***1 = 24.411, ***2 = 8.679, ***3 = 6.140$$



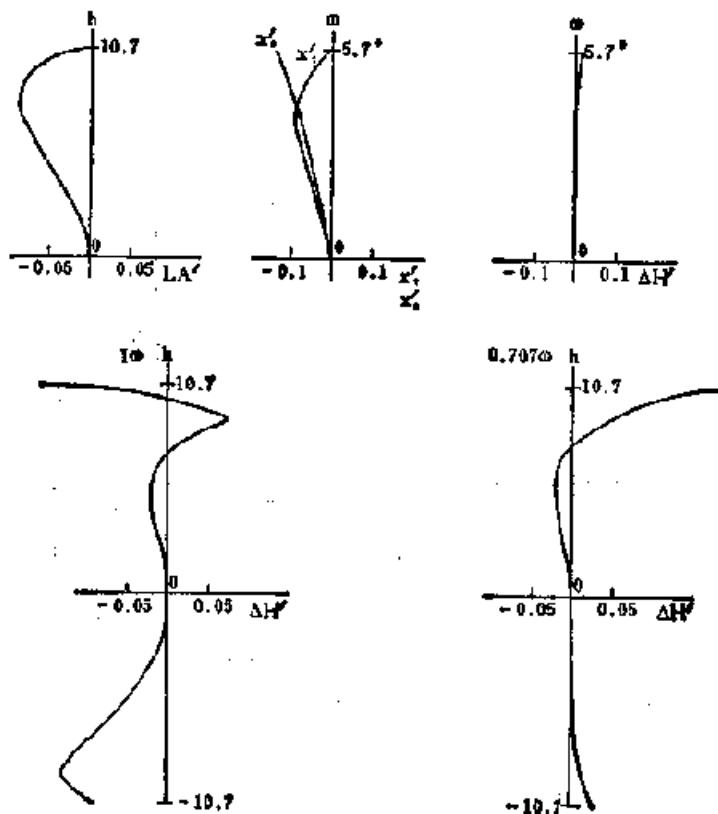
04-03-004-5

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取消“自动缩放”

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HJ	QP(1 o)
	- 0.05572	- 0.01061	- 0.00223	- 0.03001	0.02187	3.4	0.34%
h 或 φ %	LA'	ΔH'	x_t'	x_e	x_t' - x_e	Kr1	Kr0.7
100	- 0.0073	0.0117	- 0.0122	- 0.1482	0.1386	- 0.12645	- 0.04408
70	- 0.0883	0.0085	- 0.0386	- 0.0892	0.0006	0.11522	- 0.00254

$$E \cdot F \cdot L = 34.30 (\pm 5.7^\circ)$$

$$***1 = 34.531, ***2 = 3.500, ***3 = 1.200$$

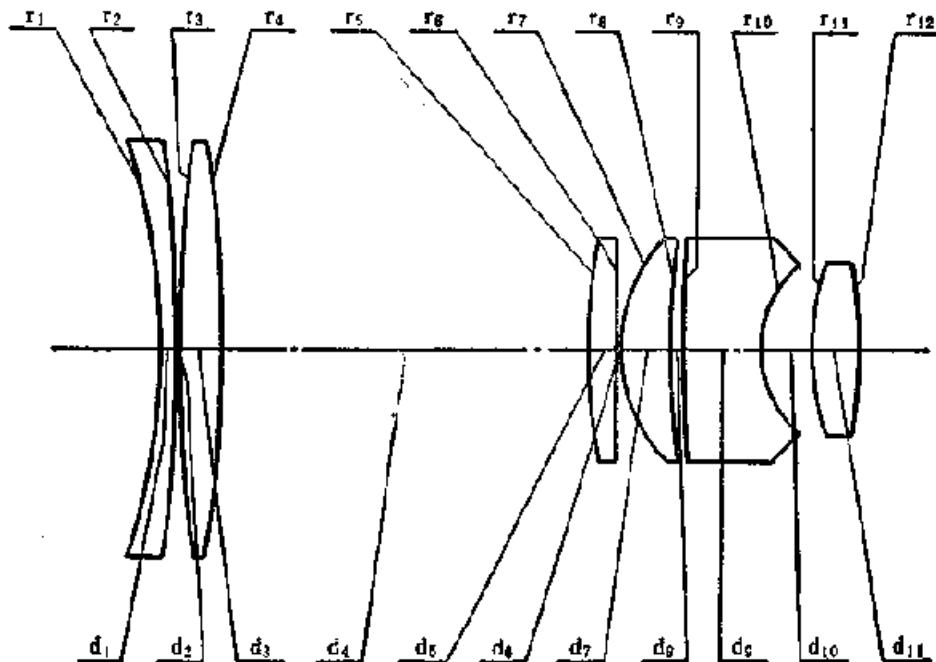


编号: 04-03-005

## 具有可动正组的变焦距物镜

E.F.L=15.65~24.70 B.F.L=7.74 FNo.=1.4 F.A.=±11°~±6.9°

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序号	r	d	n <sub>a</sub>	v <sub>d</sub>	序号	r	d	n <sub>a</sub>	v <sub>d</sub>
1	-33.0000	0.80	1.5111	63.4	7	9.8186	3.80	1.62041	60.3
2	-111.7000	***1			8	52.0000	0.80		
3	84.0000	2.70	1.62041	60.3	9	100.0000	4.80	1.7518	27.0
4	-84.0000	***2			10	6.8778	3.16*		
5	35.0000	1.80	1.62041	60.3	11	14.9628	2.70	1.6910	54.8
6	∞	0.15			12	-32.3126			

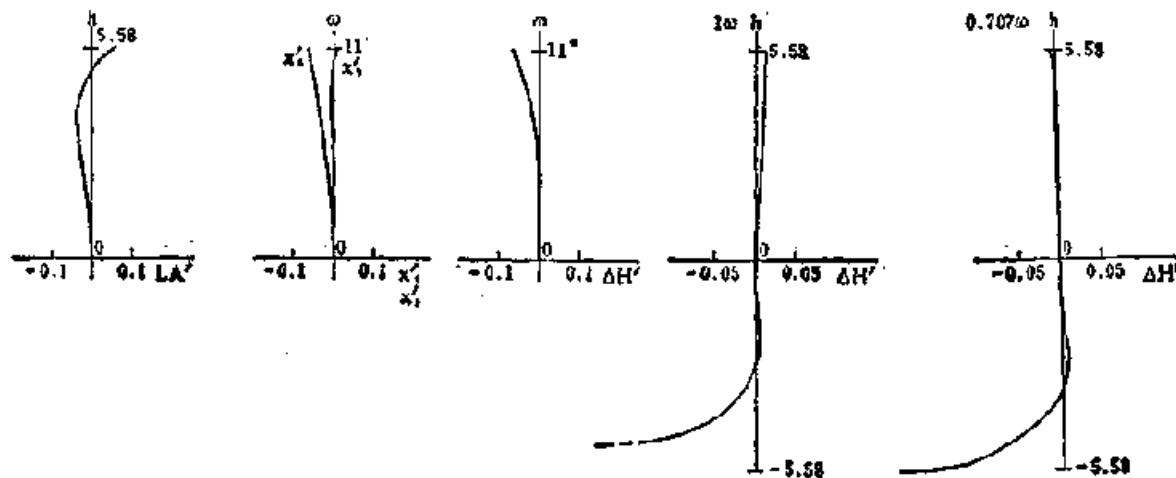
$$3.16^* = 2.16 + 1.00$$

04-03-005-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.0355	0.0072	0.0087	-0.0275	-0.0362	3.04	-1.95%
h 或 $\phi\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	0.0568	-0.0594	0.0099	-0.0628	0.0727	-0.2301	-0.0114
70	-0.0299	-0.0196	-0.0009	-0.0353	0.0344	-0.0997	-0.0042

E. F. L = 15.66 ( $\pm 11^\circ$ )

\*\*\*1 = 31.70, \*\*\*2 = 0.30

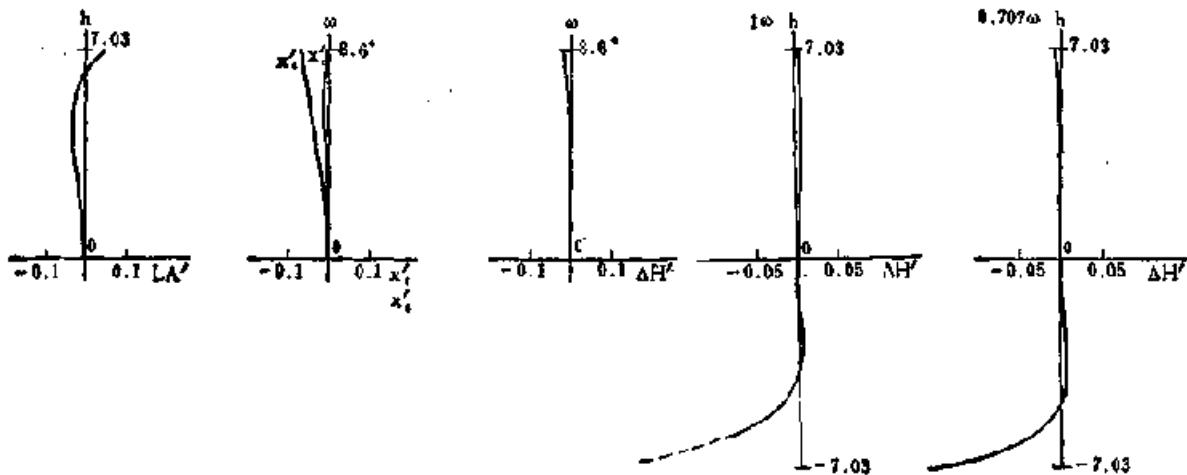


04-03-005-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.0353	0.0087	0.0070	-0.0268	-0.0048	2.97	-0.44%
h 或 $\phi\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	0.0448	-0.0130	-0.0003	-0.0868	0.0855	-0.1727	-0.0056
70	-0.0339	-0.0035	-0.0064	-0.0366	0.0302	-0.0827	-0.0018

E. F. L = 19.68 ( $\pm 8.6^\circ$ )

\*\*\*1 = 16.00, \*\*\*2 = 16.00

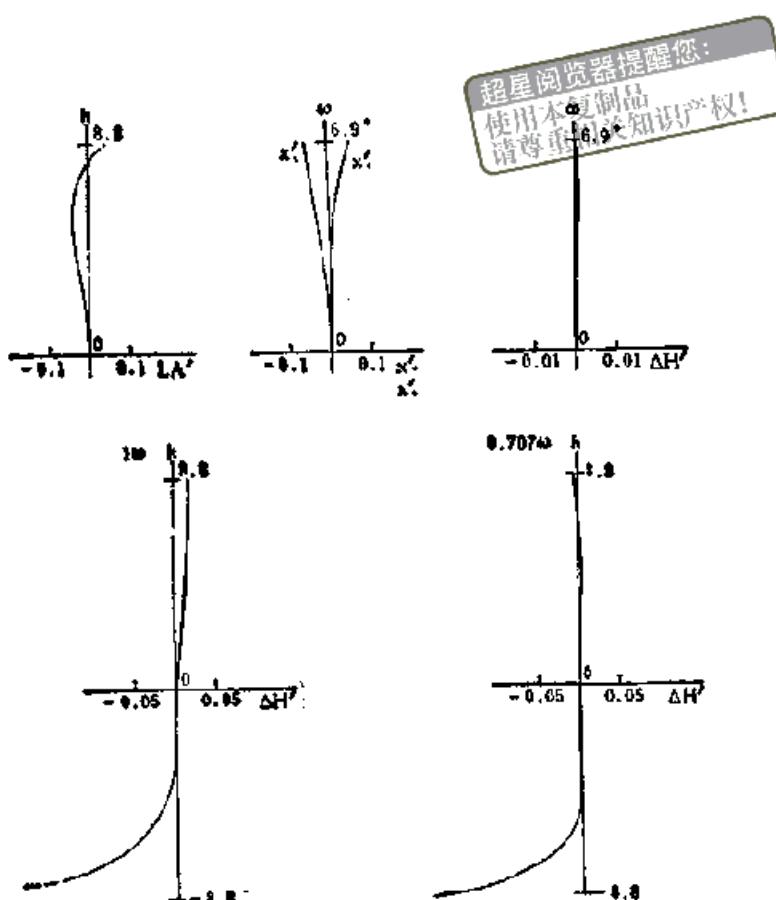


04-03-005-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HJ	QP(1 $\omega$ )
	-0.0358	0.0076	0.0107	-0.0270	0.0052	2.98	-0.001%
b 或 $\alpha\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>PI</sub>	K <sub>PI0.7</sub>
100	0.0433	-0.00004	0.0535	-0.0515	0.1050	-0.1889	-0.0097
70	-0.0356	0.00130	0.0185	-0.0292	0.0477	-0.0898	-0.0042

E, F, L = 24.7 ( $\pm 6.9^\circ$ )

\* \* \* 1 = 0.3, \* \* \* 2 = 31.7



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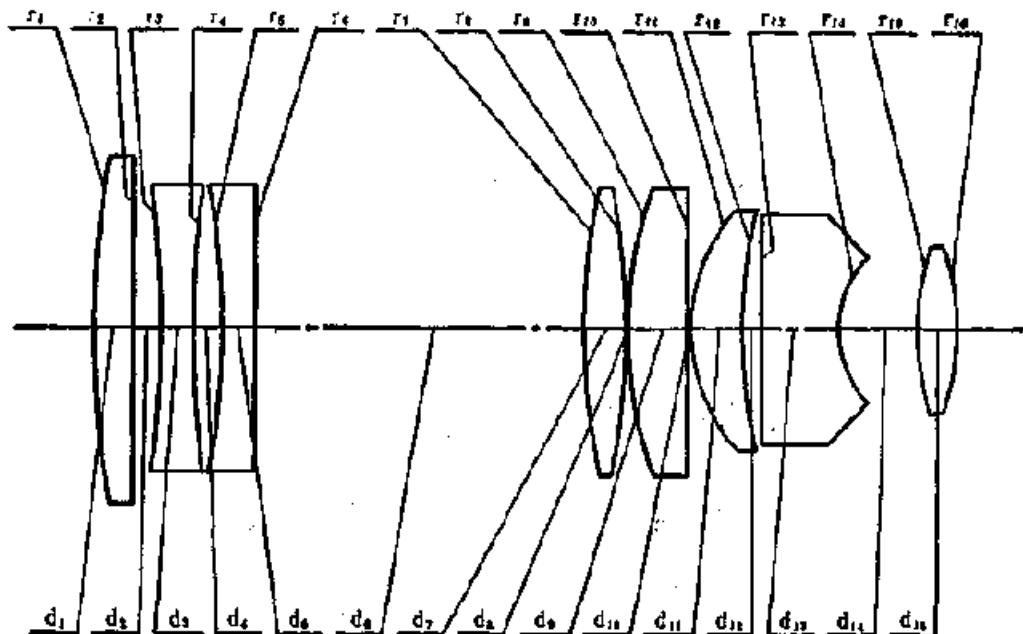
编号：04-03-006

# 八片式变焦距物镜

E.F.L=0.751~1.253

B.F.L= FNo. = 1.1

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序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	3.10878	0.12500	1.56873	63.12	9	1.41669	0.19000	1.62041	60.29
2	∞	***1			10	∞	0.00500		
3	-3.54321	0.10947	1.51680	64.20	11	0.66300	0.16880	1.62041	60.29
4	3.54321	0.07900			12	2.02380	0.04621		
5	-2.37372	0.10947	1.51680	64.20	13	∞	0.25175	1.78470	26.10
6	∞	***2			14	0.33093	0.25194*		
7	2.25261	0.13673	1.56873	63.12	15	0.82575	0.13000	1.75496	53.23
8	-2.25261	0.00800			16	-0.82575			

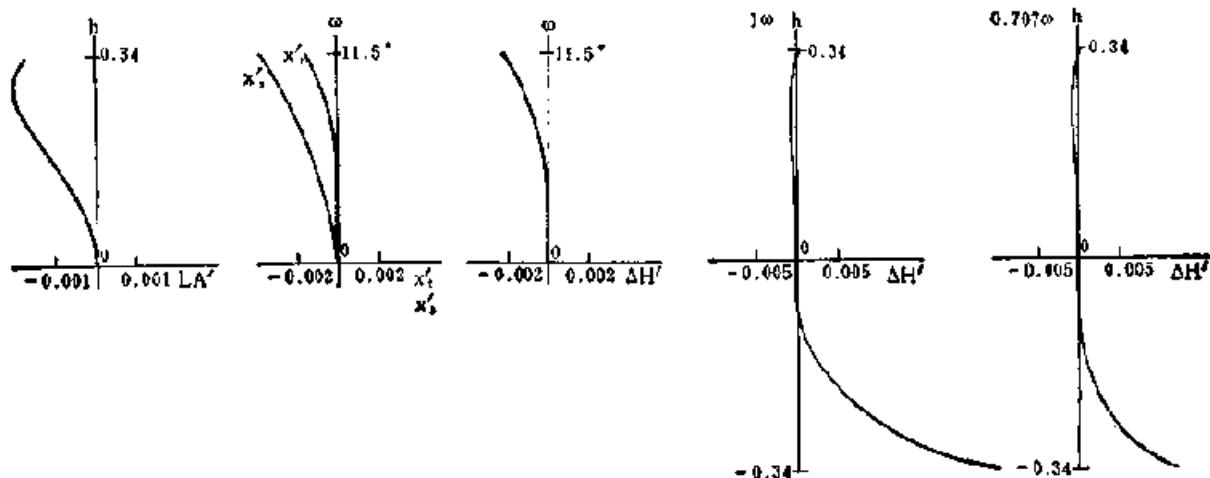
$$0.25194^* = 0.10000 + 0.15194$$

04-03-006-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	- 0.00214	- 0.00024	0.00088	- 0.00263	- 0.00177	0.15	- 1.41%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	K <sub>f1</sub>	K <sub>f0.7</sub>
100	- 0.00169	- 0.00214	- 0.00153	- 0.00379	0.00226	0.01277	0.00327
70	- 0.00177	- 0.00073	- 0.00025	- 0.00201	0.00176	0.00069	0.00107

E. F. L = 0.751 ( $\pm 11.5^\circ$ ) B. F. L = 0.292

\*\*\*1 = 0.08749; \*\*\*2 = 1.08023

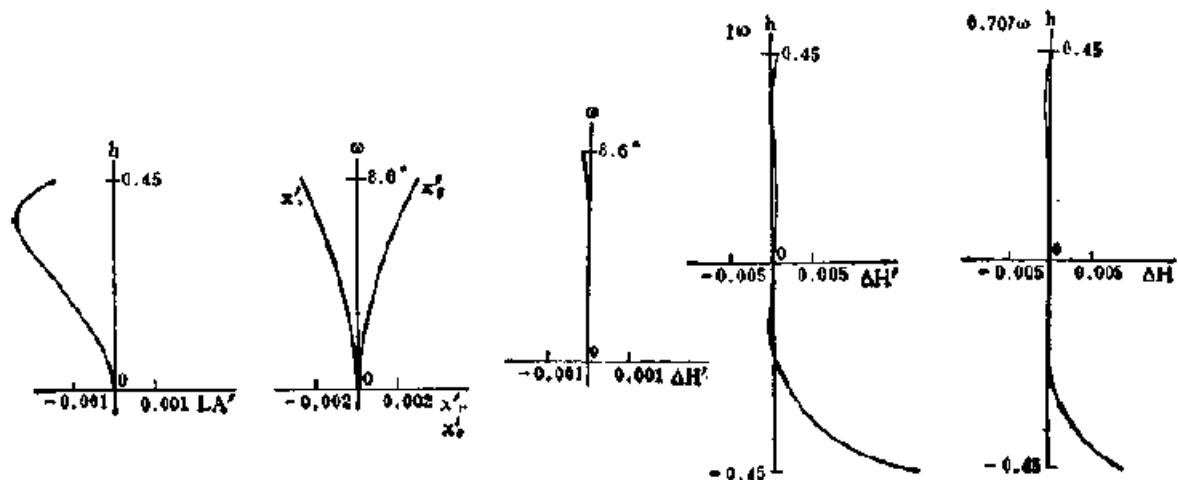


04-03-006-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	- 0.00259	- 0.00044	0.00138	- 0.00261	0.00001	0.15	- 0.09%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	K <sub>f1</sub>	K <sub>f0.7</sub>
100	- 0.00151	- 0.00014	0.00291	- 0.00256	0.00547	0.00943	0.00181
70	- 0.00219	- 0.00002	0.00175	- 0.00141	0.00316	0.00467	0.00050

E. F. L = 1.000 ( $\pm 8.6^\circ$ ) B. F. L = 0.313

\*\*\*1 = 0.08768; \*\*\*2 = 0.48004

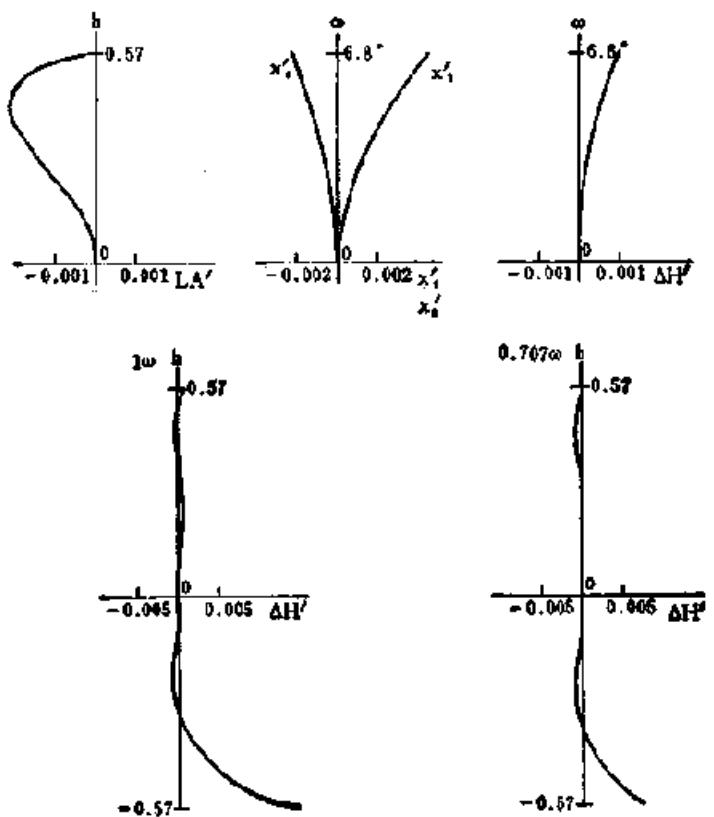


04-03-006-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_t$	Hf	QP(1 w)
	- 0.00275	- 0.00069	0.00161	- 0.00268	0.00103	0.15	0.68%
h 或 Φ%	LA'	AH'	$x'_1$	$x'_4$	$x'_1 - x'_4$	K' <sup>1</sup>	K <sup>1</sup> 0.7
100	- 0.00017	0.00102	0.00454	- 0.00235	0.00670	0.00787	0.00096
70	- 0.00211	0.00039	0.00244	- 0.00122	0.00366	0.00391	0.00099

$$E.F.I. = 1.253 (\pm 6.8^\circ) \quad B.F.L = 0.324$$

$$\ast \ast 1 = 1.12772, \ast \ast 2 = 0.04000$$

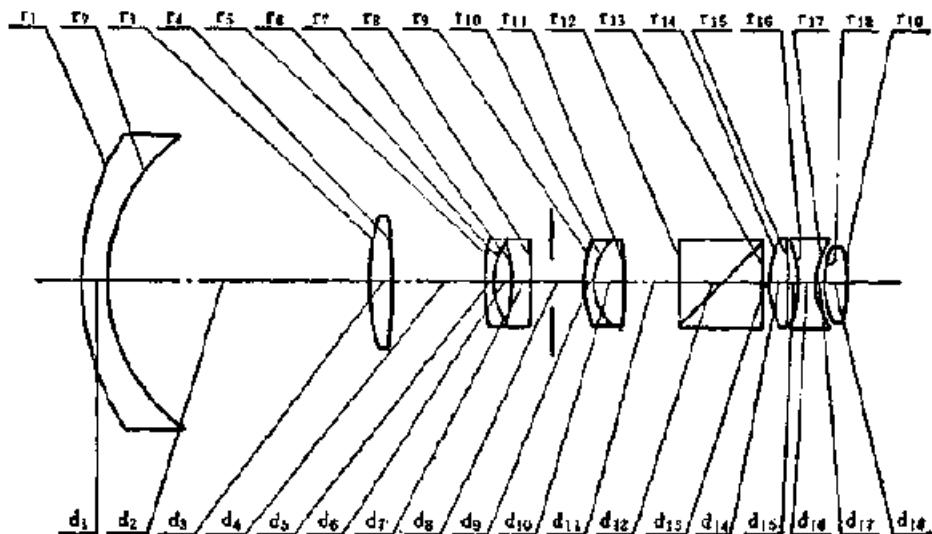


编号: 04-03-007

# 变 焦 距 镜 头

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E.F.L=9.95~22.42    B.F.L=7.1    FNo. = 2.7    F.A. = ±20° ~ ±8.9°



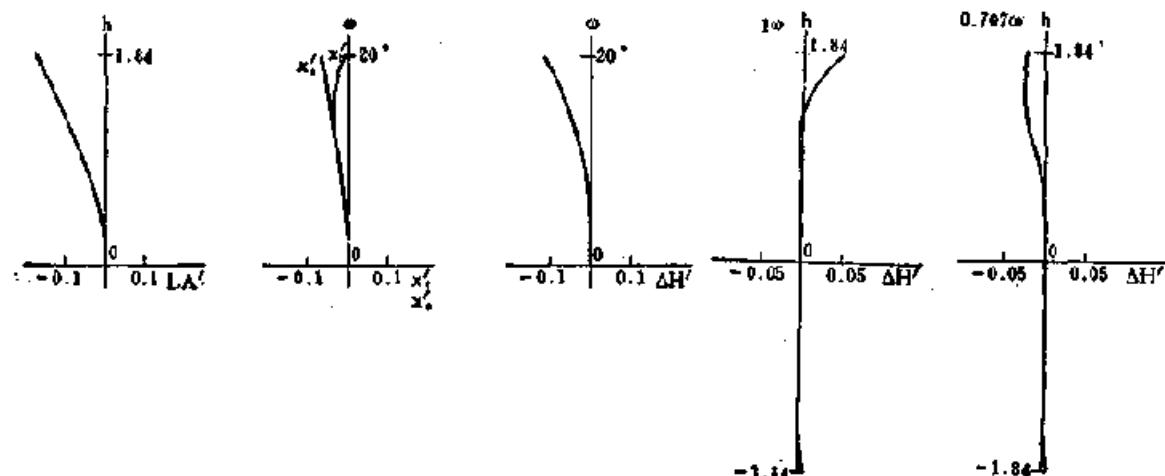
序号	r	d	n	v	序号	r	d	n	v
1	35.60	3.48	1.50	67.0	11	- 62.90	* * * 3		
2	24.10	36.02			12	∞	11.13	1.49	57.4
3	32.60	2.73	1.64	60.1	13	∞	0.85		
4	-103.60	* * * 1			14	13.20	2.58	1.60	56.2
5	51.80	0.90	1.50	67.0	15	- 267.60	0.83		
6	9.27	2.17			16	- 19.30	2.73	1.62	36.6
7	- 19.40	2.93	1.50	67.0	17	9.56	0.83		
8	- 54.80	* * * 2*			18	12.90	2.96	1.61	58.8
9	16.40	0.97	1.72	29.3	19	- 33.40			
10	7.92	4.37	1.66	50.8					

04-03-007-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.0135	-0.0063	0.0008	-0.0052	-0.0419	3.55	0.19%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_b'$	$x_t' - x_b'$	K <sub>T1</sub> '	K <sub>T0.7</sub> '
100	-0.170	-0.111	-0.006	-0.068	0.062	0.0250	0.0002
70	-0.094	-0.042	-0.038	-0.042	0.004	-0.0079	-0.0106

E, F, L = 10.00 ( $\pm 20^\circ$ )

$$***1 = 3.06; ***2 = 24.94; ***3 = 2.02; ***2^* = 24.94 + 7.28$$

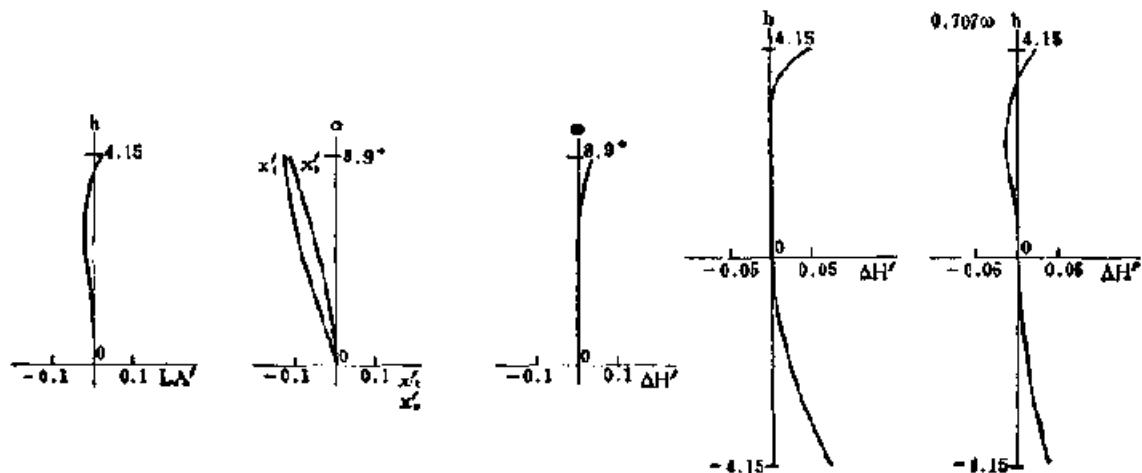


04-03-007-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.0053	0.0001	-0.0036	-0.0054	0.0091	3.55	1.06%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_b'$	$x_t' - x_b'$	K <sub>T1</sub> '	K <sub>T0.7</sub> '
100	0.0228	0.0377	-0.124	-0.108	-0.016	0.0651	0.6213
70	-0.0217	0.0106	-0.096	-0.062	-0.034	0.0803	0.0082

E, F, L = 22.60 ( $\pm 8.9^\circ$ )

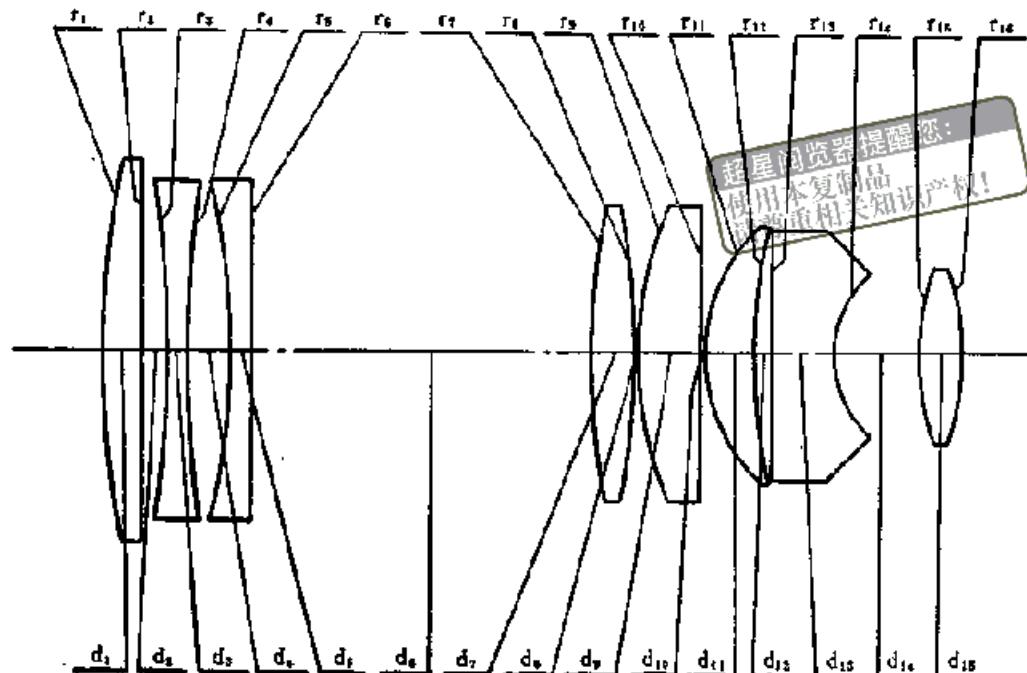
$$***1 = 13.28; ***2 = 9.05; ***3 = 7.67; ***2^* = 9.05 = 7.52 + 1.53$$



编号：04-03-008

## 八 片 式 变 焦 距 物 镜

E.F.L=0.747~1.248    B.F.L= FNo.=1.1    F.A.=±11.5°~±6.8°



序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	3.17793	0.12500	1.56873	63.12	9	1.16025	0.21000	1.62041	60.20
2	∞	***1			10	∞	0.00500		
3	-3.84882	0.07250	1.51680	64.20	11	0.56300	0.16480	1.62041	60.20
4	3.84882	0.12791			12	2.14680	0.04621		
5	-2.81809	0.07250	1.53680	64.20	13	∞	0.19700	1.78470	26.10
6	∞	***2			14	0.34965	0.28051*		
7	2.51876	0.13673	1.56873	63.12	15	0.86810	0.13000	1.75496	53.28
8	-2.51876	0.00800			16	-0.86810			

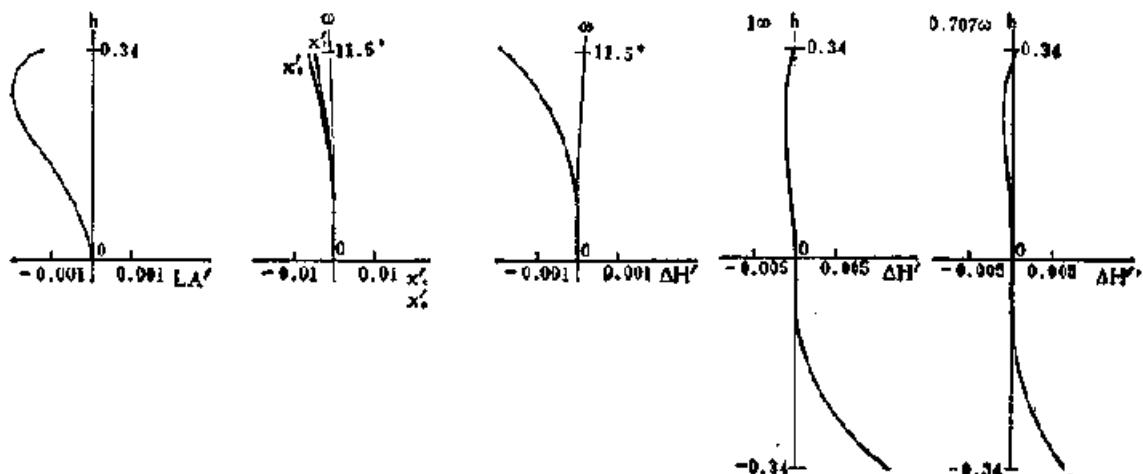
$$0.28051^* = 0.10000 + 0.18051$$

04-03-008-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\infty$ )
	- 0.00248	0.00005	0.00052	- 0.00278	- 0.00178	0.151	- 1.4%
h 或 %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K'_{T0,T}$
100	- 0.0012	- 0.0021	- 0.0036	- 0.0049	0.0013	0.00578	0.00175
70	- 0.0019	- 0.0007	- 0.0016	- 0.0026	0.0016	0.00336	0.00073

E. F. L = 0.747 ( $\pm 11.5^\circ$ ) B. F. L = 0.298

\*\*\*1 = 0.07800; \*\*\*2 = 1.11451

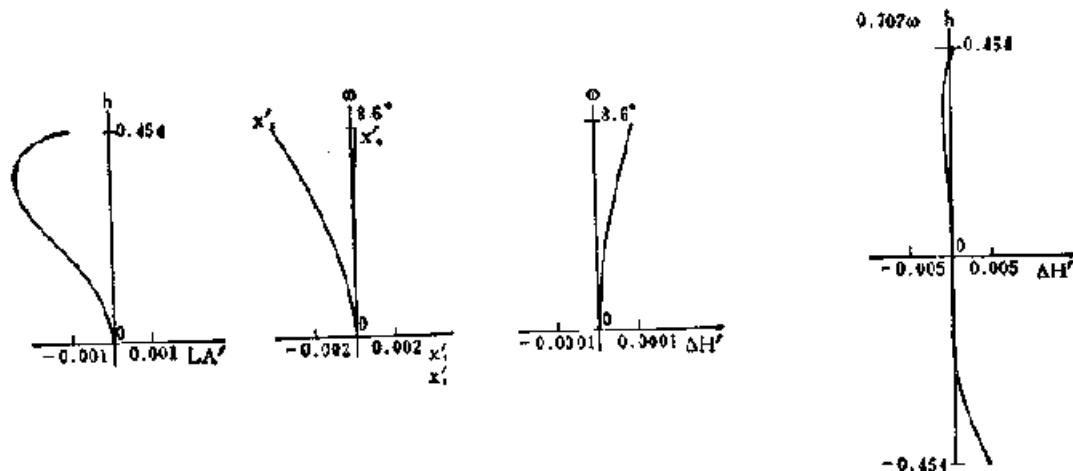


04-03-008-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\infty$ )
	- 0.00295	- 0.00021	0.00097	- 0.00280	0.00021	0.15	0.06%
h 或 %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K'_{T0,T}$
100	- 0.0009	0.000095	0.00020	- 0.00390	0.00410	0.00350	0.00080
70	- 0.0023	0.000059	0.00016	- 0.00210	0.00226	0.00232	0.00018

E. F. L = 0.998 ( $\pm 8.6^\circ$ ) B. F. L = 0.318

\*\*\*1 = 0.69769; \*\*\*2 = 0.49481



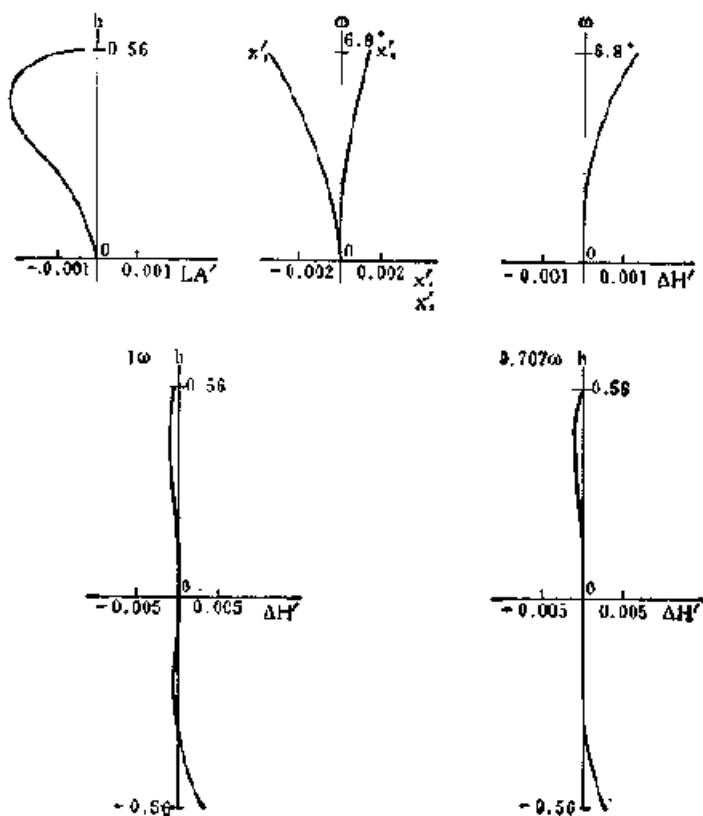
04-03-008-3

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	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 φ)
	- 0.00278	- 0.00046	0.00108	- 0.00314	0.00132	0.15	0.02%
h 或 ω %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' x_s'$	$K_{T1}'$	$K_{Dg,7}'$
100	- 0.0003	0.0019	0.00130	- 0.00370	0.00500	0.00167	- 0.00023
70	- 0.0021	0.0005	0.00065	- 0.00197	0.00262	0.00120	- 0.00026

$$E \cdot F \cdot L = 1.248 (\pm 6.8^\circ) \quad B \cdot F \cdot L = 0.326$$

$$***1 = 1.15291, ***2 = 0.04000$$

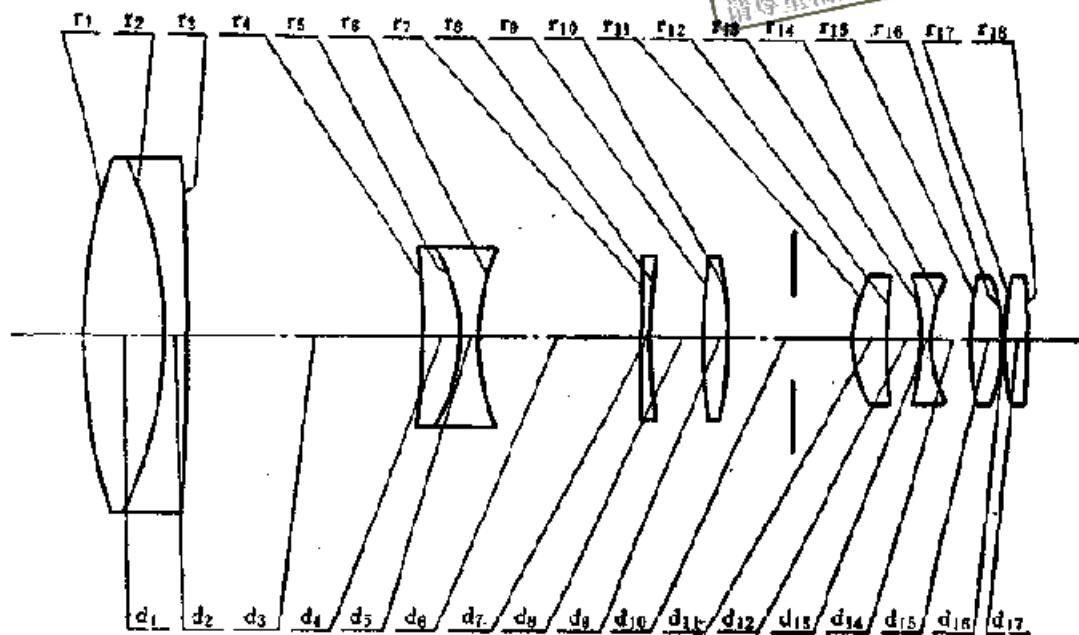


编号: 04-03-009

## 变 焦 距 物 镜

E.F.L=12.10~36.27 B.F.L=15.273 FNo.=1.9 F.A.= $\pm 14.2^\circ \sim \pm 4.7^\circ$

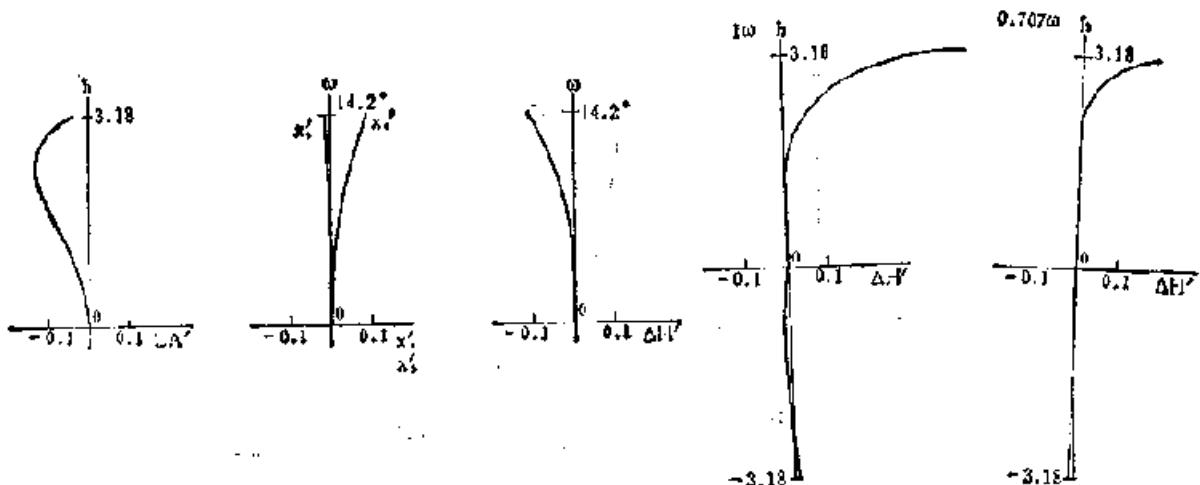
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序号	r	d	n <sub>D</sub>	v <sub>D</sub>	序号	r	d	n <sub>D</sub>	v <sub>D</sub>
1	50.89	7.40	1.611	58.8	10	-32.96	* * * 1		
2	-37.04	2.02	1.649	33.8	11	11.83	3.20	1.697	58.2
3	-390.30	* * * 1			12	203.03	2.94		
4	-80.55	3.57	1.720	29.3	13	-22.61	1.06	1.720	29.3
5	-15.98	1.80	1.697	56.2	14	11.40	4.09		
6	21.70	* * * 2			15	43.01	2.80	1.611	58.8
7	∞	1.07	1.649	33.8	16	-16.52	0.12		
8	61.33	* * * 3			17	29.16	2.00	1.611	58.8
9	158.70	2.16	1.611	58.8	18	-137.90			

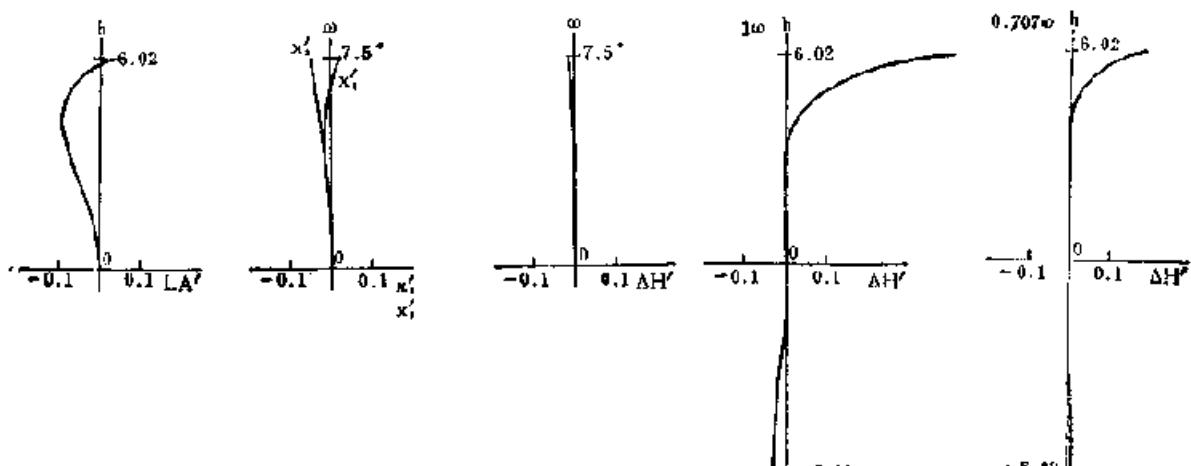
04-03-009-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	III 复测 重测 误差 率 (%)	QP(1%)
	-0.0534	-0.0169	0.0036	-0.0103	-0.0526	3.06	-3.4%
h 或 φ %	LA'	ΔH'	x'_t	x'_s	x'_t - x'_s	K'_T1	K'_{T0.7}
100	-0.026	-0.104	0.0909	-0.0127	0.1036	0.2313	0.0119
70	-0.128	-0.037	0.0483	-0.0077	0.0560	0.1015	-0.0022

E. F. L = 32.10 ( $\pm 14.2^\circ$ ) $* * * 1 = 2.50, * * * 2 = 34.56, * * * 3 = 2.12, * * * 4 = 14.58, * * * 4'' = 14.58 = 8.87 + 5.71$ 

04-03-009-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	III	QP(1%)
	-0.0449	-0.0110	0.0014	-0.0104	-0.0031	3.01	-0.41%
h 或 φ %	LA'	ΔH'	x'_t	x'_s	x'_t - x'_s	K'_T1	K'_{T0.7}
100	0.041	-0.0123	0.0287	-0.0493	0.0780	0.1876	0.0008
70	-0.096	-0.0031	-0.0102	-0.0361	0.0199	0.0958	-0.0034

E. F. L = 22.86 ( $\pm 7.5^\circ$ ) $* * * 1 = 22.12, * * * 2 = 14.94, * * * 3 = 4.99, * * * 4 = 11.71, * * * 4'' = 11.71 = 6.00 + 5.71$ 

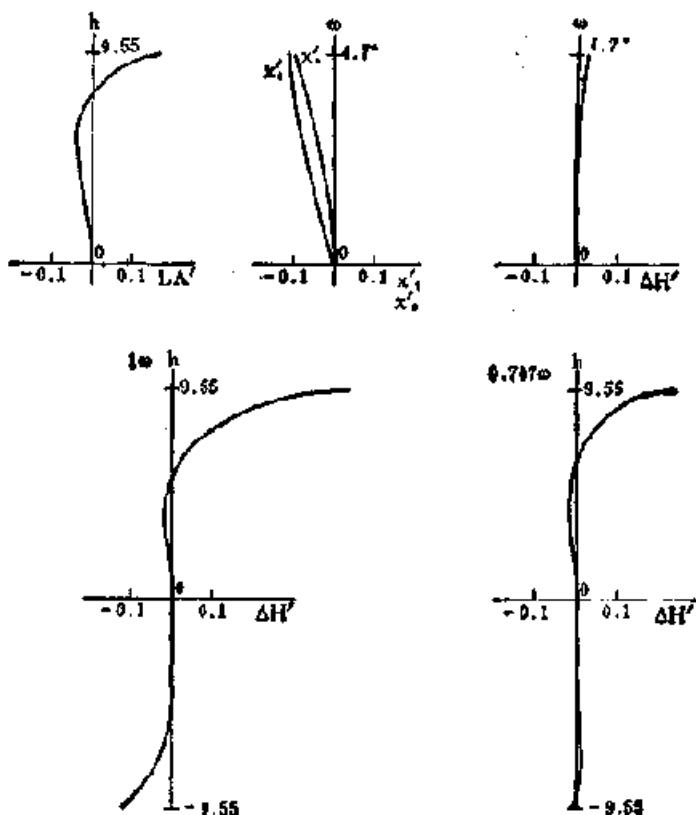
04-03-009-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	H	QP(1 w)
	-0.0275	-0.0003	-0.0071	-0.0106	0.0162	3.01	0.84%
h 或 $\phi$ %	LA'	$\Delta H'$	$x'_1$	$x'_2$	$x'_1 - x'_2$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	0.173	0.0254	-0.1149	-0.1044	-0.0105	0.1625	0.0064
70	-0.031	0.0099	-0.0925	-0.0590	-0.0335	0.1196	0.0120

$$E \cdot F \cdot L = 36.27 (\pm 4.7^\circ)$$

$$***1=31.86, ***2=5.20, ***3=2.87, ***4=13.83, ***4'=13.83 - 8.12 + 5.77$$

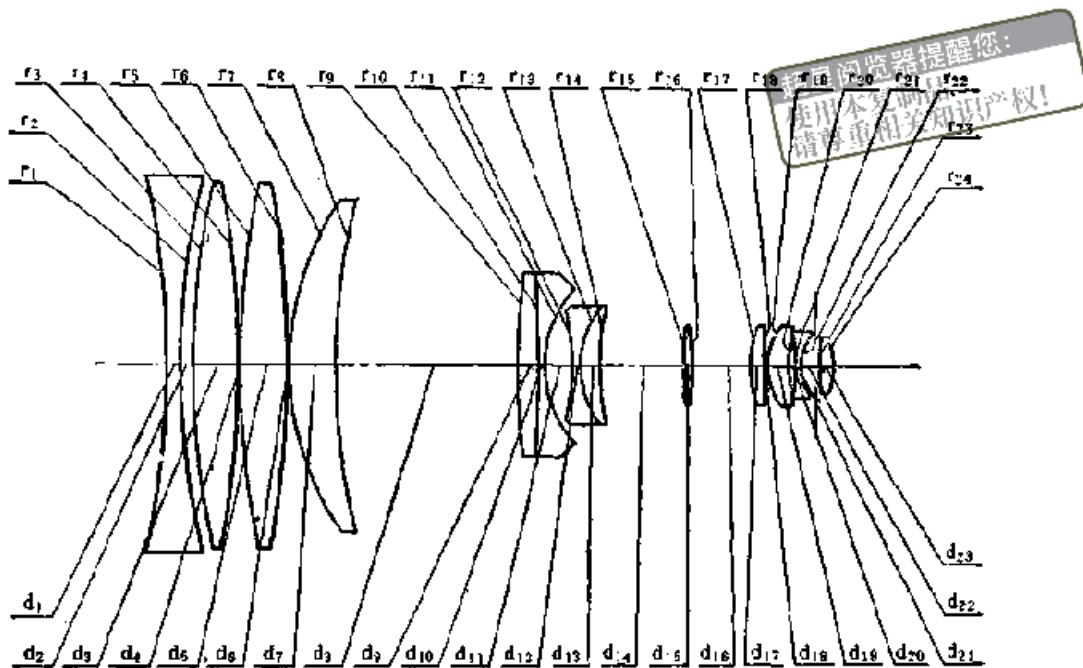
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编号： 04-03-010

## 变 焦 距 物 镜

E.F.L=35.50~202.60 B.F.L=45.4 FNo.=1.8 F.A.=±13.2°~±2.3°



序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	-552.80	8.50	1.74080	28.05	13	57.00	12.50*	1.80518	25.46
2	468.80	8.50			14	166.05	* * * 3		
3	627.10	27.50	1.62041	60.29	15	349.40	5.00	1.65830	57.29
4	627.10	0.50			16	-173.40	35.00		
5	627.16	27.50	1.62041	60.29	17	59.95	9.00	1.59181	58.25
6	-627.10	0.50			18	901.75	0.50		
7	171.55	30.00	1.62041	60.29	19	97.25	13.00	1.71300	53.89
8	415.40	* * * 1			20	86.90	2.00		
9	944.50	12.50	1.80518	25.46	21	-475.00	5.00	1.80518	25.46
10	-1832.50	5.00	1.51821	65.18	22	28.70	11.55*		
11	67.15	* * * 2			23	121.00	8.35	1.62280	56.88
12	-137.05	5.00	1.71300	53.89	24	-48.05*			

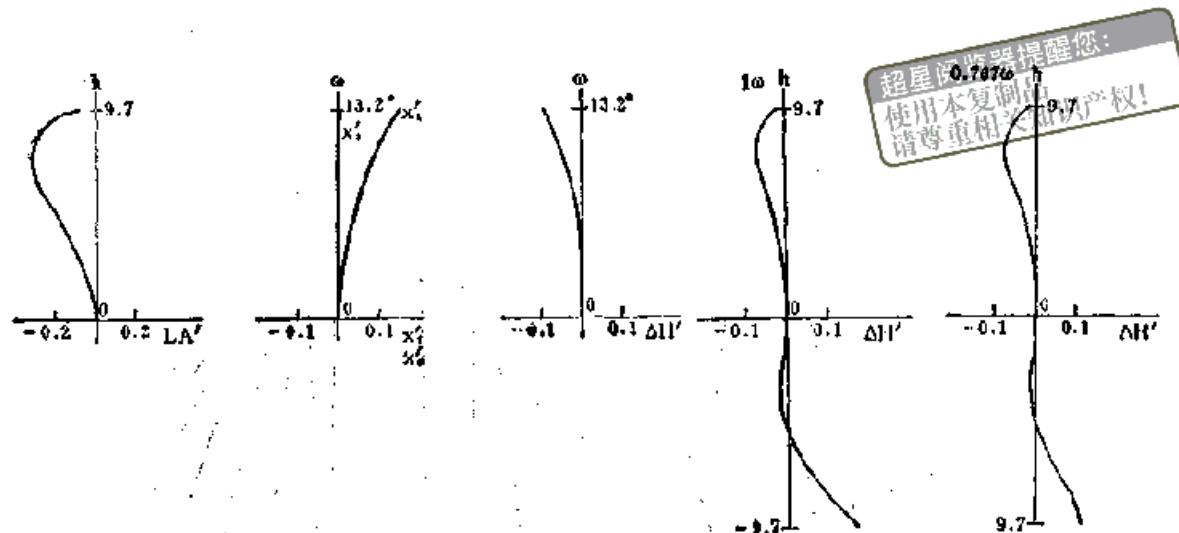
$$11.55^* = 6.00 + 5.55$$

04-03-010-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.1357	-0.0131	0.0134	-0.0119	-0.0521	8.31	-1.08%
h 或 φ %	LA'	ΔH'	x'_1	x'_2	x'_1 - x'_2	K <sub>T1</sub>	K <sub>T0.7</sub>
100	-0.073	-0.0905	0.1532	0.0077	0.1455	0.0811	-0.0086
70	-0.312	-0.0329	0.0787	0.0017	0.0770	0.0539	-0.0074

E. F. L = 35.50 ( $\pm 13.2^\circ$ )

\* \* \* 1 = 5.10, \* \* \* 2 = 95.30, \* \* \* 3 = 77.10

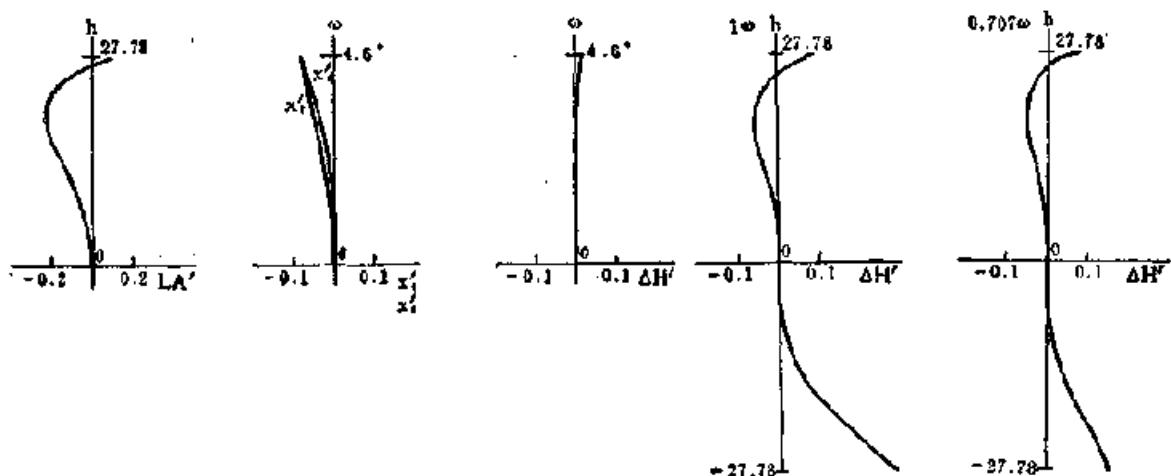


04-03-010-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.4111	-0.0058	-0.0023	-0.0120	0.0117	8.42	0.21%
h 或 φ %	LA'	ΔH'	x'_1	x'_2	x'_1 - x'_2	K <sub>T1</sub>	K <sub>T0.7</sub>
100	0.100	0.0173	-0.0793	-0.0812	0.0019	0.1810	0.0292
70	-0.226	0.0068	-0.0521	-0.0444	-0.0077	0.1185	0.0189

E. F. L = 101.00 ( $\pm 4.6^\circ$ )

\* \* \* 1 = 111.40, \* \* \* 2 = 15.30, \* \* \* 3 = 50.30



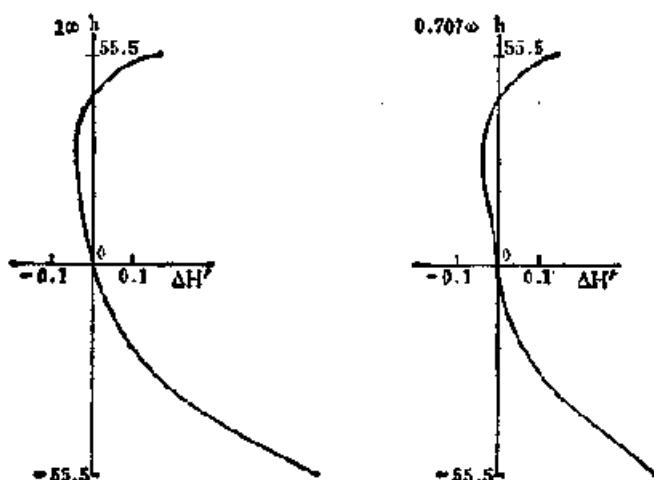
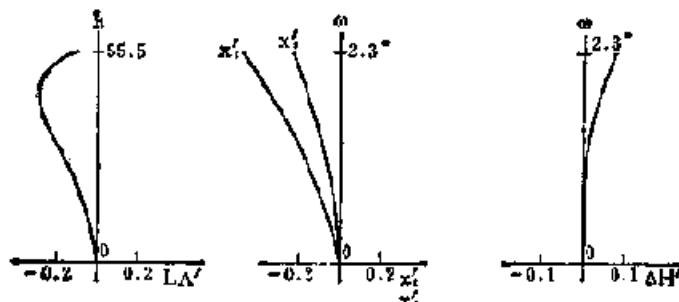
04-03-010-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HII	QP(1 $\omega$ )
	-0.1222	0.0399	-0.0275	-0.0120	0.0487	8.1	1.02%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	-0.070	0.0823	-0.184	-0.231	-0.253	0.3620	0.1188
70	-0.277	0.0301	-0.378	-0.123	-0.155	0.2805	0.0963

$$E.F.L = 202.64 (\pm 2.3^\circ)$$

$$***1 = 145.60, ***2 = 28.50, ***3 = 3.40$$

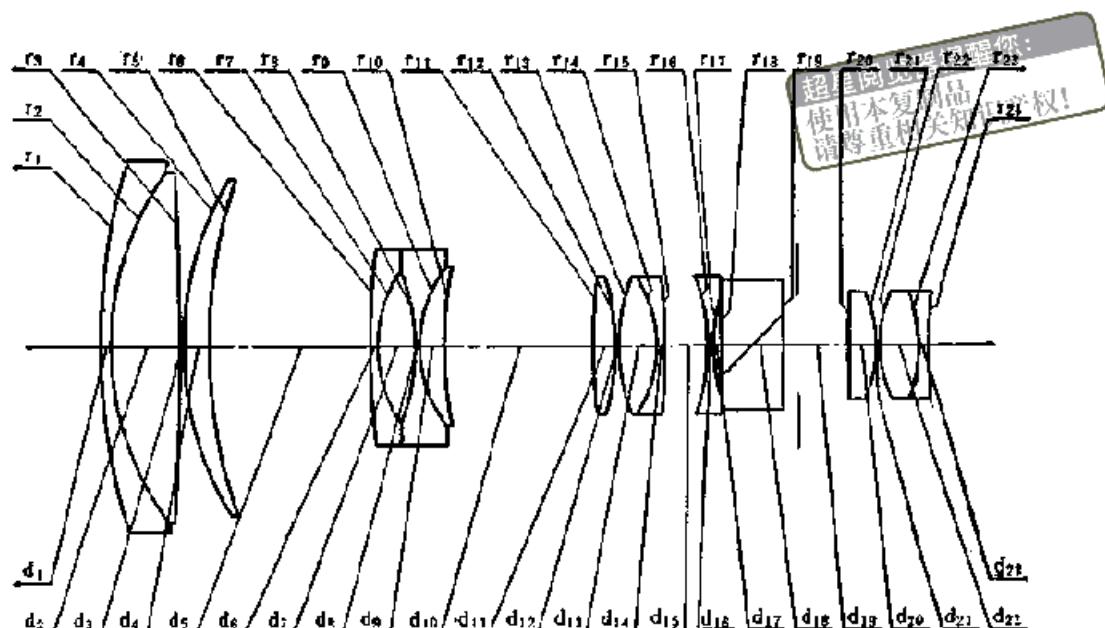
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## 用于近距离摄影的变焦距镜头

E.F.L=7.50~56.30 B.F.L=14.22 FNo.=1.8 F.A.=±26.70°~±3.55°



序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	85.943	1.40	1.74077	27.7	13	25.000	5.50	1.65830	57.3
2	40.600	9.50	1.65160	58.5	14	-17.200	0.90	1.72342	38.0
3	-292.560	0.10			15	-254.650	*** 3		
4	42.962	3.40	1.5168	64.2	16	-24.050	0.80	1.65830	57.3
5	69.600	*** 1			17	24.050	0.85		
6	205.150	0.90	1.717	47.9	18	∞	8.30	1.57561	41.3
7	17.200	5.00			19	∞	8.90*		
8	-28.400	0.80	1.51835	60.3	20	1100.000	3.90	1.62374	47.0
9	17.558	3.30	1.72825	28.3	21	-17.335	0.20		
10	52.125	*** 2			22	17.900	5.30	1.62041	60.3
11	86.894	2.90	1.6516	58.3	23	-14.530	1.20	1.80518	26.6
12	-33.490	0.10			24	174.600			

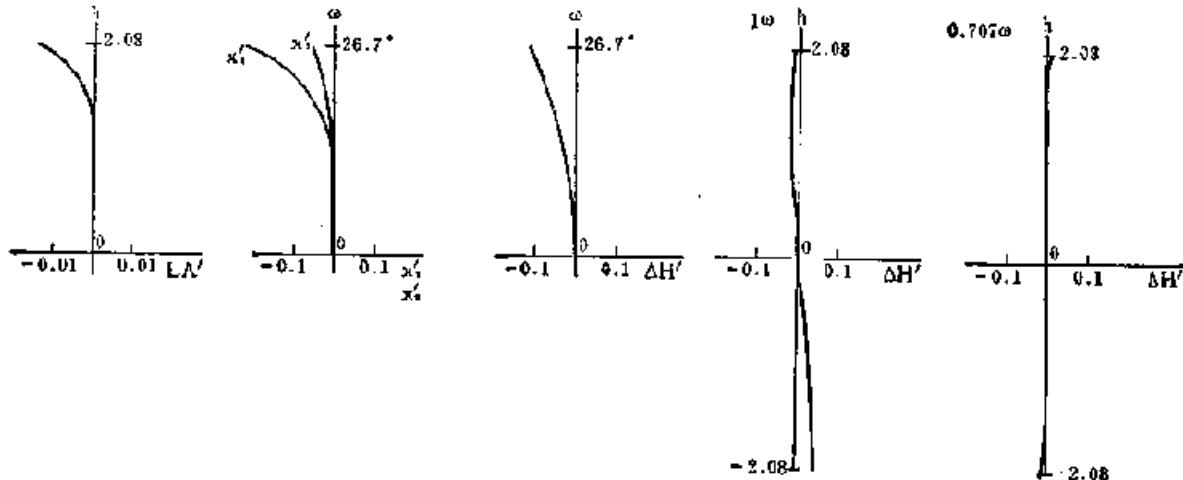
$$8.90^* = 2.90 + 6.00$$

04-03-011-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.00005	-0.00450	0.00707	-0.00636	-0.08159	3.77%	-2.99%
h 或 w%	LA'	$\Delta H'$	$x'_1$	$x'_2$	$x'_1 - x'_2$	$K'_{T1}$	$K'_{T0.7}$
100	-0.0141	-0.1127	-0.2263	-0.0538	-0.1725	0.00862	0.00206
70	-0.0008	-0.0497	-0.0306	-0.0159	-0.0147	-0.00112	-0.00378

E. F. L = 7.50 ( $\pm 26.7^\circ$ )

\*\*\*1 = 1.73, \*\*\*2 = 45.72, \*\*\*3 = 1.47

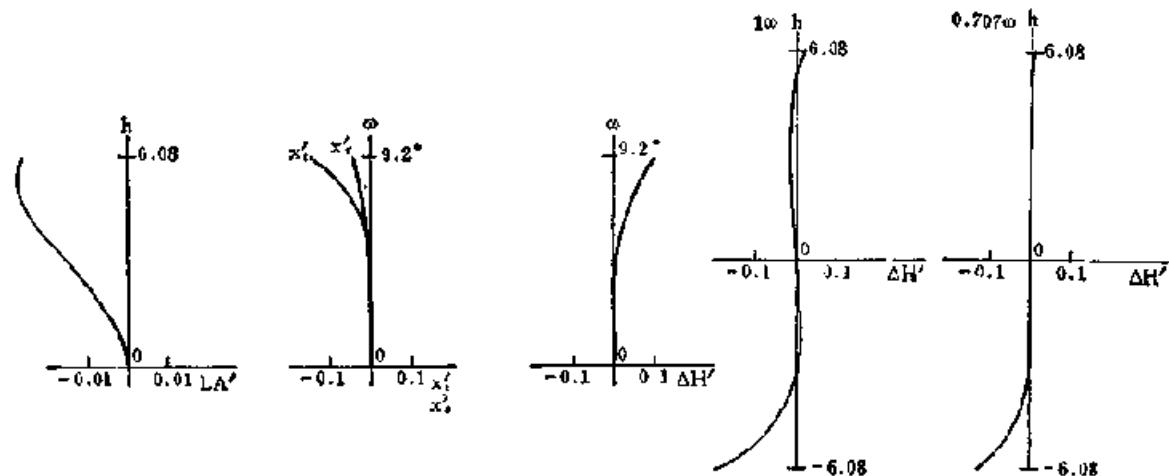


04-03-011-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.01142	0.00083	0.00401	-0.00683	0.03673	3.53	3.04%
h 或 w%	LA'	$\Delta H'$	$x'_1$	$x'_2$	$x'_1 - x'_2$	$K'_{T1}$	$K'_{T0.7}$
100	-0.0259	0.1072	-0.1437	-0.0372	-0.1065	-0.0973	-0.0231
70	-0.0243	0.0801	-0.0185	-0.0130	-0.0058	-0.0538	-0.0137

E. F. L = 21.00 ( $\pm 9.2^\circ$ )

\*\*\*1 = 22.43, \*\*\*2 = 20.37, \*\*\*3 = 6.32

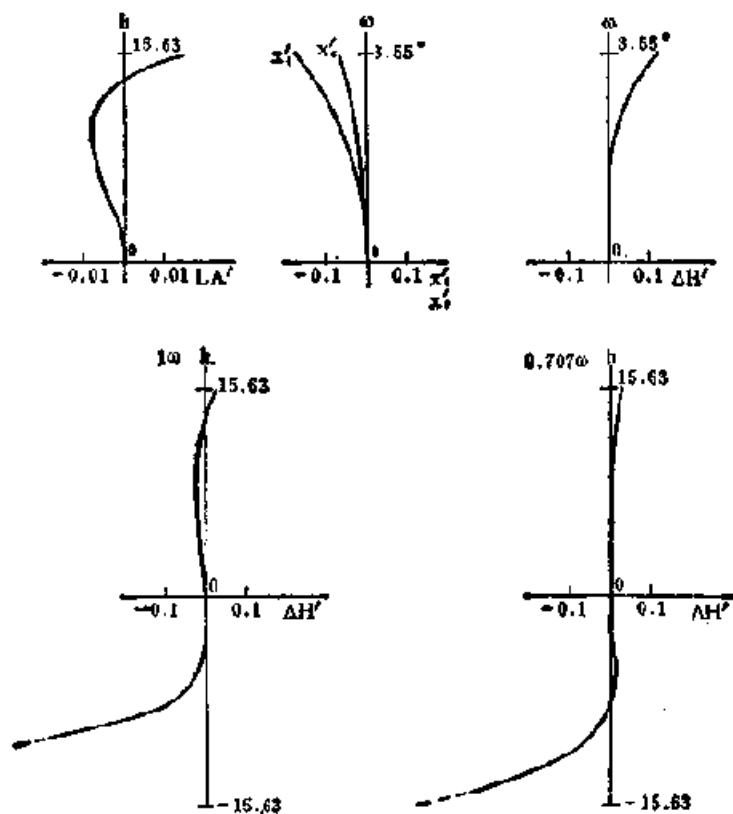


04-03-011-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	(P10)
	-0.00558	0.00607	-0.00374	-0.00633	0.05126	3.5	3.25%
±或‰%	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T0.7}$	$K_{T0.7}'$
100	0.0169	0.1138	-0.1692	-0.0667	-0.1026	-0.1205	-0.3093
70	-0.0077	0.0357	-0.0750	-0.0335	-0.0415	-0.4015	-0.0333

E. F. L = 50.30 ( $\pm 3.55^\circ$ )

\* \* \* 1 = 33.23, \* \* \* 2 = 2.96, \* \* \* 3 = 12.73

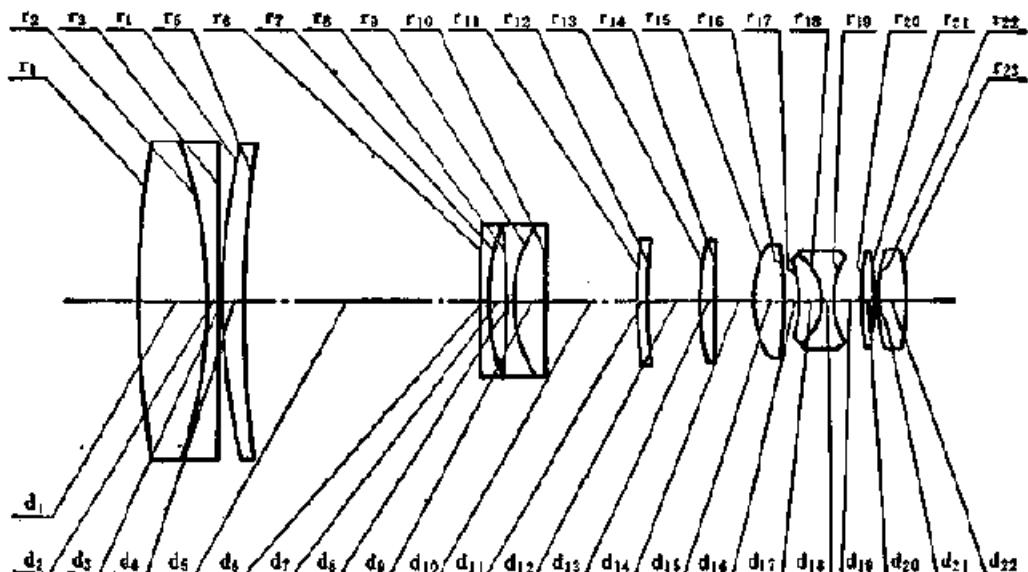


编号： 04-03-012

## 变 焦 距 镜 头

E.F.L=10.0~40.0 B.F.L=13.46 FNo.=1.4 F.A.= $\pm 17.5^\circ \sim \pm 4.3^\circ$

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序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	187.000	9.0000	1.6779	55.5	13	35.130	2.0000	1.6385	55.5
2	-64.000	1.5000	1.6889	31.1	14	$\infty$	5.0000		
3	$\infty$	0.5000			15	13.800	4.2700	1.6073	56.7
4	81.270	3.0000	1.6237	47.0	16	-60.000	2.1300		
5	321.440	* * * 1			17	-16.750	3.0000	1.7200	50.3
6	1016.400	1.0000	1.6910	54.8	18	-7.940	1.5800	1.6483	33.8
7	30.330	2.2863			19	11.229	3.7300*		
8	-107.400	1.0000	1.6910	54.8	20	33.400	2.0000	1.6204	60.3
9	18.500	4.5000	1.6727	32.2	21	-33.400	0.1600		
10	$\infty$	* * * 2			22	21.000	4.0000	1.6204	60.3
11	180.900	1.0000	1.6385	55.5	23	-30.720			
12	50.000	* * * 3							

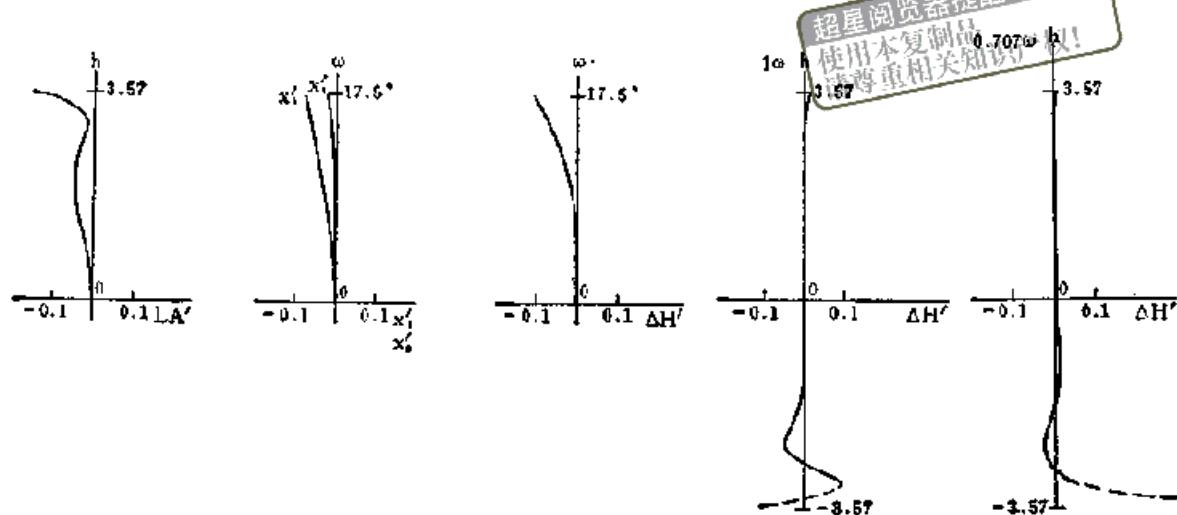
$$3.7300^* = 2.0000 + 1.7300$$

04-03-012-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP(1 $\omega$ )
	-0.06519	0.00972	0.0075	-0.02808	-0.06737	3.17	-3.32%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	-0.151	-0.105	-0.0150	-0.0750	0.0600	-5.4047	-0.0266
70	-0.038	-0.036	-0.0037	-0.0395	0.0308	1.5200	-0.0152

E. F. L = 10.0 ( $\pm 17.5^\circ$ )

\*\*\*1 = 3.7757; \*\*\*2 = 52.2675; \*\*\*3 = 1.0000

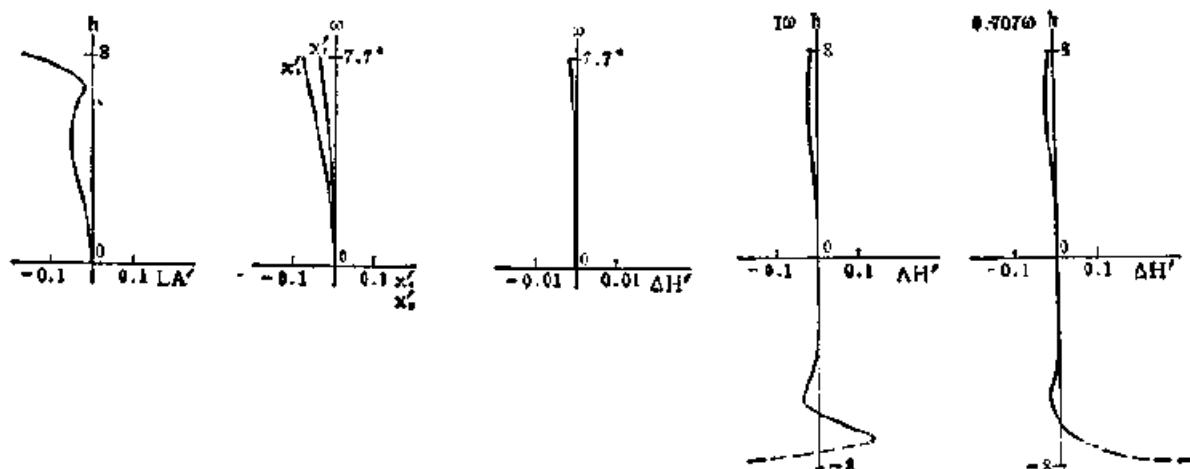


04-03-012-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP(1 $\omega$ )
	-0.06911	0.01279	0.00421	-0.02778	0.00038	3.03	-0.07%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	-0.180	-0.0021	-0.0388	-0.0808	0.0420	-5.4703	-0.0297
70	-0.045	-0.0004	-0.0204	-0.0422	0.0218	2.3589	-0.0178

E. F. L = 22.4 ( $\pm 7.7^\circ$ )

\*\*\*1 = 37.1090; \*\*\*2 = 12.4510; \*\*\*3 = 7.4832

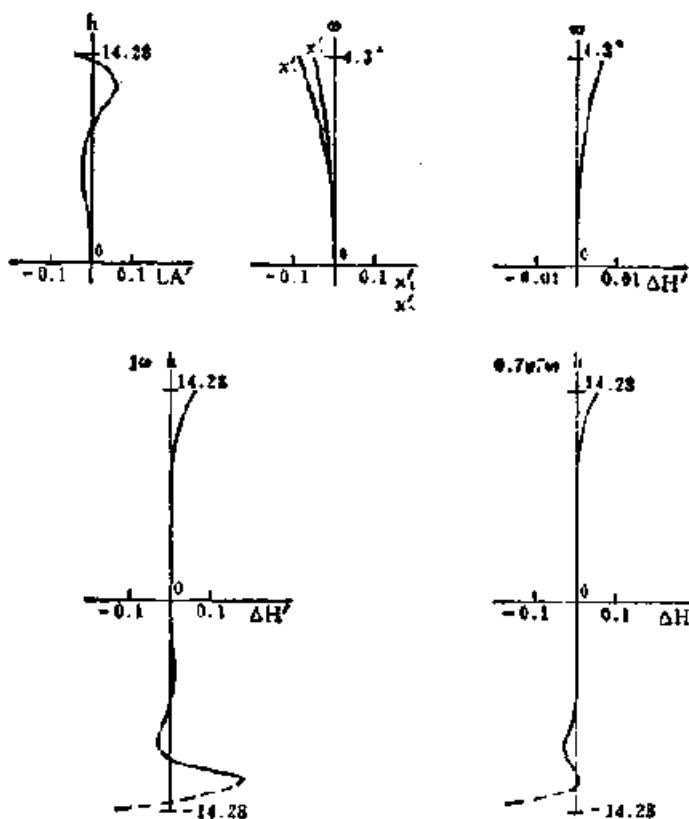


04-03-012-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1Ω)
	-0.04018	0.01623	0.00335	-0.02844	0.00618	3.04	9.21%
h 或 ω %	LA'	$\Delta H'$	$x'_1$	$x'_4$	$x'_2 - x'_4$	$K'_{T1}$	$K'_{T0.7}$
300	-0.040	0.0063	-0.0515	-0.0870	0.0355	-5.5308	-0.0198
70	0.013	0.0025	-0.0284	-0.0456	0.0172	-4.7343	-0.0089

E. F. L = 40.0 ( $\pm 4.3^\circ$ )  
 \* \* \* 1 = 53.7757; \* \* \* 2 = 2.2675; \* \* \* 3 = 1.0000

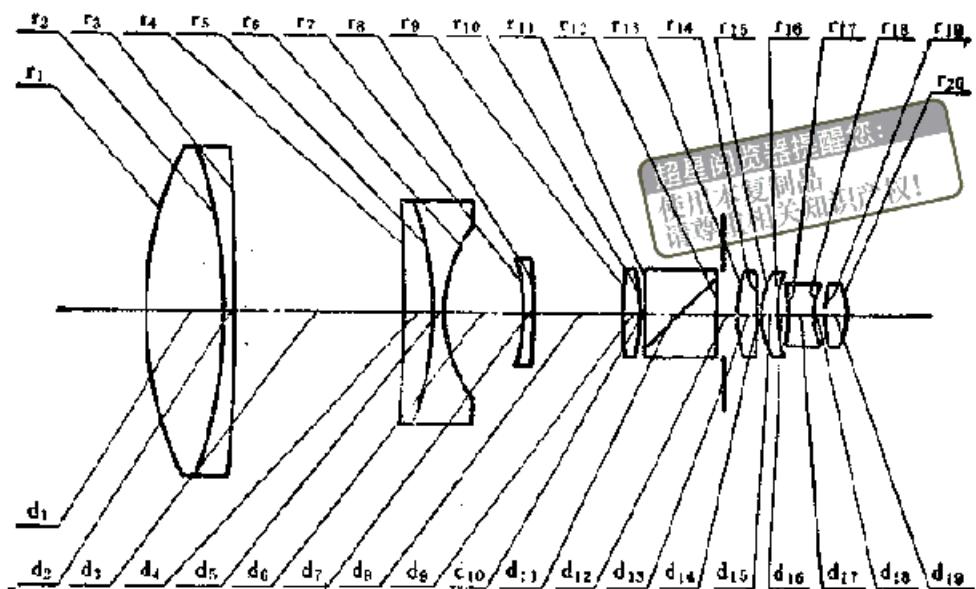
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## 变 焦 距 物 镜

E.F.L=50~200 B.F.L=58.1 FNo.=1.8 F.A.=±0.1°~±2.8°



序号	r	d	n_d	v_d	序号	r	d	n_d	v_d
1	275.13	58.75	1.61772	49.78	11	∞	65.00	1.52015	63.59
2	-355.69	8.75	1.78180	26.98	12	∞	15.63		
3	-3212.56	* * * 1			13	124.00	13.75	1.67790	55.52
4	-1821.25	22.50	1.80516	25.46	14	-473.63	0.25		
5	-217.00	7.50	1.62041	60.98	15	56.31	14.88	1.69680	55.61
6	102.06	* * * 2			16	85.50	7.50		
7	-142.56	6.25	1.62004	36.34	17	177.50	19.69	1.78470	26.10
8	-3618.75	* * * 3			18	46.84	8.13		
9	275.63	12.50	1.52015	63.59	19	93.00	14.38	1.74400	44.90
10	-220.31	3.13			20	-71.94			

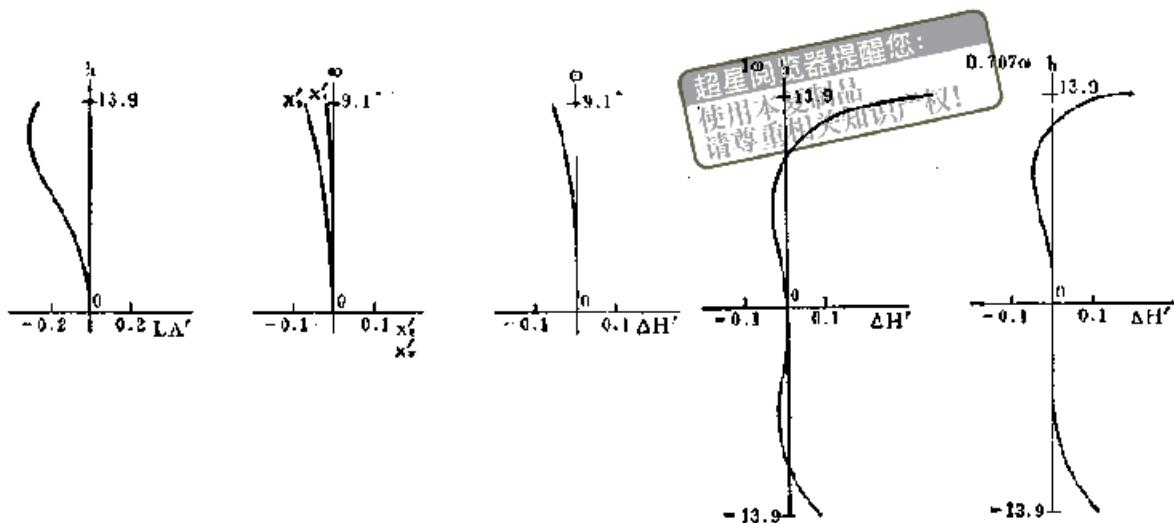
$$15.63'' = 5.63 + 10.00$$

04-03-013-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.1053	-0.0337	0.0650	-0.0154	-0.0347	8.08	+0.75%
h 或 φ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	$K'_{T1}$	$K'_{T0.7}$
100	-0.264	-0.061	-0.0110	-0.0670	0.0560	0.2356	+0.0079
70	-0.270	-0.022	-0.0051	-0.0345	0.0294	0.1447	-0.0123

E. F. L = 50 ( $\pm 9.1^\circ$ )

\*\*\*1 = 6.15, \*\*\*2 = 130.15, \*\*\*3 = 68.14

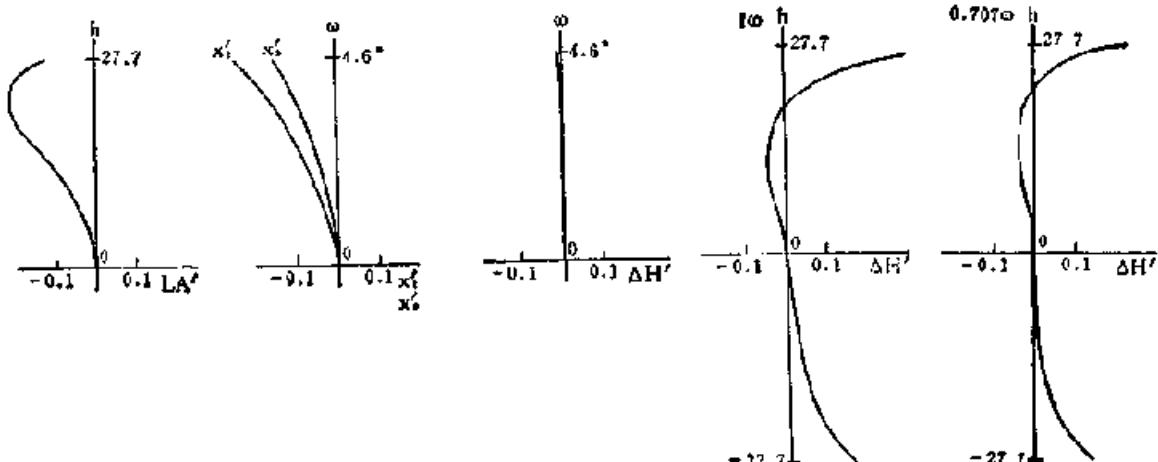


04-03-013-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.0820	-0.0229	-0.0091	-0.0154	-0.0014	8.02	-0.06%
h 或 φ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	$K'_{T1}$	$K'_{T0.7}$
100	-0.119	-0.0047	-0.254	-0.153	-0.101	0.3099	0.0213
70	-0.197	-0.0013	-0.135	-0.079	-0.056	0.1900	0.0076

E. F. L = 100 ( $\pm 4.6^\circ$ )

\*\*\*1 = 127.19, \*\*\*2 = 61.00, \*\*\*3 = 66.25



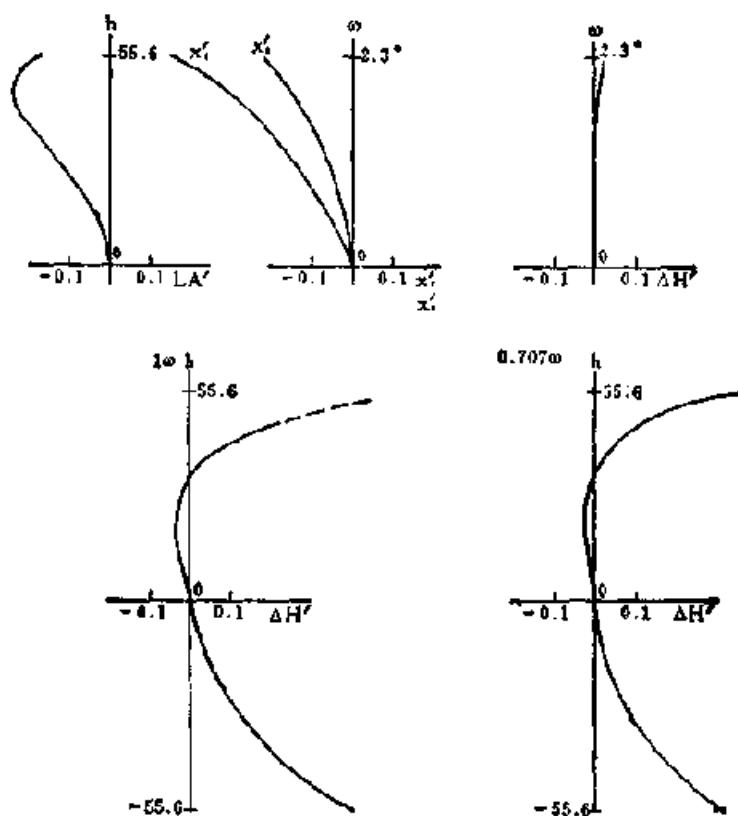
04-03-013-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP(1 $\infty$ )
	-0.0913	0.0218	-0.0203	-0.0155	0.0158	t	0.33%
h 或 φ (%)	LA'	ΔH'	x'_t	x'_s	x'_t + x'_s	K <sub>ft</sub>	K <sub>fs</sub>
100	-0.171	0.0258	-0.145	-0.220	-0.235	0.5254	0.1303
70	-0.220	0.0097	-0.135	-0.113	-0.122	0.3531	0.0895

$$E.F.L = 200 (\pm 2.3^\circ)$$

$$***1 = 214.52, ***2 = 12.90, ***3 = 27.02$$

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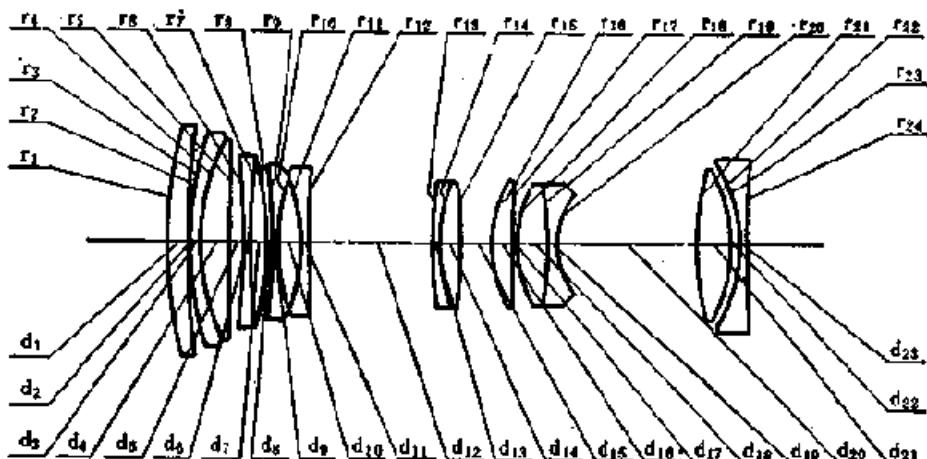


编号： 04-03-014

## 变 焦 距 镜 头

E.F.L=76.79~153.60 B.F.L=43.18 FNo.=4 F.A.= $\pm 17.9^\circ \sim \pm 9.0^\circ$

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序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	76.829	4.09	1.51633	64.15	13	84.070	1.13	1.74077	27.79
2	441.679	0.19			14	36.191	3.95	1.6223	63.2
3	74.639	1.90	1.74077	27.79	15	-105.440	6.707*		
4	44.110	5.80	1.51821	65.04	16	24.560	4.78	1.51633	64.15
5	1742.450	***1			17	$\infty$	0.38		
6	-175.362	1.70	1.618	63.38	18	24.442	6.12	1.51009	63.63
7	133.175	2.96	1.7846	26.22	19	-61.605	2.00	1.744	44.78
8	-80.740	0.38			20	17.088	28.87		
9	-214.635	1.43	1.5725	57.65	21	57.836	7.00	1.60342	33.91
10	39.980	5.26			22	-31.791	1.43		
11	-35.068	1.43	1.618	63.38	23	-30.887	1.43	1.66998	39.32
12	626.880	***2			24	465.310			

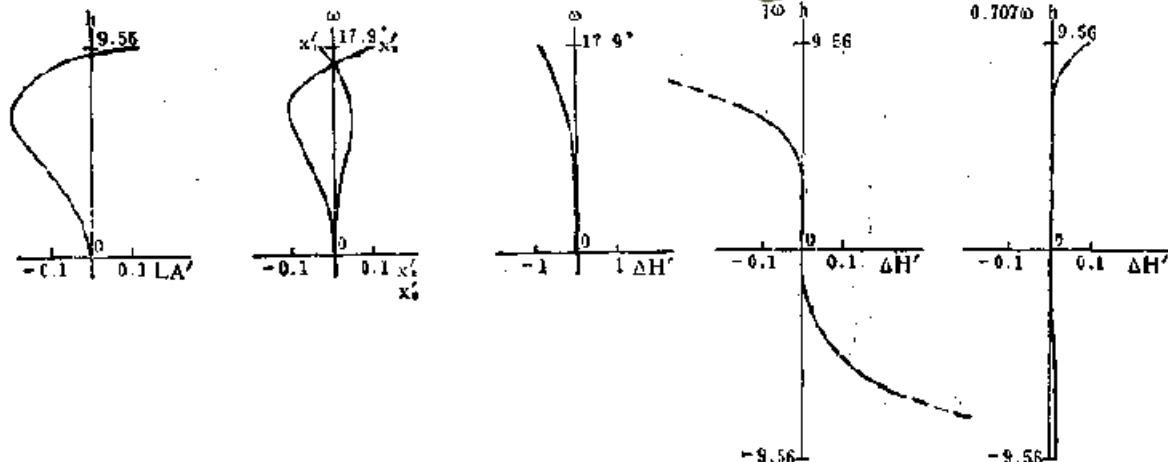
$$6.707^* = 3.000 + 3.707$$

04-03-014-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.0229	-0.0103	-0.0029	-0.0159	-0.1741	24.85	-3.3%
h 或 $\omega\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.125	-0.820	-0.0373	0.1100	-0.1478	-1.9345	0.0481
70	-0.201	-0.278	0.0447	-0.1087	0.1534	0.0423	0.0043

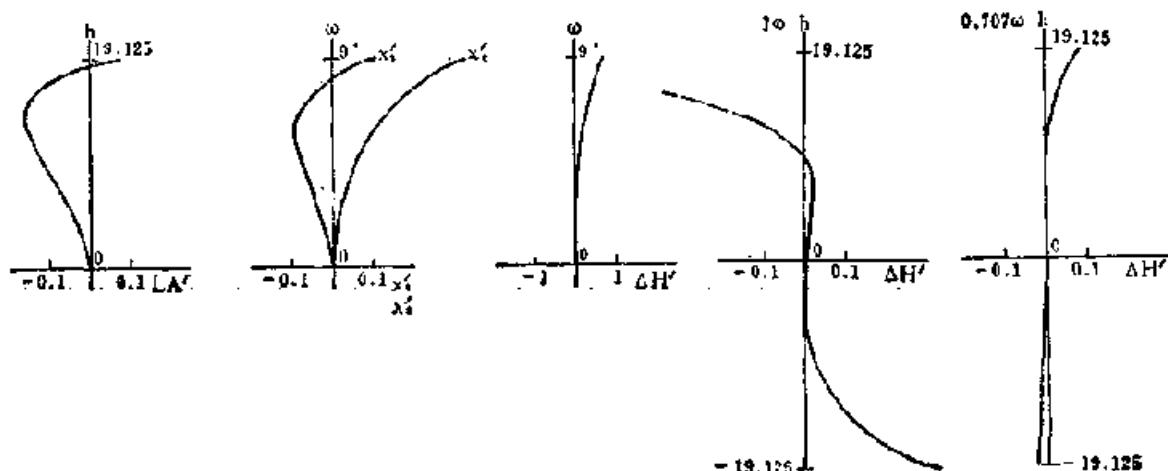
E. F. L = 78.79 ( $\pm 17.9^\circ$ ) $* * * 1 = 2.086, * * * 2 = 25.371$ 

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04-03-014-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.0169	-0.0154	0.0039	-0.0163	0.1829	24.28	3.02%
h 或 $\omega\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.085	0.734	0.843	0.104	0.239	-2.2351	-0.0426
70	-0.164	0.285	0.125	-0.083	0.213	0.0298	0.0036

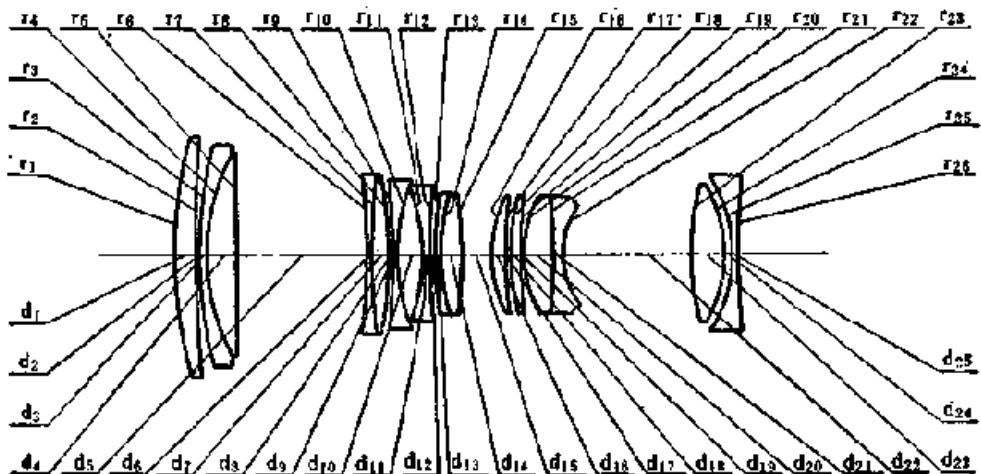
E. F. L = 153.60 ( $\pm 9.0^\circ$ ) $* * * 1 = 26.433, * * * 2 = 1.024$ 

编号: 04-03-015

# 变 焦 距 镜 头

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E.F.L=76.5~153.0 B.F.L=44.39 FNo.=4 F.A.=±17.9°~±9.0°



序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	78.828	4.09	1.51633	64.15	14	36.191	3.95	1.6223	53.2
2	441.679	0.19			15	-105.440	6.707*		
3	74.639	1.90	1.74077	27.79	16	25.913	3.30	1.50378	66.81
4	44.110	5.80	1.51821	65.04	17	108.255	0.15		
5	1742.450	*** 1			18	46.923	2.50	1.50048	65.99
6	-175.362	1.70	1.618	63.38	19	98.549	0.20		
7	133.175	2.96	1.7847	26.22	20	24.890	5.74	1.50378	66.81
8	-80.740	0.38			21	-115.109	2.00	1.744	44.78
9	-214.635	1.43	1.5725	67.65	22	16.950	26.00		
10	39.980	5.26			23	51.876	7.00	1.50717	40.34
11	-35.068	1.43	1.618	63.38	24	-28.193	1.44		
12	626.880	*** 2			25	-26.962	1.43	1.56755	41.93
13	84.070	1.13	1.74077	27.79	26	248.554			

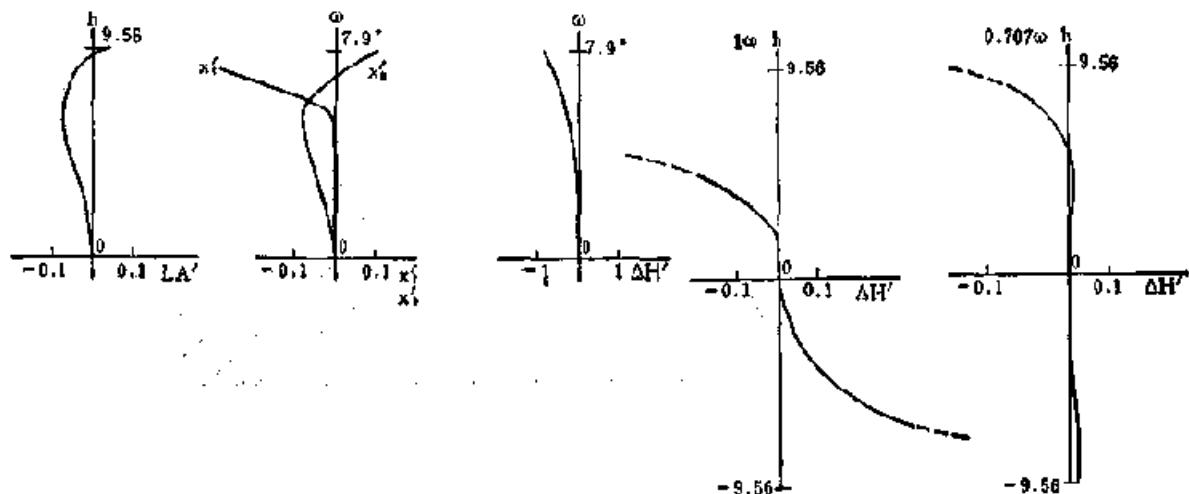
$$6.707^* = 4.707 + 2.000$$

04-03-015-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.0093	-0.0044	-0.0039	-0.0124	-0.1059	1.76	-3.3%
h 或 ω %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T0.7</sub>	
100	0.044	-0.808	-0.5780	0.1050	-0.5330	-1.6051	-0.5481
70	-0.076	-0.269	-0.0078	-0.0794	0.0716	-0.2382	-0.0036

E. F. L = 75.5 ( $\pm 17.9^\circ$ )

\*\*\*1 = 2.986, \*\*\*2 = 25.271

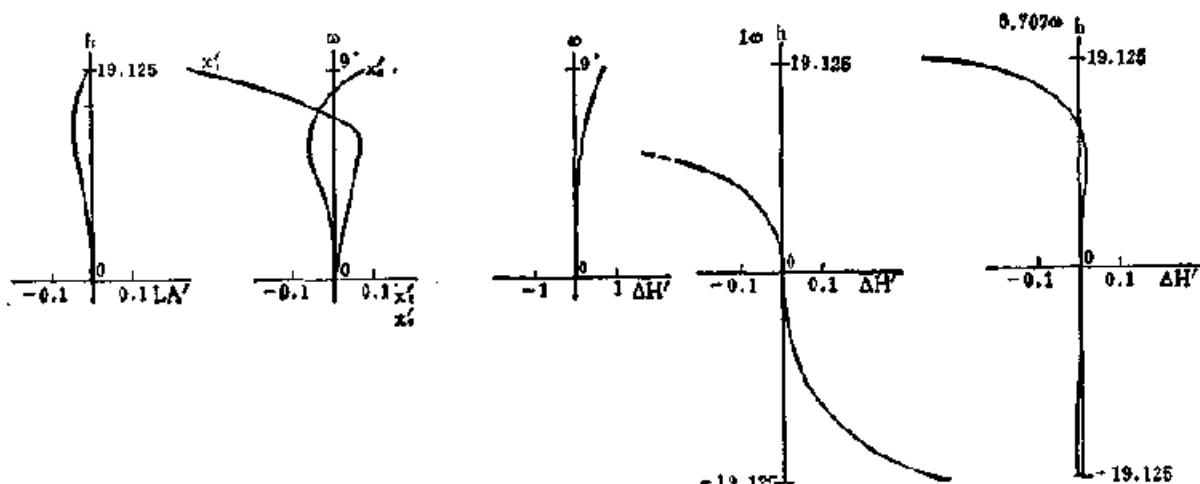


04-03-015-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.0034	-0.0101	0.0030	-0.0128	0.1897	24.19	3.04%
h 或 ω %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	0.0007	0.736	-0.3590	0.0330	-0.4420	-2.4037	-0.7668
70	-0.0394	0.271	0.0635	-0.0564	0.1100	-0.1967	-0.0044

E. F. L = 153.0 ( $\pm 9.0^\circ$ )

\*\*\*1 = 26.433, \*\*\*2 = 1.024

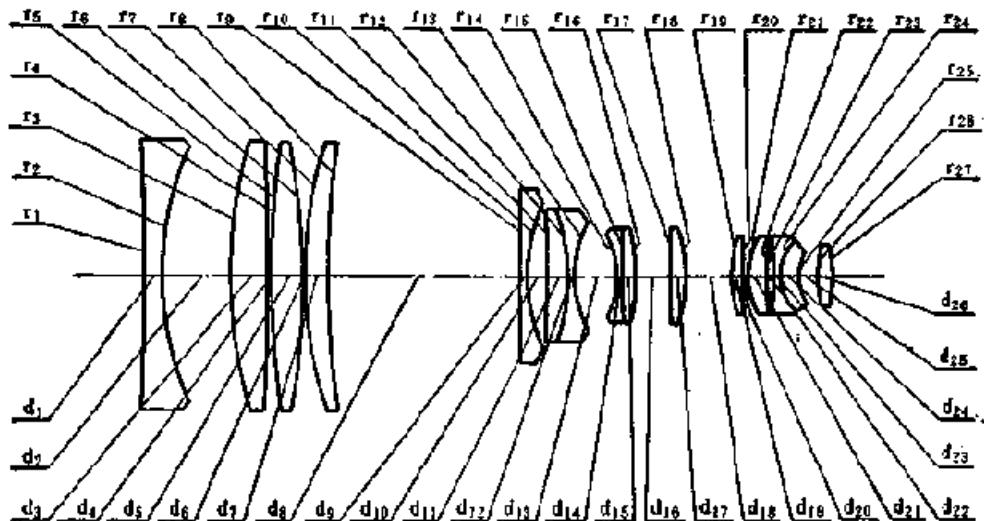


编号: 04-03-016

# 大孔径变焦距物镜

E.F.L=30~180 B.F.L=46.9 FNo.=1.4 F.A.=±15.3°~±2.5°

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序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	-1339.00	15.00	1.78470	26.10	15	472.75	10.50	1.64831	33.77
2	249.60	56.50			16	-168.25	* * * 3		
3	385.40	30.00	1.69938	49.57	17	1002.60	11.00	1.65844	50.8
4	-1434.00	0.90			18	-126.25	38.00		
5	1025.00	25.75	1.67790	55.52	19	102.80	10.75	1.71300	53.86
6	-537.20	1.35			20	1087.00	0.50		
7	308.60	22.50	1.67790	55.52	21	62.95	17.00	1.71300	53.89
8	980.75	* * * 1			22	1169.50	1.50		
9	10000.00	7.50	1.62041	60.29	23	-475.00	7.75	1.80518	25.46
10	139.75	15.50			24	38.93	15.00	1.71300	53.89
11	-1502.00	17.00	1.80518	25.46	25	40.83	16.25*		
12	-160.70	5.00	1.52542	64.55	26	100.50	10.75	1.71300	53.89
13	92.75	* * * 2			27	-124.65			
14	-66.00	4.00	1.62041	60.29					

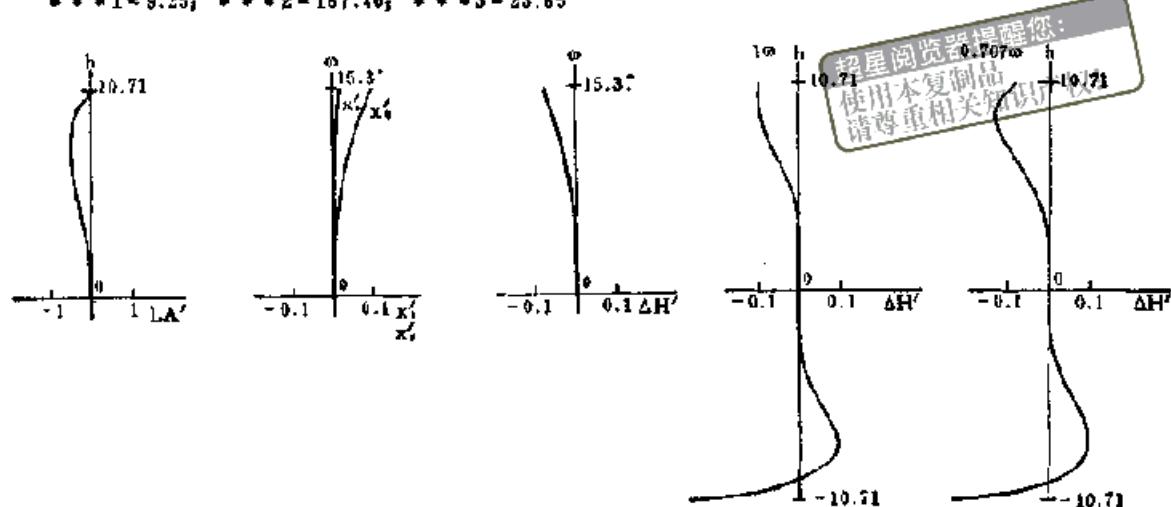
$$16.25^* = 8.25 + 8.00$$

04-03-016-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.3805	0.0133	0.0101	-0.0065	-0.0626	8.22	-1.92%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.1515	-0.0841	0.0938	0.0189	0.0759	-0.1839	0.00776
70	-0.4597	-0.0311	0.0475	0.0082	0.0393	-0.1557	0.00688

E. F. L = 30 ( $\pm 15.3^\circ$ )

\*\*\*1 = 9.25; \*\*\*2 = 187.46; \*\*\*3 = 23.65

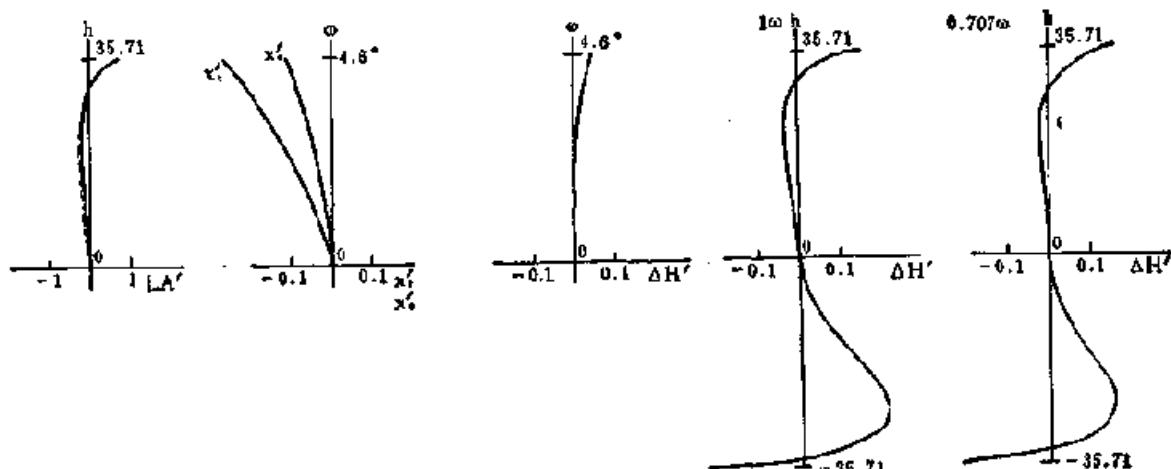


04-03-016-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.2443	0.0615	-0.0236	-0.0067	0.0353	8.02	0.62%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.673	0.0416	-0.272	-0.115	-0.157	-0.0332	0.0965
70	-0.185	0.0158	-0.154	-0.062	-0.092	-0.0122	0.0685

E. F. L = 100 ( $\pm 4.6^\circ$ )

\*\*\*1 = 155.70; \*\*\*2 = 34.80; \*\*\*3 = 30.00

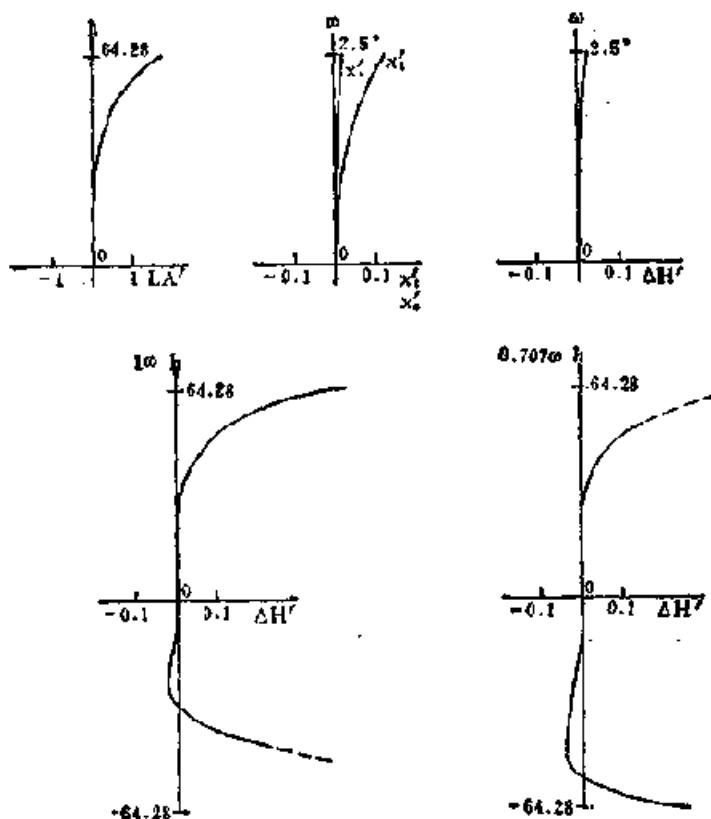


04-03-016-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\infty$ )
	0.08271	-0.03146	0.00848	-0.04657	0.02158	7.9	0.32%
b 或 $\alpha\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}'$
100	1.713	0.0256	0.1268	0.0211	0.1057	1.8261	0.1459
70	0.397	0.0098	0.0528	0.0073	0.0455	0.3758	0.0302

E. F. L = 180 ( $\pm 2.5^\circ$ )

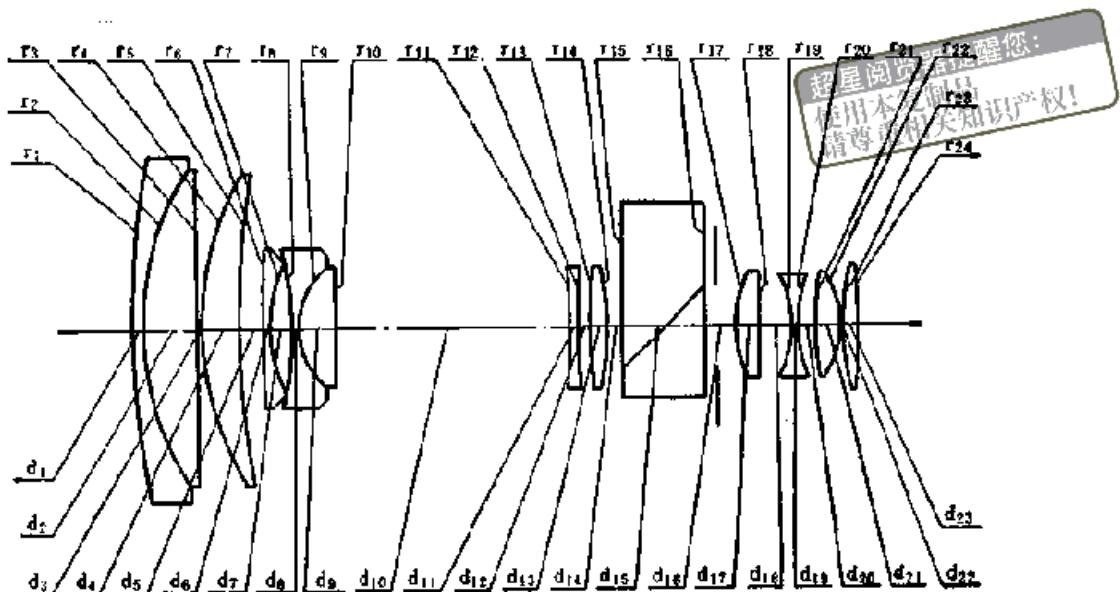
\* \* \* 1 = 200.60, \* \* \* 2 = 14.70, \* \* \* 3 = 5.20



编号： 04-03-017

## 两个可动负组在两个固定正组间的变焦距镜头

E.F.L=7.50~30.00 B.F.L=11.658 FNo.=1.7 F.A.=±11.3°~±2.6°



序号	r	d	n	v <sub>D</sub>	序号	r	d	n	v <sub>D</sub>
1	90.30	1.00	1.6990	30.1	13	66.83	1.70	1.6936	53.4
2	28.76	5.90	1.6073	59.5	14	-28.87	1.50		
3	-762.36	0.10			15	∞	8.50	1.6200	36.3
4	30.68	4.10	1.6204	60.3	16	∞	3.00*		
5	112.56	***1			17	11.92	2.40	1.7440	44.9
6	326.18	0.57	1.6385	55.5	18	∞	3.40		
7	14.12	2.30			19	-10.30	0.80	1.7847	25.7
8	-33.26	0.57	1.6936	53.4	20	13.93	1.80		
9	7.80	3.80	1.6727	32.2	21	60.56	2.40	1.7200	50.3
10	543.87	***2			22	-9.43	0.32		
11	-95.62	1.00	1.7847	25.7	23	24.22	1.50	1.6935	53.4
12	95.02	***3			24	-197.77			

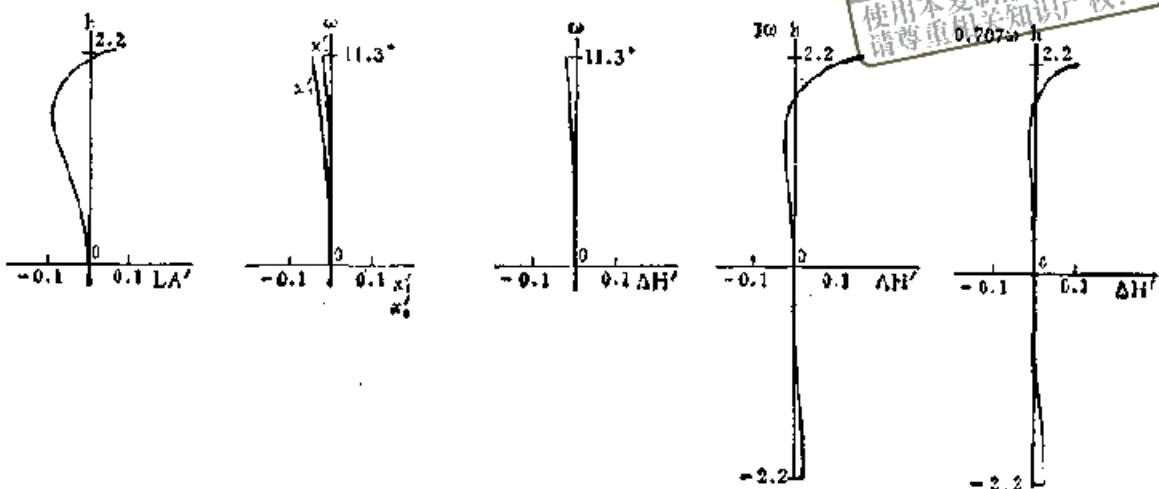
$$3.00^* = 1.00 + 2.00$$

04-03-017-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.04982	-0.00792	-0.00204	-0.09266	-0.01175	1.5	-1.4%
$h$ 或 $\omega$ %	LA'	$\Delta H'$	$x'_1$	$x'_2$	$x'_1 - x'_2$	$K_{T1}$	$K_{T0.7}$
100	0.0468	-0.0210	-0.0464	-0.0260	-0.0204	0.09696	-0.00064
70	-0.0896	-0.0073	-0.0245	-0.0134	-0.0111	0.06222	-0.00187

E. F. L = 7.50 ( $\pm 11.3^\circ$ )

\*\*\*1 = 2.30, \*\*\*2 = 23.94, \*\*\*3 = 1.20

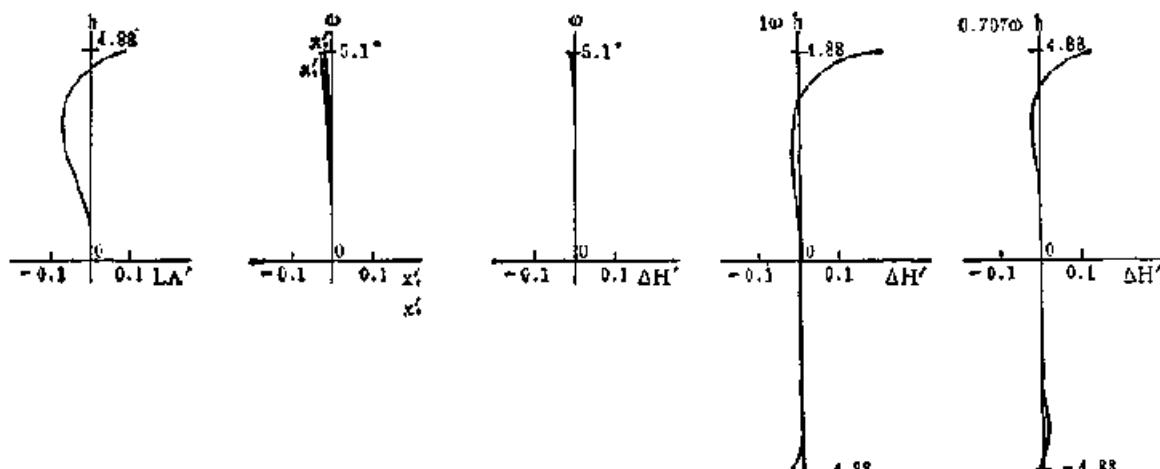


04-03-017-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.04402	-0.00965	-0.00052	-0.00273	-0.00242	1.5	-0.29%
$h$ 或 $\omega$ %	LA'	$\Delta H'$	$x'_1$	$x'_2$	$x'_1 - x'_2$	$K_{T1}$	$K_{T0.7}$
100	0.0939	-0.0043	-0.0237	-0.0185	-0.0052	0.09670	-0.00579
70	-0.0718	-0.0015	-0.0130	-0.0095	-0.0034	0.05748	-0.00685

E. F. L = 16.60 ( $\pm 5.1^\circ$ )

\*\*\*1 = 16.30, \*\*\*2 = 6.39, \*\*\*3 = 4.75



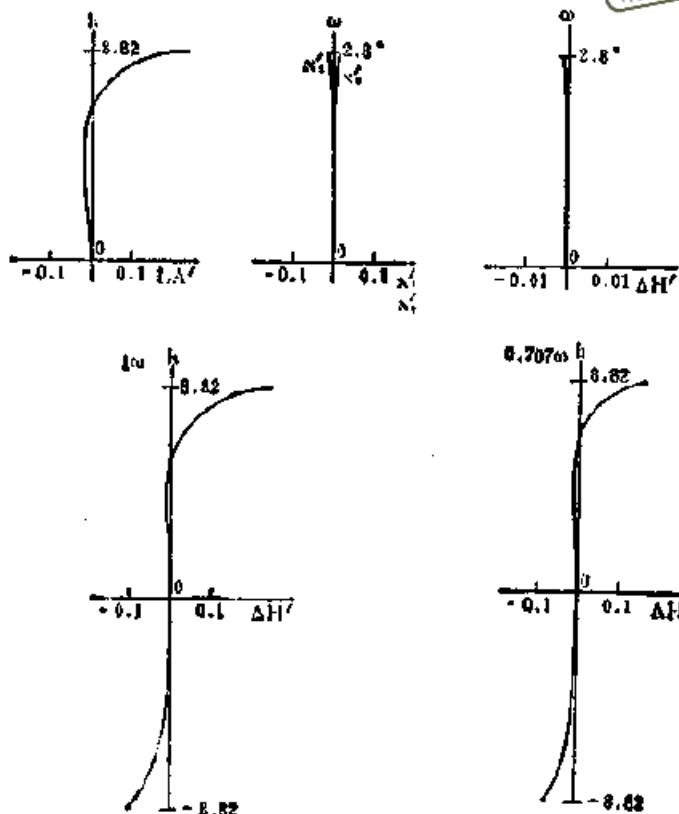
04-03-017-5

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_6$	HI	QP(1‰)
	-0.02414	-0.00985	0.00129	-0.00276	-0.00045	1.5	-0.06%
b 或 00 %	LA'	$\Delta H'$	$x_t$	$x'_t$	$x'_t - x_t$	K <sub>1</sub>	K <sub>0.7</sub>
100	0.2389	-0.0008	0.0141	-0.0066	0.0207	0.08145	-0.00907
70	-0.0099	-0.0003	0.0049	-0.0038	0.0087	0.04891	-0.00740

E, F, L = 30.00 ( $\pm 2.8^\circ$ )

\* \* \* 1 = 23.30, \* \* \* 2 = 2.94, \* \* \* 3 = 1.20

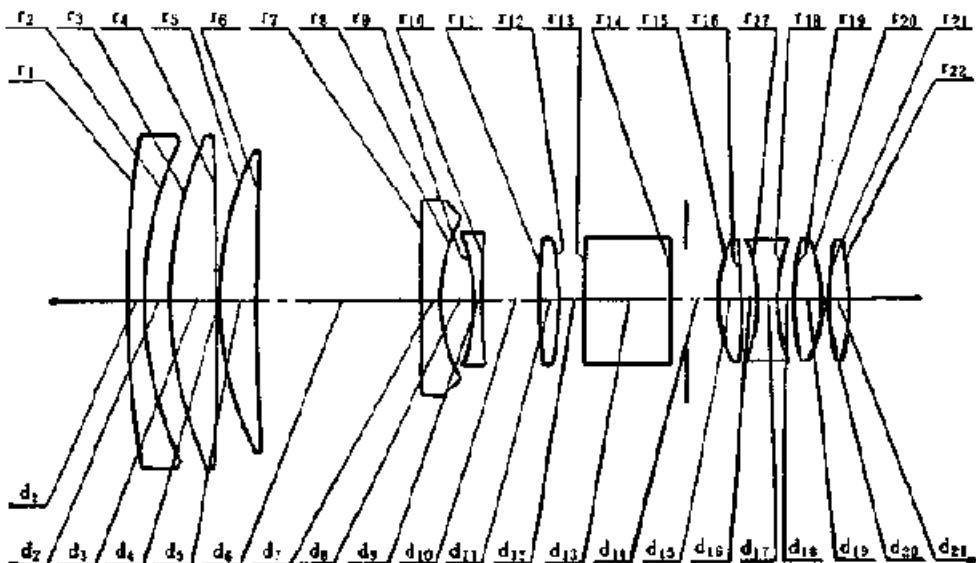
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编号： 04-03-018

# 大孔径变焦距物镜

E.F.L=10.40~30.00 B.F.L=15.22 FNo.=2 F.A.=±19.3°~±5.9°



序号	r	d	n <sub>e</sub>	v <sub>e</sub>	序号	r	d	n <sub>e</sub>	v <sub>e</sub>
1	161.60	1.80	1.76167	27.4	12	-32.02	2.50		
2	38.01	2.50			13	∞	9.00	1.51872	64.0
3	41.27	4.70	1.60994	56.4	14	∞	4.80 <sup>3</sup>		
4	-550.50	0.10			15	14.01	2.30	1.62509	52.9
5	33.99	3.80	1.62509	52.9	16	-190.50	1.80		
6	308.20	* * * 1			17	16.81	2.10	1.79180	25.9
7	700.00	2.00	1.60548	60.4	18	17.94	1.65		
8	17.11	* * * 2			19	45.04	2.60	1.62286	60.1
9	-19.53	1.00	1.48914	70.2	20	-15.87	0.80		
10	120.02	* * * 3			21	27.81	2.00	1.62286	60.1
11	224.40	1.80	1.79180	25.9	22	-31.06			

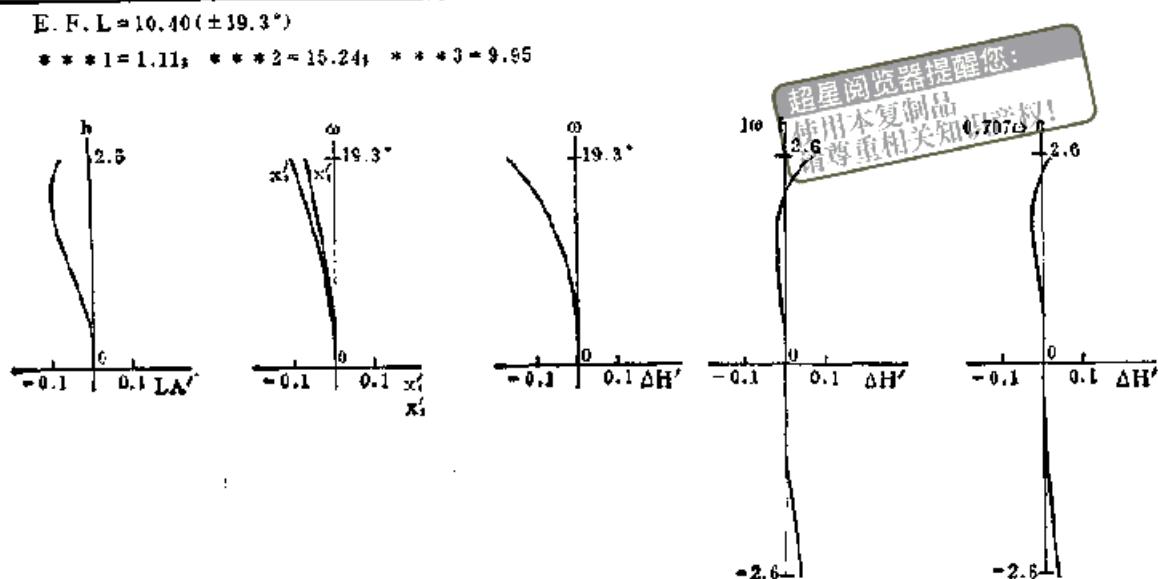
$$4.80^3 = 1.80 + 3.00$$

04-03-018-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.0284	-0.0051	0.0023	-0.0171	-0.0788	3.6	-4.3%
h 或 φ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	-0.067	-0.176	-0.0715	-0.1102	0.0387	0.05307	0.00189
70	-0.081	-0.061	-0.0393	-0.0584	0.0191	0.03093	-0.00116

E. F. L = 10.40 ( $\pm 19.3^\circ$ )

\* \* \* 1 = 1.11; \* \* \* 2 = 15.24; \* \* \* 3 = 9.95

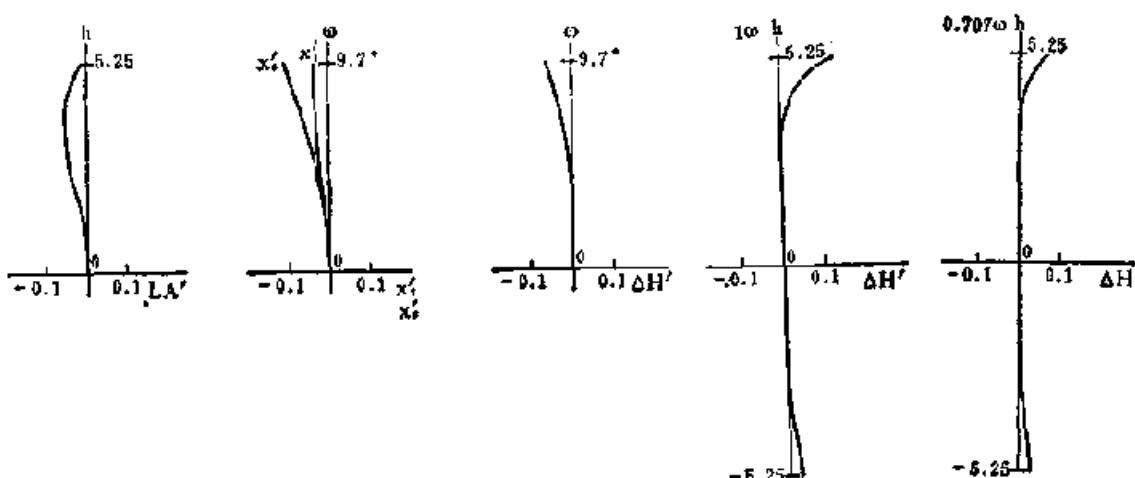


04-03-018-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.02155	-0.00188	0.00280	-0.01843	-0.02586	3.6	-1.6%
h 或 φ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	-0.012	-0.0580	-0.0336	-0.1089	0.0753	0.07964	0.00897
70	-0.054	-0.0196	-0.0304	-0.0594	0.0290	0.04766	0.00516

E. F. L = 21.00 ( $\pm 9.7^\circ$ )

\* \* \* 1 = 16.97; \* \* \* 2 = 3.28; \* \* \* 3 = 6.04



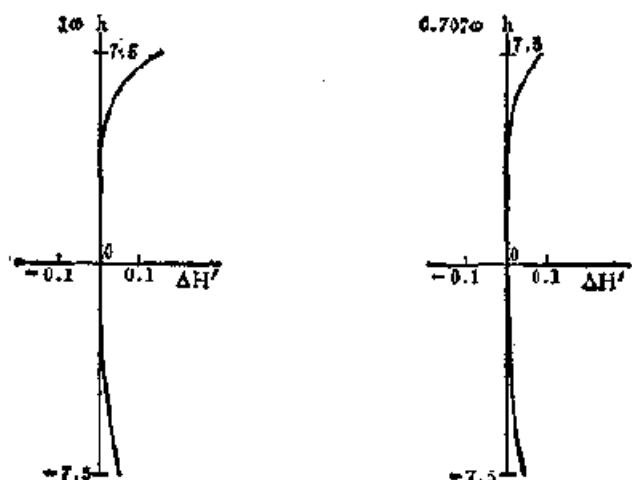
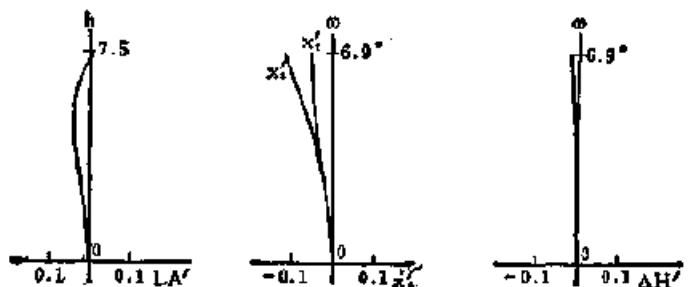
04-03-018-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	H1	QP(1ω)
	-0.01876	0.00137	0.00203	-0.01883	-0.00526	3.6	-0.39%
h 或 φ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.0100	-0.0141	-0.0545	-0.1212	0.0667	0.1000	0.0187
70	-0.0411	-0.0045	-0.0393	-0.0640	0.0248	0.0538	0.0126

E. F. L = 30.00 ( $\pm 6.9^\circ$ )

\* \* \* 1 = 22.84; \* \* \* 2 = 2.27; \* \* \* 3 = 1.19

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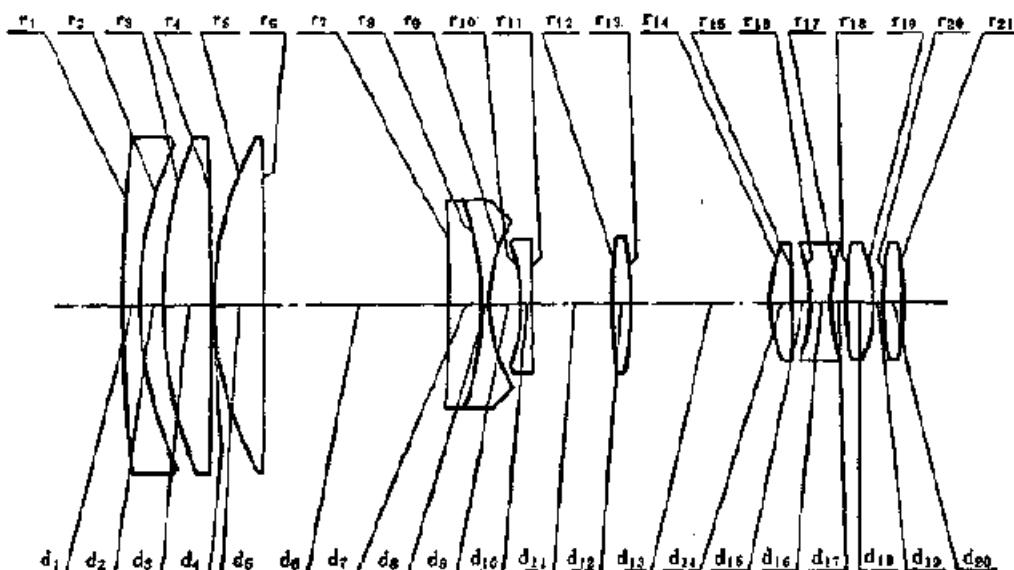


编号：04-03-019

## 大孔径变焦距物镜

E.F.L=9.35~35.00 B.F.L=15.187 FNo. = 2 F.A. = ±21.4° ~ ±6.7°

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序号	r	d	n <sub>e</sub>	v <sub>w</sub>	序号	r	d	n <sub>e</sub>	v <sub>w</sub>
1	224.80	1.80	1.76167	27.4	12	60.13	1.80	1.69476	31.0
2	37.67	2.50			13	-43.75	14.30*		
3	45.13	4.90	1.62543	56.8	14	14.01	2.30	1.62509	52.9
4	-477.50	0.10			15	-190.50	1.80		
5	35.32	5.20	1.62509	52.9	16	-16.81	2.10	1.79180	25.9
6	-1875.00	***1			17	17.94	1.54		
7	-286.80	3.10	1.76167	27.4	18	45.04	2.60	1.62286	60.1
8	-31.95	1.00	1.62286	60.1	19	-15.87	0.80		
9	16.33	***2			20	25.50	2.00	1.62286	60.1
10	-18.55	1.00	1.52583	51.2	21	-34.72			
11	428.00	***3							

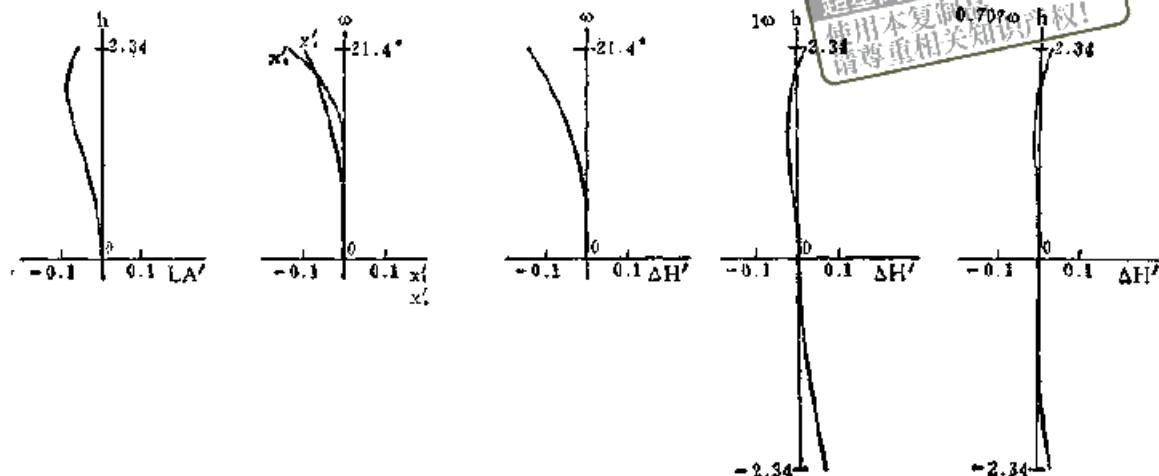
14.30° - 11.30 + 3.00

04-03-019-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.02864	-0.00097	0.00744	-0.01574	-0.08294	3.67	-3.9%
h 或 ω%	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	-0.0569	-0.1456	-0.1388	-0.0948	-0.0410	0.04493	0.00717
70	-0.0792	-0.0587	-0.0139	-0.0419	0.0250	0.02956	0.00037

E. F. L = 0.35 ( $\pm 21.4^\circ$ )

\*\*\* 1 = 1.15; \*\*\* 2 = 17.02; \*\*\* 3 = 12.23



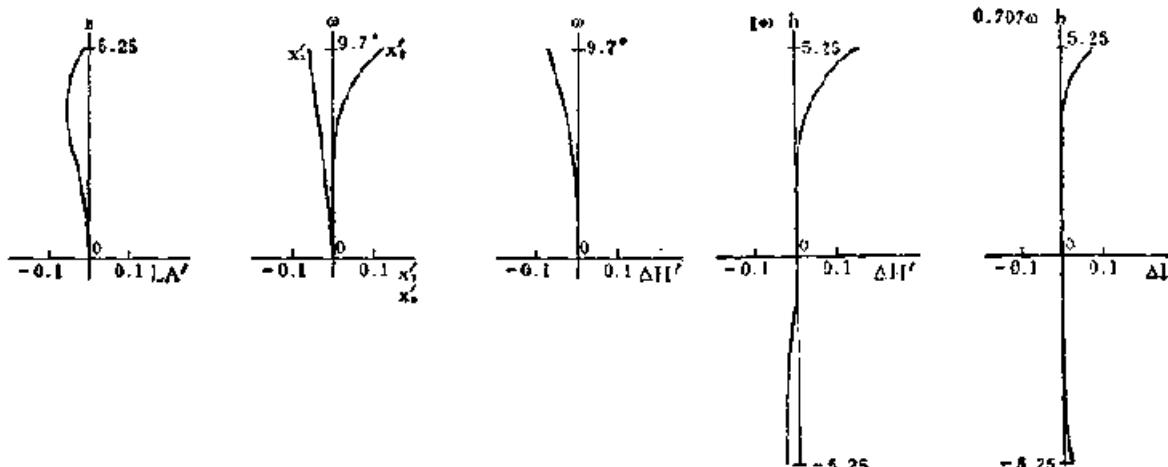
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04-03-019-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.02291	-0.00077	0.00500	-0.01699	-0.02807	3.6	-2.05%
h 或 ω%	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	-0.0126	-0.0739	0.1183	-0.0610	0.1793	0.0713	0.0045
70	-0.0566	-0.0230	0.0195	-0.0409	0.0604	0.0474	0.0051

E. F. L = 21.00 ( $\pm 9.7^\circ$ )

\*\*\* 1 = 18.93; \*\*\* 2 = 3.12; \*\*\* 3 = 8.35



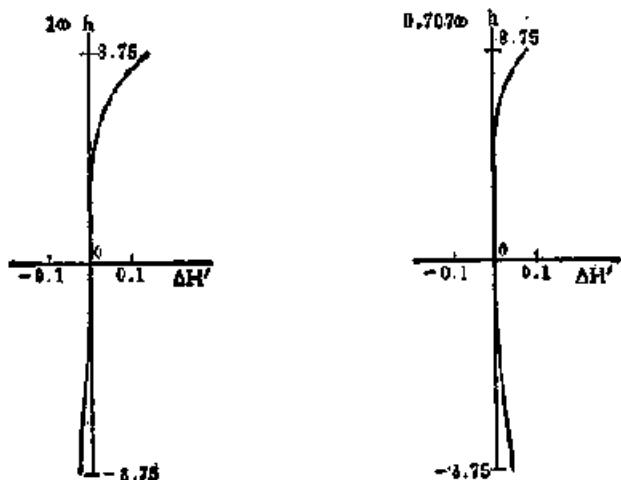
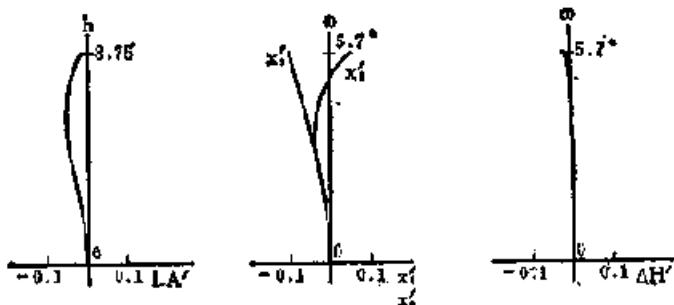
04-03-019-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1ω)
	-0.02157	0.00520	-0.00133	-0.01644	0.00516	3.5	-0.14%
$h$ 或 $\omega\%$	$LA'$	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{t1}$	$K_{T0.7}$
100	-0.0122	-0.0051	0.0488	-0.0994	0.1482	0.05953	0.00029
70	-0.0533	0.0010	-0.0359	-0.0612	0.0263	0.06269	0.01323

E. F. L = 35.00 ( $\pm 5.7^\circ$ )

\* \* \* 1 = 26.36; \* \* \* 2 = 3.10; \* \* \* 3 = 0.95

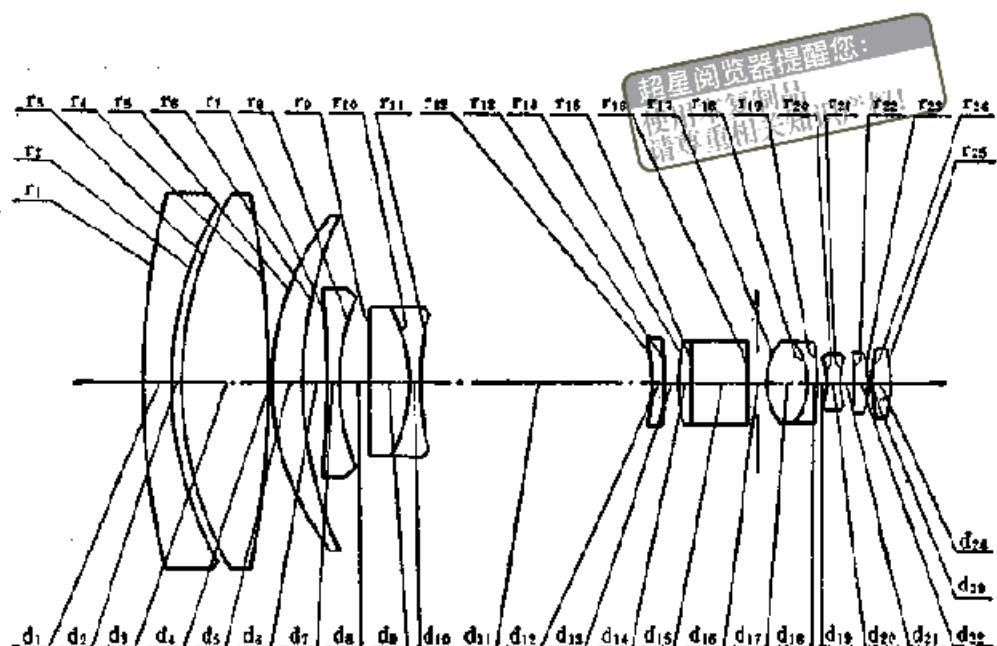
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编号: 04-03-020

## 变焦距摄影物镜

E.F.L=7.600~29.900 B.F.L=7.20 FNo.=1.8 F.A.= $\pm 22.3^\circ \sim \pm 5.7^\circ$



序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	80.5840	3.000	1.80518	25.46	14	20.6830	1.300	1.71300	53.89
2	40.6790	1.000			15	$\infty$	6.400	1.60738	58.66
3	42.7800	10.000	1.56873	53.12	16	$\infty$	2.000*		
4	-97.8630	0.100			17	7.6076	4.600	1.71300	53.89
5	29.0050	3.500	1.61765	56.10	18	-7.6076	0.700	1.62374	47.04
6	42.4730	* * * 1			19	-32.3150	1.100		
7	-118.8400	1.510	1.69100	54.80	20	-6.9780	1.600	1.80518	25.46
8	23.5440	3.200			21	9.3061	1.500		
9	805.8400	4.500	1.74077	27.70	22	-38.4060	1.700	1.78797	47.44
10	-17.4030	1.200	1.71300	53.89	23	-12.0570	0.050		
11	29.6400	* * * 2			24	20.2410	2.000	1.78797	47.44
12	-24.4050	1.400	1.78463	43.77	25	-20.8330			
13	-63.0790	* * * 3							

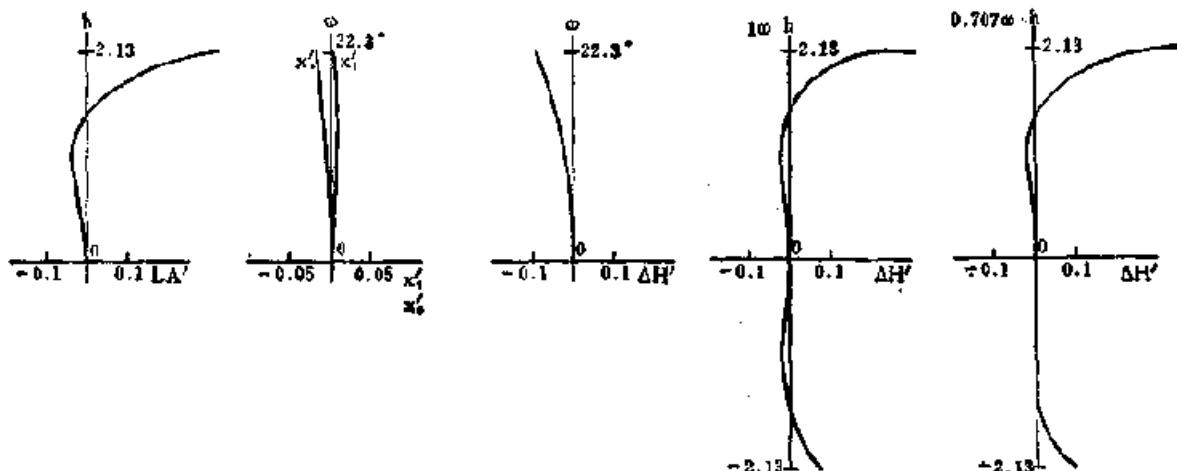
$$2.000^* = 1.000 + 1.000$$

04-03-020-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.03873	-0.00681	0.00887	-0.00865	-0.06420	3.1	2.8%
h 或 $\phi$ %	LA'	$\Delta H'$	$x_t'$	$x_u'$	$x_t' - x_u'$	K <sub>T1</sub>	K <sub>T0.1</sub>
100	0.3342	-0.0882	0.0055	-0.0131	0.0186	0.2023	0.0010
70	-0.0021	-0.0385	0.0103	-0.0117	0.0220	0.2355	0.0087

E. F. L = 7.600 ( $\pm 22.3^\circ$ )

\*\*\* 1 = 2.510, \*\*\* 2 = 25.813, \*\*\* 3 = 1.500

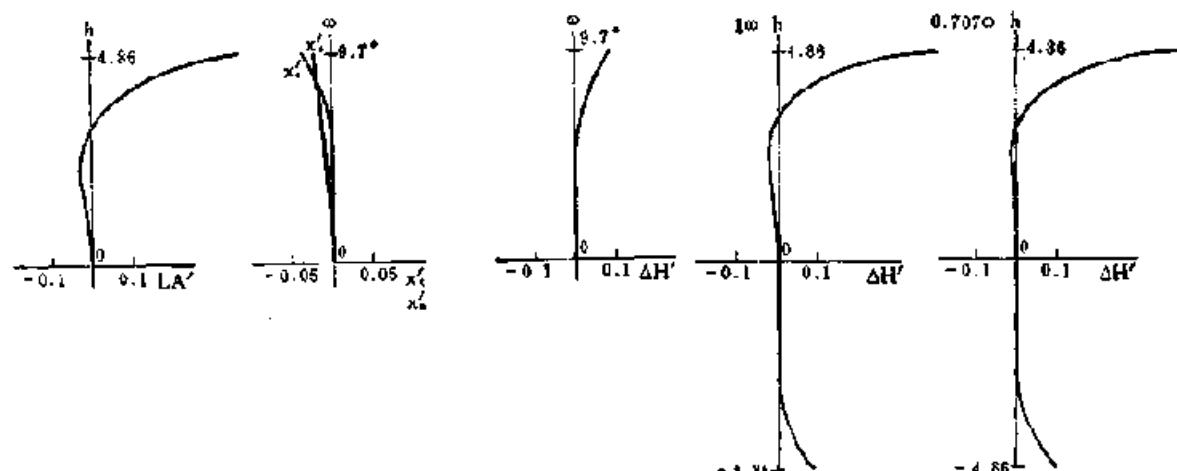


04-03-020-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.03327	-0.00224	0.00776	-0.00892	0.02084	3	3.1%
h 或 $\phi$ %	LA'	$\Delta H'$	$x_t'$	$x_u'$	$x_t' - x_u'$	K <sub>T1</sub>	K <sub>T0.1</sub>
100	0.3689	0.0932	-0.0358	-0.0216	-0.0142	0.2542	0.0078
70	0.0145	0.0221	-0.0020	-0.0151	0.0131	0.2638	0.0148

E. F. L = 17.500 ( $\pm 9.7^\circ$ )

\*\*\* 1 = 19.328, \*\*\* 2 = 8.995, \*\*\* 3 = 3.500

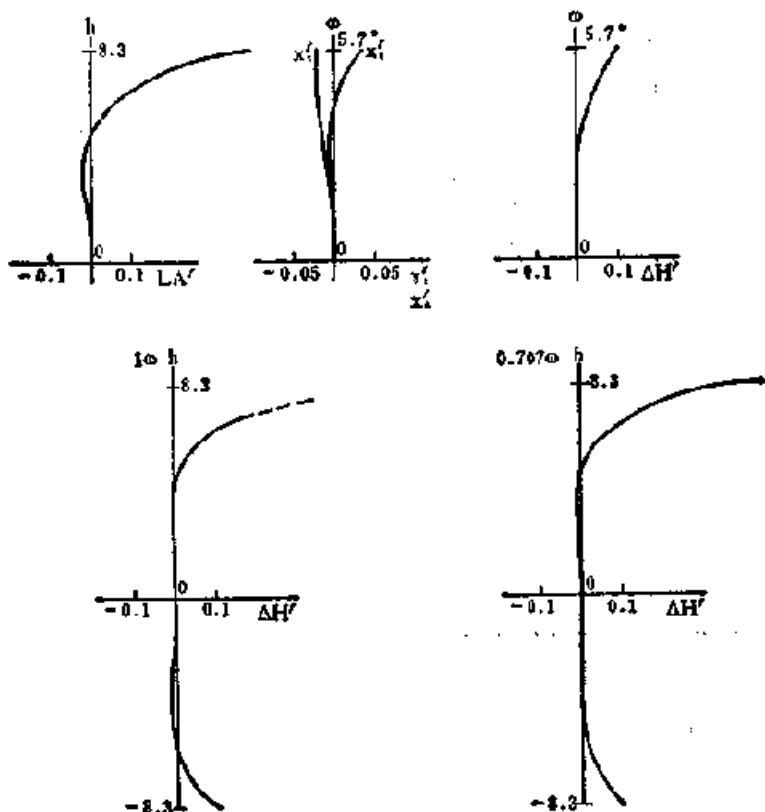


04-03-020-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.02390	-0.00316	0.00228	-0.00996	0.04645	3	3.434
$h \text{ 或 } \alpha \%$	LA'	$\Delta H'$	$x_1'$	$x_2'$	$x_3' - x_4'$	$K_{11}$	$K_{T0.7}$
100	0.3985	0.1021	0.0391	-0.0187	0.0578	0.3753	0.0166
70	0.0291	0.0324	-0.0013	-0.0182	0.0169	0.2875	0.0229

$$E.F.L = 29.900 (\pm 5.7^\circ)$$

$$***1 = 26.219, ***2 = 2.105, ***3 = 1.500$$

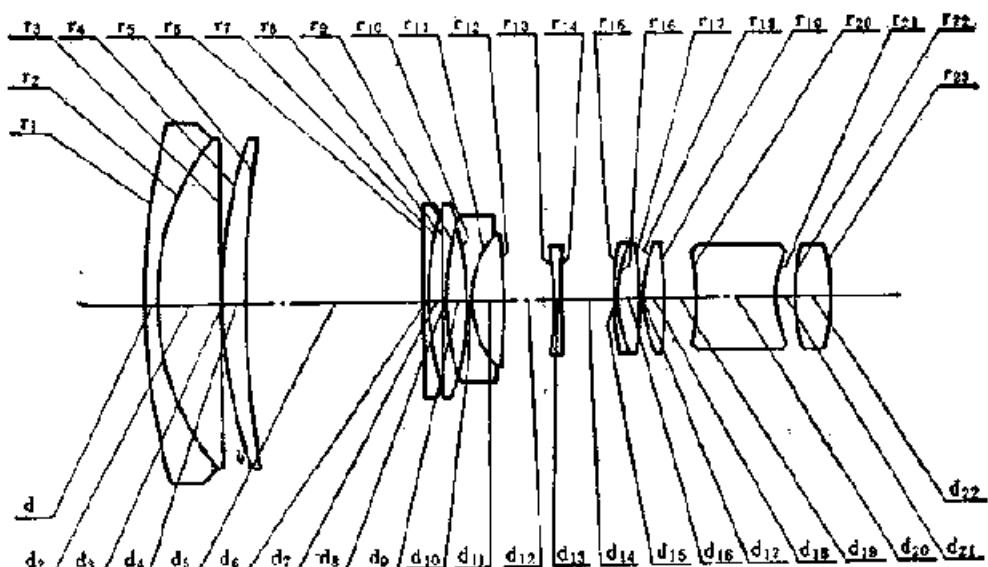


编号：04-03-021

# 变 焦 距 镜 头

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E.F.L=1.0000~4.4444 B.F.L=1.4642 FNo.=2.5 F.A.=±27.5°~±6.2°



序号	r	d	n <sub>4</sub>	v	序号	r	d	n <sub>4</sub>	v
1	4.6924	0.0667	1.6889	31.3	13	-3.0782	0.0434	1.5688	56.0
2	1.7478	0.4444	1.6935	53.4	14	9.6259*	*** 3		
3	∞	0.0022			15	2.4029	0.0222	1.7283	28.3
4	3.3395	0.1556	1.6204	80.3	16	0.9098	0.1378	1.6433	47.8
5	9.0175	*** 1			17	-2.4029	0.0111		
6	∞	0.0400	1.6385	55.5	18	0.0524	0.1442	1.6073	59.5
7	2.0666	0.0751			19	-13.4843	0.2307*		
8	∞	0.0400	1.6385	55.5	20	-1.6858	0.5509	1.6477	33.9
9	2.0666	0.1316			21	0.7678	0.1164		
10	-2.0666	0.0267	1.6583	57.3	22	1.3423	0.2444	1.6237	47.0
11	0.6651	0.2289	1.6477	33.9	23	-1.3423			
12	-10.1419	*** 2							

$$0.2307^* = 0.1000 + 0.1307$$

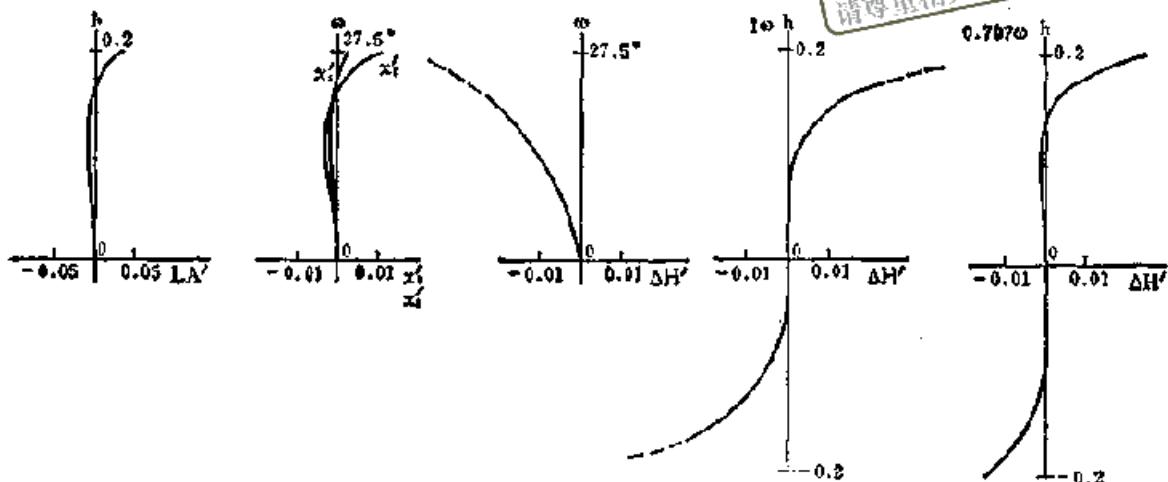
04-03-021-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.00328	-0.00247	-0.00174	-0.00022	-0.01774	0.52	-10.4%
b 或 0 %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.1}$
100	0.03217	-0.06414	0.01183	0.00238	0.00947	~0.05289	-0.00106
70	-0.00691	-0.01774	-0.00258	-0.00163	-0.00095	0.00432	-0.00135

E. F. L = 1.0000 ( $\pm 27.5^\circ$ )

\*\*\*1 = 0.0097; \*\*\*2 = 1.8414; \*\*\*3 = 0.0889

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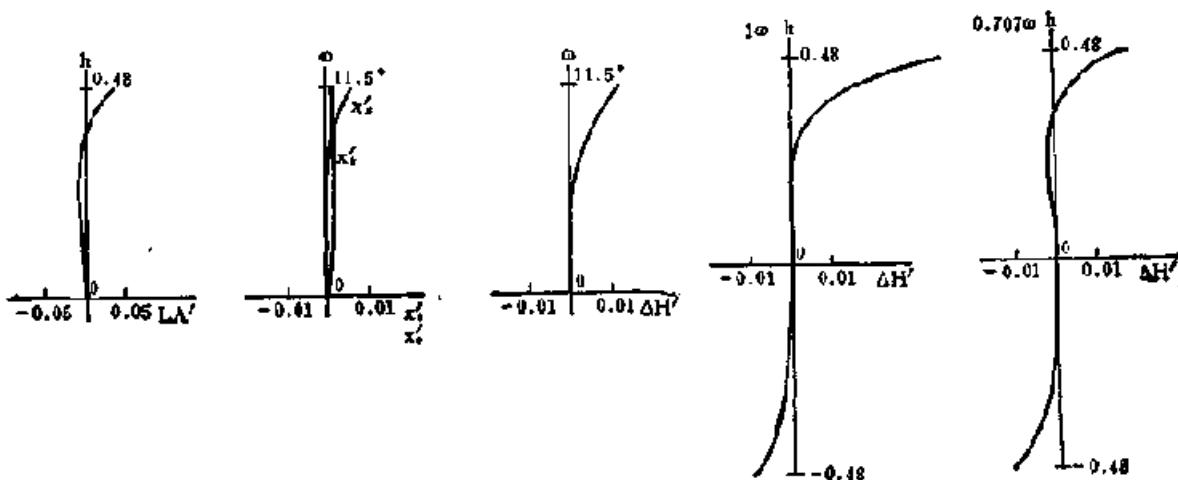


04-03-021-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.003257	-0.000873	0.000619	-0.000235	0.003226	0.48	2.6%
b 或 0 %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.03630	0.01279	0.001145	0.005808	-0.004463	0.01488	0.00195
70	-0.00602	0.00366	0.002030	0.001010	0.001020	0.00366	-0.00124

E. F. L = 2.3876 ( $\pm 11.5^\circ$ )

\*\*\*1 = 1.2155; \*\*\*2 = 0.8521; \*\*\*3 = 0.3724



04-03-021-3

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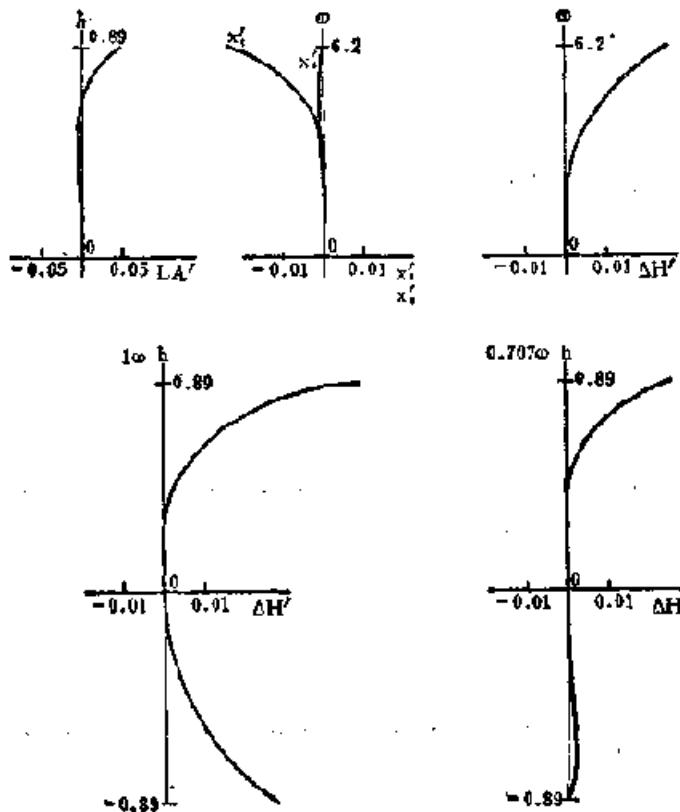
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	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HR	QP(1.0)
	-0.002405	-0.000293	0.000189	-0.000235	0.000252	0.48	5.2%
$h$ 或 $\omega$ %	$LA'$	$\Delta H'$	$x_1'$	$x_4'$	$x_t - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.04979	0.0254	-0.02895	0.00039	-0.02434	0.03737	0.01105
70	-0.00014	0.0080	-0.00310	-0.00023	-0.00287	0.01318	0.00304

$$E.F.L = 4.4414 (\pm 6.2^\circ)$$

$$***1 = 1.7875, ***2 = 0.0637, ***3 = 0.0889$$

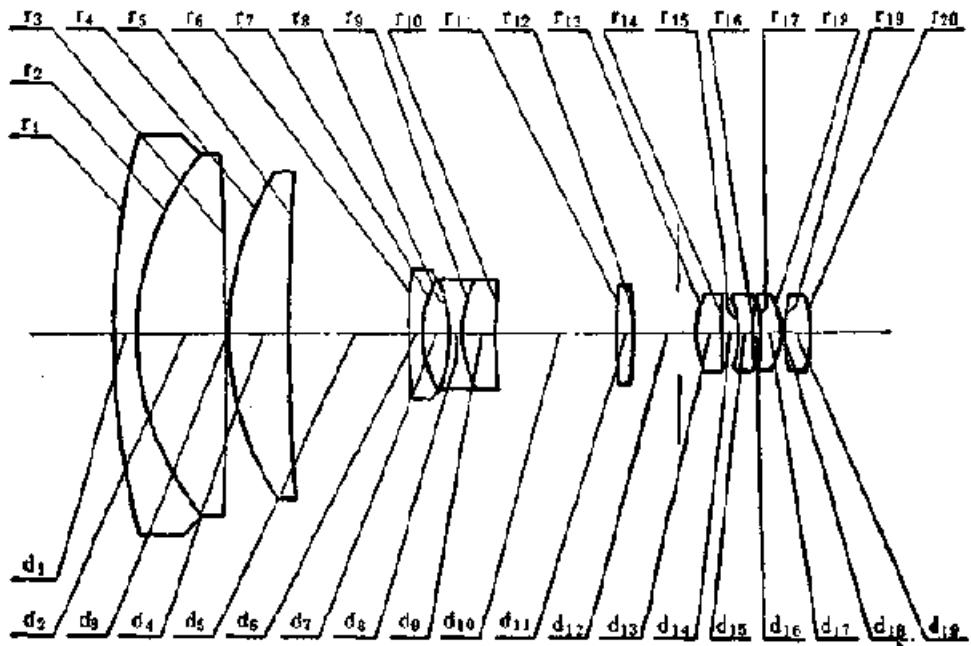


编号: 04-03-022

## 变 焦 距 镜 头

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E.F.L=0.3250~1.2770 B.F.L=0.4298 FNo.=1.8 F.A.=±17.6°~±4.5°



序号	r	d	nD	v	序号	r	d	nD	v
1	3.6500	0.100	1.751	27.7	11	1.8000	0.085	1.620	60.3
2	1.3100	0.425	1.620	60.3	12	-2.8250	0.280*		
3	-15.4000	0.005			13	0.3900	0.126	1.697	66.2
4	1.4650	0.270	1.620	60.3	14	∞	0.080		
5	10.7000	* * * 1			15	-0.4600	0.050	1.731	27.7
6	5.0484	0.060	1.617	55.0	16	0.4600	0.042		
7	0.5060	0.120			17	-0.9190	0.105	1.651	55.5
8	-0.6740	0.055	1.620	60.3	18	-0.3720	0.007		
9	0.5680	0.150	1.751	27.7	19	0.7019	0.120	1.620	60.3
10	10.7610	* * * 2			20	-0.7019			

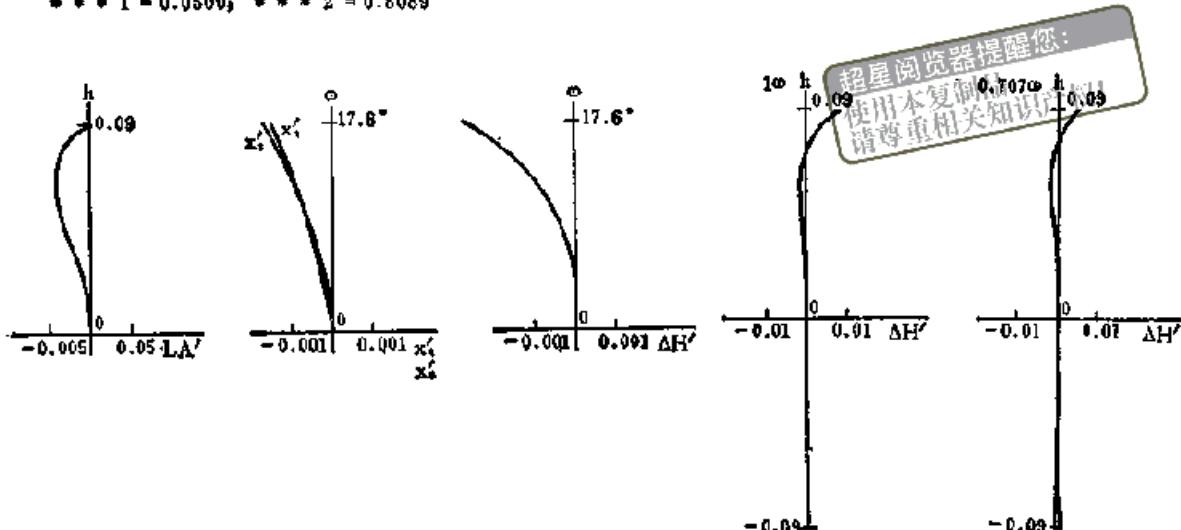
$$0.200^* = 0.200 + 0.080$$

04-03-022-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	-0.002052	-0.000685	0.000941	-0.000298	-0.001243	0.10	-2.67%
h 或 $\omega\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.00037	-0.00275	-0.00150	-0.00166	0.00016	0.00414	-0.00035
70	-0.00417	-0.00089	-0.00097	-0.00094	-0.00003	0.00239	-0.00046

$$E.F.L = 0.3250 (\pm 17.6^\circ)$$

$$***1 = 0.0500, ***2 = 0.8089$$

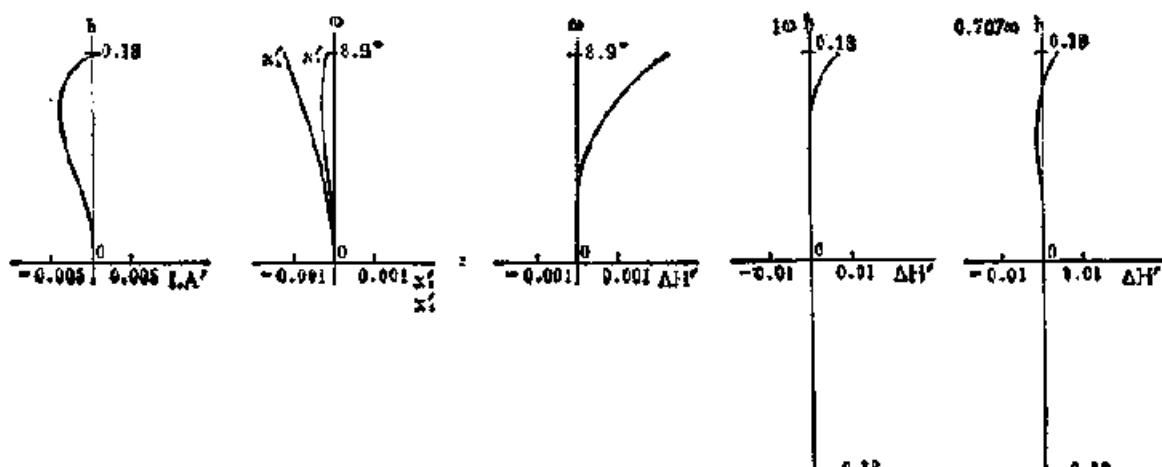


04-03-022-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	-0.002100	-0.000303	0.000287	-0.000310	0.001004	0.1	2.24%
h 或 $\omega\%$	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	0.00095	0.00225	-0.00017	-0.00124	0.00107	0.00288	-0.00049
70	-0.00411	0.00073	-0.00034	-0.00074	0.00040	0.00224	-0.00046

$$E.F.L = 0.6440 (\pm 8.9^\circ)$$

$$***1 = 0.5550, ***2 = 0.5547$$



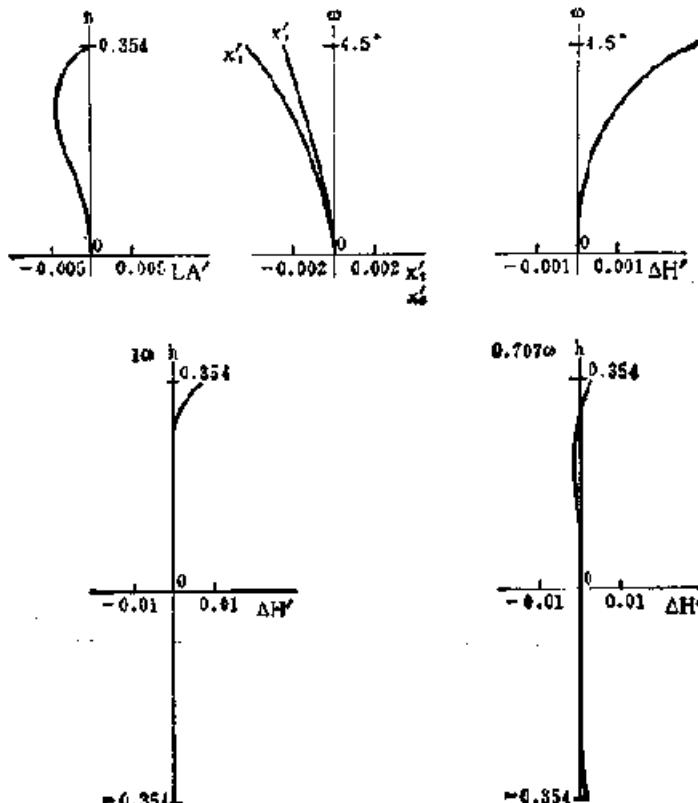
04-03-022-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	-0.002045	-0.000477	-0.000045	-0.000306	0.001528	0.1	3.01%
$h$ 或 $\phi$ %	$LA'$	$\Delta H'$	$x_t$	$x'_t$	$x'_t - x_t$	$K_{T1}$	$K_{T0.7}$
100	-0.00009	0.00300	-0.00450	-0.00253	-0.00197	0.00347	-0.00027
70	-0.00423	0.00100	-0.00213	-0.00131	-0.00082	0.00265	-0.00024

E.F.L = 1.2770 ( $\pm 4.5^\circ$ )

\* \* \* 1 = 0.8100, \* \* \* 2 = 0.0503

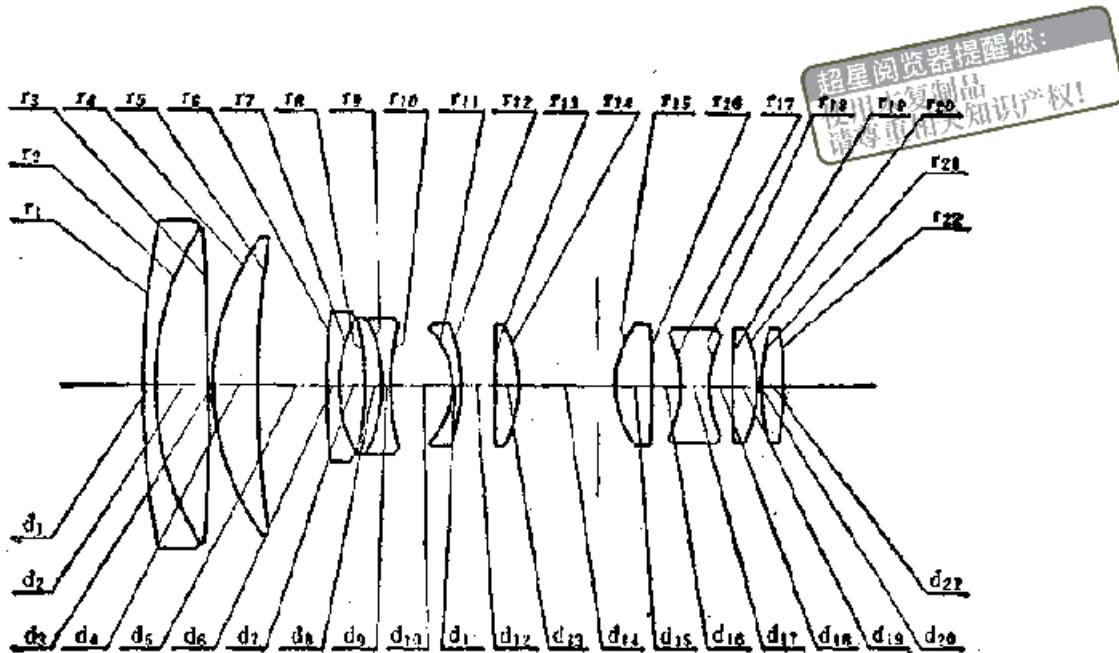
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## 变 焦 距 镜 头

E.F.L=8.0~30.0    B.F.L=7.909    FNo.=2.8    F.A.=±22.3°~±6.7°



序号	r	d	n	v	序号	r	d	n	v
1	76.025	1.14	1.78472	25.7	12	-36.431	* * * 3		
2	27.438	5.02	1.71300	53.9	13	∞	2.19	1.71300	53.9
3	-379.080	0.10			14	-11.905	0.00*		
4	22.850	4.25	1.64000	60.2	15	9.269	3.43	1.74330	49.2
5	115.012	* * * 3			16	-276.780	2.52		
6	115.000	0.86	1.62041	60.3	17	-11.104	2.87	1.78472	25.7
7	12.941	2.32			18	11.104	2.04		
8	-29.426	1.81	1.78472	25.7	19	255.200	2.23	1.62041	60.3
9	-13.148	0.84	1.64000	60.2	20	-12.686	0.10		
10	22.105	* * * 2			21	19.386	2.00	1.62041	60.3
11	-7.446	0.83	1.67270	32.2	22	-32.200			

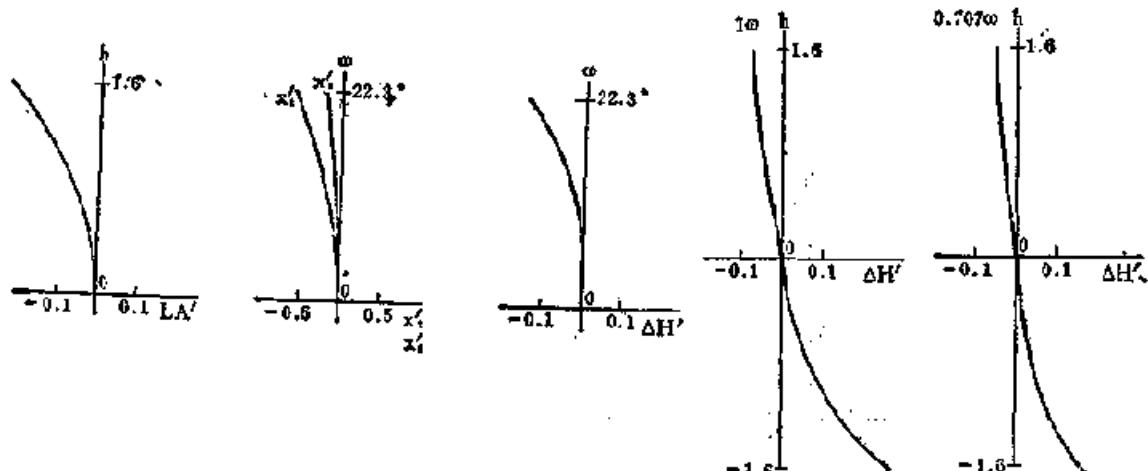
$$0.00^* \approx 6.00 + 3.00$$

04-05-023-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HII	QP(1 φ)
	-0.01582	0.00272	-0.01221	-0.00062	-0.01259	3.7	-3.8%
h 或 φ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	-0.219	-0.143	-0.594	-0.165	-0.428	0.0900	0.0268
70	-0.117	-0.040	-0.300	-0.095	-0.205	0.0569	0.0168

E.F.L = 9.0 ( $\pm 22.3^\circ$ )

\*\*\* 1 = 0.038; \*\*\* 2 = 12.061; \*\*\* 3 = 3.210

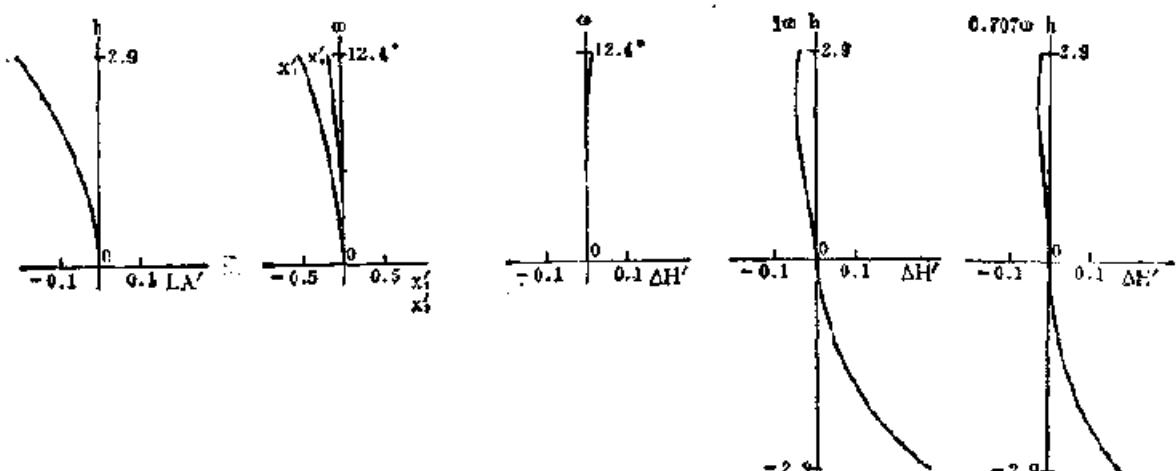


04-05-023-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HII	QP(1 φ)
	-0.01513	0.00820	-0.01417	-0.00065	0.01041	3.6	0.56%
h 或 φ %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	-0.203	0.0200	-0.514	-0.137	-0.377	0.1206	0.0384
70	-0.110	0.0037	-0.253	-0.082	-0.161	0.0774	0.0253

E.F.L = 16.2 ( $\pm 12.4^\circ$ )

\*\*\* 1 = 6.541; \*\*\* 2 = 5.556; \*\*\* 3 = 3.262

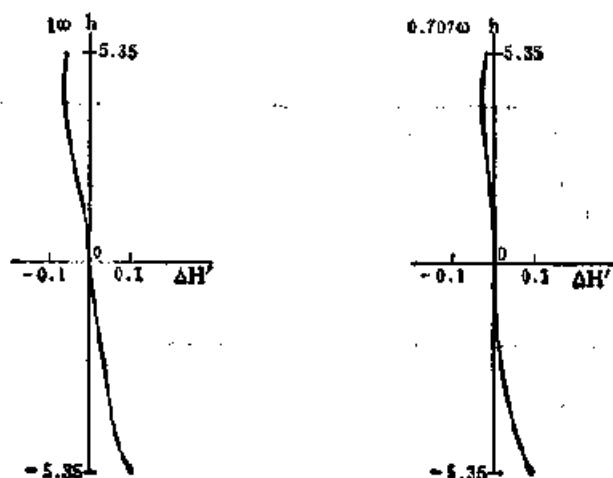
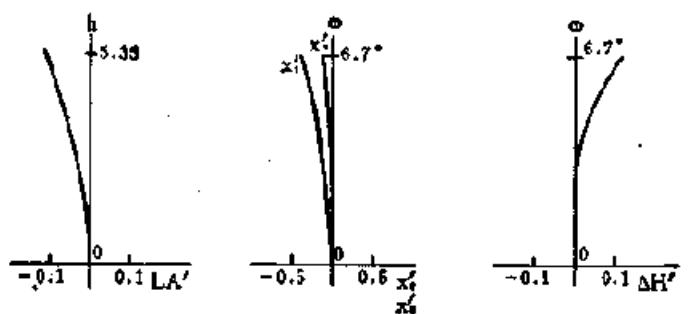


04-03-025-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QF(1 φ)
	-0.00932	0.00105	-0.00851	-0.00085	0.03292	3.5	3.06%
h 或 φ %	LA'	ΔH'	x'_1	x'_4	x'_1 - x'_4	Kf <sub>1</sub>	Kf <sub>0.7</sub>
100	-0.111	0.108	-0.412	-0.107	-0.305	0.02778	-0.00036
70	-0.065	0.033	-0.201	-0.063	-0.138	0.02716	0.00367

E. F. L = 30.0 ( $\pm 6.7^\circ$ )

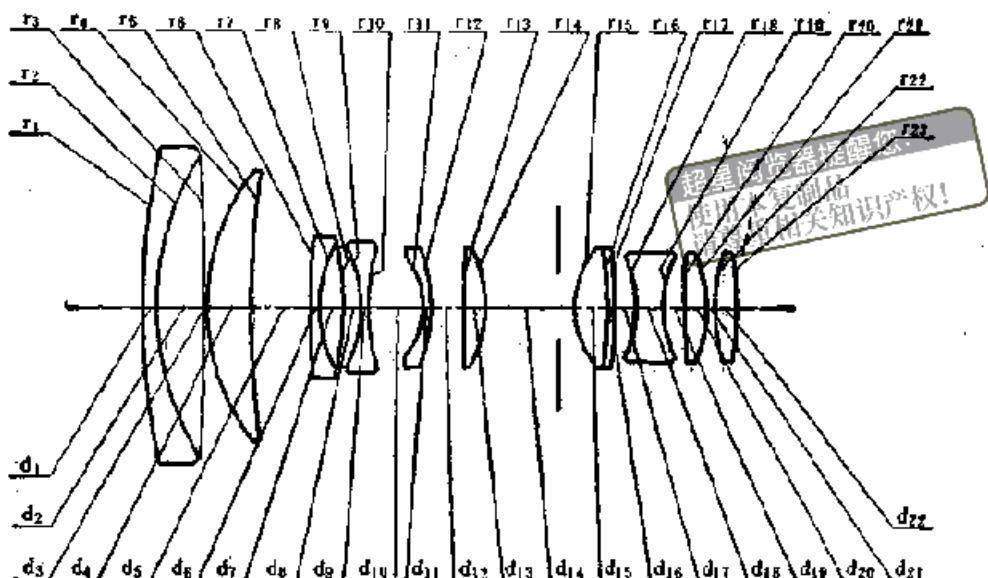
\* \* \* 1 = 11.421, \* \* \* 2 = 2.782, \* \* \* 3 = 1.158



编号: 04-03-024

## 变 焦 距 镜 头

E.F.L=9.0~30.4 B.F.L=9.071 FNo.=3.6 F.A.=±22.3°~±6.7°



序号	r	d	n	v	序号	r	d	n	v
1	76.025	1.14	1.73472	25.7	13	∞	2.10	1.74334	53.0
2	27.436	5.02	1.71300	53.7	14	-12.905	9.00*		
3	-379.060	0.10			15	9.269	3.43	1.74330	49.2
4	22.850	4.25	1.64000	60.2	16	-40.000	0.80	1.74400	44.9
5	115.012	***1			17	-276.780	2.14		
6	115.000	0.66	1.62041	60.3	18	-11.104	2.87	1.73472	25.7
7	12.941	2.32			19	11.104	2.04		
8	-29.426	1.81	1.73472	25.7	20	255.200	2.23	1.62041	60.3
9	-13.148	0.84	1.64000	60.2	21	-12.686	0.60		
10	22.105	***2			22	19.386	2.20	1.62041	60.3
11	-7.446	0.83	1.67270	32.2	23	-31.724			
12	-16.451	***3							

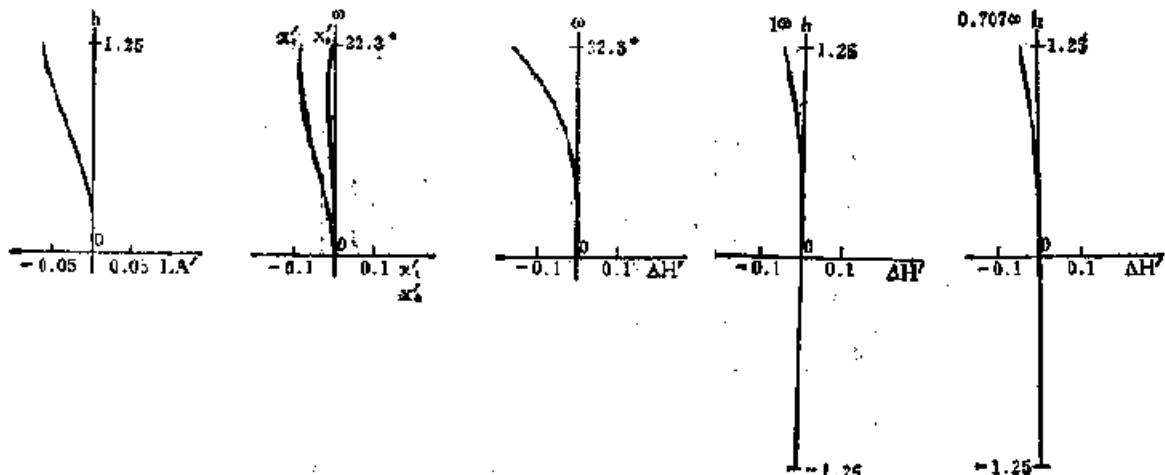
$$9.00^* = 6.00 + 3.00$$

04-03-024-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 φ)
	-0.00360	-0.00344	-0.00209	0.00019	-0.03845	3.7	-4.4%
$h$ 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	-0.067	-0.164	-0.0856	-0.0042	-0.0814	-0.0266	-0.0176
70	-0.041	-0.056	-0.0725	-0.0179	-0.0546	-0.0165	-0.0122

E, F, L = 9.1 ( $\pm 22.3^\circ$ )

\*\*\* 1 = 0.083; \*\*\* 2 = 12.061; \*\*\* 3 = 3.210

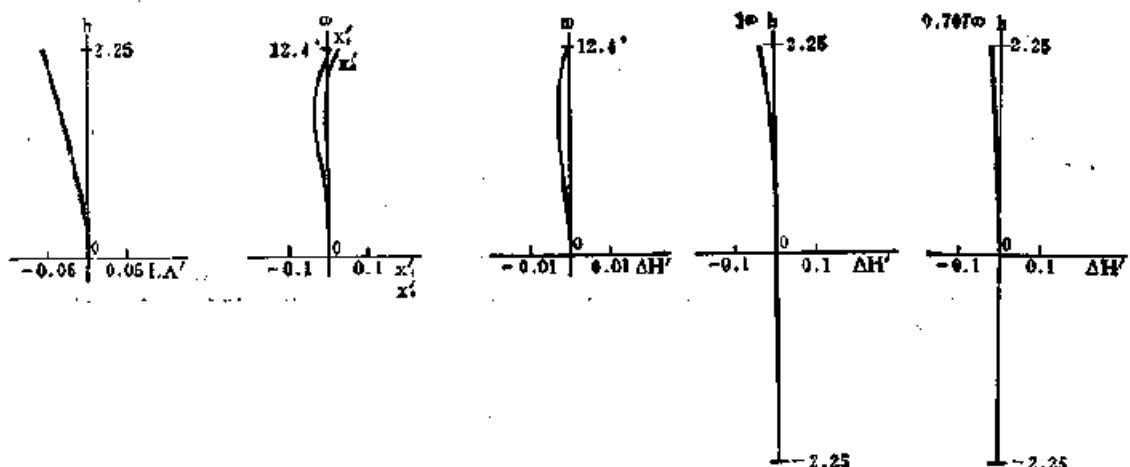


04-03-024-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 φ)
	-0.00319	-0.00152	-0.00052	0.00019	-0.00232	3.6	0.02%
$h$ 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	-0.056	0.0006	0.0040	0.0271	-0.0231	-0.01671	-0.01322
70	-0.035	-0.0025	-0.0338	-0.0046	-0.0292	-0.00933	-0.00815

E, F, L = 16.4 ( $\pm 12.4^\circ$ )

\*\*\* 1 = 6.541; \*\*\* 2 = 5.556; \*\*\* 3 = 3.162

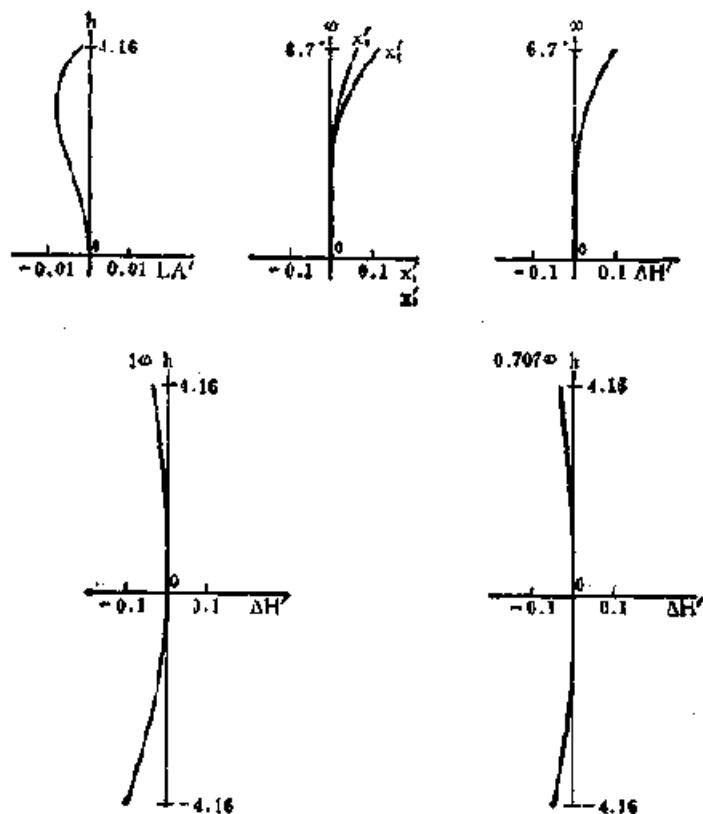


04-03-024-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	$QP(1\omega)$
	-0.00112	-0.00448	0.00125	0.00019	0.01637	3.6	2.5%
h或φ%	LA'	$\Delta P'$	$x_t$	$x_s$	$x_t + x_s$	Kr	KTeJ
100	-0.0017	0.0838	0.1121	0.0593	0.0523	-0.05978	-0.03382
70	-0.0084	0.0275	0.0285	0.0147	0.0138	-0.03500	-0.01975

E.F.L = 30.4 ( $\pm 6.7^\circ$ )

\* \* \* 1 = 11.421, \* \* \* 2 = 2.782, \* \* \* 3 = 1.156

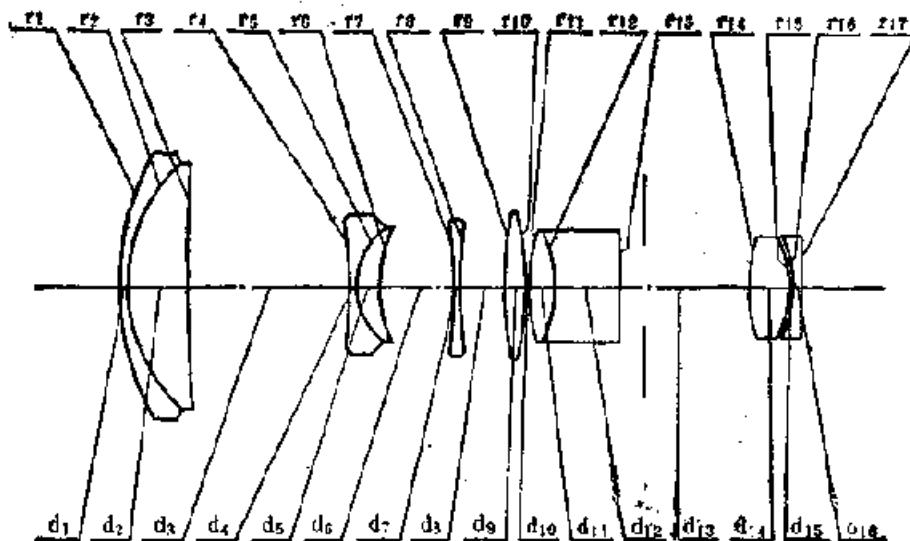


编号：04-03-025

## 变焦距摄影物镜

E.F.L=1.000~4.080 B.F.L=0.830 FNo.=1.8 F.A.= $17.2^{\circ}$  $\sim$  $4.3^{\circ}$

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序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	2.4779	0.080	1.7618	26.5	10	-2.8304	0.010		
2	1.5150	0.545	1.6237	47.0	11	1.7254	0.250	1.5725	57.5
3	26.3760	* * * 1			12	-1.1404	0.600	1.7174	29.5
4	-4.0140	0.050	1.6968	55.6	13	$\infty$	1.200*		
5	0.6440	0.218	1.8061	40.7	14	1.3680	0.370	1.6074	56.7
6	1.2215	* * * 2			15	$\sim$ 1.0500	0.010		
7	-6.4220	0.080	1.6385	55.5	16	-0.9880	0.090	1.5927	35.4
8	6.4220	* * * 3			17	-50.8400			
9	3.2970	0.200	1.6433	47.8					

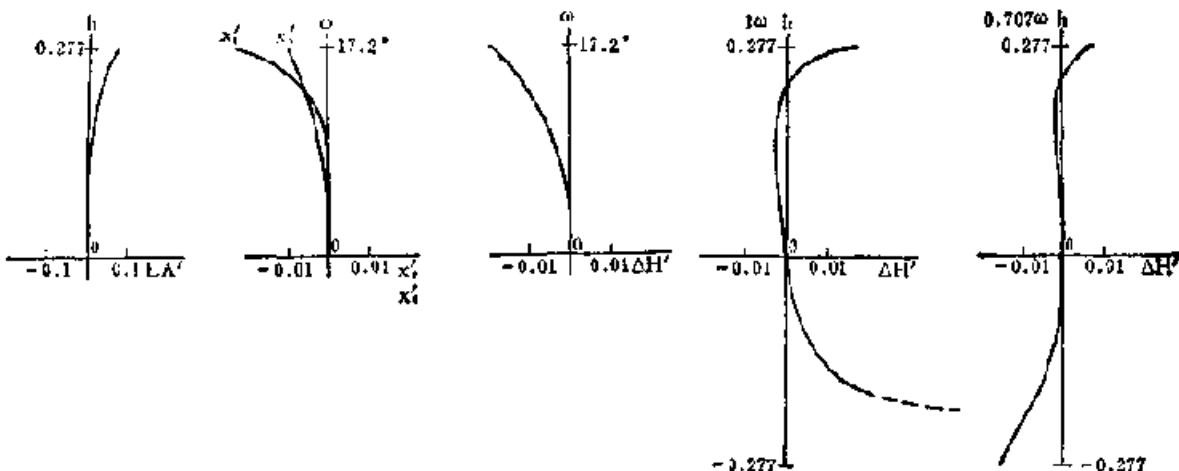
$1.200^* \approx 0.100 + 1.100$

04-03-025-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	0.00355	-0.00273	0.00021	-0.00187	-0.01076	0.31	-6.1%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_1$	$x_e$	$x'_1 - x_e$	$K_{T1}$	$K_{T0.7}$
100	0.0669	-0.0192	-0.0281	-0.0099	-0.0132	-0.5443	0.0136
70	0.0201	-0.0071	-0.0017	-0.0037	0.0020	-0.0040	-0.0045

E. F. L = 1.015 ( $\pm 17.2^\circ$ )

\*\*\* 1 = 0.01561, \*\*\* 2 = 2.49315, \*\*\* 3 = 0.08000

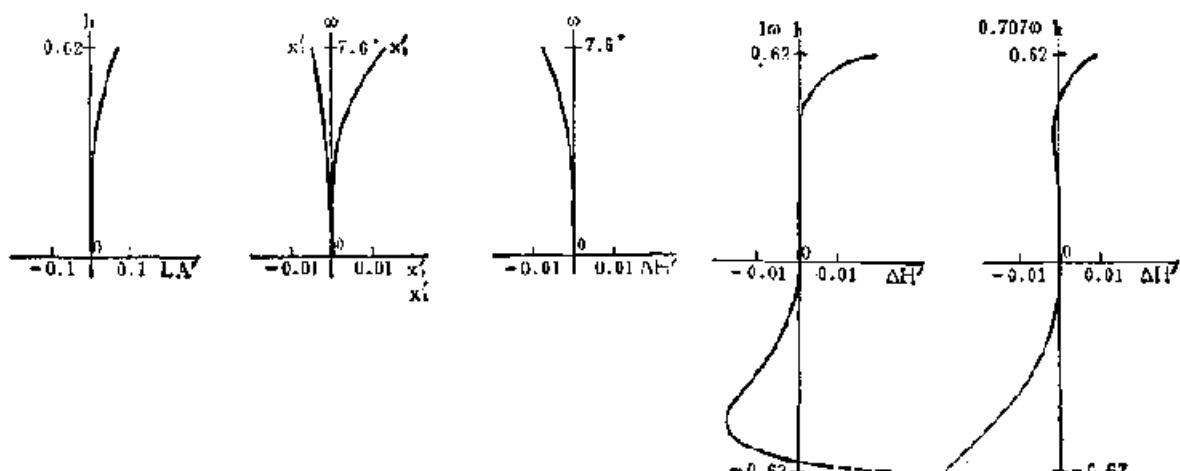


04-03-025-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	0.00545	-0.00324	0.00080	-0.00191	-0.00375	0.31	-2.4%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_1$	$x_e$	$x'_1 - x_e$	$K_{T1}$	$K_{T0.7}$
100	0.0701	-0.0075	0.0129	-0.0048	0.0177	0.0417	-0.0084
70	0.0248	-0.0025	0.0042	-0.0030	0.0072	-0.0035	-0.0071

E. F. L = 2.278 ( $\pm 7.6^\circ$ )

\*\*\* 1 = 1.515610, \*\*\* 2 = 0.680222, \*\*\* 3 = 0.392930

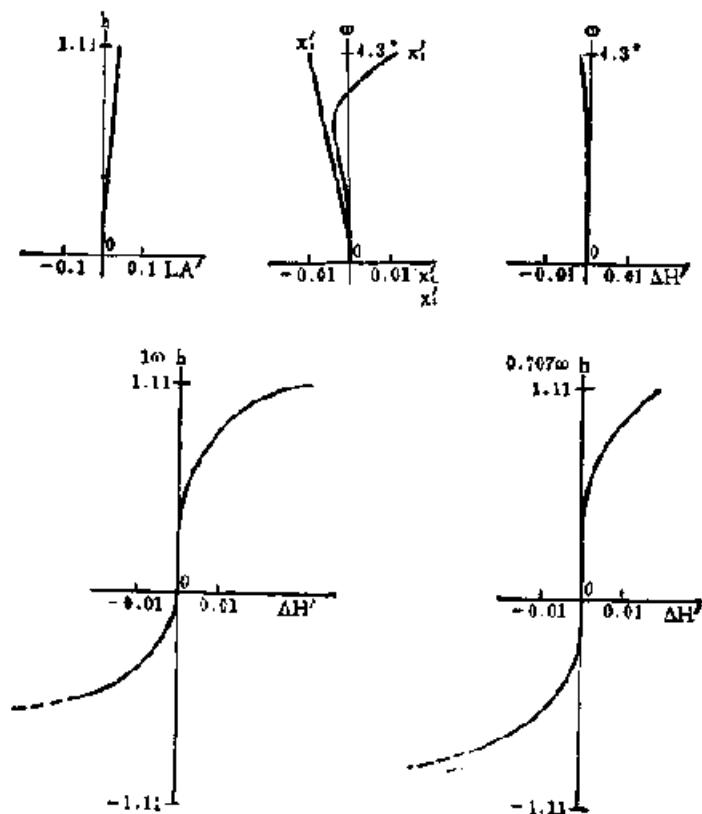


04-03-025-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	0.00684	0.00033	-0.00047	-0.00193	-0.00062	0.31	-0.78%
$h$ 或 $\omega$ %	$LA'$	$\Delta H'$	$x_t'$	$x_s'$	$x_t - x_s$	$K_{t,s}$	$K_{T,B,T}$
100	0.0368	-0.0024	0.0122	-0.0094	0.0218	-0.6881	-0.0328
70	0.0247	-0.0006	-0.0036	-0.0066	0.0039	-0.4958	-0.0101

$$E.F.L = 4.060 (\pm 4.3^\circ)$$

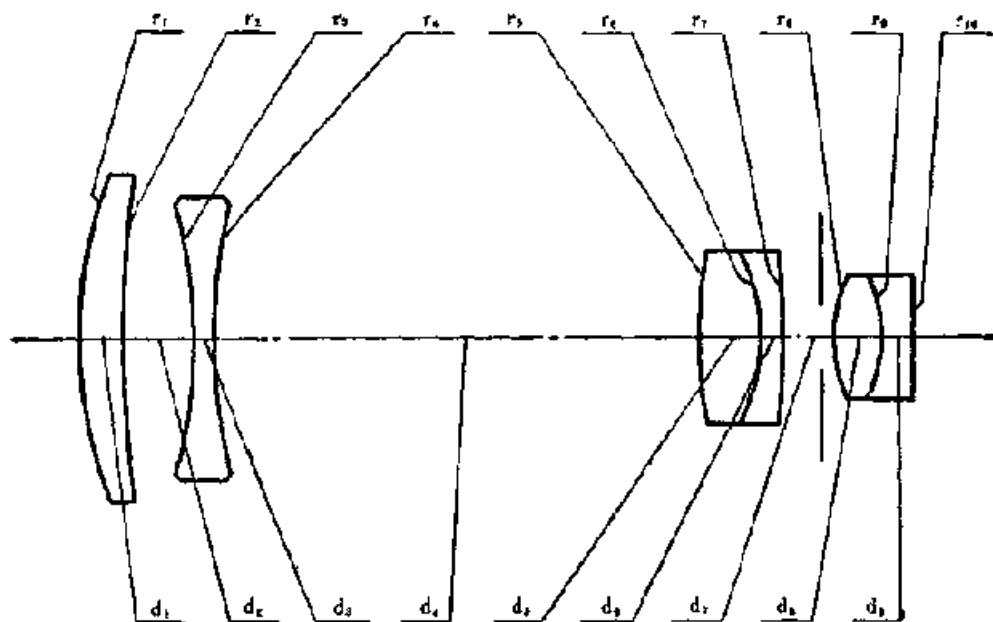
$$***1 = 2.26561, ***2 = 0.24315, ***3 = 0.08000$$



编号：04-03-026

## 可动透镜作线性差动式移动的变焦距镜头

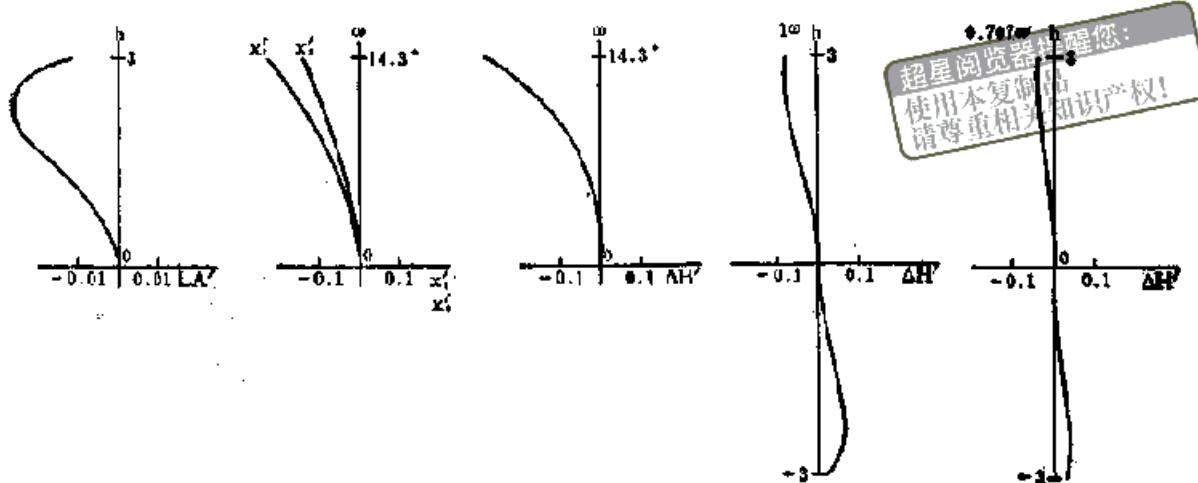
E.F. L=12.00~32.30 B.F. L=12.0 FNo. = 2 F.A. = ±14.8° ~ ±5.4°



序号	r	d	n <sub>D</sub>	v <sub>D</sub>	序号	r	d	n <sub>D</sub>	v <sub>D</sub>
1	35.650	3.840	1.620	60.3	6	-14.489	1.840	1.617	36.6
2	92.945	***1			7	-81.667	***3*		
3	-39.960	1.840	1.620	60.3	8	11.420	3.840	1.617	54.9
4	45.784	***2			9	-11.420	2.780	1.720	29.3
6	38.768	5.070	1.617	54.9	10	∞			

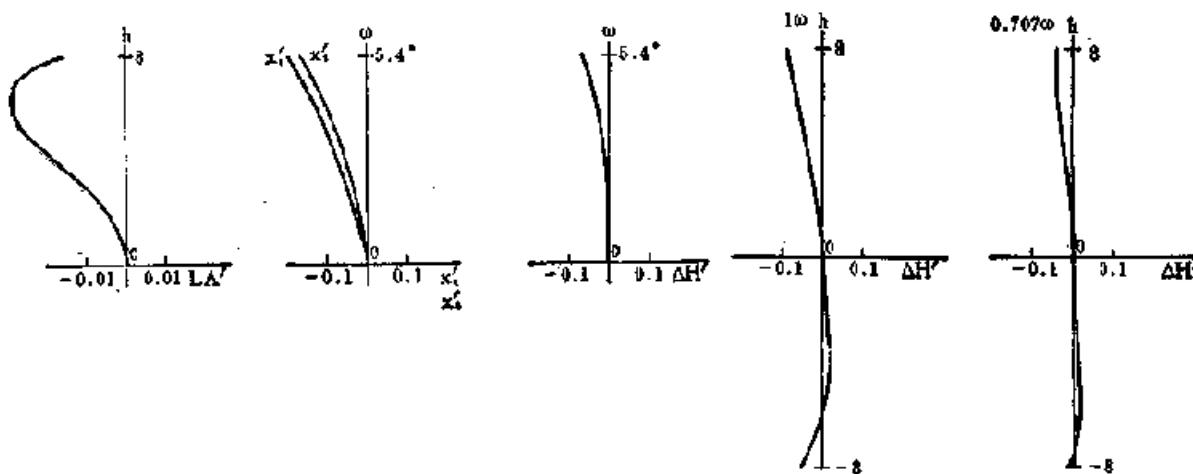
04-03-026-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HII	QP(1 $\omega$ )
	-0.01021	-0.00318	-0.00492	-0.01840	-0.16168	3.1	-0.4%
b 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t - x_s'$	$K_{T1}$	$K_{T0.1}$
100	-0.0106	-0.2897	-0.2295	-0.1415	-0.0880	-0.0255	-0.0023
70	-0.0257	-0.1060	-0.1193	-0.0802	-0.0391	-0.0071	-0.0003

E. F. L = 12.00 ( $\pm 14.3^\circ$ ) $* * * 1 = 5.620; * * * 2 = 40.530; * * * 3 = 5.730; * * * 3' = 5.730 = 4.270 + 1.460$ 

04-03-026-2

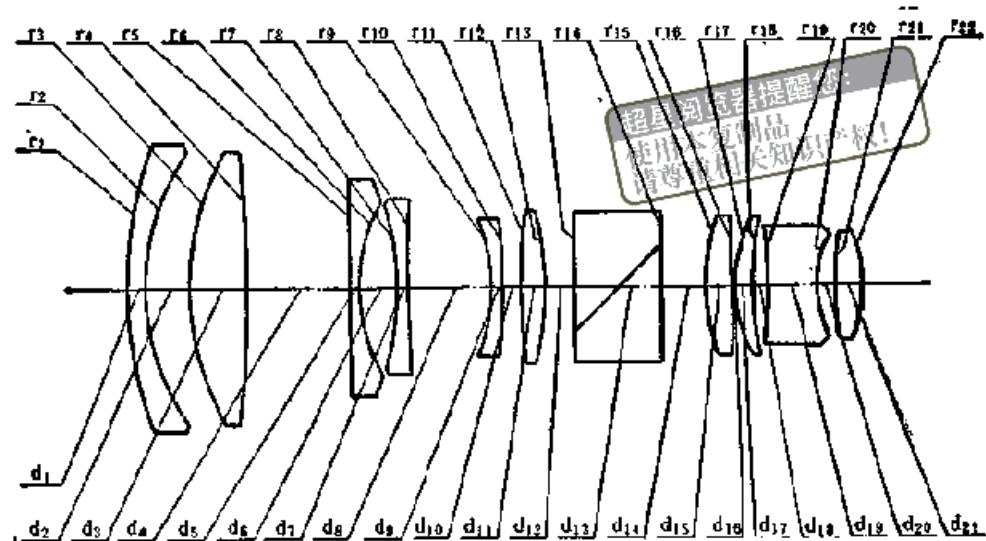
	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HII	QP(1 $\omega$ )
	-0.01019	0.00048	-0.00506	-0.01883	-0.03405	3.04	-2.3%
b 或 $\omega$ %	LA'	$\Delta H'$	$x_t$	$x_s$	$x_t - x_s$	$K_{T1}$	$K_{T0.1}$
100	-0.0155	-0.0708	-0.1977	-0.1665	-0.0312	-0.0668	-0.0226
70	-0.0278	-0.0243	-0.1180	-0.0903	-0.0277	-0.0237	-0.0072

E. F. L = 32.30 ( $\pm 6.4^\circ$ ) $* * * 1 = 24.890; * * * 2 = 1.990; * * * 3 = 25.000; * * * 3' = 25.000 = 23.540 + 1.460$ 

编号: 04-03-027

## 大孔径变焦距物镜

E.F.L=10.30~30.00 B.F.L=13.050 FNo.=1.8 F.A.=±19.5°~±6.7°



序号	r	d	n <sub>g</sub>	v <sub>g</sub>	序号	r	d	n <sub>g</sub>	v <sub>g</sub>
1	41.42	1.80	1.7917	25.8	12	-32.91	3.10		
2	24.03	4.50			13	∞	9.00	1.5187	63.9
3	27.05	6.00	1.6808	54.9	14	∞	4.50		
4	-183.60	*** 1			15	22.56	2.55	1.6940	54.4
5	2727.00	1.00	1.4891	70.2	16	-106.20	0.05		
6	16.09	3.70			17	13.29	1.80	1.6940	54.4
7	-29.74	1.00	1.4891	70.2	18	30.04	1.40		
8	279.40	*** 2			19	-36.19	4.90	1.8126	25.2
9	-18.46	1.00	1.4891	70.2	20	10.99	2.25		
10	-70.35	*** 3			21	32.69	2.45	1.7161	53.6
11	60.03	2.40	1.6713	41.6	22	-14.61			

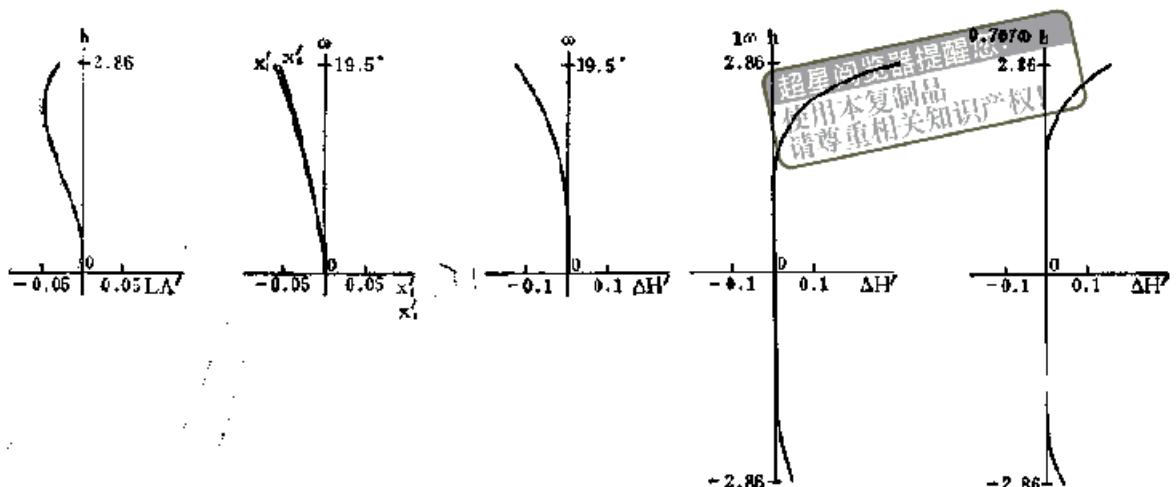
4.50° = 3.60 + 1.50

04-03-027-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HJ	QP(1 $\omega$ )
	-0.01942	-0.01218	-0.00128	-0.01015	-0.06611	3.6	-3.6%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>tr</sub>	K <sub>tr2,7</sub>
100	-0.0271	-0.1321	-0.0615	-0.0616	-0.0029	0.1818	0.0282
70	-0.0458	-0.0453	-0.0353	-0.0334	-0.0029	0.0985	0.0093

E. F. L = 10.30 ( $\pm 19.5^\circ$ )

\*\*\* 1 = 0.15; \*\*\* 2 = 27.05; \*\*\* 3 = 2.10

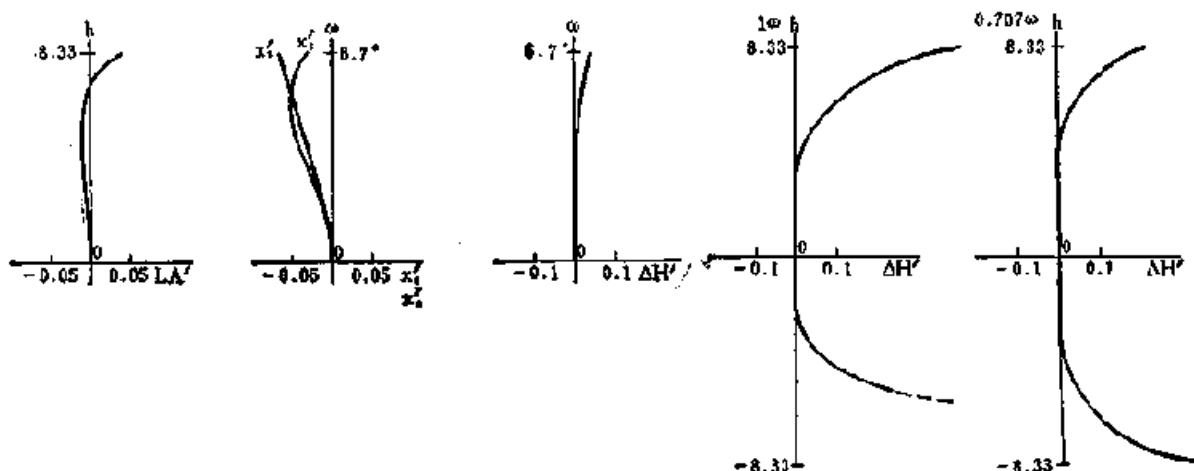


04-03-027-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HJ	QP(1 $\omega$ )
	-0.01168	-0.00577	-0.00144	-0.01046	0.00948	3.5	0.27%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>tr</sub>	K <sub>tr2,7</sub>
100	0.0256	0.0098	0.0257	-0.0490	0.0747	0.2203	0.0346
70	-0.0203	0.0047	-0.0288	-0.0343	0.0055	0.1184	0.0159

E. F. L = 20.00 ( $\pm 10^\circ$ )

\*\*\* 1 = 16.31; \*\*\* 2 = 8.75; \*\*\* 3 = 4.24



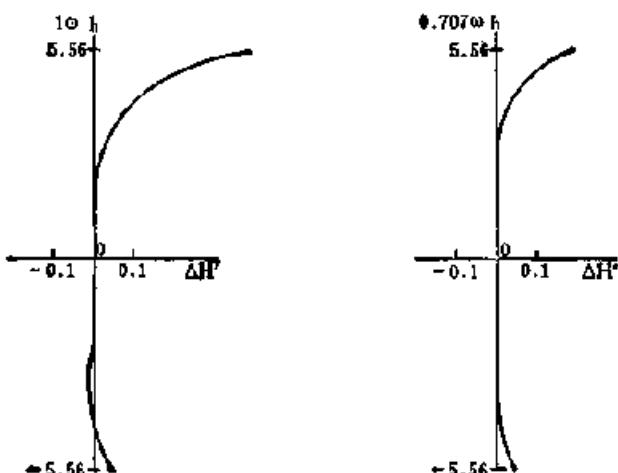
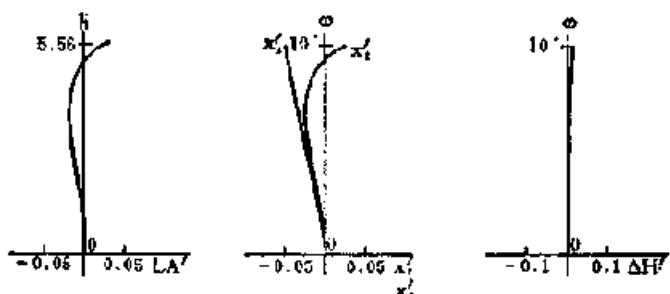
04-03-027-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 w)
	-0.00649	-0.00134	-0.00553	-0.01048	0.02824	3.5	1.2%
h 或 w %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	K <sub>T1</sub>	K <sub>T0.7</sub>
100	0.0402	0.0420	-0.0239	-0.0665	0.0376	10.9150	0.2425
70	-0.0070	0.0163	-0.0503	-0.0431	0.0072	0.2785	0.0411

E. F. L = 30.00 ( $\pm 5.7^\circ$ )

\*\*\* 1 = 23.81; \*\*\* 2 = 2.41; \*\*\* 3 = 2.98

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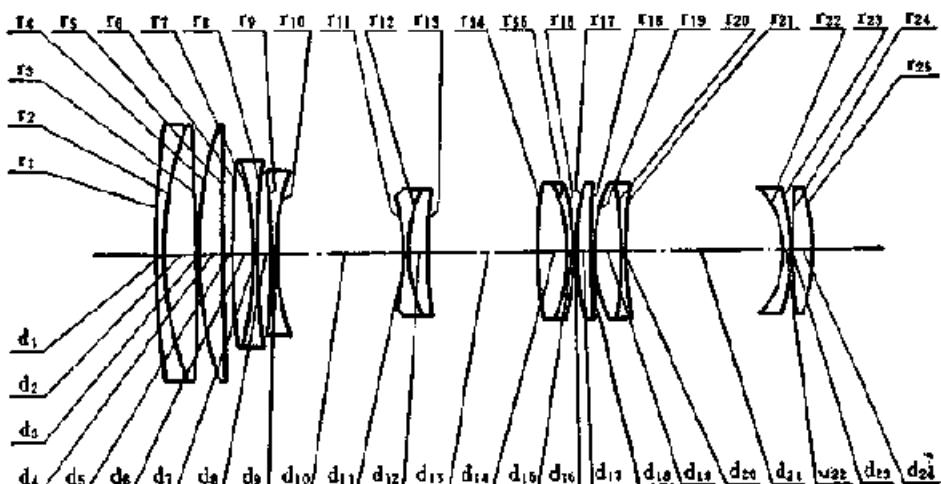


编号：04-03-028

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## 变 焦 距 物 镜

E.F.L=72~203 B.F.L=40.00 FNo.=4 F.A.=±19.1°~±6.8°



序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	268.54	1.900	1.71736	29.5	14	88.43	6.500	1.48749	70.0
2	80.13	6.900	1.58913	61.2	15	-36.55	1.460	1.80518	25.5
3	-410.77	0.300			16	-56.17	0.300		
4	90.60	5.300	1.53009	63.4	17	61.15	3.870	1.48749	70.0
5	3376.49	* * * 1			18	284.27	0.300		
6	222.96	4.700	1.78472	25.7	19	38.35	6.000	1.48749	70.0
7	-81.30	1.300	1.66672	48.4	20	-104.13	1.023	1.64328	47.8
8	154.03	2.700			21	94.73	49.846*		
9	-184.02	1.000	1.66672	48.4	22	-20.19	1.480	1.69700	48.5
10	51.53	* * * 2			23	-53.33	0.267		
11	-47.69	1.000	1.52249	59.6	24	135.84	4.000	1.58921	41.0
12	33.79	4.800	1.02588	35.6	25	-53.64			
13	153.92	* * * 3							

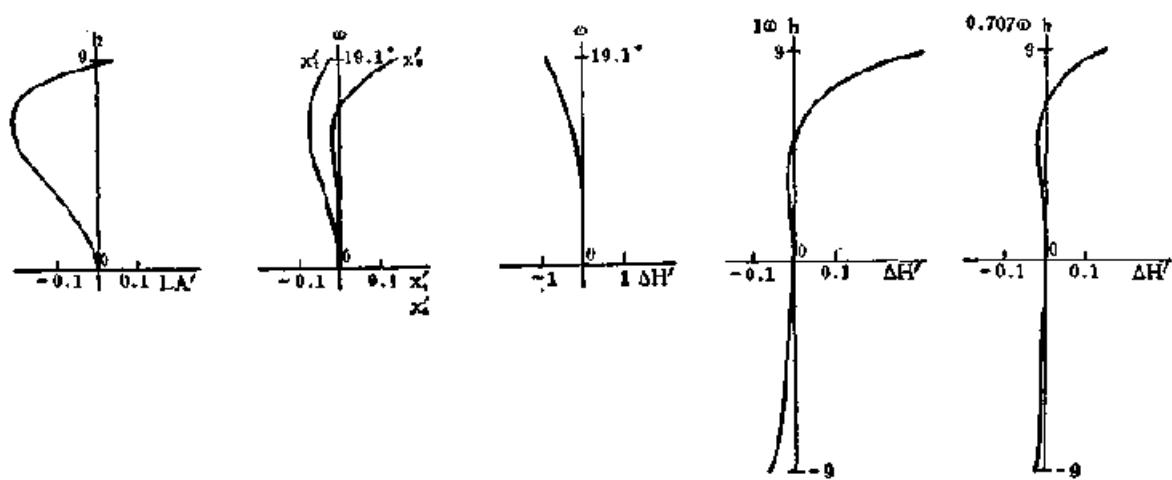
$$49.846^* = 1.000 + 48.846$$

04-03-028-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	使 用 HI	QP (cm)
	-0.0236	-0.0037	-0.0016	-0.0033	-0.1813	24.9	-3.6%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_1$	$x'_4$	$x'_1 - x'_4$	K <sub>f1</sub>	K <sub>f0.7</sub>
100	0.0235	-0.903	-0.0148	0.1421	-0.1569	0.1329	0.0045
70	-0.2000	-0.295	-0.0730	-0.0159	-0.0571	0.0663	-0.0063

E. F. L = 72 ( $\pm 19.1^\circ$ )

\*\*\* 1 = 2.041, \*\*\* 2 = 28.624, \*\*\* 3 = 24.389

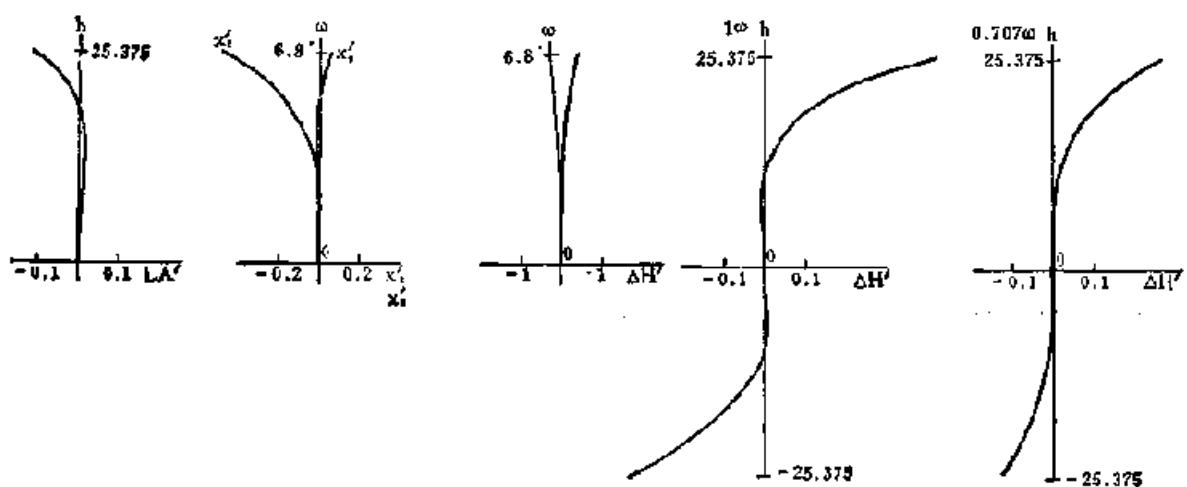


04-03-028-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP (cm)
	0.00316	-0.00218	0.00067	-0.00345	0.18596	24.06	2.98%
h 或 $\omega$ %	LA'	$\Delta H'$	$x'_1$	$x'_4$	$x'_1 - x'_4$	K <sub>f1</sub>	K <sub>f0.7</sub>
100	-0.1237	0.718	-0.524	0.065	-0.589	0.0403	-0.0109
70	0.0056	0.261	-0.113	-0.009	-0.104	0.0615	0.0040

E. F. L = 203 ( $\pm 5.8^\circ$ )

\*\*\* 1 = 47.565, \*\*\* 2 = 6.000, \*\*\* 3 = 1.500

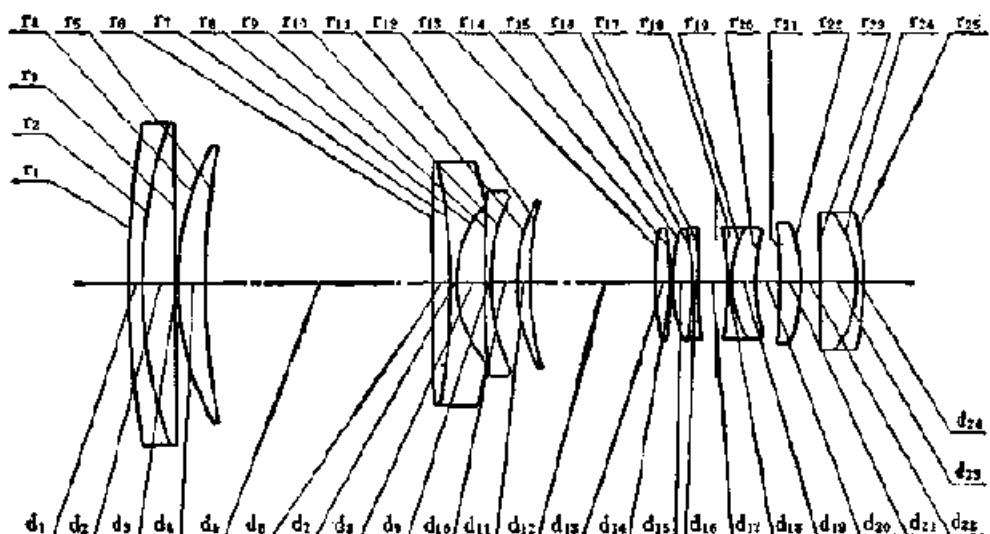


编号: 04-03-029

# 广角变焦距物镜

E.F.L=35.99~100.00 B.F.L=48.482 FNo.=2.8 F.A.=±15.9°\*\*~±6.3°\*\*

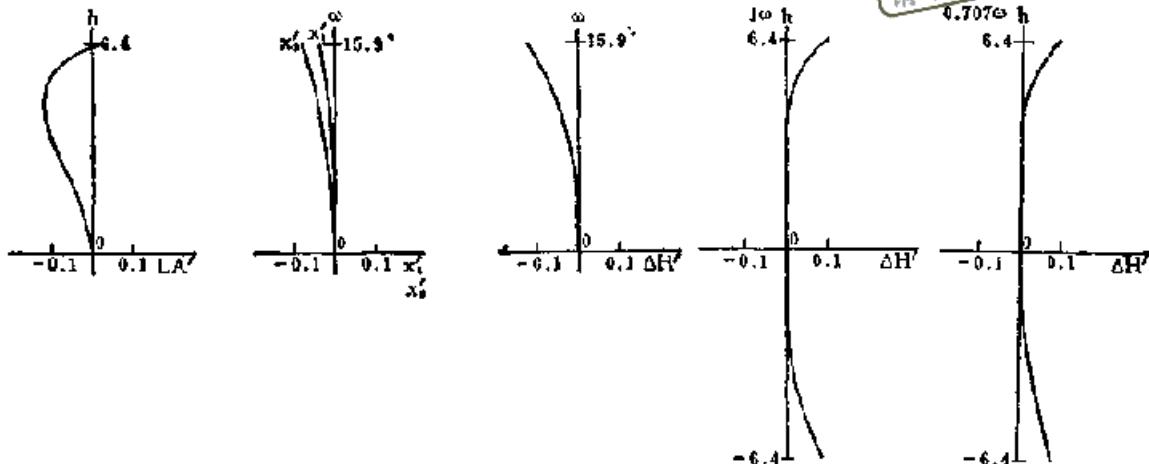
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序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	266.000	2.8	1.80518	25.5	14	-86.500	0.1		
2	104.500	7.4	1.64000	60.2	15	41.610	5.0	1.64000	60.2
3	∞	0.1			16	-54.000	0.9	1.80518	25.5
4	64.250	6.5	1.62041	60.3	17	876.482	* * * 3		
5	191.282	* * * 1			18	-64.080	1.0	1.69680	55.6
6	501.010	3.7	1.80518	25.5	19	24.080	5.8	1.71736	29.5
7	-144.785	1.5	1.67003	47.2	20	38.585	5.0		
8	26.326	6.8			21	-122.500	5.0	1.80610	41.0
9	470.070	1.5	1.62041	60.3	22	-38.250	4.2		
10	46.610	5.5			23	∞	8.0	1.75500	52.4
11	39.703	3.0	1.80518	25.5	24	-23.770	1.5	1.75520	27.5
12	69.777	* * * 2			25	-83.107			
13	70.000	3.0	1.62041	60.3					

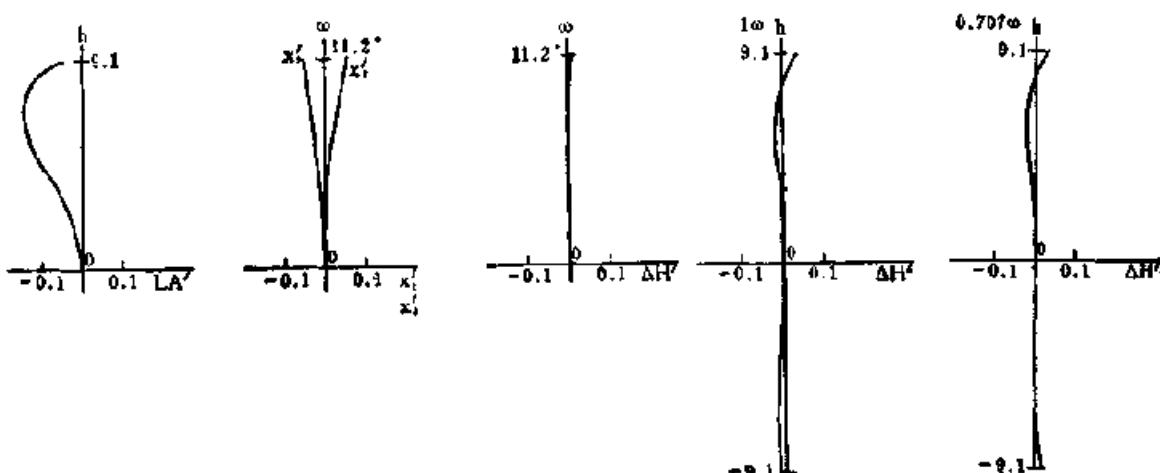
04 03 029-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.02851	0.00290	0.00188	-0.00763	-0.04227	10.2	-1.2%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	0.0216	-0.1225	-0.0353	-0.0803	0.0450	0.0977	0.0221
70	-0.1259	-0.0435	-0.0153	-0.0431	0.0278	0.0836	0.0207

E.F.L = 35.99 ( $\pm 15.9^\circ$ ) $* * * 1 = 2.246; * * * 2 = 45.122; * * * 3 = 4.194; * * * 3' = 4.194 + 1.000$ 

04-03-029-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP(1 $\omega$ )
	-0.02870	-0.00627	0.00408	-0.00774	0.00148	10.1	0.03%
h 或 $\omega$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	-0.0494	0.0084	0.0600	-0.0483	0.1088	0.01513	-0.01748
70	-0.1422	0.0022	0.0295	-0.0281	0.0576	0.02013	-0.00900

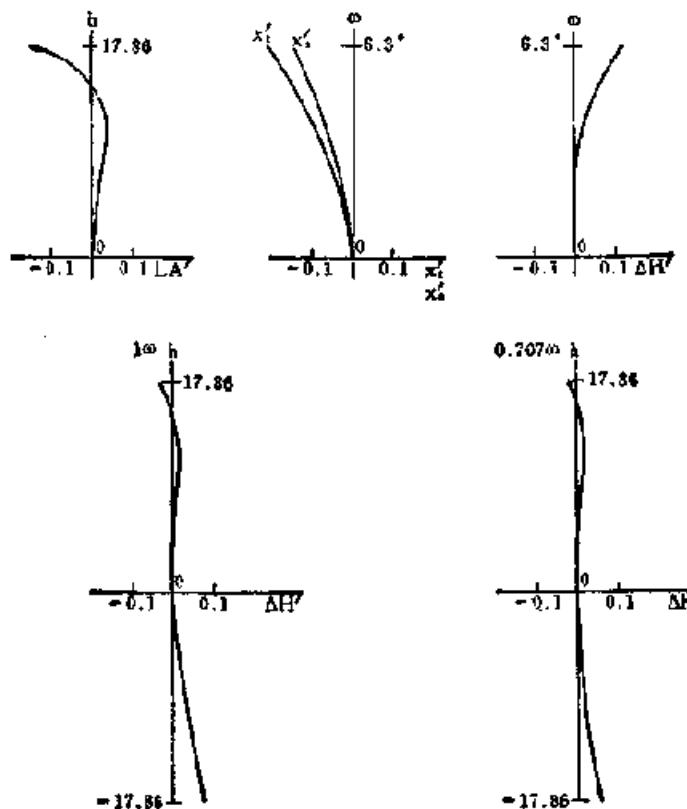
E.F.L = 50.99 ( $\pm 11.2^\circ$ ) $* * * 1 = 16.246; * * * 2 = 28.854; * * * 3 = 6.462; * * * 3' = 6.462 + 1.000$ 

04-03-029-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	H	QP (1ω)
	0.00971	0.01082	- 0.00182	- 0.00957	0.04095	11.0	1.1%
h 或 ω %	LA'	$\Delta H'$	$x'_t$	$x'_s$	$x'_t - x'_s$	K <sub>T0,T</sub>	
100	- 0.1480	0.1208	- 0.2120	- 0.1524	- 0.0596	0.02656	0.03275
70	0.0301	0.0416	- 0.1091	- 0.0822	- 0.0269	0.02174	0.02455

E. F. L = 100.00 ( $\pm 6.3^\circ$ )

\* \* \* 1 = 42.246; \* \* \* 2 = 0.903; \* \* \* 3 = 8.413; \* \* \* 3' = 8.413 ± 7.413 ± 1.008

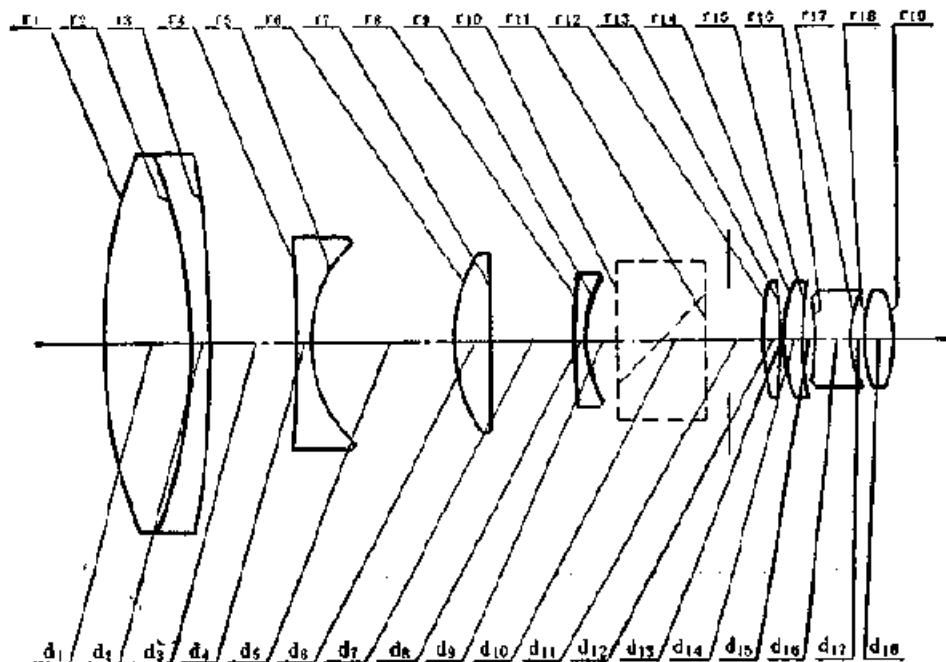


编号: 04-03-030

## 光学补偿式变焦距物镜

E.F.L = 9.50~23.00 B.F.L = 13.76 FNo. = 1.8 F.A. =  $21.1^\circ \pm 8.7^\circ$

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序号	r	d	n	v	序号	r	d	n	v
1	50.91	8.85	1.6204	60.3	11	$\infty$	5.80*		
2	-55.61	1.90	1.8052	25.5	12	22.02	1.92	1.7344	43.8
3	-125.86	* * * 1			13	-57.37	0.04		
4	-327.66	1.50	1.6204	60.3	14	14.49	2.15	1.7440	44.9
5	13.82	* * * 2			15	37.67	1.00		
6	17.38	3.60	1.5785	41.7	16	-27.65	3.90	1.8052	25.5
7	$\infty$	* * * 3			17	9.89	1.30		
8	72.09	1.00	1.6204	60.3	18	15.87	2.85	1.7130	53.9
9	12.44	3.06	1.5168	64.2	19	-13.58			
10	$\infty$	9.00							

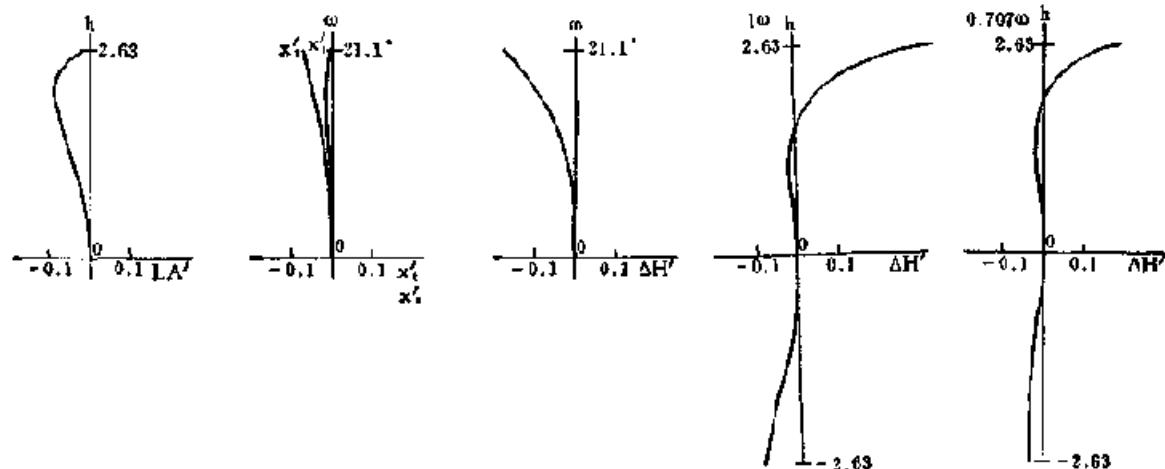
$$5.80'' = 5.00 + 0.80$$

04-05-030-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP (1Ω)
	-0.02944	-0.02356	0.00419	-0.01617	-0.08638	3.7	-4.7%
h 或 Φ%	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	-0.0189	-0.173	-0.0029	-0.0700	0.0671	0.1273	-0.0174
70	-0.0760	-0.061	-0.0108	-0.0395	0.0287	0.0787	-0.0176

E.F.L = 9.52 ( $\pm 21.1^\circ$ )

\*\*\* 1 = 0.41; \*\*\* 2 = 23.10; \*\*\* 3 = 0.40

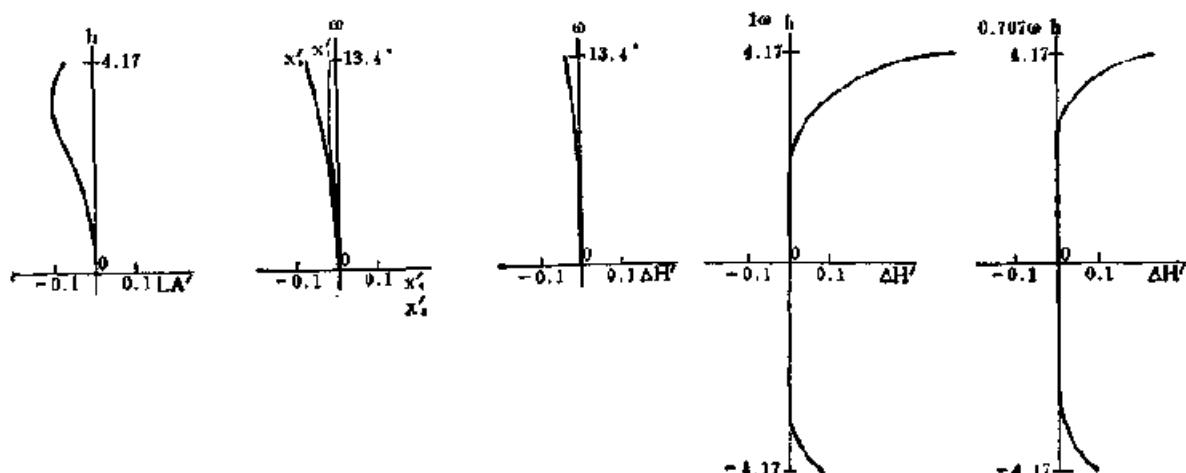


04-03-030-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HI	QP (1Ω)
	-0.03369	-0.00604	0.00320	-0.01678	-0.02263	3.6	-0.9%
h 或 Φ%	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}$	$K_{T0.7}$
100	-0.0555	-0.0321	-0.0148	-0.0713	0.0565	0.2314	0.0253
70	-0.0921	-0.0137	-0.0172	-0.0413	0.0241	0.1622	0.0120

E.F.L = 15.00 ( $\pm 13.4^\circ$ )

\*\*\* 1 = 8.70; \*\*\* 2 = 14.61; \*\*\* 3 = 8.69

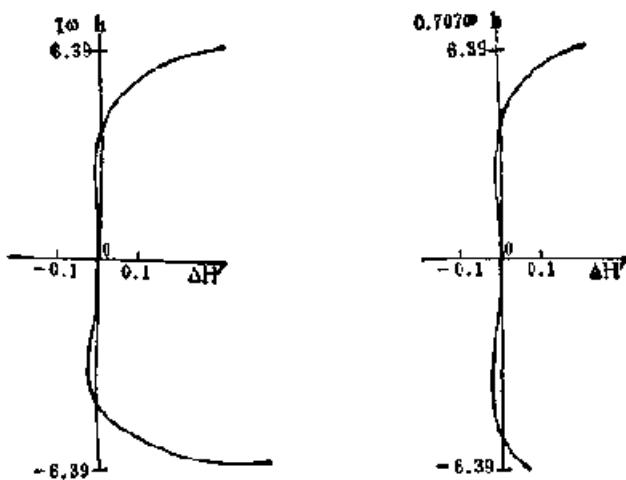
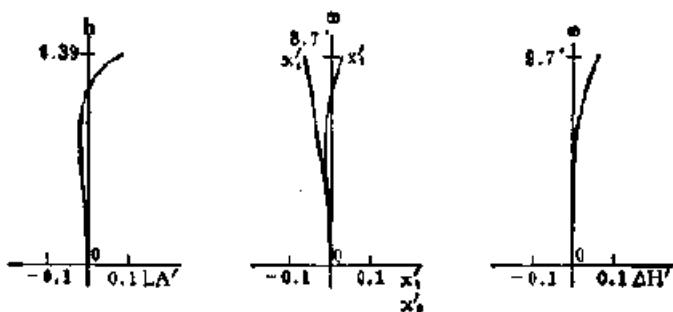


04-03-030-3

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	HL	QP (10)
	-0.01177	-0.03897	0.01275	-0.01691	0.01889	3.5	3.7%
b 或 φ%	LA'	$\Delta H'$	$x_t$	$x_s$	$x_s - x_t$	K <sub>ff</sub> '	K <sub>ff</sub> '
100	0.0840	0.0603	0.0300	-0.0587	0.0837	0.3765	0.0137
70	-0.0217	0.0162	-0.0100	-0.0395	0.0295	0.1455	-0.0050

E.F.L = 23.00 ( $\pm 8.7^\circ$ )

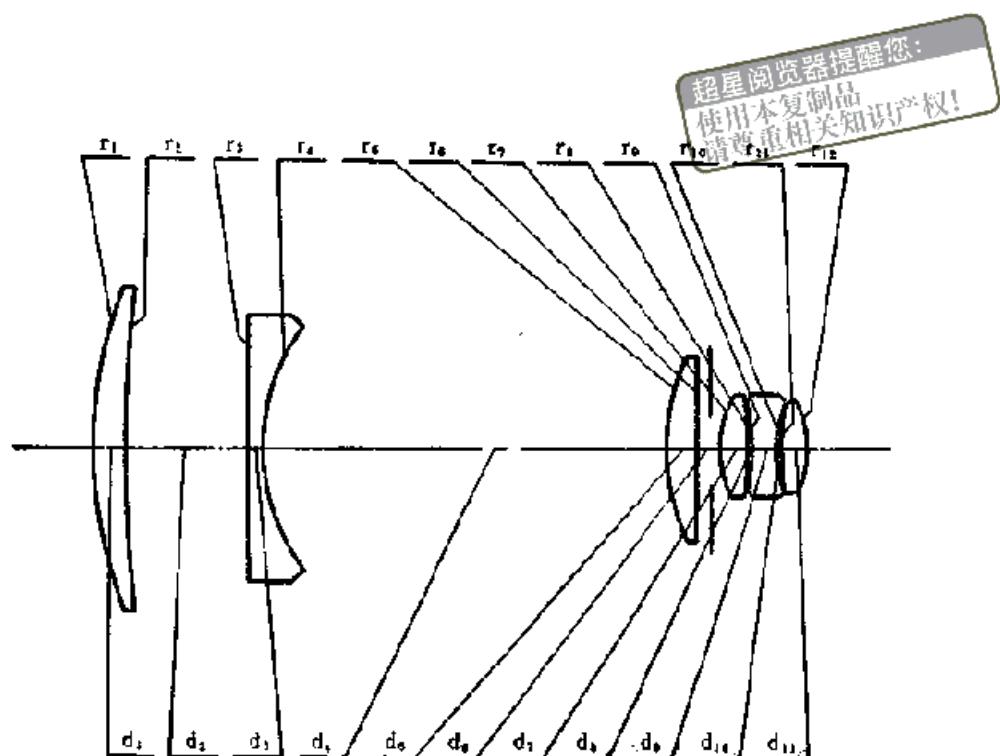
\* \* \* 1 = 16.00; \* \* \* 2 = 7.51; \* \* \* 3 = 15.99



编号: 04-03-031

## 可动透镜作线性差动式移动的变焦距镜头

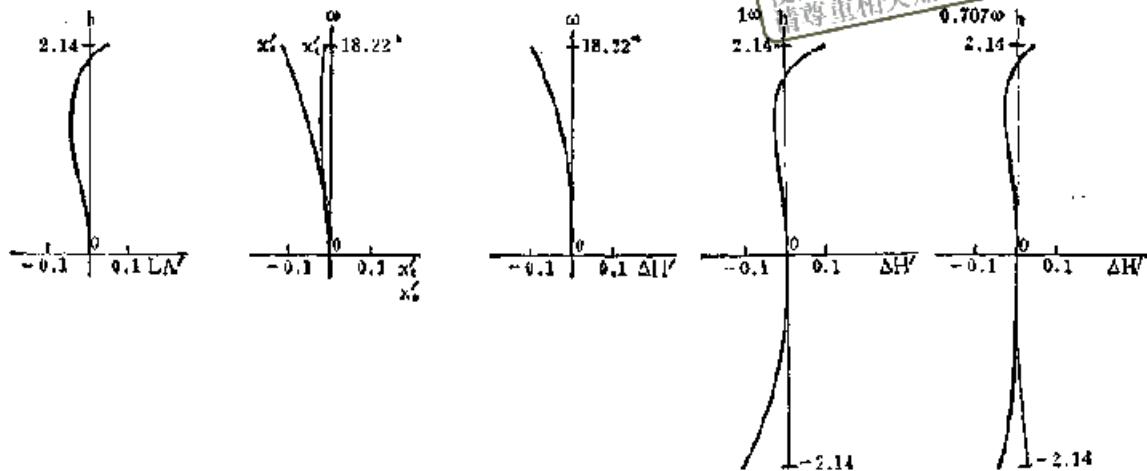
E.F.L=9.43~25.36 F.No.=2.2 F.A.=±18.22°~±6.7°



序号	r	d	n <sub>D</sub>	v <sub>D</sub>	序号	r	d	n <sub>D</sub>	v <sub>D</sub>
1	31.900	2.500	1.613	58.8	7	7.913	2.000	1.611	58.8
2	140.318	* * * 1			8	-31.592	0.230		
3	∞	1.000	1.605	43.6	9	-11.219	2.000	1.649	33.8
4	15.212	* * * 2			10	7.985	0.361		
5	19.559	2.000	1.611	58.8	11	31.592	2.000	1.611	58.8
6	∞	* * * 3			12	-7.913			

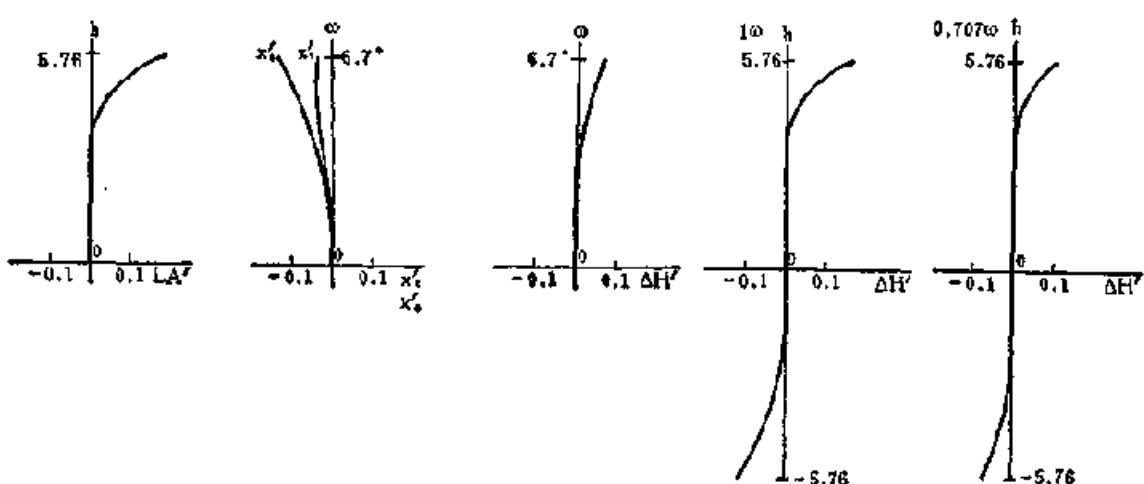
04-03-031-1

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP (1 $\omega$ )
	-0.01731	-0.01522	0.00298	-0.01760	-0.04010	3.1	-3.2%
h 或 $\phi$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	0.0500	-0.0085	-0.0154	-0.1219	0.1065	-0.0060	-0.0322
70	-0.0448	-0.0337	-0.0203	-0.0653	0.0450	-0.0156	-0.0253

E. F. L = 9.43 ( $\pm 18.22^\circ$ ) $* * * 1 = 4.677; * * * 2 = 31.334; * * * 3 = 2.660; * * * 3^* = 2.660 = 1.844 + 1.016$ 超星阅读器提醒您：  
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04-03-031-2

	$\Sigma S_1$	$\Sigma S_2$	$\Sigma S_3$	$\Sigma S_4$	$\Sigma S_5$	Hf	QP (1 $\omega$ )
	-0.00422	-0.00832	0.00344	-0.01807	0.02354	3	1.87%
h 或 $\phi$ %	LA'	$\Delta H'$	$x_t'$	$x_s'$	$x_t' - x_s'$	$K_{T1}'$	$K_{T0.7}'$
100	0.1798	0.0562	-0.0370	-0.1358	0.0988	0.02757	-0.0116
70	0.0193	0.0101	-0.0317	-0.0706	0.0388	0.00980	-0.0109

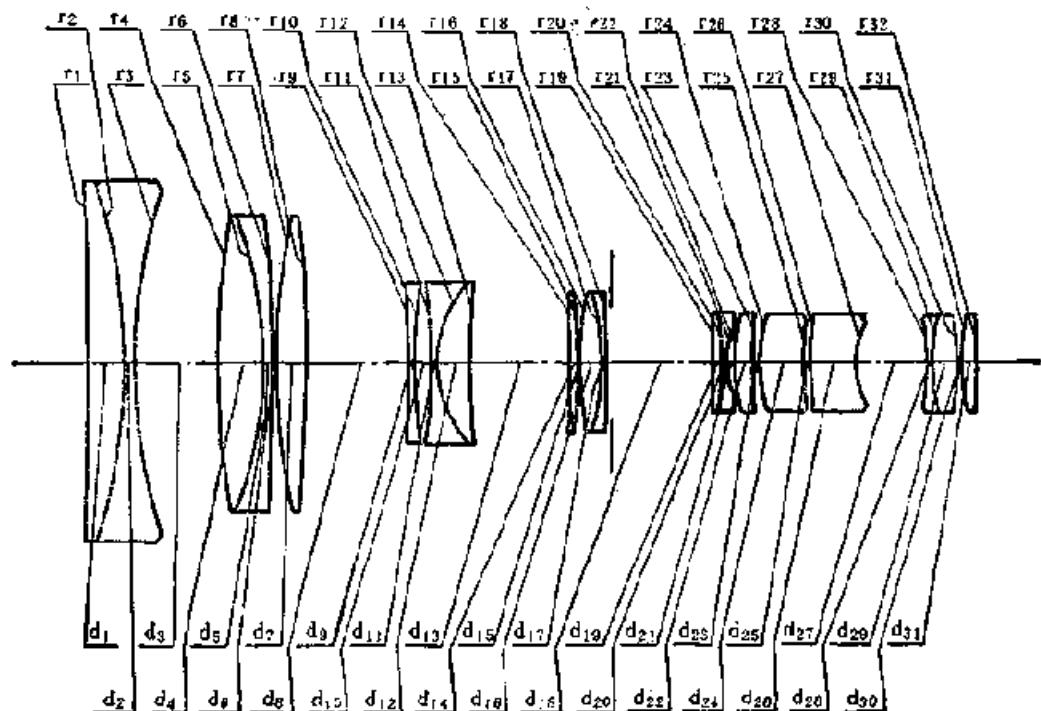
E. F. L = 25.36 ( $\pm 6.7^\circ$ ) $* * * 1 = 18.868; * * * 2 = 2.952; * * * 3 = 18.851; * * * 3^* = 15.851 = 15.835 + 1.016$ 

编号: 04-03-032

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# 大倍率变焦距镜头

**E.F.L = 60.0 ~ 400.0    B.F.L =    FNo. = 14    F.A. = ± 20° ~ ± 3.5°**



序号	r	d	n	v	序号	r	d	n	v
1	-1000.000	14.00	1.6645	25.9	17	-92.227	2.40	1.6398	34.6
2	-181.600	4.00	1.6228	56.9	18	∞	* * * 4		
3	205.700	* * * 1			19	-778.900	3.20	1.6398	34.6
4	405.000	16.00	1.6204	60.3	20	-105.000	1.60	1.6385	55.5
5	148.240	3.00	1.6680	31.1	21	23.945	2.00		
6	-1000.000	0.10			22	86.700	8.40	1.62084	60.3
7	207.300	12.00	1.6204	60.4	23	135.000	0.30		
8	-683.600	* * * 2			24	55.236	17.25	1.56377	60.9
9	-1000.600	2.50	1.6172	54.0	25	111.075	3.40		
10	191.500	5.00			26	214.500	17.65	1.67266	32.0
11	-250.000	2.50	1.6125	58.6	27	34.580	26.25		
12	44.800	12.50	1.6126	57.0	28	-47.300	0.90	1.57808	41.6
13	331.400	* * * 3			29	55.500	11.55	1.63867	53.3
14	∞	3.50	1.6204	60.3	30	-55.500	0.30		
15	-229.400	0.10			31	109.500	4.50	1.61193	37.1
16	203.000	7.50	1.6204	60.3	32	-493.500			

(1) E.F.L = 60.0

$$* * * 1 = 104.32; * * * 2 = 5.96; * * * 3 = 207.06; * * * 4 = 20.98$$

(2) E.F.L = 150.0

$$* * * 1 = 60.65; * * * 2 = 104.55; * * * 3 = 108.47; * * * 4 = 64.25$$

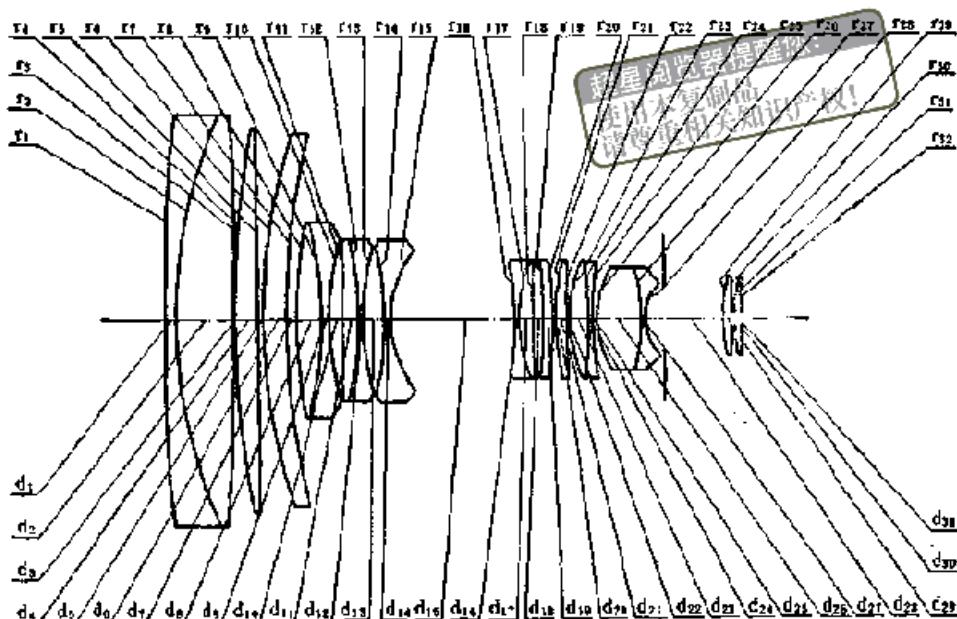
(3) E.F.L = 400.0

$$* * * 1 = 14.66; * * * 2 = 216.62; * * * 3 = 2.40; * * * 4 = 110.44$$

编号: 04-03-033

## 小型的大倍率变焦距镜头

E.F.L=6.5~75.0    B.F.L=9.2330    FNo. = 1.8    F.A. = ±24° ~ ±2.4°



序号	r	d	n <sub>D</sub>	v <sub>D</sub>	序号	r	d	n <sub>D</sub>	v <sub>D</sub>
1	356.9900	1.20	1.7552	27.5	17	18.8900	1.80	1.53258	43.0
2	61.6600	6.70	1.713	53.9	18	-2436.8800	* * * 3		
3	-602.2800	0.10			19	-411.2400	1.30	1.83481	42.9
4	152.4500	3.00	1.62041	60.3	20	-38.3300	0.10		
5	∞	0.10			21	38.3300	1.40	1.883	47.0
6	66.5400	3.40	1.62041	60.3	22	450.3700	0.10		
7	178.9310	* * * 1			23	17.2100	2.50	1.58313	59.3
8	92.9800	2.90	1.80518	25.5	24	-54.5700	0.60	1.78472	23.7
9	-46.0700	0.60	1.78695	50.0	25	41.0900	0.10		
10	30.0000	1.70			26	10.4000	5.65	1.6393	45.0
11	∞	2.00	1.80518	25.5	27	-25.0500	0.50	1.69695	30.0
12	-43.8000	0.60	1.78695	50.0	28	6.9100	9.60		
13	36.7300	2.50			29	20.8900	1.00	1.62041	60.3
14	-36.7300	0.60	1.62041	60.3	30	-99.0200	0.10		
15	14.2833	* * * 2			31	23.9400	1.00	1.62041	60.3
16	-24.4800	0.60	1.51633	64.1	32	∞			

(1) E.F.L=6.5

\* \* \* 1 = 1.152; \* \* \* 2 = 51.597; \* \* \* 3 = 1.000

(2) E.F.L=30.0

\* \* \* 1 = 38.364; \* \* \* 2 = 7.091; \* \* \* 3 = 8.294

(3) E.F.L=75.0

\* \* \* 1 = 49.553; \* \* \* 2 = 3.196; \* \* \* 3 = 1.000

编号: 04-03-034

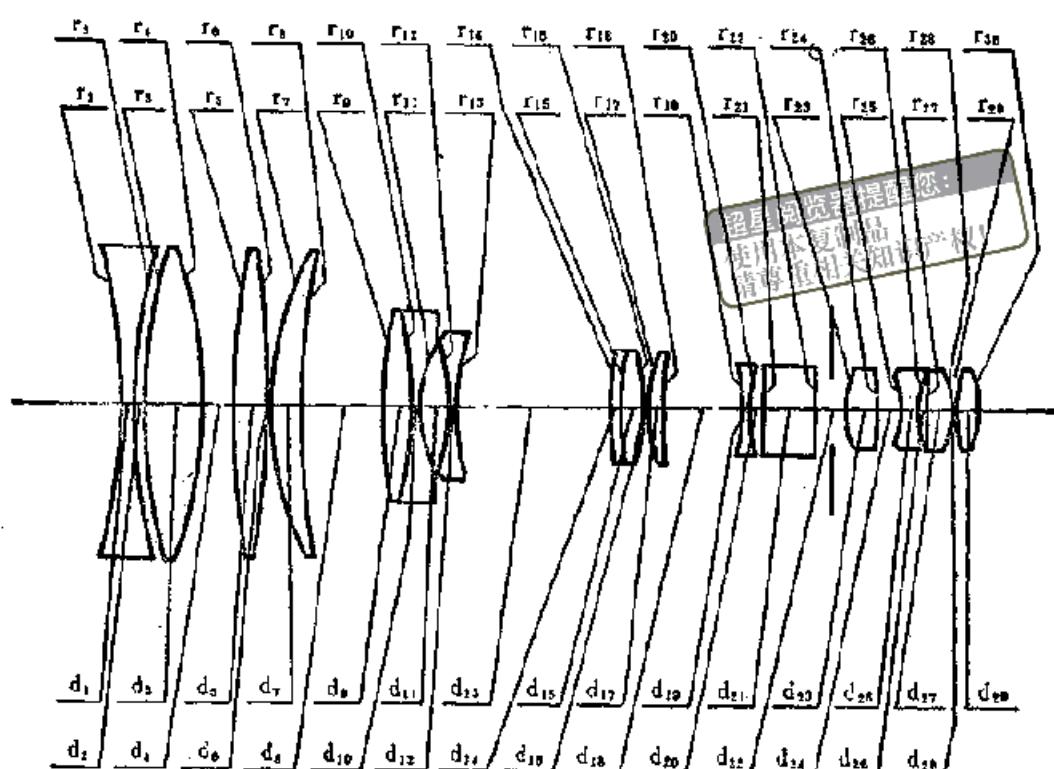
## 变 焦 距 镜 头

E.F.L=7.0~56.0

B.F.L=

FNo.=1.8

F.A.=



序号	r	d	n	v	序号	r	d	n	v
1	-67.2	1.90	1.805	25.4	16	-30.0	0.10		
2	105.0	1.90			17	19.9	2.79	1.720	56.4
3	116.0	8.30	1.574	56.4	18	78.2	* * * 3		
4	-60.8	4.90			19	-41.1	0.99	1.620	60.3
5	187.0	4.40	1.643	48.0	20	17.4	1.00		
6	-187.0	0.10			21	∞	8.20	1.569	56.1
7	45.4	5.70	1.558	50.9	22	∞	5.05		
8	166.0	* * * 1			23	17.8	4.20	1.570	49.6
9	93.2	3.80	1.805	25.4	24	-49.7	3.50		
10	-52.2	1.00	1.620	60.3	25	-16.5	2.40	1.847	23.8
11	16.8	4.90			26	16.5	1.35		
12	-37.9	1.00	1.744	44.0	27	-585.0	3.80	1.569	63.1
13	41.2	* * * 2			28	-12.4	0.20		
14	77.7	0.80	1.741	27.6	29	18.9	3.10	1.620	60.3
15	30.0	3.80	1.652	44.9	30	-23.3			

(1) E.F.L=7.0

\* \* \* 1 = 0.80; \* \* \* 2 = 41.80; \* \* \* 3 = 2.80

(2) E.F.L=56.0

\* \* \* 1 = 29.30; \* \* \* 2 = 2.00; \* \* \* 3 = 14.10

编号: 04-03-035

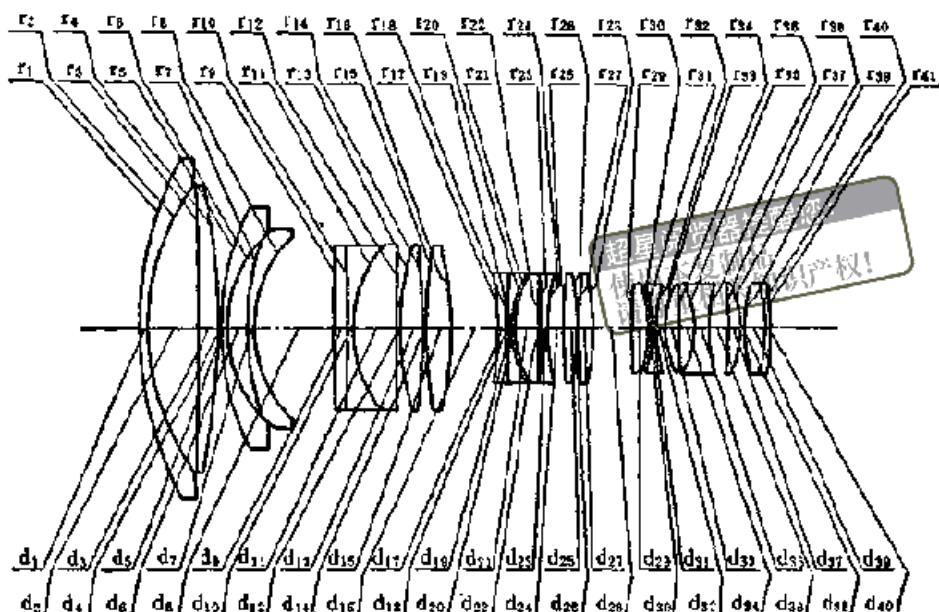
## 变焦距电影摄影镜头

E.F.L=8~24

B.F.L=

FNo. = 1.6

F.A. = ±37.5°



序号	r	d	n_d	v_d	序号	r	d	n_d	v_d
1	76.20	2.20	1.697	56	22	∞	0.40		
2	55.20	11.10			23	-170.60	1.40	1.697	56
3	-740.80	4.40	1.697	36	24	50.00	* * * 3		
4	-145.50	0.20			25	159.40	2.60	1.698	31
5	62.40	1.40	1.697	56	26	-71.30	0.02		
6	28.20	4.60			27	159.40	2.60	1.698	31
7	55.70	1.40	1.697	56	28	-71.30	* * * 4		
8	26.80	* * * 1			29	221.30	3.40	1.788	47
9	435.60	3.00	1.788	47	30	-30.00	0.40		
10	-463.40	1.40	1.788	25	31	-30.00	1.30	1.788	25
11	25.60	9.40	1.788	45	32	37.54	1.40		
12	∞	0.63			33	18.60	3.40	1.720	56
13	65.00	5.10	1.697	56	34	-523.50	3.10		
14	-191.20	1.20			35	-19.45	3.40	1.788	25
15	191.20	5.10	1.697	56	36	33.70	3.80		
16	-65.00	* * * 2			37	-136.40	3.10	1.720	56
17	-50.00	1.40	1.697	56	38	-18.86	0.13		
18	170.60	0.50			39	27.50	4.40	1.697	56
19	∞	0.80	1.788	47	40	-33.20	1.00	1.698	31
20	20.10	0.07			41	-123.60			
21	20.10	5.40	1.788	25					

(1) E.F.L=8

\* \* \* 1 = 18.20; \* \* \* 2 = 25.50; \* \* \* 3 = 1.70; \* \* \* 4 = 15.70

(2) E.F.L=24

\* \* \* 1 = 29.20; \* \* \* 2 = 1.54; \* \* \* 3 = 26.70; \* \* \* 4 = 4.70

编号: 04-03-036

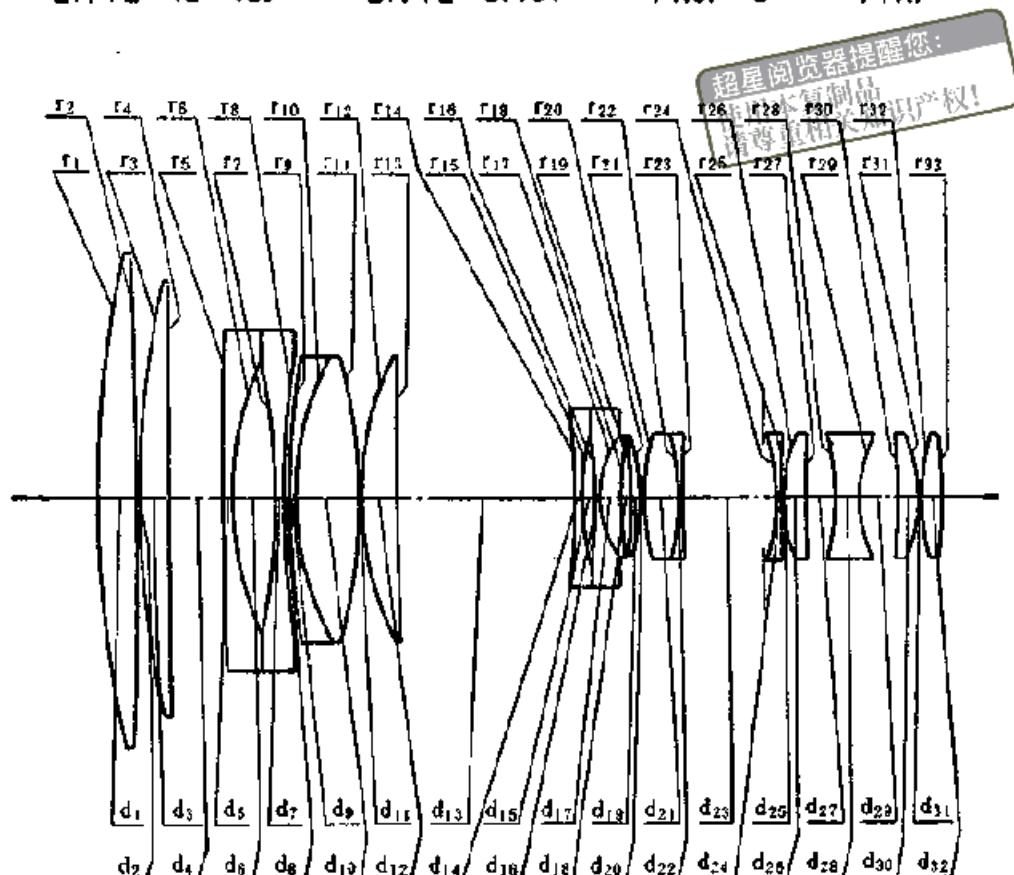
## 变 焦 距 镜 头

E.F.L=12~120

B.F.L=27.34

FNo. = 2

F.A. =



序号	r	d	n <sub>d</sub>	v <sub>d</sub>	序号	r	d	n <sub>d</sub>	v <sub>d</sub>
1	246.920	7.00	1.69738	56	13	65.150	* * * 3		
2	-450.780	0.01			19	-167.150	2.00	1.51610	64.2
3	170.630	5.50	1.69930	30.1	20	-37.950	0.01		
4	4511.000	10.20			21	44.500	6.50	1.62008	60.2
5	856.170	1.50	1.69738	56	22	-45.493	0.80	1.69866	30.1
6	61.110	8.45			23	754.200	* * * 4		
7	-117.200	1.50	1.69738	56	24	-38.550	1.00	1.54125	47.6
8	173.000	* * * 1			25	602.200	0.10		
9	184.650	1.00	1.78723	24.4	26	27.514	4.23	1.744	45
10	55.040	12.00	1.62086	60	27	983.600	5.36		
11	-97.750	0.01			28	-47.400	4.94	1.73150	28
12	57.026	0.50	1.69738	56	29	25.611	6.61		
13	2954.000	* * * 2			30	-182.770	4.34	1.69675	56
14	-150.700	0.80	1.62030	60.2	31	-26.238	0.10		
15	47.314	2.40			32	44.100	3.50	1.69675	56
16	103.060	0.70	1.69774	55.7	33	-143.600			
17	18.544	4.00	1.73118	28.3					

(1) E.F.L=12

\* \* \* 1 = 0.909; \* \* \* 2 = 63.243; \* \* \* 3 = 1.787; \* \* \* 4 = 32.030

(2) E.F.L=120

\* \* \* 1 = 29.439; \* \* \* 2 = 1.247; \* \* \* 3 = 63.783; \* \* \* 4 = 3.500

编号: 04-03-037

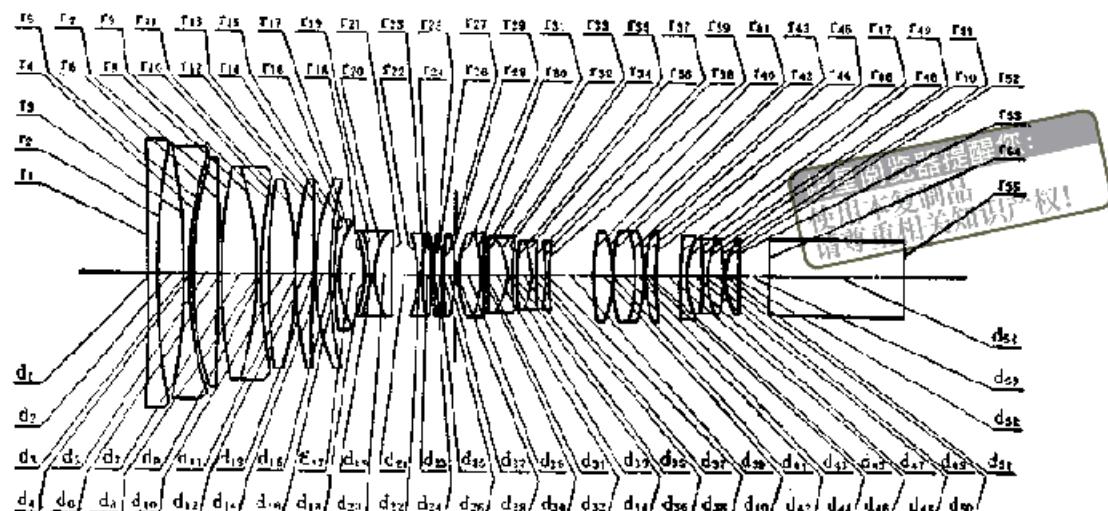
# 大 倍 率 大 孔 径 变 焦 距 物 镜

E. F. L = 1.0 ~ 29.6

B. F. L = 0.162

FNo. = 2.1

F. A. =



序号	r	d	n <sub>o</sub>	v <sub>o</sub>	序号	r	d	n <sub>o</sub>	v <sub>o</sub>
1	-50.68	0.19	1.643	59.9	29	2.32	0.52	1.499	66.8
2	13.02	0.66			30	-3.34	0.09	1.761	27.1
3	-17.36	0.19	1.643	59.9	31	-55.07	* * * 1		
4	9.14	0.02			32	-98.52	0.49	1.761	27.4
5	8.98	0.63	1.694	31.0	33	-1.53	0.07	1.734	23.5
6	-105.91	0.14			34	3.71	* * * 5		
7	17.61	0.82	1.680	54.9	35	7.89	0.33	1.761	27.4
8	-7.48	0.18	1.791	25.9	36	-2.06	0.09	1.792	47.2
9	16.44	0.15			37	3.62	0.22		
10	42.11	0.50	1.643	59.9	38	-7.29	0.09	1.792	47.2
11	-8.73	0.00			39	4.67	* * * 6		
12	9.87	0.47	1.613	59.9	40	12.23	0.39	1.489	70.2
13	-147.78	0.00			41	-3.88	0.00		
14	5.13	0.44	1.643	59.9	42	4.19	0.59	1.489	70.2
15	9.59	* * * 1			43	-3.20	0.14	1.694	31.0
16	6.02	0.12	1.792	47.2	44	-5.34	0.00		
17	2.91	0.58			45	2.21	0.36	1.489	70.2
18	-3.55	0.19	1.761	27.4	46	11.44	0.59		
19	-2.37	0.09	1.716	53.6	47	35.56	0.14	1.792	47.2
20	1.02	0.44	1.723	29.3	48	2.09	0.34		
21	19.16	* * * 2			49	-25.81	0.12	1.792	47.2
22	-2.55	0.09	1.716	53.6	50	1.83	0.44	1.489	70.2
23	3.80	0.19	1.727	29.0	51	-3.86	0.00		
24	-27.68	* * * 3			52	2.04	0.29	1.489	70.2
25	20.68	0.24	1.503	56.2	53	39.87	0.78		
26	-3.49	0.00			54	∞	3.30	1.518	64.0
27	8.66	0.26	1.503	56.2	55	∞			
28	-5.23	0.12							

(1) E. F. L = 1.0

$$* * * 1 = 0.013; * * * 2 = 4.456; * * * 3 = 1.418; * * * 4 = 0.068; * * * 5 = 0.123; * * * 6 = 1.439$$

(2) E. F. L = 14.5

$$* * * 1 = 5.174; * * * 2 = 0.675; * * * 3 = 0.038; * * * 4 = 0.063; * * * 5 = 0.123; * * * 6 = 1.439$$

(3) E. F. L = 29.6

$$* * * 1 = 5.174; * * * 2 = 0.675; * * * 3 = 0.038; * * * 4 = 0.574; * * * 5 = 1.042; * * * 6 = 0.014$$

编号: 04-03-038

# 大 倍 率 变 焦 距 镜 头

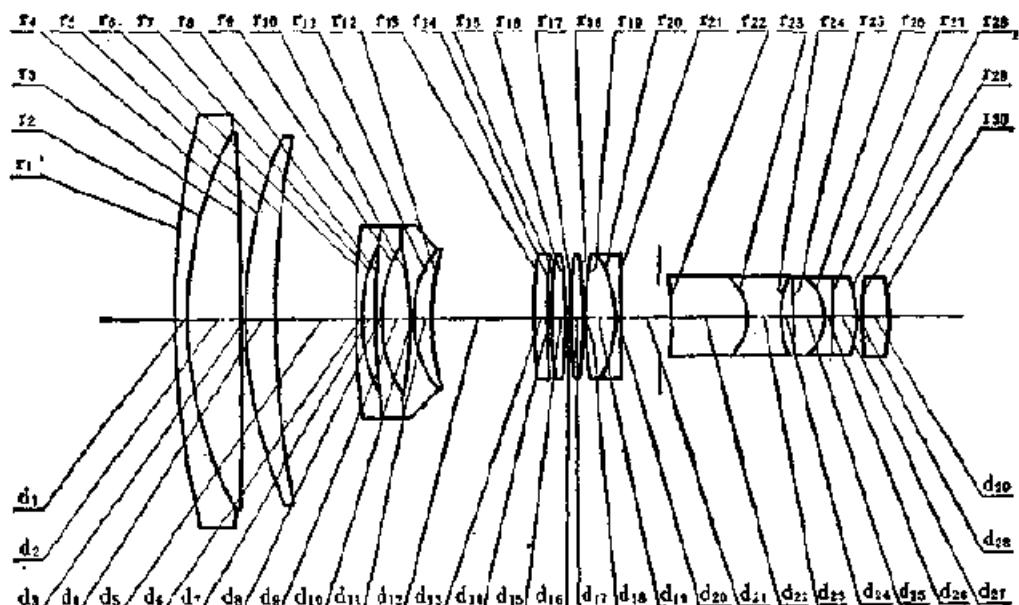
E. F. L=13~286

B. F. L=

FNo. = 3.5

F. A. =  $\pm 30.8' \sim \pm 1.5'$

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序号	r	d	n	v	序号	r	d	n	v
1	210.4470	2.20	1.78472	25.7	16	-144.0000	0.10		
2	90.0000	12.00	1.61405	55.1	17	86.8940	3.00	1.62606	39.1
3	-937.4600	0.10			18	-144.0000	0.10		
4	96.5820	7.30	1.51935	60.3	19	69.1000	7.50	1.73601	51.0
5	425.3202	* * * 1			20	-26.1670	1.01	1.78472	25.7
6	246.0000	0.85	1.64006	60.0	21	2008.7200	* * * 3		
7	34.4000	3.40			22	-40.2700	17.00	1.72342	38.0
8	210.2000	0.85	1.64006	60.0	23	-11.8000	7.50	1.62045	36.0
9	28.9270	6.50			24	19.2000	2.40		
10	-82.4800	0.75	1.51728	69.6	25	$\infty$	7.45	1.44628	67.2
11	25.0000	4.35	1.78472	25.7	26	-9.8640	1.45	1.57250	57.5
12	65.1988	* * * 2			27	$\infty$	5.80	1.46450	65.8
13	346.6000	3.00	1.61840	44.2	28	-19.7040	0.05		
14	557.6000	0.10			29	59.9000	5.80	1.51118	50.9
15	86.8940	3.00	1.62606	39.1	30	-77.4000			

(1) E. F. L=13

\* \* \* 1 = 0.4100; \* \* \* 2 = 102.1958; \* \* \* 3 = 3.6837

(2) E. F. L=286

\* \* \* 1 = 99.3295; \* \* \* 2 = 3.2763; \* \* \* 3 = 26.6837

编号: 04-03-039

## 用于中心快门照相机的变焦距镜头

E. F. L=50.00~121.00

B. F. L=39.17

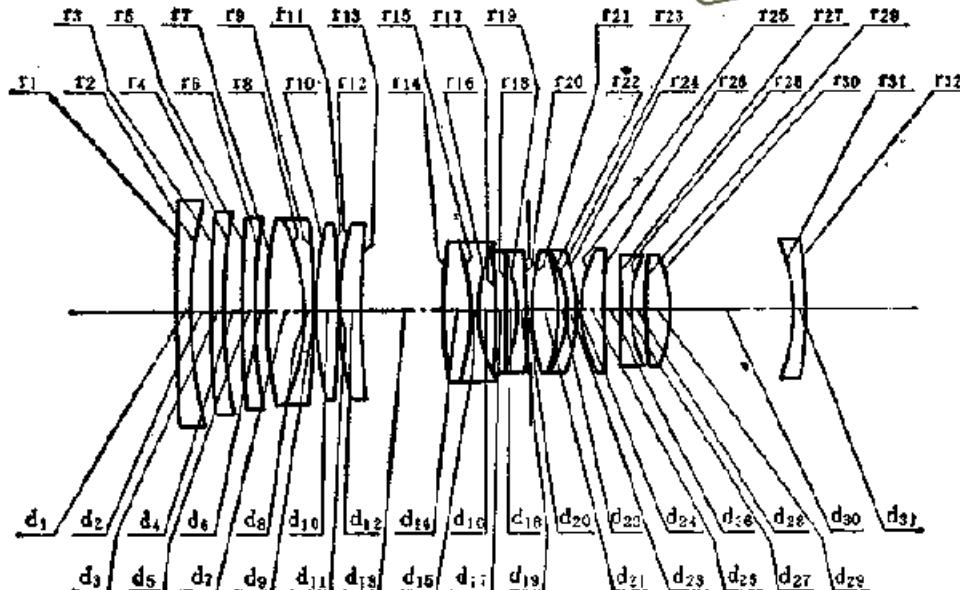
FNo. =

F. A. =

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序号	$r$	$d$	$n_D$	$v_D$	序号	$r$	$d$	$n_D$	$v_D$
1	883.57	2.50	1.744	41.90	17	-97.46	1.60	1.8374	43.47
2	79.58	3.50			18	-762.85	1.90		
3	250.10	2.50	1.744	41.90	19	-82.28	1.74	1.8374	43.47
4	80.70	3.50			20	1323.99	* * * 3		
5	270.88	2.50	1.744	41.90	21	40.86	5.00	1.5168	64.19
6	96.67	* * * 1			22	-35.35	1.40		
7	93.11	7.00	1.720	50.31	23	-20.77	2.00	1.7495	34.99
8	-40.45	1.50	1.7215	29.28	24	-30.16	0.50		
9	-160.61	0.25			25	23.57	4.50	1.6204	60.29
10	63.85	4.00	1.691	54.79	26	182.46	3.00		
11	-240.37	0.25			27	-233.63	2.00	1.720	50.31
12	56.17	4.16	1.691	54.79	28	20.35	3.00		
13	310.44	* * * 2			29	108.73	4.00	1.6204	60.29
14	84.77	4.50	1.7215	29.28	30	-25.16	22.30		
15	-43.06	1.50	1.720	50.31	31	-39.23	2.00	1.7215	29.28
16	26.21	3.50			32	-96.03			

(1) E. F. L=50.00

\* \* \* 1 = 1.93; \* \* \* 2 = 15.15; \* \* \* 3 = 1.00

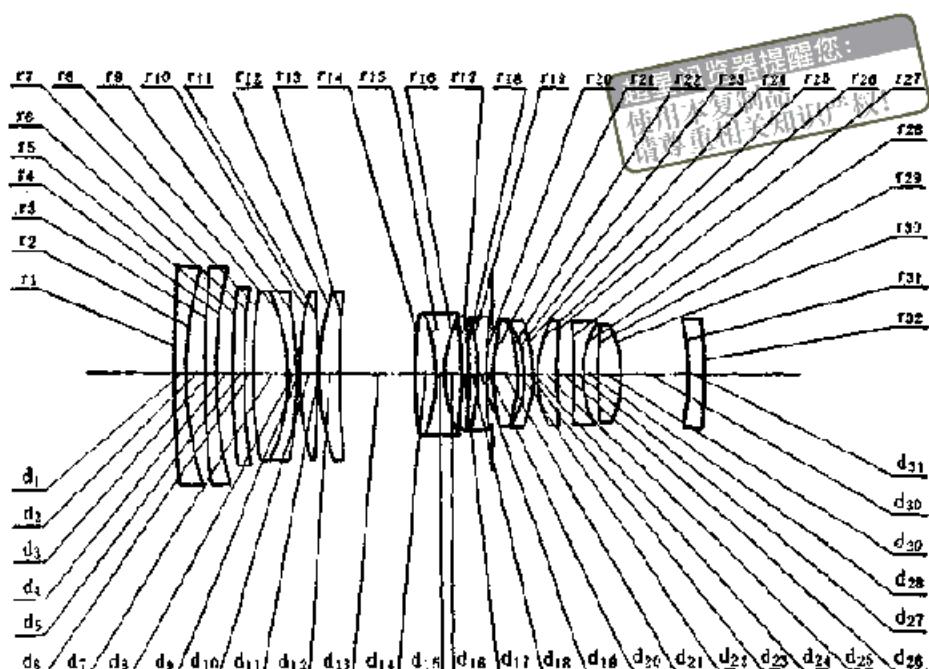
(2) E. F. L=121.00

\* \* \* 1 = 16.33; \* \* \* 2 = 0.75; \* \* \* 3 = 15.40

编号: 04-03-040

## 小 型 的 变 焦 距 镜 头

E.F.L=50.06~121.63      B.F.L=52.0      FNo. =      F.A. =



序号	r	d	n <sub>D</sub>	v <sub>D</sub>	序号	r	d	n <sub>D</sub>	v <sub>D</sub>
1	216.00	2.50	1.744	44.90	17	-96.74	1.60	1.8028	46.75
2	78.13	3.50			18	-1137.40	1.60		
3	379.87	2.50	1.744	44.90	19	-32.22	1.60	1.8028	46.75
4	89.00	3.50			20	552.18	* * * 3		
5	464.40	2.50	1.744	44.90	21	40.94	5.00	1.5168	64.19
6	118.02	* * * 1			22	-35.64	1.40		
7	103.38	7.00	1.720	50.31	23	-20.53	2.00	1.7215	29.28
8	-41.56	1.50	1.7215	29.28	24	-30.30	0.50		
9	-140.22	0.25			25	24.07	4.50	1.6204	60.29
10	63.58	4.00	1.691	54.70	26	210.40	3.10		
11	-258.75	0.25			27	-171.72	2.00	1.7200	50.31
12	54.03	4.20	1.691	54.79	28	30.98	3.00		
13	270.16	* * * 2			29	111.76	4.50	1.6204	60.29
14	86.41	4.50	1.7215	29.28	30	25.00	13.50		
15	-35.64	3.50	1.7200	50.31	31	-64.44	3.60	1.7215	29.28
16	26.30	3.40			32	-210.40			

(1) E.F.L=50.06  
\* \* \* 1 = 1.73; \* \* \* 2 = 15.29; \* \* \* 3 = 1.00

(2) E.F.L=121.63  
\* \* \* 1 = 16.13; \* \* \* 2 = 0.89; \* \* \* 3 = 15.40

编号: 04-03-041

## 具有两个光栏的变焦距镜头

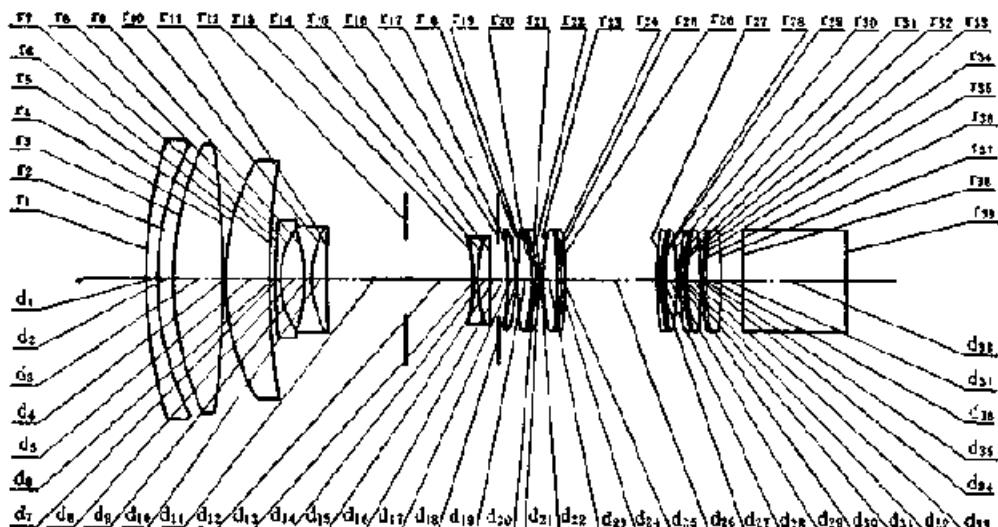
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E.F.L=6.675~38.477

B.F.L =

FNo. = 1.85

F.A. =



序号	r	d	n	v	序号	r	d	n	v
1	50.75000	1.80000	1.92286	21.3	21	-15.25000	0.50000	1.80518	25.4
2	35.60000	1.95000			22	-19.50000	0.10000		
3	38.17000	8.50000	1.61800	63.4	23	32.06353	1.80000	1.62041	60.3
4	-230.97000	0.13000			24	-87.73000	0.50000		
5	28.73552	5.65000	1.61800	63.4	25	-26.65000	0.50000	1.80518	25.4
6	124.93000	* * * 1			26	-42.23000	13.42244		
7	292.74000	0.50000	1.88300	41.0	27	56.36000	0.50000	1.80518	25.4
8	10.73000	2.90000			28	27.56000	0.60000		
9	-19.93751	0.60000	1.78650	50.2	29	174.60000	1.50000	1.71300	54.0
10	11.90000	2.10000	1.92286	21.3	30	-34.81000	0.13000		
11	246.32000	* * * 2			31	33.98000	0.50000	1.80518	25.4
12	∞	* * * 3			32	21.07000	0.23000		
13	-20.98952	0.50000	1.80610	40.8	33	28.06475	1.70000	1.71300	54.0
14	16.41000	1.60000	1.80518	25.4	34	-86.88000	0.13000		
15	∞	* * * 4			35	115.52000	0.50000	1.80518	25.4
16	∞	1.00000			36	38.69000	1.70000	1.71300	54.0
17	-57.13000	1.30000	1.62041	60.3	37	-83.67000	2.60000		
18	-20.12000	0.10000			38	∞	13.00000	1.51333	64.1
19	134.00000	1.70000	1.62041	60.3	39	∞			
20	-25.02000	0.63000							

① 系双光栏，在计算时分别按平面处理。

(1) E.F.L = 6.675

$$* * * 1 = 0.886156; * * * 2 = 9.771670; * * * 3 = 12.349600; * * * 4 = 0.759890$$

(2) E.F.L = 18.126

$$* * * 1 = 18.916767; * * * 2 = 0.266933; * * * 3 = 6.297661; * * * 4 = 3.287400$$

(3) E.F.L = 38.477

$$* * * 1 = 19.934757; * * * 2 = 0.387002; * * * 3 = 0.847105; * * * 4 = 2.588671$$

编号: 04-03-042

# 超远摄型变焦距镜头

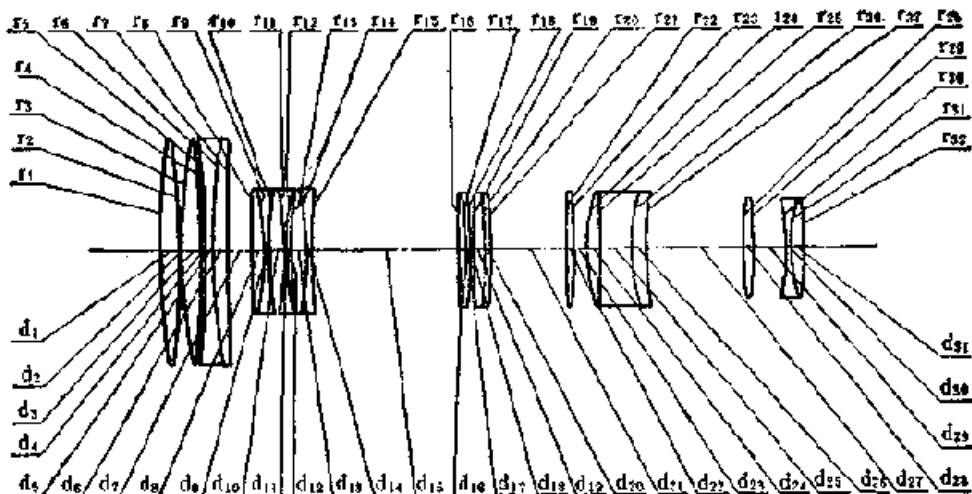
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E.F. L=360~1200

B.F. L=

FNo. - 11

F.A. -



序号	r	d	n	v	序号	r	d	n	v
1	441.500	8.0	1.48606	81.5	17	-134.200	2.6	1.61293	36.9
2	-580.000	0.2			18	-203.700	0.2		
3	274.200	9.5	1.43606	81.5	19	398.100	4.7	1.48606	81.5
4	-638.100	1.0			20	-143.200	2.6	1.75520	27.5
5	-638.100	4.0	1.744	44.9	21	-246.400	* * * 3		
6	298.200	6.0	1.53913	61.2	22	344.600	4.0	1.51454	54.6
7	1281.500	* * * 1			23	-577.700	8.2		
8	8939.700	4.7	1.75520	27.5	24	25.800	6.0	1.48606	81.5
9	-126.600	2.6	1.58913	61.2	25	-1535.000	13.5	1.744	44.9
10	172.900	6.0			26	80.000	6.3	1.6398	45.0
11	-166.700	1.3	1.48606	81.5	27	136.359	139.4		
12	118.300	3.0	1.53875	51.2	28	385.100	2.7	1.50137	56.5
13	238.700	6.0			29	-385.100	15.2		
14	-149.800	2.6	1.5168	64.2	30	-124.900	2.8	1.74443	49.4
15	444.700	* * * 2			31	87.500	4.4	1.60342	38.0
16	-3106.900	3.5	1.62041	60.3	32	-200.400			

(1) E.F. L=360

\* \* \* 1 = 11.258; \* \* \* 2 = 64.853; \* \* \* 3 = 143.138

(2) E.F. L=1200

\* \* \* 1 = 211.258; \* \* \* 2 = 4.248; \* \* \* 3 = 3.744

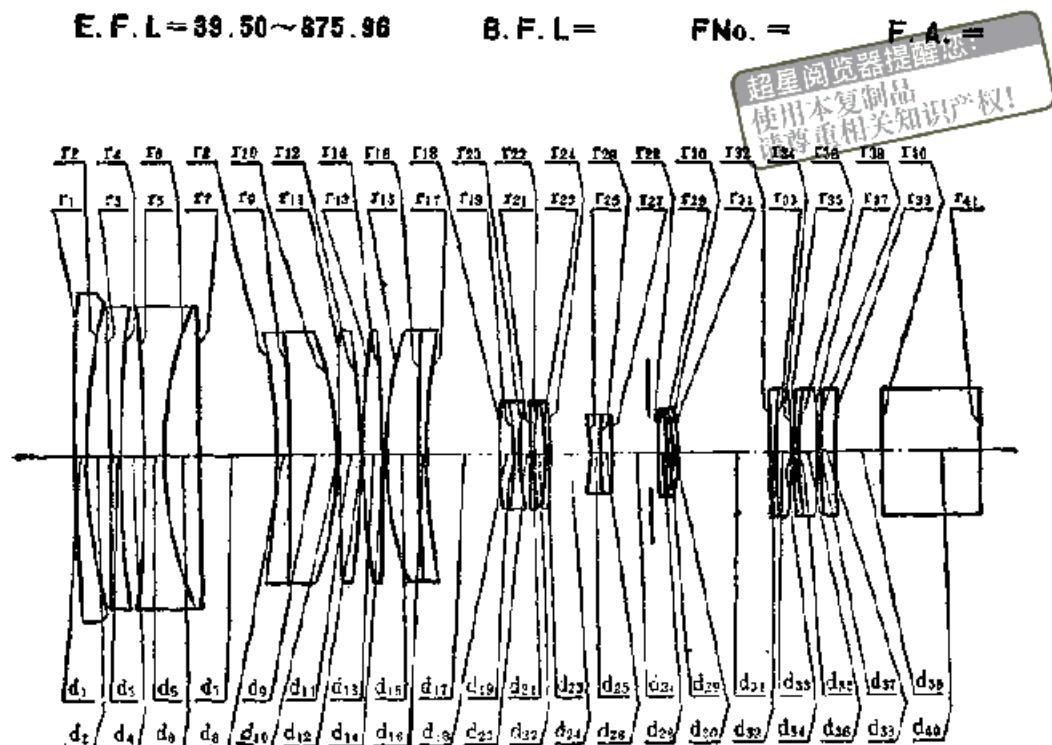
## 大孔径广角变焦距镜头

E.F.L = 39.50 ~ 875.96

B.F.L =

FNo. =

F.A. =



序号	r	d	$n_d$	v	序号	r	d	$n_d$	v
1	947.50268	5.000000	1.713	53.0	22	262.80000	4.40500		
2	305.84600	11.264000			23	-134.77000	2.000000	1.883	41.0
3	-1975.00000	5.000000	1.713	53.0	24	-369.15045	* * * 2		
4	610.00000	8.645000			25	-103.94000	5.000000	1.757	47.7
5	-652.48000	10.000000	1.67003	47.2	26	255.71000	5.000000	1.78472	25.7
6	171.74000	16.000000	1.72825	28.3	27	-413.00332	* * * 3		
7	$\infty$	62.772725			28	213.51000	5.500000	1.48749	70.0
8	-308.57000	6.000000	1.7552	27.5	29	-106.76000	2.500000		
9	-1965.80000	21.000300	1.48749	70.0	30	-63.10000	2.000000	1.80518	25.5
10	-162.48000	0.100000			31	-79.19153	176.20160		
11	1229.45000	10.000000	1.48749	70.0	32	$\infty$	2.000000	1.66446	35.9
12	-379.98000	0.100000			33	243.56000	8.500000	1.4645	65.7
13	340.42000	10.100000	1.48749	70.0	34	-194.83000	0.100000		
14	-1975.00000	0.100000			35	495.75000	2.000000	1.66446	35.9
15	169.98000	15.000000	1.48749	70.0	36	163.10000	8.500000	1.4645	65.7
16	2623.33000	4.000000	1.7552	27.5	37	-321.82000	0.100000		
17	405.85090	* * * 1			38	409.09000	5.700000	1.62041	60.3
18	372.49000	7.000000	1.82286	20.9	39	1039.37230	50.000000		
19	-116.53000	2.000000	1.841	43.2	40	$\infty$	82.200000	1.51633	64.1
20	118.53000	4.208000			41	$\infty$			
21	-618.65000	2.000000	1.883	41.0					

(1) E.F.L = 39.50

\* \* \* 1 = 3.7540141; \* \* \* 2 = 217.2927000; \* \* \* 3 = 6.8377210

(2) E.F.L = 164.70

\* \* \* 1 = 164.3035800; \* \* \* 2 = 31.4230730; \* \* \* 3 = 32.1517340

(3) E.F.L = 375.96

\* \* \* 1 = 216.3512000; \* \* \* 2 = 4.6955089; \* \* \* 3 = 6.8377210

编号: 04-03-044

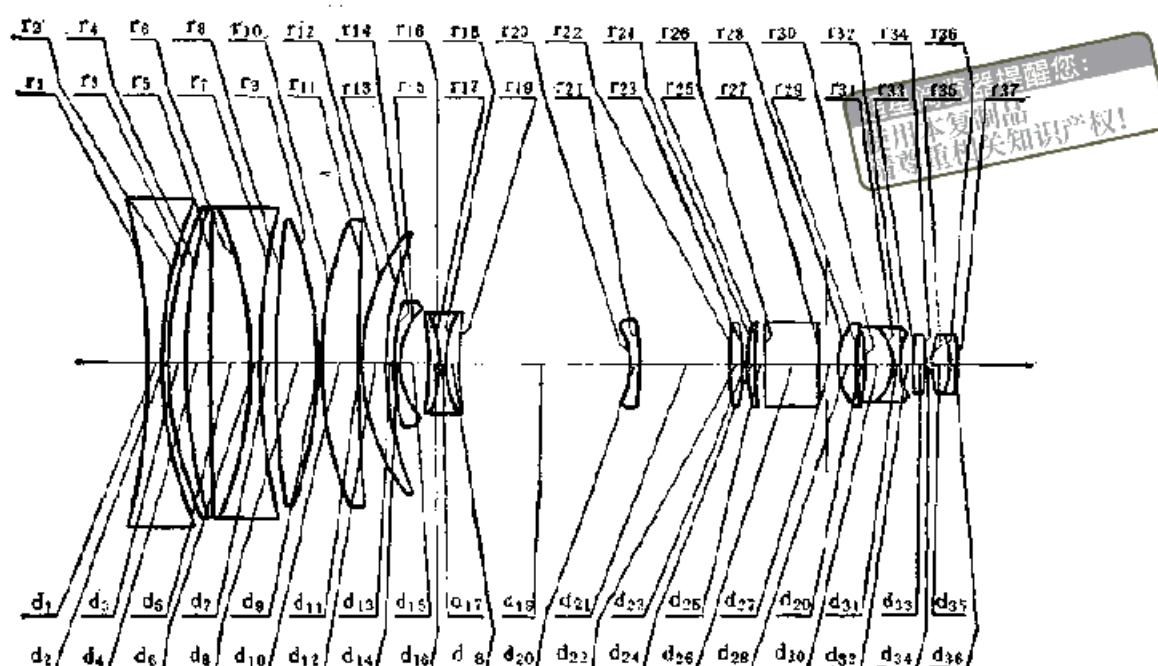
# 大孔径变焦距物镜

E.F.L = 1.0~13.3

B.F.L = 2.37

FNo. = 1.8

F.A. =

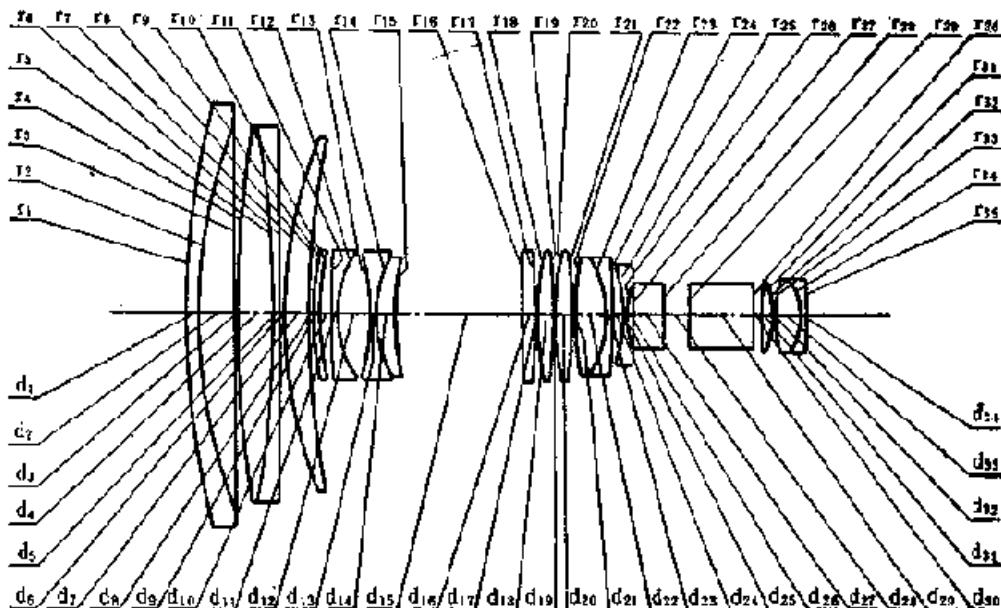


序号	r	d	n <sub>d</sub>	v	序号	r	d	n <sub>d</sub>	v
1	-19.190	0.411	1.62041	60.3	20	-3.048	0.274	1.62280	56.9
2	12.233	0.205			21	-12.173	* * * 3		
3	11.041	0.616	1.69895	30.1	22	13.014	0.370	1.62542	64.7
4	17.307	0.692			23	-6.085	0.010		
5	94.523	1.206	1.71300	53.8	24	4.803	0.292	1.62542	64.7
6	-12.003	0.300	1.76180	26.9	25	18.820	0.274		
7	20.859	0.479			26	∞	1.644	1.51680	64.2
8	34.478	1.438	1.64050	60.1	27	∞	0.616		
9	-10.863	0.010			28	2.073	0.558	1.48749	70.4
10	11.521	1.096	1.64050	60.1	29	6.856	0.219		
11	94.527	0.010			30	-5.121	0.884	1.76180	27.0
12	6.378	0.810	1.64050	60.1	31	-1.658	0.190	1.67270	32.2
13	10.589	* * * 1			32	2.260	0.419		
14	6.474	0.195	1.69100	54.7	33	4.888	0.437	1.48749	70.4
15	2.292	0.918			34	-5.536	0.051		
16	-7.537	0.329	1.80518	25.4	35	2.364	0.575	1.50127	56.4
17	-3.697	0.195	1.71300	53.8	36	-2.170	0.205	1.80518	25.4
18	3.416	0.438	1.80518	25.4	37	-5.525			
19	11.113	* * * 2							

- (1) E.F.L=1.0  
\* \* \* 1 = 0.137; \* \* \* 2 = 5.497; \* \* \* 3 = 2.837
- (2) E.F.L=2.1  
\* \* \* 1 = 3.013; \* \* \* 2 = 2.262; \* \* \* 3 = 3.196
- (3) E.F.L=4.3  
\* \* \* 1 = 4.907; \* \* \* 2 = 0.597; \* \* \* 3 = 2.966
- (4) E.F.L=7.6  
\* \* \* 1 = 5.912; \* \* \* 2 = 0.597; \* \* \* 3 = 1.962
- (5) E.F.L=10.3  
\* \* \* 1 = 6.269; \* \* \* 2 = 1.124; \* \* \* 3 = 1.088
- (6) E.F.L=13.3  
\* \* \* 1 = 6.475; \* \* \* 2 = 1.281; \* \* \* 3 = 0.215

# 大倍率变焦距镜头

E.F. L=6.0~128.5    B.F. L=    FNo. = 1.8    F.A. = ±30.8° ~ ±1.5°



序号	r	d	n	v_d	序号	r	d	n	v_d
1	198.000	1.90	1.740	28.2	19	-154.320	0.10		
2	115.617	9.09	1.51728	69.6	20	73.650	3.50		
3	2025.800	0.10			21	111.330	0.10		
4	250.898	7.70	1.51728	69.6	22	62.200	7.30		
5	-250.898	1.90	1.740	28.2	23	-23.854	1.00		
6	-562.377	0.10			24	-655.518	* * * 3		
7	93.500	6.10	1.5168	64.2	25	-33.834	0.70		
8	260.459	* * * 1			26	23.900	1.20		
9	85.740	1.10	1.744	44.9	27	∞	7.00		
10	45.002	3.10			28	∞	5.80		
11	790.330	1.10	1.6068	65.6	29	∞	13.90		
12	21.493	7.70			30	∞	1.30		
13	-53.850	0.85	1.5168	64.2	31	99.500	2.90		
14	23.400	5.10	1.80518	25.5	32	-21.338	0.20		
15	71.697	* * * 2			33	26.710	5.30		
16	-1229.864	3.10	1.62280	56.9	34	-16.559	1.20		
17	-167.880	0.10			35	-175.330			
18	70.667	3.50	1.62041	60.3					

(1) E.F. L=6.0

\* \* \* 1 = 0.46%; \* \* \* 2 = 102.88%; \* \* \* 3 = 2.148

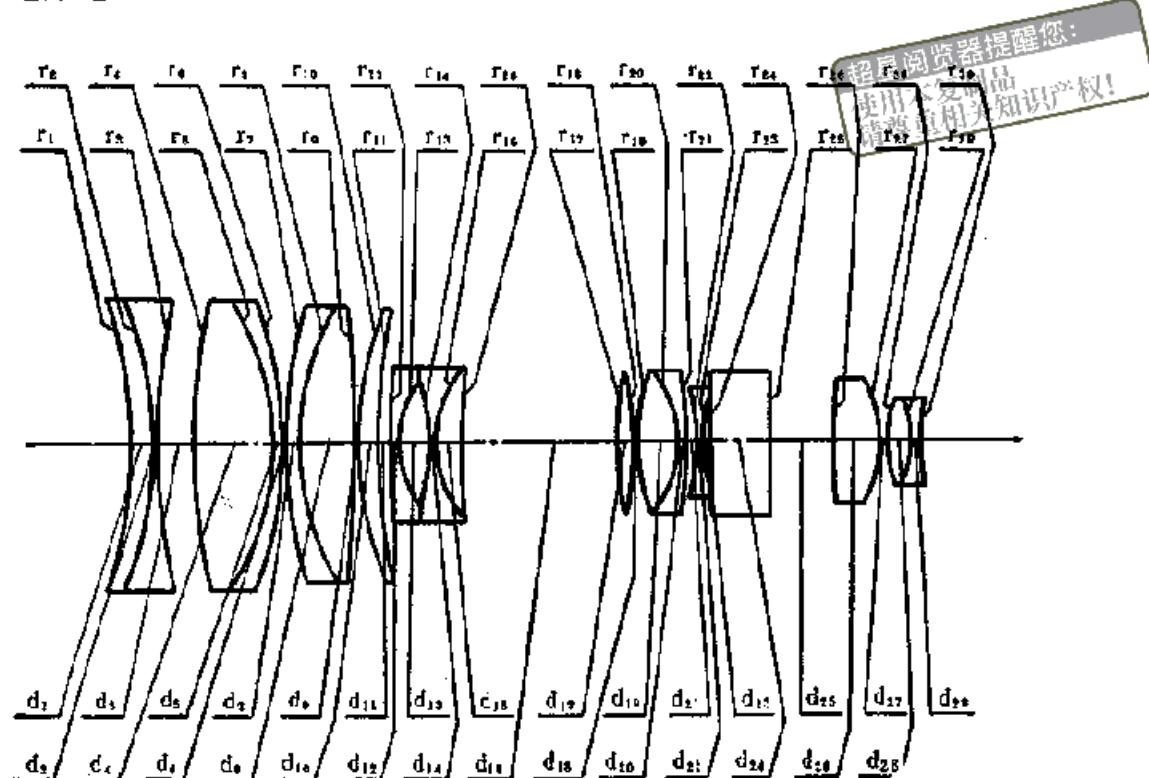
(2) E.F. L=128.5

\* \* \* 1 = 80.633; \* \* \* 2 = 2.731; \* \* \* 3 = 22.135

● 后固定组仅供参考。

## 五组变焦距镜头

E.F.L=9.5~50.0 B.F.L= FNo.=1.8 F.A.=+20.75° ~ ±4.14°



序号	r	d	n <sub>D</sub>	v	序号	r	d	n <sub>D</sub>	v
1	-79.100	3.9	1.74077		16	130.440	* * * 2		
2	+56.000	0.8	1.62041		17	39.000	2.7		
3	110.610	6.3			18	-51.315	0.1		
4	131.135	11.2	1.5168		19	33.640	6.3		
5	-40.000	1.6	1.69895		20	-16.780	0.8		
6	-59.050	0.2			21	-95.933	* * * 3		
7	85.400	1.4	1.76162		22	-23.600	0.8		
8	39.500	9.1	1.6516		23	21.047	1.2		
9	-260.753	0.1			24	∞	9.0		
10	52.824	3.0	1.6516		25	∞	9.8		
11	90.046	* * * 1			26	148.995	6.9		
12	345.300	1.0	1.717		27	-19.704	0.4		
13	16.261	5.4			28	18.900	4.9		
14	-30.253	0.7	1.5168		29	-14.790	1.2		
15	18.200	3.7	1.72825		30	34.322			

(1) E.F.L=9.5  
\* \* \* 1 = 1.8144; \* \* \* 2 = 39.4096; \* \* \* 3 = 1.8788(2) E.F.L=50.0  
\* \* \* 1 = 27.8144; \* \* \* 2 = 2.0358; \* \* \* 3 = 13.2526

● 原资料不全, 仅供参考。