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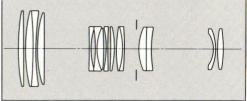
# **TAMRON**SP 70-210<sub>mm</sub> F/3.5 Model 19AH

OWNER'S MANUAL

Thank you for selecting the Tamron 70—210mm F/3.5 zoom lens as the latest addition to your photographic equipment. Before using your new lens, please read the contents of this Owner's Manual thoroughly to become fully acquainted with the proper techniques that will give you the best results possible.

With proper handling and care your Tamron lens will give you many years of beautiful and exciting pictures.





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#### 1. NAMES OF PARTS



#### 2. SPECIFICATIONS

Focal Length	70-210mm
Aperture Range	F/3.5 – 32, AE
Lens Construction	11 groups, 15 elements
Coating	BBAR multiple layer coating
Angle of View	34° ~ 12°
Minimum Focus	0.85m (2 feet 9.5 inches)
Max. Reproduction Ratio	1:2.6 (f=210mm, M.O.D. 0.85m)
Zooming System	Single Action Direct Zooming
Lens Accessory Size	62mm
Overall Length	154.5mm (w/Mount for Nikon)
Max. Diameter	71mm
Weight	860g. (30.3 oz.)
Lens Hood	Bayonet type, coupled to zooming

# 3. FITTING/REMOVING THE ADAPTALL-2 MOUNT AND MOUNTING THE LENS TO YOUR CAMERA



This lens employs the Tamron Adaptall Interchangeable Mount system. The lens can be fitted to most of the SLR cameras on the market. Please read the instruction manual enclosed with the Adaptall Interchangeable Mount, so that the proper fitting is made.

#### 1. Fitting the Mount to Your Lens

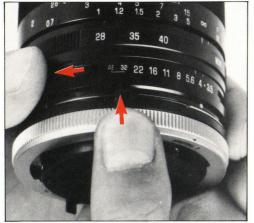
(1) Align the green dot on the bayonet of the custom mount with the matching green dot on the lens barrel and turn the mount clockwise for approximately 2cm until the mount is locked into the proper position.



(2) The custom mounts for cameras featuring TTL light-metering, AE and automatic diaphragm control, are provided with a meter coupling lever which activates the control ring. After fitting the custom mount, move the meter coupling lever so that it engages in the slot provided on the lens, and the exposure control mechanism of the lens will crosscouple to the camera's system.

NOTE: Some mounts have two coupling levers on both sides, so when fitting the mount of the lens, engage the two coupling levers in the corresponding slots on both sides of the lens.

# FITTING/REMOVING THE ADAPTALL-2 MOUNT AND MOUNTING THE LENS TO YOUR CAMERA



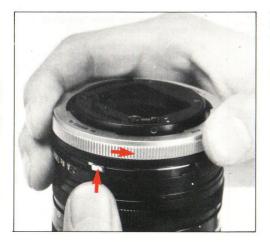
#### 2. Removing the Mount from Your Lens

(1) Before removing the custom mount, be sure to move the aperture ring to the maximum opening. When the aperture ring is set at the AE position, depress the AE lock button to release the AE setting and then move the aperture control ring to the maximum opening.

(2) An L-shaped mount release lever is provided directly opposite the aperture indicator which, when depressed, will release the mount. Therefore, while keeping the L-shaped mount release lever depressed, turn the custom mount counter-clockwise all the way until it stops

and then lift the mount off the lens.

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#### 3. Mounting the Lens to Your Camera

Your Tamron lens with the Adaptall custom mount can be fitted to your camera in the same manner as the camera manufacturer's lenses. When fitting the lens and adapter onto a camera, be sure to move the aperture control ring of the lens to the maximum opening.

#### 4. TAMRON ADAPTALL-2 CUSTOM MOUNTS

Mount	Mount Type	Adaptall lenses	SP/ Adaptall-2 lenses
For Canon	Bayonet type	×	0
For Minolta MD	Bayonet type	×	0
For Konica AR	Bayonet type	×	0*
For Contax/Yashica	Bayonet type	X	0
For Olympus	Bayonet type	0	0
For Pentax K	Bayonet type	0	0
For Pentax ES	Screw-in type	0	0.
For Pentax Universal	Screw-in type	0	0
For Nikon AI/E	Bayonet type	×	0
For Nikon Al	Bayonet type	○▲1	○▲1
For Fujica AX	Bayonet type	×	0
For Fujica ST	Screw-in type	0	0
For Mamiya SX	Screw-in type	0	0
For Rollei	Bayonet type	0	0
For Topcon	Bayonet type	. 0	0.
For Praktica-B	Bayonet type	○ ▲2	0
For Praktica-LLC	Screw-in type	0	0
For "C" mount for CCTV/V	/TR cameras and 16mm movie cameras	0	0
For "MS" mount for CCTV	/VTR cameras	0	0

- Mount requires initial maximum aperture adjustment.
- Due to small rear aperture, this mount will not accept the SP 70-210mm F/3.5-4 (52A), SP 90mm F/2.5 (52B), SP flat-field 2X tele-converter (01F), Adaptall-2 80-210mm F/3.8-4 (03A) and Adaptall-2 75-250mm F/3.8-4.5 (04A & 104A).
- Mill not synchronize with Auto Mode of designated speed light of Nikon EM.
- Program AE system and AE system of shutter speed priority will not work.

#### 5. OPERATING INSTRUCTIONS



#### (1) Focusing

Focus by turning the operation ring while looking through the viewfinder until the image is sharp. A zoom lens can be focused more easily at its maximum focal length.
Focusing is continuous from infinity to minimum distance of 0.85m (macro area).

#### **OPERATING INSTRUCTIONS**



#### (2) Checking of Depth of Field

For checking of the depth of field, the lens is provided with the depth of field scales for F/8, 16 and 32. Each color of the scale lines correspond to the same color of the lines under the aperture scales.

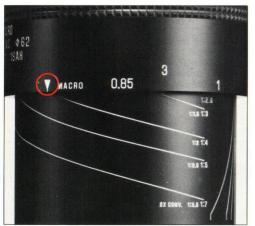
For further details of the depth of field, refer to the tables provided in this manual. To check the depth of field, use the preview button on your camera. (In case of the Olympus cameras, the mount has a built-in preview lever.)



#### (3) Zooming

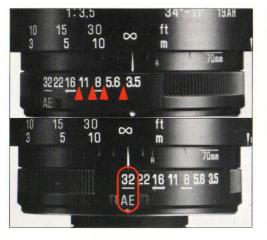
By pulling or pushing the operation ring, the focal length can be changed, steplessly increasing or decreasing the size of subject. Select the desired subject size and perspective while looking through the viewfinder.

#### **OPERATING INSTRUCTIONS**



### (4) Macro Photography and Macro Magnification Scale

Since this lens can be focused continuously from infinity to the minimum object distance of 0.85m (33.5 in.), no special adjustments are needed. The macro magnification ratio scale is provided on the lens barrel with slanted lines. By turning or pushing/pulling the operation ring, the desired macro magnification ratio can be obtained.



#### (5) Aperture Control

Set the required aperture by rotating the aperture control ring until the desired f-stop is aligned with the index line. Intermediate click stops are provided from F/3.5 to F/16 for precise exposure control.

#### (6) AE Setting

When using your lens on cameras which incorporate a shutter priority automatic mode, turn the aperture control ring on your lens to the AE position which also serves as F/32 when the lens is used on other cameras.

#### **OPERATING INSTRUCTIONS**



#### (7) Infra-red Index

Since the focal point shifts in infra-red photography, it is necessary to correct the focus using the infra-red index line. After focusing in the normal manner, shift the indicated distance scale to the red line marked R.

#### (8) Depth of Field Tables

To ascertain the depth of field for example when you shoot at a distance of 3 meters (10 feet) with this lens when the aperture and focal length are set to F/5.6 and f=135mm, read where the figures shown on the F/5.6 vertical column intersect with the 3 meters value shown on the horizontal distance row. In this case, the depth of field is from 2.92 to 3.08 meters.



#### (9) Lens Hood

This lens features a unique lens hood system which crosscouples to the zooming mechanism to have optimum shading effects at all focal lengths. Mount the lens hood on the operation ring using the bayonet provided at the inner side of the ring. The lens hood is always advantageous since it prevents unwanted light from striking the lens causing image-degrading flare.

#### **OPERATING INSTRUCTIONS**



#### (10) How to Hold Your Telephoto Zoom Lens

When taking photographs with a telephoto lens, using a tripod is always advantageous since the angle of view of telephoto lenses is narrow and your photos may suffer from camera-shake. This can be a particular problem with telephoto lenses of 200mm or longer. If a tripod is not available, hold the operation ring with your left hand, draw the camera near and hold it firmly against your face with your right hand. If you wear glasses, fix the viewfinder frame securely against the glasses. The slowest shutter speed for hand-held shots is normally considered to be 1/focal length of the lens. Accordingly, with this lens set at 210mm focal length, it is recommended that you use shutter speeds faster than 1/210, i.e., 1/250 second. However, depending upon the photographer's skill, slower shutter speeds to 1/60 second with the 210mm setting can be used.

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F/5.6, 1 sec. (X), zooming during exposure

## (11) Special Effects with a Zoom Lens (Zooming during Exposure)

This is a method of obtaining special effects using a zoom lens. Use a slow shutter speed (about 1/2 sec.) or B (bulb) and vary the focal length during the exposure. Zooming during exposure on a small subject in macro mode is a special effect obtainable with zoom lenses such as the Tamron 70–210, having the full zoom function.

#### 6. DEPTH OF FIELD TABLES

Focal Length	Aperture (F) Distance (m)	3.5	4	5.6	8	11	16	22	32
	0.85	0.84	0.84 - 0.86	0.84 - 0.86 -	0.83 - 0.87	0.82 - 0.88	0.81 ~ 0.89	0.80~	0.78 0.94
	1.00	0.99	0.98	0.98 ~ 1.02	0.97	0.96 - 1.05	0.94~ 1.07	0.92 - 1.10	0.89~
	2.00	1.93 2.07	1.92 - 2.08	1.89 ~	1.85 ~ 2.18	1.80 ~ 2.25	1.72 - 2.39	1.64~ 2.59	1.52~
	3.00	2.84 3.18	2.81 3.21	2.75 ~ 3.31	2.65 ~ 3.46	2.54 - 3.67	2.38 - 4.10	2.21 ~ 4.76	1.98
. 70	5.00	4.54 ~ 5.57	4.48 - 5.67	4.30 ~ 5.99	4.06 ~ 6.54	3.79 7.41	3.42 9.53	3.06 - 14.6	2.61-
f = 70mm	10.00	8.24 -	8.04 ~ 13.3	7.45 ~ 15.3	6.72 ~ 19.8	5.99 - 31.4	5.08 ~ 2101.0	4.30 ~ ∞	3.44
	20.00	13.9 ~ 35.7	13.3 ~ 40.3	11.8 ~ 68.0	10.0 ~	8.45 ~	6.71 ∽ ∞	5.40 - ∞	4.08 ∞
	70.00	27.4 ~	25.2 ~ ∞	20.1 ~	15.4 ~	11.9 ∽	8.71 ∽ ∞	6.59 ∞	4.71
	200.0	36.6 ~	32.8 ~ ∞	24.6 ~	17.9 ~ ∞	13.4 ~	9.44 ~ ∞	6.99	4.90 ∞
	∞	44.7 ~	39.1 ~	28.0 ~ ∞	19.6 ∼	14.3 ~	9.89 ~~	7.23 -	5.02 ∞

Focal Length	Aperture (F) Distance (m)	3.5	4	5.6	8	11	16	22	32
	0.85	0.845 0.855	0.84 0.86	0.84	0.84 0.86	0.84 ~ 0.87	0.83 0.87	0.82~ 0.88	0.81 ~ 0.90
	1.00	0.99~	0.99~  .0	0.99~ I.0I	0.98 - 1.02	0.98~ 1.02	0.97	0.96 1.05	0.94 1.07
	2.00	1.97 ~ 2.04	1.96 ~ 2.04	1.95 — 2.06	2.08	1.90~	1.85~ 2.17	2.24	2.38
	3.00	2.92~ 3.09	2.91~ 3.10	2.87~ 3.14	2.82 - 3.20	2.76 — 3.29	2.66 - 3.44	2.56~ 3.64	2.40 4.03
	5.00	4.77~ 5.26	4.74 ~ 5.30	4.64 5.42	4.50 ~ 5.63	4.34 ~ 5.91	4.09 6.44	3.83 7.23	3.47 9.08
f = 105mm	10.00	9.08~	8.96~ 11.3	8.60-	8.12 - 13.0	7.59 - 14.7	6.84 18.7	6.12 - 27.9	5.21 157.0
	20.00	16.6~ 25.2	16.2 - 26.2	15.0~ 29.9	13.6 - 38.1	12.1 - 57.6	10.3	8.72 - ∞	6.95 ∞
	70.00	40.4- 265.0	38.I- 441.0	32.2 - ∞	26.2 ∞	21.2	16.1	12.5	9.14
	200.0	64.4-	58.7 ~ ∞	45.8 − ∞	34.4 ∞	26.3 ∞	18.9 - ∞	14.1	9.95
	∞	94.8~	82.9 -	59.3 ~ ∞	41.5	30.2	20.8	15.2	10.5

#### **DEPTH OF FIELD TABLES**

Focal Length	Aperture (F) Distance (m)	3.5	4	5.6	8	11	16	22	32
	0.85	0.847 0.853	0.846 0.854	0.84 - 0.86	0.84 0.86	0.84 ~ 0.86	0.84 ~ 0.86	0.83 0.87	0.82~ 0.88
	1.00	0.995	0.99	0.99 ~ 1.01	0.99	0.99 ~ 1.01	0.98 - 1.02	0.97~ 1.03	0.96~ 1.04
	2.00	2.02	1.98 - 2.02	2.03	1.95 ~ 2.05	1.94 ~ 2.07	1.91~	1.87 ~ 2.14	1.82-
	3.00	2.95 ~ 3.05	2.94 - 3.06	2.92 - 3.08	2.89 ~ 3.12	2.85 ~ 3.17	2.78~ 3.25	2.71 ~ 3.36	2.60 3.55
	5.00	4.86 ~ 5.15	4.84 ~ 5.18	4.77 ~ 5.25	4.68 ~ 5.37	4.57 ~ 5.52	4.40 - 5.79	4.21 ~ 6.15	3.93 6.88
f = 135mm	10.00	9.42 ~ 10.7	9.34 -	9.10~ 11.1	8.76~ II.6	8.38~ 12.4	7.80~ 13.9	7.21~ 16.4	6.40 ~ 23.1
	20.00	17.8-22.9	17.5~ 23.4	16.7~ 25.0	15.5~ 28.1	14.3~ 33.1	12.7~ 47.2	11.2~ 96.6	9.32-
	70.00	48.4 - 126.0	46.4- 143.0	40.9~ 245.0	34.7~ ∞	29.2~ ∞	23.1∼ ∞	18.4~ ∞	13.8~ ∞
	200.0	87.8~	81.3~ ∞	65.7∼ ∞	51.0~ ∞	39.9~ ∞	29.3~	22.2~ ∞	15.8~ ∞
	∞	156.0~	137.0~	97.6~ ∞	68.3~ ∞	49.7∼ ∞	34.2~	24.9~	17.1~ ∞

Focal Length	Aperture (F) Distance (m)	3.5	4	5.6	8	11	16	22	32
	0.85	0.848 0.852	0.848 - 0.852	0.847 - 0.853	0.846 ~ 0.854	0.84 - 0.86	0.84 ~ 0.86	0.84 ~ 0.86	0.84 0.87
	1.00	0.998~ 1.002	0.997~ 1.003	0.996 1.004	0.99~ 1.01	0.99~ 1.01	0.99~ 1.01	0.99~ 1.01	0.98~ 1.02
	2.00	1.99~ 2.01	1.99~ 2.01	1.98 ~ 2.02	1.98~ 2.02	1.97 ~ 2.03	1.96 ~ 2.05	1.94 ~ 2.06	1.92~ 2.09
	3.00	2.98~ 3.02	2.97~ 3.03	2.96~ 3.04	2.95~ 3.05	2.93~ 3.07	2.90~ 3.11	2.86~ 3.15	2.81 - 3.22
	5.00	4.93~ 5.07	4.93 ~ 5.08	4.90 ~ 5.11	4.85 ~ 5.16	4.80 ~ 5.22	4.72 - 5.32	4 •62 ~ 5.45	4.46~ 5.69
f = 210mm	10.00	9.73~	9.70~ 10.3	9.58~ 10.5	9.41~ 10.7	9.21 ~ 10.9	8.89~	8.54~ 12.1	8.01~ 13.3
	20.00	19.0~ 21.2	18.8-	18.4~ 21.9	17.8~ 22.9	17.0 ~ 24.2	16.0~ 26.8	14.8~ 30.7	13.3~ 40.5
	70.00	58.5 ~ 87.1	57.2 - 90.2	53.3~ 102.0	48.4~ 127.0	43.3 — 182.0	36.9~ 672.0	31.4~ ∞	25.1∼ ∞
	200.0	128.0 ~ 456.0	122.0 ~ 558.0	105.0~ 1970.0	87.6∼ ∞	72.4 ~ ∞	56.1∼ ∞	44.2 - ∞	32.6~ ∞
		356.0	311.0~	222.0~	156.0~	113.0~	77.8~	56.6-	38.9

#### 7. SPECIFICATIONS OF TAMRON LENSES

Model No. Specification	13A	27A	17A	01A	22A	20AB	52A	103A	104A			
Focal Length	24-48mm	28-80mm	35-70mm	35-80mm	35-135mm	70-150mm	70-210mm	80-210mm	75–250mm			
Max. Aperture	F/3,5-3.8	F/3.5-4.2	F/3.5	F/2.8-3.8	F/3,5-4.2	F/3.5	F/3.5-4	F/3.8-4	F3.8-4.5			
Angle of View	84°-48°	75.5° –30.5°	64°-34°	64°-30°	63°-18°	34°-16°	34°-11°	30°-11°	32°-10°			
Lens Construction	9/10	8/9	7/7	8/9	12/14	10/13	15/16	10/13	10/13			
Coating	BBAR Multiple Layer Coating											
Minimum Focus from Film Plane	0.6m	0.36m	0.25m	0.27m	1.8m	0.7m	0.75m	0.9m	1,2m			
Max. Reproduction Ratio	-	1:3.4	1:2.8	1:2.5	1:4	1:3	1:2	1:2.8	1:3.4			
Aperture Range	3.5/3.8-32, AE	3.5/4.2-32, AE	3.5-32, AE	2.8/3.8-32, AE	3.5/4.2-32, AE	3.5-32, AE	3.5/4-32, AE	3.8/4-32, AE	3.8/4.5-32, A			
Lens Accessory Size	77mm	67mm	58mm	62mm	67mm	49mm	58mm	58mm	62mm			
Length at ∞[w/Nikon Mount] (mm)	61 [ 65,5 ]	82 [86,5]	55 [59,5]	72   76,5	105 [109,5]	99 [103,5]	165 [169,5]	137,7 [142,2]	172 [176,5]			
Max. Diameter (mm)	64.5	70	65.6	64.5	72.4	64.5	64.5	64.5	71			
Weight (g)	346	480	330	386	625	459	750	634	856			
Lens Hood	Bayonet	Bayonet	Push-on	Push-on	Bayonet	Built-in	Built-in	Screw-in	Built-in			

05A	06A	51B	01B	02B	52B	03B	04B	54B	06B	55BB	01F
70-350mm	200-500mm	17mm	24mm	28mm	90mm	135mm	200mm	300mm	350mm	500mm	4 9/4
F/4.5	F/6.9	F/3.5	F/2.5	F/2.5	F/2.5	F/2.5	F/3.5	F/5.6	F/5.6	F/8	
34°-7°	12°-5°	104°	84°	75°	27°	18°	12°	8°	7.3°	5°	-
13/15	8/14	10/12	9/10	7/7	6/8	4/4	5/5	5/6	4/7	4/7	5/6
			1	BBAR Multipl	e Layer Coating	1					0.012
2.5m	3.0m	0.25m	0:25m	0.25m	0.39m	1.2m	1.7m	1.4m	1.1m	1.7m	-
-	-	-	-	1 : 5.8	1:2	1:7	1 : 5.9	1:3.3	1:2.5	1:3	-
4.5–32, AE	6.9-32	3.5-22, AE	2.5-22, AE	2.5-32, AE	2.5-32, AE	2.5-32, AE	3.5-32, AE	5.6-32, AE	-	-	-
82mm	82mm	Built-in	55mm	49mm	49mm	58mm	58mm	58mm	82mm 30.5mm (rear)	82mm 30,5mm (rear)	-
274 [278,5]	370 [ 374,5 ]	43   47,5	38 [42,5]	33 [37,5]	66 [70,5]	79,5[84]	108 [112,5]	163,5 [168]	74,5[79]	87 [91,5]	42,5 [47]
90	90	70	64.5	64.5	64.5	64.5	68	64.5	86	84	64.5
2,170	2,770	270	230	180	420	410	540	610	577	575	250
Built-in	Built-in	Push-on	Screw-in	Screw-in	Screw-in	Built-in	Built-in	Built-in	Screw-in	Screw-in	_

Specifications and availability are subject to change without notice.

#### 8. CARING FOR YOUR LENS

- Avoid touching the lens surface. Use a photographic brush or blower to remove dust from the lens surface. When not using the lens, put a lens cap on for protection.
- Use a lens cleaning tissue or lintless cloth with a drop of cleaning solution to clean fingerprints or dirt on the lens surface with a rotary motion from center to edge. Use a silicon cloth to clean your lens barrel only.

 When carrying a lens on your camera without a camera case, hang it from your shoulder with the lens towards your body to protect it from objects which it might hit.







- 4. When storing your lens in a lens case, turn the focusing ring so that the ∞ mark on the distance scale is aligned to the index line. Also store it with a packet of desiccant
- 5. Fungus is an enemy of your lens. Clean the lens after shooting at seaside or in a humid place. Store your lens in a clean, cool and dry place. If you find fungus on your lens, please consult a repair shop or nearby photographic store.







#### **TAMRON International Service**

Should any TAMRON product require service, TAMRON's international service is available in over 48 nations worldwide.

#### TAMRON CO.,LTD.

Manufacturers of lenses for photographic, industrial, laboratory, video, and scientific applications.

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