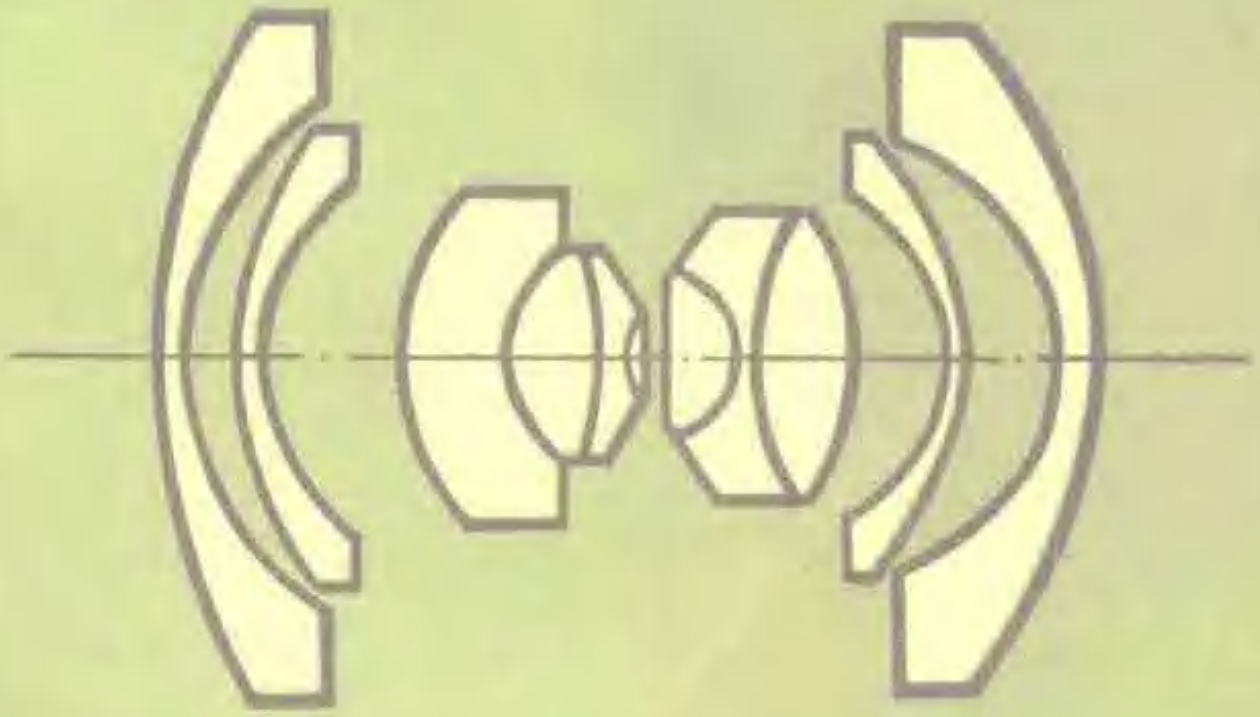
光学镜头手册

第四册

福建光学技术研究所
国营红星机电厂
编译



国防工业出版社

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内 容 简 介

本手册收集和整理了美、英、德、日等国从1811年至现在历年来的光学镜头资料。

第四册的内容为变焦距镜头，共46个。每个镜头都有光学镜头的结构图、各种主要参数及象差曲线图。

本手册可供研究所和工厂的光学设计人员和大专院校光学专业的师生参考。

光学镜头手册

第四册

福建光学技术研究所

国营红星机电厂 编译

国防工业出版社出版

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编 译 者 说 明

由于电子工业和电影、电视事业的飞速发展，近年来，我国在光学镜头设计及加工方面取得了很大进展。成系列的各类镜头已经设计和试制出来，有些并已进入成批生产阶段。但在品种、数量和质量方面，跟世界先进水平相比，差距还是比较大。

近年来，我们收集了美、英、德、日等国从 1811 年到现在的光学镜头资料共 3000多种，现挑选其中的一部分经补充整理之后，将其出版，以供我国从事光学镜头设计的人员参考。

原资料中，大多没有给出象差曲线图，我们均重新计算给予补上。由于原资料的光栏位置大多没有给出，我们计算时只能根据我们主观给定的光栏位置进行计算，因此相应的象差曲线图仅供参考。

本册的内容为变焦距物镜。其中 04-03-032 至 04-03-046 共 15 个镜头，由于面数太多，我们计算机的程序无法计算，所以没有给出象差曲线图。

由于我们水平有限，时间仓促，力量不足，所以只能一部分一部分地整理出版，而且在整理过程中一定会存在不少缺点和错误，分类也可能不完全合理，望读者批评指正。

参加本册编译工作的有林茂智、杨甦田、叶恩霖等。

编 译 者

目　录

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。

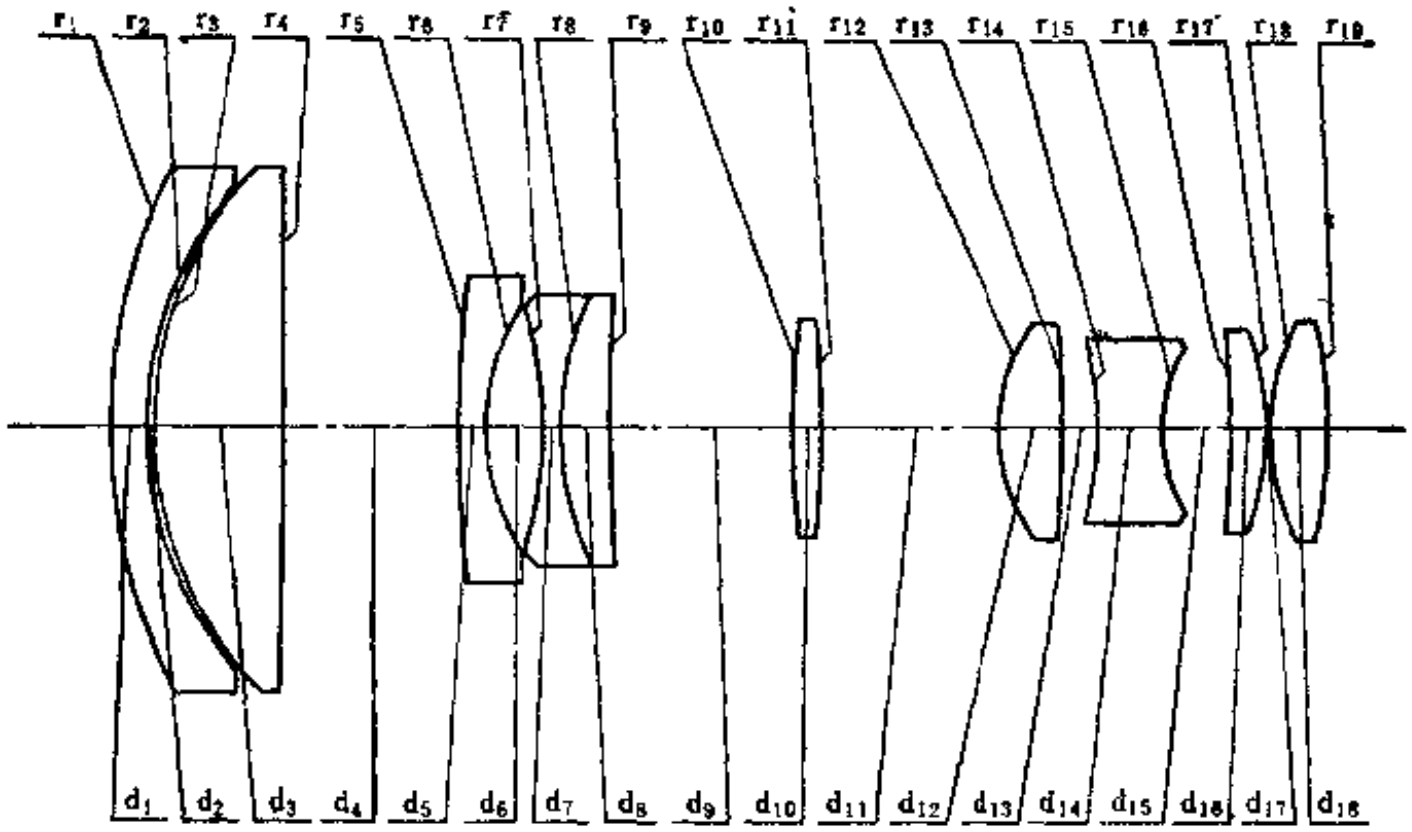
4. 常用符号：

ΣS_1	球差系数和；
ΣS_2	彗差系数和；
ΣS_3	象散系数和；
ΣS_4	场曲系数和；
ΣS_5	畸变系数和；
LA'	球差；
$\Delta H'$	绝对畸变；
x_t'	细光束子午场曲；
x_s'	细光束弧矢场曲；
$x_t'-x_s'$	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；
HI	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.=±26.9°～±10.9°



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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	40.85	15	0.4479	0.193		
6	0.6295	0.155			16	−2.7248	0.102	1.71300	53.83
7	−1.1272	0.061	1.51821	65.05	17	−0.7910	0.006		
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					

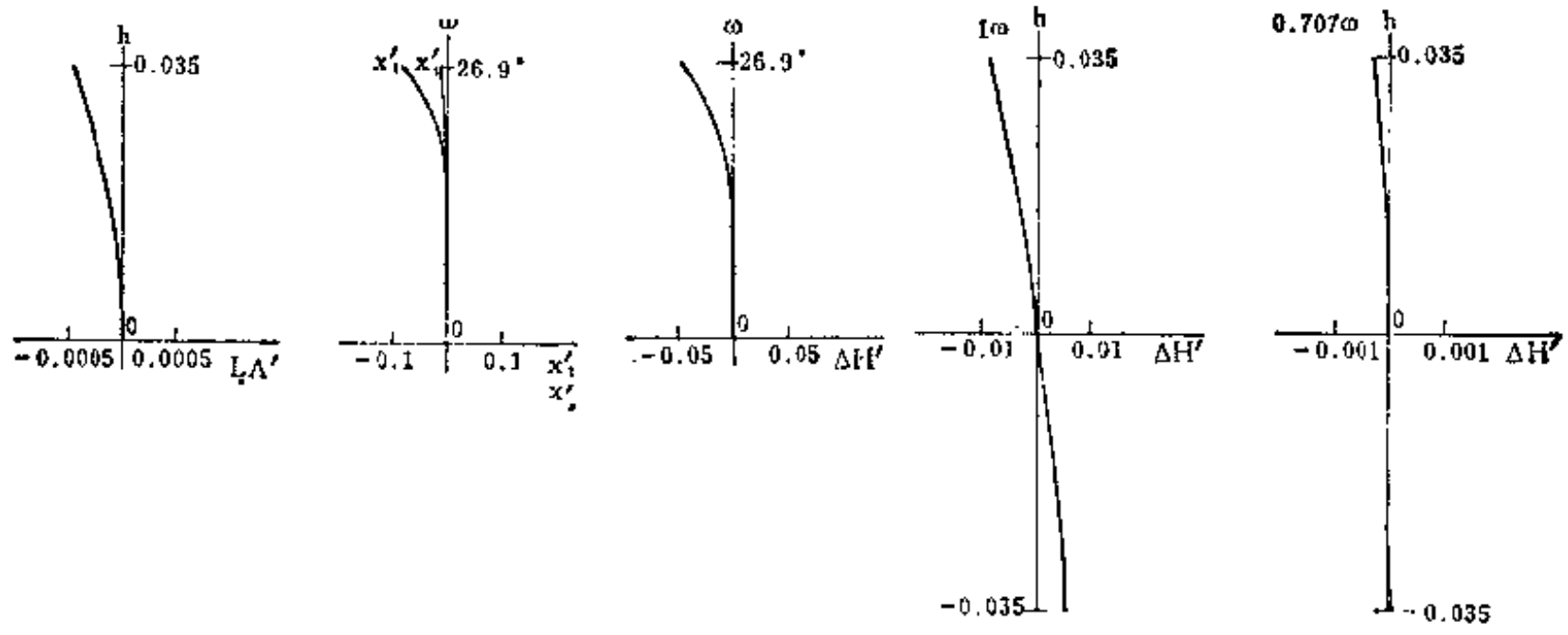
0.505* = 0.300 + 0.205

04-03-001-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.0000028	− 0.0000106	0.0000228	− 0.0000455	− 0.0019261	0.325	− 13%
h 或 ω %	LA′	ΔH′	x_t	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
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	− 0.000091	− 0.000046

E . F . L = 0.641 (± 26.9°)

* * * 1 = 0.035; * * * 2 = 0.816

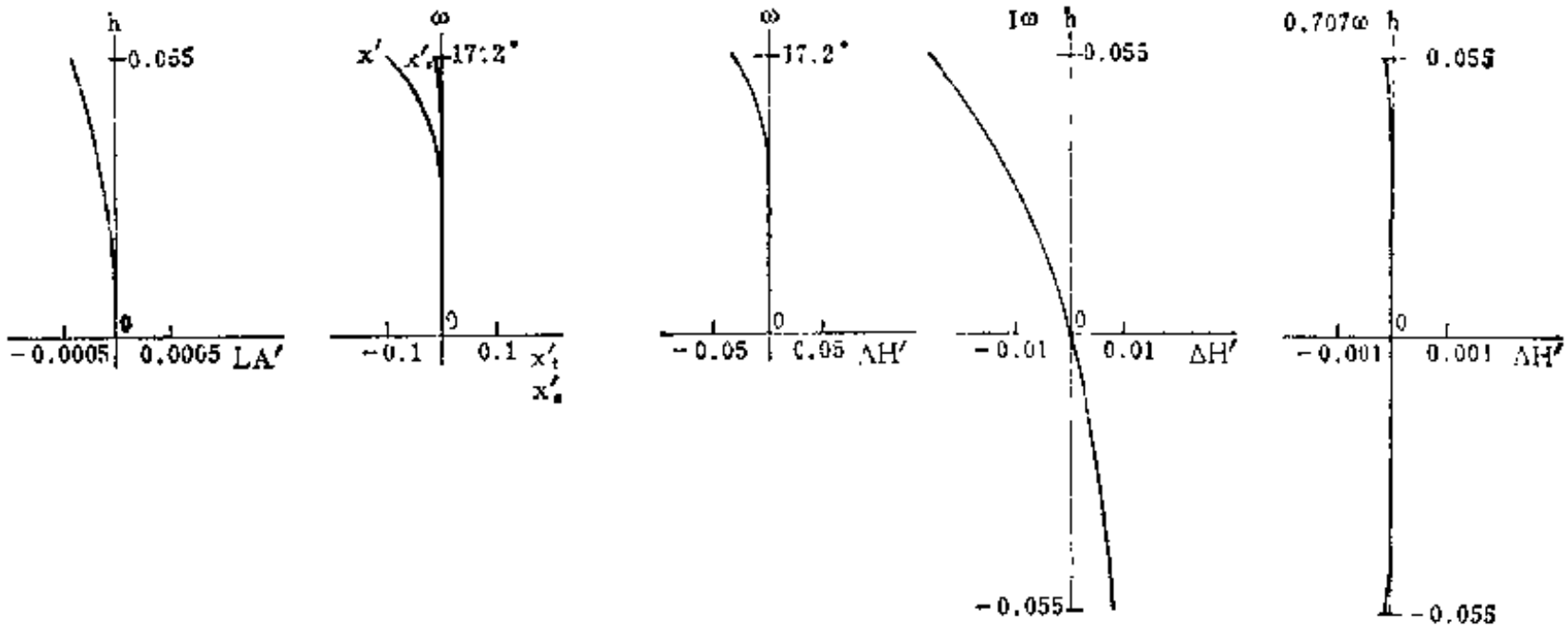


04-03-001-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.0000026	− 0.0000022	0.0000383	− 0.0000479	0.0003027	0.309	− 9 %
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t - x_s$	K_{T1}'	$K_{T0.7}$
100	− 0.00042	− 0.0280	− 0.0951	− 0.00430	− 0.0908	− 0.009090	− 0.004130
70	− 0.00022	0.0001	0.0004	0.00005	− 0.0001	− 0.000134	− 0.000067

E . F . L = 1.000 (± 17.2°)

* * * 1 = 0.501; * * * 2 = 0.516



1

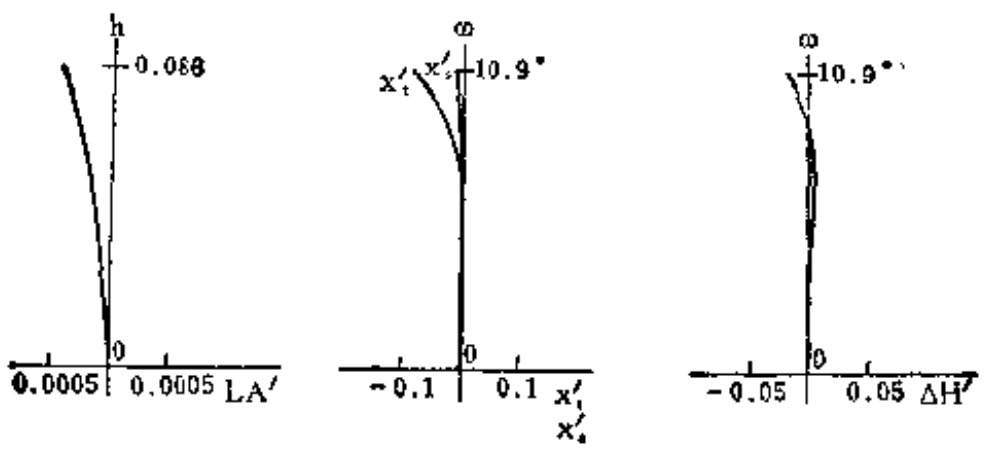
3

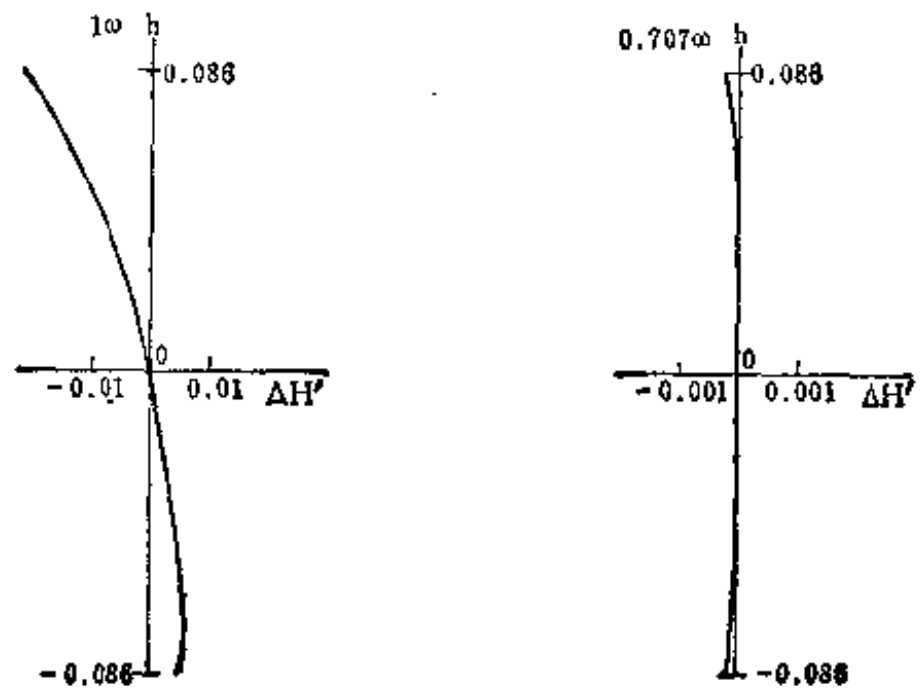
04-03-001-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.0000027	0.0000056	− 0.0000142	− 0.0000478	0.0014143	0.800	− 6 %
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	− 0.00043	− 0.0184	− 0.0854	− 0.0026	− 0.0828	− 0.008800	− 0.004020
70	− 0.00022	0.0031	− 0.0010	− 0.0009	− 0.0001	− 0.000163	− 0.000078

E. F. L = 1.560(±10.9°)

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



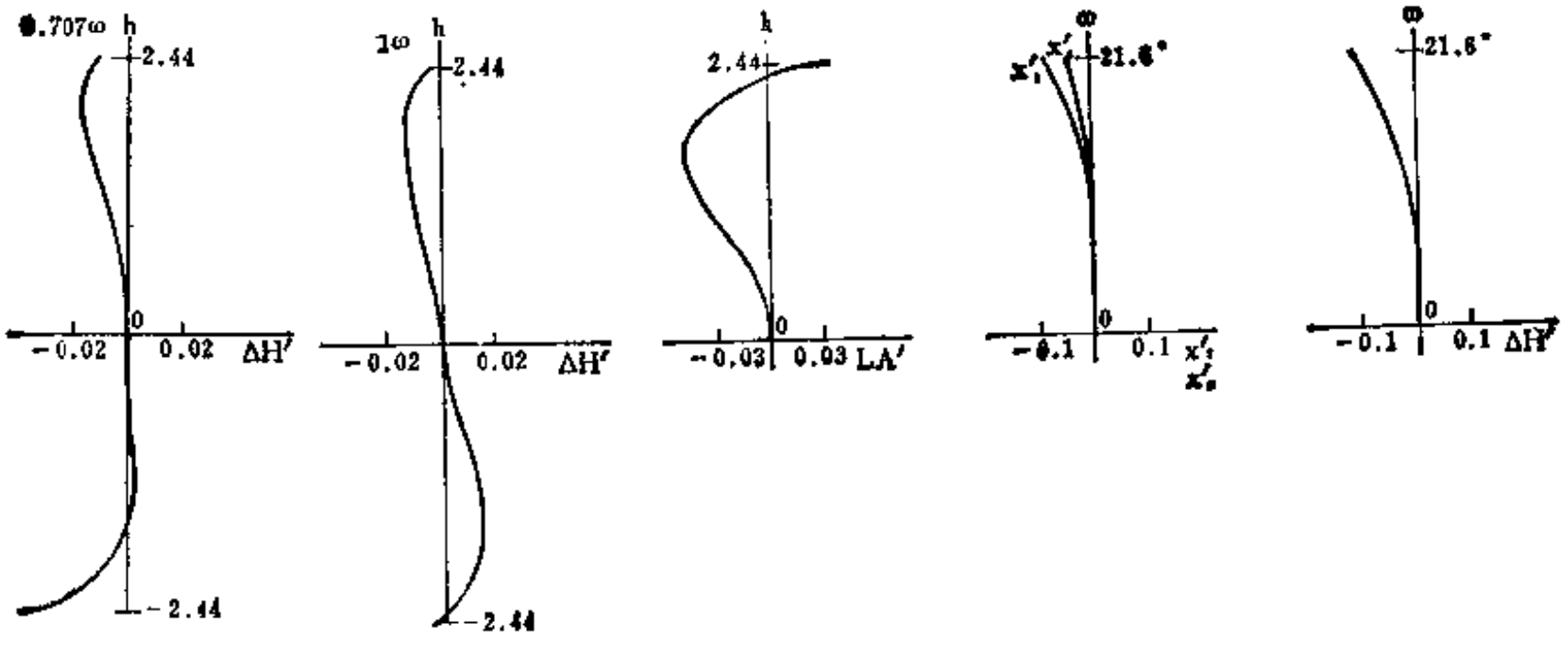


04-03-002-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.02495	− 0.00163	0.00217	− 0.00578	− 0.06571	3.7	− 3.1%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	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(± 21.6°)

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

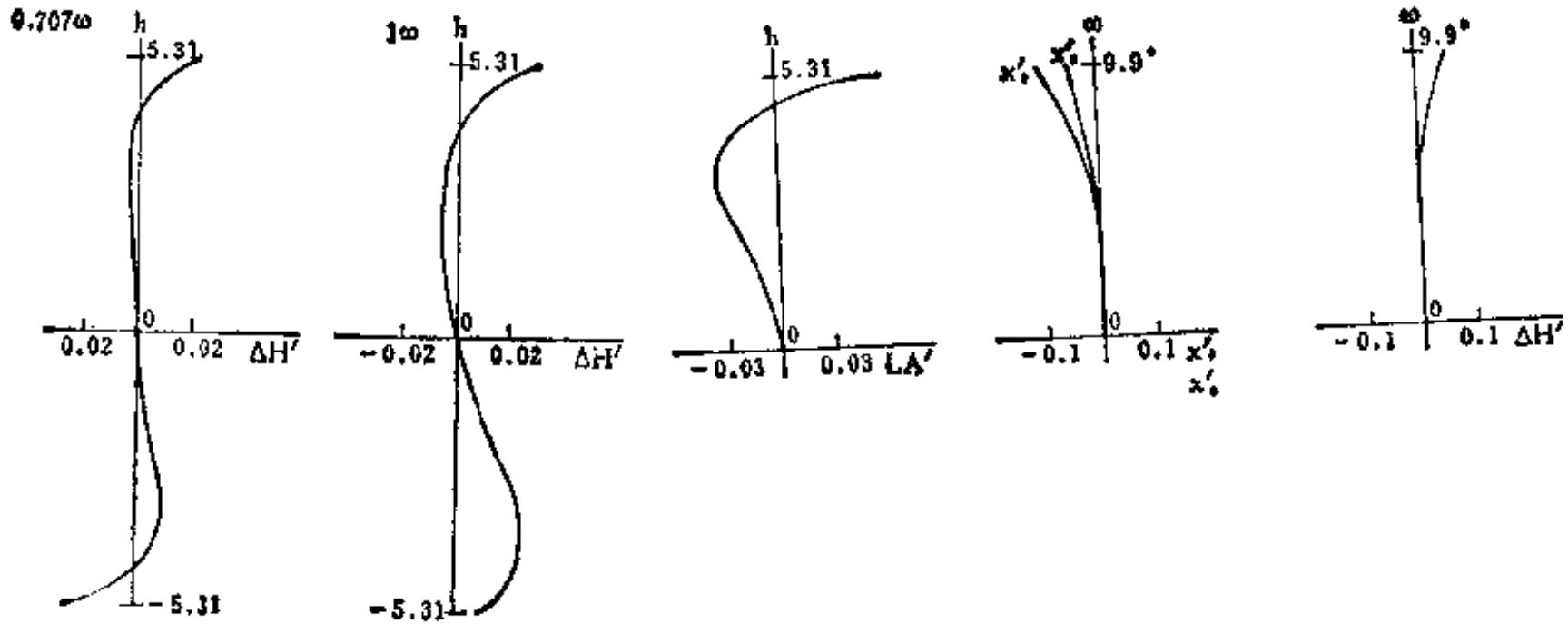


04-03-002-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.02145	0.00742	− 0.00224	− 0.00602	0.01174	3.5	1.6%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	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	− 0.00240	0.00314

E . F . L = 20.2(± 9.9°)

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



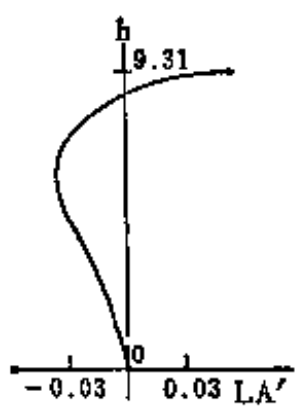
04-03-002-3

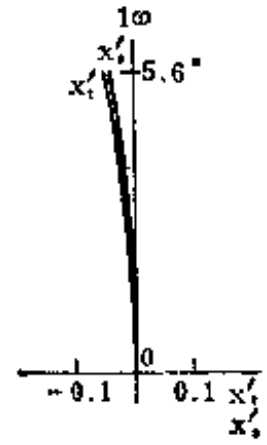
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.02189	0.01183	− 0.00273	− 0.00608	0.02969	3.5	1.9%

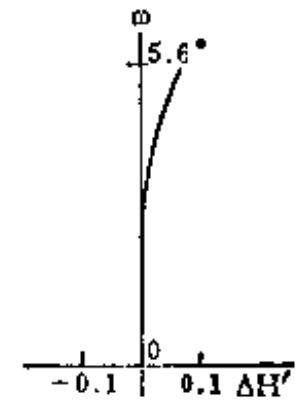
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0551	0.0694	− 0.0491	− 0.0410	− 0.0081	0.010800	0.014060
70	− 0.0357	0.0217	− 0.0277	− 0.0228	− 0.0049	0.012270	0.012808

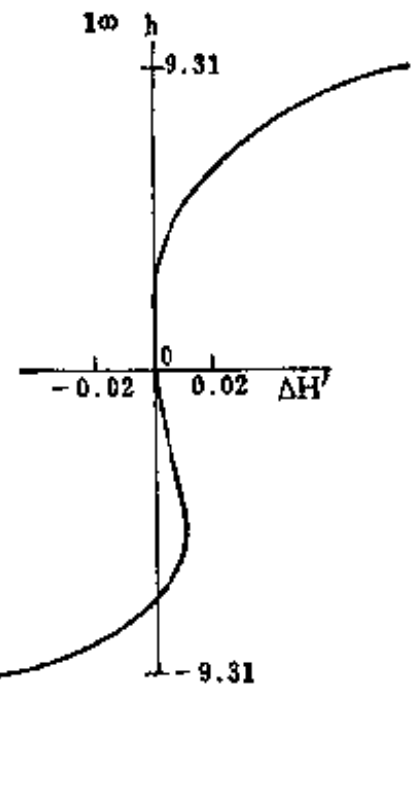
E . F . L = 35.4 (± 5.6°)

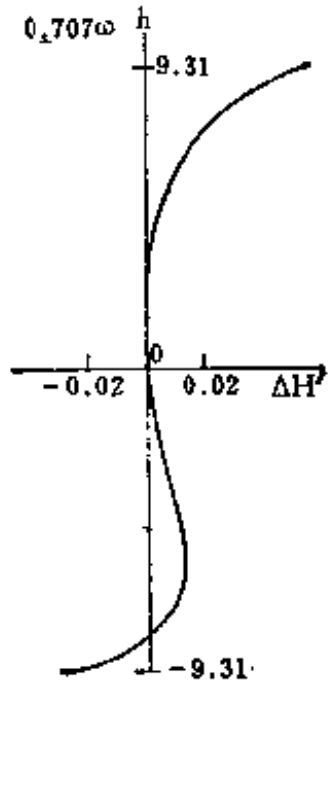
* * * 1 = 31.500; * * * 2 = 1.910; * * * 3 = 1.785







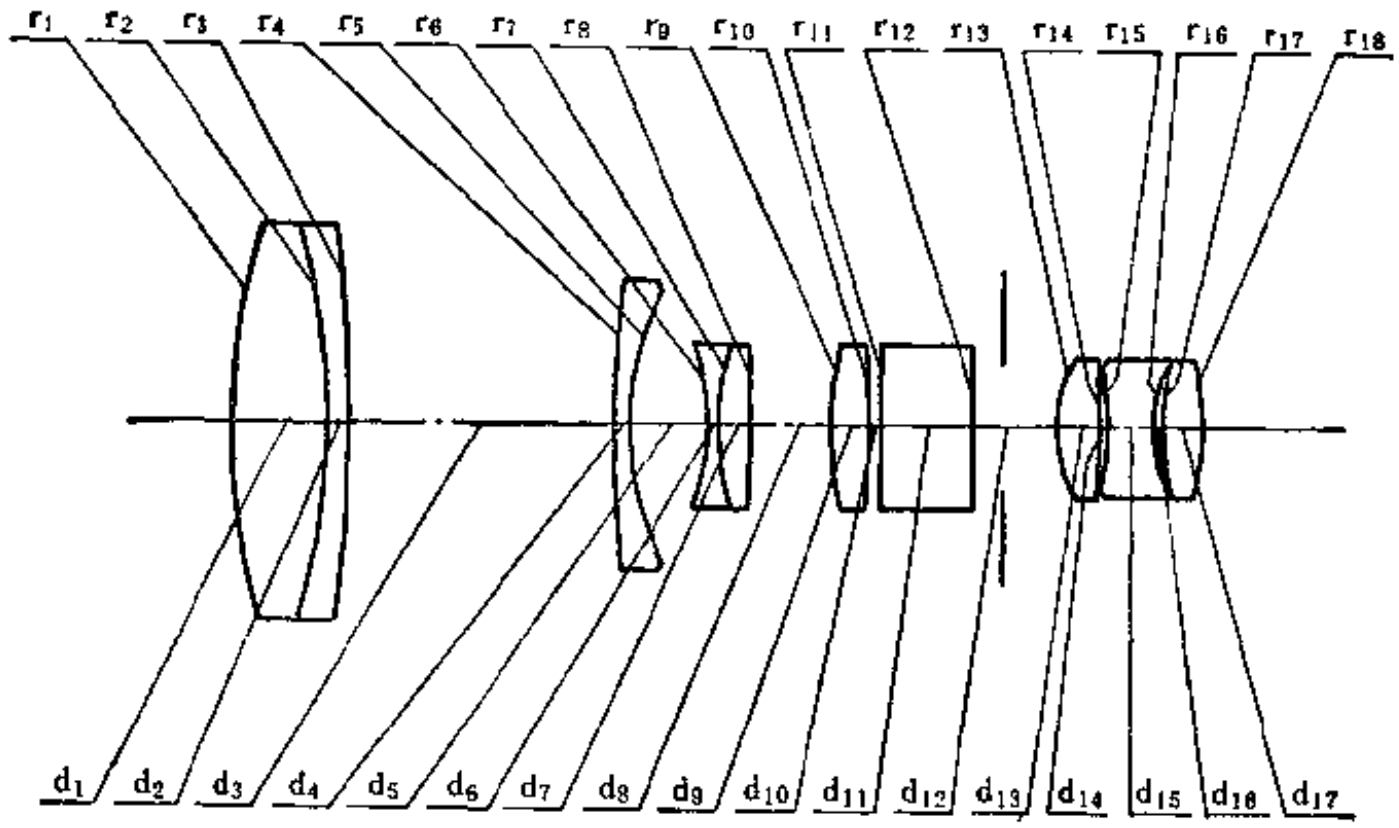




编号：04-03-003

变 焦 距 摄 影 物 镜

E.F.L＝12.34～29.08　B.F.L＝9.58　FNo.＝1.9　F.A.＝±16°～±6.9°



序号	r	d	n_d	ν_d	序号	r	d	n_d	ν_d
1	48.3490	6.0	1.62299	58.05	10	− 64.9380	0.7		
2	− 41.8680	1.2	1.78470	26.08	11	∞	6.0	1.51680	64.17
3	−149.6300	* * * 1			12	∞	5.2*		
4	127.7210	1.0	1.62041	60.33	13	8.9123	2.7	1.71300	53.83
5	18.1710	* * * 2			14	− 95.0290	0.4		
6	− 14.8530	0.8	1.51742	52.20	15	− 20.2410	3.2	1.78470	26.08
7	18.1710	2.0	1.71736	29.51	16	8.5340	0.6		
8	−262.2700	* * * 3			17	18.1710	2.4	1.74400	44.77
9	20.9820	2.3	1.62041	60.33	18	− 18.1710			

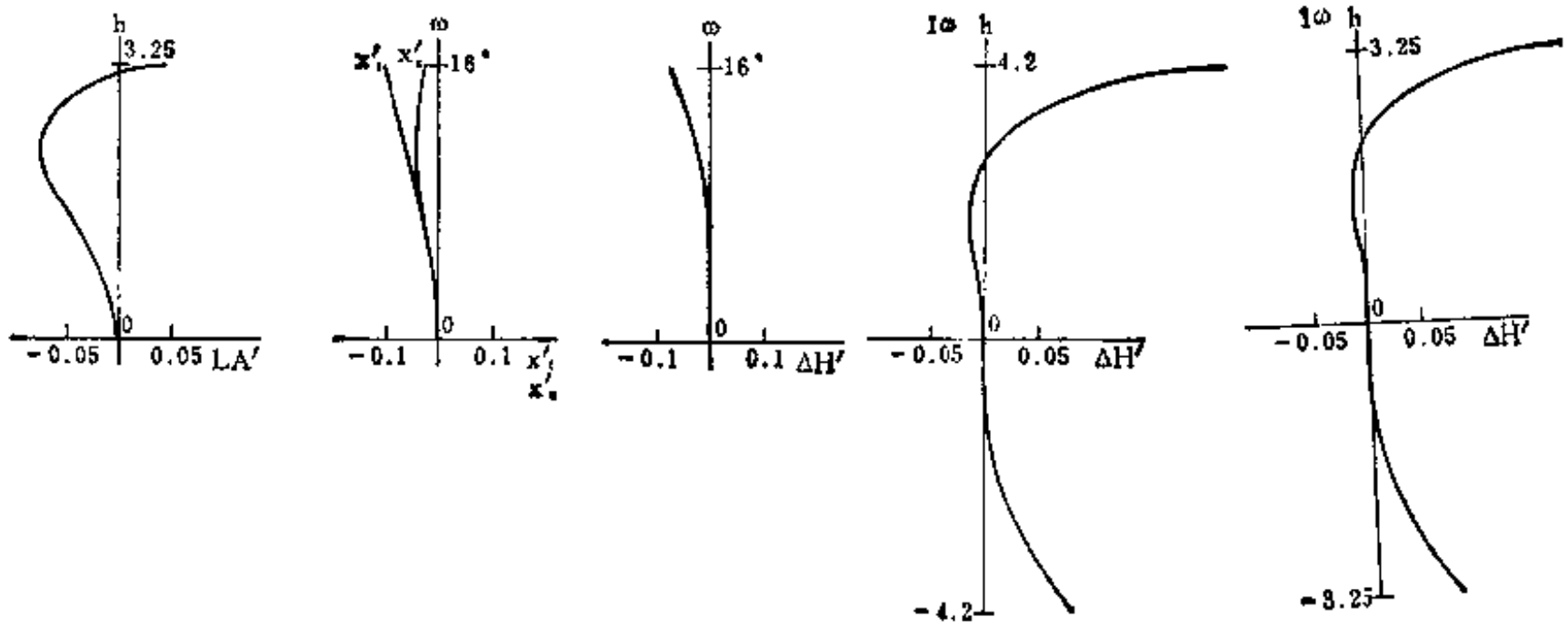
5.2* = 2.0 + 3.2

04-03-003-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1 ω)
	− 0.03939	− 0.00435	0.00122	− 0.01877	− 0.03310	3.5	− 1.9%
h 或 ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	0.0456	− 0.0701	− 0.0235	− 0.1022	0.0787	0.13752	0.01633
70	− 0.0757	− 0.0240	− 0.0386	− 0.0591	0.0205	0.07779	0.00839

E. F. L = 12.34(±16°)

* * * 1 = 1.70; * * * 2 = 18.14; * * * 3 = 8.36

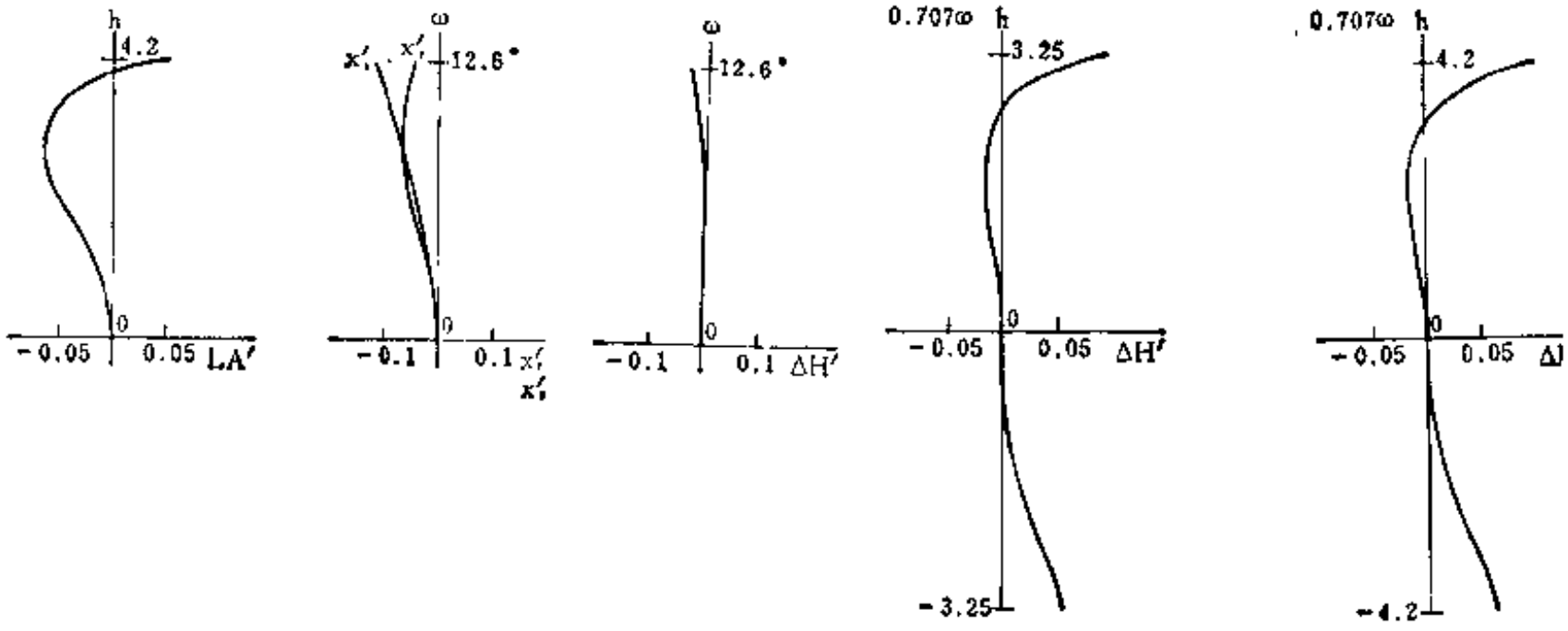


04-03-003-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.03631	− 0.00249	− 0.00197	− 0.01955	− 0.01093	3.6	− 0.8%
h 或 ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	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	− 0.0648	− 0.0715	0.0067	0.08555	0.01068

E. F. L = 16.03(±12.6°)

* * * 1 = 9.75; * * * 2 = 10.86; * * * 3 = 7.59



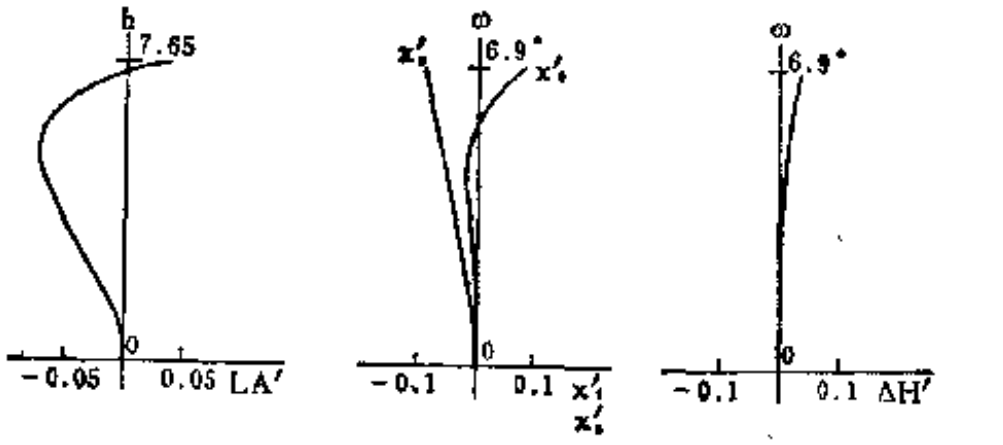
04-03-003-5

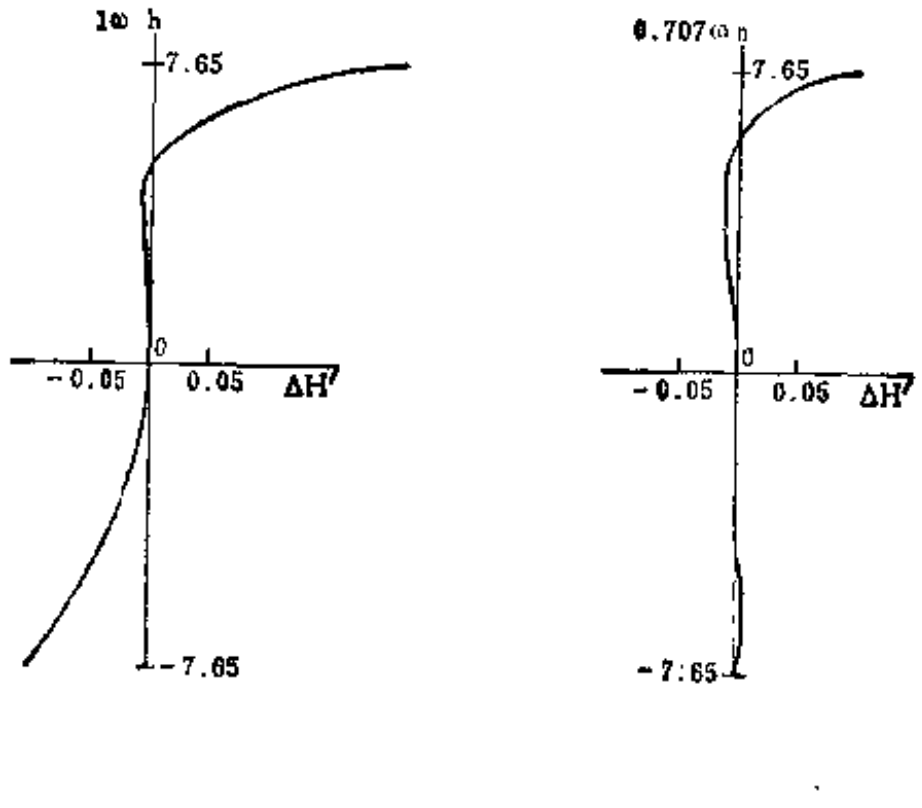
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1 ω)
	- 0.03737	- 0.00538	0.00041	- 0.01951	0.02101	3.5	0.98%

h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0335	0.0345	0.0819	- 0.0929	0.1748	0.05797	- 0.02156
70	- 0.0747	0.0132	- 0.0218	- 0.0595	0.0377	0.05096	- 0.00385

E. F. L = 29.08(± 6.9°)

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

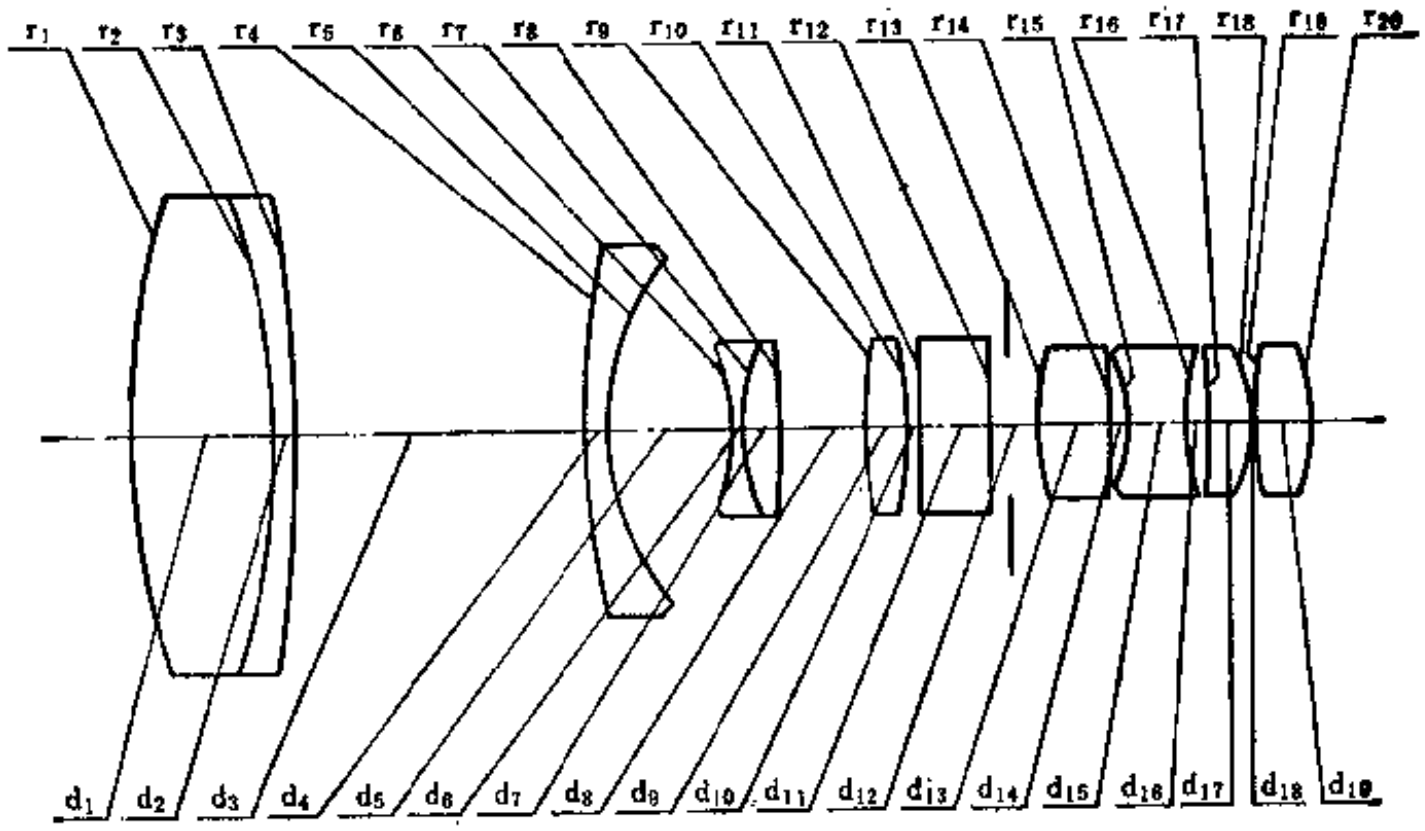




编号：04-03-004

变 焦 距 摄 影 物 镜

E.F.L＝10.25～34.30　B.F.L＝13.28　FNo.＝1.6　F.A.＝±19.5°～±5.7°



序号	r	d	n_d	ν_d	序号	r	d	n_d	ν_d
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	60.33
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	16.669	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			

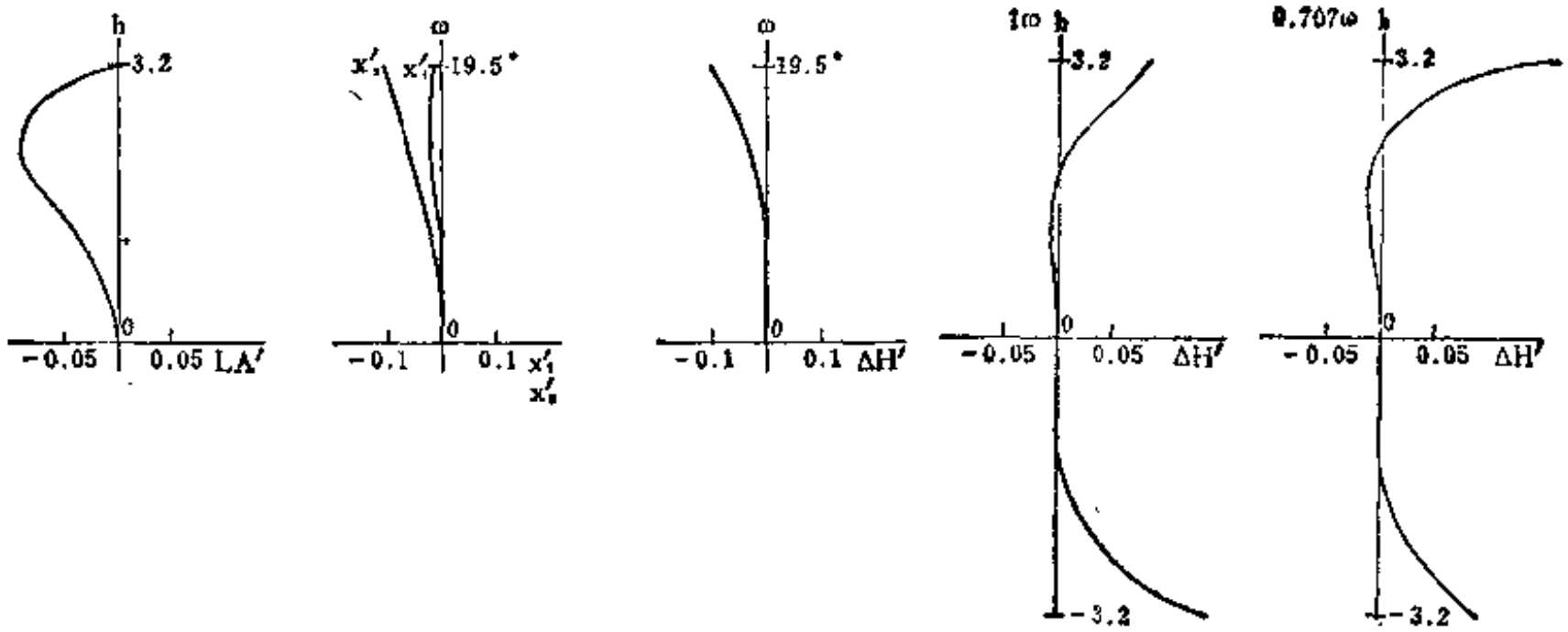
3.3* = 1.3+2.0

04-03-004-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.06064	− 0.00577	0.01256	− 0.02995	− 0.05659	3.6	− 2.7%
h 或 ω %	LA′	ΔH′	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. F. L = 10.25(± 19.5°)

* * * 1 = 0.800; * * * 2 = 29.906; * * * 3 = 8.524

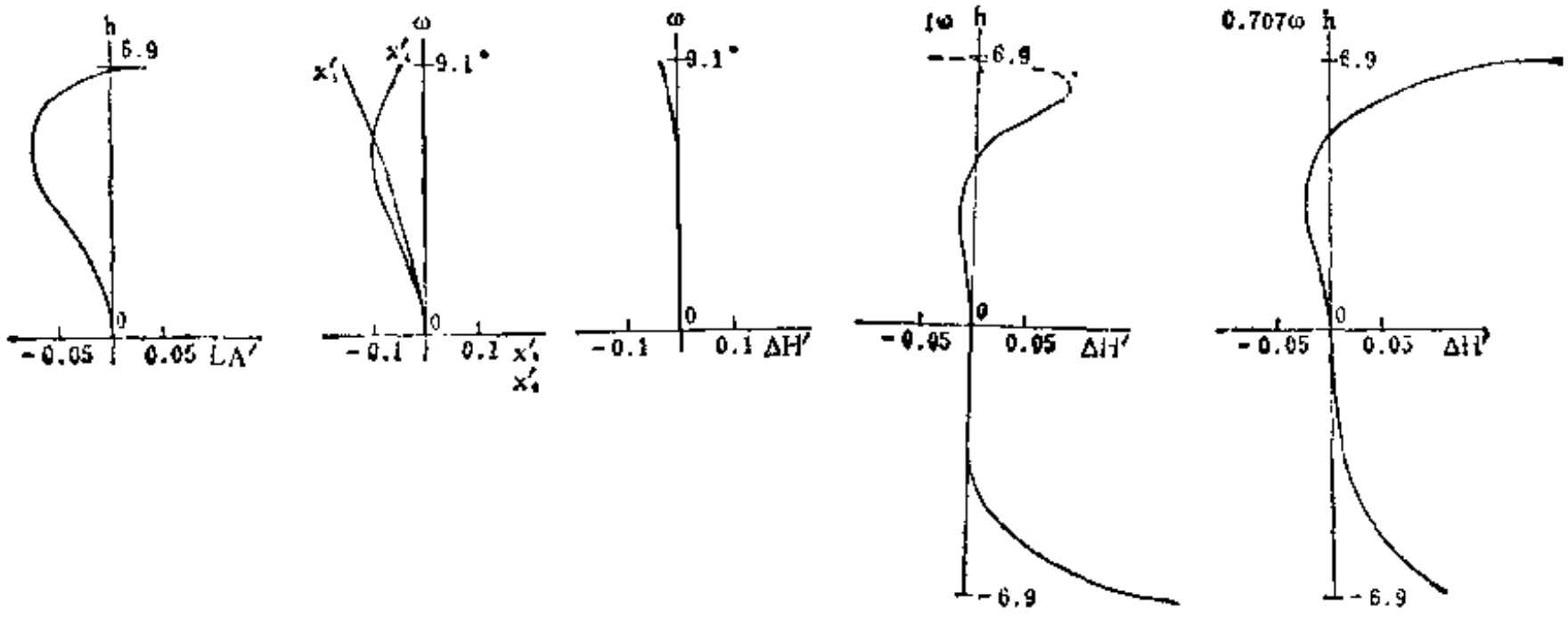


04-03-004-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.05362	− 0.00975	− 0.00728	− 0.03138	0.00639	3.5	− 0.79%
h 或 ω %	LA′	ΔH′	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	0.02103
70	− 0.0751	− 0.0029	− 0.0981	− 0.0931	− 0.0050	0.17227	0.01658

E. F. L = 22.07(± 9.1°)

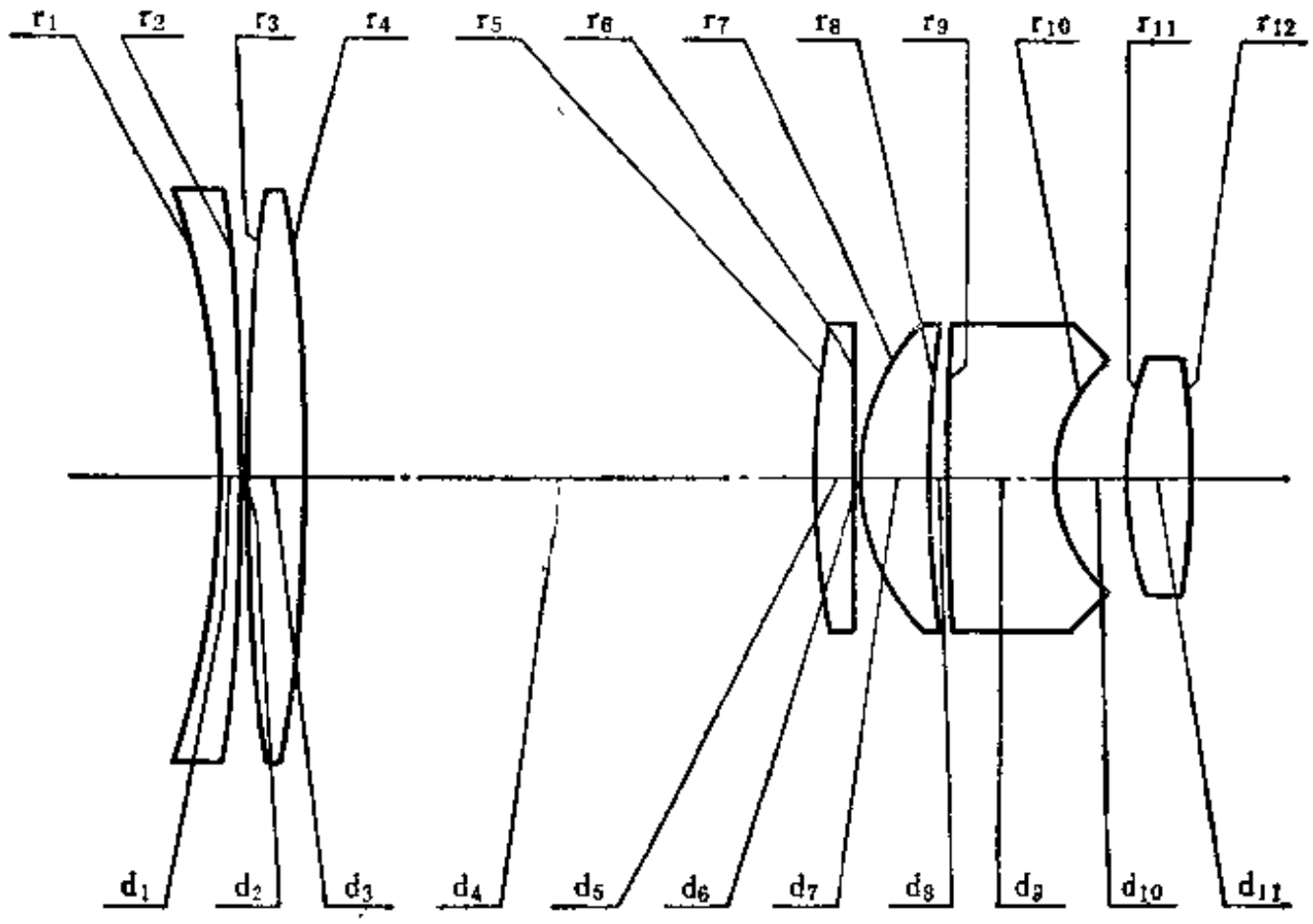
* * * 1 = 24.411; * * * 2 = 8.679; * * * 3 = 6.140



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°



序号	r	d	n_d	ν_d	序号	r	d	n_d	ν_d
1	－ 39.6000	0.80	1.5111	63.4	7	9.8186	3.30	1.62041	60.3
2	－111.7000	* * * 1			8	52.0000	0.60		
3	84.0000	2.70	1.62041	60.3	9	400.0000	4.80	1.7618	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			

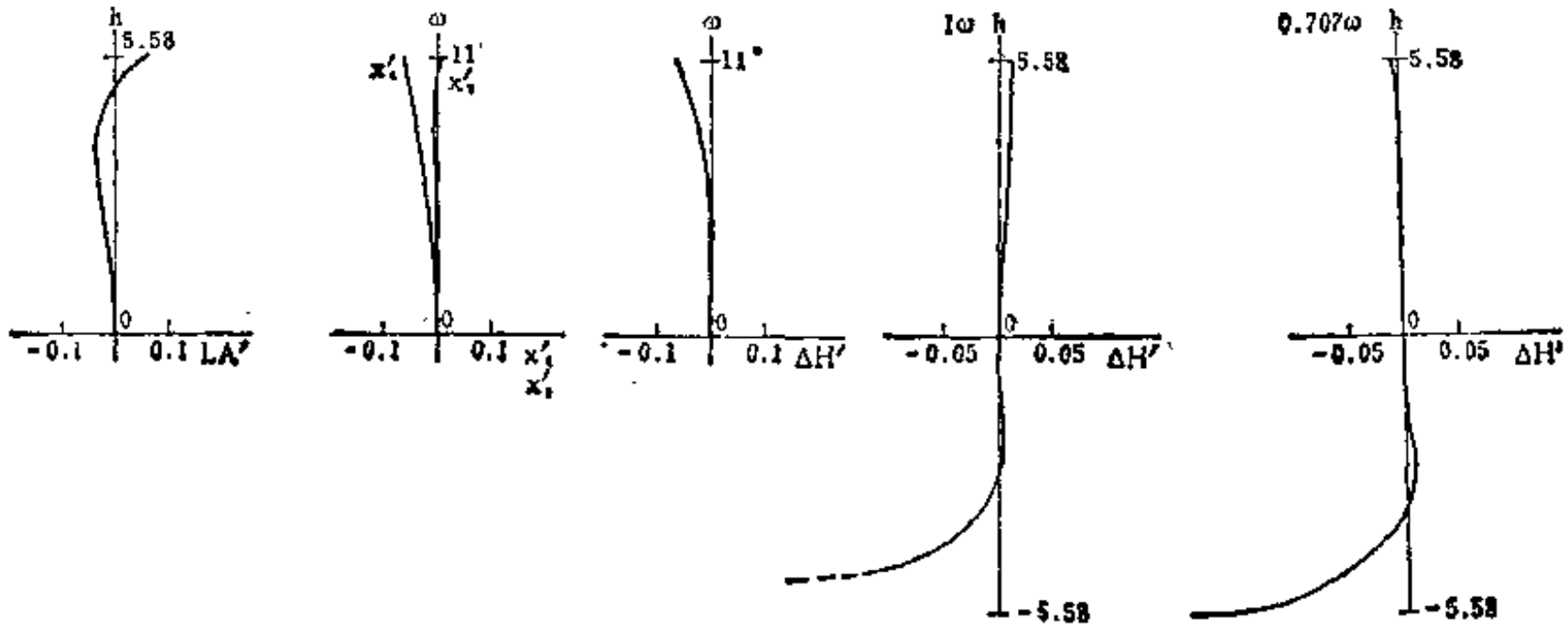
3.16* = 2.16 + 1.00

04-03-005-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.0335	0.0072	0.0087	−0.0275	−0.0362	3.04	−1.95%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
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(±11°)

* * * 1 = 31.70; * * * 2 = 0.30

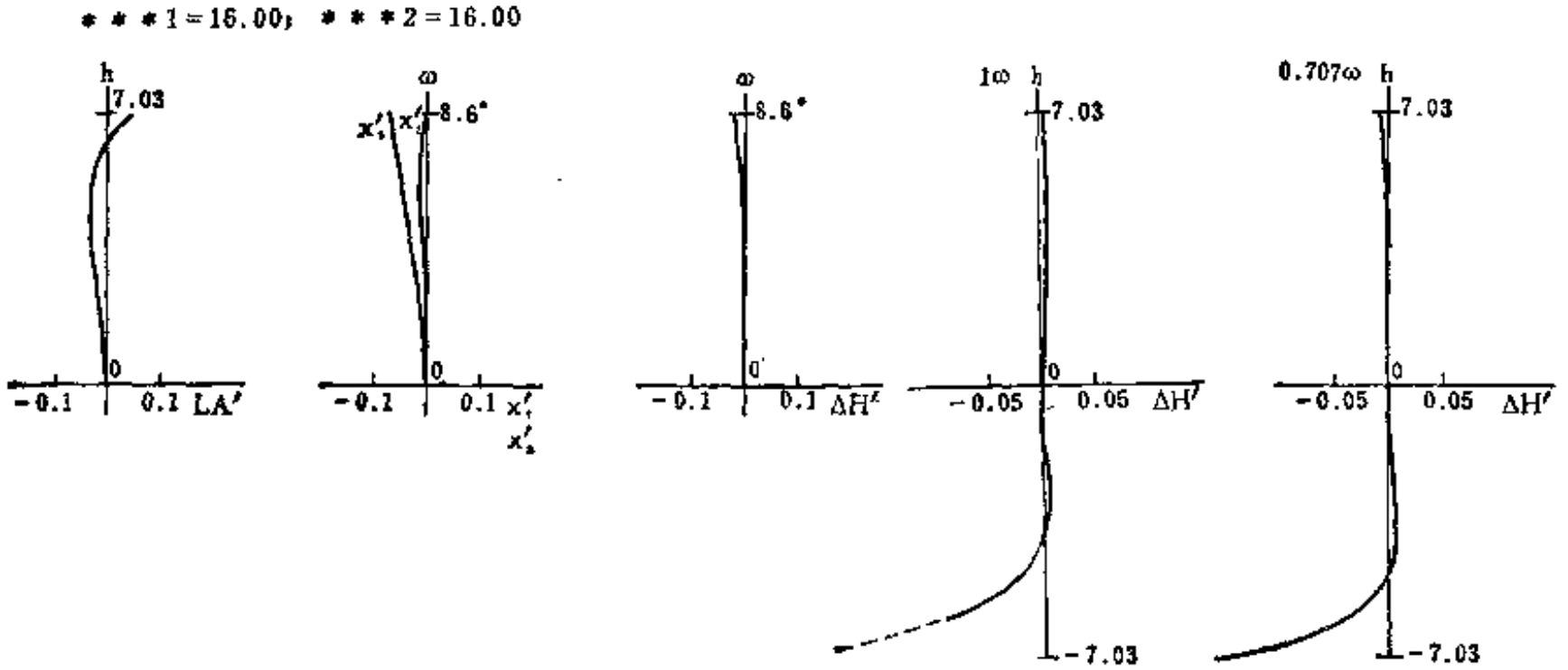


04-03-005-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.0353	0.0087	0.0070	−0.0268	−0.0048	2.97	−0.44%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0448	−0.0130	−0.0003	−0.0668	0.0665	−0.1727	−0.0056
70	−0.0339	−0.0035	−0.0064	−0.0366	0.0302	−0.0827	−0.0018

E. F. L = 19.68(±8.6°)

* * * 1 = 16.00; * * * 2 = 16.00

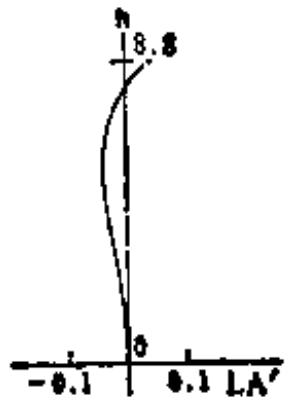


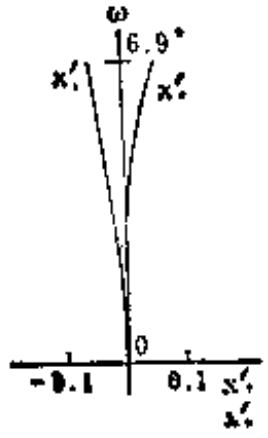
04-03-005-3

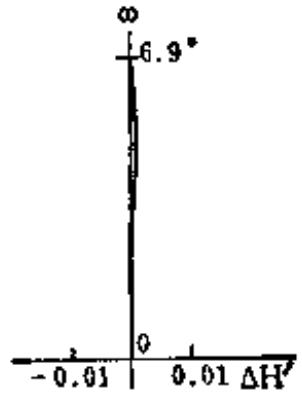
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.0358	0.0076	0.0107	− 0.0270	0.0052	2.98	− 0.001%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0433	− 0.00004	0.0535	− 0.0515	0.1050	− 0.1889	− 0.0097
70	− 0.0356	0.00130	0.0185	− 0.0292	0.0477	− 0.0898	− 0.0042

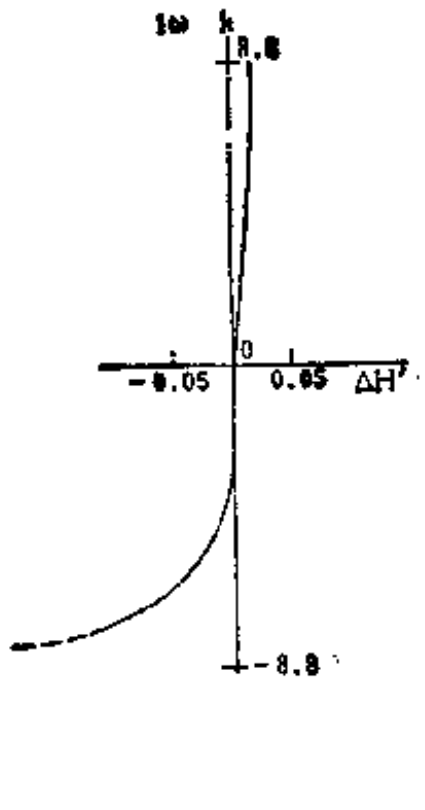
E . F . L = 24.7 (± 6.9°)

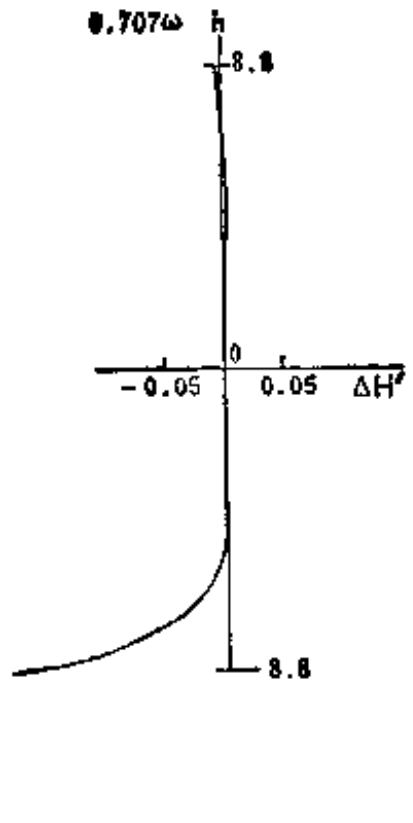
* * * 1 = 0.3, * * * 2 = 31.7







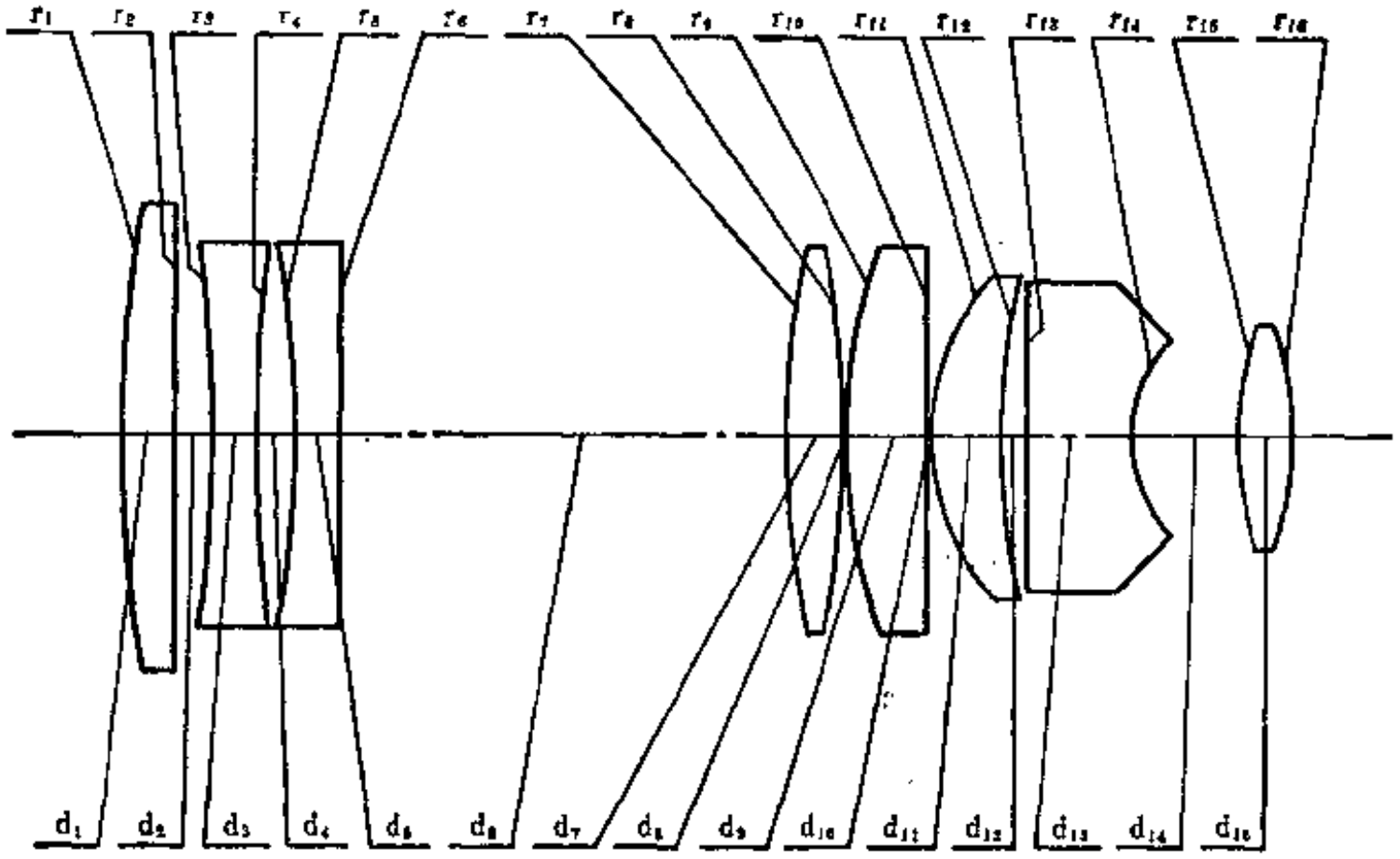




编号：04-03-006

八 片 式 变 焦 距 物 镜

E.F.L＝0.751～1.253　　B.F.L＝　　FNo.＝1.1　　F.A.＝±11.5°～±6.8°



序号	r	d	n_d	v_d	序号	r	d	n_d	v_d
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	0.56300	0.18880	1.62041	60.29
4	3.54321	0.07900			12	2.02380	0.04621		
5	− 2.37372	0.10947	1.51680	64.20	13	∞	0.25475	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	53.28
8	− 2.25261	0.00800			16	− 0.82575			

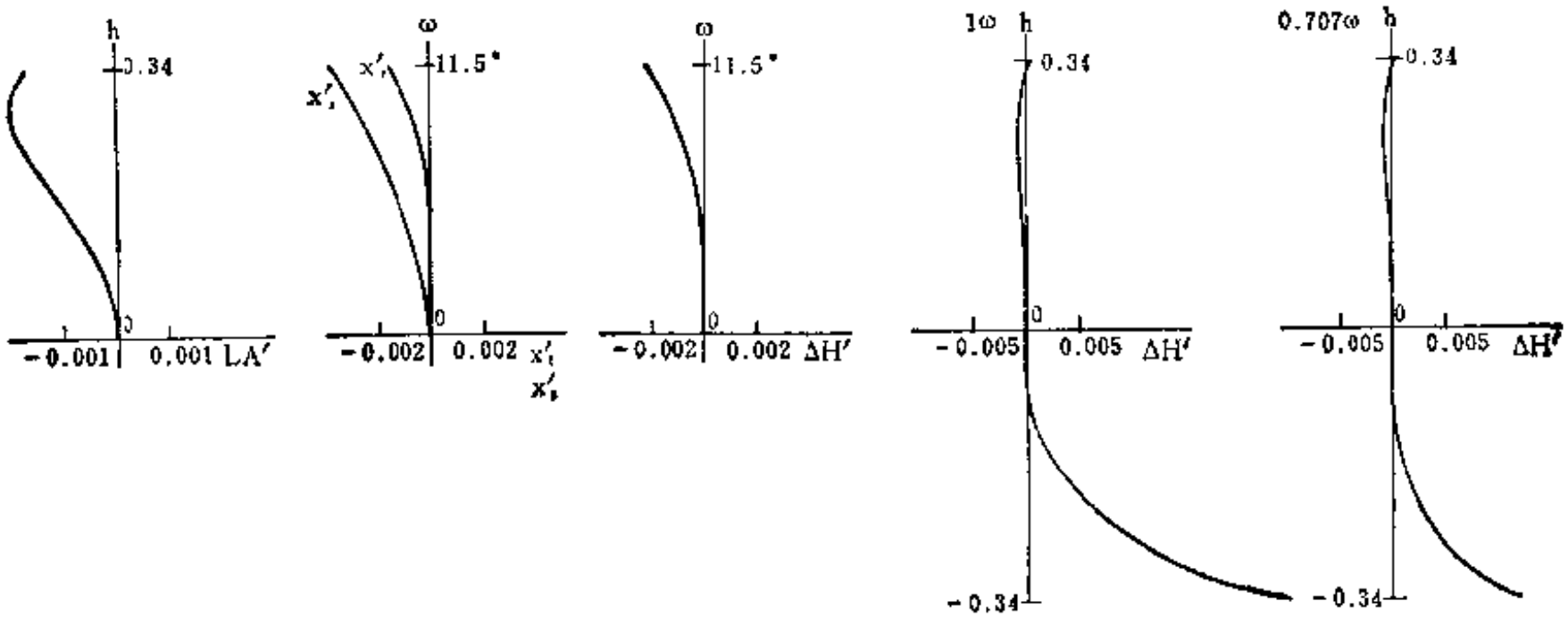
0.25194* = 0.10000 + 0.15194

04-03-006-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	- 0.00214	- 0.00024	0.00088	- 0.00263	- 0.00177	0.15	- 1.41%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
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	0.00609	0.00107

E. F. L = 0.751(±11.5°)　　B F. L = 0.292

* * * 1 = 0.08749,　* * * 2 = 1.08023

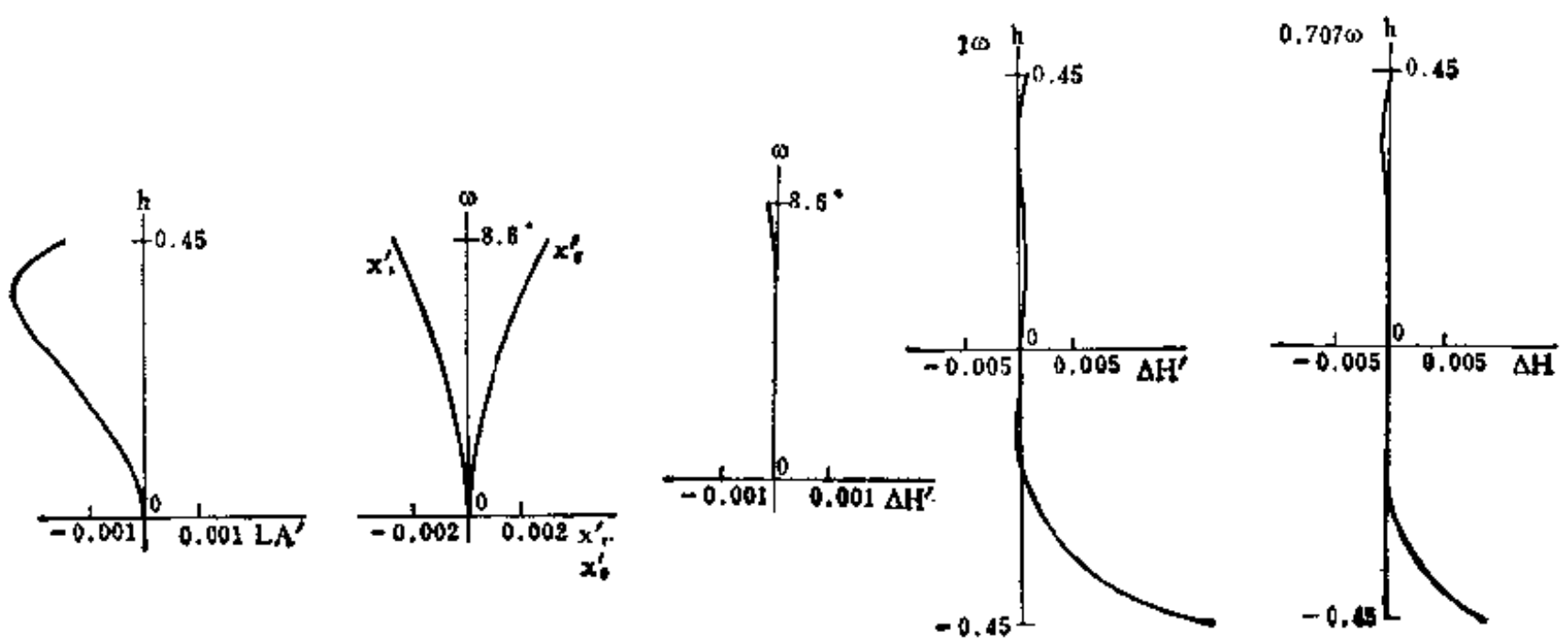


04-03-006-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	- 0.00259	- 0.00044	0.00138	- 0.00261	0.00001	0.15	- 0.09%
h 或 ω %	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
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(±8.6°)　　B. F. L = 0.313

* * * 1 = 0.68768,　* * * 2 = 0.48004

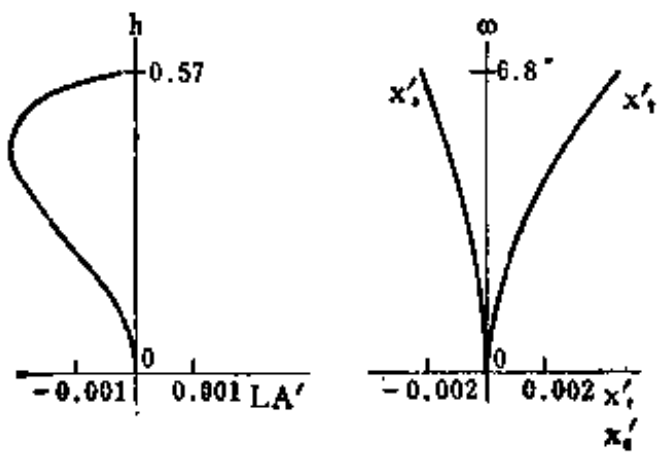


04-03-006-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.00275	− 0.00069	0.00161	− 0.00268	0.00103	0.15	0.68%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	− 0.00017	0.00102	0.00454	− 0.00215	0.00670	0.00787	0.00096
70	− 0.00211	0.00039	0.00244	− 0.00122	0.00366	0.00391	0.00009

E . F . L = 1.253(± 6.8°)　　B . F . L = 0.324

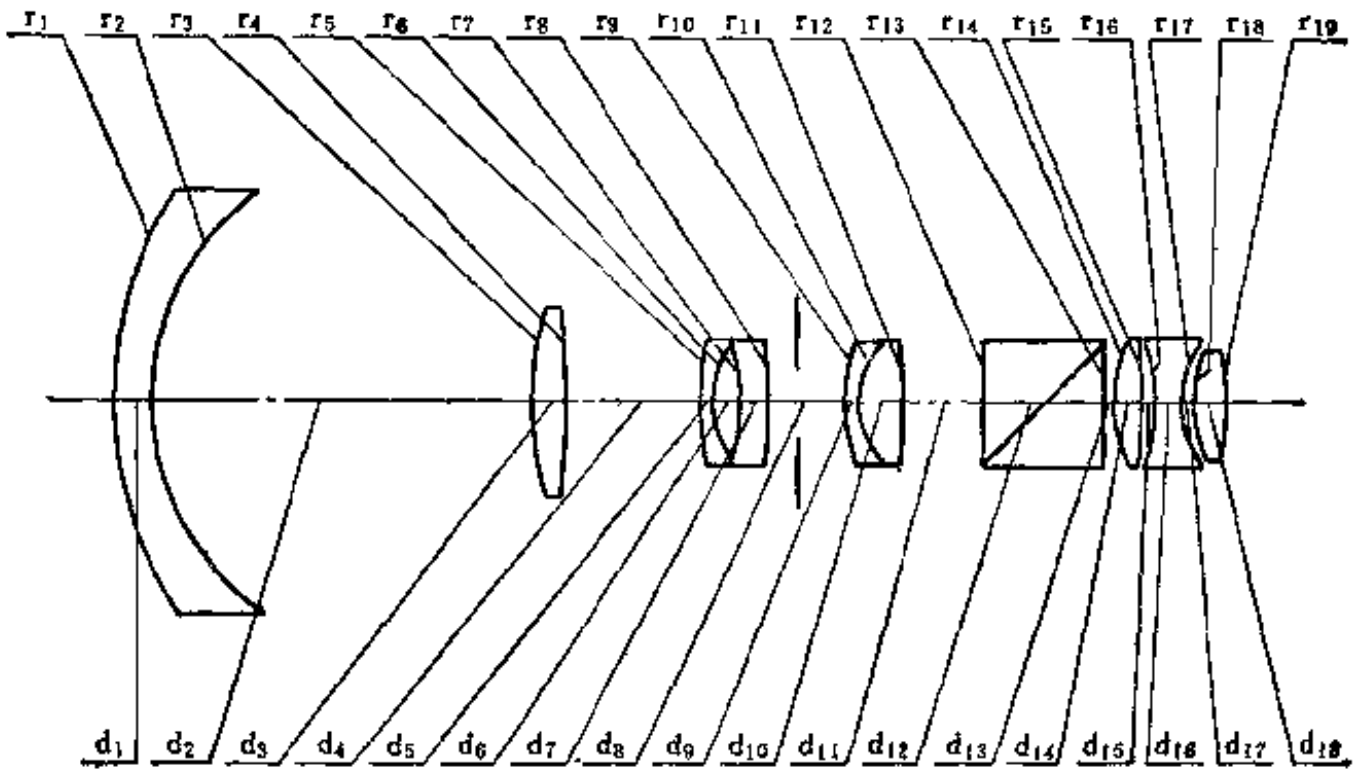
* * * 1 = 1.12772,　* * * 2 = 0.04000



编号：04-03-007

变 焦 距 镜 头

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



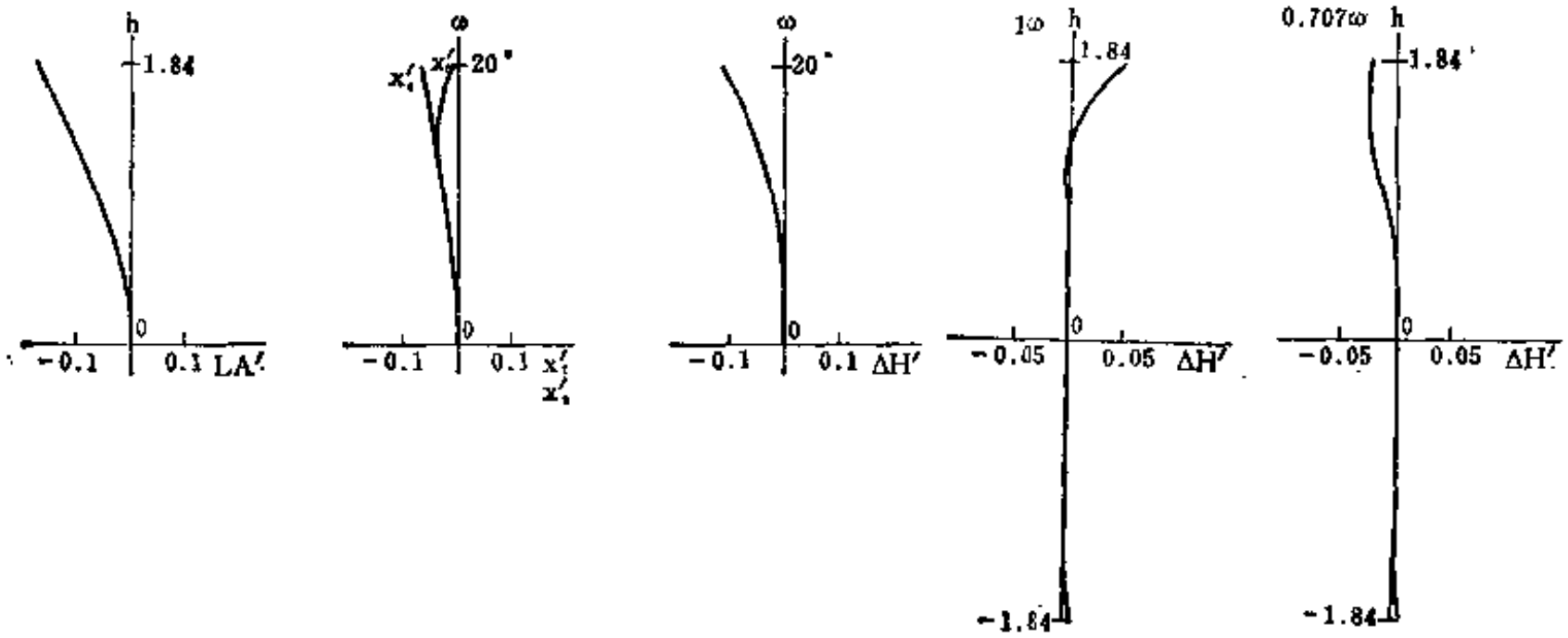
序号	r	d	n	ν	序号	r	d	n	ν
1	35.60	3.48	1.50	67.0	11	− 62.90	* * * 3		
2	24.10	36.02			12	∞	11.13	1.49	57.4
3	32.60	2.73	1.64	60.1	13	∞	0.85		
4	−103.60	* * * 1			14	13.20	2.58	1.69	56.2
5	51.80	0.90	1.50	67.0	15	−267.80	0.93		
6	9.27	2.17			16	− 19.30	2.73	1.62	36.6
7	− 19.40	2.92	1.50	67.0	17	9.56	0.83		
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

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ●)
	-0.0135	-0.0063	0.0008	-0.0052	-0.0419	3.65	-3.1%
h 或 ω %	LA′	ΔH′	x_t	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
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(±20°)

* * *1 = 3.06; * * *2 = 24.94; * * *3 = 2.02; * * *2* = 24.91 = 17.74 + 7.20

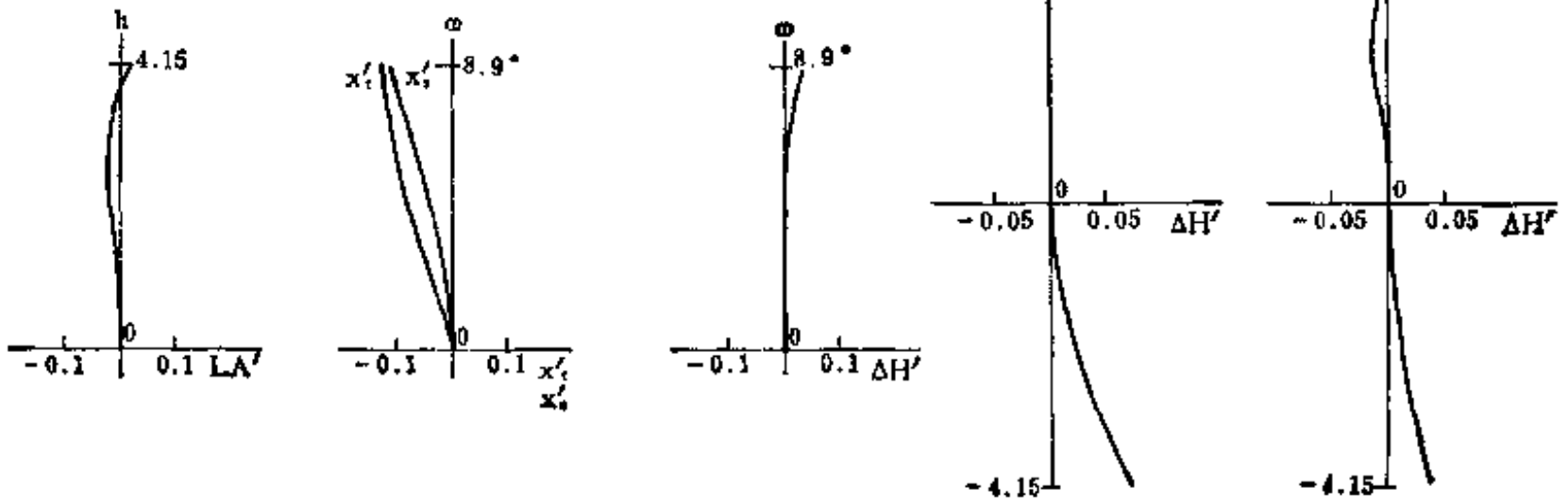


04-03-007-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.0053	0.0001	-0.0036	-0.0054	0.0091	3.55	1.06%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0228	0.0377	-0.124	-0.108	-0.016	0.0651	0.0213
70	-0.0217	0.0106	-0.096	-0.062	-0.034	0.0303	0.0082

E. F. L = 22.60(±8.9°)

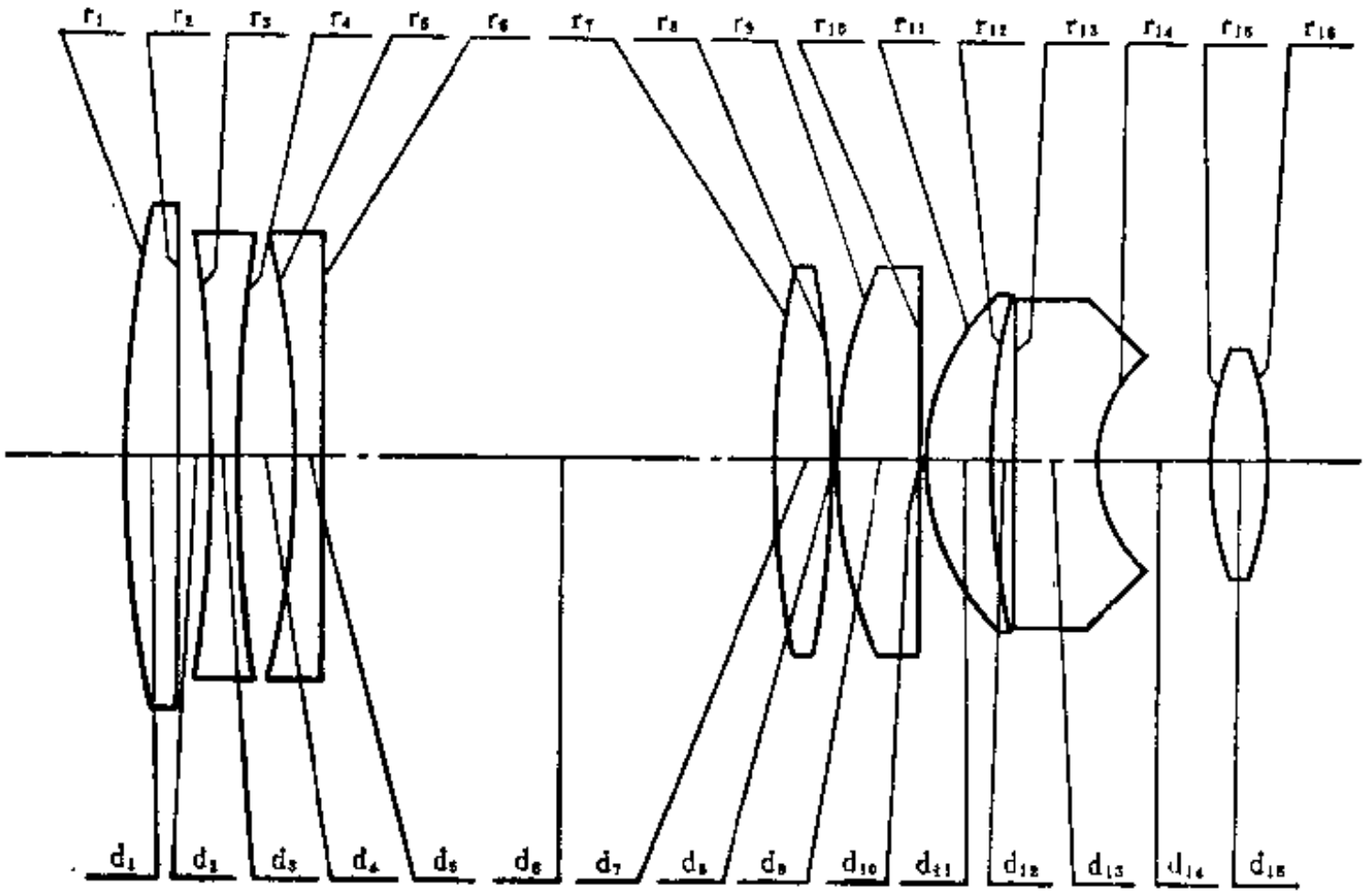
* * *1 = 13.28; * * *2 = 9.05; * * *3 = 7.67; * * *2* = 9.05 = 7.52 + 1.53



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_d	ν_d	序号	r	d	n_d	ν_d
1	3.17793	0.12500	1.56873	63.12	9	1.16025	0.21000	1.62041	60.29
2	∞	* * * 1			10	∞	0.00500		
3	− 3.84882	0.07250	1.51680	64.20	11	0.56300	0.16480	1.62041	60.29
4	3.84882	0.12791			12	2.14680	0.04621		
5	− 2.31809	0.07250	1.51680	64.20	13	∞	0.19700	1.78470	26.10
6	∞	* * * 2			14	0.34065	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			

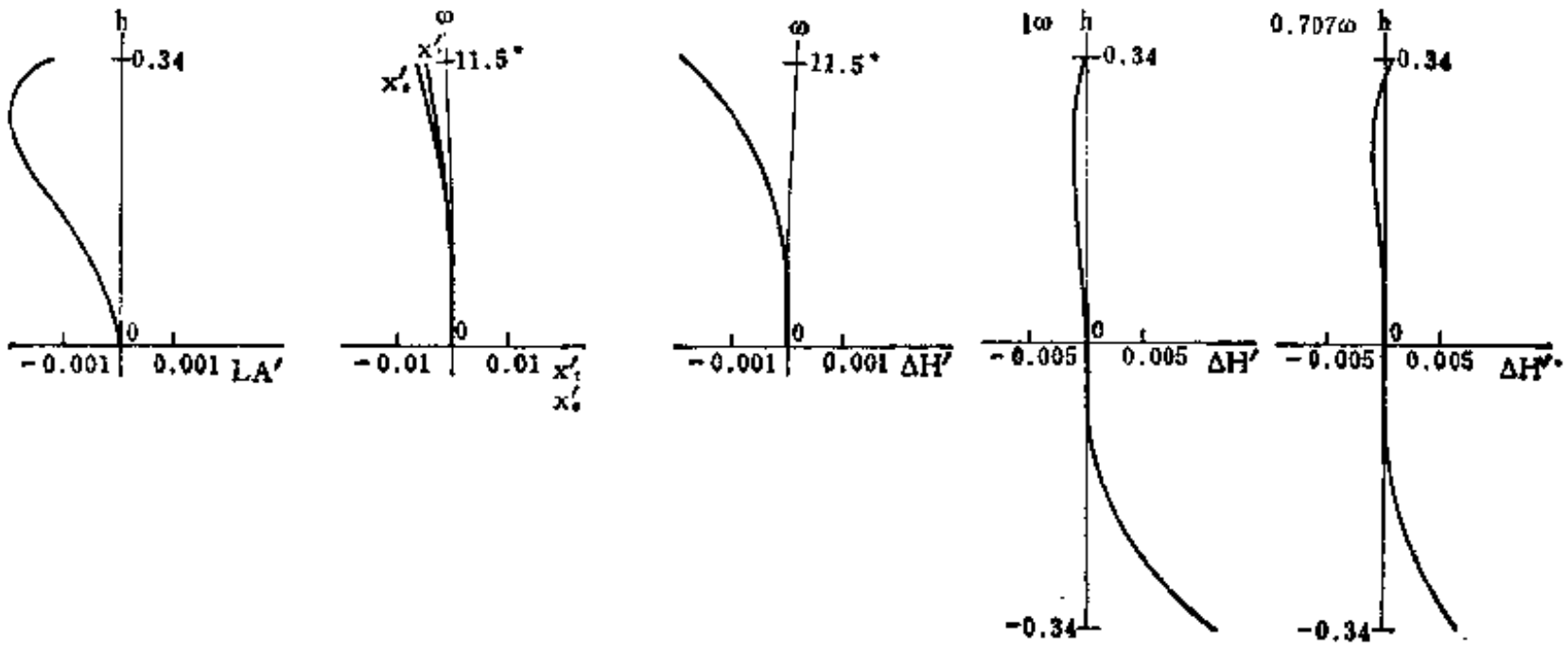
0.28051* = 0.10000 + 0.18051

04-03-008-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.00248	0.00005	0.00052	− 0.00278	− 0.00178	0.151	− 1.4%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	− 0.0012	− 0.0021	− 0.0036	− 0.0049	0.0013	0.00578	0.00175
70	− 0.0019	− 0.0007	− 0.0016	− 0.0026	0.0010	0.00336	0.00073

E . F . L = 0.747(±11.5°)　B . F . L = 0.296

* * * 1 = 0.07800;　* * * 2 = 1.11451

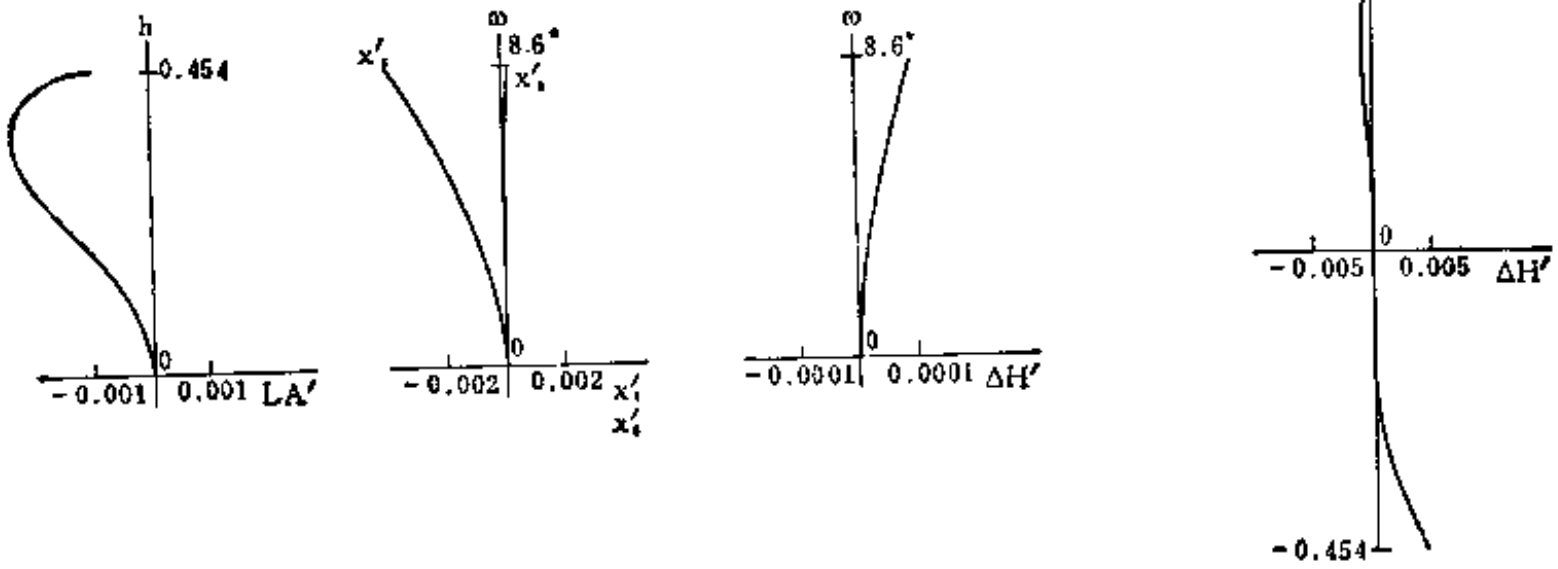


04-03-008-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.00295	− 0.00021	0.00097	− 0.00280	0.00021	0.15	0.06%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	− 0.0009	0.000095	0.00020	− 0.00390	0.00410	0.00350	0.00060
70	− 0.0023	0.000059	0.00016	− 0.00210	0.00226	0.00232	0.00018

E . F . L = 0.998(±8.6)°　B . F . L = 0.316

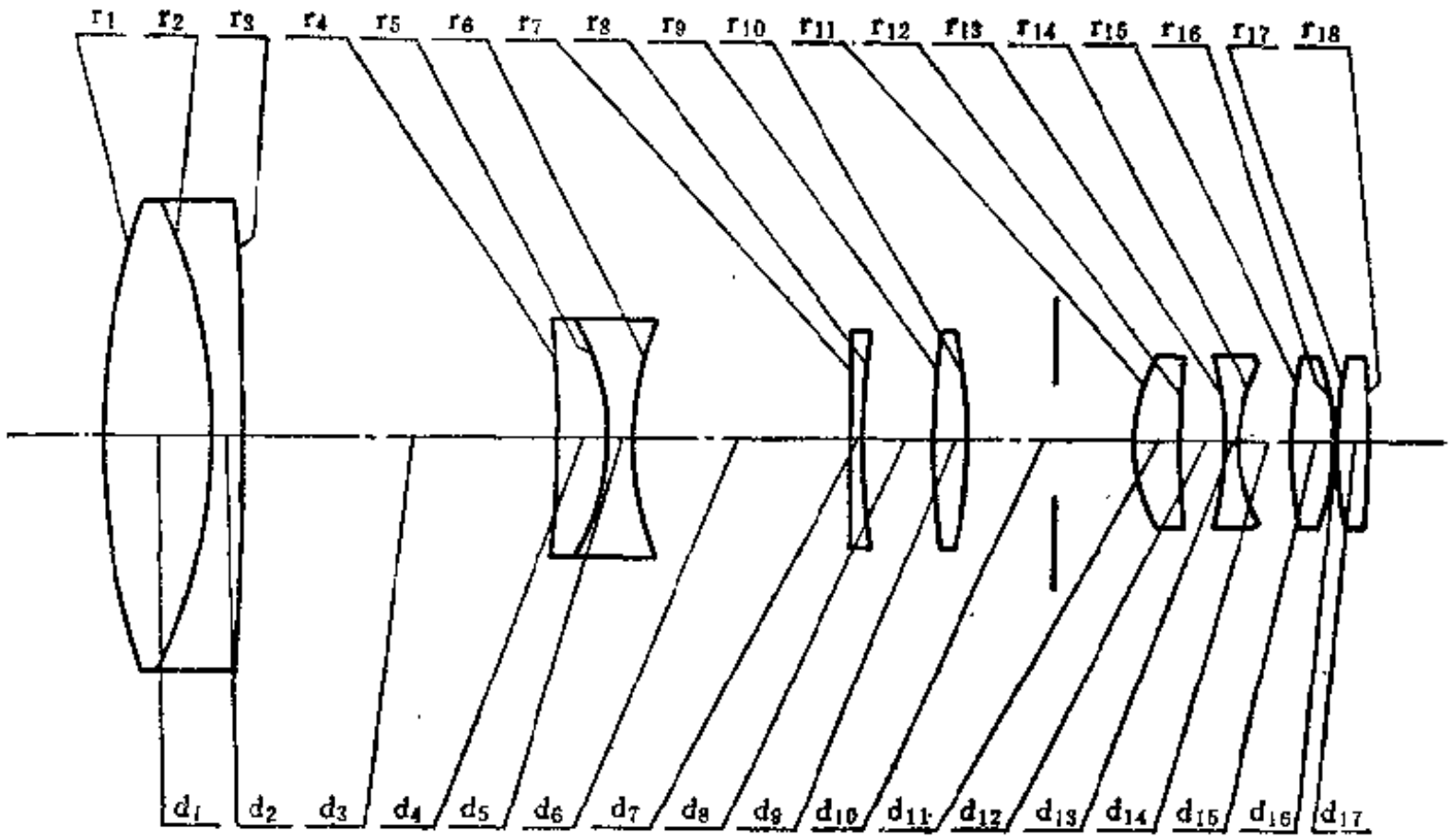
* * * 1 = 0.69769;　* * * 2 = 0.49481



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.＝±14.2°～±4.7°



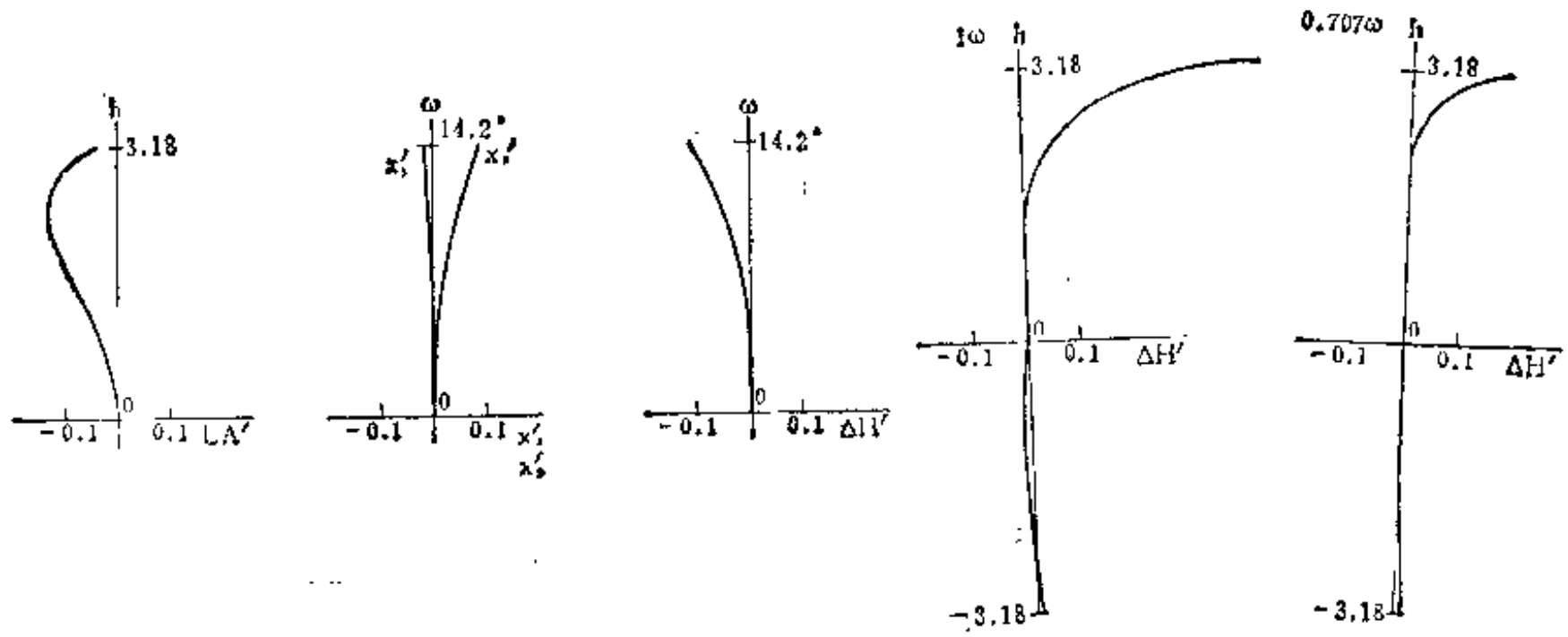
序号	r	d	n_D	ν_D	序号	r	d	n_D	ν_D
1	50.89	7.40	1.611	58.8	10	− 32.96	＊＊＊4		
2	− 37.04	2.02	1.649	33.8	11	11.83	3.20	1.697	56.2
3	−390.30	＊＊＊1			12	203.00	2.94		
4	− 80.55	3.57	1.720	29.3	13	− 22.61	1.06	1.720	29.3
5	− 15.98	1.80	1.697	56.2	14	11.40	4.09		
6	21.70	＊＊＊2			15	43.01	2.80	1.611	58.8
7	∞	1.07	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

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.0534	− 0.0169	0.0036	− 0.0103	− 0.0526	3.06	− 3.4%
h 或ω%	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 = 12.10(±14.2°)

* * * 1 = 2.50; * * * 2 = 34.56; * * * 3 = 2.12; * * * 4 = 14.58; * * * 4° = 14.58 = 8.87 + 5.71

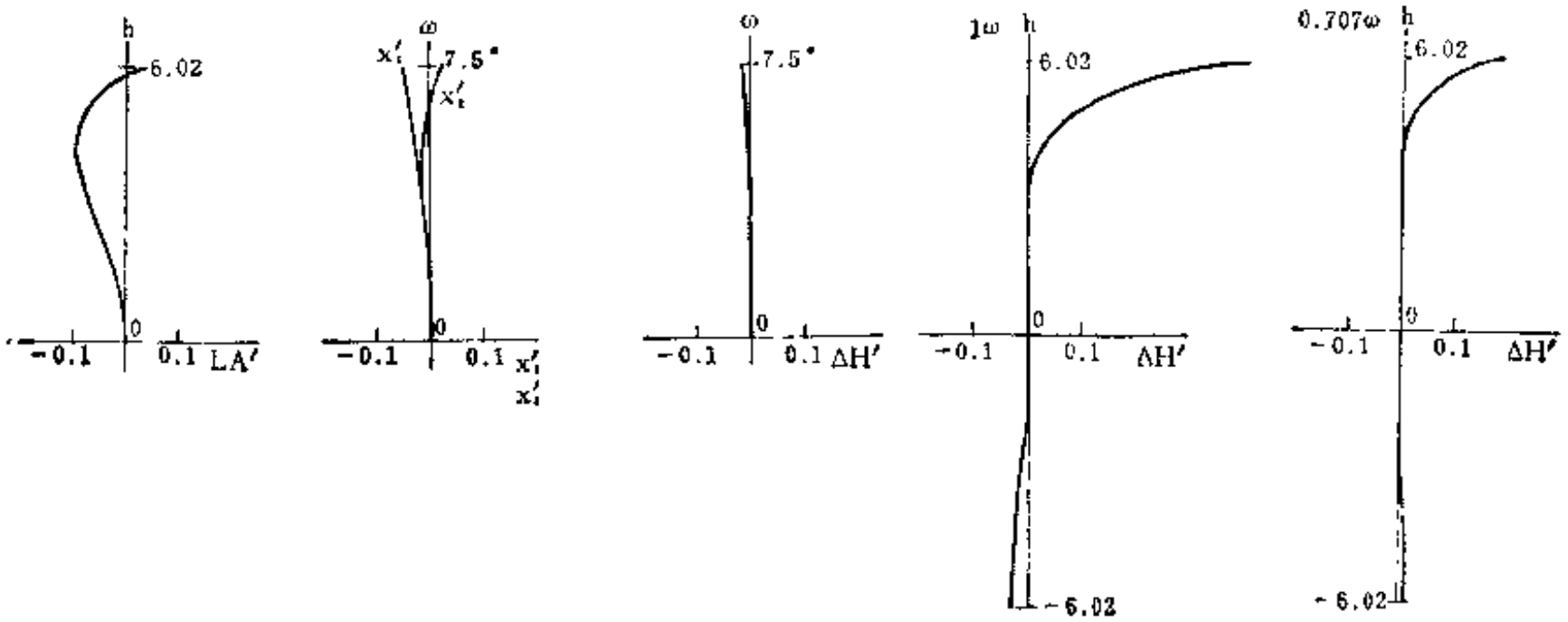


04-03-009-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	− 0.0449	− 0.0110	0.0014	− 0.0104	− 0.0031	3.01	− 0.41%
h 或ω%	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	0.0009
70	− 0.096	− 0.0031	− 0.0102	− 0.0301	0.0199	0.0958	− 0.003₀

E. F. L = 22.86(±7.5°)

* * * 1 = 22.12; * * * 2 = 14.94; * * * 3 = 4.99; * * * 4 = 11.71; * * * 4° = 11.71 = 6.00 + 5.71

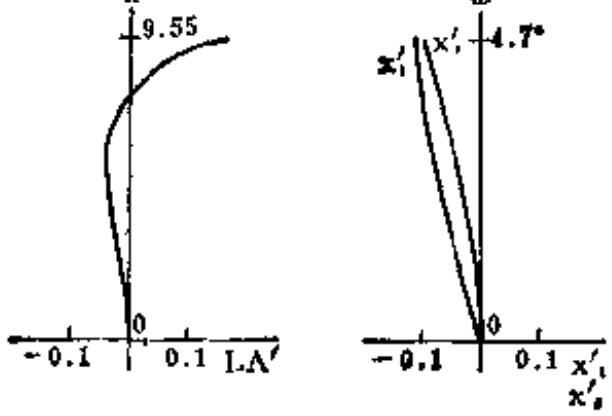


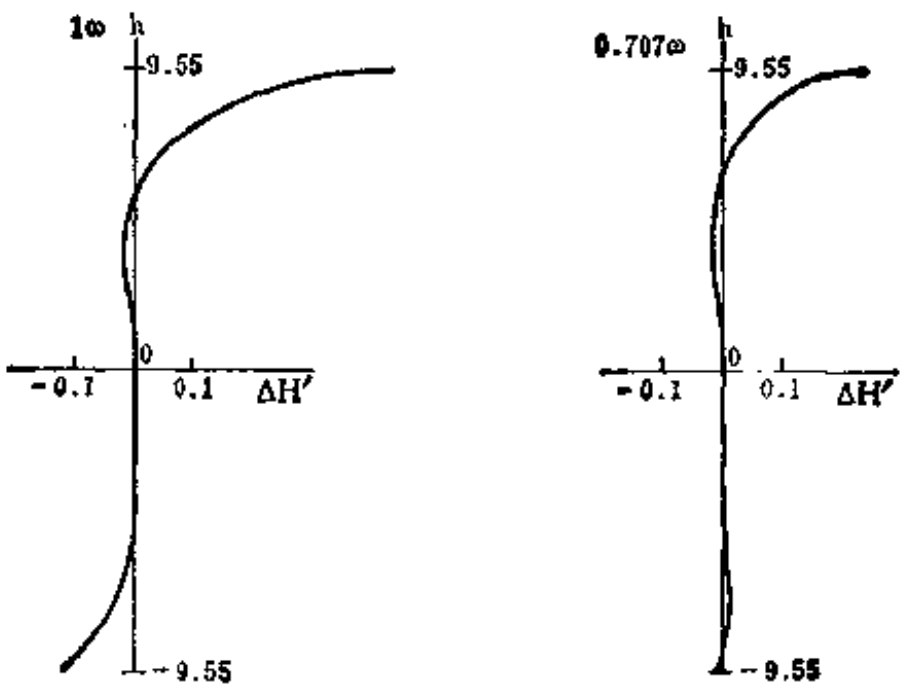
04-03-009-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.0275	−0.0003	−0.0071	−0.0106	0.0162	3.01	0.84%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
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. F. L = 36.27(±4.7°)

* * * 1 = 31.86; * * * 2 = 5.20; * * * 3 = 2.87; * * * 4 = 13.83; * * * 4* = 13.83 = 8.12 + 5.71

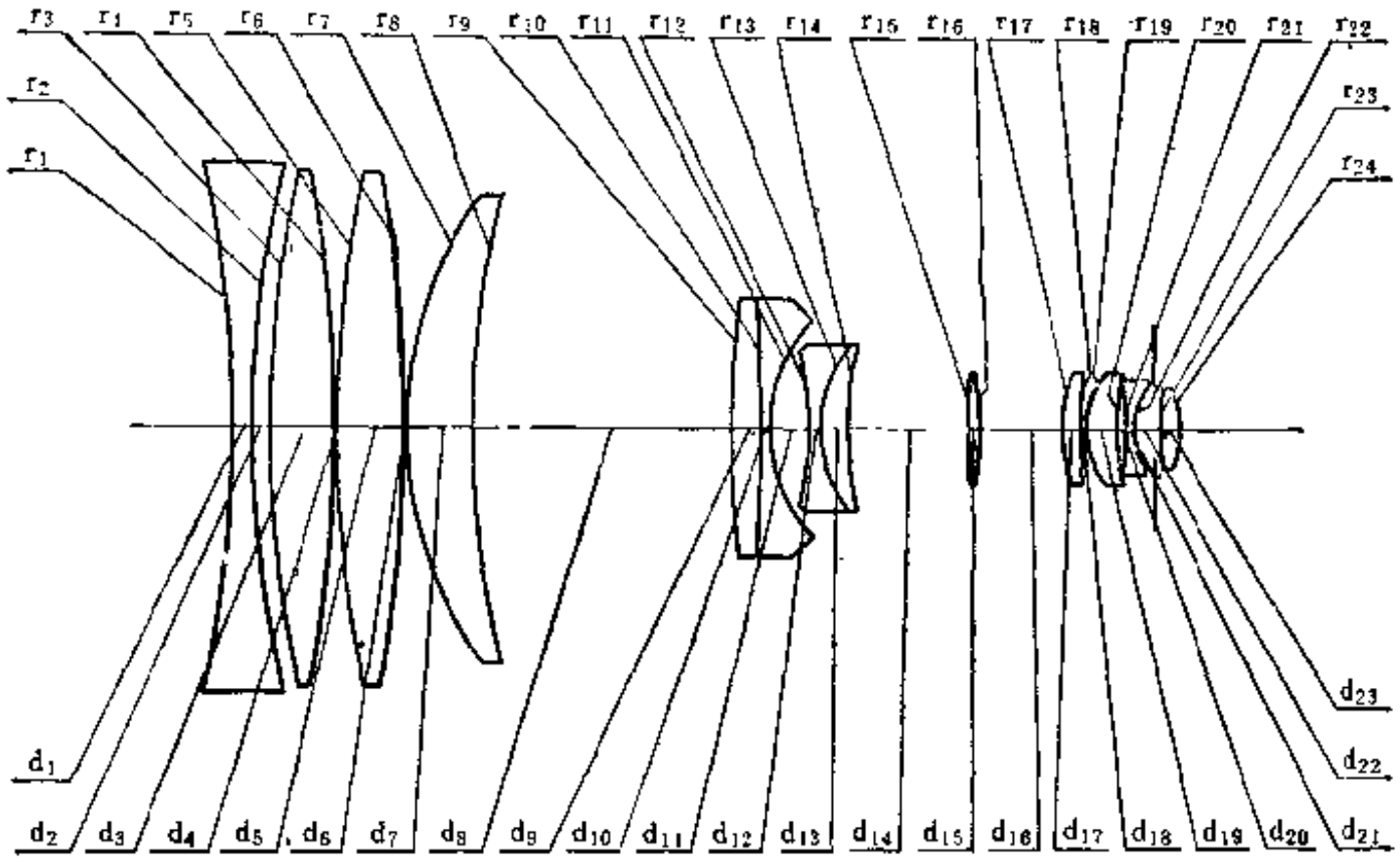




编号： 04-03-010

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_d	ν_d	序号	r	d	n_d	ν_d
1	－552.80	8.50	1.74080	28.05	13	57.00	12.50	1.805.8	25.46
2	468.80	8.50			14	136.05	＊＊＊3		
3	627.10	27.50	1.62041	60.29	15	349.10	5.00	1.65830	57.29
4	－627.10	0.50			16	－173.10	35.00		
5	627.10	27.50	1.62041	60.29	17	39.95	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	37.25	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	－137.95	5.00	1.71300	53.89	24	－48.05			

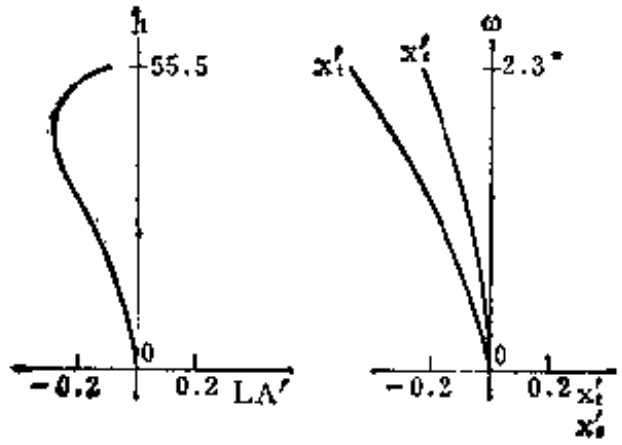
11.55* = 6.00 + 5.55

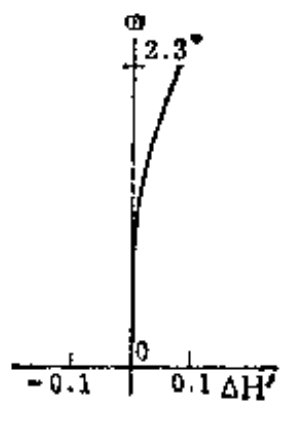
04-03-010-3

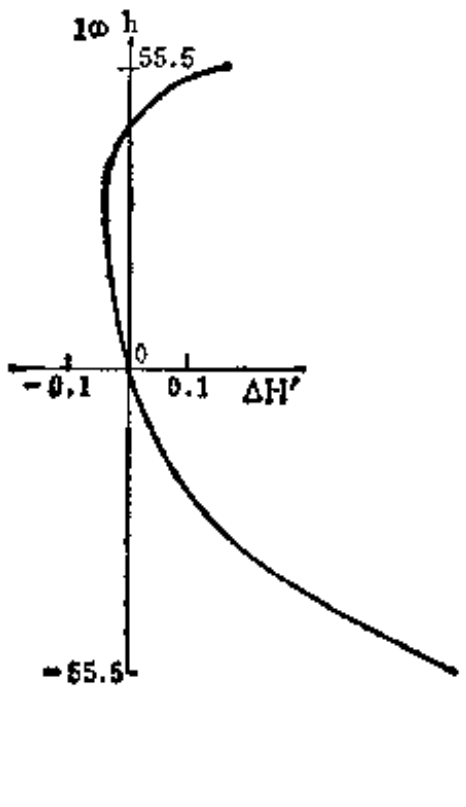
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.1222	0.0399	−0.0275	−0.0120	0.0487	8.1	1.02%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	−0.070	0.0823	−0.484	−0.231	−0.253	0.3620	0.1186
70	−0.277	0.0301	−0.278	−0.123	−0.155	0.2805	0.0953

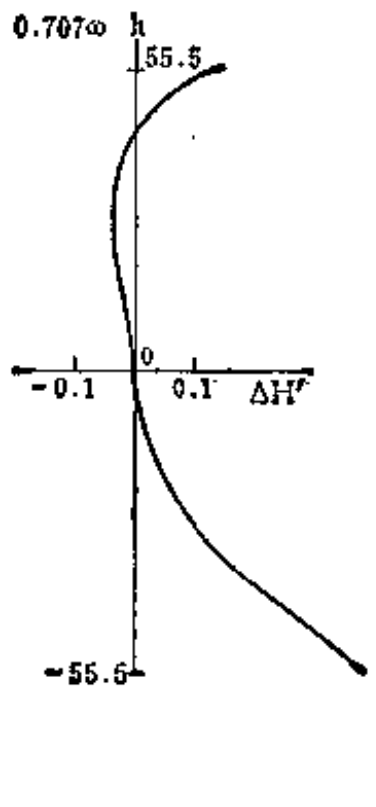
E. F. L = 202.60(±2.3°)

＊＊＊1 = 145.60;　＊＊＊2 = 28.50;　＊＊＊3 = 3.40





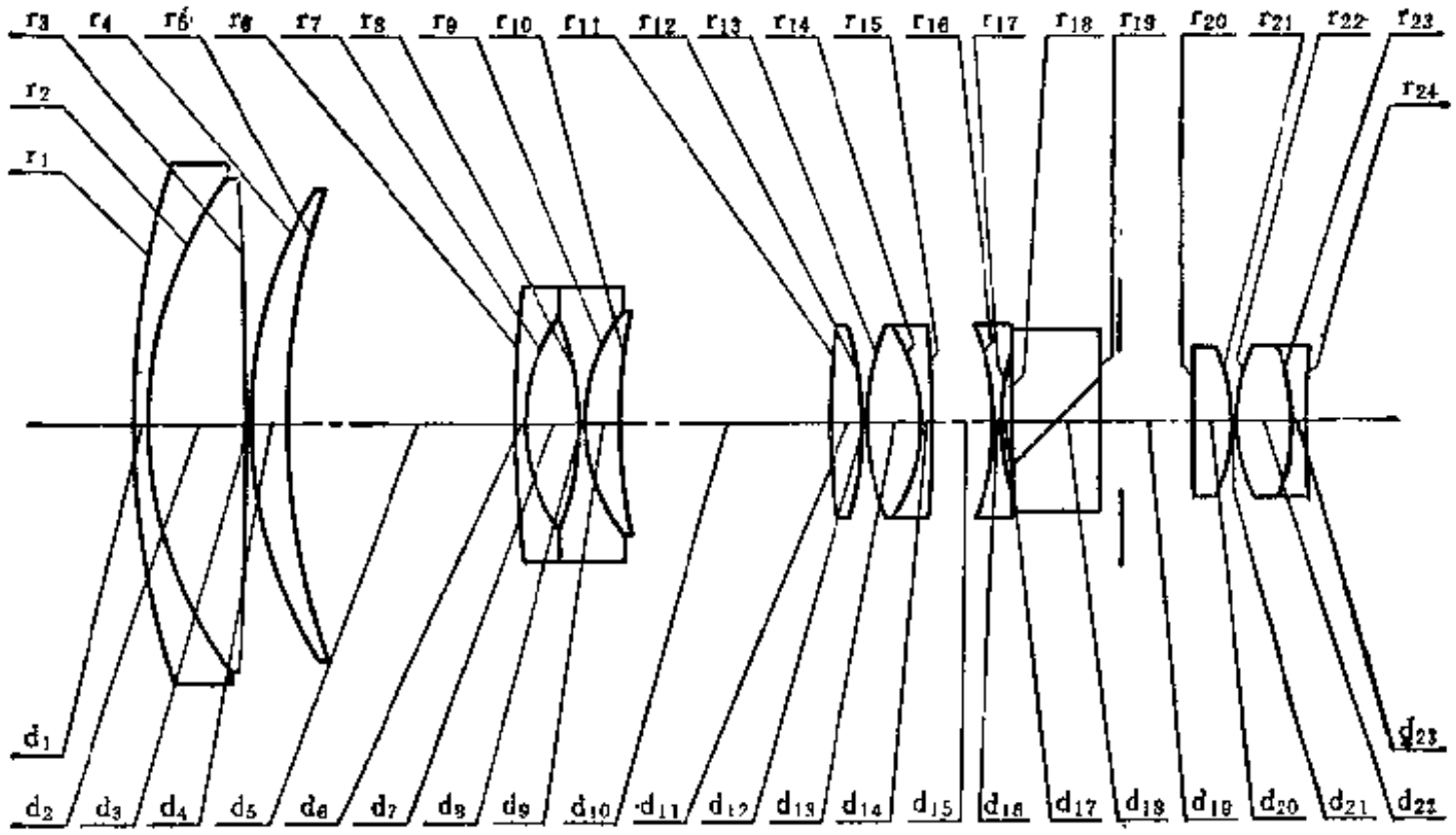




编号： 04-03-011

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_d	ν	序号	r	d	n_d	ν
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	69.590	＊＊＊1			17	24.050	0.85		
6	205.150	0.90	1.717	47.9	18	∞	8.30	1.57501	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	25.5
12	−33.490	0.10			24	174.600			

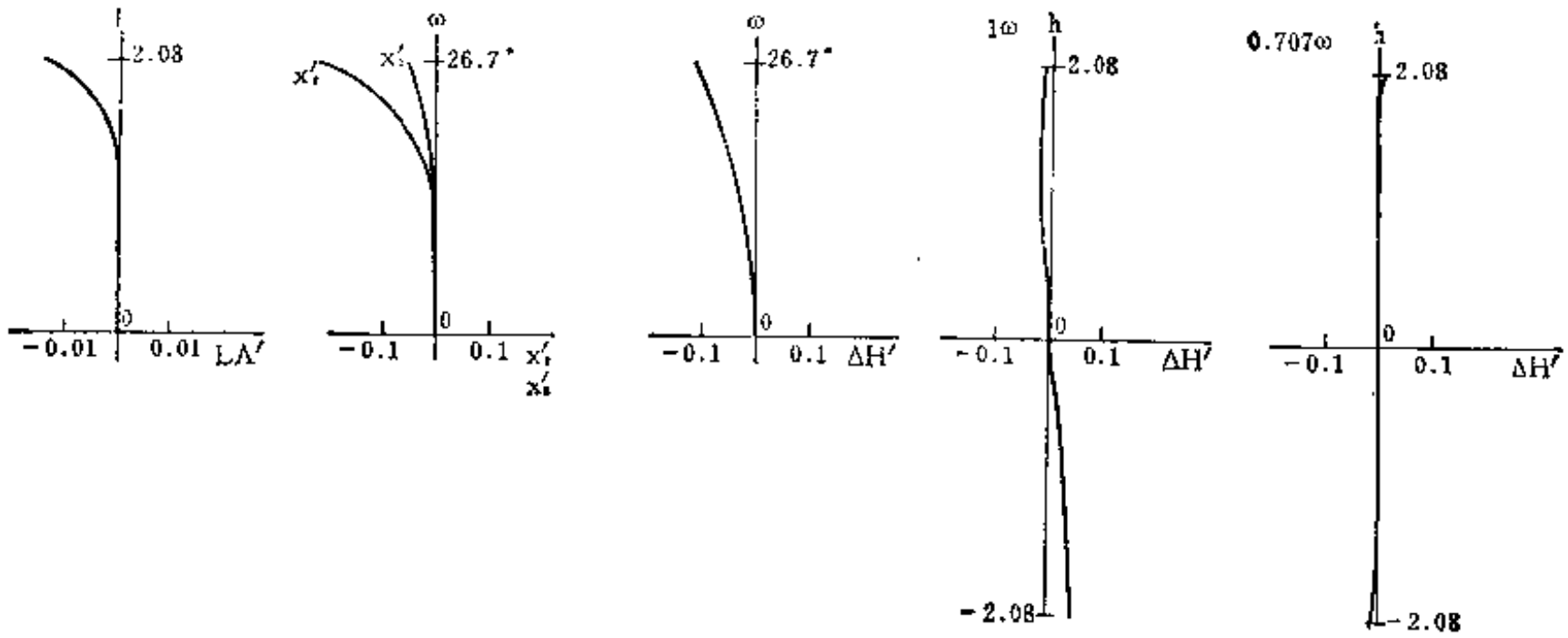
8.90* = 2.90 + 6.00

04-03-011-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.00005	-0.00450	0.00707	-0.00636	-0.08159	3.77	-2.99%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	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(±26.7°)

＊＊＊1=1.73; ＊＊＊2=45.72; ＊＊＊3=1.47

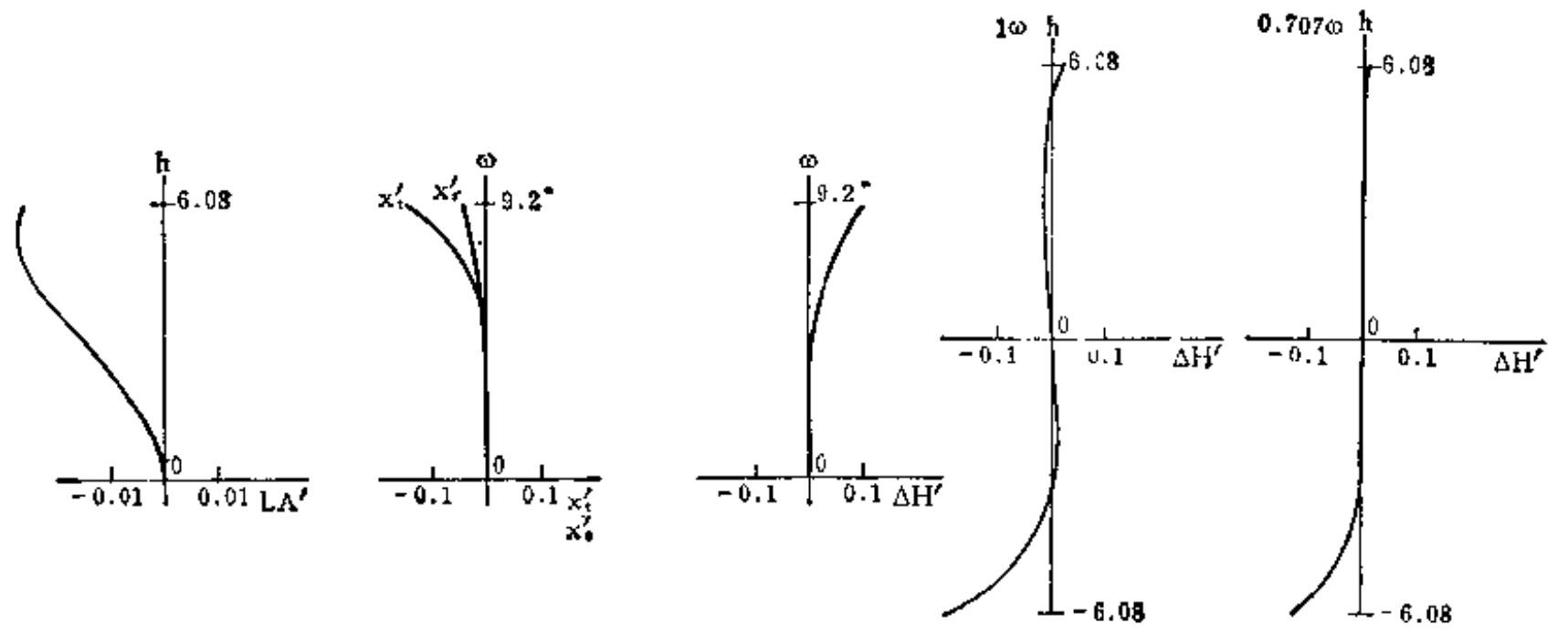


04-03-011-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.01142	0.00083	0.00401	-0.00683	0.03673	3.53	3.04%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.0259	0.1072	-0.1437	-0.0372	-0.1065	-0.0978	-0.0231
70	-0.0243	0.0301	-0.0195	-0.0136	-0.0059	-0.0538	-0.0137

E.F.L=21.90(±9.2°)

＊＊＊1=22.43; ＊＊＊2=20.37; ＊＊＊3=6.12

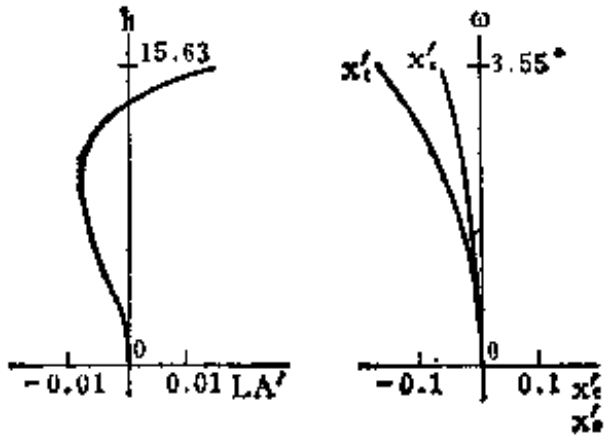


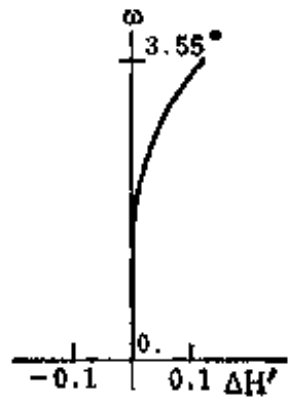
04-03-011-3

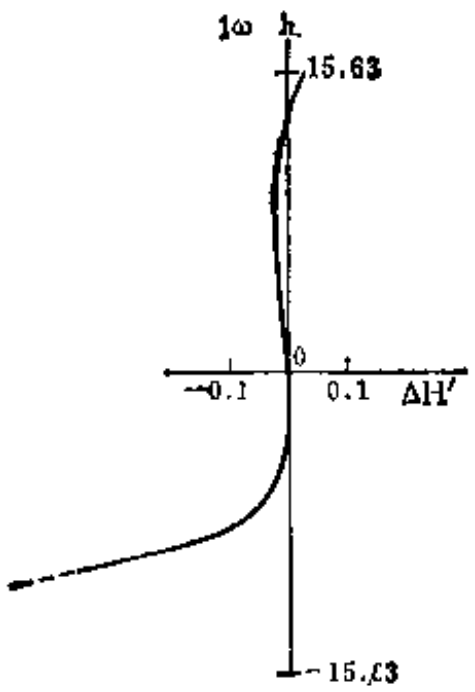
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.00558	0.00607	-0.00374	-0.00683	0.05126	3.5	3.25%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0169	0.1138	-0.1692	-0.0667	-0.1025	-8.1295	-0.3093
70	-0.0077	0.0357	-0.0750	-0.0335	-0.0415	-0.4015	-0.0333

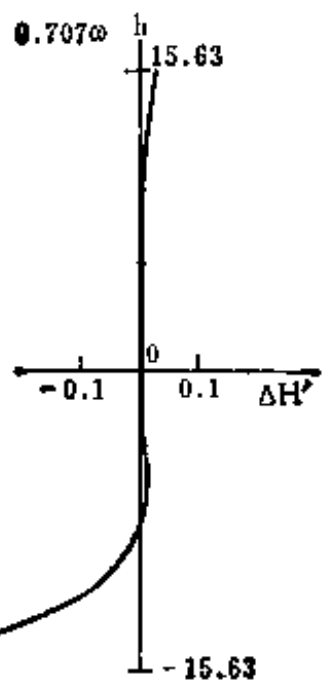
E. F. L = 56.30(±3.55°)

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





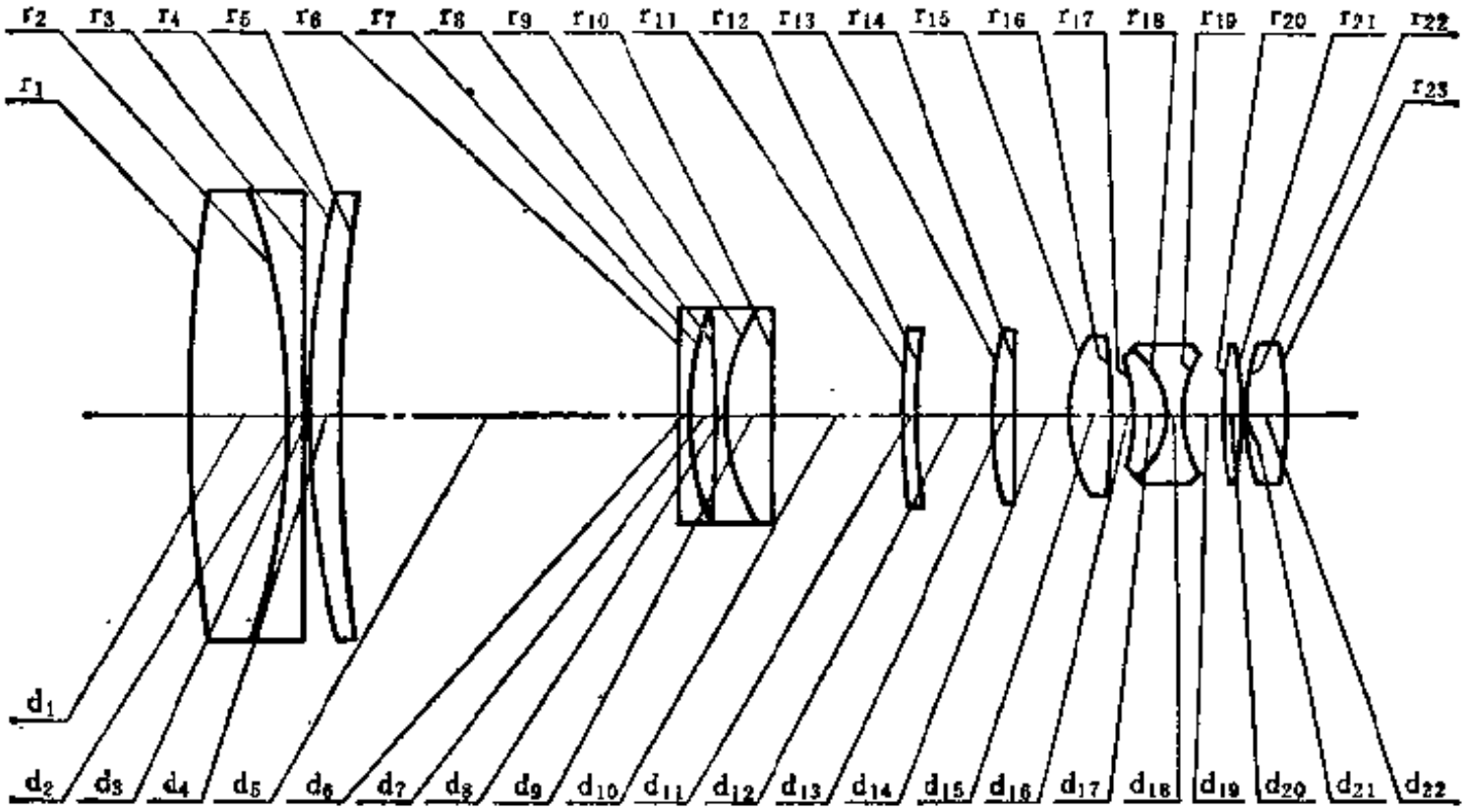




编号：　04-03-012

变　焦　距　镜　头

E.F.L＝10.0～40.0　B.F.L＝13.46　FNo.＝1.4　F.A.＝±17.5°～±4.3°



序号	r	d	n_d	v	序号	r	d	n_d	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	∞	5.0000		
3	∞	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	∞	* * * 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							

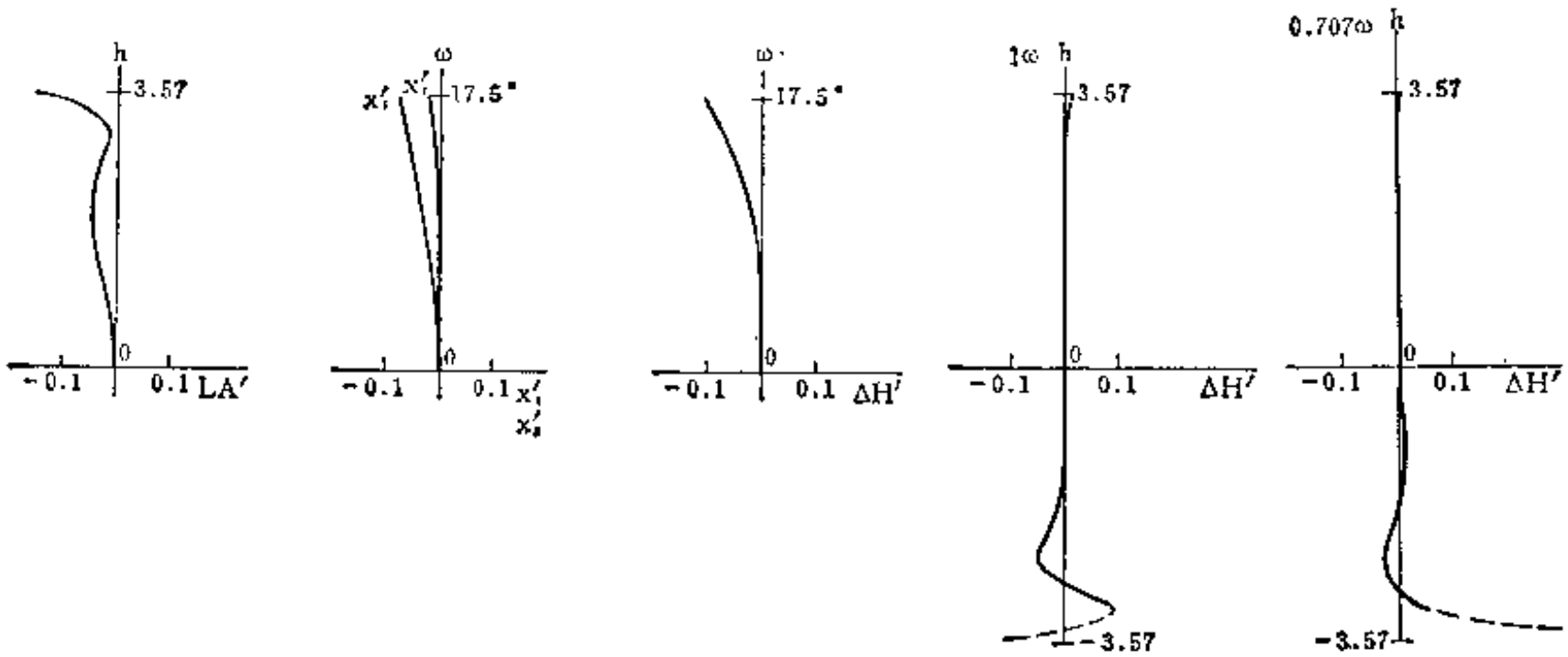
3.7300* = 2.0000 + 1.7300

04-03-012-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.06519	0.00972	0.00775	-0.02808	-0.06737	3.17	-3.32%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.151	-0.105	-0.0150	-0.0750	0.0600	-5.4047	-0.0266
70	-0.038	-0.036	-0.0087	-0.0395	0.0308	1.5200	-0.0152

E. F. L=10.0(±17.5°)

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

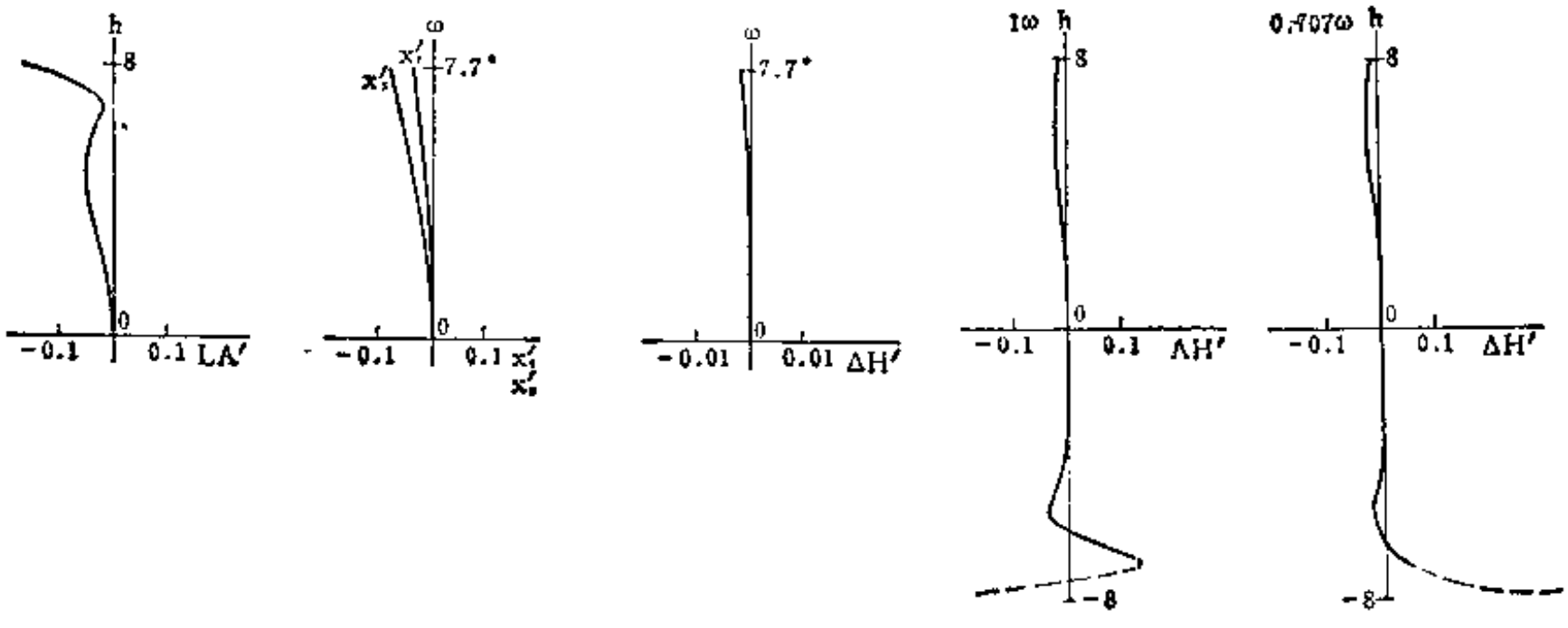


04-03-012-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.06911	0.01279	0.00421	-0.02778	0.00038	3.03	-0.07%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
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(±7.7°)

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

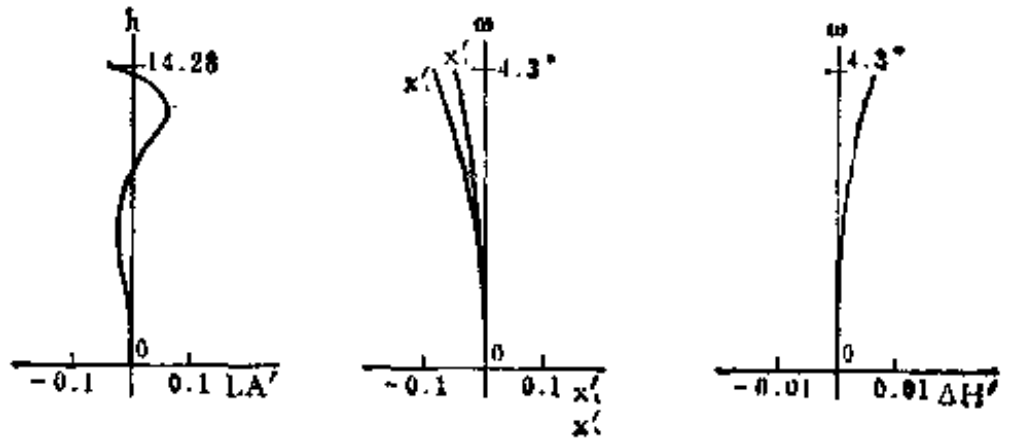


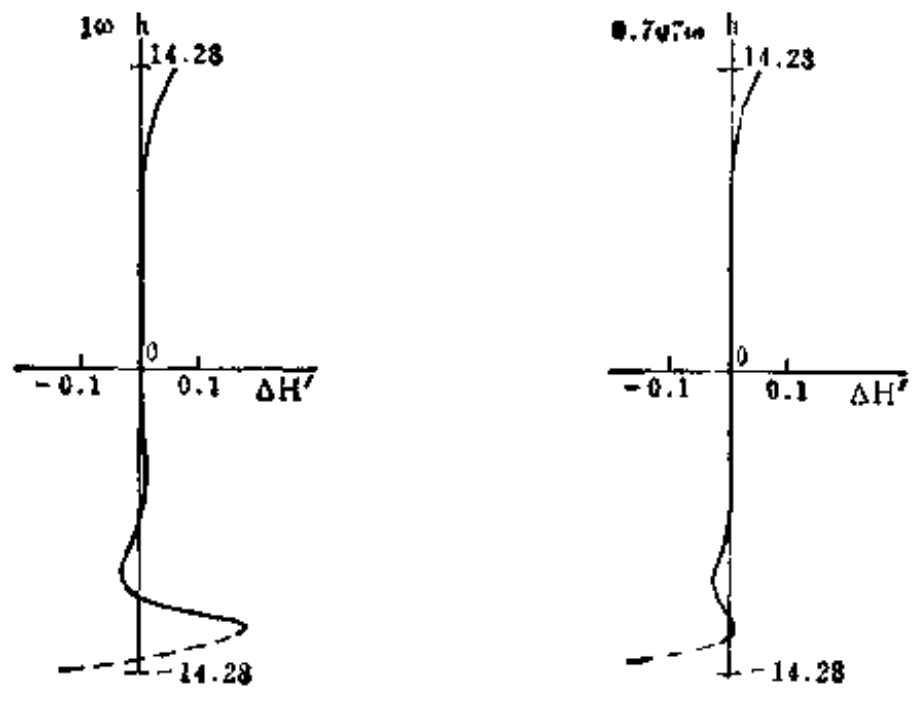
04-03-012-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.04018	0.01623	0.00335	−0.02844	0.00618	3.04	0.21%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	−0.040	0.0063	−0.0515	−0.0870	0.0355	−5.5309	−0.0198
70	0.013	0.0025	−0.0284	−0.0456	0.0172	−4.7343	−0.0089

E. F. L = 40.0(±4.3°)

＊＊＊1 = 53.7757;　＊＊＊2 = 2.2675;　＊＊＊3 = 1.0000



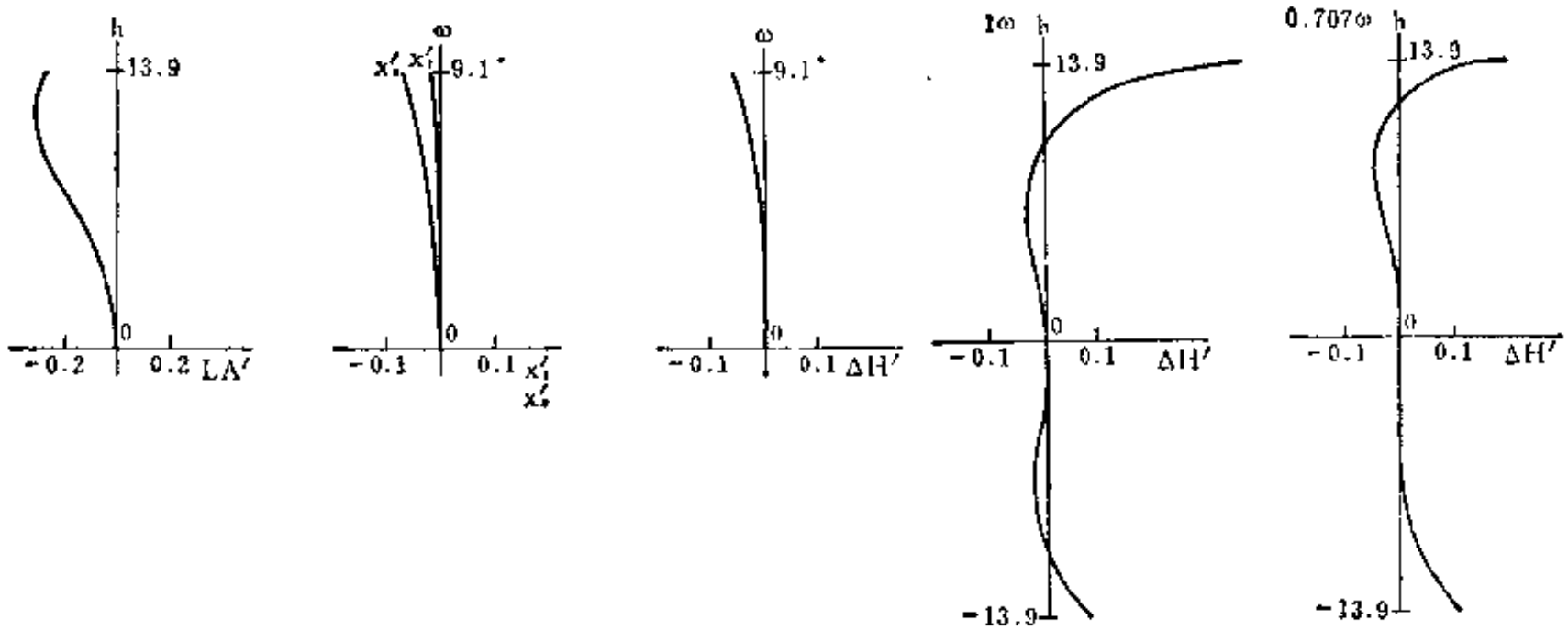


04-03-013-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.1053	−0.0337	0.0050	−0.0154	−0.0347	8.08	−0.75%
h或ω%	LA′	ΔH′	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	−0.0070
70	−0.270	−0.022	−0.0051	−0.0345	0.0294	0.1447	−0.0123

E.F.L=50(±9.1°)

＊＊＊1=6.15;　＊＊＊2=180.15;　＊＊＊3=68.14

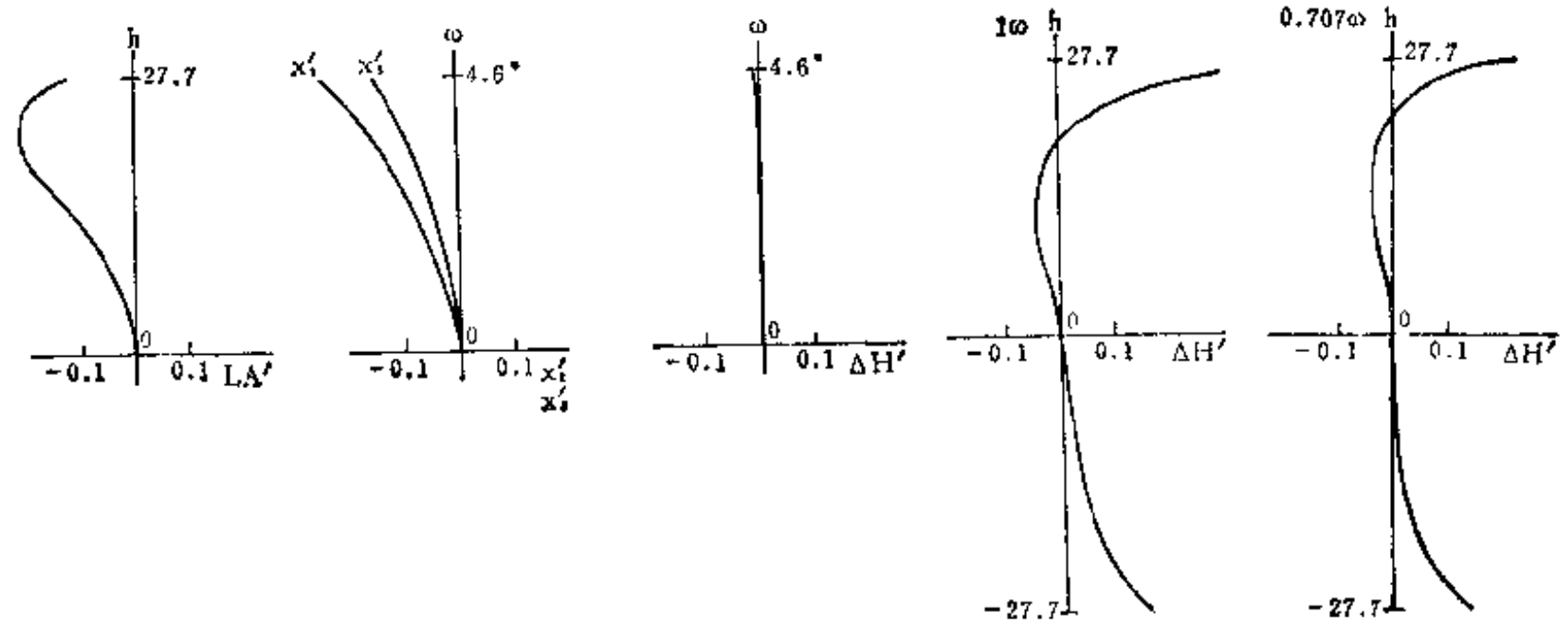


04-03-013-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.0820	−0.0229	−0.0091	−0.0154	−0.0014	8.02	−0.06%
h或ω%	LA′	ΔH′	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(±4.6°)

＊＊＊1=127.19;　＊＊＊2=61.00;　＊＊＊3=66.25

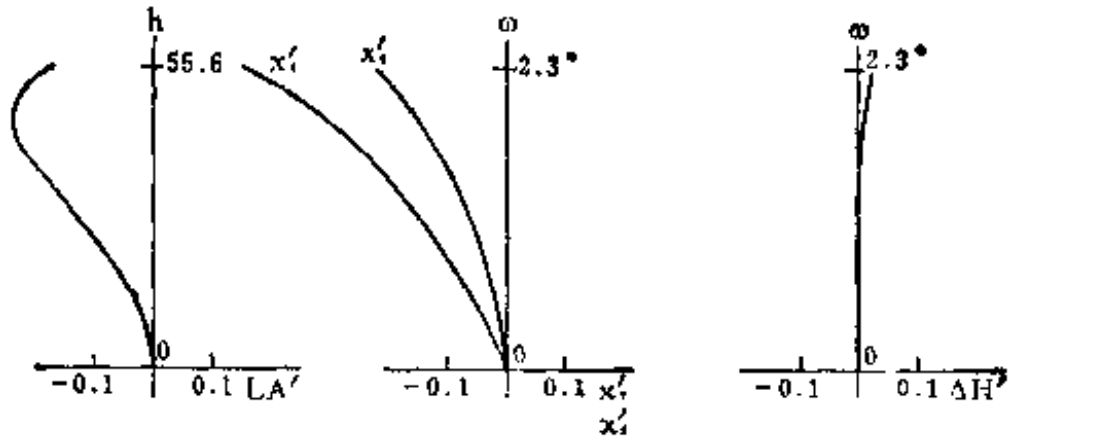


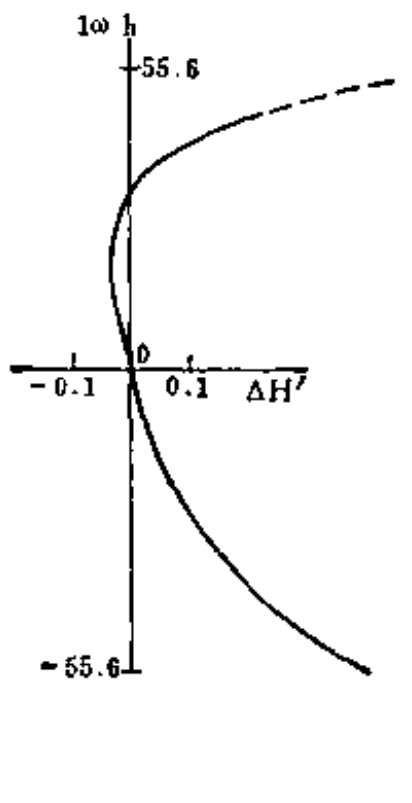
04-03-013-3

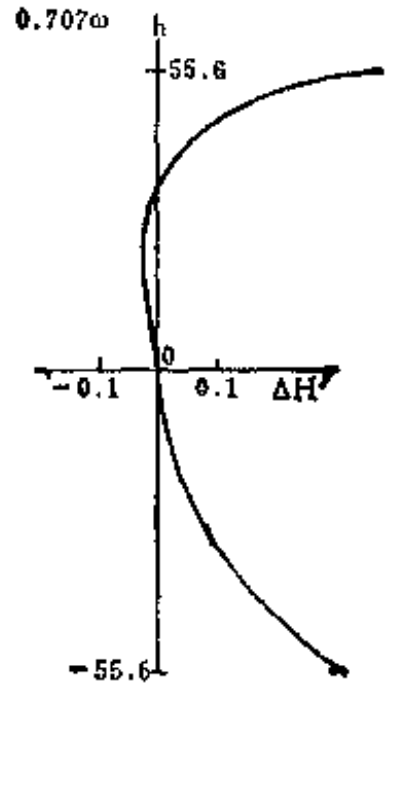
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.0913	0.0218	-0.0203	-0.0155	0.0158	8	0.33%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.171	0.0268	-0.445	-0.220	-0.225	0.5254	0.1303
70	-0.220	0.0097	-0.235	-0.113	-0.122	0.3531	0.0895

E. F. L = 200(±2.3°)

＊＊＊1 = 214.52;　＊＊＊2 = 12.90;　＊＊＊3 = 27.02



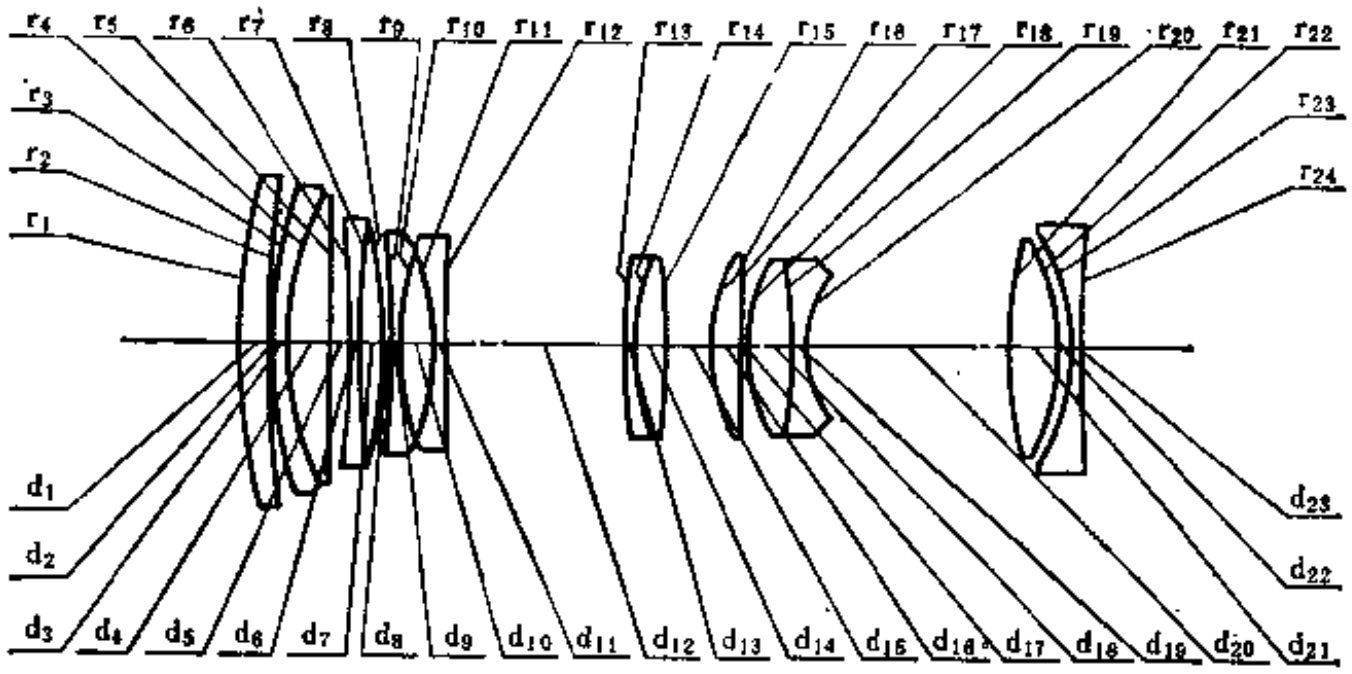




编号： 04-03-014

变 焦 距 镜 头

E.F.L＝76.79～153.60　B.F.L＝43.18　FNo.＝4　F.A.＝±17.9°～±9.0°



序号	r	d	n_d	ν	序号	r	d	n_d	ν
1	78.829	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	53.2
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	∞	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	38.01
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	455.310			

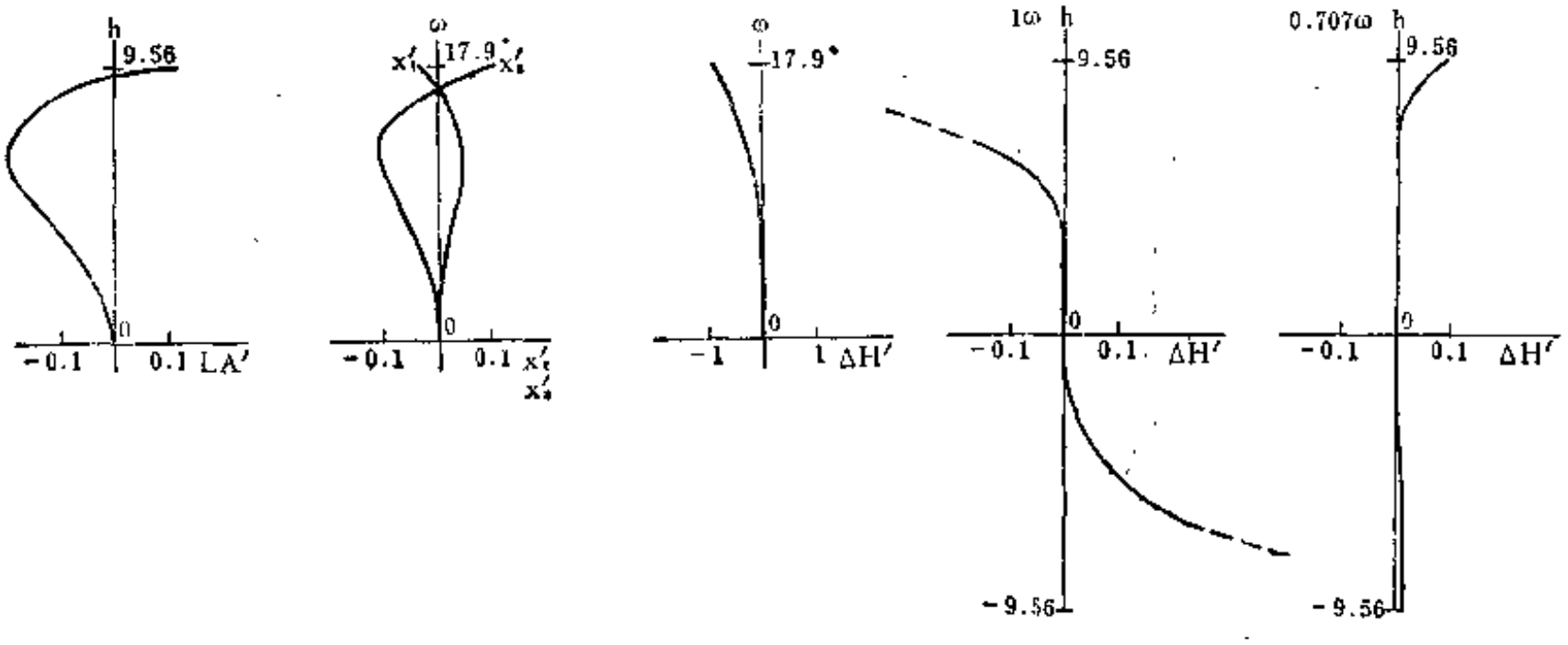
$6.707^* = 3.000 + 3.707$

04-03-014-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.0229	-0.0103	-0.0029	-0.0159	-0.1741	24.85	-3.3%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.125	-0.820	-0.0378	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 = 76.79(±17.9°)

* * * 1 = 2.086, * * * 2 = 25.371

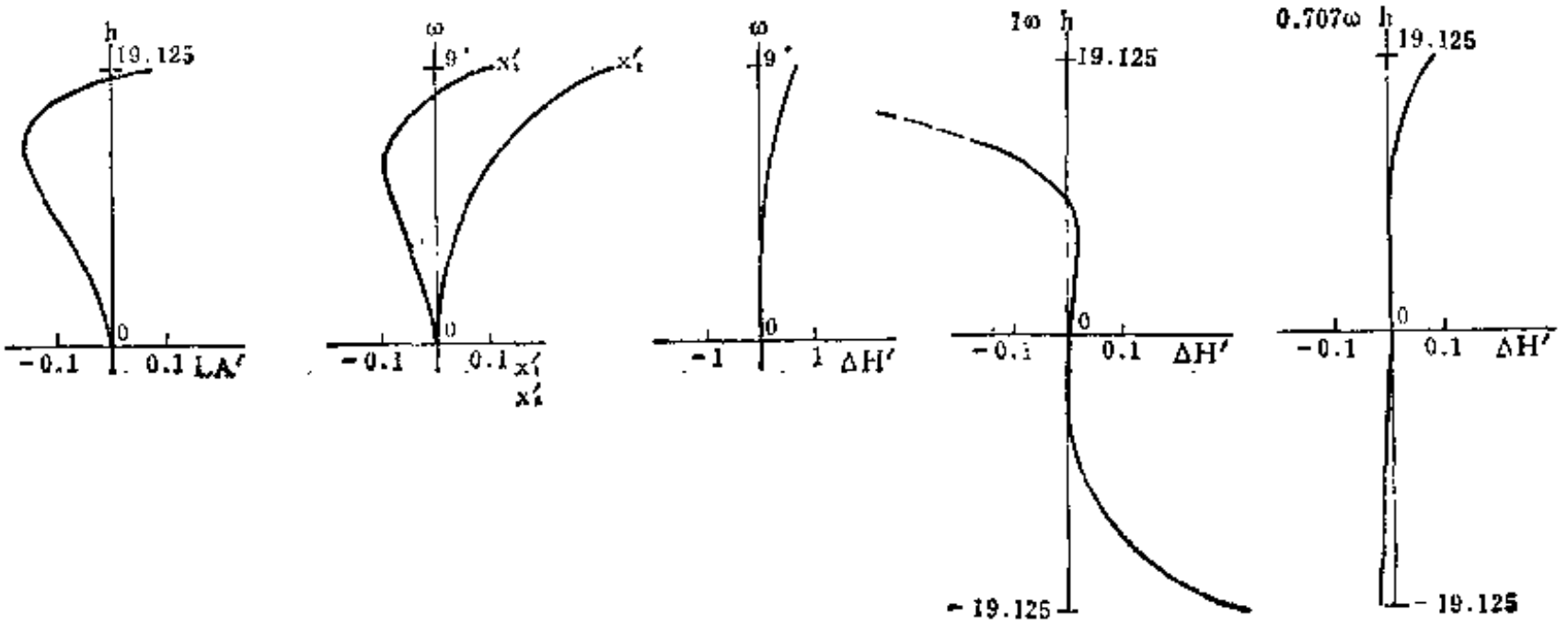


04-03-014-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.0169	-0.0154	0.0039	-0.0163	0.1829	24.28	3.02%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.085	0.734	0.343	0.104	0.239	-2.2351	-0.0426
70	-0.164	0.265	0.125	-0.088	0.213	0.0298	0.0036

E. F. L = 153.60(±9.0°)

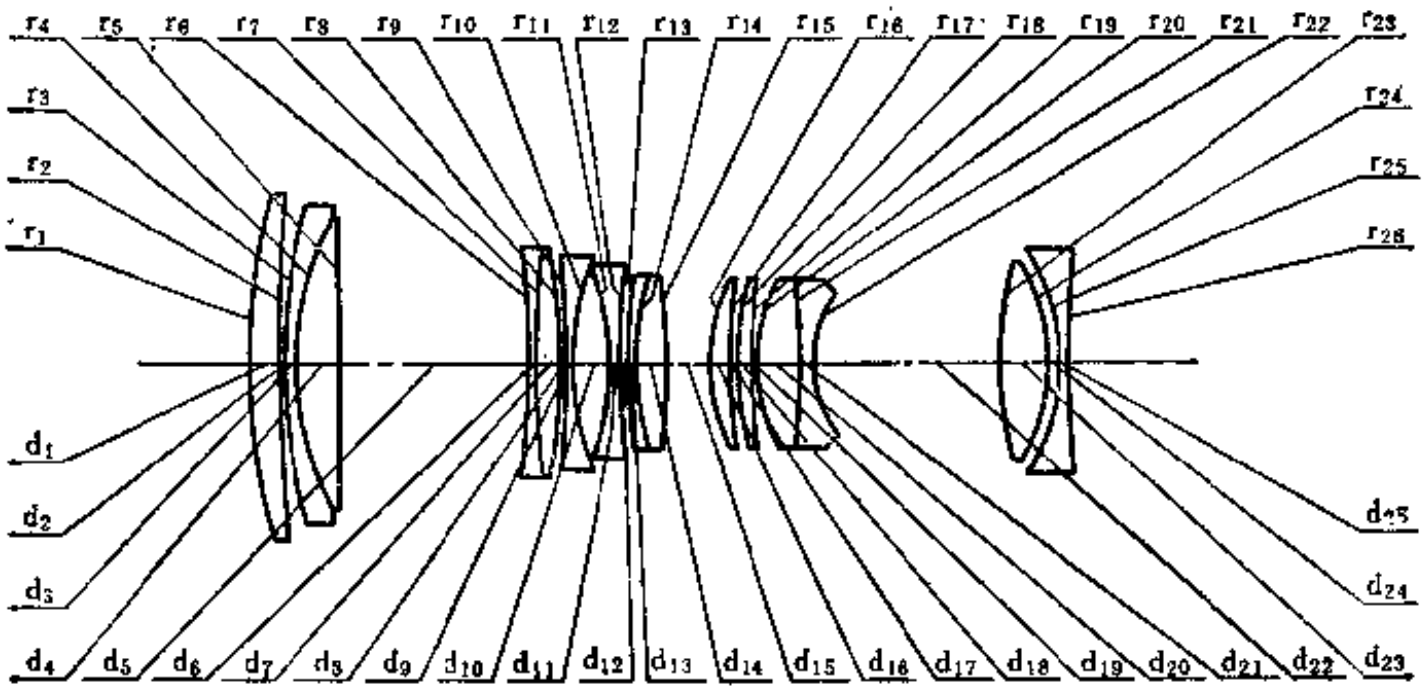
* * * 1 = 26.433, * * * 2 = 1.024



编号：　04-03-015

变　焦　距　镜　头

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_d	ν	序号	r	d	n_d	ν
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	24.830	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	57.65	22	16.950	26.00		
10	39.980	5.26			23	51.876	7.00	1.60717	40.34
11	－35.068	1.43	1.618	63.38	24	－28.103	1.44		
12	626.880	* * * 2			25	－26.962	1.43	1.66755	41.93
13	84.070	1.13	1.74077	27.79	26	248.554			

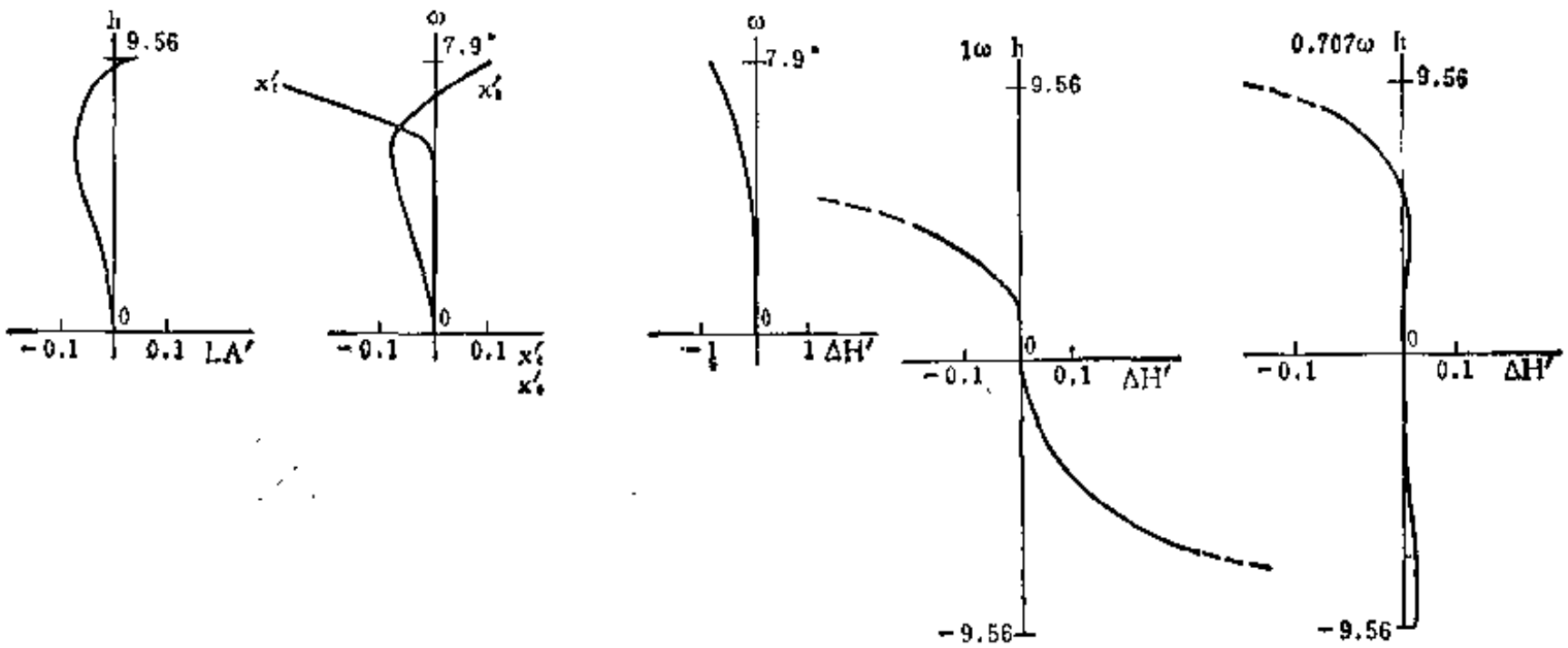
6.707* = 4.707 + 2.000

04-03-015-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.0093	−0.0044	−0.0039	−0.0124	−0.1669	24.76	−3.3%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.044	−0.808	−0.5780	0.1050	−0.6830	−1.6051	−0.5481
70	−0.076	−0.269	−0.0078	−0.0794	0.0716	−0.2382	−0.0036

E. F. L = 76.5(±17.9°)

* * * 1 = 2.086, * * * 2 = 25.371

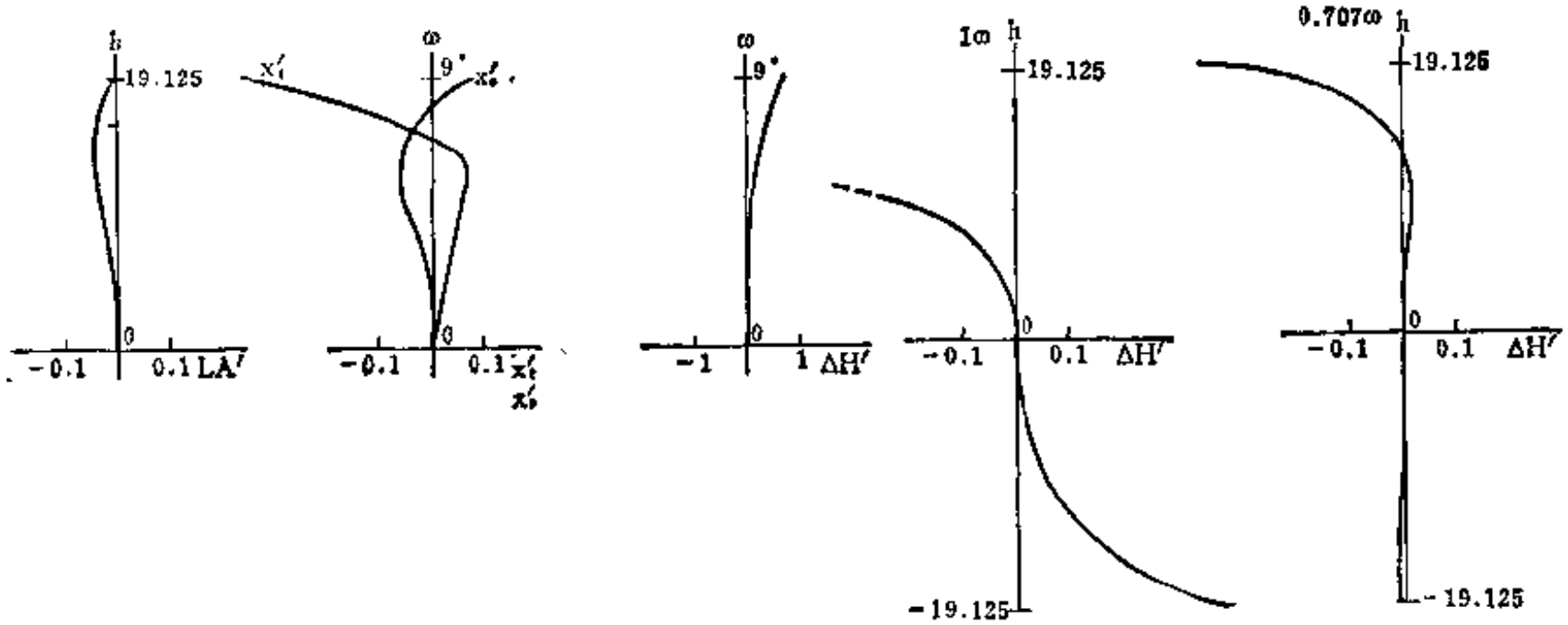


04-03-015-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.0034	−0.0101	0.0030	−0.0128	0.1897	24.19	3.04%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0007	0.736	−0.3590	0.0830	−0.4420	−2.4037	−0.7668
70	−0.0394	0.271	0.0635	−0.0564	0.1199	−0.1967	−0.0044

E. F. L = 153.0(±9.0°)

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

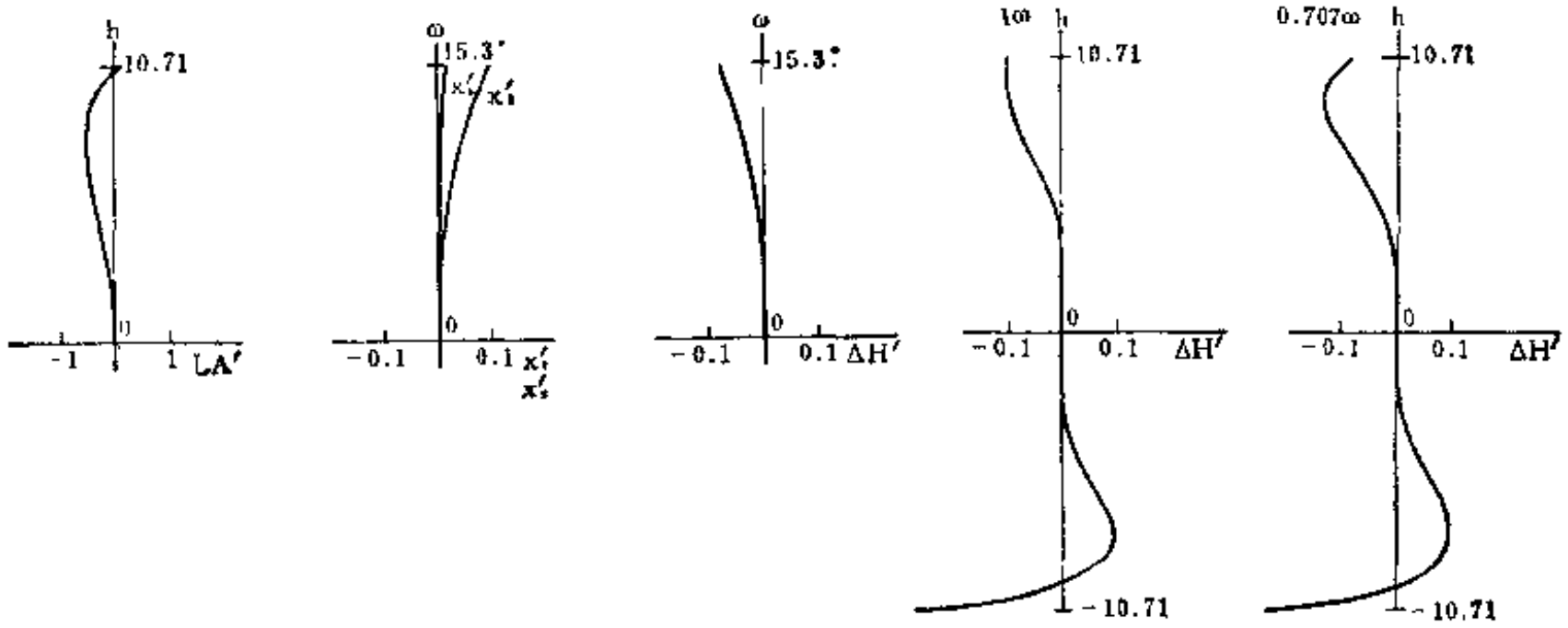


04-03-016-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.3805	0.0133	0.0101	−0.0065	−0.0626	8.22	−1.02%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.1515	−0.0841	0.0958	0.0199	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(±15.3°)

* * * 1 = 9.25; * * * 2 = 187.40; * * * 3 = 23.85

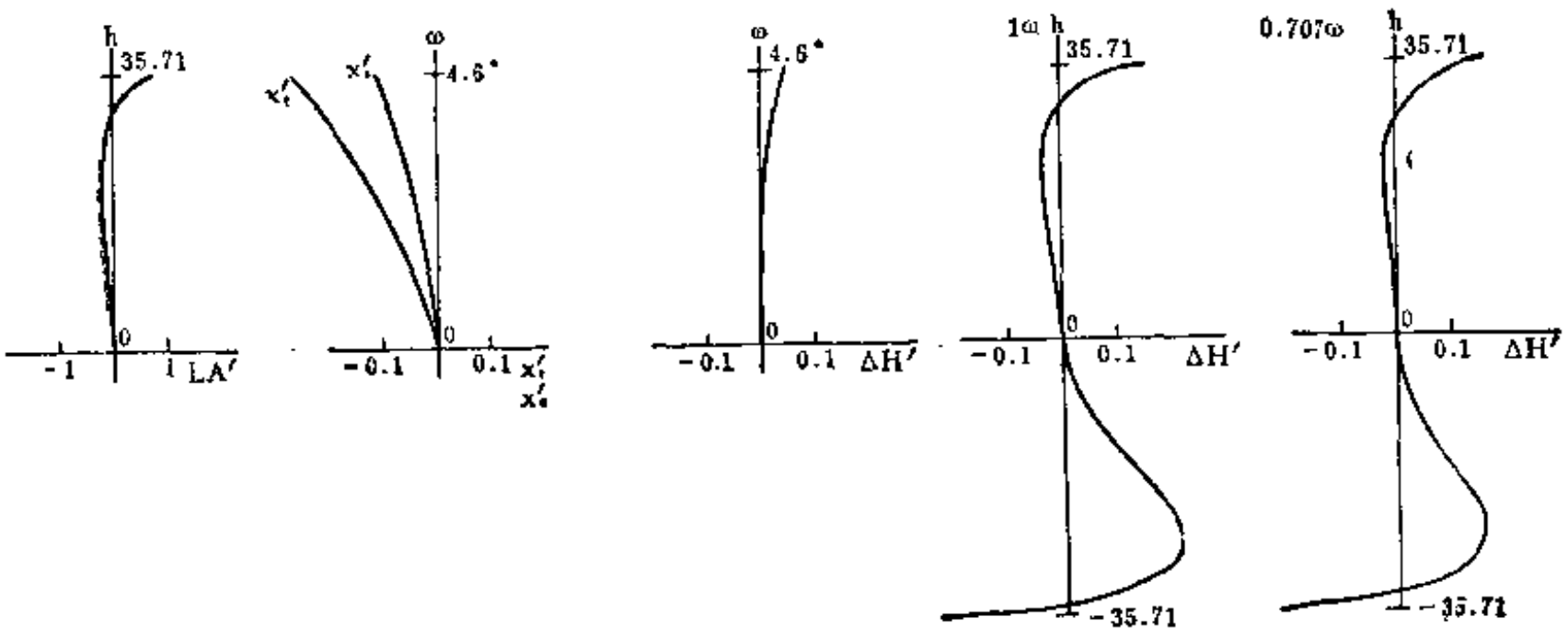


04-03-016-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.2443	0.0615	−0.0286	−0.0067	0.0353	8.02	0.52%
h 或 ω%	LA′	ΔH′	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(±4.6°)

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

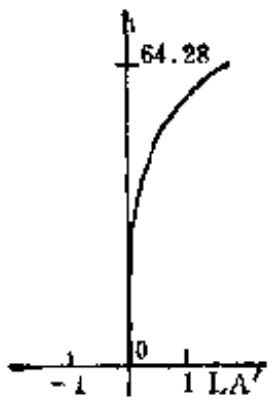


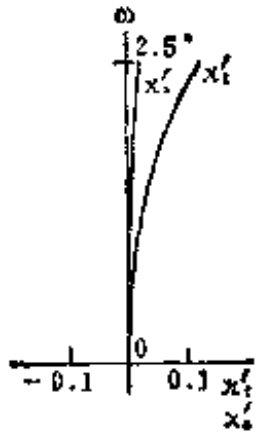
04-03-016-3

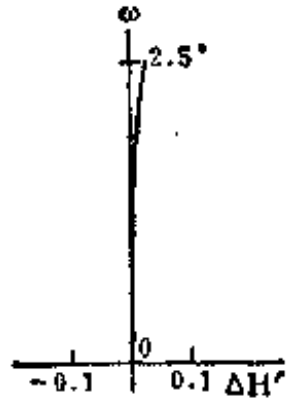
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	0.08271	-0.03146	0.00848	-0.00657	0 02158	7.9	0.32%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	1.713	0.0256	0.1268	0.0211	0.1057	1.8261	0.1459
70	0.397	0.0098	0.0528	0.0073	0.0455	0.3758	0.0102

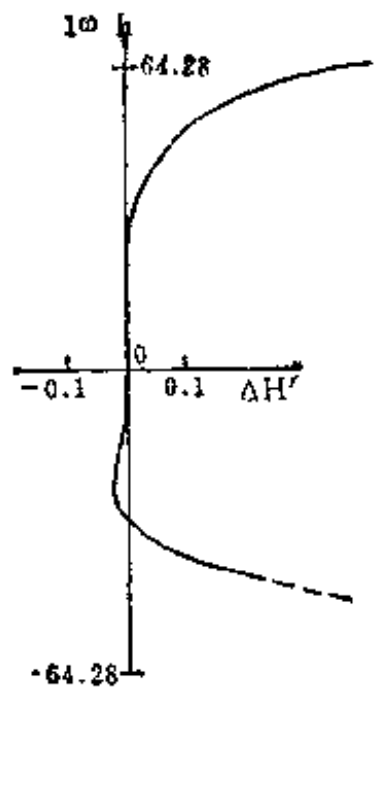
E. F. L = 180(± 2.5°)

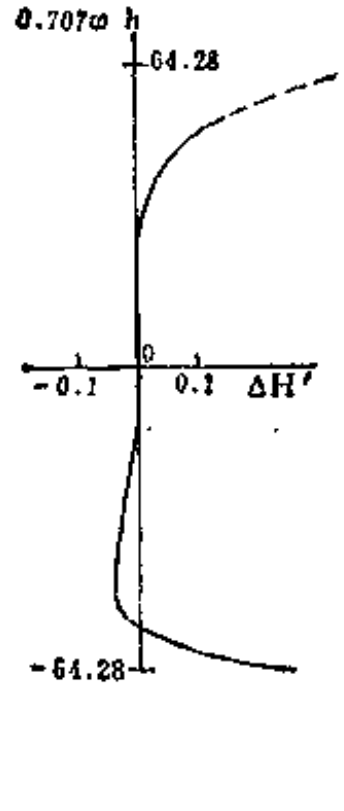
＊＊＊1 = 200.60，　＊＊＊2 = 14.70，　＊＊＊3 = 5.20









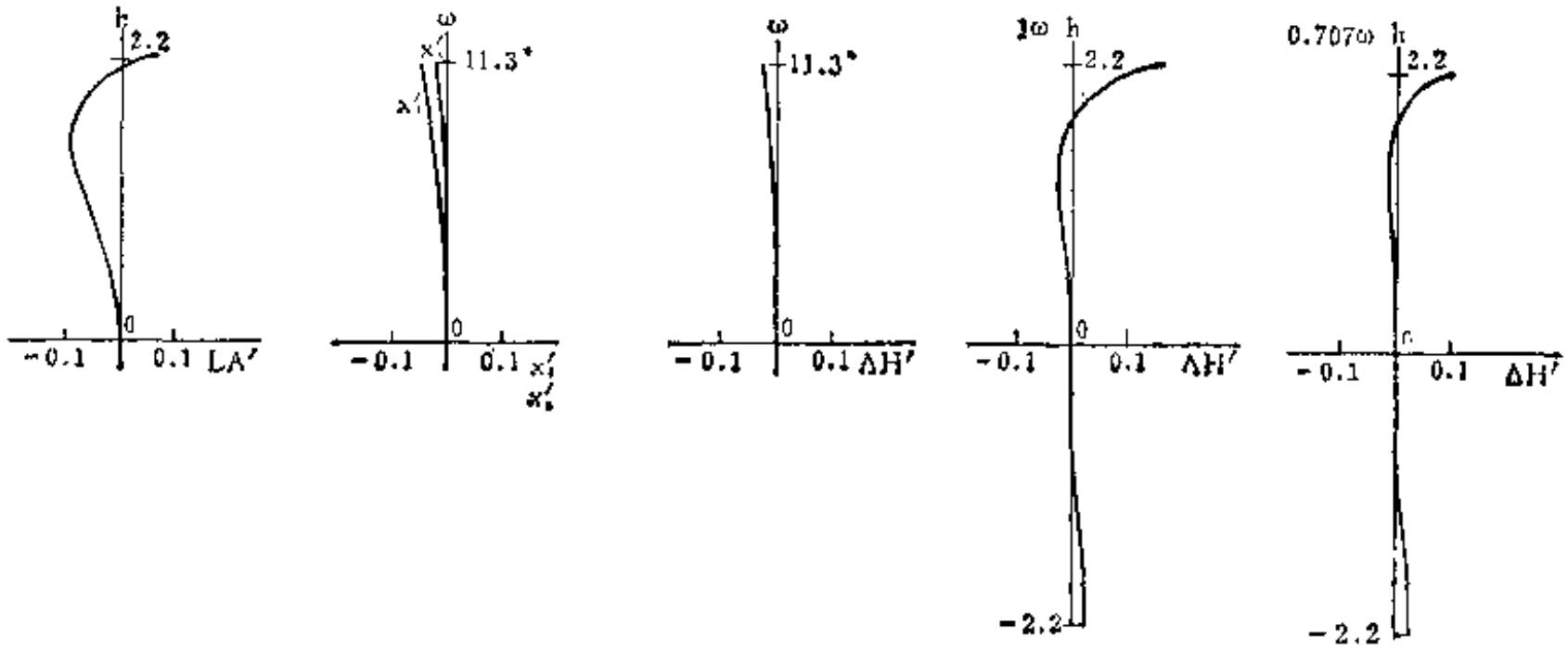


04-03-017-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.04982	-0.00792	-0.00204	-0.00266	-0.01175	1.5	-1.4%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0458	-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(±11.3°)

＊＊＊1=2.30; ＊＊＊2=23.94; ＊＊＊3=1.20

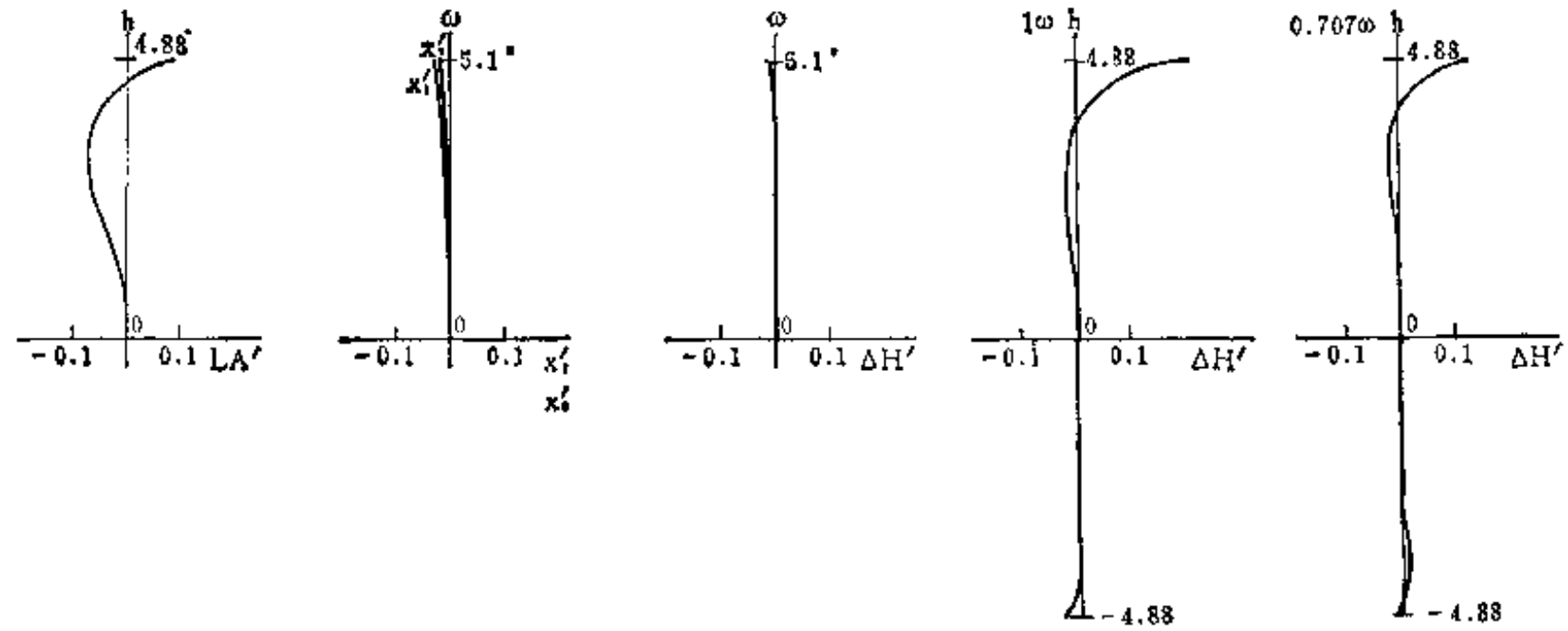


04-03-017-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.04402	-0.00965	-0.00052	-0.00273	-0.00242	1.5	-0.29%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0939	-0.0043	-0.0237	-0.0185	-0.0052	0.09670	-0.00579
70	-0.0713	-0.0015	-0.0130	-0.0096	-0.0034	0.05748	-0.00585

E.F.L=16.60(±5.1°)

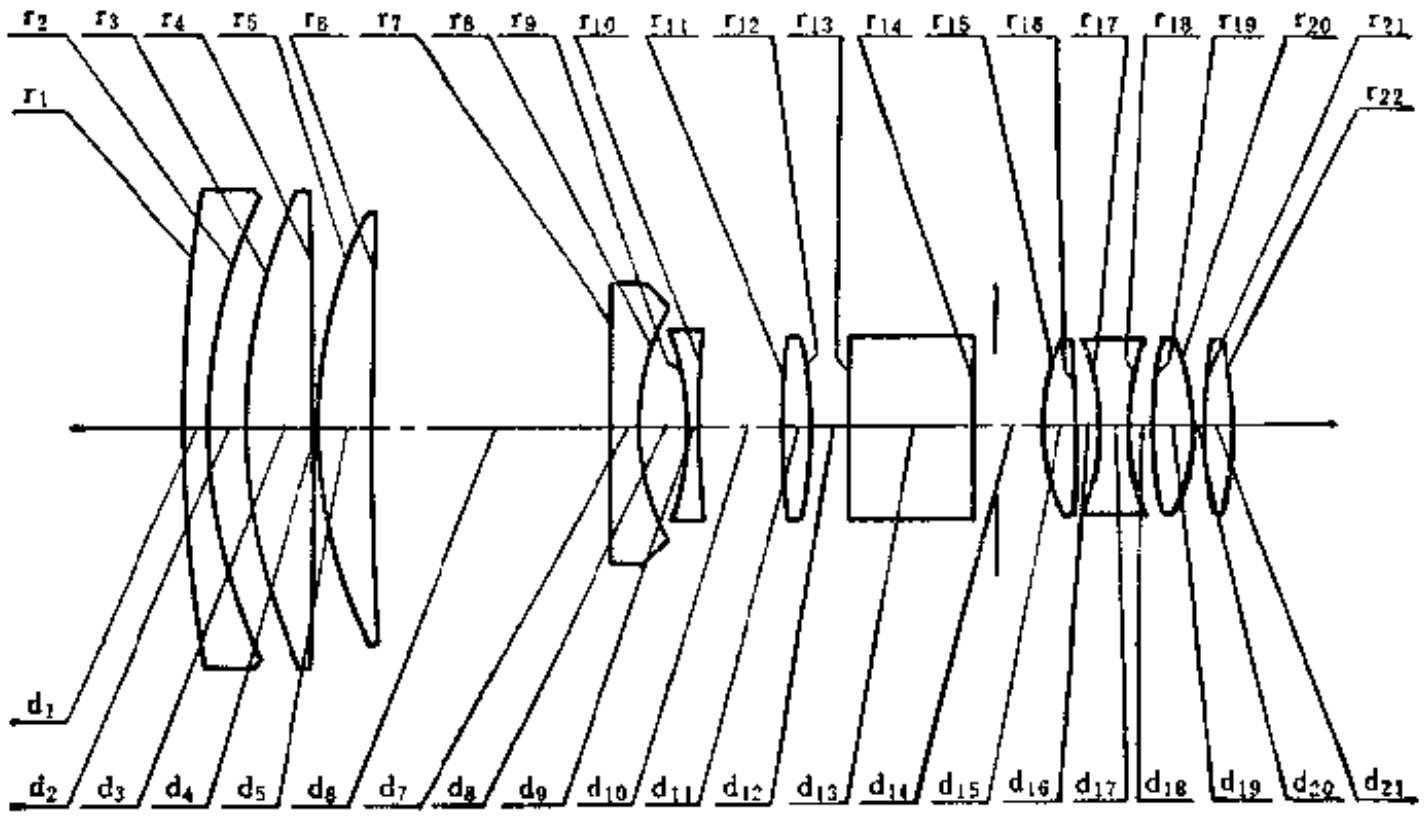
＊＊＊1=16.30; ＊＊＊2=6.39; ＊＊＊3=4.75



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°～±6.9°



序号	r	d	n_e	ν_e	序号	r	d	n_e	ν_e
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*		
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			

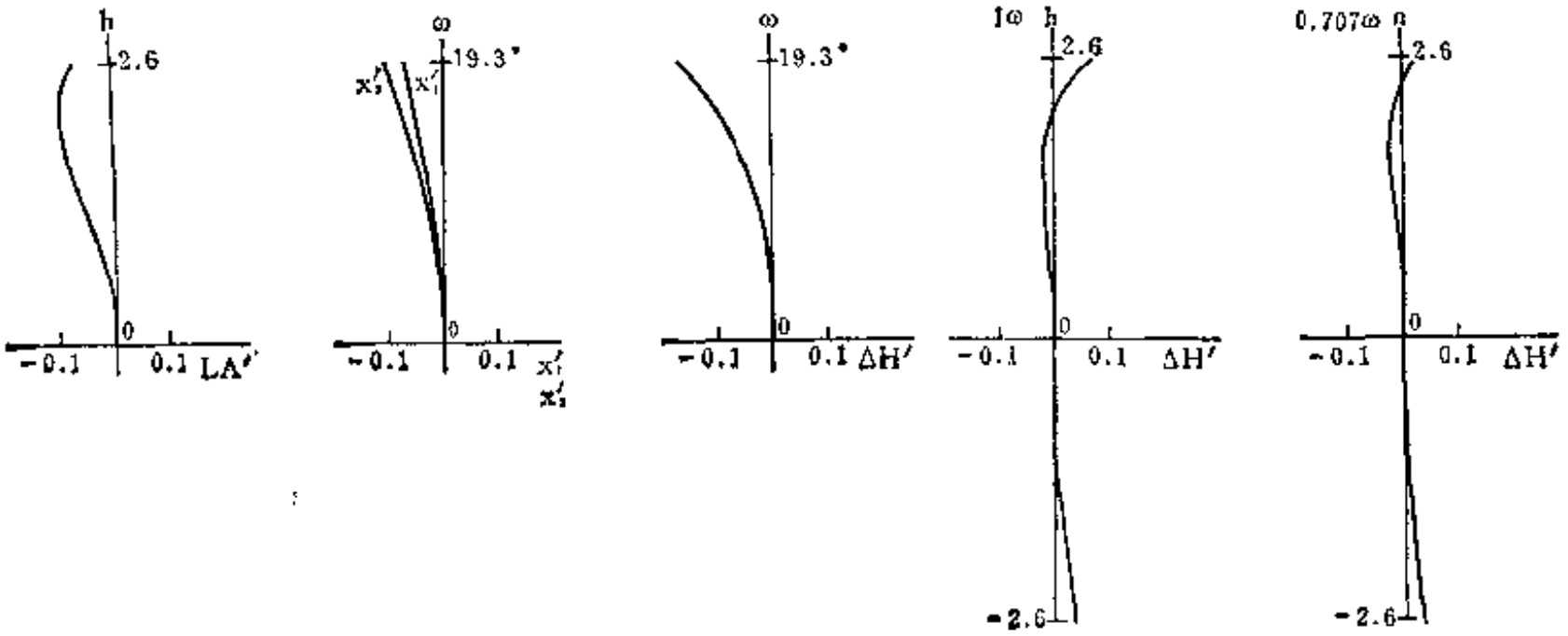
4.80* = 1.80 + 3.00

04-03-018-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.0284	-0.0061	0.0023	-0.0171	-0.0788	3.6	-4.8%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.067	-0.176	-0.0715	-0.1102	0.0387	0.05397	0.00189
70	-0.081	-0.061	-0.0393	-0.0584	0.0191	0.03093	-0.00116

E.F.L=10.40(±19.3°)

＊＊＊1=1.11; ＊＊＊2=15.24; ＊＊＊3=9.95

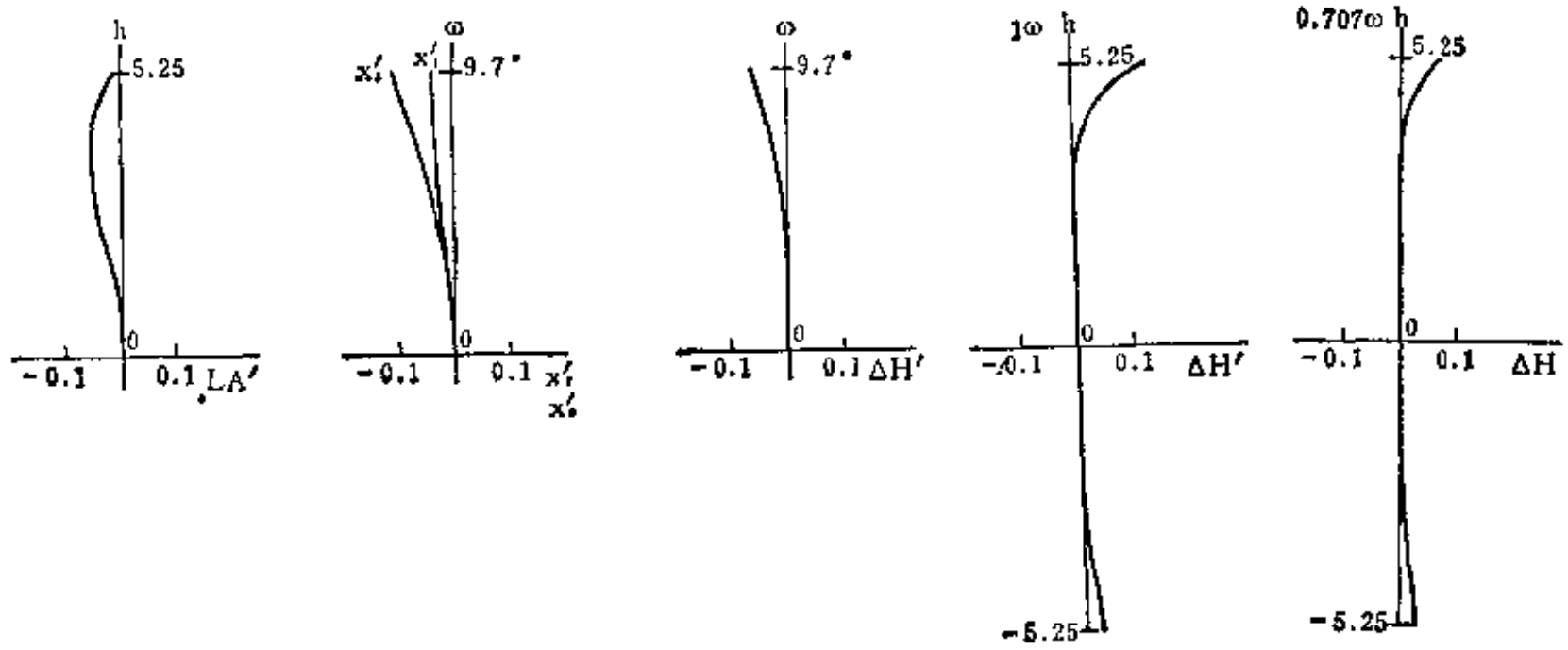


04-03-018-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.02155	-0.00188	0.00280	-0.01843	-0.02586	3.6	-1.6%
h 或 ω %	LA′	ΔH′	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(±9.7°)

＊＊＊1=16.97; ＊＊＊2=3.28; ＊＊＊3=6.04

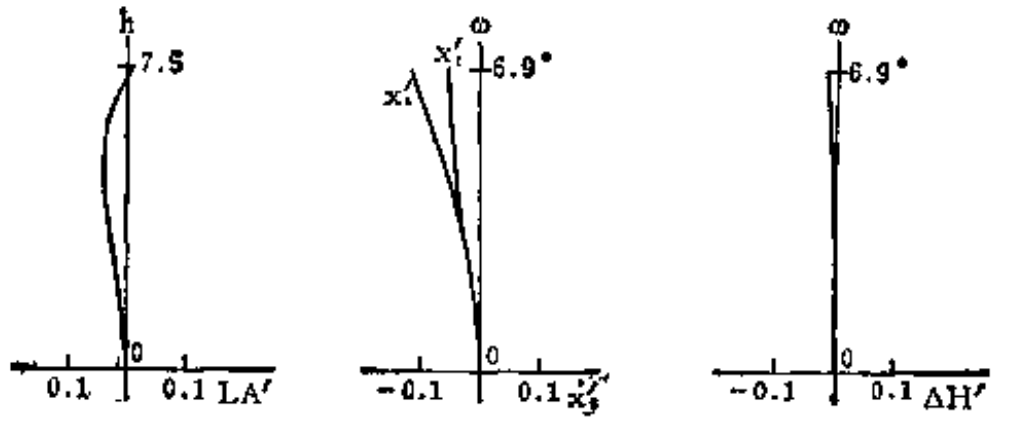


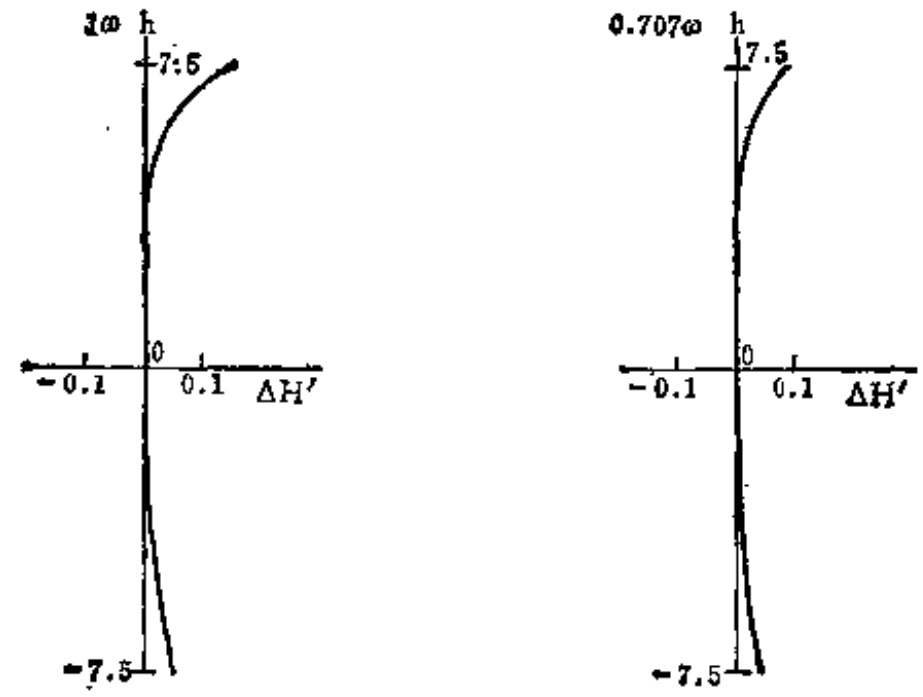
04-03-018-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.01816	0.00137	0.00203	−0.01883	−0.00526	3.6	−0.39%
h 或 ω%	LA′	ΔH′	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	−0.0392	−0.0640	0.0248	0.0638	0.0126

E. F. L = 30.00(±6.9°)

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

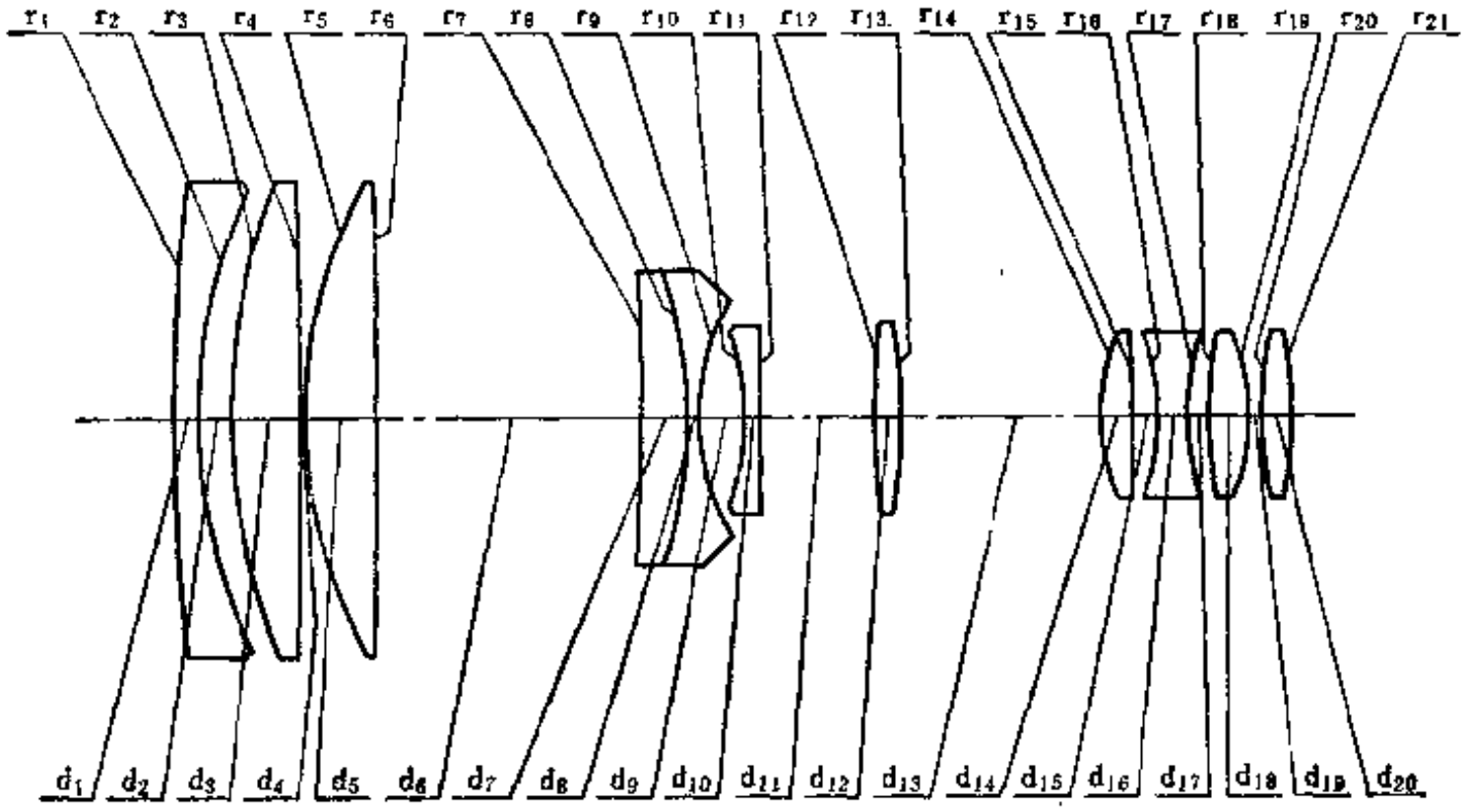




编号：04-03-019

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°～±5.7°



序号	r	d	n_e	ν_e	序号	r	d	n_e	ν_e
1	224.80	1.80	1.76167	27.4	12	60.13	1.80	1.69416	31.0
2	37.67	2.50			13	−43.75	14.30*		
3	45.13	4.90	1.62541	56.6	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	1.64		
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							

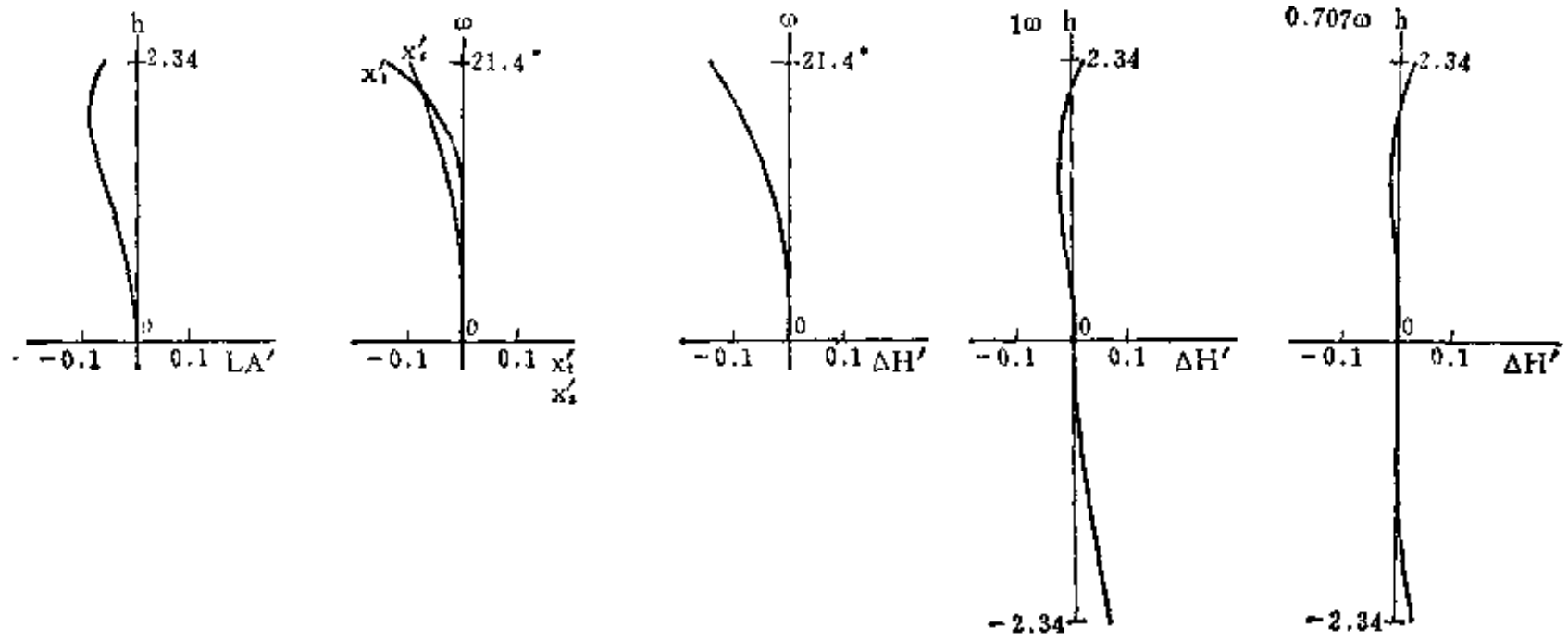
14.30* = 11.30 + 3.00

04-03-019-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.02864	−0.00097	0.00744	−0.01574	−0.08294	3.67	−3.9%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	−0.0569	−0.1456	−0.1388	−0.0948	−0.0440	0.04493	0.00717
70	−0.0792	−0.0587	−0.0139	−0.0419	0.0280	0.02956	0.00037

E. F. L = 9.35 (±21.4°)

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

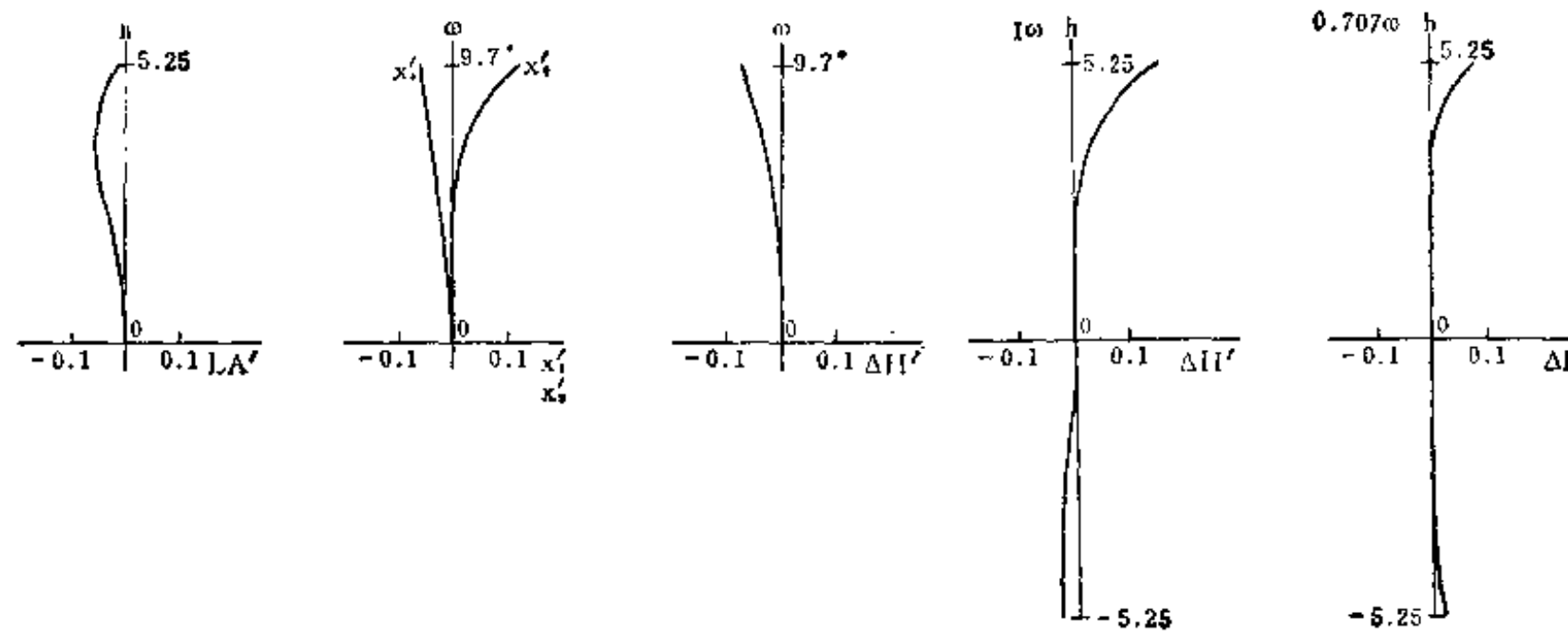


04-03-019-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.02291	−0.00077	0.00500	−0.01699	−0.02867	3.6	−2.05%
h 或 ω%	LA′	ΔH′	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 (±9.7°)

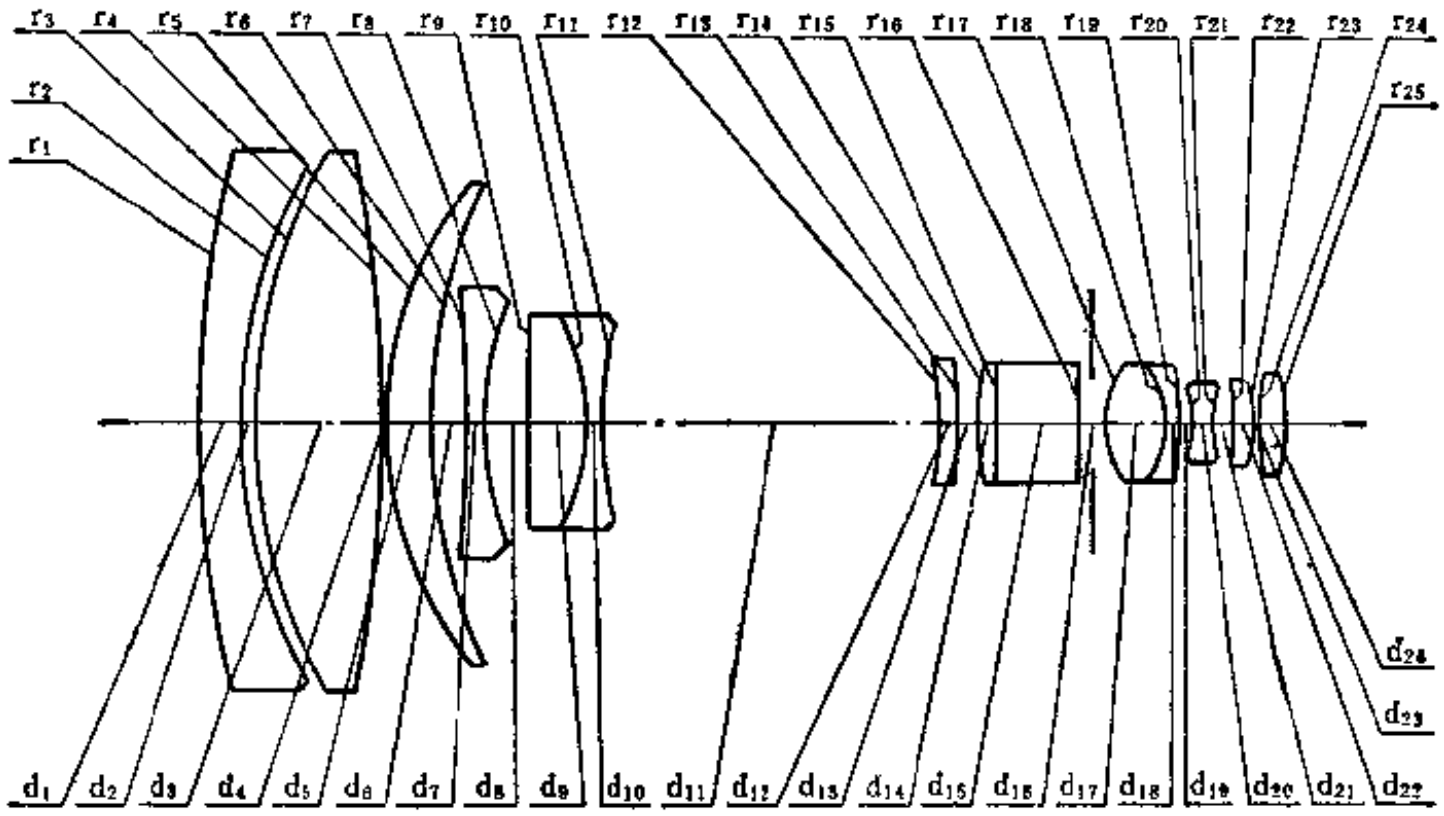
* * * 1 = 18.93; * * * 2 = 3.12; * * * 3 = 8.35



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.=±22.3°～±5.7°



序号	r	d	n_d	v	序号	r	d	n_d	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	∞	6.400	1.60738	56.66
3	42.7800	10.000	1.56873	63.12	16	∞	2.000*		
4	-97.8630	0.100			17	7.6076	4.600	1.71300	53.89
5	29.0050	3.500	1.61765	55.10	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	1.78443	43.77	25	-20.8330			
13	-63.0790	* * * 3							

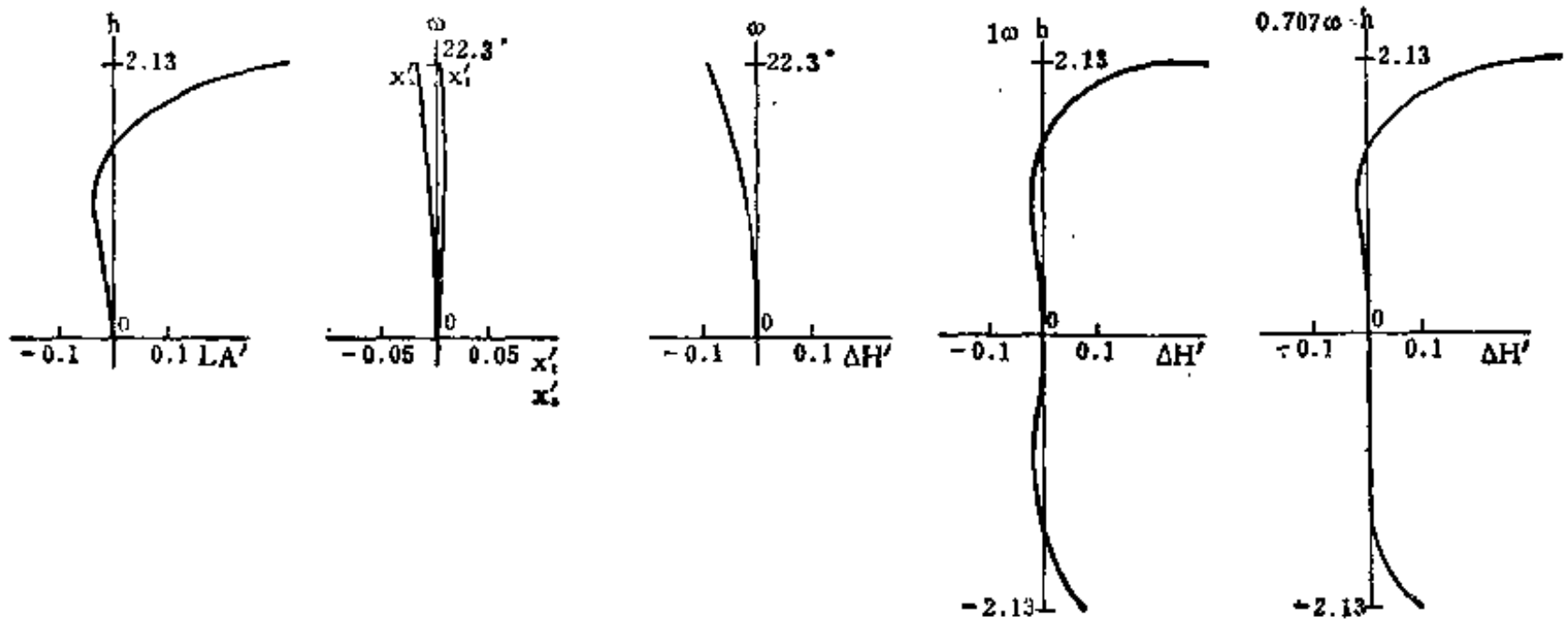
2.000* = 1.000 + 1.000

04-03-020-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.03873	-0.00681	0.00887	-0.00865	-0.06420	3.1	-2.8%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}	$K_{T0.7}$
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 (±22.3°)

* * * 1 = 2.510; * * * 2 = 25.813; * * * 3 = 1.500

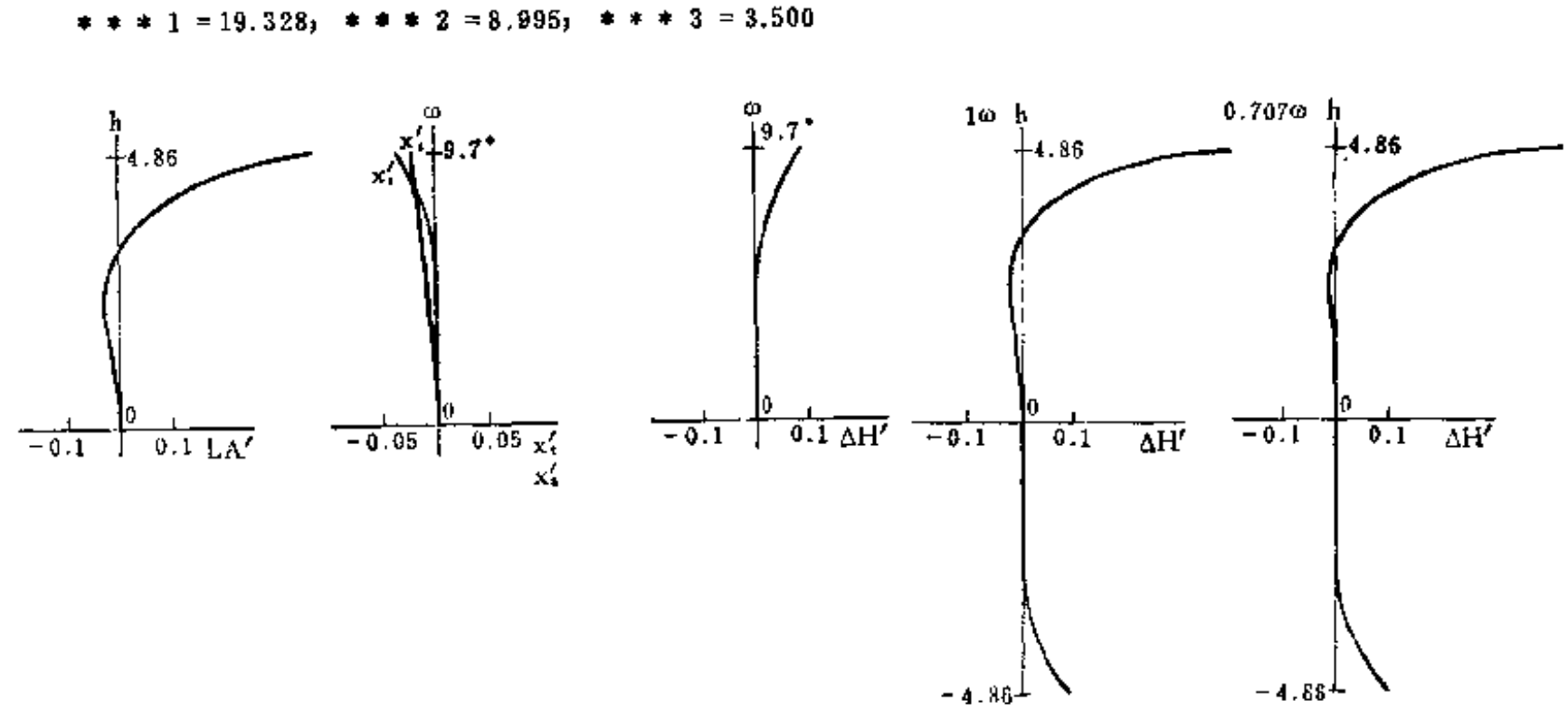


04-03-020-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.03327	-0.00224	0.00776	-0.00892	0.02084	3	3.1%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}	$K_{T0.7}$
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 (±9.7°)

* * * 1 = 19.328; * * * 2 = 8.995; * * * 3 = 3.500

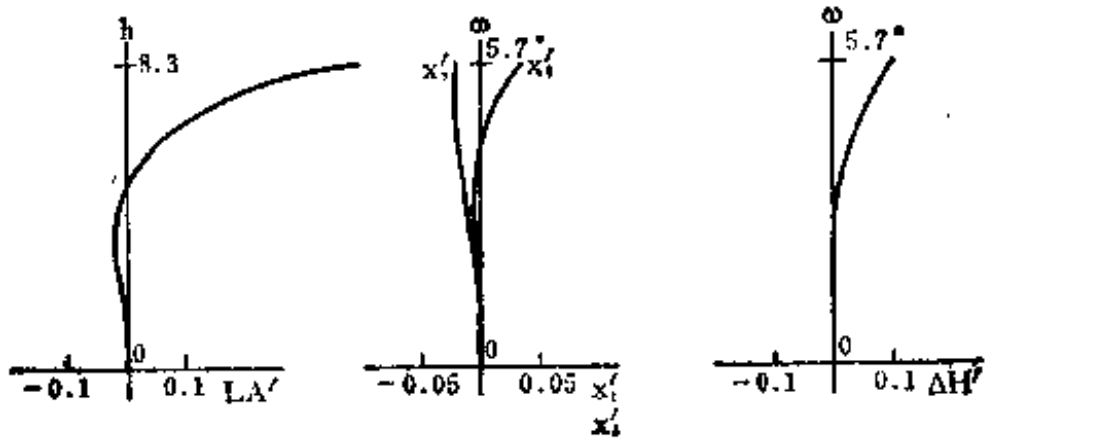


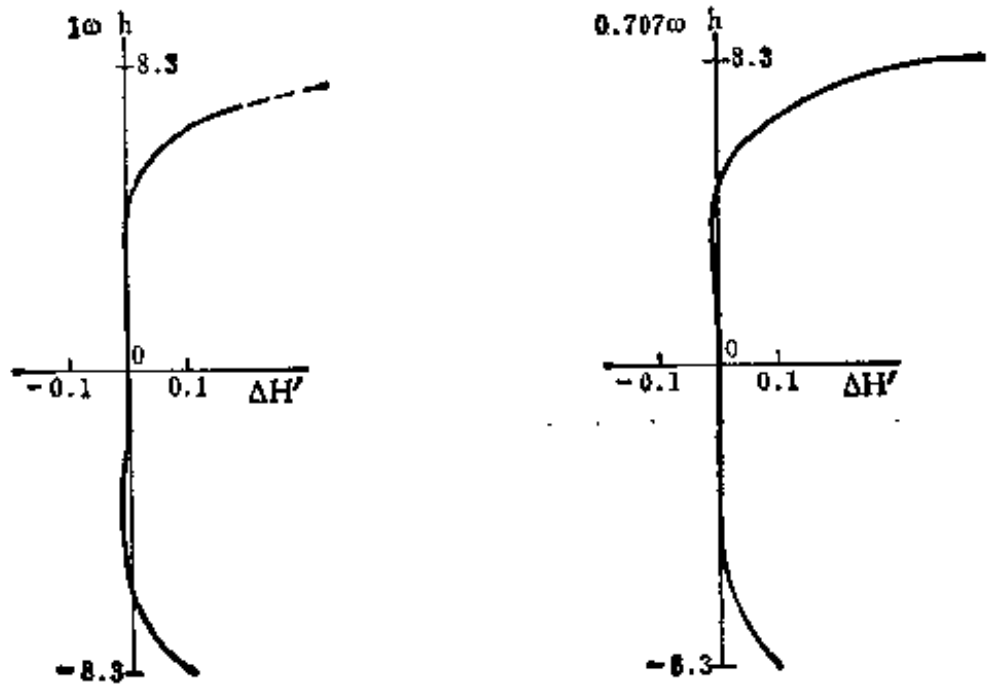
04-03-020-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.02390	-0.00318	0.00228	-0.00906	0.04645	3	3.4%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}	$K_{T0.7}$
100	0.3985	0.1021	0.0391	-0.0187	0.0578	0.3763	0.0166
70	0.0291	0.0324	-0.0013	-0.0182	0.0169	0.2876	0.0229

E. F. L = 29.900 (± 5.7°)

* * * 1 = 26.219; * * * 2 = 2.105; * * * 3 = 1.500



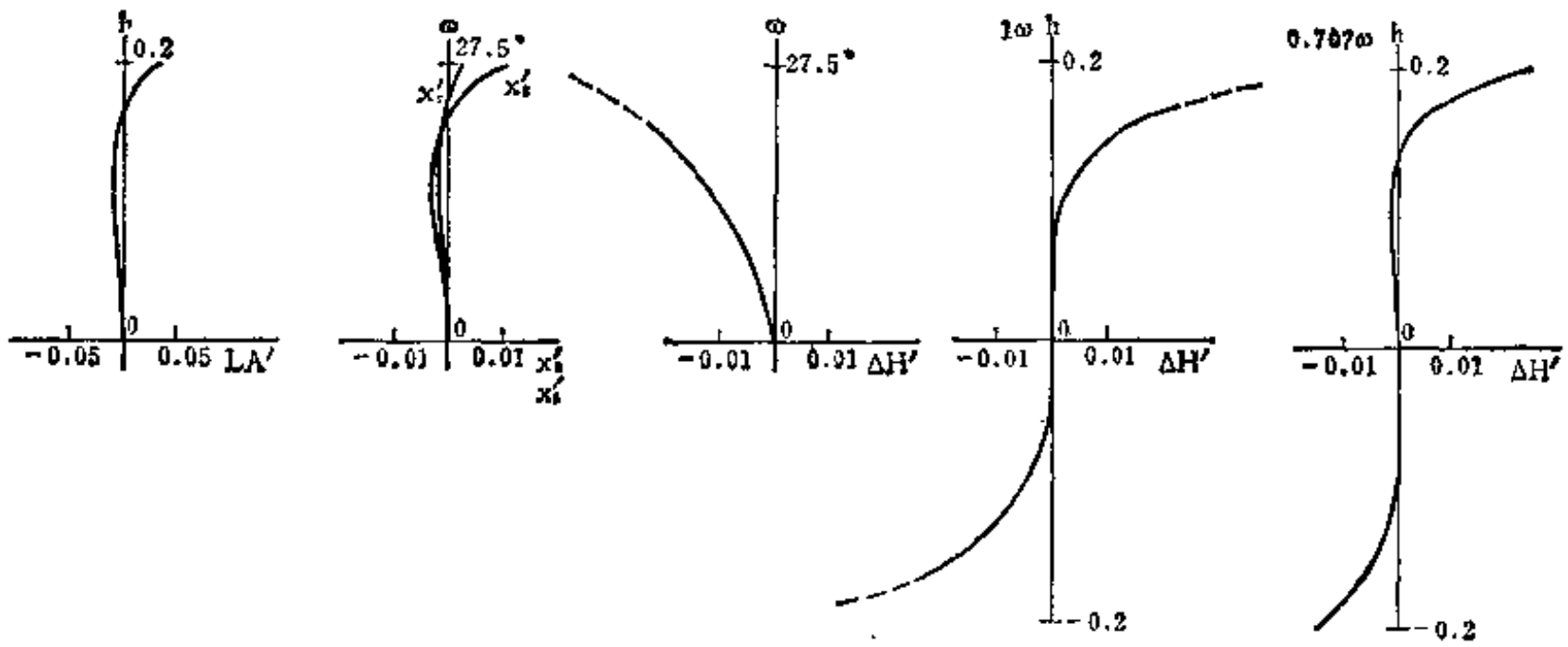


04-03-021-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.00328	−0.00247	−0.00174	−0.00022	−0.01774	0.52	−10.4%
h 或 ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K_{T1}	$K_{T0.7}$
100	0.03217	−0.05414	0.01183	0.00236	0.00947	−0.05289	−0.00106
70	−0.00691	−0.01774	−0.00258	−0.00163	−0.00095	0.00482	−0.00135

E.F.L=1.0000 (±27.5°)

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

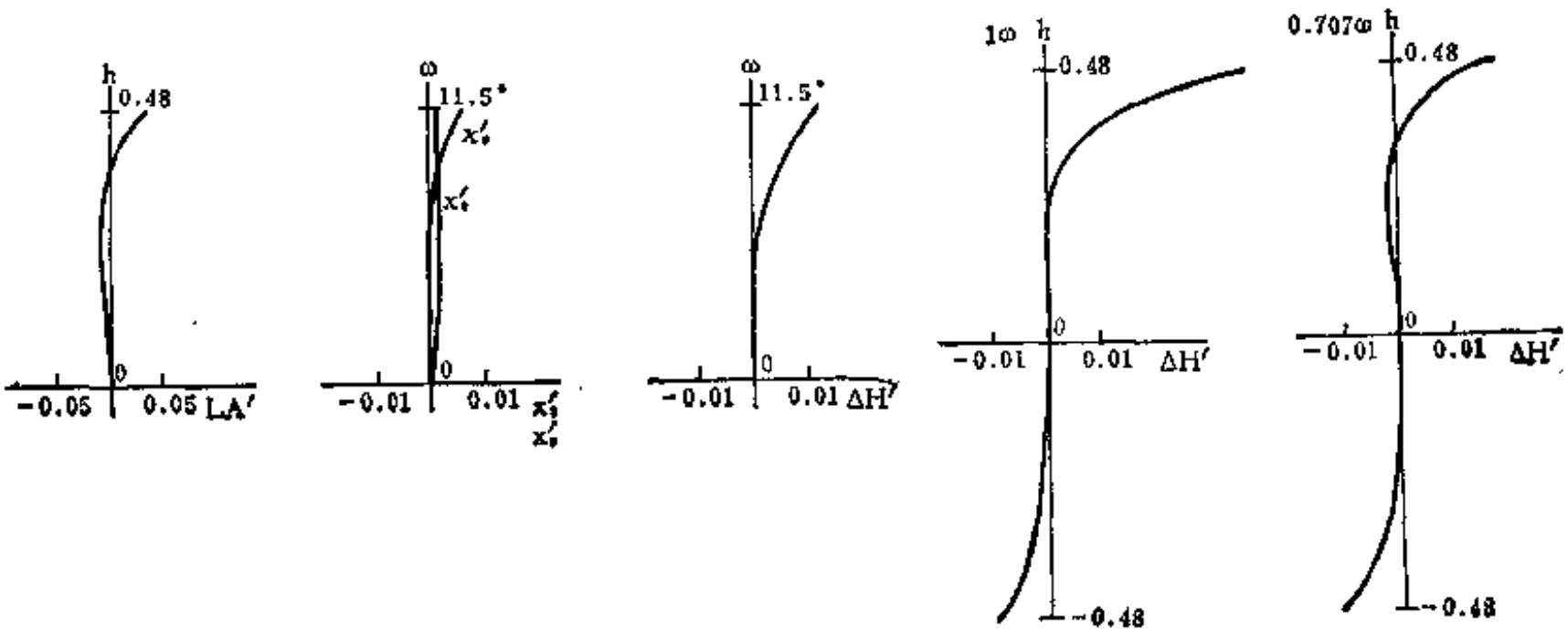


04-03-021-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.003257	−0.000873	0.000619	−0.000235	0.003226	0.48	2.6%
h 或 ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	0.03630	0.01279	0.001145	0.005608	−0.004463	0.01486	0.00195
70	−0.00602	0.00366	0.002030	0.001010	0.001020	0.00366	−0.00124

E.F L=2.3876 (±11.5°)

* * * 1 = 1.2155; * * * 2 = 0.3521; * * * 3 = 0.3724

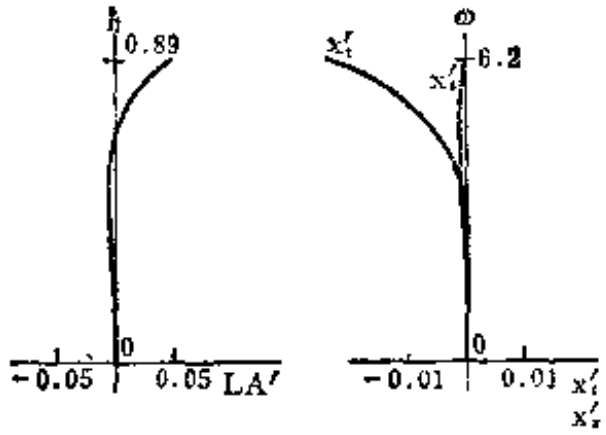


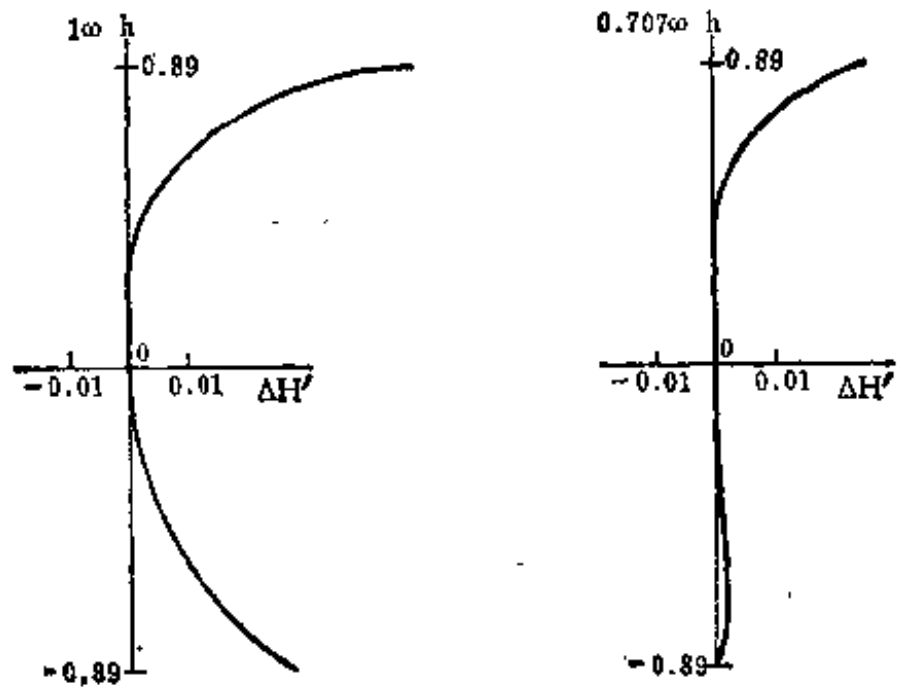
04-03-021-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.002405	−0.000293	0.000189	−0.000235	0.008252	0.48	5.2%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}$
100	0.04979	0.0254	−0.02395	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 = 4.4444 (±6.2°)

* * * 1 = 1.7875; * * * 2 = 0.0637; * * * 3 = 0.0889

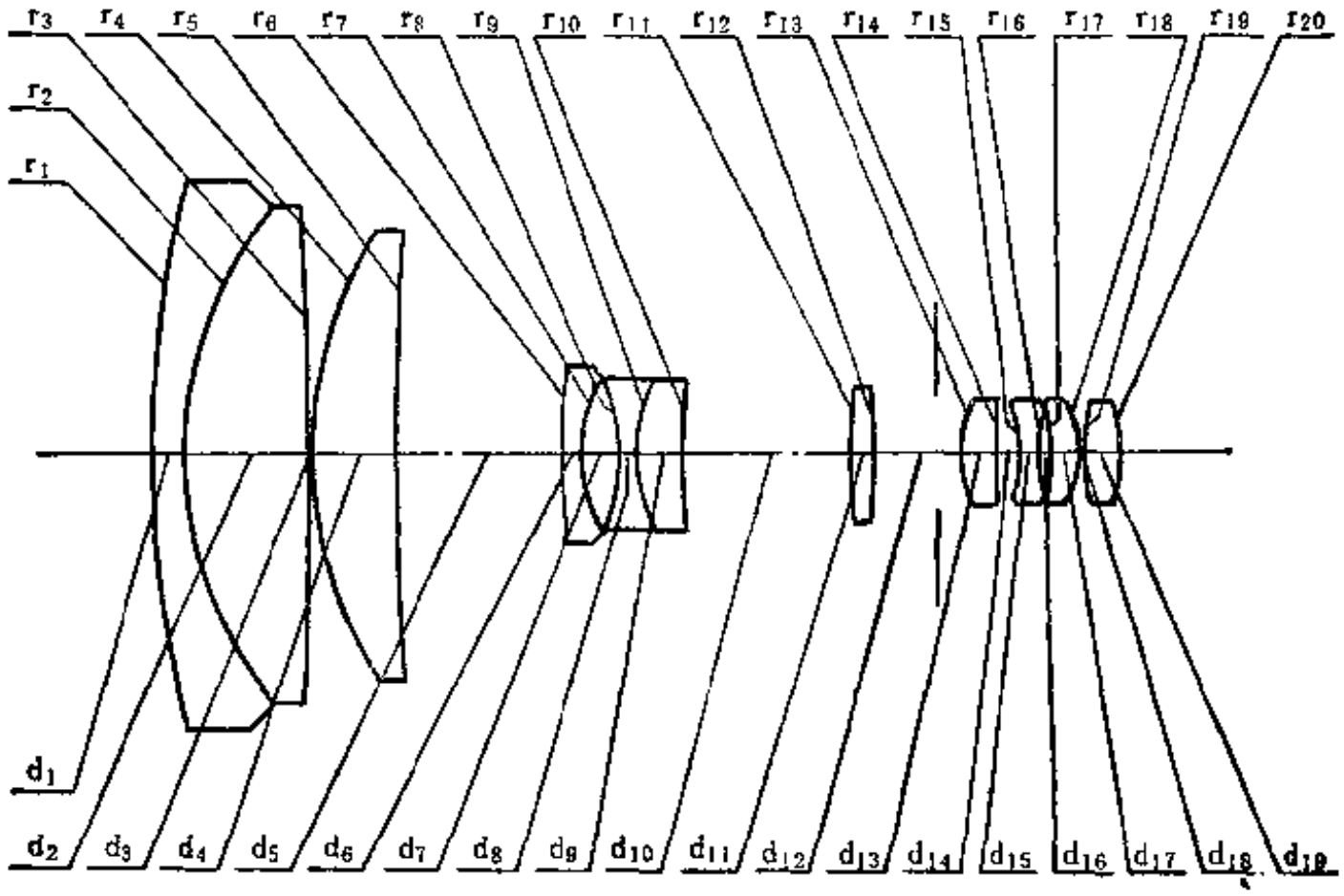




编号：04-03-022

变 焦 距 镜 头

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	n_D	ν	序号	r	d	n_D	ν
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	56.2
4	1.4650	0.270	1.620	60.3	14	∞	0.080		
5	16.7000	* * * 1			15	−0.4600	0.050	1.751	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	55.8
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			

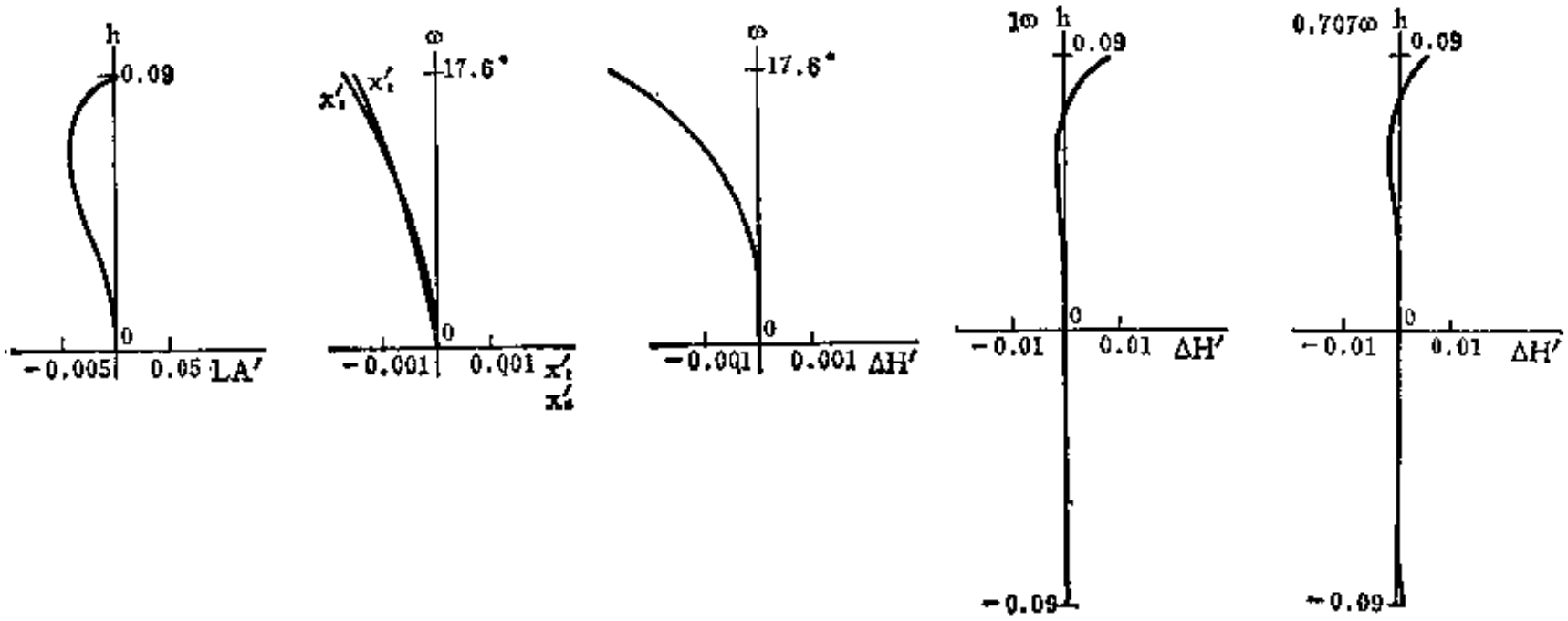
0.280* = 0.200 + 0.080

04-03-022-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_6	HI	QP(1 ω)
	−0.002052	−0.000685	0.000041	−0.000298	−0.001243	0.10	−2.67%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.00037	−0.00275	−0.00150	−0.00166	0.00015	0.00414	−0.00035
70	−0.00417	−0.00089	−0.00097	−0.00094	−0.00003	0.00239	−0.00045

E.F.L=0.3250 (±17.6°)

＊＊＊1=0.0500; ＊＊＊2=0.8089

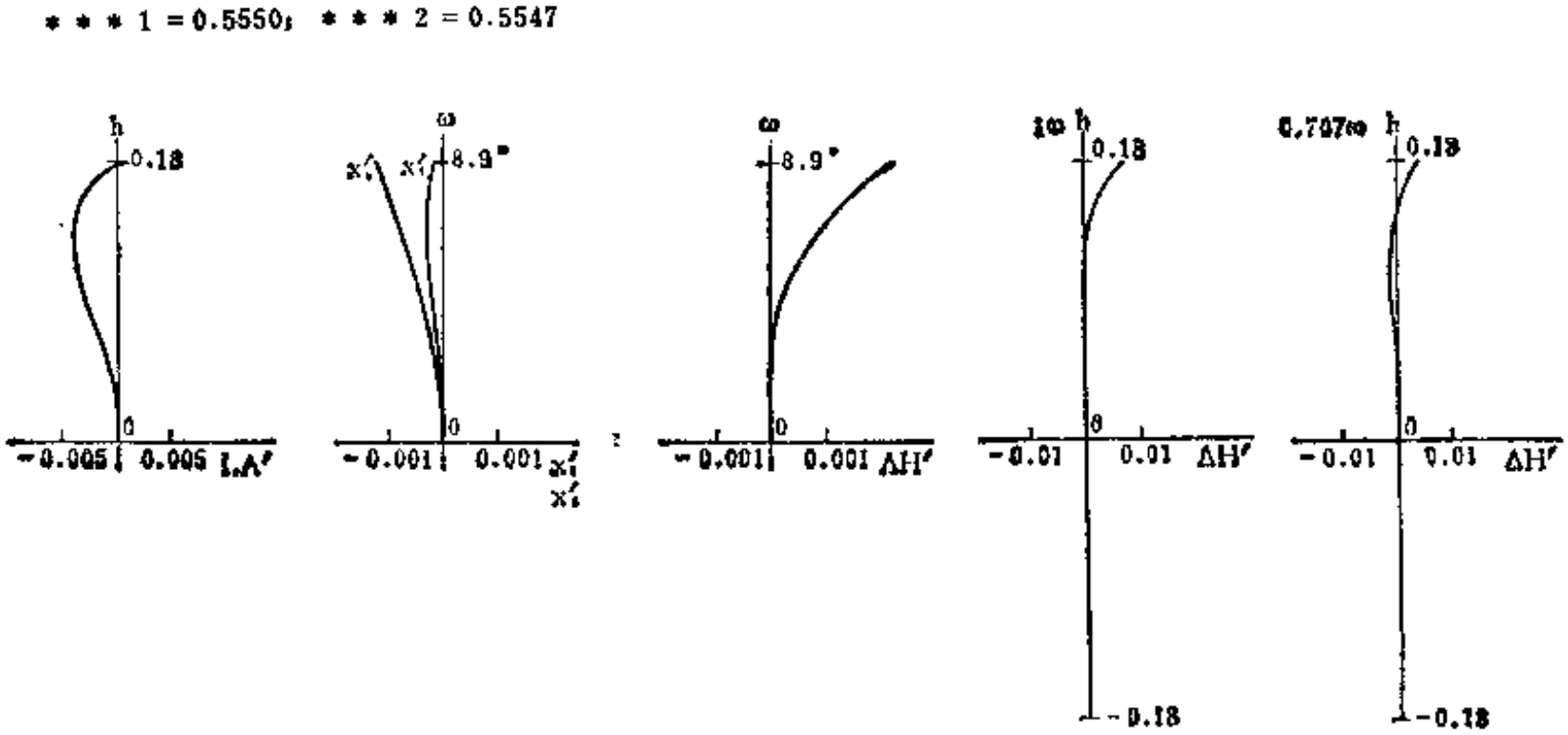


04-03-022-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.002100	−0.000303	0.000287	−0.000310	0.001004	0.1	2.24%
h 或 ω%	LA′	ΔH′	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 (±8.9°)

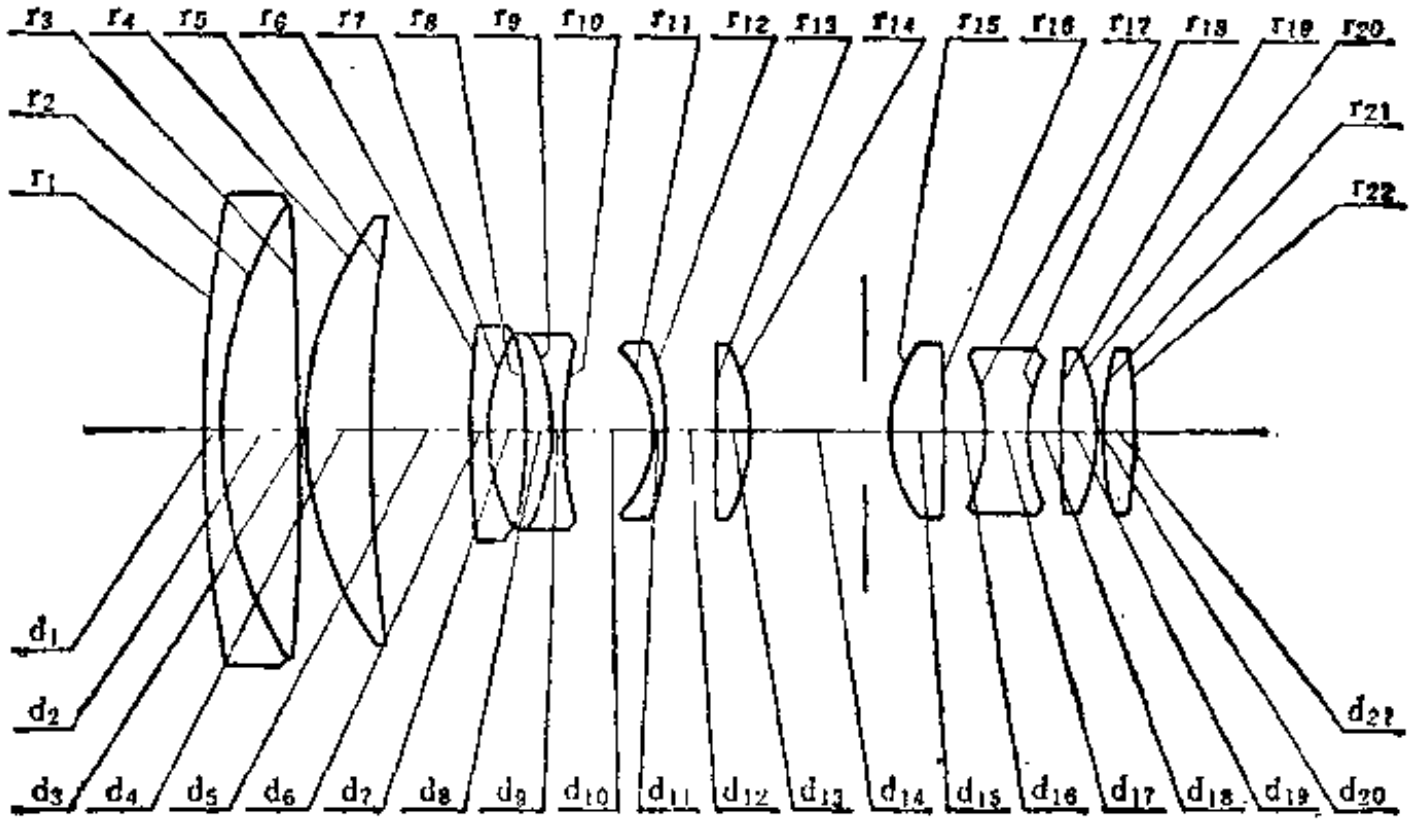
＊＊＊1=0.5550; ＊＊＊2=0.5547



编号：04-03-023

变 焦 距 镜 头

E.F.L=9.0～30.0　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	−16.451	* * * 3		
2	27.438	5.02	1.71300	53.9	13	∞	2.10	1.71300	53.9
3	−379.080	0.10			14	−11.905	9.00*		
4	22.850	4.25	1.64000	60.2	15	9.269	3.43	1.74330	49.2
5	115.012	* * * 1			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			

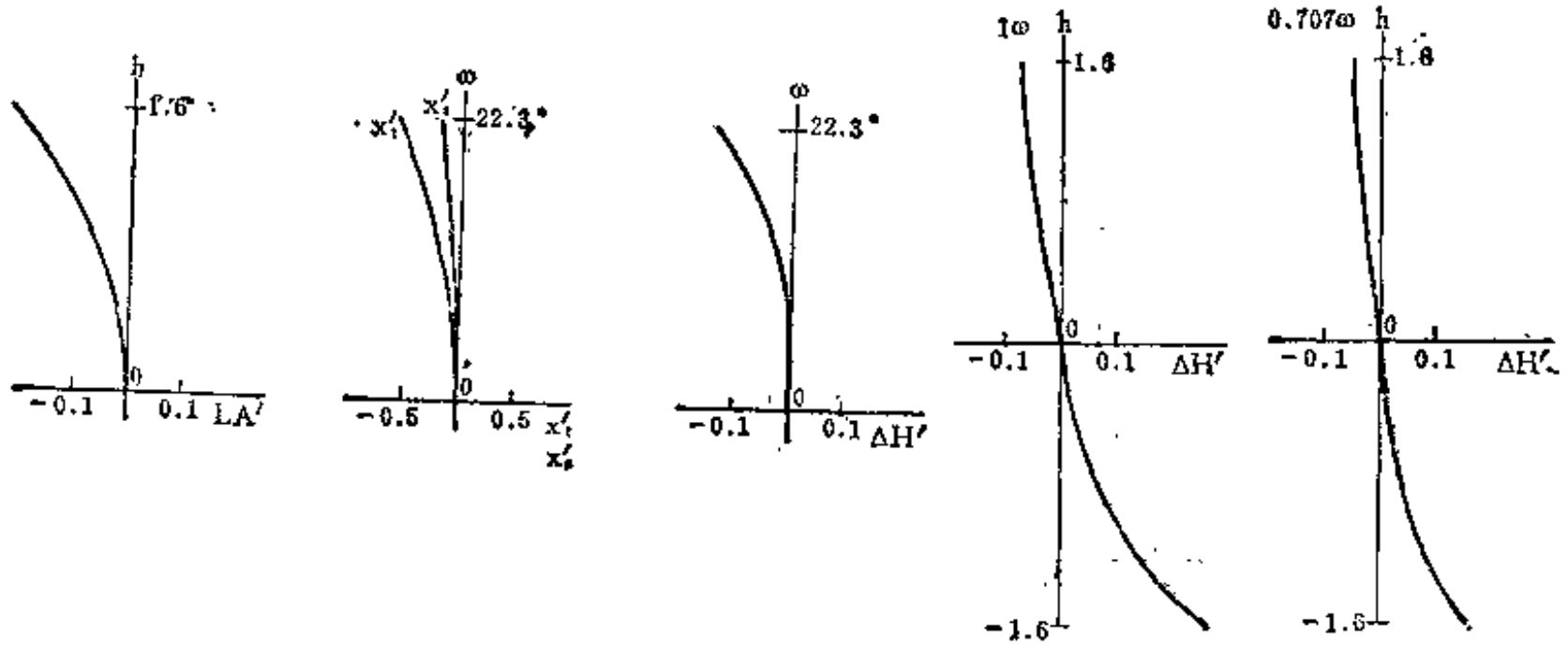
9.00* = 6.00 + 3.00

04-03-023-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.01582	0.00272	-0.01221	-0.00062	-0.04259	3.7	-3.8%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T_1}'	$K_{T0.7}'$
100	-0.219	-0.143	-0.594	-0.165	-0.429	0.0900	0.0268
70	-0.117	-0.049	-0.300	-0.095	-0.205	0.0569	0.0168

E.F.L=9.0 (±22.3°)

* * * 1 = 0.088; * * * 2 = 12.061; * * * 3 = 3.210

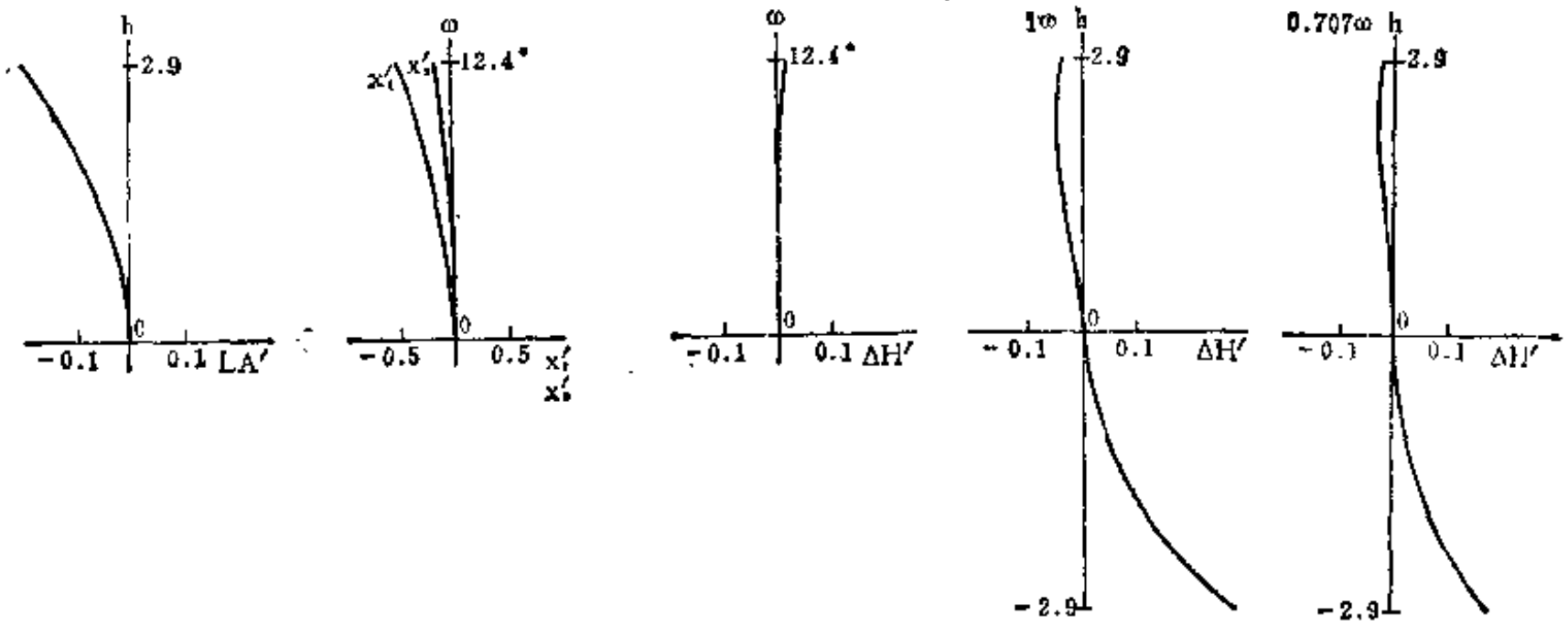


04-03-023-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.01513	0.00820	-0.01417	-0.00065	0.01041	3.6	0.56%
h 或ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.203	0.0200	-0.514	-0.137	-0.377	0.1206	0.0384
70	-0.110	0.0037	-0.263	-0.082	-0.181	0.0774	0.0253

E.F.L=16.2 (±12.4°)

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

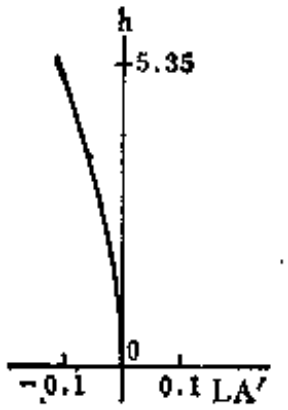


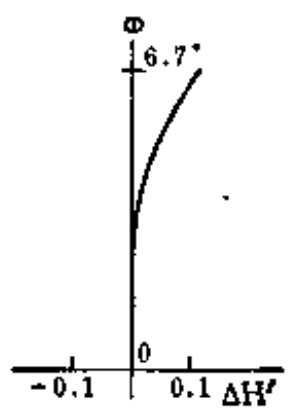
04-03-023-3

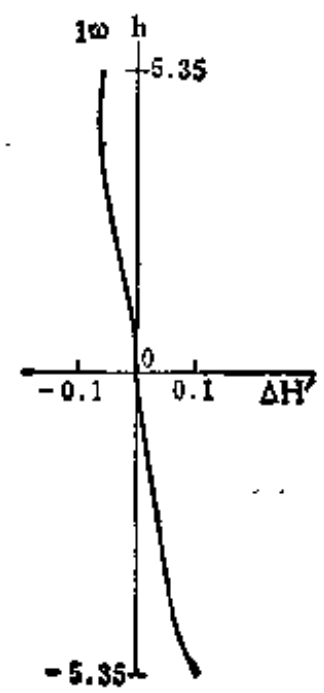
	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.00932	0.00105	-0.00851	-0.00065	0.03292	3.5	3.06%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.111	0.108	-0.412	-0.107	-0.305	0.02778	-0.00036
70	-0.065	0.033	-0.201	-0.063	-0.138	0.02716	0.00367

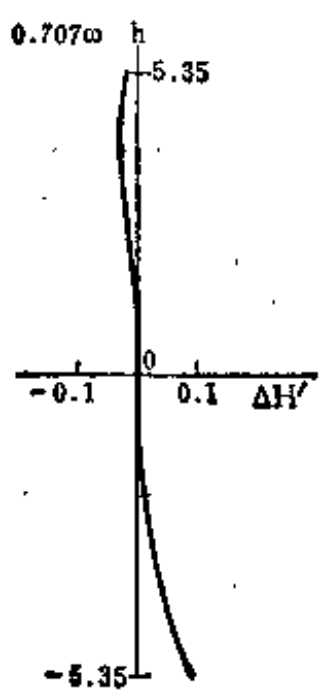
E. F. L = 30.0 (±6.7°)

* * * 1 = 11.421; * * * 2 = 2.782; * * * 3 = 1.156





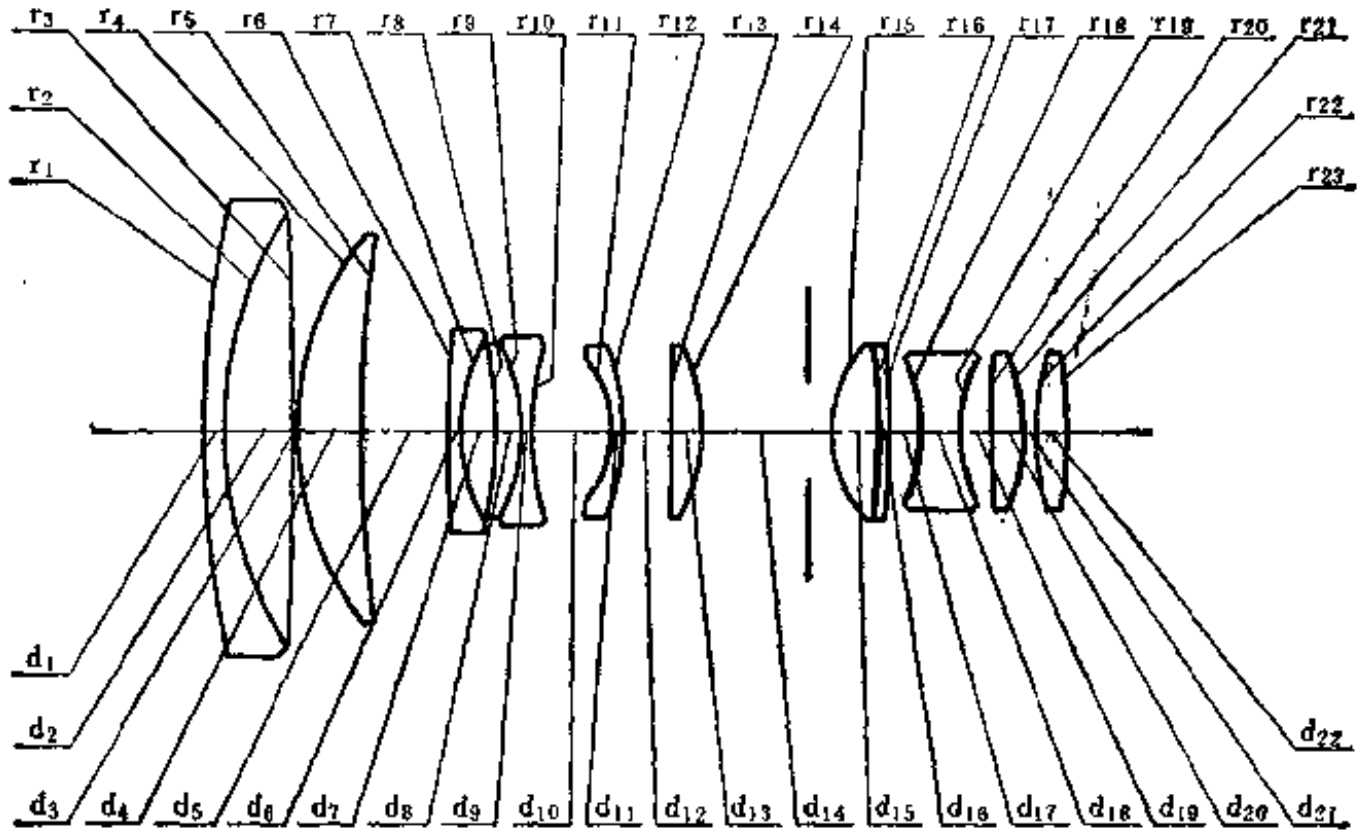




编号：04-03-024

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	1.78472	25.7	13	∞	2.10	1.71300	53.9
2	27.438	5.02	1.71300	53.7	14	−12.905	9.00*		
3	−379.080	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	0.86	1.62041	60.3	18	−11.104	2.87	1.78472	25.7
7	12.941	2.32			19	11.104	2.04		
8	−29.426	1.81	1.78472	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							

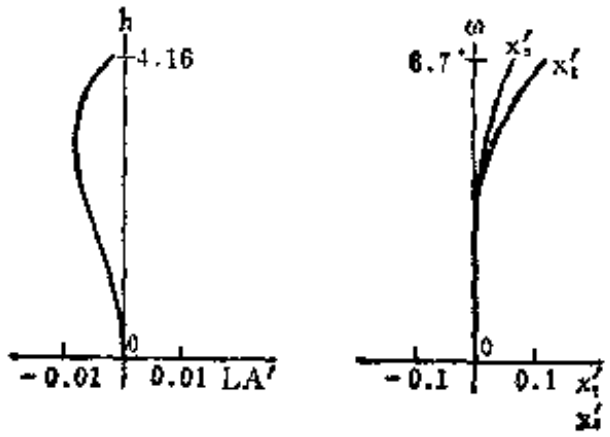
9.00* = 6.00 + 3.00

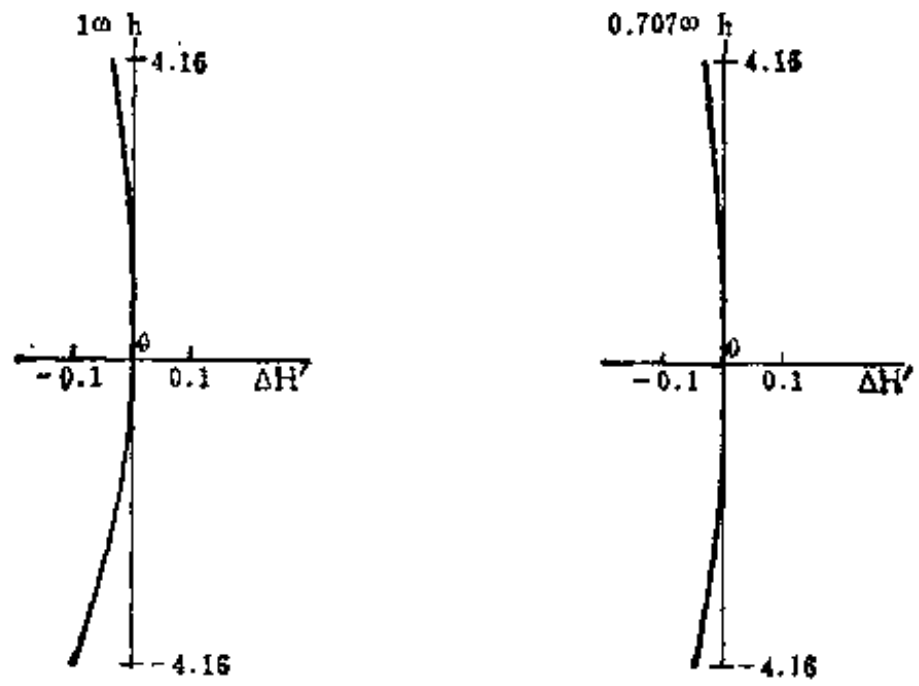
04-03-024-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.00112	-0.00448	0.00125	0.00019	0.01857	3.6	2.5%
h 或 ω%	LA′	ΔH′	x_t'	x_s	$x_t' - x_s'$	K_{T1}	$K_{T0.7}$
100	-0.0017	0.0888	0.1121	0.0593	0.0528	-0.05978	-0.03282
70	-0.0084	0.0275	0.0285	0.0147	0.0138	-0.03500	-0.01975

E.F.L=30.4 (±6.7°)

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

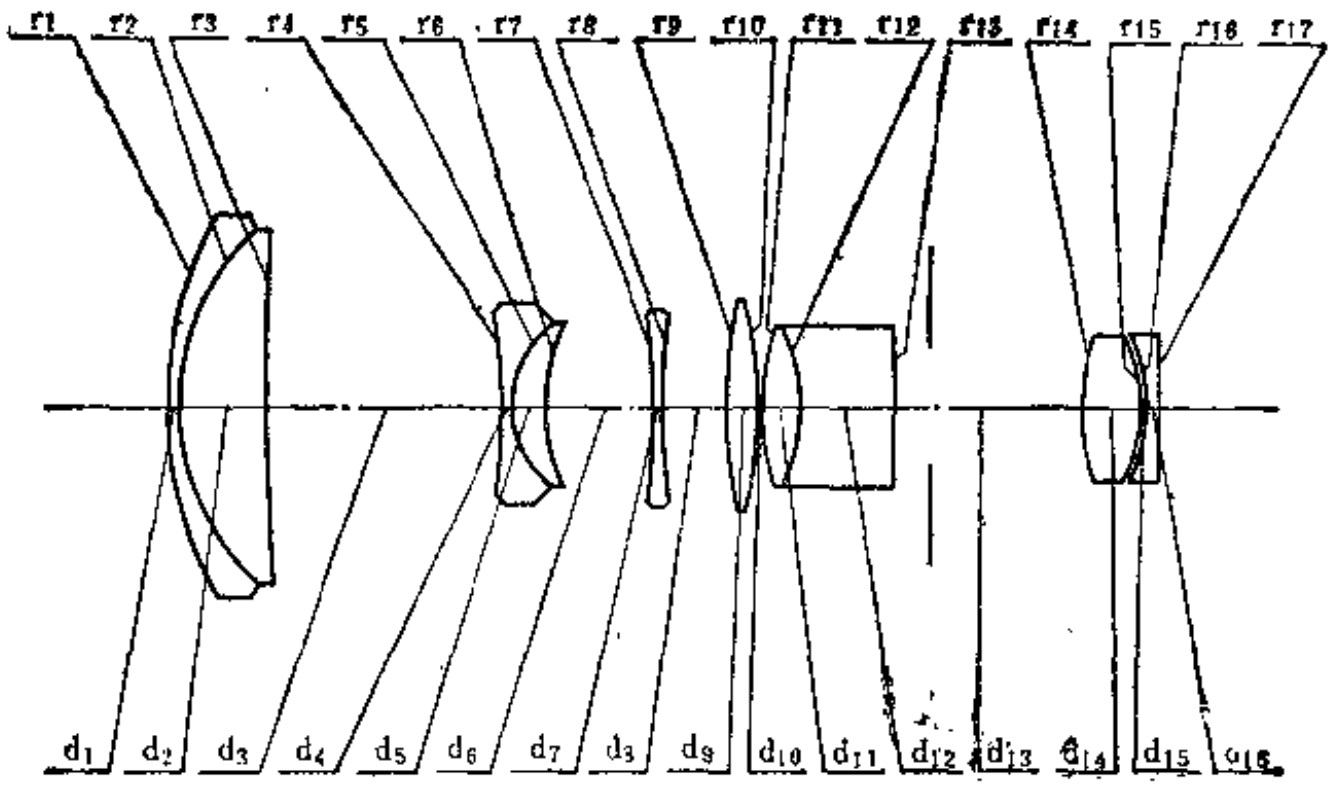




编号：04-03-025

变 焦 距 摄 影 物 镜

E.F.L＝1.000～4.060　B.F.L＝0.830　FNo.＝1.8　F.A.＝±17.2°～±4.3°



序号	r	d	n_d	ν_d	序号	r	d	n_d	ν_d
1	2.4770	0.080	1.7618	26.5	10	−2.8300	0.010		
2	1.5150	0.545	1.6237	47.0	11	1.7250	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	∞	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	−1.0590	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					

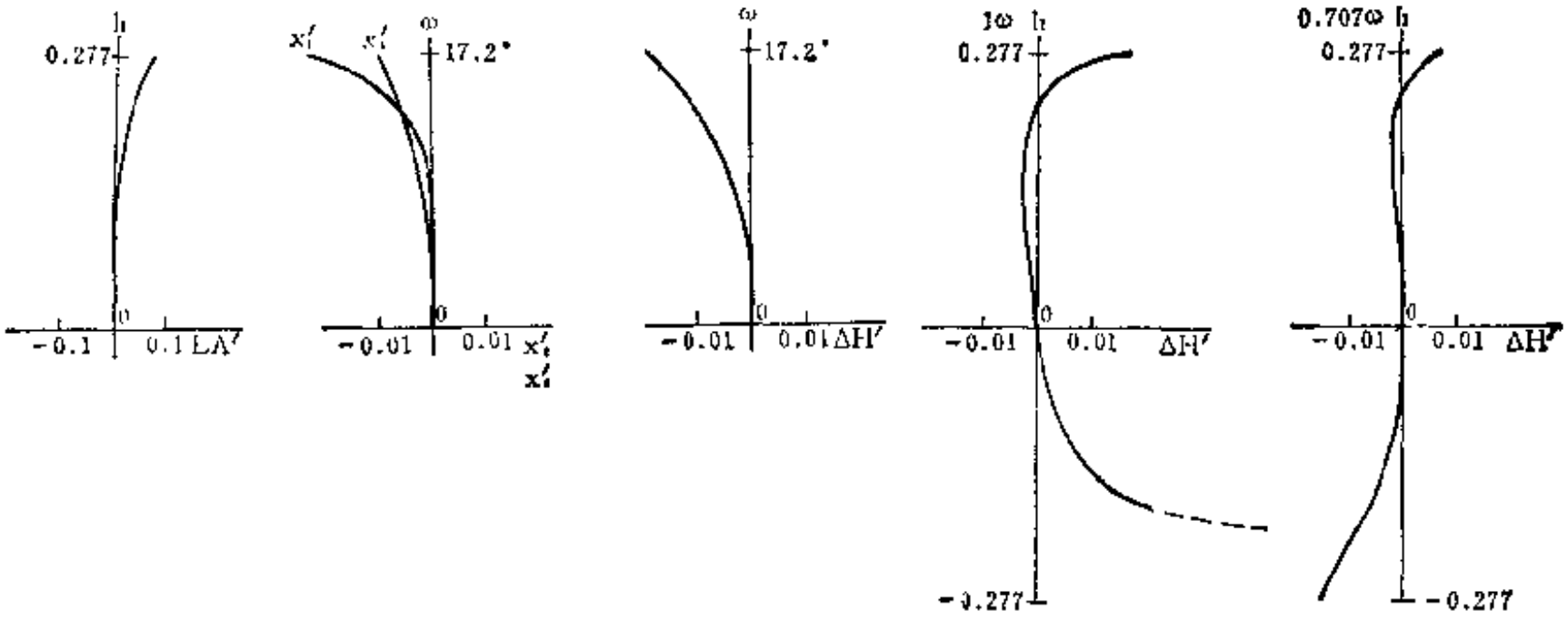
1.200* = 0.100 + 1.100

04-03-025-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.00355	−0.00273	0.00021	−0.00187	−0.01076	0.31	−6.1%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}	$K_{T0.7}'$
100	0.0669	−0.0192	−0.0231	−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 (±17.2°)

* * * 1 = 0.01561; * * * 2 = 2.49315; * * * 3 = 0.08000

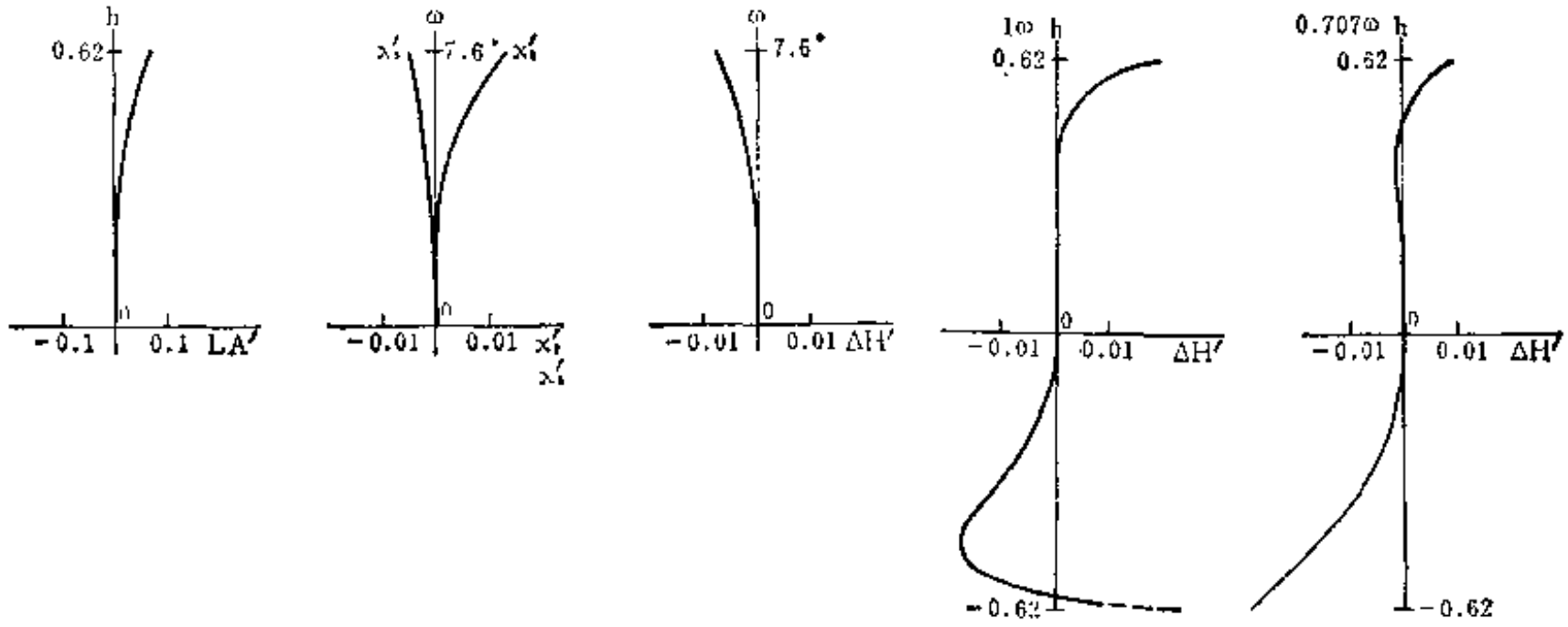


04-03-025-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	0.00345	−0.00324	0.00080	−0.00191	−0.00375	0.31	−2.4%
h 或 ω%	LA′	ΔH′	x_t'	x_s	$x_t'-x_s'$	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	−0.0095	−0.0071

E.F.L=2.278 (±7.6°)

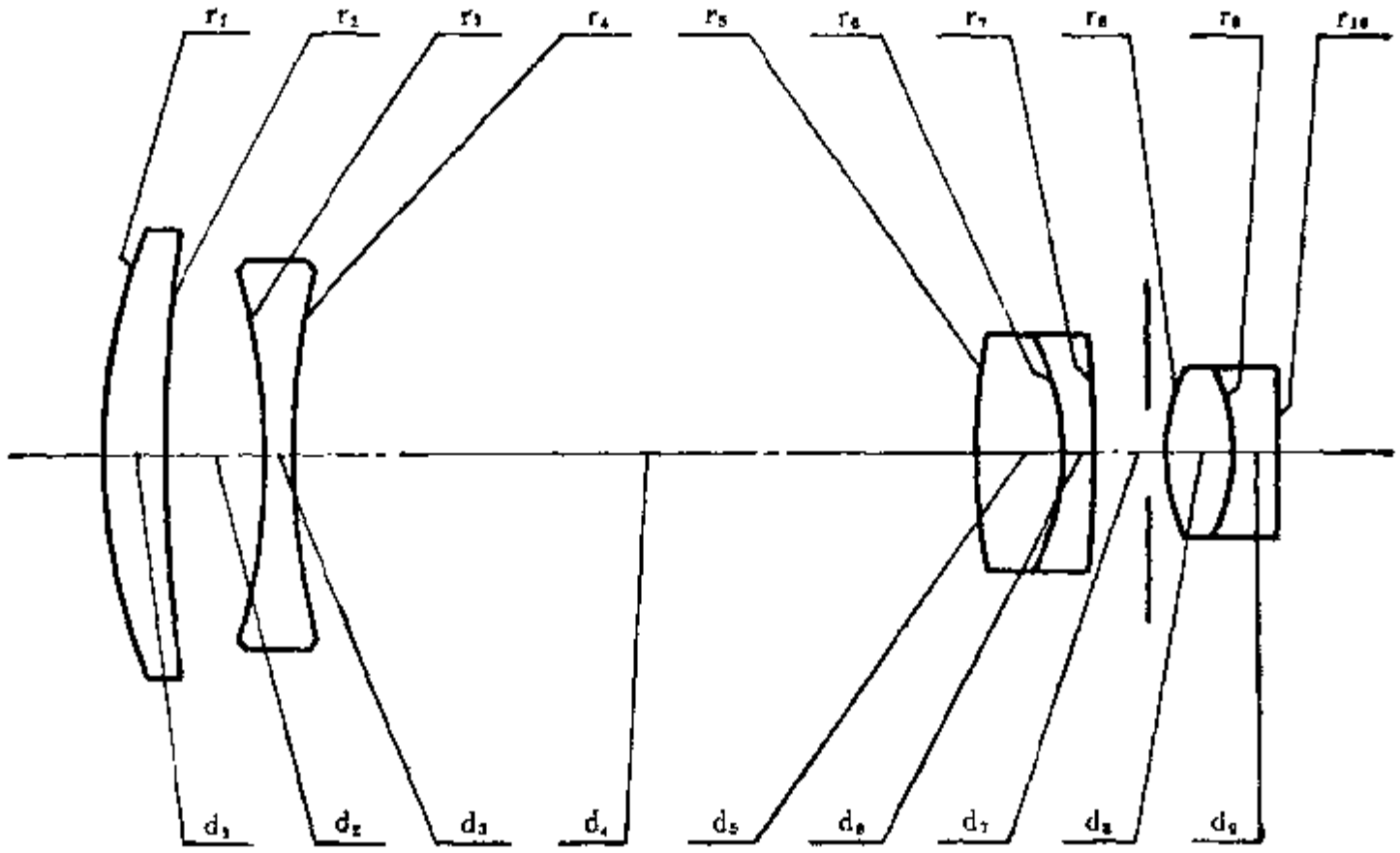
* * * 1 = 1.515610 ; * * * 2 = 0.680222; * * * 3 = 0.392930



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.＝±14.3°～±5.4°



序号	r	d	n_D	ν_D	序号	r	d	n_D	ν_D
1	35.650	3.840	1.620	60.3	6	−14.489	1.840	1.617	36.6
2	92.945	＊＊＊1			7	−81.067	＊＊＊3*		
3	−39.960	1.840	1.620	60.3	8	11.420	3.840	1.617	54.9
4	45.794	＊＊＊2			9	−11.420	2.780	1.720	29.3
5	38.768	5.070	1.617	54.9	10	∞			

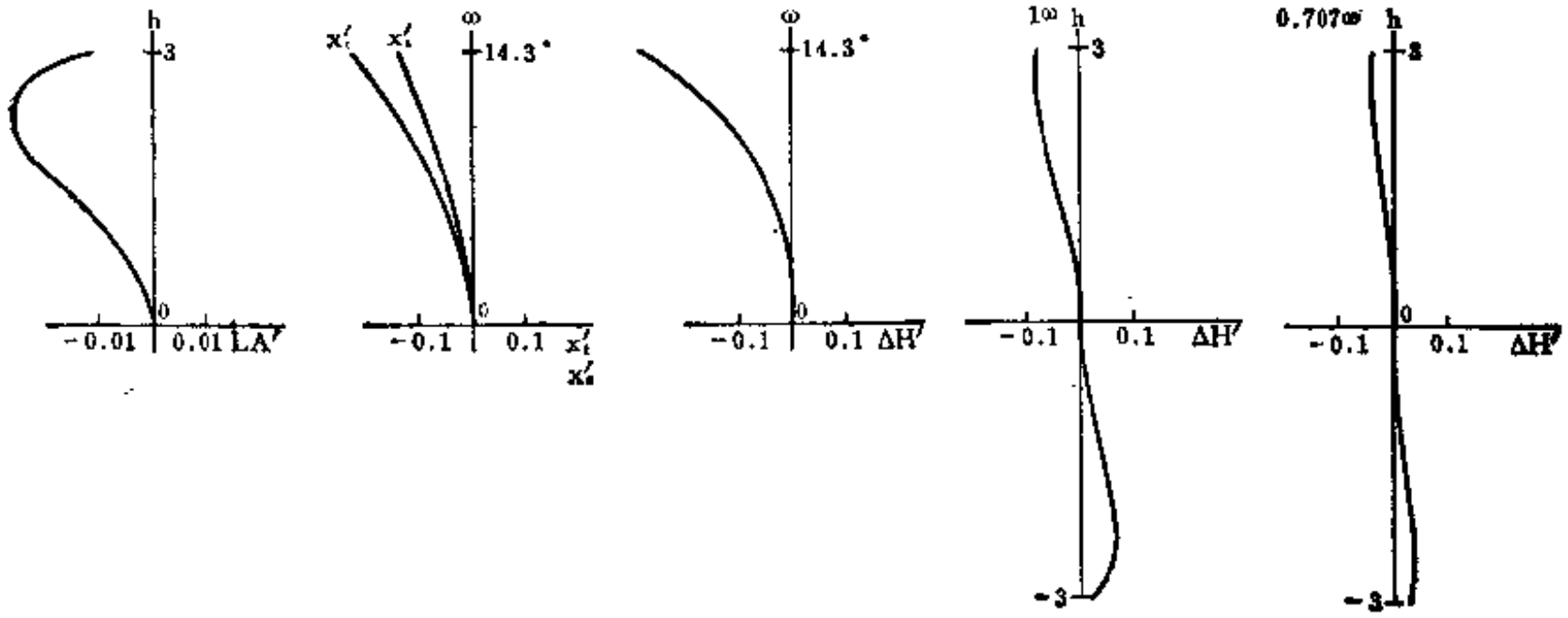
宏

04-03-026-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.01021	−0.00311	−0.00492	−0.01840	−0.16168	3.1	−9.4%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t - x_s'$	K_{T1}'	$K_{T0.7}'$
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 (±14.3°)

* * * 1 = 5.620; * * * 2 = 40.530; * * * 3 = 5.730; * * * 3* = 5.730 = 4.270 + 1.460

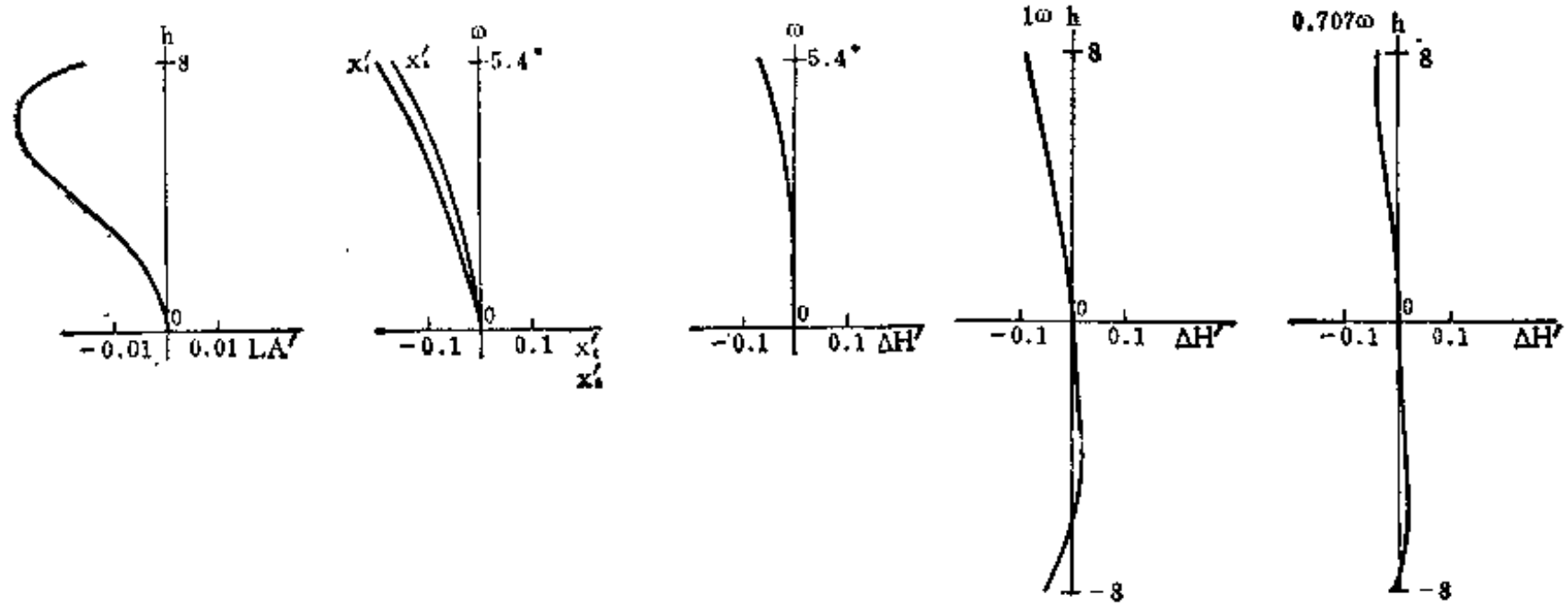


04-03-026-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.01049	0.00048	−0.00506	−0.01883	−0.03105	3.04	−2.3%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t - x_s$	K_{T1}'	$K_{T0.7}'$
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 (±5.4°)

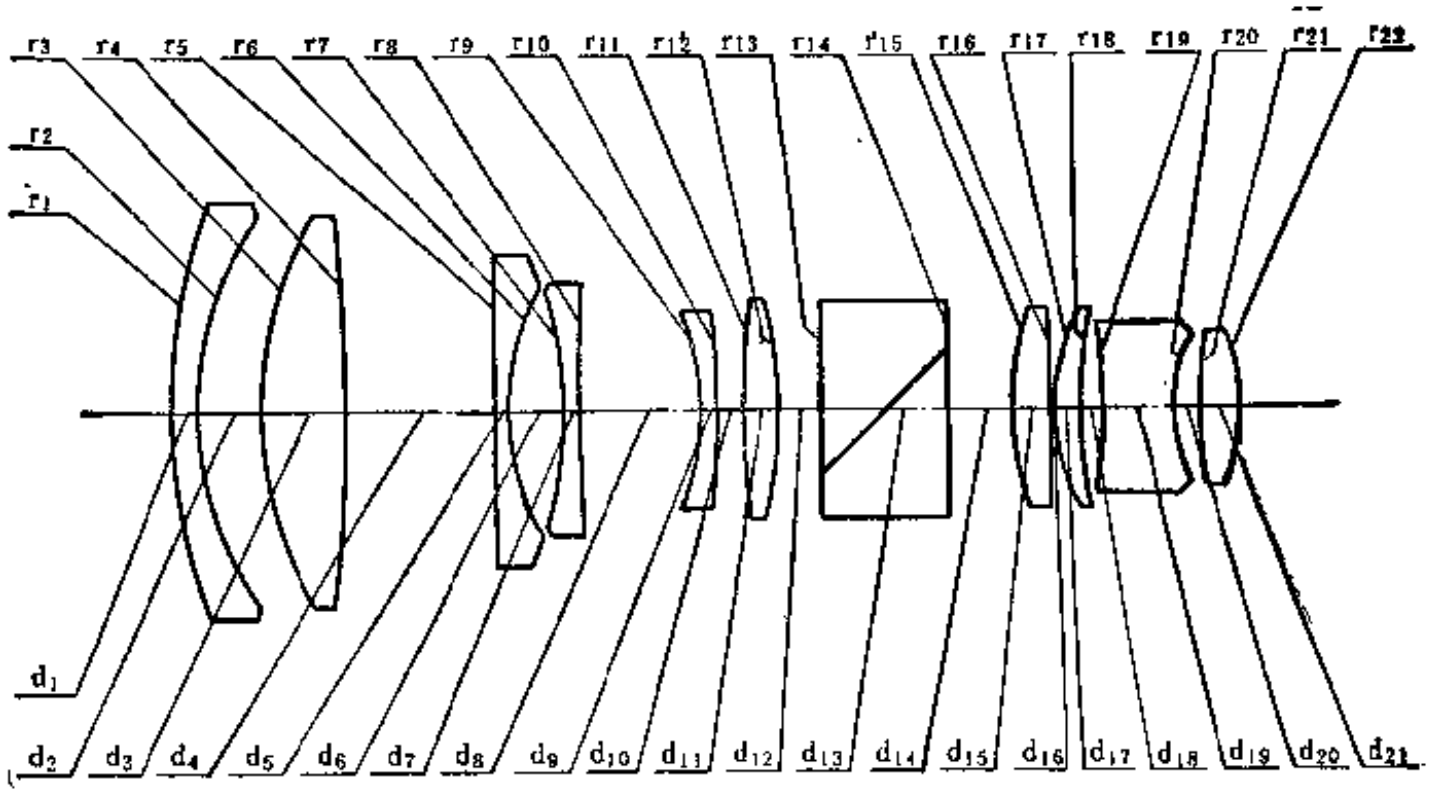
* * * 1 = 24.890; * * * 2 = 1.990; * * * 3 = 25.000; * * * 3* = 25.000 = 23.540 + 1.460



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_e	ν_e	序号	r	d	n_e	ν_e
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	16.99	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	−70.15	* * * 3			21	32.69	2.45	1.7161	53.6
11	60.03	2.40	1.6713	41.6	22	−14.61			

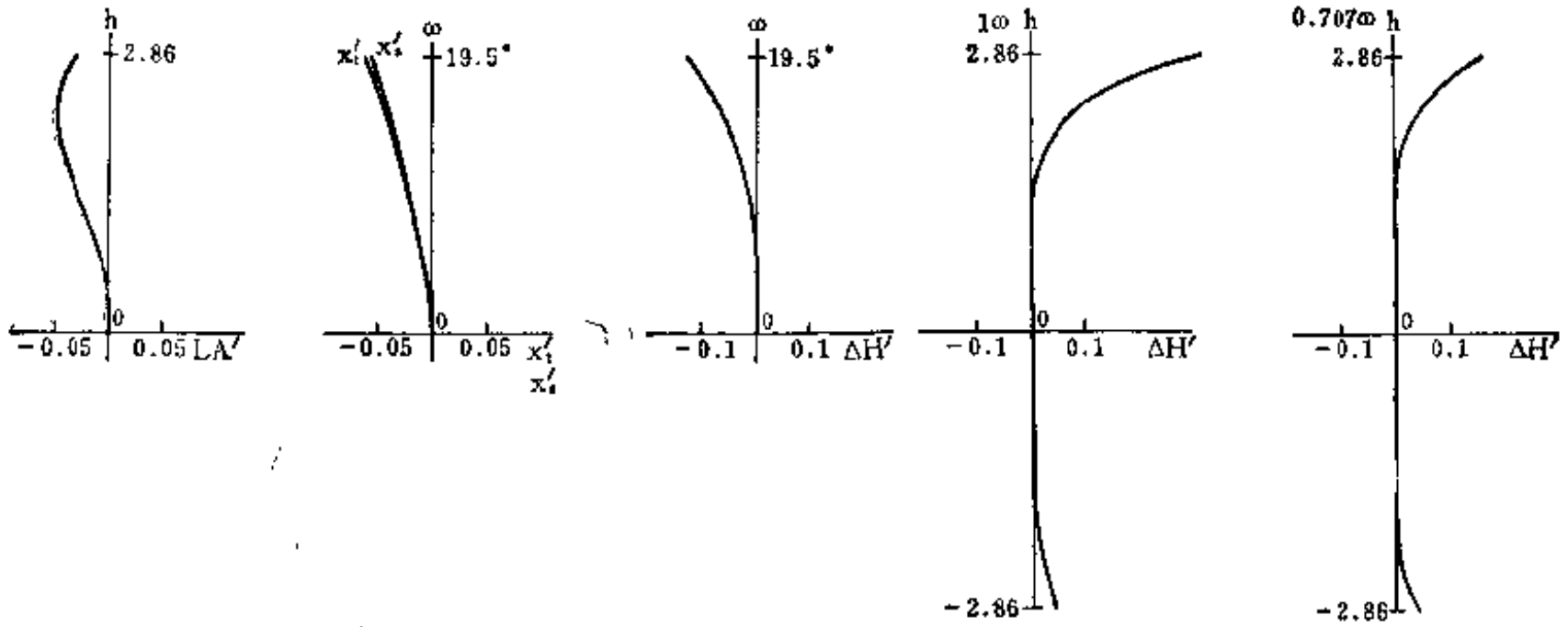
4.50* = 3.00 + 1.50

04-03-027-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.01942	−0.01218	−0.00128	−0.01015	−0.06611	3.6	−3.6%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s$	K_{T1}'	$K_{T0.7}'$
100	−0.0271	−0.1321	−0.0645	−0.0616	−0.0029	0.1818	0.0282
70	−0.0458	−0.0453	−0.0383	−0.0334	−0.0029	0.0985	0.0093

E. F. L = 10.30 (±19.5°)

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

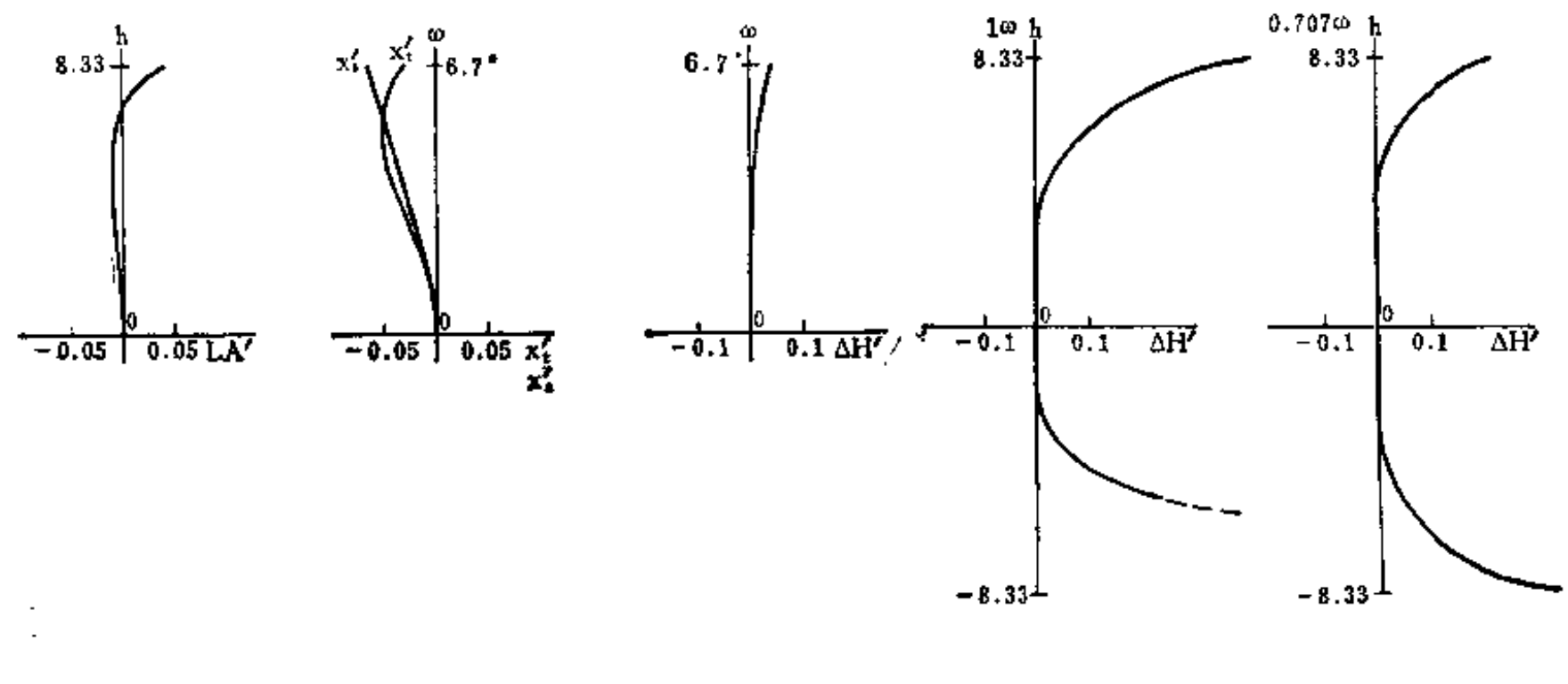


04-03-027-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	−0.01168	−0.00577	−0.00144	−0.01046	0.00948	3.5	0.27%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0256	0.0098	0.0257	−0.0490	0.0747	0.2203	0.0336
70	−0.0203	0.0047	−0.0288	−0.0343	0.0055	0.1184	0.0159

E. F. L = 20.00 (±10°)

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

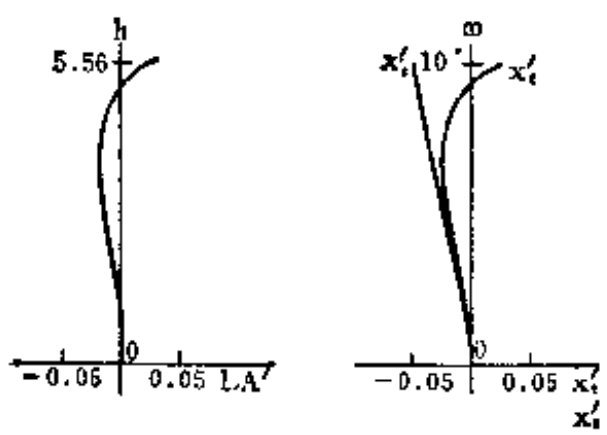


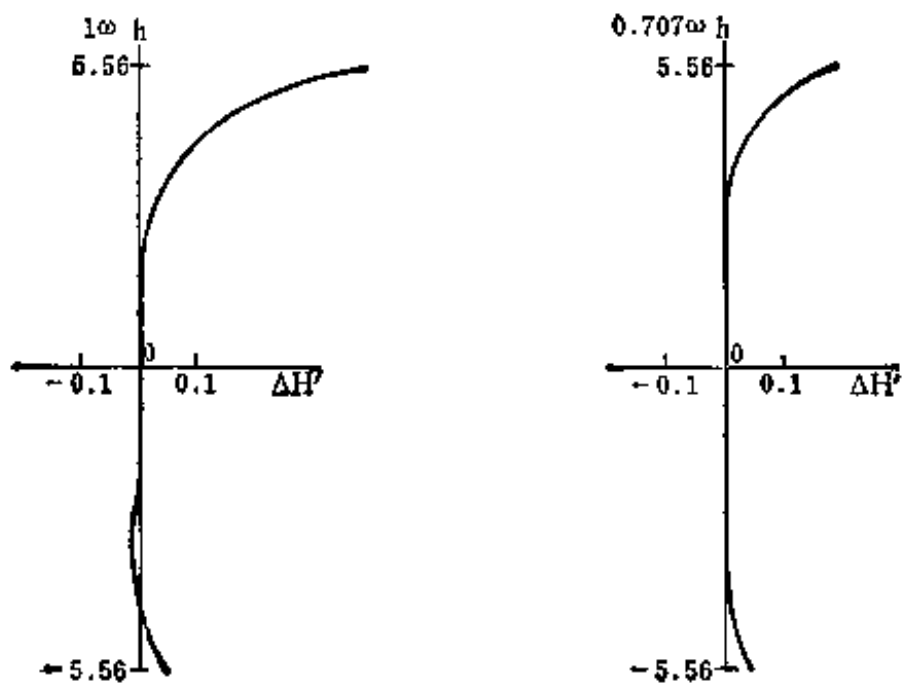
04-03-027-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1 ω)
	-0.00649	-0.00134	-0.00553	-0.01048	0.02824	3.5	1.2%
h 或 ω%	LA′	ΔH′	x_t'	x_e	$x_t'-x_e'$	K_{T1}'	$K_{T0.7}'$
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 (±6.7°)

* * * 1 = 23.91; * * * 2 = 2.41; * * * 3 = 2.98

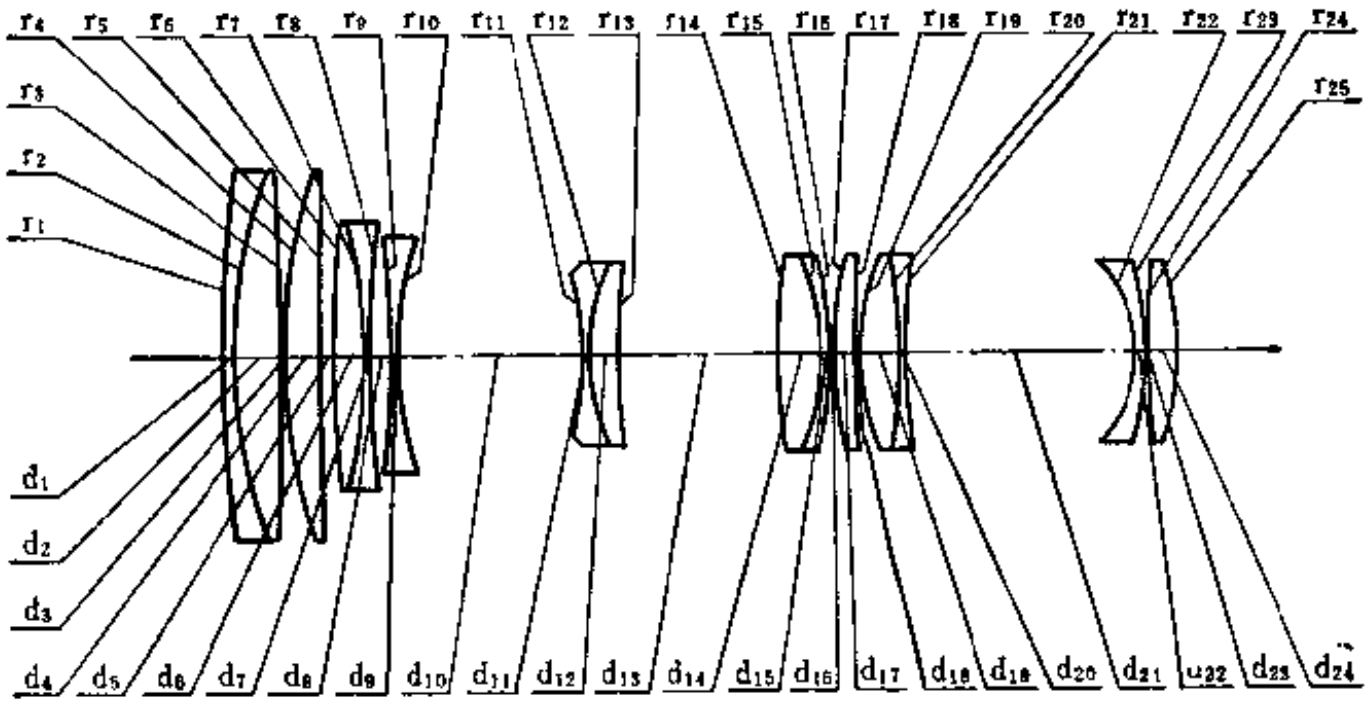




编号：04-03-028

变 焦 距 物 镜

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



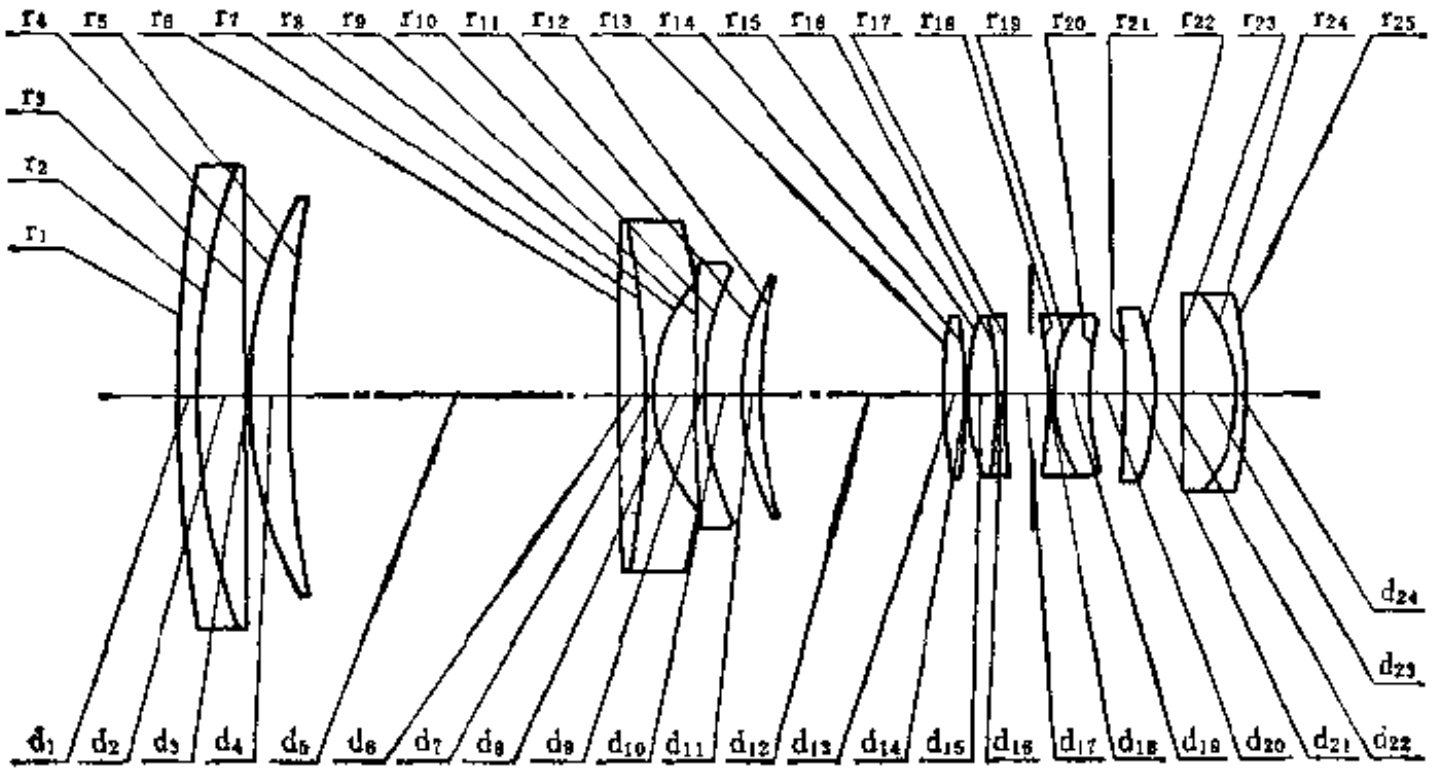
序号	r	d	n_d	v	序号	r	d	n_d	v
1	268.54	1.900	1.71736	29.5	14	88.43	6.500	1.48749	70.0
2	80.13	6.900	1.58913	61.2	15	－36.55	1.460	1.80518	25.5
3	－410.77	0.300			16	－56.17	0.300		
4	90.60	5.300	1.51009	63.4	17	61.15	3.870	1.48749	70.0
5	3376.49	* * * 1			18	284.27	0.300		
6	222.96	4.700	1.78472	25.7	19	38.35	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	94.78	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	1.62588	35.6	25	－ 53.64			
13	153.92	* * * 3							

49.846* = 1.000 + 48.846

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°**



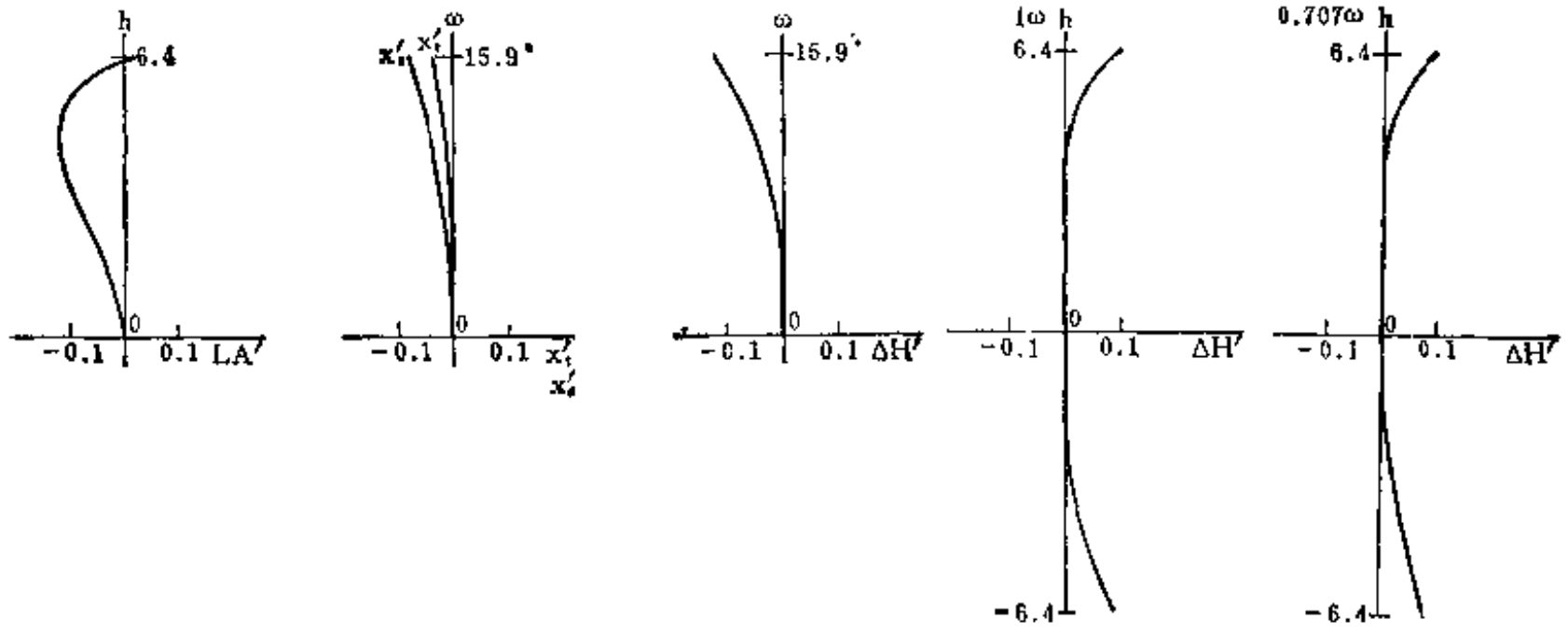
序号	r	d	n_d	ν_d	序号	r	d	n_d	ν_d
1	266.000	2.8	1.80518	25.5	14	−86.560	0.1		
2	104.500	7.4	1.64000	60.2	15	41.610	5.0	1.64000	60.2
3	∞	0.1			16	−54.000	0.9	1.80518	25.5
4	64.250	6.5	1.62041	60.3	17	876.482	***3*		
5	191.282	***1			18	−64.080	1.0	1.69680	55.6
6	501.010	3.7	1.80518	25.5	19	24.080	5.8	1.71736	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	89.777	***2			25	−83.107			
13	70.000	3.0	1.62041	60.3					

04-03-029-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	-0.02851	0.00290	0.00188	-0.00763	-0.04227	10.2	-1.2%
h 或 ω%	LA′	ΔH′	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 (±15.9°)

* * * 1 = 2.246; * * * 2 = 45.122; * * * 3 = 4.194; * * * 3 * = 4.194 = 3.194 + 1.000

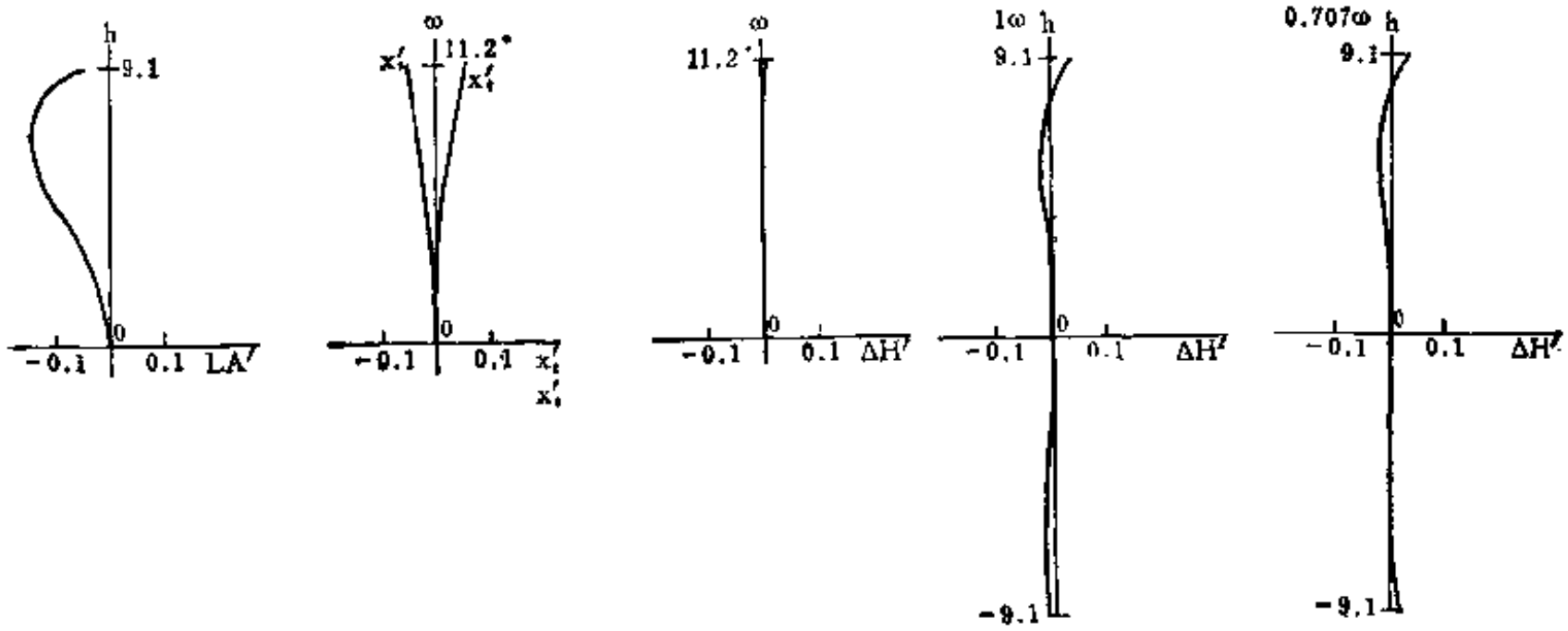


04-03-029-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP (1ω)
	-0.02870	-0.00627	0.00408	-0.00774	0.00148	10.1	0.08%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.0494	0.0084	0.0600	-0.0488	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 (±11.2°)

* * * 1 = 16.246; * * * 2 = 28.854; * * * 3 = 6.462; * * * 3 * = 6.462 = 5.462 + 1.000

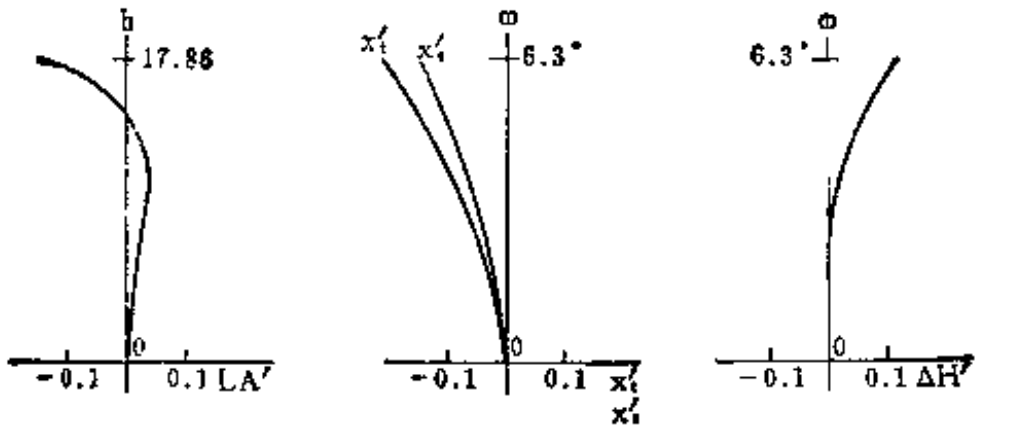


04-03-029-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP (1ω)
	0.00971	0.01082	−0.00182	−0.00957	0.04095	11.0	1.1%
h 或 ω%	LA′	ΔH′	x'_t	x'_s	$x'_t - x'_s$	K'_{T1}	$K'_{T0.7}$
100	−0.1480	0.1208	−0.2120	−0.1524	−0.0596	0.02656	0.03276
70	0.0301	0.0416	−0.1091	−0.0822	−0.0269	0.02174	0.02455

E. F. L = 100.00 (±6.3°)

* * * 1 = 42.246; * * * 2 = 0.903; * * * 3 = 8.413; * * * 3 * = 8.413 = 7.413 + 1.000

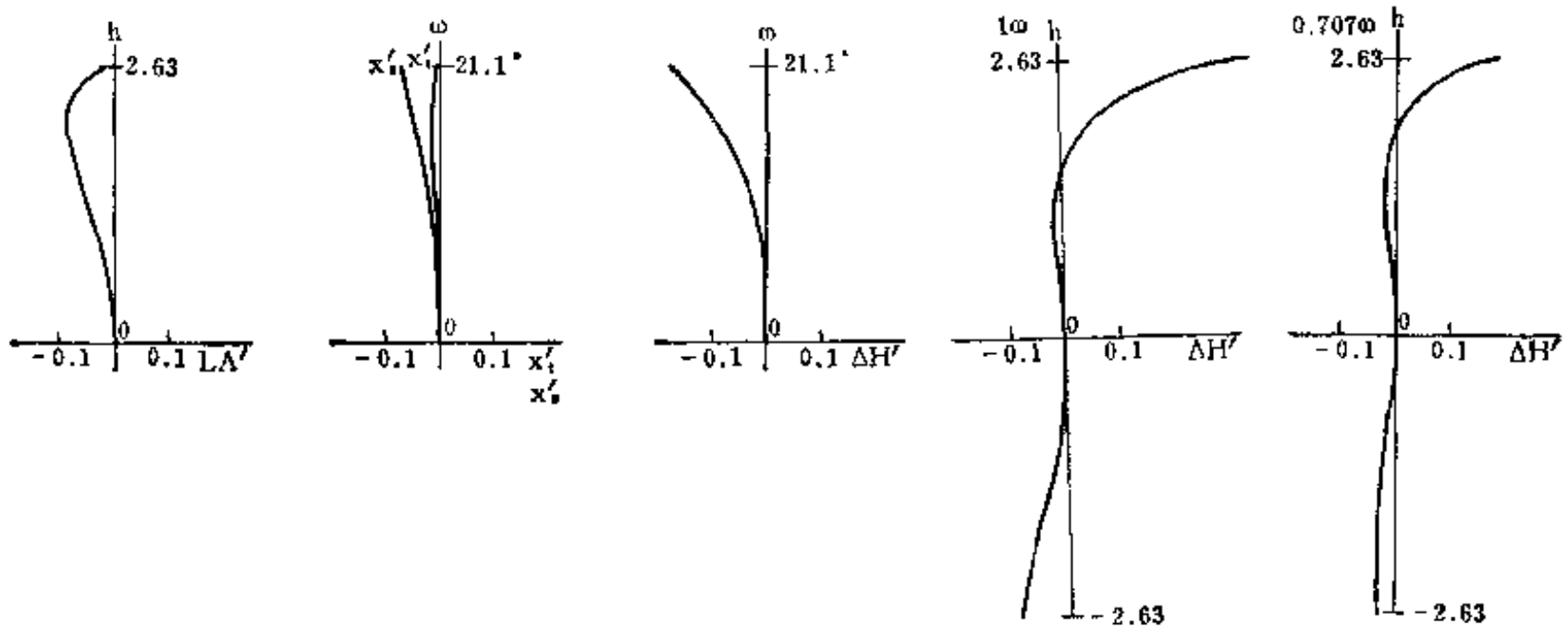


04-03-030-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP (1ω)
	-0.02944	-0.02356	0.00419	-0.01617	-0.08638	3.7	-4.7%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.0189	-0.175	-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 (±21.1°)

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

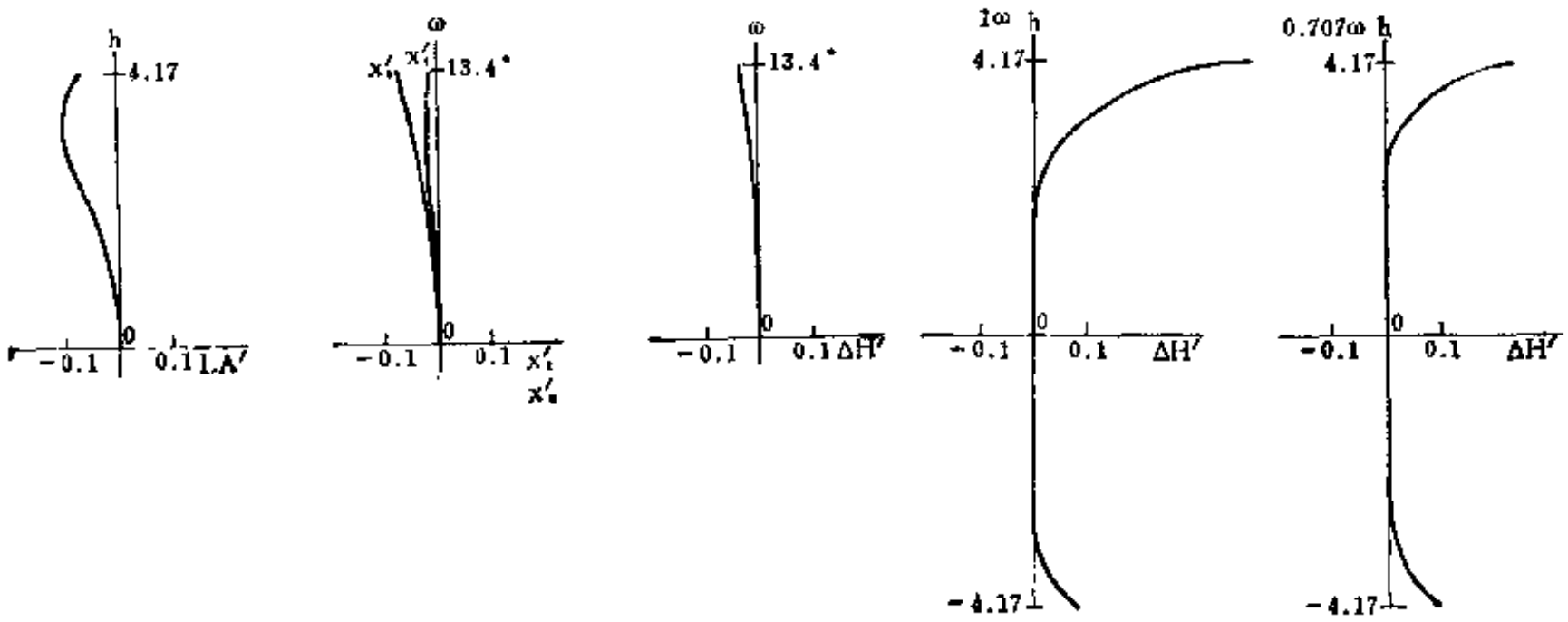


04-03-030-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP (1ω)
	-0.03369	-0.00604	0.00620	-0.01678	-0.02263	3.6	-0.9%
h 或 ω %	LA′	ΔH′	x_t'	x_s'	$x_t' - x_s'$	K_{T1}'	$K_{T0.7}'$
100	-0.0655	-0.0321	-0.0148	-0.0713	0.0565	0.2514	0.0253
70	-0.0921	-0.0137	-0.0172	-0.0413	0.0241	0.1622	0.0120

E.F.L=15.00 (±13.4°)

* * * 1 = 8.70; * * * 2 = 14.81; * * * 3 = 8.69

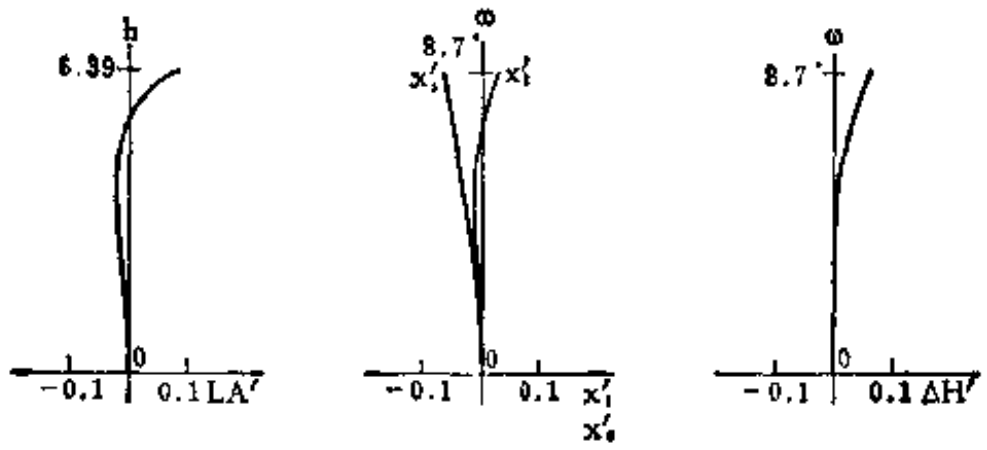


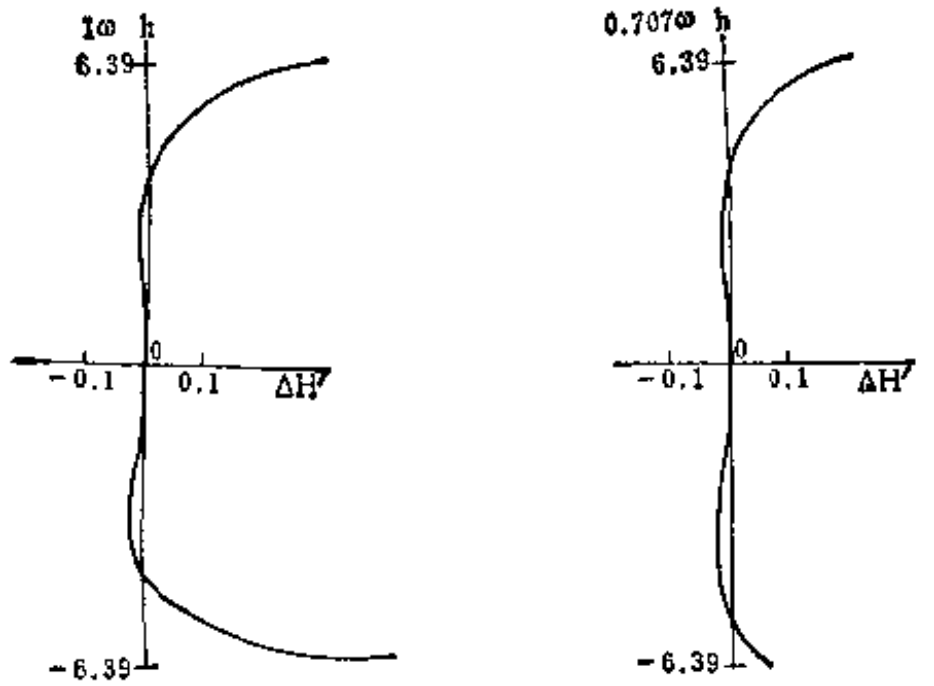
04-03-030-3

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP (1ω)
	-0.01177	-0.01897	0.01275	-0.01691	0.01869	3.5	1.7%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t - x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0840	0.0603	0.0300	-0.0587	0.0887	0.3765	0.0137
70	-0.0217	0.0162	-0.0100	-0.0395	0.0295	0.1455	-0.0050

E. F. L = 23.00 (±8.7°)

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

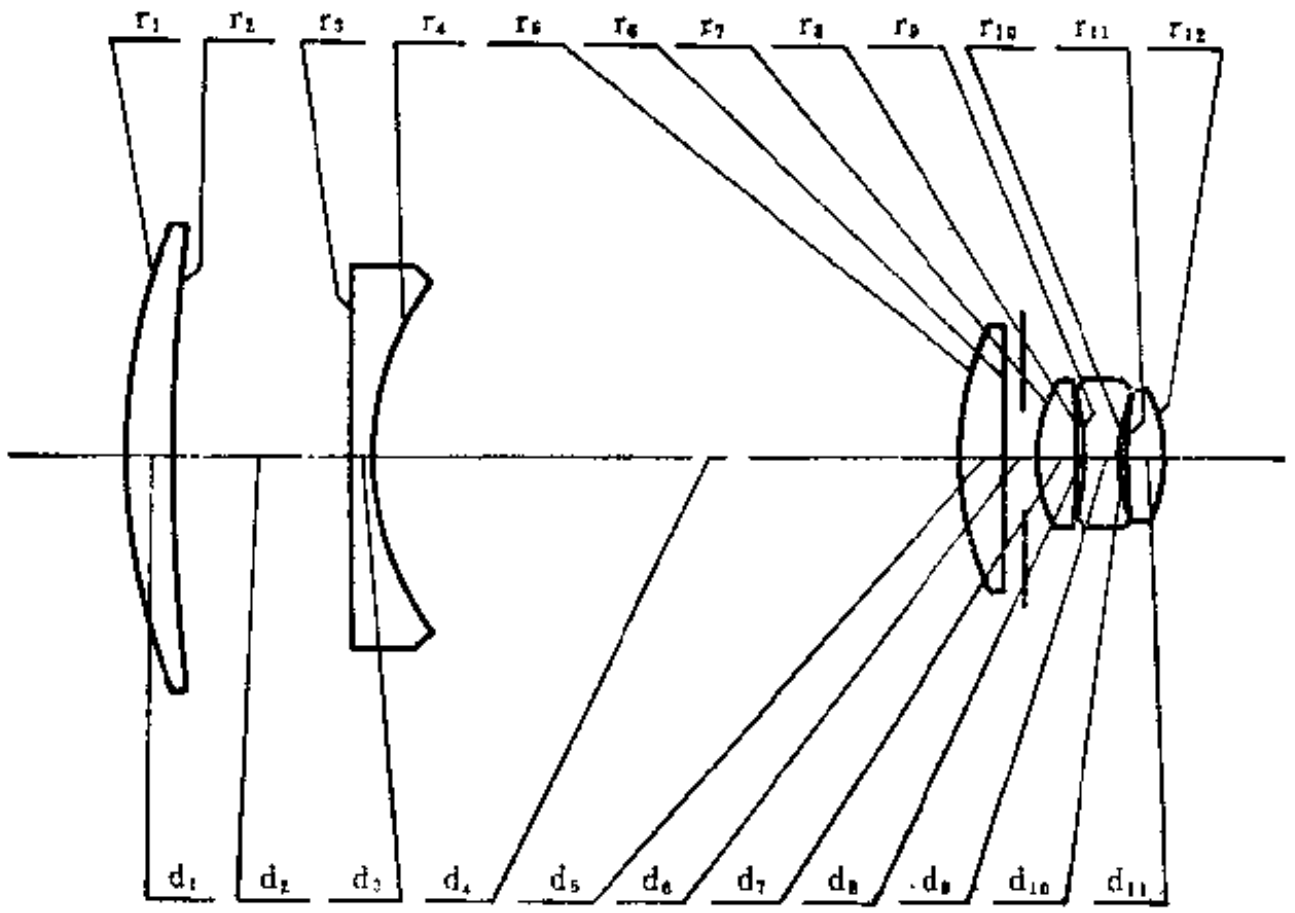




编号：04-03-031

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　B. F. L＝10.167　FNo. ＝2.2　F. A. ＝±18.22°～±6.7°



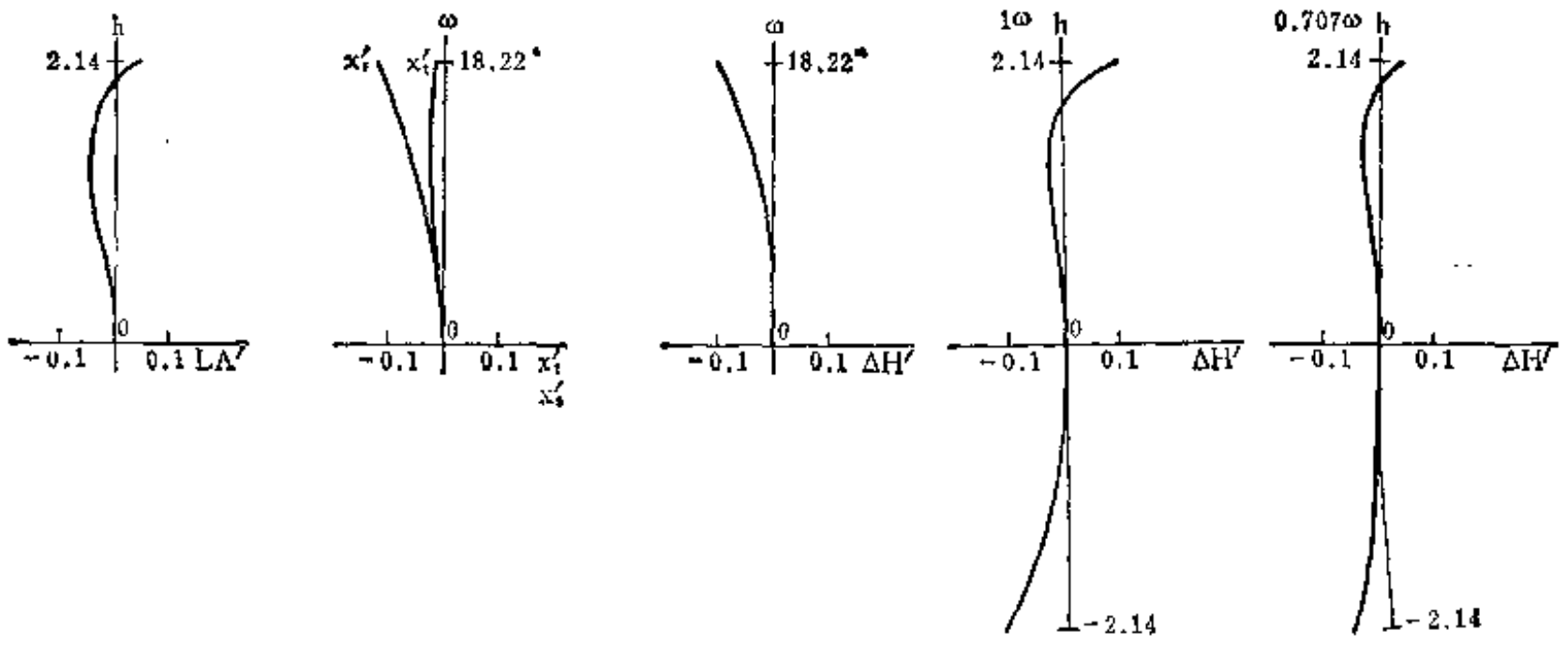
序号	r	d	n_D	ν_D	序号	r	d	n_D	ν_D
1	31.900	2.500	1 611	58.8	7	7.913	2.000	1.611	58.8
2	140.318	* * * 1			8	−31.592	0.230		
3	∞	1.000	1.605	43.6	9	−11.219	2 000	1.649	33.8
4	15.212	* * * 2			10	7.985	0.381		
5	19.559	2.000	1.611	58.8	11	31.592	2.000	1.611	58.8
6	∞	* * * 3*			12	−7.913			

04-03-031-1

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.01731	−0.01522	0.00298	−0.01760	−0.04016	3.1	−3.2%
h 或 ω%	LA′	ΔH′	x_t'	x_s'	$x_t'-x_s'$	K_{T1}'	$K_{T0.7}'$
100	0.0500	−0.0985	−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 (±18.22°)

* * * 1 = 4.677, * * * 2 = 31.334, * * * 3 = 2.660; * * * 3* = 2.660 = 1.644 + 1.016

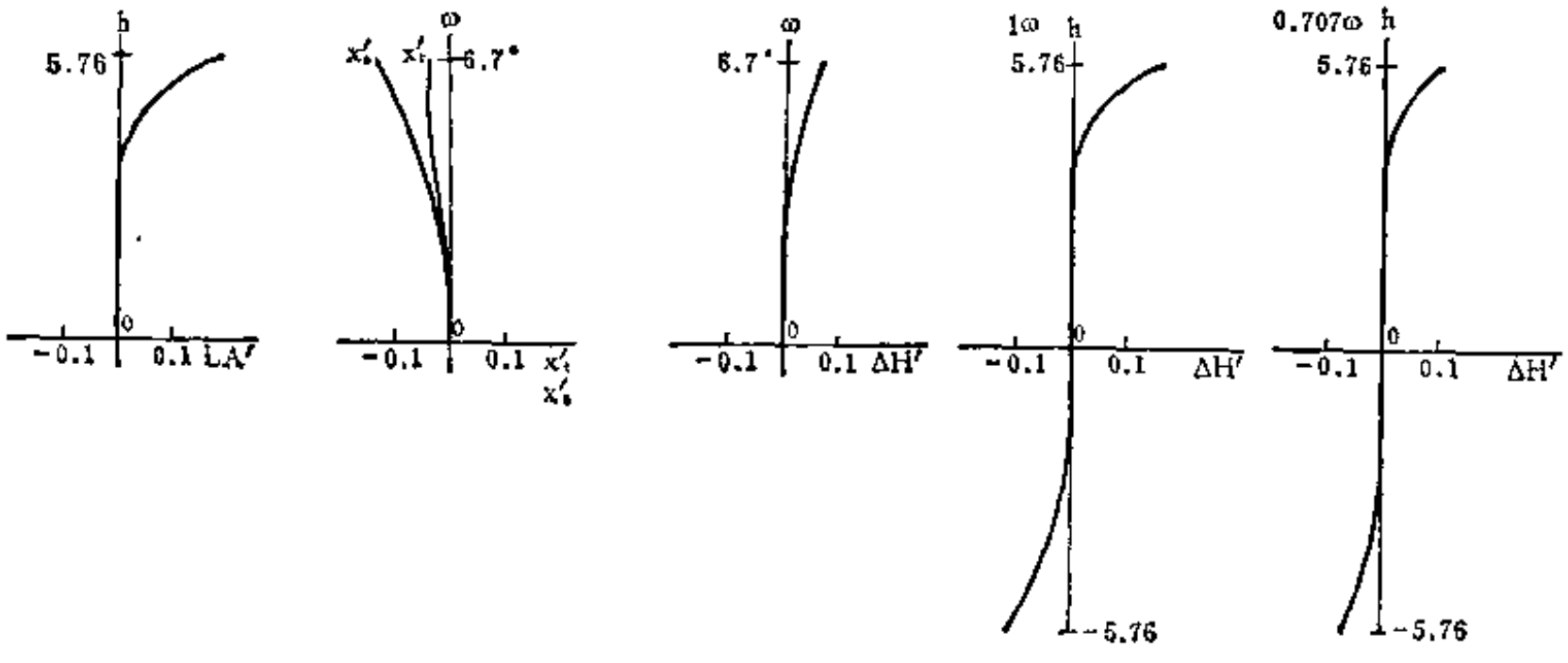


04-03-031-2

	ΣS_1	ΣS_2	ΣS_3	ΣS_4	ΣS_5	HI	QP(1ω)
	−0.00422	−0.00832	0.00344	−0.01807	0.02364	3	1.87%
h 或 ω%	LA′	ΔH′	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	0.0191	−0.0317	−0.0705	0.0388	0.00980	−0.0109

E. F. L = 25.36 (±6.7°)

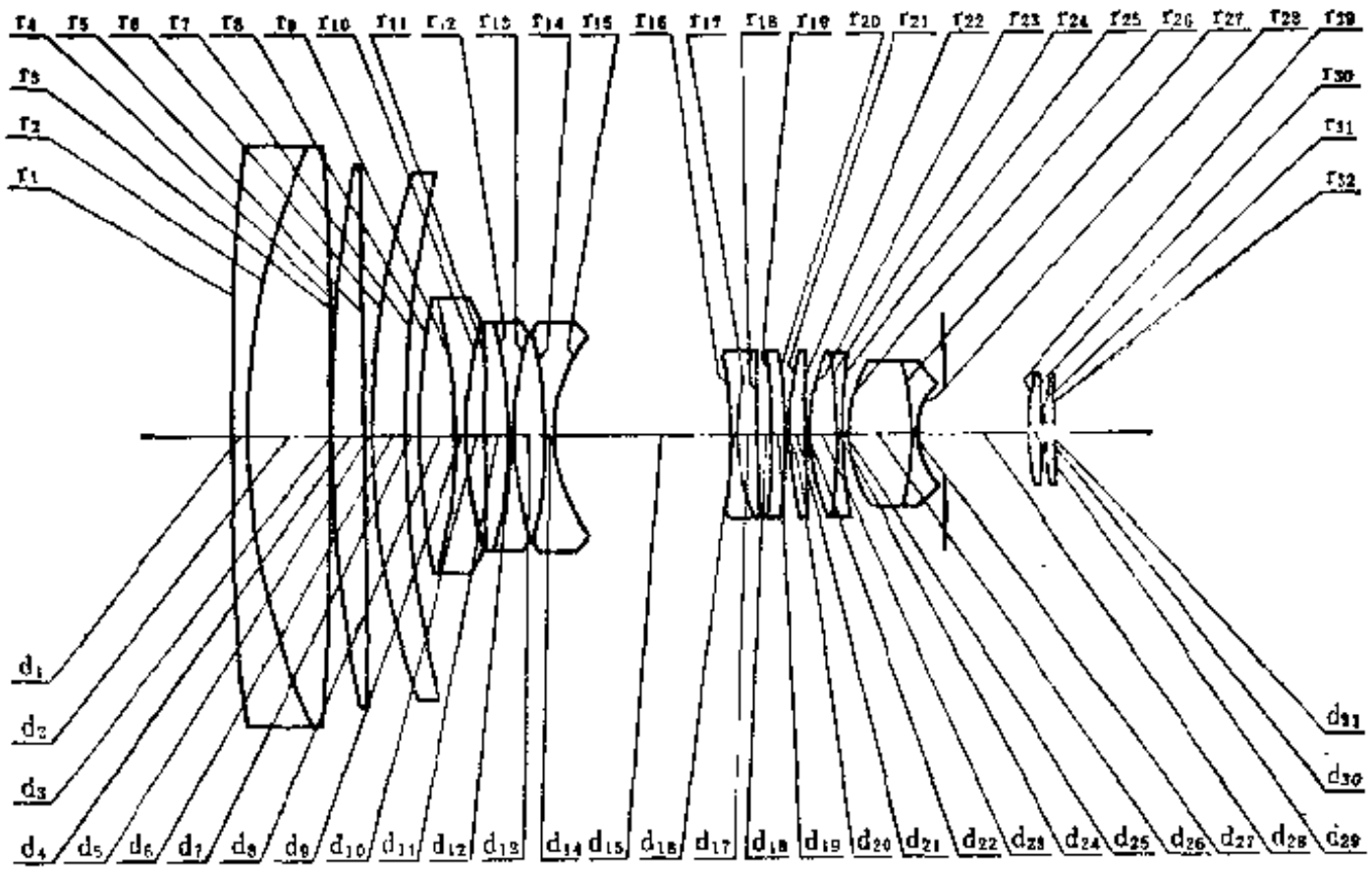
* * * 1 = 18.868, * * * 2 = 2.952; * * * 3 = 16.851; * * * 3* = 16.851 = 15.835 + 1.016



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_D	ν_D	序号	r	d	n_D	ν_D
1	356.9900	1 20	1.7552	27.5	17	18.8900	1.80	1.53256	46.0
2	61.6600	6.70	1.713	53.9	18	−2436.8890	* * * 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	41.0
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	25.7
9	−46.0700	0.60	1.78595	50.6	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	1.69895	30.0
12	−43.8000	0 60	1.78595	50.6	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	−99.6200	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

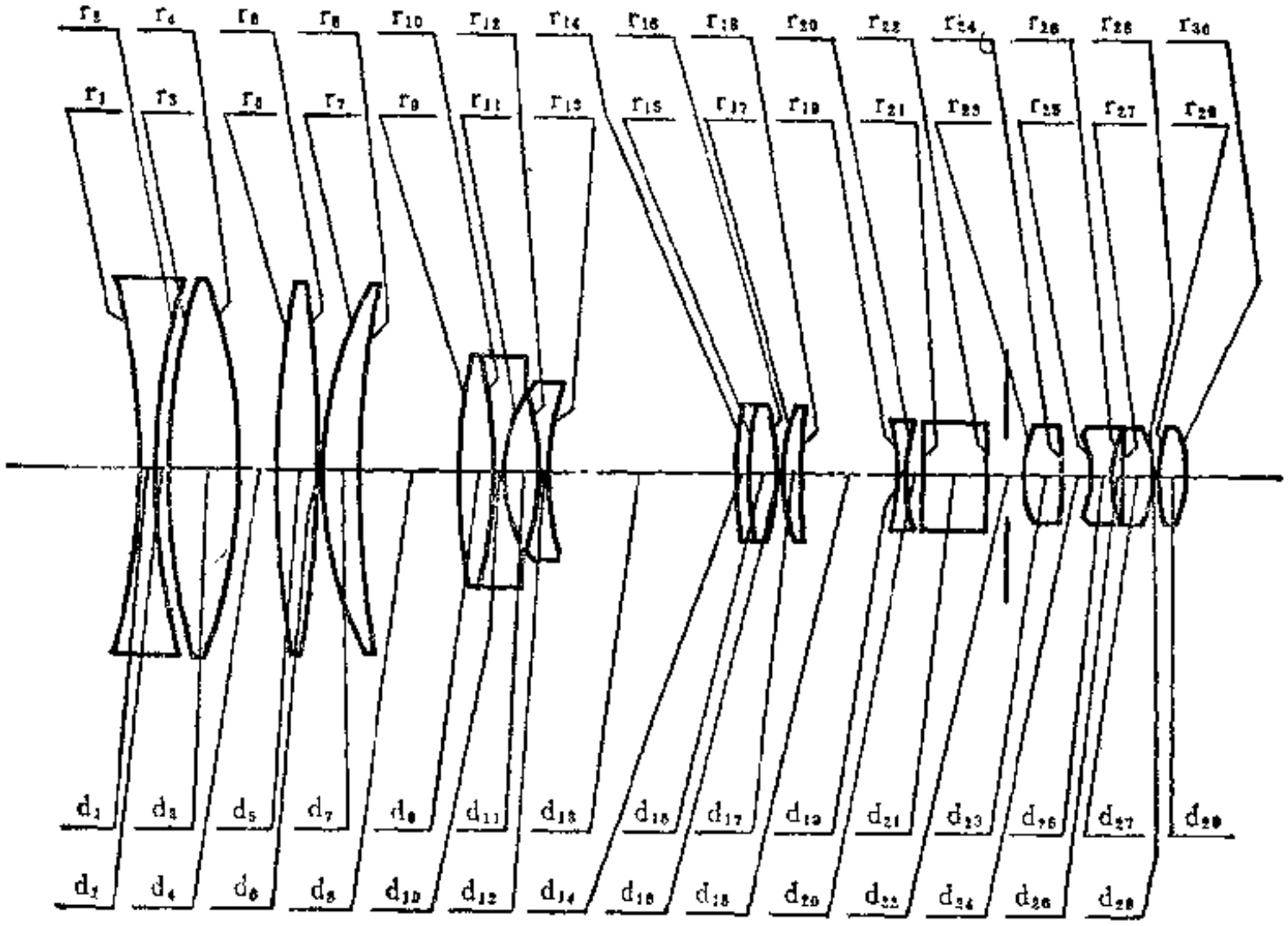
(3) E.F.L＝75.0

* * * 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	2.70	1.720	50.4
3	116.0	8.30	1.574	56.4	18	78.2	* * * 3		
4	-60.8	4.90			19	-41.1	0.90	1.620	60.3
5	187.0	4.40	1.643	48.0	20	17.4	1.90		
6	-187.0	0.10			21	∞	8.20	1.569	56.1
7	45.4	5.70	1.658	50.9	22	∞	5.05		
8	166.0	* * * 1			23	17.8	4.20	1.570	49.5
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	16.6	4.90			26	16.5	1.35		
12	-37.9	1.00	1.744	44.8	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

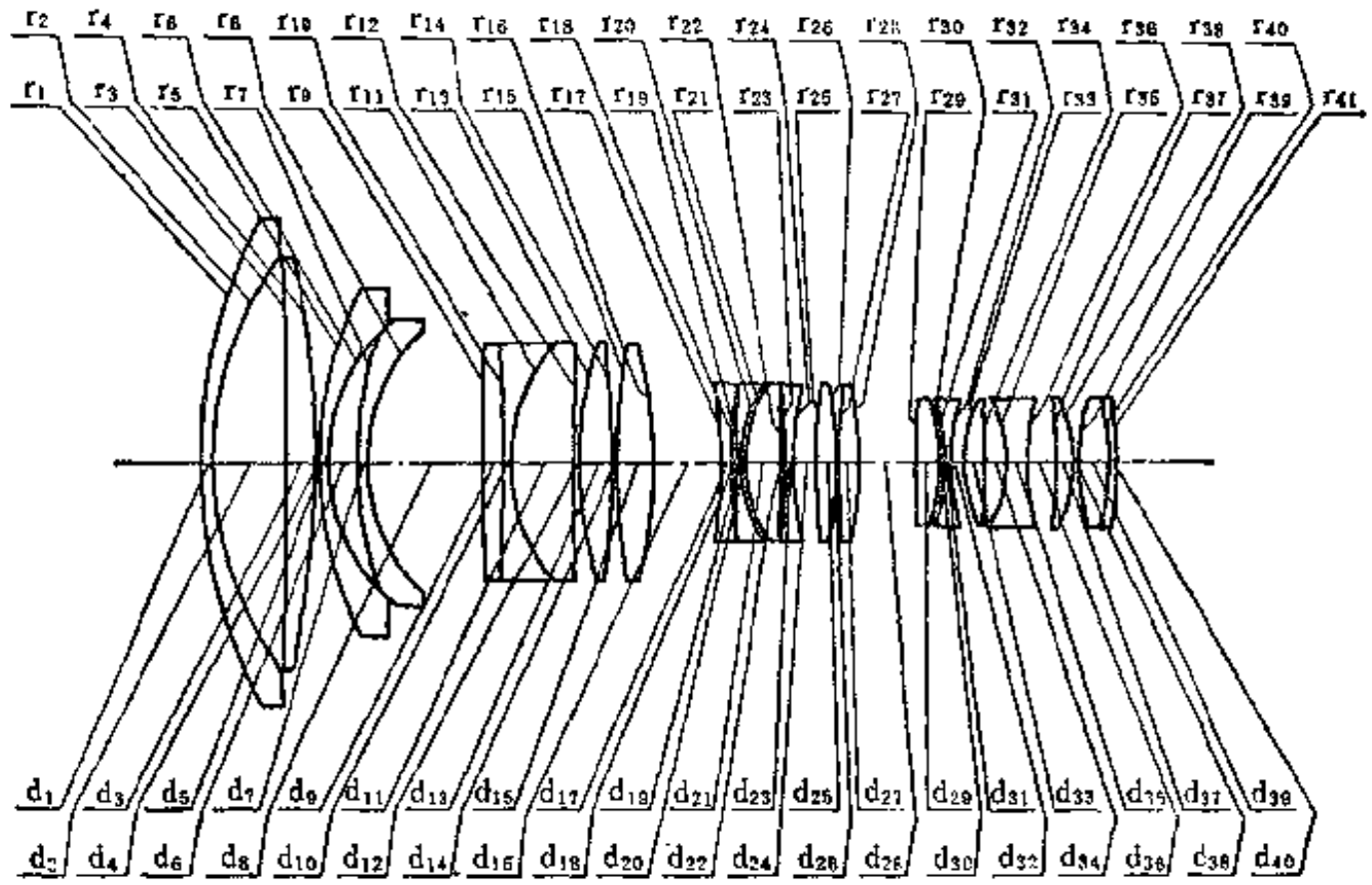
(2) E.F.L=56.0

* * * 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	ν_d	序号	r	d	n_d	ν_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	1.696	31
5	62.40	1.40	1.697	56	26	−71.30	0.02		
6	28.20	4.60			27	159.40	2.60	1.696	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	0.60		
10	−463.40	1.40	1.788	25	31	−30.00	1.30	1.788	25
11	26.60	9.40	1.744	45	32	37.54	1.40		
12	∞	0.03			33	18.60	3.40	1.720	50
13	65.00	5.10	1.697	56	34	−528.50	3.10		
14	−191.20	1.30			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	50
17	−50.00	1.40	1.697	56	38	−18.80	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	1.696	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

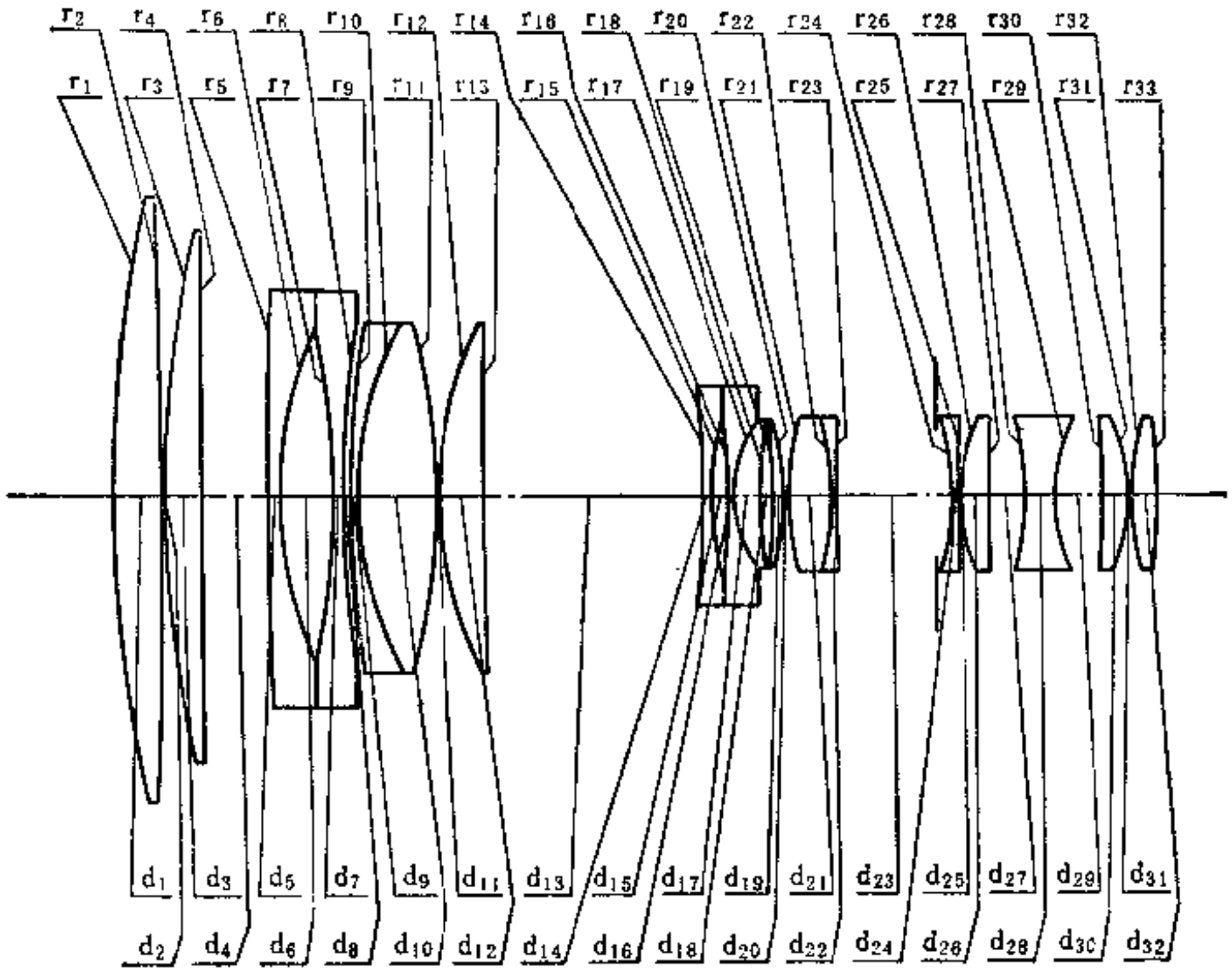
(2) E.F.L＝24

* * * 1＝29.20；　* * * 2＝1.54；　* * * 3＝25.70；　* * * 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_d	ν_d	序号	r	d	n_d	ν_d
1	246.920	7.00	1.69738	56	18	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	692.200	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	57.526	6.50	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

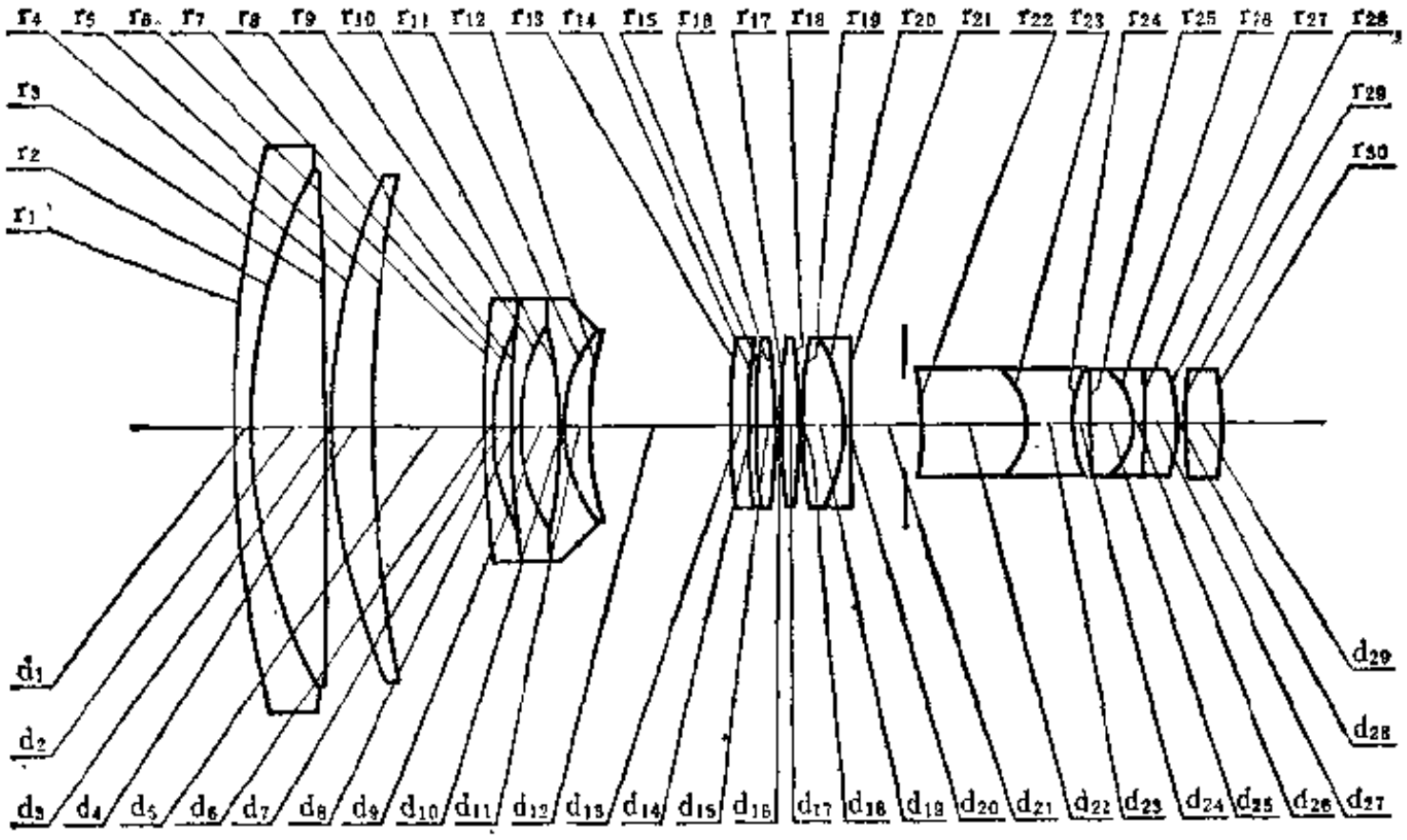
(2) E. F. L = 120

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

编号：04-03-038

大 倍 率 变 焦 距 镜 头

E.F.L＝13～286　　B.F.L＝　　FNo.＝3.5　　F.A.≈±30.8°～±1.5°



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	98.5820	7.30	1.51835	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	1008.7200	* * * 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	38.0
9	28.9270	6.50			24	19.2000	2.40		
10	−82.4800	0.75	1.51728	69.6	25	∞	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	∞	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＝102.1968；　* * * 3＝3.6837

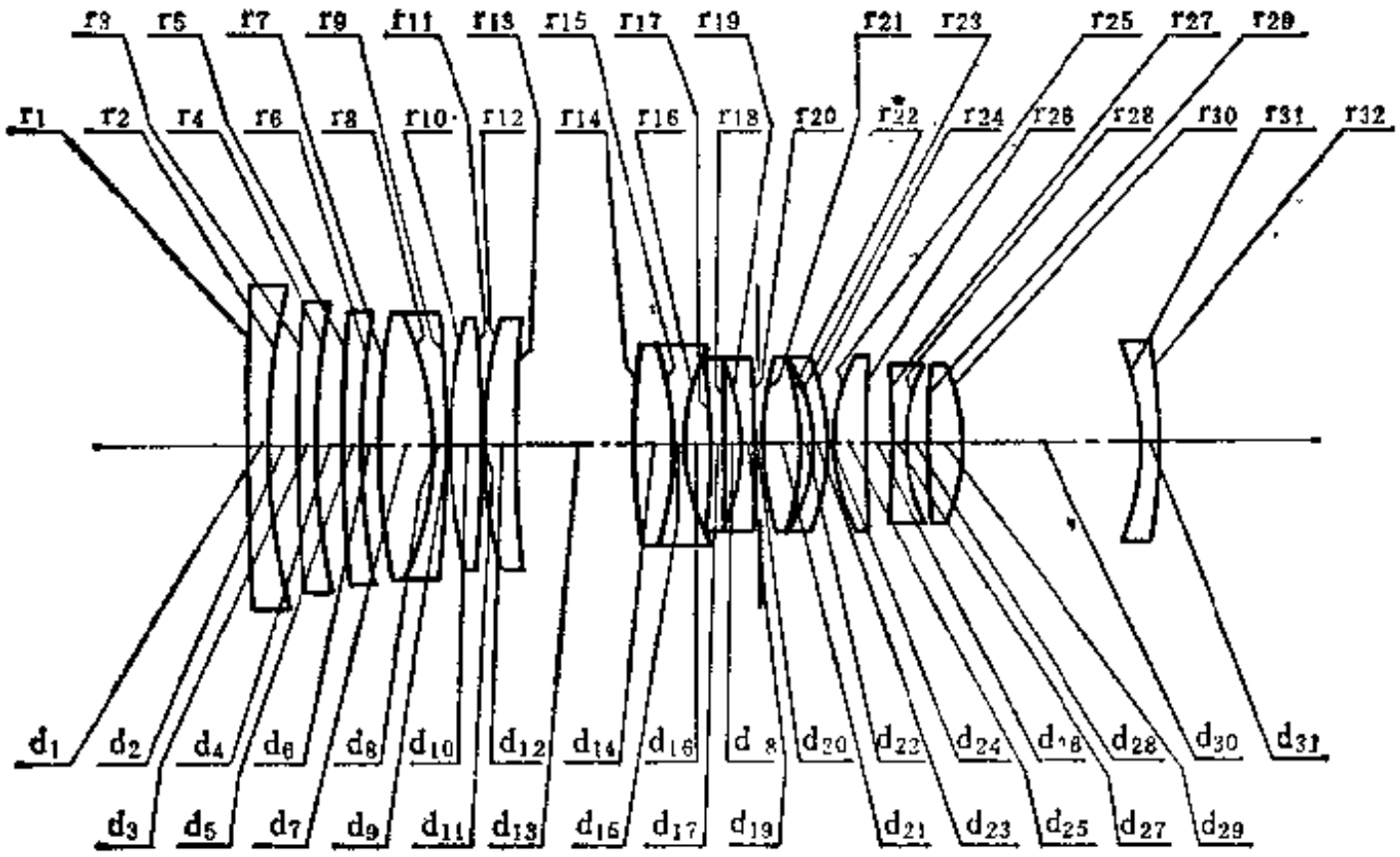
(2) E.F.L＝286

* * * 1＝99.3295；　* * * 2＝3.2768；　* * * 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. ＝



序号	r	d	n_D	ν_D	序号	r	d	n_D	ν_D
1	883.57	2.50	1.744	44.90	17	－97.46	1.60	1.8374	43.47
2	79.58	3.50			18	－763.85	1.90		
3	250.10	2.50	1.744	44.90	19	－32.28	1.74	1.8374	43.47
4	80.70	3.50			20	1323.99	* * * 3		
5	270.88	2.50	1.744	44.90	21	40.36	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	182.45	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	4.50	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

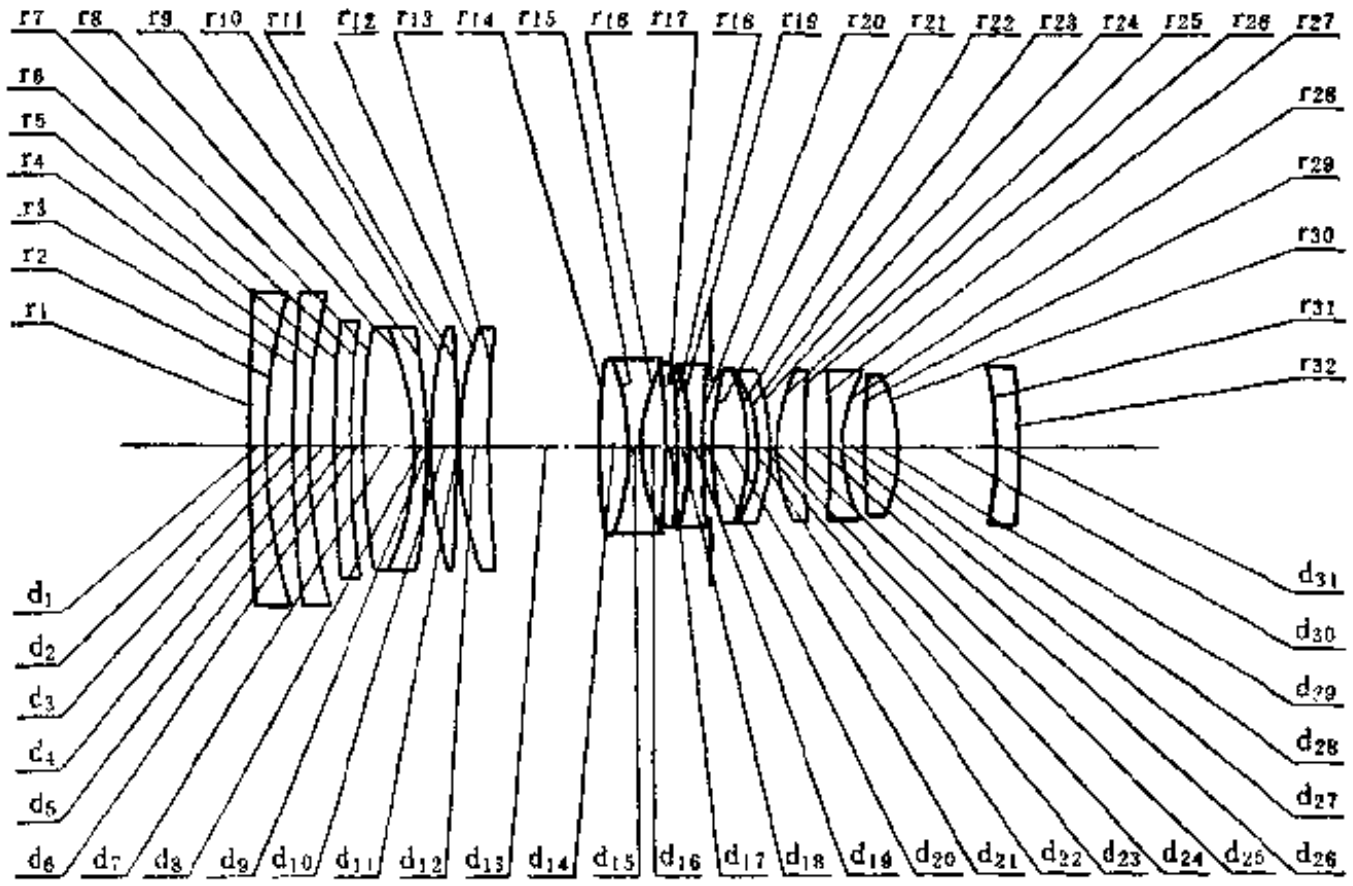
(2) E. F. L＝121.00

* * * 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_D	ν_D	序号	r	d	n_D	ν_D
1	716.00	2.50	1.744	44.90	17	－96.74	1.60	1.8028	46.75
2	78.13	3.50			18	－1137.40	1.90		
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	－20.63	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	54.79	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	20.98	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	1.50	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＝13.29；　* * * 3＝1.00

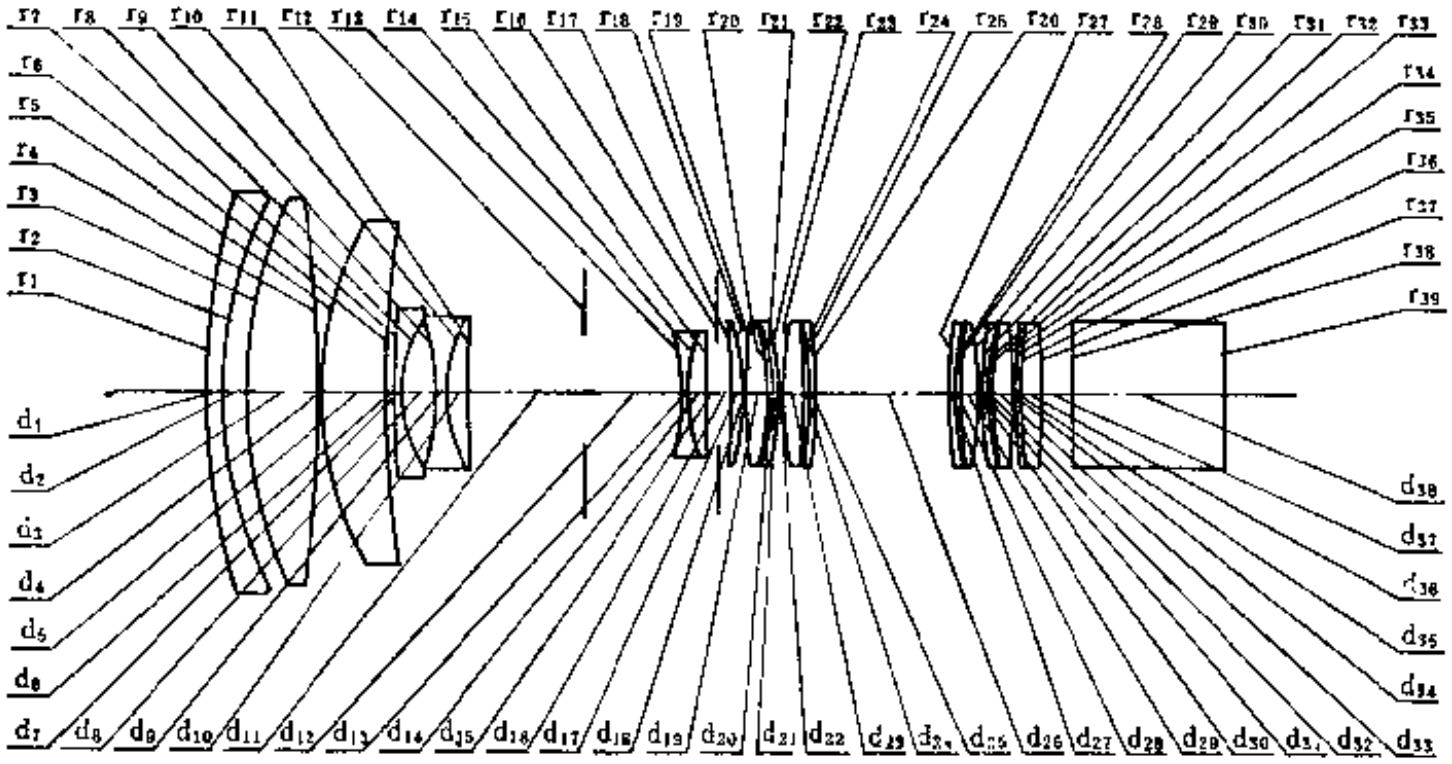
（2） E.F.L＝121.63

* * * 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

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	59.75000	1.30000	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	－67.73000	0.50000		
5	28.73552	5.65000	1.61800	63.4	25	－26.55000	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	∞❶	* * * 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	∞❶	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	1.51633	64.1
19	134.00000	1.70000	1.62041	60.3	39	∞			
20	－25.02000	0.53000							

❶ 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＝13.915757；　* * * 2＝0.266933；　* * * 3＝6.297661；　* * * 4＝3.287400

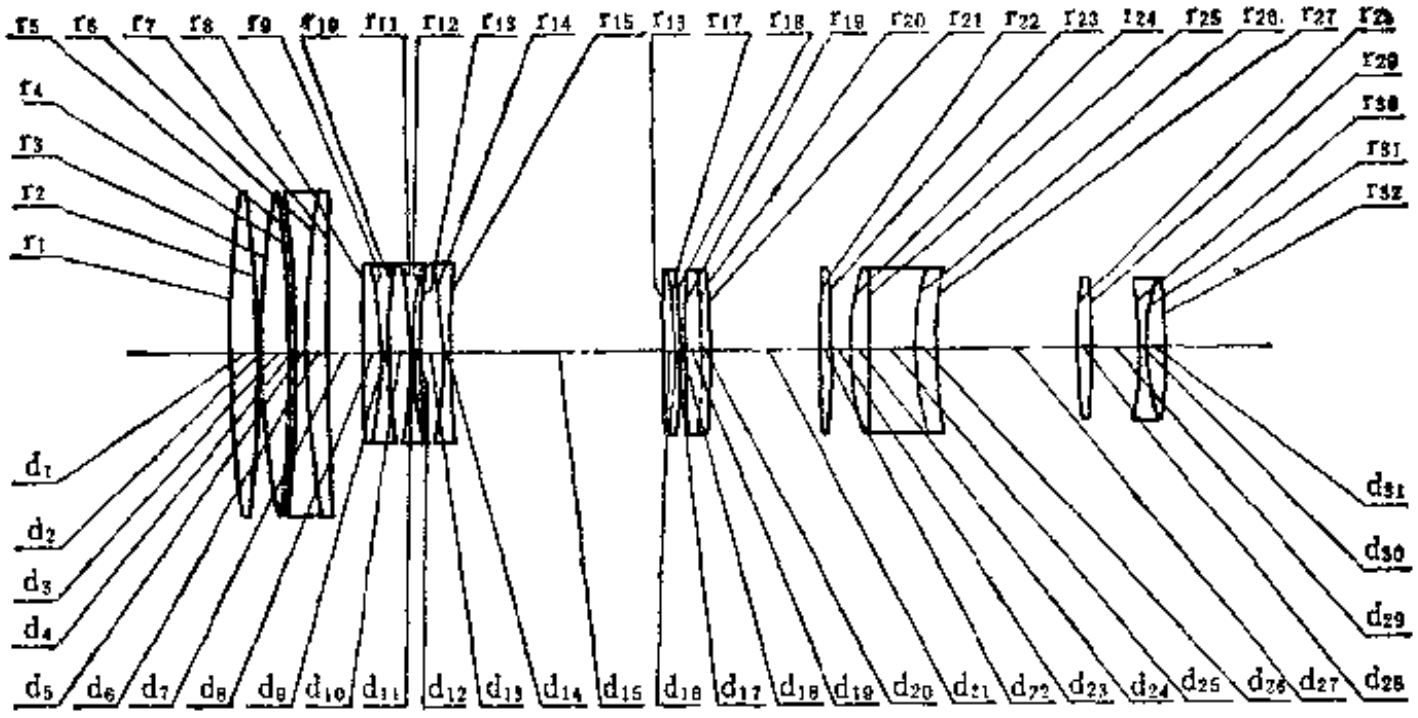
(3) E. F. L＝38.477

* * * 1＝19.934757；　* * * 2＝0.397002；　* * * 3＝0.847105；　* * * 4＝2.588871

编号：04-03-042

超 远 摄 型 变 焦 距 镜 头

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	1.48606	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	1.58913	61.2	22	344.600	4.0	1.51454	54.6
7	1281.500	* * * 1			23	－577.700	6.2		
8	8939.700	4.7	1.75520	27.5	24	85.800	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	1.58875	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

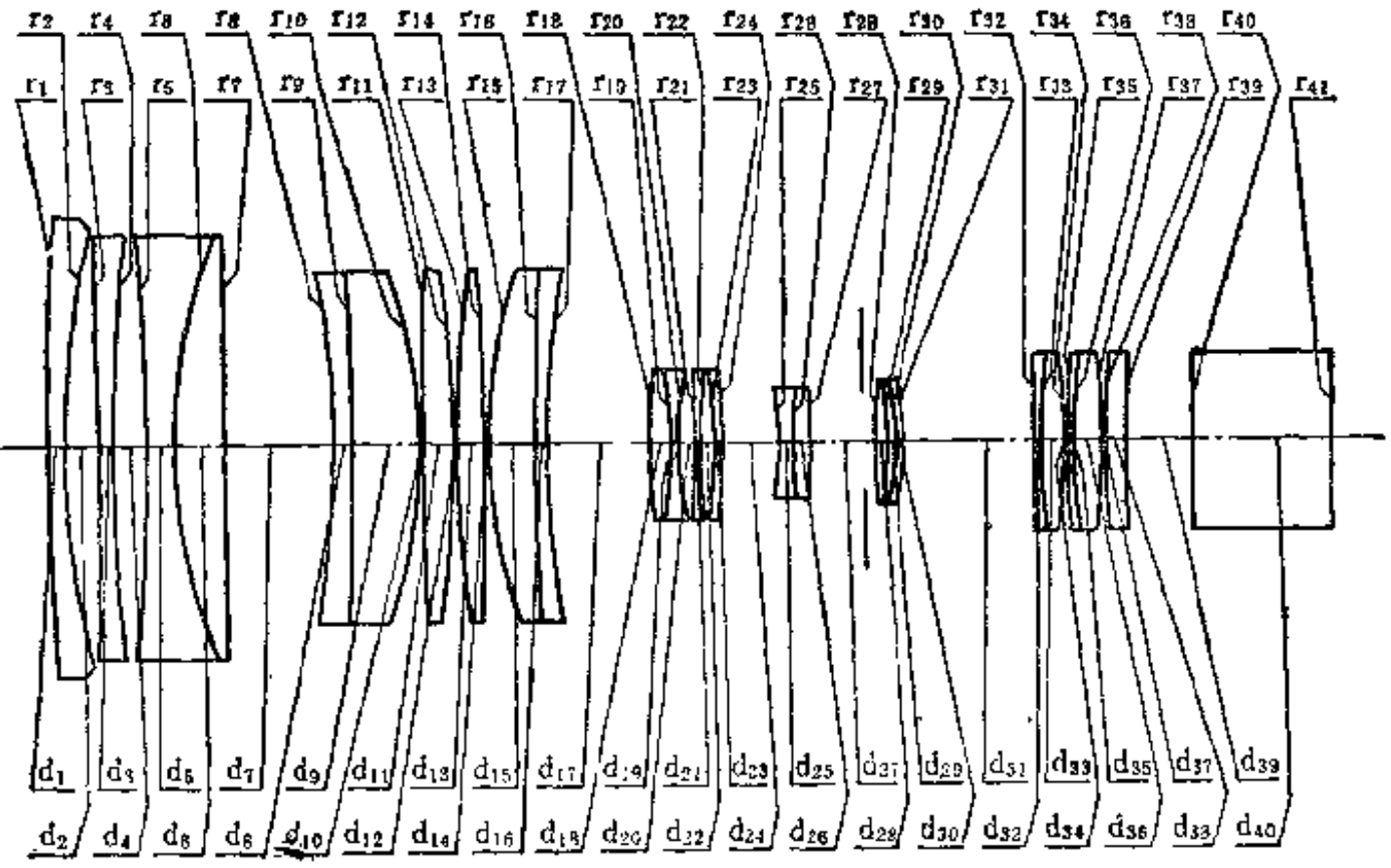
(2) E.F.L＝1200

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

编号：04-03-043

大孔径广角变焦距镜头

E. F. L＝39.50～375.96　　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	53.9	22	262.80000	4.40500		
2	303.84000	11.261000			23	－134.77000	2.000000	1.883	41.0
3	－1975.00000	5.000000	1.713	53.9	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	∞	62.772725			28	213.51000	6.500000	1.48749	70.0
8	－308.57000	6.000000	1.7552	27.5	29	－106.76000	2.500000		
9	－1905.80000	21.000000	1.48749	70.0	30	－63.19000	2.000000	1.80518	25.5
10	－162.48000	0.100000			31	－79.19153	176.293160		
11	1229.45000	10.000000	1.48749	70.0	32	∞	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	2633.33000	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	1.92286	20.9	39	1039.37230	50.000000		
19	－118.53000	2.000000	1.841	43.2	40	∞	82.200000	1.51633	64.1
20	118.53000	4.208000			41	∞			
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＝164.3095800；　* * * 2＝31.4230730；　* * * 3＝32.1517840

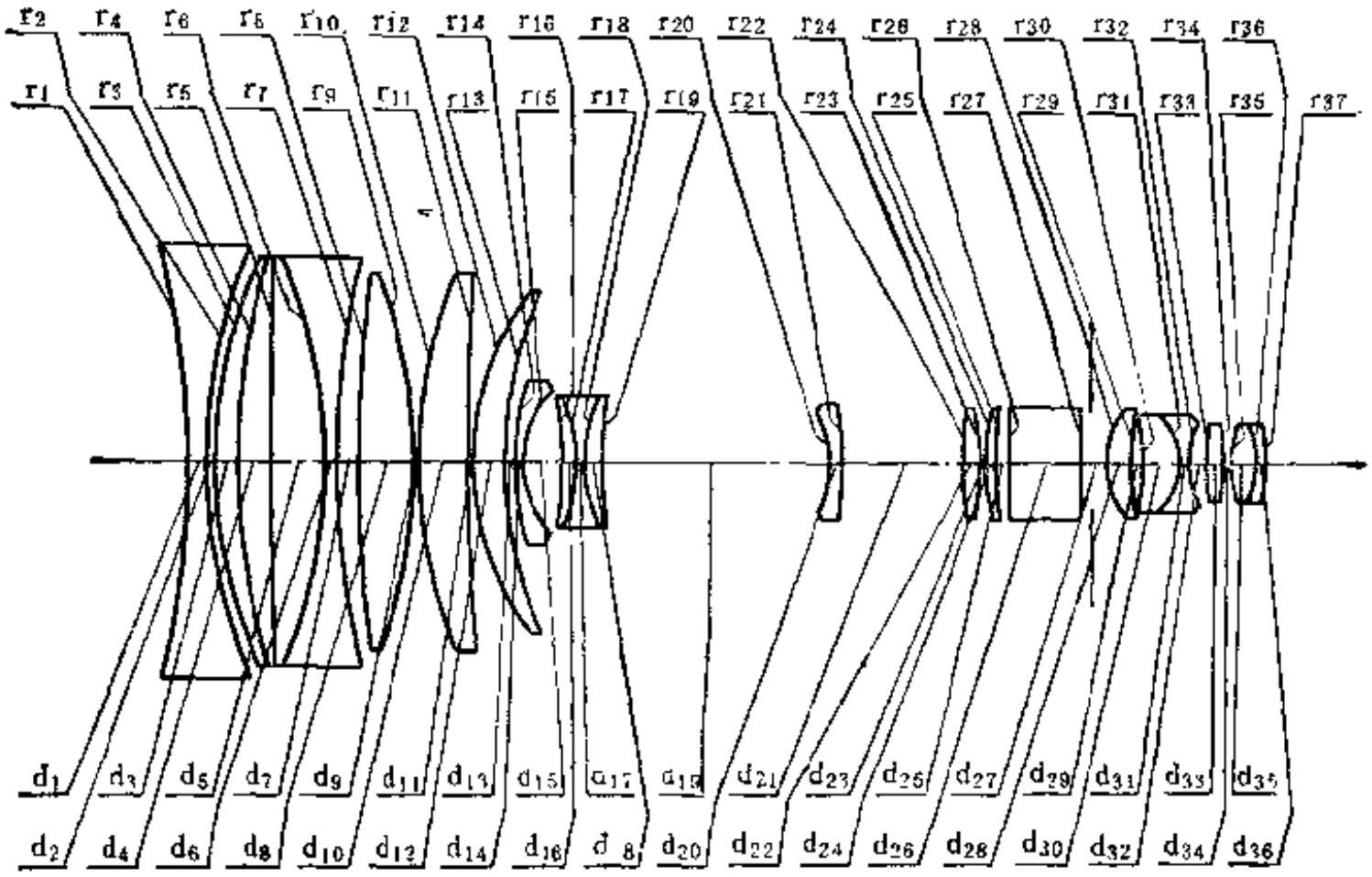
(3) E. F. L＝375.96

* * * 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_d	ν	序号	r	d	n_d	ν
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	1.52542	64.7
4	17.302	0.692			23	－6.086	0.010		
5	94.523	1.206	1.71300	53.8	24	4.803	0.292	1.52542	64.7
6	－12.003	0.360	1.76180	26.9	25	18.820	0.274		
7	20.559	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	－5.421	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	1.50137	56.4
17	－3.697	0.195	1.71300	53.8	36	－2.170	0.205	1.80518	25.4
18	3.415	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＝0.598；＊＊＊3＝2.966

(4) E.F.L＝7.6
＊＊＊1＝5.912；＊＊＊2＝0.597；＊＊＊3＝1.962

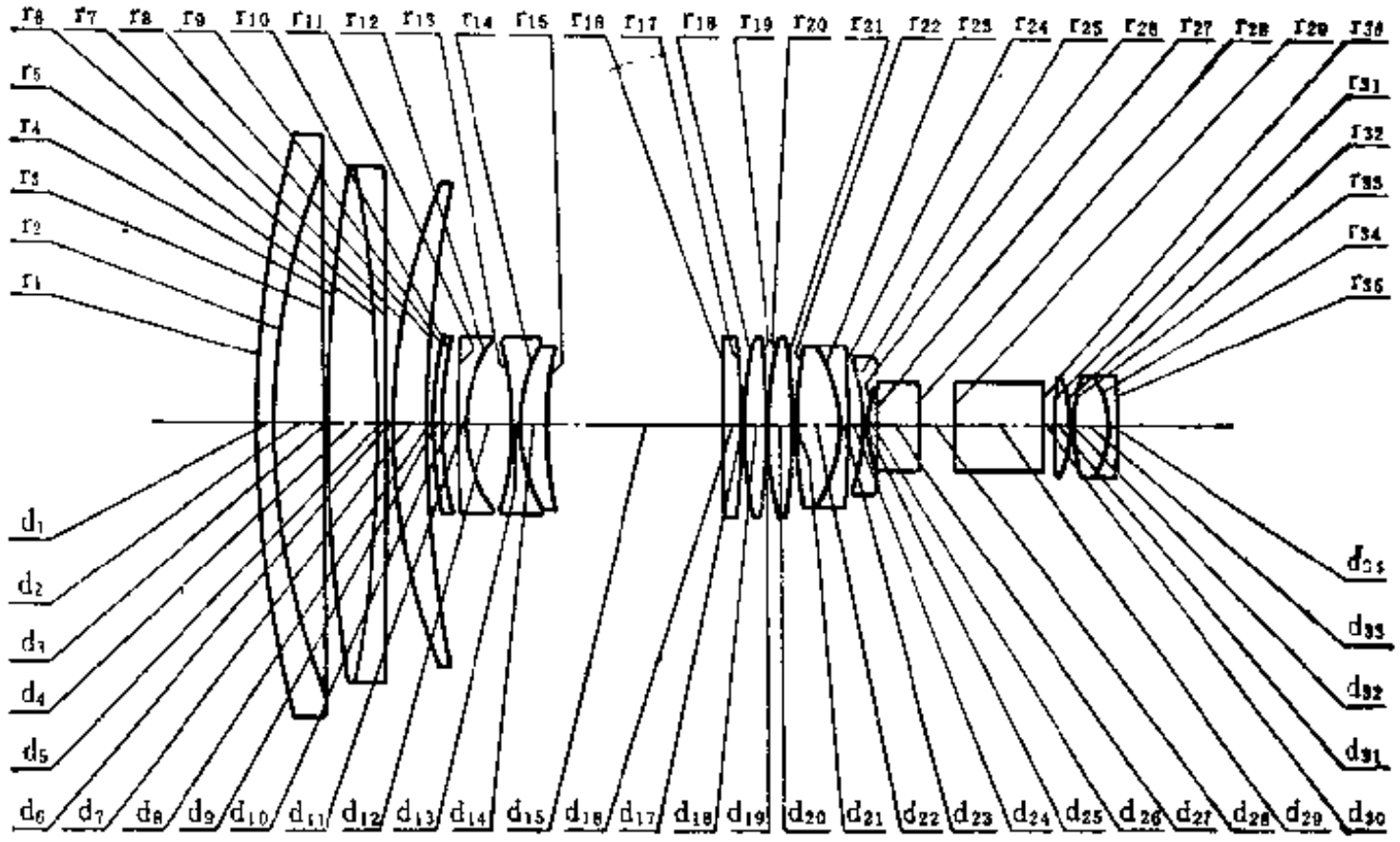
(5) E.F.L＝10.3
＊＊＊1＝6.269；＊＊＊2＝1.114；＊＊＊3＝1.088

(6) E.F.L＝13.3
＊＊＊1＝6.475；＊＊＊2＝1.781；＊＊＊3＝0.215

编号：04-03-045●

大倍率变焦距镜头

E.F.L＝6.0～123.5　　B.F.L＝　　FNo.＝1.8　　F.A.＝±30.8°～±1.5°



序号	r	d	n	ν_d	序号	r	d	n	ν_d
1	198.000	1.90	1.740	28.2	19	－154.320	0.10		
2	115.617	9.00	1.51728	69.6	20	73.650	3.50	1.62041	60.3
3	2025.800	0.10			21	－141.330	0.10		
4	250.898	7.70	1.51728	69.6	22	62.200	7.30	1.67790	55.5
5	－250.898	1.90	1.740	28.2	23	－23.851	1.00	1.740	28.2
6	－582.377	0.10			24	－655.518	* * * 3		
7	93.500	6.10	1.5168	64.2	25	－33.884	0.70	1.5168	64.2
8	260.459	* * * 1			26	23.900	1.20		
9	85.740	1.10	1.744	44.9	27	∞	7.00	1.57501	41.3
10	45.562	3.10			28	∞	5.80		
11	790.330	1.10	1.6968	55.6	29	∞	13.90	1.57501	41.3
12	21.493	7.70			30	∞	1.30		
13	－53.850	0.85	1.5168	64.2	31	99.500	2.90	1.53172	48.9
14	23.400	5.10	1.80518	25.5	32	－21.336	0.20		
15	71.697	* * * 2			33	26.710	5.30	1.60717	40.2
16	－1229.864	3.10	1.62280	56.9	34	－16.539	1.20	1.86074	23.1
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＝102.888；* * * 3＝2.148

(2) E.F.L＝128.5

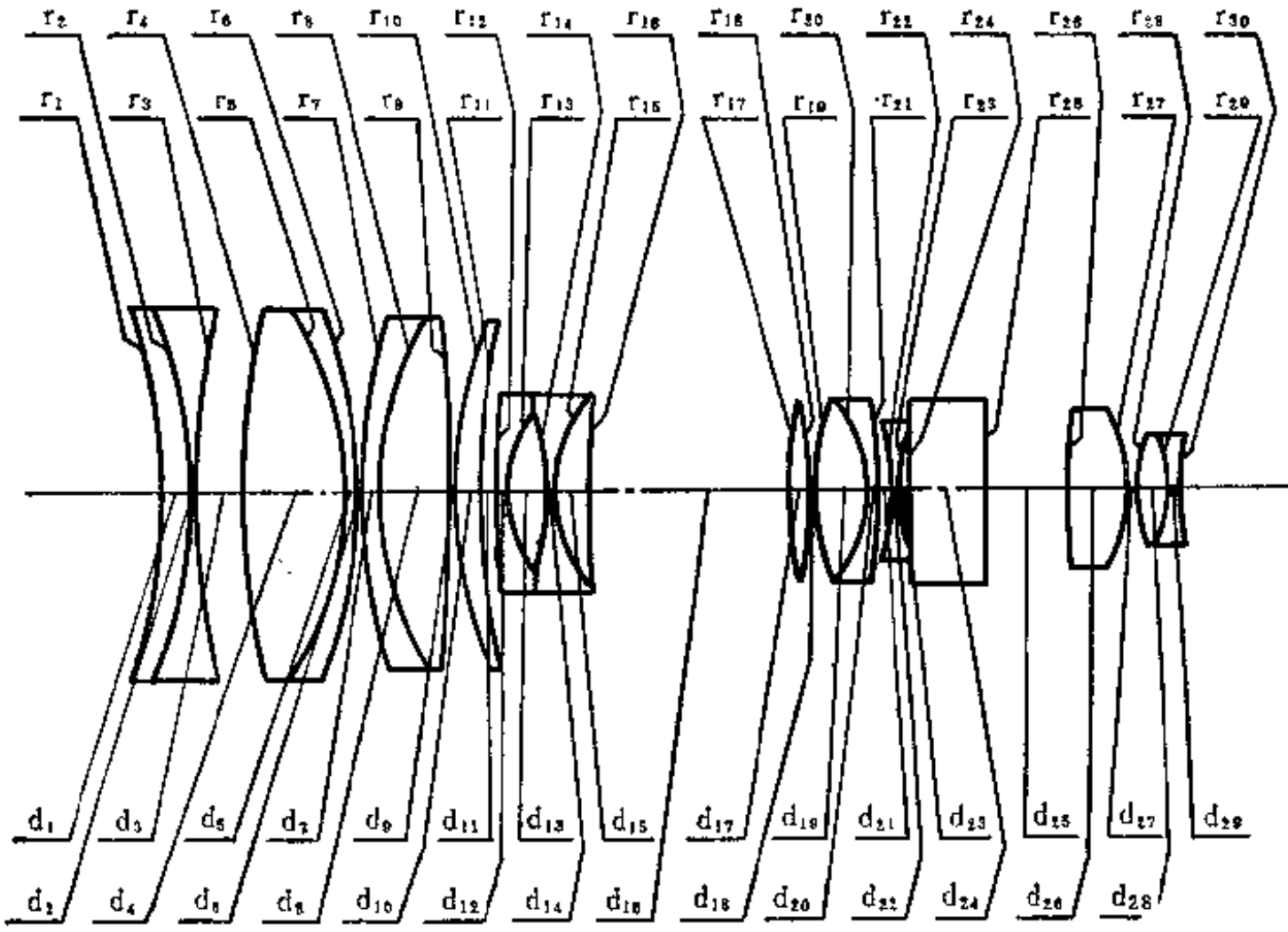
* * * 1＝80.633；* * * 2＝2.731；* * * 3＝22.135

● 后固定组仅供参考。

编号：04-03-046●

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_D	v	序号	r	d	n_D	v
1	−79.100	3.9	1.74077		16	130.440	* * * 2		
2	−56.000	0.8	1.62041		17	60.000	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	1.76182		22	−28.800	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	90.946	* * * 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	−14.290	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。

[General Information]
书名=光学镜头手册　　第四册
作者=
页数=104
SS号=0
出版日期=