

Nikon Camera Controls

How to get the best from your Nikon digital SLR

Presented by Barry Headrick

Agenda

- Three levels of Nikon DSLRs
- Focus controls
- Exposure controls
- Flash controls
- Other controls
- Menu settings
- Best practices for various types of photography
- Software
- Tips
- Final words

Not Covered in this Workshop

- Creative process
 - deciding on what to photograph
- Composition
- Lighting
- Camera location and position
- Choice of lens and focal length to use
- Anything else you do before you raise the viewfinder to your eye

Nikon DSLR models

- Current Models
 - D3000, D5000, D90, D300s, **D700**
 - **D3x**, **D3s**
- Non-production models
 - D40, D40x, D50, D60 (*), D70, D70s, D80
 - D100, D200, D300 (*)
 - D1, D1x, D1h, D2h, D2hs, D2x, D2xs, **D3** (*)
 - S2 Pro, S3 Pro, Pro 14n, Pro SLR/n
- * designates out-of-production but may be at McBains
- **Blue** designates full-size sensor

Three levels of Nikon DSLR

- Consumer
 - Dial with scene modes and AUTO, use SD card
 - D40(x), D50, D60, D70, D80, D90, D3000, D5000
- Prosumer
 - Small battery, no scene modes, CF card
 - D100, D200, D300, D300s, D700
- Pro
 - Large battery, no pop-up flash, CF card(s)
 - D2x, D2xs, D2h, D2hs, D3, D3x, D3s

Nikon's view of three levels

ESSENTIAL DSLR

**Incredible Pictures,
Incredibly Simple**



D3000 BODY
10.2MP
\$499.95*



D5000 BODY
12.3MP
\$829.95*



D60 BODY
10.2MP
\$449.95*

ADVANCED DSLR

**High Precision,
High Performance**



D300s BODY
12.3MP
\$2,069.95*



D300 BODY
12.3MP
\$1,699.95*



D90 BODY
12.3MP
\$1,069.95*

PROFESSIONAL DSLR

**The Standard
of Excellence**



D3s BODY
12.1MP
\$5,699.95*



D3X BODY
24.5MP
\$8,949.95*



D3 BODY
12.1MP
\$5,549.95*



D700 BODY
12.1MP
\$3,069.95*

Focus Controls

- You can fix many things but not out-of-focus
- Focus mode M, S, C or M, A or M, S, C, A
 - Examples of each setting
- Focus area: single, multi, closest priority
 - Examples of each setting
- Focus priority menu settings for AF-S and AF-C
- AF-on button
- Menu settings
- Don't forget the M - M/A – A/M switch on lens

Depth of Field

- Depth of field (dof) is defined by two planes perpendicular to the centerline of the lens
 - The distance between the two planes is the dof
 - Everything between the two planes is in focus
 - Focus distance = distance to subject you focus on
 - The dof is approx. $1/3$ in front of focus distance
 - The dof is approx. $2/3$ behind the focus distance
- DOF is NOT based on the distance from the camera to the subject – that is an arc not a plane

Depth of Field

- Depth of field (dof) is based on four factors:
 - Aperture
 - Smaller aperture gives greater dof
 - Focal length
 - Shorter focal length gives greater dof
 - Distance to subject
 - Greater distance to subject gives greater dof
 - Size of sensor
 - Smaller sensor size gives greater dof

Depth of Field Calculator

- Various hand-held devices are available
- Older lenses had dof guides inscribed on them
- The best online calculation web site is <http://www.dofmaster.com/dofjs.html>
- Based on your favorite lens and body, calculate a few dofs for your favorite focal length, subject distance, and aperture
- Carry this information on paper for reference
- For a paper chart: <http://www.dofmaster.com/doftable.html>

Camera, film format, or circle of confusion

Nikon D300, 200, D100

Focal length (mm)

50

Selected f-stop

f/8

Subject distance

10

feet

Subject distance

10 ft

Depth of field**Near limit**

8.39 ft

Far limit

12.4 ft

Total

3.98 ft

In front of subject

1.61 ft (40%)

Behind subject

2.37 ft (60%)

Hyperfocal distance

51.4 ft

Circle of confusion

0.02 mm

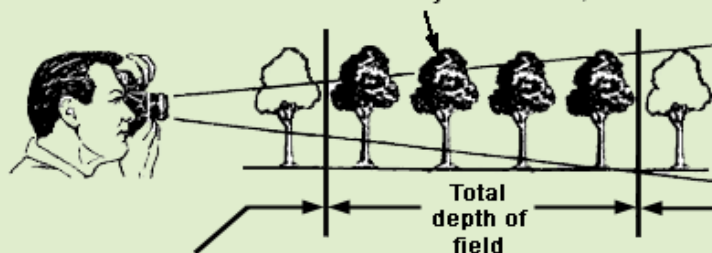
Ads by Google [Aperture Guide](#) [Hyperfocal](#) [Sports Field](#) [DOF Calculator](#)



Use the actual focal length of the lens for depth of field calculations. The calculator will automatically adjust for any "focal length multiplier" or "field of view crop" for the selected camera.

Focal lengths of digital camera lenses are listed [here](#).

Focus at the subject distance, 10 ft



Near limit of acceptable sharpness

8.39 ft

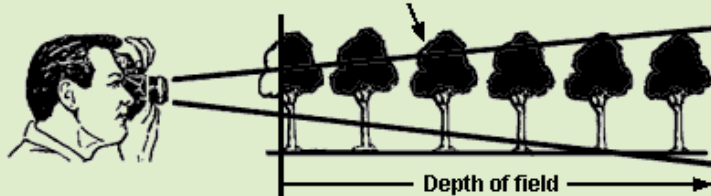
Total depth of field

3.98 ft

Far limit of acceptable sharpness

12.4 ft

Focus at the hyperfocal distance, 51.4 ft



Depth of field

Depth of field extends from 25.7 ft to infinity

Depth of Field Table

| | | |
|---------------|--|--------------|
| Focal Length: | Film Format, Digital Camera, or Circle of Confusion: | Units: |
| 50 mm | Nikon D300, D200, D100 | feet, inches |

Calculate

Nikon D300, D200, D100 Focal Length: 50 mm

| Distance (feet) | f/1.4 | | f/2 | | f/2.8 | | f/4 | | f/5.6 | | f/8 | | f/11 | | f/16 | | f/22 | | f/32 | |
|---------------------|----------|---------|----------|---------|----------|---------|----------|----------|----------|----------|----------|---------|----------|---------|----------|---------|----------|----------|----------|----------|
| | Near | Far | Near | Far | Near | Far | Near | Far | Near | Far | Near | Far | Near | Far | Near | Far | Near | Far | Near | Far |
| 1 | 1' 0" | 1' 0" | 1' 0" | 1' 0" | 0' 11.9" | 1' 0.1" | 0' 11.9" | 1' 0.1" | 0' 11.9" | 1' 0.1" | 0' 11.8" | 1' 0.2" | 0' 11.7" | 1' 0.3" | 0' 11.6" | 1' 0.4" | 0' 11.5" | 1' 0.6" | 0' 11.3" | 1' 0.8" |
| 2 | 1' 11.8" | 2' 0.2" | 1' 11.8" | 2' 0.2" | 1' 11.7" | 2' 0.3" | 1' 11.6" | 2' 0.4" | 1' 11.4" | 2' 0.6" | 1' 11.2" | 2' 0.9" | 1' 10.8" | 2' 1.3" | 1' 10.4" | 2' 1.9" | 1' 9.8" | 2' 2.7" | 1' 9" | 2' 4" |
| 3 | 2' 11.7" | 3' 0.4" | 2' 11.5" | 3' 0.5" | 2' 11.3" | 3' 0.7" | 2' 11" | 3' 1" | 2' 10.6" | 3' 1.5" | 2' 10.1" | 3' 2.1" | 2' 9.4" | 3' 3.1" | 2' 8.4" | 3' 4.5" | 2' 7.1" | 3' 6.7" | 2' 5.5" | 3' 10.2" |
| 4 | 3' 11.4" | 4' 0.6" | 3' 11.1" | 4' 0.9" | 3' 10.8" | 4' 1.3" | 3' 10.3" | 4' 1.9" | 3' 9.6" | 4' 2.7" | 3' 8.7" | 4' 3.9" | 3' 7.4" | 4' 5.7" | 3' 5.8" | 4' 8.4" | 3' 3.6" | 5' 0.9" | 3' 0.9" | 5' 8.5" |
| 5 | 4' 11" | 5' 1" | 4' 10.6" | 5' 1.4" | 4' 10.1" | 5' 2.1" | 4' 9.3" | 5' 3" | 4' 8.2" | 5' 4.3" | 4' 6.8" | 5' 6.2" | 4' 4.9" | 5' 9.2" | 4' 2.5" | 6' 2" | 3' 11.4" | 6' 9.8" | 3' 7.6" | 8' 0.4" |
| 6 | 5' 10.6" | 6' 1.5" | 5' 10" | 6' 2.1" | 5' 9.2" | 6' 3" | 5' 8.1" | 6' 4.3" | 5' 6.6" | 6' 6.3" | 5' 4.6" | 6' 9.2" | 5' 2" | 7' 1.8" | 4' 10.6" | 7' 9.2" | 4' 6.5" | 8' 10.2" | 4' 1.5" | 11' 0" |
| 7 | 6' 10.1" | 7' 2" | 6' 9.3" | 7' 2.9" | 6' 8.2" | 7' 4.2" | 6' 6.7" | 7' 6" | 6' 4.8" | 7' 8.7" | 6' 2.1" | 8' 0.9" | 5' 10.7" | 8' 7.5" | 5' 6.3" | 9' 6.6" | 5' 1" | 11' 3" | 4' 6.8" | 15' 0" |
| 8 | 7' 9.5" | 8' 2.7" | 7' 8.5" | 8' 3.8" | 7' 7.1" | 8' 5.5" | 7' 5.2" | 8' 7.9" | 7' 2.6" | 8' 11.6" | 6' 11.3" | 9' 5.3" | 6' 6.9" | 10' 3" | 6' 1.5" | 11' 6" | 5' 7" | 14' 1" | 4' 11.6" | 20' 7" |
| 9 | 8' 8.8" | 9' 3.4" | 8' 7.5" | 9' 4.9" | 8' 5.8" | 9' 7" | 8' 3.4" | 9' 10.2" | 8' 0.3" | 10' 3" | 7' 8.1" | 10' 11" | 7' 2.8" | 11' 11" | 6' 8.3" | 13' 9" | 6' 0.6" | 17' 7" | 5' 3.9" | 29' 0" |
| 10 | 9' 8.1" | 10' 4" | 9' 6.5" | 10' 6" | 9' 4.4" | 10' 9" | 9' 1.5" | 11' 1" | 8' 9.7" | 11' 7" | 8' 4.7" | 12' 5" | 7' 10.4" | 13' 9" | 7' 2.7" | 16' 3" | 6' 5.8" | 21' 10" | 5' 7.9" | 43' 0" |
| 12 | 11' 6" | 12' 6" | 11' 4" | 12' 9" | 11' 1" | 13' 1" | 10' 9" | 13' 7" | 10' 4" | 14' 4" | 9' 9" | 15' 7" | 9' 0.6" | 17' 10" | 8' 2.5" | 22' 4" | 7' 3.1" | 34' 7" | 6' 2.9" | 157' |
| 14 | 13' 4" | 14' 8" | 13' 1" | 15' 0" | 12' 9" | 15' 6" | 12' 4" | 16' 2" | 11' 9" | 17' 4" | 11' 0" | 19' 2" | 10' 2" | 22' 8" | 9' 1.1" | 30' 5" | 7' 11.3" | 59' | 6' 8.8" | ∞ |
| 16 | 15' 2" | 16' 11" | 14' 10" | 17' 4" | 14' 5" | 18' 0" | 13' 10" | 18' 11" | 13' 2" | 20' 6" | 12' 3" | 23' 2" | 11' 2" | 28' 5" | 9' 10.7" | 41' 10" | 8' 6.5" | 127' | 7' 1.9" | ∞ |
| 18 | 17' 0" | 19' 2" | 16' 7" | 19' 9" | 16' 0" | 20' 6" | 15' 4" | 21' 10" | 14' 5" | 23' 11" | 13' 4" | 27' 7" | 12' 1" | 35' 5" | 10' 7" | 59' | 9' 0.9" | 1132' | 7' 6.3" | ∞ |
| 20 | 18' 9" | 21' 6" | 18' 3" | 22' 2" | 17' 7" | 23' 2" | 16' 9" | 24' 10" | 15' 8" | 27' 6" | 14' 5" | 32' 8" | 12' 11" | 44' 2" | 11' 3" | 88' | 9' 6.6" | ∞ | 7' 10.2" | ∞ |
| 30 | 27' 2" | 33' 5" | 26' 2" | 35' 1" | 24' 11" | 37' 9" | 23' 3" | 42' 4" | 21' 3" | 51' | 19' 0" | 72' | 16' 6" | 170' | 13' 10" | ∞ | 11' 4" | ∞ | 9' 0.2" | ∞ |
| 40 | 35' 2" | 46' 4" | 33' 6" | 49' 8" | 31' 5" | 55' | 28' 10" | 65' | 25' 10" | 89' | 22' 6" | 179' | 19' 1" | ∞ | 15' 8" | ∞ | 12' 6" | ∞ | 9' 8.8" | ∞ |
| 50 | 42' 8" | 60' | 40' 3" | 66' | 37' 3" | 76' | 33' 8" | 97' | 29' 8" | 160' | 25' 4" | 1796' | 21' 1" | ∞ | 17' 0" | ∞ | 13' 4" | ∞ | 10' 3" | ∞ |
| 75 | 60' | 101' | 55' | 118' | 49' 6" | 155' | 43' 4" | 278' | 36' 11" | ∞ | 30' 6" | ∞ | 24' 6" | ∞ | 19' 2" | ∞ | 14' 8" | ∞ | 11' 0" | ∞ |
| 100 | 74' | 153' | 67' | 195' | 59' | 321' | 51' | 3811' | 42' 1" | ∞ | 33' 11" | ∞ | 26' 8" | ∞ | 20' 5" | ∞ | 15' 4" | ∞ | 11' 5" | ∞ |
| ∞ | 290' | ∞ | 205' | ∞ | 145' | ∞ | 103' | ∞ | 73' | ∞ | 51' | ∞ | 36' 5" | ∞ | 25' 10" | ∞ | 18' 4" | ∞ | 13' 0" | ∞ |
| Hyperfocal Distance | 290' | | 205' | | 145' | | 103' | | 73' | | 51' | | 36' 5" | | 25' 10" | | 18' 4" | | 13' 0" | |

Circle of confusion: 0.02 mm

Shutter Speed

- Most can hand-hold at 1/125
- Some can hand-hold at 1/30
- VR gives you a couple of stops slower
- VR II gives you four stops slower
- Sports need about 1/500 or faster
- Moving targets - experiment

Exposure Controls

- PASM (pro and prosumer)
- Green thing on the dial (consumer)
- Scene modes (consumer)
 - Demo of hand-held light meters
- Exposure compensation
- Flexible program (P*)
- Meter pattern (evaluative, centre, spot)
- ISO setting
- Auto ISO

Flash controls

- iTTL BL intelligent TTL mode balanced
- Manual mode
- Red-eye reduction, exposure compensation
- Flash menus
- CLS Creative Lighting System
- Demo of SB-600, SB-800 and SB-900
- Demo of CLS with one remote

Other Controls

- White balance, not needed for Raw images
- Color space
- Image Quality
 - Raw – bit depth and compression
 - JPEG – size and quality
- Overview of menu structure and usage
 - Display D300 menus on projector
- Menu banks – shooting banks, custom banks

Best practices for subject types

- Fast action – sports, news
- Real time – weddings, presentations
- Low light – weddings, news
- Nothing moves, lots of light

Tips

- Out of the box
 - First menu change: focus priority for AF-C
 - Second menu change: view mode zoom to 1:1
 - Third menu change: display histogram and blinkies
 - Fourth: set auto-ISO on, 1/30th minimum
- Believe your histogram not your LCD
 - Brightness level on LCD is optimized for viewing
 - Learn what the histogram can tell you

More Tips

- Disable autofocus on shutter release button
- Use AF-ON instead of shutter release button
- Aperture priority
- Turn off all beeps
- Test to find the highest ISO you want to use
- Use AUTO ISO, min shutter speed 1/30th
- Check your focus and histogram for every shot

The Last Tip

- It is generally very difficult to capture a scene exactly the way that you see it. There are huge differences between the human visual system and the image capture process of a digital SLR. In many cases, you can use your photo editing software to adjust the image to match your original perception. Prepare to spend a lot of time on your computer. Prepare to be amazed at what you can do with editors.

Software

- Free Photo Editors
 - Picasa (by Google) is more for organizing, does RAW
 - GIMP
 - Paint.net
- Not Free Photo Editors
 - Adobe Photoshop Software
 - CS4 \$820 - \$999
 - Elements 8 \$130
 - Lightroom 2.5 \$350 – \$400, version 3 is available in Beta
 - Aperture for Mac
 - Capture NX2 \$250, quirky, uses control points (NIK)

Reference Information

- Nikon lens designation codes
- Nikon DSLR specifications
 - Lens compatibility
 - Current production model specifications
 - Discontinued model specifications
- Sensor sizes
- Display these Word documents if time permits

Final Words

- Visit Chapters and look at the selection of camera instruction manuals. Maybe buy one or two if you like the content and writing style. Don't be offended if the book says "... for dummies".
- Check out all of the adult education courses available. Attend the ones that are interesting.
- <http://www.metrocontinuingeducation.ca/coned/>
- <http://www.nait.ca/programsandcourses.htm>
- http://www.macewan.ca/web/services/arts_outreach/services/DetailsPage.cfm?id=3412

More Final Words

- View all 24 videos on dTown tv (free)
<http://www.dtowntv.com/>
 - Created by Scott Kelby
 - Tips and tricks and techniques for Nikon users
 - It takes a few hours to view them all
- Consider buying Thom Hogan's ebooks
<http://www.bythom.com/index.htm>

Final Final Words

- Join a good camera club. Network with others all you can. Attend the workshops and the outings. Submit images for the members' showcases (slide shows). Ask for critiques.
- Use your equipment often.
- Shoot, shoot, and shoot.
- Have a great time.