# Canon
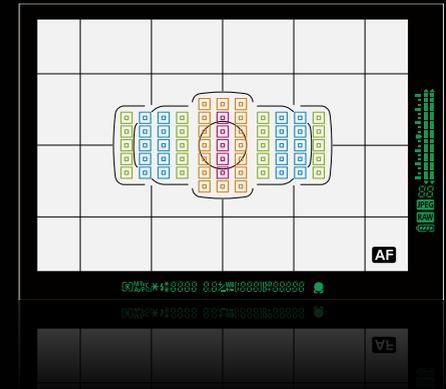
# EOS-1DX

## AF Setting Guidebook

Detailed explanations of how to use the various high precision AF features

Canon

EOS-1D

X

NON LENS EF 50mm 1:1.4

# EOS-1D X
# AF Setting Guidebook

By combining the ultimate in AF performance and easy of use, a wealth of new photographic possibilities are available.

## 61-Point High-Density Reticular AF
Improved AF performance capturing fast moving subjects

The EOS-1D X is equipped with a newly developed 61-Point High-Density Reticular AF making it possible to capture fast moving subjects in situations where accurate focusing even with a high performance autofocus is difficult. By arranging the 61 AF points in a high concentration, the level of composition freedom, and tracking performance is greatly improved. Featuring 41 high precision cross-type AF points compatible with f/4 lens and new algorithms, are used together with AI Servo AF III to improve accuracy for predictive AF, making it possible to focus precisely when shooting subjects with extremely fast movement, such as agile players with unpredictable behavior.
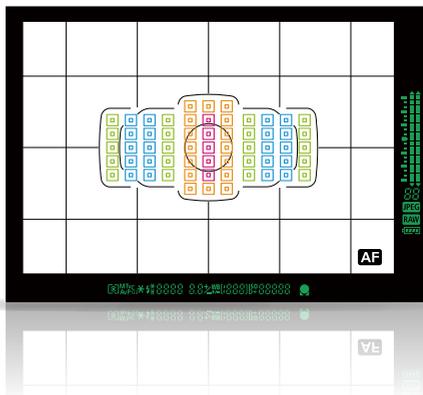
## AF Configuration Tool
Simple selection of the best combinations of AF settings for any subject or scene

The AF Configuration Tool makes it possible to set the AI Servo AF features by simply selecting the shooting scene from [Case 1] to [Case 6]. Should you need to, it is also possible to adjust the parameters separately. This AF Setting Guidebook will introduce a variety of features and most effective settings centered around the 61-point AF and AF Configuration Tool, in order to take advantage of the high performance AF functions of the EOS-1D X.

## Contents

### New AF Setting Operability

### AF Configuration Tool [Presets]

### AF Configuration Tool [Parameters]

### AF Area Selection Mode

### 61-Point High-Density Reticular AF Cross-type Points

### Setting the AF Shutter-release Characteristics

### Utilizing the AF

AF frame indicated in this information may differ from those interior indication and color of actual finder.

# All AF-related menu functions now in a separate menu
The Various AF-related functions are now incorporated into an AF menu tab
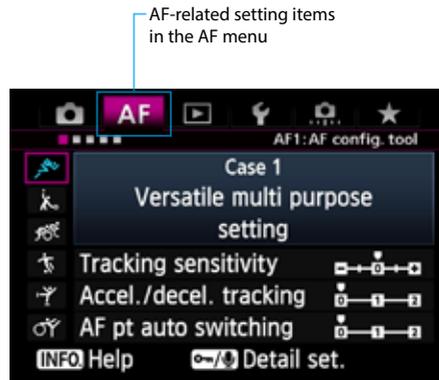


AF-related setting items in the AF menu



The AF1 tab includes the AF Configuration Tool

The AF1 tab is important when shooting moving subjects using the AI Servo AF of the EOS-1D X. It is possible to effectively set AI Servo AF characteristics by selecting the option that closely matches the scene with the AF Configuration Tool.

The various AF-related settings that were previously included in the custom functions (C.Fn) menu, have been incorporated into the new AF menu tab. This makes smooth access to AF-related settings possible. In particular, the AF Configuration Tool included in tab AF1 can be used to easily match settings with the AI Servo AF characteristics, making it an important feature that takes advantage of the advanced AF performance on the EOS-1D X. By selecting from six presets (Case 1 - Case 6), makes it possible to set the AI Servo AF characteristics to most accurately suit the subject's movement, and scene conditions. It is also possible for fine control to adjust each parameters separately. (Refer to P. 7 – 25 for AF Configuration Tool details.) Tabs [AF 2] – [AF 5] include a variety of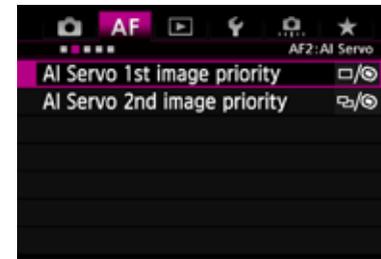 settings such as shutter-release timing settings, a setting for the number of AF points that can be selected and AF area selection method.

## Various settings for AF-related features can be made with AF menus [AF2] - [AF5]



### AF2 AI Servo
Settings related to the camera priorities when using AI Servo AF

The [AF/2] tab includes settings related to cameras priority concerning shutter-release timing when using AI Servo AF. [AI Servo 1st image priority] and [AI Servo 2nd image priority] make it possible to make focusing the priority slowing the shutter-release timing, or prioritize faster shutter-release.
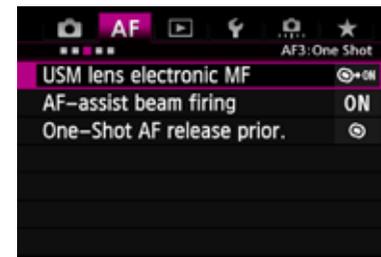


### AF3 One-Shot
Settings related to focusing and shutter-release timing when using One-Shot AF release priority

Within the [AF3] tab, the [One-Shot AF release priority] settings related to focusing and shutter-release timing when using One-Shot AF release priority. The other options [USM lens electronic MF] and [AF-assist beam firing], control the manual focus operation of some lenses and the operation of AF assist function of attached Speedlites.
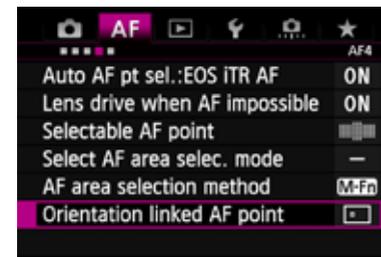


### AF4
Includes general settings related to AF point selection

Select which and how AF points are selected. This menu includes settings related to [AF area selection mode] ([Automatic AF point selection criteria], [Selectable AF points], [AF area selection mode], [AF area selection method], and [Orientation linked AF point]). In addition there is the [Lens drive when AF impossible] option in this menu.
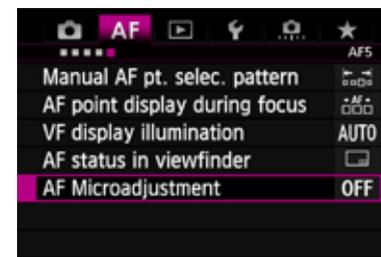


### AF5
Includes general settings related to display of AF points, etc.

Within [AF5] tab are settings that control how AF points are displayed in the viewfinder such as ([AF point display during focusing], [VF display illumination], and [AF status in viewfinder]). With the (Manual AF pt. selec pattern) the AF point selection can stop at the peripheral AF point or instead loop back to the opposite side of the AF area. For those who need to make fine adjustments to the focus position [AF Microadjustment] is available.

# Select from Case 1 - Case 6 to match subject scenarios

Presets consist of three different parameters combinations



[AF1] tab screen. By selecting an appropriate preset from the Case 1 - Case 6 icons on the left side of the screen, the most effective AI Servo AF settings for different subjects can be made.



The AF Configuration Tool is a function for setting AI Servo AF characteristics. Therefore, it's settings will have no function when using [One shot AF].

When the [AF1] tab on the EOS-1D X is opened, [Case1 Versatile multi-purpose setting] a running man icon will be displayed. This is the default option for the AF Configuration Tool. Different presets to match the characteristics of the type of subject and its movement, and the shooting conditions, can be selected from Case 1 - Case 6. By simply selecting one of these cases, settings for the AI Servo AF characteristics that match the scene will be used.

,These six presets are combinations of the following three parameters, [Tracking sensitivity], [Accel./decel. tracking], and [AF pt auto switching] (P. 20 - 25). Using the presets sets the parameters in the most effective way. However, if you wish It is also possible to manually adjust the parameters individually.

The best parameters for different subjects and shooting scenes are combined into presets from Case 1 - 6



Case1
Versatile multi-purpose setting

Case2
Continue to track subjects, ignoring possible obstacles

Case3
Instantly focus on subjects suddenly entering AF points

Case4
For subjects that accelerate or decelerate quickly

Case5
For erratic subjects, moving in any direction

Case6
For subjects that change speed and move erratically

A combination of parameters to best suit the characteristics of subject movement have been used to create the presets from Case 1 – Case 6. By selecting the appropriate icon, the different AI Servo AF settings can be selected to suit the subject.



Press the INFO button
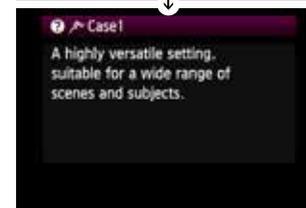
Content displays on the help screen

**Hints & Tips**

Pushing INFO. button while any of [Case] is indicated in display, then text information of AF Setting Characteristics or Shooting Scene Example is indicated.

Moving the purple square over Case 1 – Case 6 will display the name of each case, for example [Case1 Versatile multi-purpose setting]. If you want more detailed information, you can press the INFO button. This will display the help screen containing information about shooting scene examples and which settings to alter and when.

# Precise and accurate focusing is possible for a wide range of subjects

## Versatile multi-purpose setting
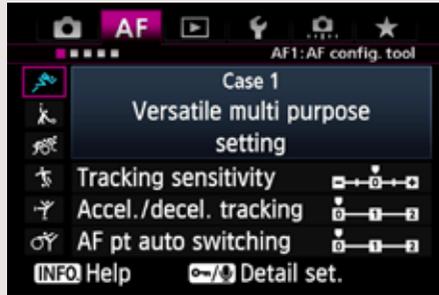


| Parameter default settings | |
| --- | --- |
| Subject tracking sensitivity | [0] |
| Accelerate / decelerate Tracking | [0] |
| AF point auto switching | [0] |

The [AF Configuration Tool] [Case 1] is the basic AI Servo AF setting on the EOS-1D X. As its name indicates, it is versatile and achieves a high level of tracking performance in a wide variety of scenes.

Equipped with AI Servo AF III, the EOS-1D X has improved flexibility in handling a variety of moving subjects, and superior prediction of movement for more accurate focusing. Even with a variety of difficult elements such as extremely fast movement, sudden changes in speed, and interruptions by obstacles, AI Servo AF III overcomes these and is able to capture the subject.

Case 1 is the recommend setting to start shooting with, Case 1 will provide great results when shooting a variety of sports and moving subjects. When more specific settings for individual cases are desired, please try Case 2 – Case 6 to match shooting conditions.







Case 1 can be used to great advantage when shooting moving subjects, making it possible to accurately capture fast subject.



**Single-Point**

AI Servo AF III makes it possible to carry out precise focus for subjects in a wide variety of conditions

AF on the EOS-1D X is equipped with a new focus tracking algorithm, AI Servo AF III. It supports an even greater variety of subject movement than before, and by utilizing the high level tracking performance of the AI Servo AF III, and Case 1 configuration setting, it can handle many different shooting conditions.

# Continue to focus-track even when the subject momenta rily moves from the AF points

Effective when shooting scenes with fast moving subjects, or when an obstacle momen tarily appears in front of the subject
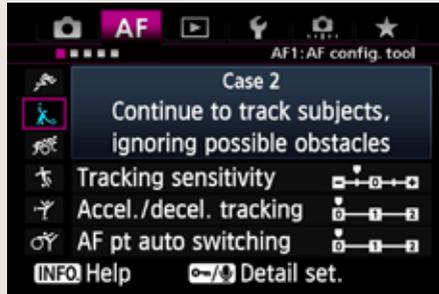


| Parameter default settings | |
| --- | --- |
| Subject tracking sensitivity | [-1] |
| Accelerate / decelerate Tracking | [0] |
| AF point auto switching | [0] |



Example of a fast moving subject where the focus has shifted to the background (photo2). By selecting Case 2 for situations like this, it will be easier to focus track the subject.



Try selecting Case 2 when shooting a tennis player with fast side to side movement. The subject will be tracked even when they move away from the AF points.

Case 2 is an effective setting for shooting fast moving subjects when they move away from the selected AF point, or when obstacles may momentarily obscure the subject. Sometimes when the subject moves from the selected AF point, focus can shift to the background (resulting in an out of focus subject), similarly when an obstacle obscures the subject, focus can shift to the obstacle. By selecting Case 2 in situations like these, focus will attempt to continue to track the desired subject. When a subject moves away from the AF points for an extended period (such as swimmers doing the butterfly stroke, or sports where the subject is hidden for intervals), even better performance may be achieved by manually setting the [Tracking sensitivity] parameter to [-2].

# Focus instantly on subjects that move into the AF points

Effective when you want to continuously photograph targeted athletes one after the other
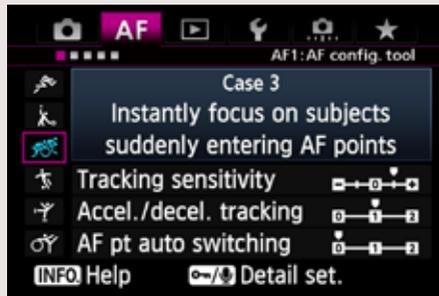


**Parameter default settings**

| | |
|---|---|
| Subject tracking sensitivity | [Responsive: +1] |
| Accelerate / decelerate Tracking | [+1] |
| AF point auto switching | [0] |

Case 3 is the ideal setting for situations when you want to focus quickly between subjects in the AF points. In Case 3, the [Tracking sensitivity] parameter is set to [+1]. As a result, subjects that come into the AF points will be focused on more quickly. This setting is most effective when subjects appear suddenly in the frame (for example photographing skiers in an alpine skiing downhill race,). Other shooting situations, this setting can be extremely effective is when switching between different subjects you want to shoot (for example, at the start of a bicycle road race, when you want to shoot continuously and switch from cyclist to cyclist while focusing).

When set to Case 3, if the subject moves away from the AF points, the camera may quickly refocus on a different subject or background, in contrast to Case 2. Therefore, it is recommended that you use this setting only when you have a particular objective as indicated above.

1. Shoot the whole group while focusing on the cyclist in the center

A scene with cyclists coming towards the camera. While focusing on the lead cyclist you may wish to switch focus to the other cyclists whilst continuously shooting. In this situation, by selecting Case 3, you can I achieve the desired focus on each subject.



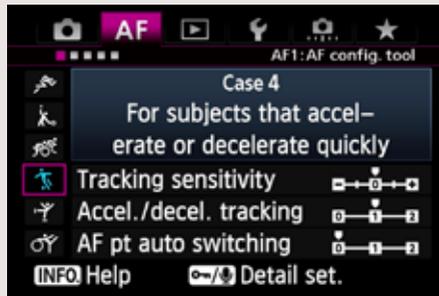2. Focus on the lead cyclist



3. Focus on the right side cyclist



4. Focus on the left side cyclist

# Focus track subjects that can accelerate or decelerate quickly

Effective when a subject's speed changes rapidly, or in sports where subjects stop or change direction



For example in soccer. A player dribbling at high speed stops suddenly in front of a defender, changes direction and then begins to sprint again. By using Case 4 the AF system reacts to sudden changes in speed, allowing continuous and accurate focusing.

| Parameter default settings | |
|---|---|
| Subject tracking sensitivity | [0] |
| Accelerate / decelerate Tracking | [+1] |
| AF point auto switching | [0] |



Continuously track players as they suddenly slow down and speed up

When shooting sports, there are many situations where it will be necessary to deal with fast moving subjects. Subjects suddenly going from static to moving or sudden stopping can occur in various sports and situations and it can be difficult for the AF system to judge accurately, In these situations, Case 4 is most effective. With the [Accelerate / decelerate Tracking] parameter set to [+1], the AI Servo AF will work to focus track any changes in speed, including sudden stops and acceleration. This makes Case 4 the most effective setting for shooting soccer, rugby, basketball or sports where there is a lot of running and stopping, as well as changes of direction. It is also effective for cornering during motor sports (sudden deceleration and acceleration).

# Focus on subjects with erratic movement
## Suitable for sports and fast action where traditionally AF systems have difficulty tracking
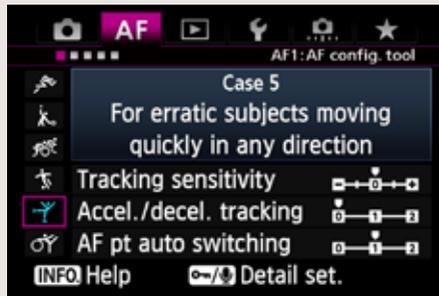


Using Case 5 when photographing a figure skater making a big jump (the AF area selection mode is set to [AF point expansion]). It is possible to track the skater's movements by letting the camera switch between AF points.

| Parameter default settings | |
|---|---|
| Subject tracking sensitivity | [0] |
| Accelerate / decelerate Tracking | [0] |
| AF point auto switching | [+1] |

It is possible to focus on subjects that move erratically and could move in any direction



Inline skating on a half-pipe. Capturing the moments when the skater is jumping and twisting is easier with Case 5.

Case 5 is most effective for subjects with large amount of movements which could occur in any direction. This setting works in 61-point automatic selection AF, Zone AF, and AF point expansion modes only. In Case 5, [AF pt auto switching] is set to [+1], when the subject moves away from the manually selected AF point (AF points focused on initially with Zone AF), focusing automatically switches to other AF points that contain the subject. As a result, even when the subject continuously leaves the selected AF point, it is possible to increase the ratio of photos that are in focus. This setting is most effective when shooting subjects with erratic movement such as figure skating, skateboarding, and inline skating.

Blue color of focus point is for explanation only, and actually there is no blue indication available.

# Focus on subjects with erratic movement and changes in speed

Effective when shooting sports that feature lots of quick movements
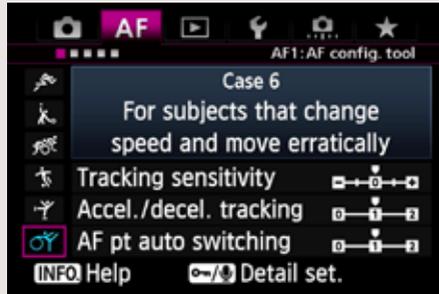


Parameter default settings

| Subject tracking sensitivity | [0] |
|---|---|
| Accelerate / decelerate Tracking | [+1] |
| AF point auto switching | [+1] |

A rhythmic gymnast making sudden big jumps can be captured when shooting with Case 6 which can focus on subjects with sudden movement, and erratic movement. Continuous focusing is possible for large movements and changes in speed.

Case 6 is a setting that combines features of both Case 4 (support for sudden changes in speed), and Case 5 (support for erratic movement in any direction). [Accel./decel. tracking] and [AF pt auto switching] parameters are both [+1].
Therefore, Case 6 is an effective setting for subjects that stop and start suddenly, but also have erratic movement which could happen in any direction, it works during Auto selection 61-point AF, Zone AF, and AF point expansion only.
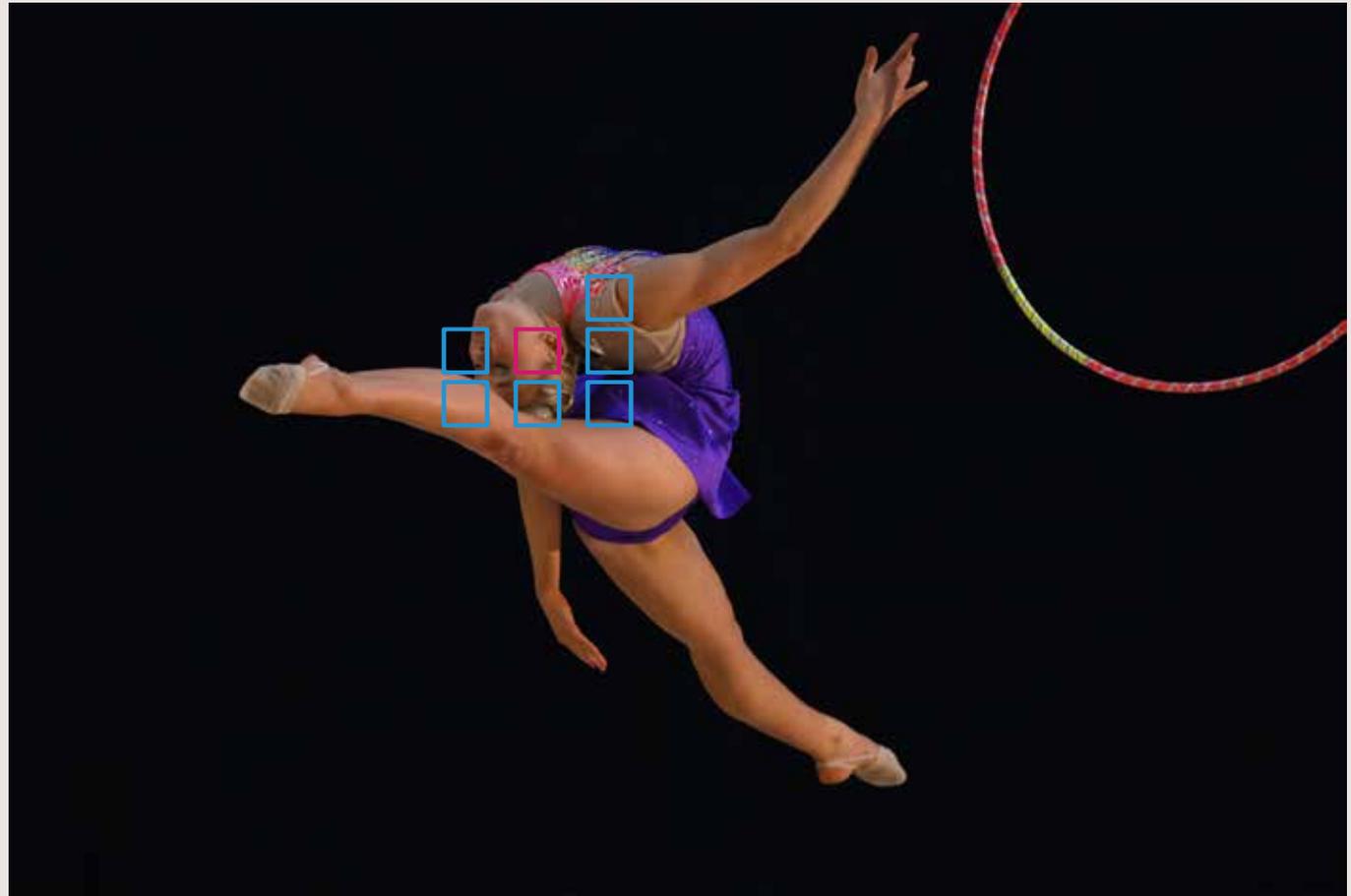Shooting subjects that are most appropriate for this setting include rhythmic gymnastics which includes large movements with complete stops.
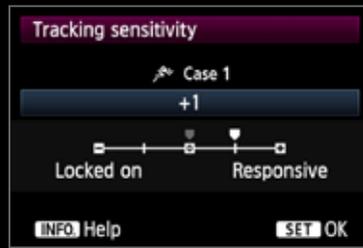
Blue color of focus point is for explanation only, and actually there is no blue indication available.

# This setting allows obstacles that pass in front of the sub

[Locked on] can be effective when an obstacle crosses in front of the subject and when

# ject to be ignored, as well as focusing on new subjects

focus jumps to the background,

[Locked on : -]    [Responsive : +]

Choose any of [Case] and push 🔒 button for Tracking sensitivity, then adjust level with 🎛 SET button.

With the AF Configuration Tool on the EOS-1D X, not only can you select from Case 1 - Case 6, but three parameters for each can be adjusted individually.

[Tracking sensitivity] is the parameter that can be set to track a subject that the AF point had been following until a different subject (or background) got in the way.

The [Locked on: -2/-1] setting excludes subjects that come into the AF point as obstacles, and continues to focus on the original subject. Selecting -2 results in the targeted subject being tracked for a longer time before focus changes to subject now in the AF point.

The [Responsive: +1/+2] setting determines that subjects that come into the AF point are new subjects to be focused, and quickly focuses. It is also effective when you want to quickly focus on subjects that are hidden and appear suddenly.

### An example where [Locked on: -2/-1] is more effective

When another player, or a referee crosses in front of the subject and focus can shift to the foreground/background

↓

Example where the referee momentarily appears in front of the player being tracked, then the player appeares again. With the [Locked on: -1] setting, the referee in the foreground is not focused on, and the AF system continuously tracks the player.

### An example where [Responsive: +1/+2] is effective

When you want to focus on an athlete who appears suddenly in the frame.

↓

Example where a skateboarder appeared suddenly from the far wall. In a situation like this, setting to [Responsive: +1/+2] makes it possible to focus even quicker on the skater that just appeared. (Photo top left, shown to illustrate scene prior to the skateboarder appearing,)

# Set tracking for subjects that move or stop suddenly
[+1/+2] is effective for fast sports which may include sudden stop-start motion

[0]



↔

[+1]



Choose any of [Case] and push 🔒 button for Accel. / decel. Tracking, then adjust level with ◉ SET button.

[Accel./decel. tracking] is a tracking setting for subjects that experience significant changes in speed, move or stop suddenly. The default setting is [0], which is suited for shooting subjects that move at steady speeds, .

 [+1/+2] is suited to shooting subjects that stop/change direction suddenly or accelerate/decelerate suddenly, enabling it to continue to focus on the subject. +2 can handle greater changes in speed than +1, however, it can also be more prone to be affected by slight movements of the subject causing temporarily unstable focus accuracy.

 Other parameters are the same, so first try shooting with default settings, then increase the setting to [+1] and then [+2] settings when more effective settings are desired.



### Examples where the [0] setting is effective

Track and field events where constant speed is common

A track and field example where an athlete is running directly towards the camera. [0] is most suitable for taking shots of subjects in this situation.
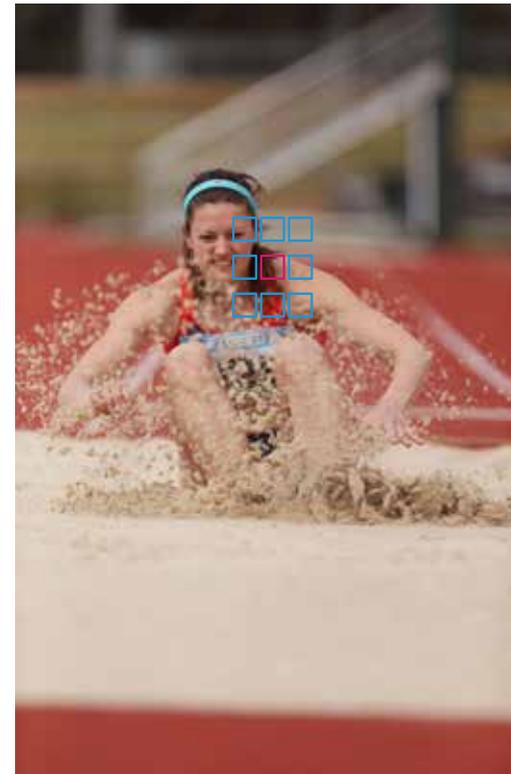


### Examples where the [+] setting more effective

Sports where athletes movement sudden stop or start

Example of a long-jump landing. As a result of the athlete suddenly decelerating as they land, a normal setting may not be able to capture it, however, it is possible to continue focusing on the athlete with [Accelerate / decelerate Tracking] set to [+1].

Blue color of focus point is for explanation only, and actually there is no blue indication available.

# Set how rapidly the AF point switches to a new AF point
[+1/+2] setting is most effective for sports with lots of movement where the subject can

# for moving subjects
easily move out of the selected AF point

[0]

[+1]

Choose any of [Case] and push ⚬▔button for AF pt auto switching, then adjust level with ◯ SET button.

The [AF pt auto switching] parameter is used for setting characteristics of AF point switching when the subject has a lot of movements. This parameter is only for switching between multiple AF points, so it is unavailable when using AF area selection modes [Single-point Spot AF] and [Single-point AF]. The [0] setting is a standard setting for moderate switching of AF points. The [+1/+2] settings are used when shooting subjects with erratic movement which

could happen in any directions. When a manually selected AF point (AF point being focused during Zone AF) leaves the subject, it will rapidly switch to surrounding AF points to capture the subject. Use the [+] setting when you want the camera to automatically decide (switch) to use a new AF point, and the [0] setting is used when you want to place emphasis on manually selected AF points to track the subject.

Examples where [0] is most effective, Sports with comparatively big movements, and are not very fast

Example of a golf bunker shot. The [0] setting is recommended when shooting subjects that do not move signifi-cantly.

Examples where [+] is effective, fast moving sports with big movements, where the AF points can lose the subject easily
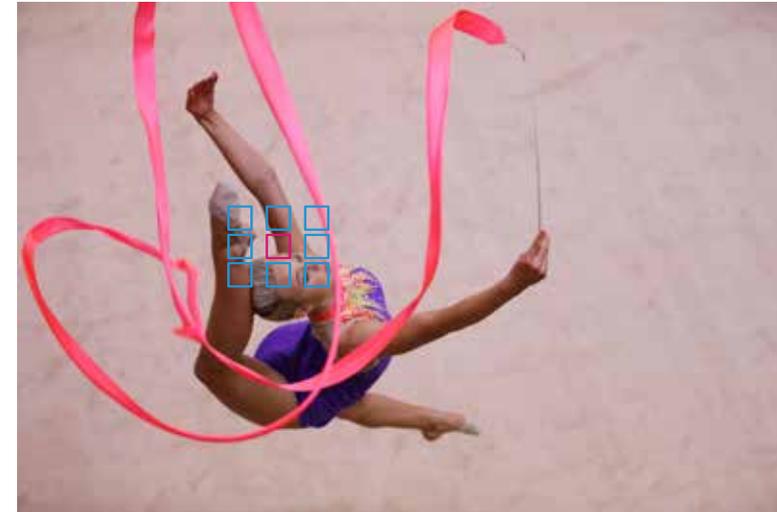
A rhythmic gymnast showing lots of movements in all directions. Use the [+1] setting in order to capture the movement by taking advantage of rapid shifting AF points.

**Tip for AF setting**    Change the level of "Accelerate / decelerate Tracking" and "AF point auto switching" to appropriate for shooting result.

"Accelerate / decelerate Tracking" and "AF point auto switching" are absolutely some part of Camera's automatic functions.  Therefore it is not always possible that these automatic functions reflect 100% of your intended idea. If you feel uncomfortable with shooting result, try to change the effect level of their functions.

Blue color of focus point is for explanation only, and actually there is no blue indication available.
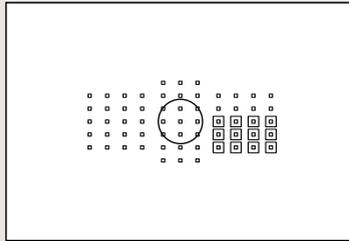
# Change the AF point selection to match your the shooting style
Choose whether only one AF point is used, or select from a vast array of AF selection options
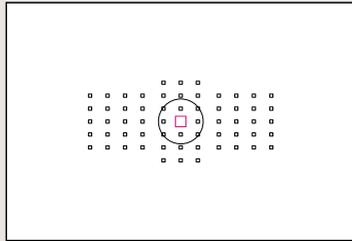

Using only one AF point


Using multiple AF points (zone)

AF modes can be selected to match the subject and conditions

The AF area selection modes make it possible to set how many of the 61-point AF are available to be used. Set the selection method of AF points that best matches the subject and shooting conditions.


Press the ⊞ button

→


The mode is changed each time the M-Fn button is pressed

**How to set the AF area selection mode**

After pressing the ⊞ button, each time the M-Fn button is pressed, the [AF area selection mode] changes. By setting the menu [AF4] tab's [AF area selection method] to [⊞ -> Main Dial], after pressing the ⊞ button, you can switch the mode with the Main Dial if you prefer.

The EOS-1D X is equipped with 61-point AF. Not only can all these AF points each be selected individually, but by also automatic switching between multiple AF points to track the subject, using all 61 AF points. The [AF area selection mode] setting allows the selection of these AF point modes.
The two types of modes that you can manually select a single AF point to focus with are [Single-point Spot AF] and [Single-point AF].

The four modes that can switch automatically between multiple AF points to capture moving subjects are AF point expansion (Manual selection, 4 points [Up, down, left, and right]), AF point expansion (Manual selection, surrounding 8 points), Zone AF, and Auto selection of 61 AF points (during AI Servo AF). Mode features are explained from P. 27 - 35, so you can select the mode best suited to your subject's characteristics and shooting scene.

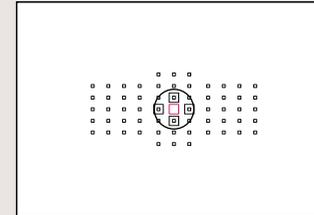## There are six AF area selection modes to choose from
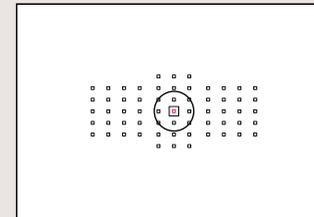

**Single-point Spot AF**
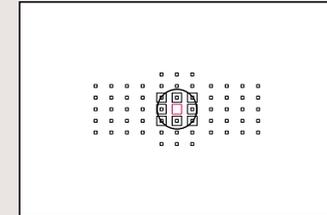It is possible to focus on a very narrow areas with a single manually selected point.
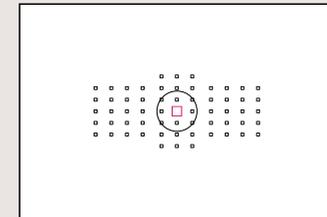

**Single-point AF**
The default setting. With this mode it is possible to focus with a single manually selected point.
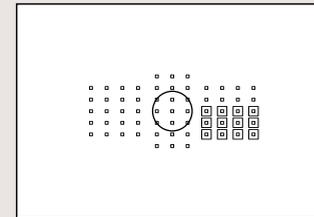

**AF point expansion (four surrounding points)**
Focus using one manually selected point assisted by 4 other AF points (up, down, left, and right).
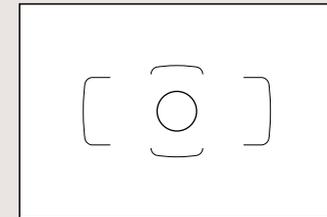

**AF point expansion (eight surrounding points)**
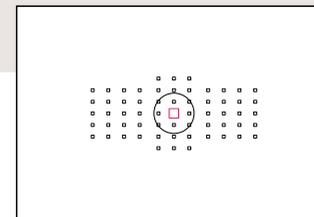Focus using one manually selected point assisted by the surrounding points.


**Zone AF**
The 61 AF points are divided into nine zones, and focus is made with the AF points in the selected zone.


**61-point automatic selection AF**
All AF points are used with this mode, and the camera selects and focuses automatically.



## Single-point AF is an easy to use mode for still life photos etc. in One-shot AF

Single-point AF is a mode where one manually selected AF point is used to focus. For experienced photographers or when it is easy to track the subject with a single AF point, AI Servo AF can be utilized when continuously shooting moving subjects, however, this mode is more effective for shooting still life and landscapes with One-shot AF mode.

# Focusing on a small or narrow area
It is possible to focus on pinpoints such as the eye when a helmet is being worn
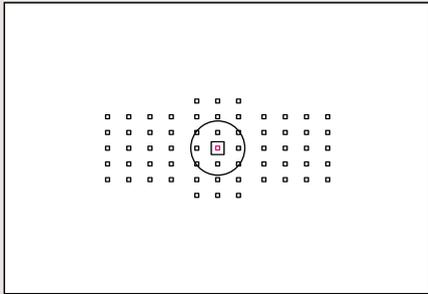


When set to [Single-point spot AF], a small rectangle is displayed inside the manually selected AF point.



Snapshot of a BMX rider wearing a helmet. Focus was pinpointed on the eye using [Single-point spot AF].

[Single-point spot AF] is effective when there is something like the edge of the helmet, or visor near the eye you want to focus on. With standard AF systems this can result in the AF system focusing on these edges rather than eye of the subject.



[Single-point spot AF] mode can be used to focus on a small area of the subject. This option makes it possible to focus on the exact area even when there is an obstacle near the area you want to focus on. A common example

when shooting sports is when you want to focus on the eyes of a rider wearing a helmet (see photos above). With normal settings, the AF point can easily get caught on the edge of the helmet near the eye, resulting in the camera

focus this edge. In situations like this, [Single-point Spot AF] makes it possible to focus more accurately on the rider's eye. As [Single-point Spot AF] only focuses on one very small area, it is not really suited to capturing fast moving

subjects when set to AI Servo AF and may take longer to focus than other AF area selection modes.

# For fast moving subjects that are difficult to track with a single AF point
This mode is ideal for sports photography
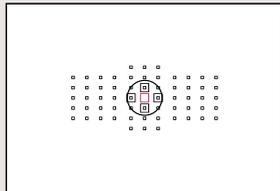


Shooting with AF point expansion (up, down, left, and right)
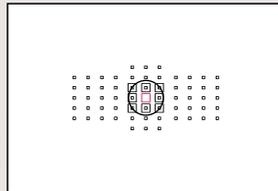
AF point expansion (surrounding points)



Viewfinder display of [AF point expansion]. The manually selected AF point lights up red.

**Hints and tips**   [Up, down, left, and right] and [surrounding] can be selected according to the difficulty of reading the movement, and the relative importance to the central AF point

When shooting subjects which might be difficult to determine movement, select [surrounding] mode, and when you want to focus on the area the covered by central (manually selected) AF point best to select the [Up, down, left, and right] mode.



[AF point expansion] mode can be used for a wide range of sporting events with erratic movement. [AF point expansion (Up, down, left, and right)] was able to accurately track the dribbling soccer player.



As switching of the AF point takes place centered on the selected AF point with [AF point expansion], this mode makes it easy to obtain the desired composition. This high jump athlete was captured with [AF point expansion (surrounding)].
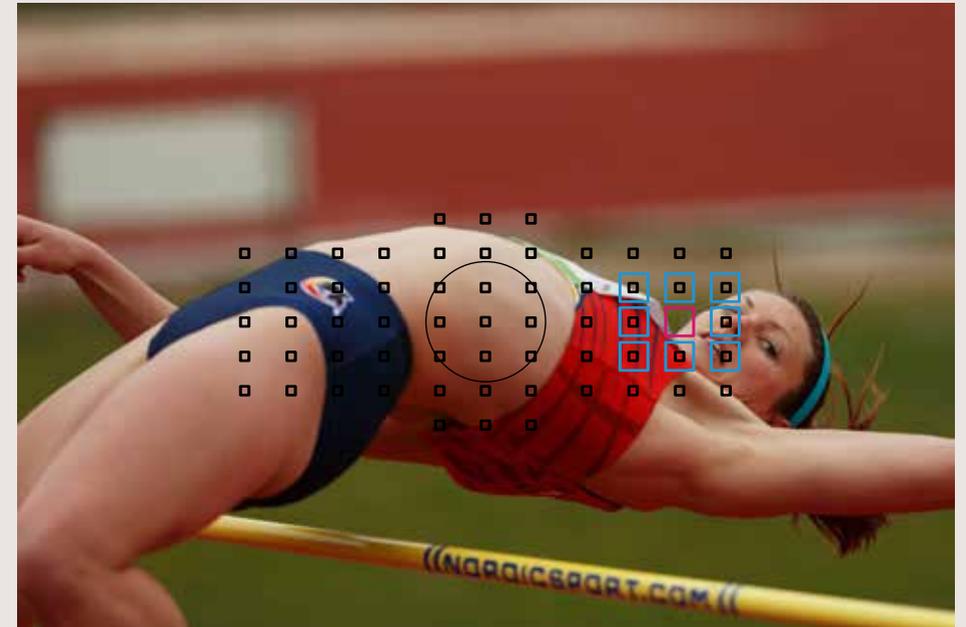
[AF point expansion] is an [AF area selection mode] that is best selected when shooting sports. Using this setting shifts the focus point used from a manually selected AF point, to an adjacent (up, down, left, and right, or surrounding) AF point, to aid focus tracking. When using this setting it is easier to obtain the desired composition as the subject is captured centering around the manually selected AF point. Based on the subject's movement characteristics, (i.e. likelihood of subject moving from the selected AF point) and the size of the subject within the frame, select either [AF point expansion] or [AF area selection mode]. In addition, when the subject has a lot of movement, setting Case 5 or Case 6 from the AF Configuration Tool is also recommended.

All focus points are superimposed on image because of explanation purpose only.
Blue color of focus point is for explanation only, and actually there is no blue indication available.

# Effective for capturing subjects within a known area

For larger subjects or subjects that subjects moving over a larger area
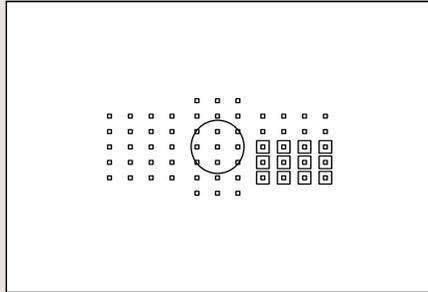
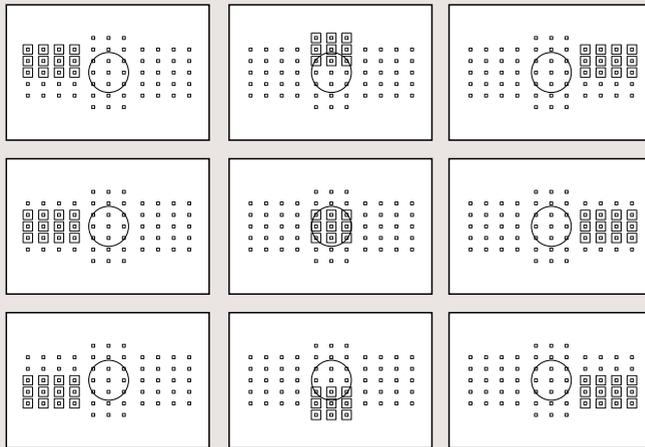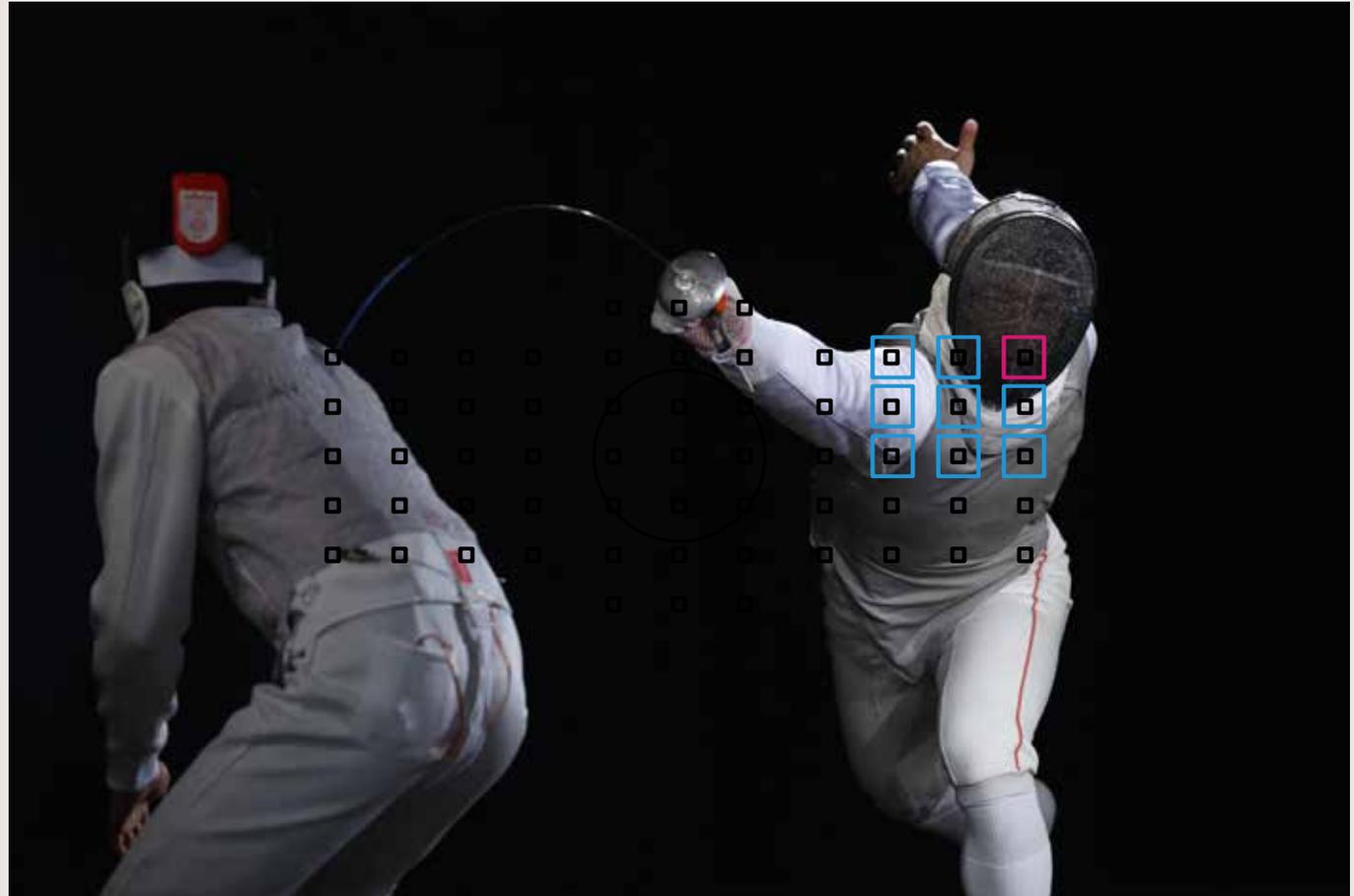The selected AF points display in [Zone AF].

A photo of a moment of action in fencing shot with [Zone AF]. In order to focus on the fencer's facial area, this shot was taken by selecting the upper right zone.

Selection can be made from nine focusing zones

The 61 AF points are divided into three blocks, left, center, and right, and each has upper, central, and lower zones, and the desired location can be selected from these nine zones.

With the [Zone AF] mode, one of the nine focusing zones can be selected, and the AF point is automatically selected from within that zone. Zone AF differs from [AF point expansion] with it's manually selected AF point, which AF tracking is based around. With Zone AF the camera decides where to focus on the subject within the zone, rather than targeting the subject (area) that you want to follow closely. This is more suited for situations where pinpoint focusing is required (the subject has no obstacles that may block the AF points). This mode is easy to use when you want to focus on areas of the subject that are a larger size, making it possible to easily capture the appropriate area.
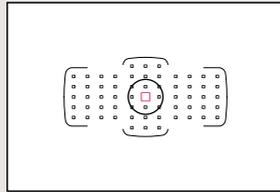
# AI Servo AF with all 61 points used for automatic tracking
Ideal for moving subjects that the old AF systems struggle with
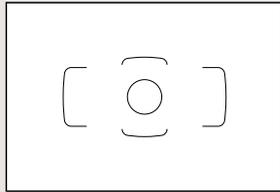
One-Shot AF                    AI Servo AF

When using [One-Shot AF], a single AF point is selected automatically from the 61 points. When using [AI Servo AF], AF starts from the manually selected AF point and then selects the most appropriate from all 61 points.

Capture the subject with an AF point near the center, and then by moving the camera to the left, you can compose a photo with space on the left side of the frame.

Shooting started by pinpointing focus on the leader of a cycling road race with a manually selected AF point. While taking continuous shots, the camera was moved to the left so the following cyclists on the left of the leader are rendered beautifully out of focus in the background.

**Hints and tips**

With "AI Servo AF" mode, the shooting starts from one AF frame that is optionally selected. So select one of any frames covering the position where object capturing starts. In addition, it will be easy to continue tracking thence very convenient, if the same start position is selected for Single Point AF and then AF area is switched to 61 Point Automatic Selection AF.

When using [Auto selection of 61 AF points] during [AI Servo AF], focusing will start from the manually selected AF point, the camera will the automatically change the AF point selecting from all 61 points as the subject moves. The AF points are arranged in a wide area so it is useful for capturing and tracking of subjects, however,

depending on the shooting conditions or if the subject is small, tracking may not be possible so caution is necessary. [Auto selection of 61 AF points] is effective when shooting subjects with movements that cannot be captured with [AF point expansion] or [Zone AF] (figure skating jump scenes for example).

Another effective use is when you want to take action images for publication/articles with lots of space in the composition for text etc. In the examples above shooting began by capturing the targeted cyclist first with a manually selected AF point (in the center etc.). From there, while continuous shooting and moving

the camera (lens) to the left or right, it is possible to position the lead cyclist off to one side and include a lot of background (focusing continues to track the cyclist by automatically switching AF points).

All focus points are superimposed on image because of explanation purpose only.

# The 61-point AF has numerous cross-type points for gre

Multi-point cross focusing is possible even using lenses with a maximum aperture

# at tracking performance

f-number of f/4

Up to 41-point cross-type AF with f/4 lenses, enabling superior tracking performance with most lenses
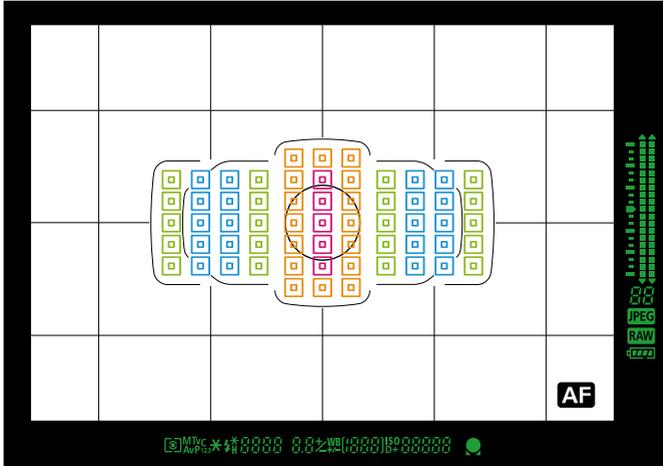


This diagram shows the distribution of the 61-point cross-type AF points in the EOS-1D X. The five AF points at the center operate as dual cross type AF points at f/2.8, 41 cross-type AF points are available for f/2.8-f/4 lenses and the centre 21 AF points serve as cross type with f/5.6. This makes it possible to focus with high precision and high tracking performance with the many AF points.

- ▫ f/2.8 and f/5.6 cross-type AF (dual-cross AF)
- ▫ f/5.6 cross-type AF
- ▫ f/4 (vertical-line focusing) + f/5.6 (horizontal-line focusing) cross-type AF
- ▫ f/5.6 (horizontal-line focusing) AF

*The colored AF points are for illustrative purpose only. This does not represent the actual viewfinder display.

Newly developed 61-point AF sensor

By increasing number of AF points greater freedom of composition is possible. The large number of cross-type AF points improves tracking performance. And as a result of two-line AF sensors in a zigzag pattern, tracking performance is improved for low contrast subjects as well.
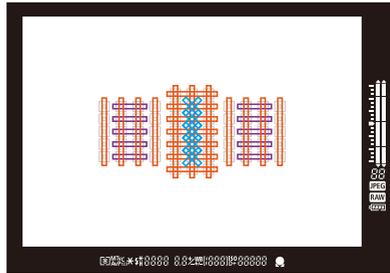


- ⊗ f/2.8 cross-type AF
- ▭ f/4.0 vertical-line focusing AF
- ▭ f/5.6 vertical-line focusing AF
- ▯ f/5.6 horizontal-line focusing AF

The AF system of the EOS-1D X has many attractive features such as the high level of composition freedom with 61 different AF points, AF area selection modes that utilize the merits of the multi-point AF system, and implementation of the AF Configuration Tool which takes advantage of the improved AI Servo AF. In addition to these, is the high precision and improved tracking performance

of each AF point to capture the subject. With the EOS-1D X AFfocusing system, most f/2.8 - f/4 lenses can utilize the high-performance 41-point cross-type AF points. As Canon produce a large number of high performance f/2.8 and f/4 AF points, this makes it possible for larger aperture lenses to achieve an even higher level of focusing precision with these AF points than ever before.

## 61-point AF (1) The number and placement of cross-type points used by the f/2.8 lenses



EF400mm F2.8L IS II USM



EF85mm F1.2L II USM

41-point cross-type AF points and 5 Dual Cross -f/2.8 AF points can be used with many lenses

Most large-aperture lenses with a maximum aperture of f/2.8, (or lower f-number values) are in Group A. With this group, the five f/2.8 dual-cross AF points, and the left and right f/4 and f/5.6 cross-type AF points (20 points) can be

used. There are a total of 41 cross-type points including the f/5.6 cross-type points. Lenses with a maximum aperture of f/2.8 in Group B, will only have a single f/2.8 dual-cross AF point in the center.
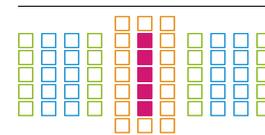


**Group A**
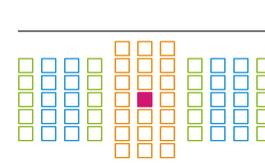**41-point cross-type AF, with five f/2.8 dual-cross AF points at the center**

AF focusing is possible with 61 points. All AF area selection modes can be chosen.

Major lenses

| | | | | |
|---|---|---|---|---|
| EF24mm f/1.4L USM | EF24mm f/1.4L II USM | EF28mm f/1.8 USM | EF35mm f/1.4L USM | EF35mm f/2 |
| EF50mm f/1.0L USM | EF50mm f/1.2L USM | EF50mm f/1.4 USM | EF50mm f/1.8 | EF50mm f/1.8 II |
| EF85mm f/1.2L USM | EF85mm f/1.2L II USM | EF85mm f/1.8 USM | EF100mm f/2 USM | EF135mm f/2L USM |
| EF135mm f/2L USM + Ext EF1.4x | | EF135mm f/2.8 (with soft focus) | | EF200mm f/1.8L USM |
| EF200mm f/1.8L USM + Ext EF1.4x | | EF200mm f/2L IS USM | | EF200mm f/2L IS USM + Ext EF1.4x |
| EF200mm f/2.8L USM | EF200mm f/2.8L II USM | EF300mm f/2.8L USM | EF300mm f/2.8L IS USM | EF300mm f/2.8L IS II USM |
| EF400mm f/2.8L USM | EF400mm f/2.8L II USM | EF400mm f/2.8L IS USM | EF400mm f/2.8L IS II USM | TS-E45mm f/2.8* |
| TS-E90mm f/2.8* | EF16-35mm f/2.8L USM | EF16-35mm f/2.8L II USM | EF17-35mm f/2.8L USM | EF20-35mm f/2.8L |
| EF28-70mm f/2.8L USM | EF24-70mm f/2.8L II USM | EF70-200mm f/2.8L USM | EF70-200mm f/2.8L IS USM | EF70-200mm f/2.8L IS II USM |

**Group B**
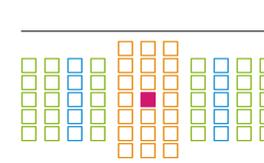**41-point cross-type AF, with one f/2.8 dual-cross AF point at the center**



Major lenses

| |
|---|
| EF14mm f/2.8L II USM |
| EF20mm f/2.8 USM |
| EF24mm f/2.8 |
| EF24mm f/2.8 IS USM |
| EF28mm f/2.8 IS USM |
| EF24-70mm f/2.8L USM |

AF focusing is possible with 61 points. All AF area selection modes are available.

**Group D**
**31-point cross-type AF, with one f/2.8 dual-cross AF point at the center**



Lens

| |
|---|
| EF28mm f/2.8 |

AF focusing is possible with 61 points. All AF area selection modes are available.

* Focus confirmation light works during manual focus (without any tilt or shift movements).
"Ext EF1.4x" is an abbreviation of various EF 1.4x Extenders.

## 61-point AF (2) The number and placement of cross-type points used by the f/4 lenses

EF70-200mm f/4L IS USM

EF 17-40mm f/4 L USM

### 41-point cross-type AF points can be used

In Group C, 41-point cross-type AF points can be used with lenses having an f/4 maximum aperture (or f/2.8 maximum aperture lenses using the EF 1.4x Extenders). Of these, the 20 points on the left and right are f/4 and f/5.6

cross-type AF providing even higher precision focus in these areas than with previous cameras. Some macro lenses with a maximum aperture of f/2.8 are also included.
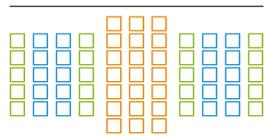
**Group C**
**41-point cross-type AF points available, and they can be used with a high level of tracking performance**
AF focusing is possible with all 61 points.
All AF area selection modes are available.

☐ f/2.8 and f/5.6 cross-type AF (dual-cross AF)

☐ f/5.6 cross-type AF

☐ f/4 (vertical-line focusing) + f/5.6 (horizontal-line focusing) cross-type AF

☐ f/5.6 (horizontal-line focusing) AF

Major lenses

| | | |
|---|---|---|
| EF50mm f/2.5 Compact Macro | EF100mm f/2.8L Macro IS USM | EF300mm f/4L IS USM |
| EF200mm f/2.8L USM + Ext EF1.4x | EF200mm f/2.8L II USM + Ext EF1.4x | EF300mm f/2.8L USM + Ext EF1.4x |
| EF300mm f/2.8L IS USM + Ext EF1.4x | EF300mm f/2.8L IS II USM + Ext EF1.4x | EF400mm f/2.8L USM + Ext EF1.4x |
| EF400mm f/2.8L II USM + Ext EF1.4x | EF400mm f/2.8L IS USM + Ext EF1.4x | EF400mm f/2.8L IS II USM + Ext EF1.4x |
| EF135mm f/2L USM + Ext EF2x | EF200mm f/1.8L USM + Ext EF2x | EF200mm f/2L IS USM + Ext EF2x |
| EF8-15mm f/4L Fish eye USM | EF17-40mm f/4L USM | EF24-105mm f/4L IS USM |
| EF70-200mm f/4L USM | EF70-200mm f/4L IS USM | EF70-200mm f/2.8L USM + Ext EF1.4x |
| EF70-200mm f/2.8L IS USM + Ext EF1.4x | EF70-200mm f/2.8L IS II USM + Ext EF1.4x | EF500mm f/4L IS USM |
| EF500mm f/4L IS II USM | EF600mm f/4L IS USM | EF600mm f/4L IS II USM |

**Many f/2.8 maximum aperture lenses using a 1.4x extender can utilize 41-point AF**

On the EOS-1D X equipped with a full size sensor, an extender is often used for sports photography etc. where longer focal lengths are required. When many large aperture telephoto lenses (200 - 400 mm f/2.8 class) are used with the Extender EF 1.4x attached, the maximum aperture will become f/4 and these combinations therefore are included in Group C. High performance AF can be utilized with the 41-point cross-point AF Therefore, offering new possibilities to use an extender.

## 61-point AF (3) The number and placement of cross-type points used by the f/5.6 lenses

EF100-400mm f/4.5-5.6L IS USM

EF70-300mm f/4-5.6L IS USM

### Majority of lenses can make use of the central 21-point cross-type AF

With the exception of a small group of lenses (groups F and G), almost all lenses that have a maximum aperture of f/4 or greater are included in Group E, and can use the 21-point

cross-type AF (f/5.6 cross-type) in the central area. Many f/2.8 maximum aperture large aperture telephoto lenses when used with the various EF 2x Extenders will fit into this group.
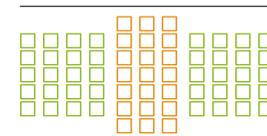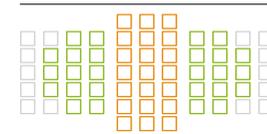
**Group E**
**The central 21-point cross-type AF can be used**
AF focusing is possible with 61 points. All AF area selection modes are available.

Major lenses

| | | |
|---|---|---|
| EF 50mm f/2.5 compact macro + life size converter EF | | EF100mm f/2.8 Macro USM |
| EF400mm f/5.6L USM | EF500mm f/4.5L USM | EF300mm f/4L USM + Ext EF1.4x |
| EF300mm f/4L IS USM + Ext EF1.4x | EF400mm f/4 DO IS USM + Ext EF1.4x | EF500mm f/4L IS USM + Ext EF1.4x |
| EF600mm f/4L USM + Ext EF1.4x | EF600mm f/4L IS USM + Ext EF1.4x | EF200mm f/2.8L USM + Ext EF2x |
| EF200mm f/2.8L II USM + Ext EF2x | EF300mm f/2.8L USM + Ext EF2x | EF300mm f/2.8L IS USM + Ext EF2x |
| EF300mm f/2.8L IS II USM + Ext EF2x | EF400mm f/2.8L USM + Ext EF2x | EF400mm f/2.8L II USM + Ext EF2x |
| EF400mm f/2.8L IS USM + Ext EF2x | EF400mm f/2.8L IS II USM + Ext EF2x | EF500mm f/4L IS II USM + Ext EF1.4x |
| EF600mm f/4L IS II USM + Ext EF1.4x | EF70-200mm f/2.8L USM + Ext EF2x | EF70-200mm f/2.8L IS USM + Ext EF2x |
| EF70-200mm f/2.8L IS II USM + Ext EF2x | EF70-200mm f/4L USM + Ext EF1.4x | EF70-200mm f/4L IS USM + Ext EF1.4x |
| EF28-300mm f/3.5-5.6L IS USM | EF70-300mm f/4-5.6 IS USM | EF70-300mm f/4-5.6L IS USM |
| EF70-300mm f/4.5-5.6 DO IS USM | EF100-400mm f/4.5-5.6L IS USM | |

**Group F**
**21-points cross-type available, total of 47 AF points available to select**

Major lenses

| |
|---|
| EF800mm f/5.6L IS USM |
| EF35-350mm f/3.5-5.6L USM |

AF focusing is possible with 47 points (61-point AF is not possible). All AF area selection modes can are available.

**Group G**
**15-points cross-type available, total of 33 AF points available to select**

Lenses

| |
|---|
| EF180mm f/3.5L Macro USM |
| EF180mm f/3.5L Macro USM + Ext EF1.4x |
| EF1200mm f/5.6L USM |

AF focusing is possible with 33 points (61-point AF is not possible). All AF area selection modes can are available.
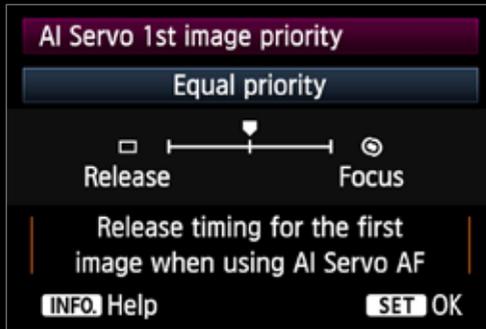
# AF operation and Image/Focusing Priority settings
You can set whether focusing or shutter-release has priority

## Image/Focusing parameters during AI Servo [Set in the AF 2 tab]

You can decide whether to put priority on focusing or shutter-release
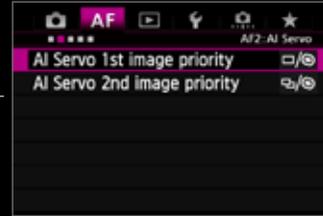
### 1   1st image parameter [AI Servo 1st image priority]

**Equal priority**

This setting gives an equal priority to both focus and shutter-release
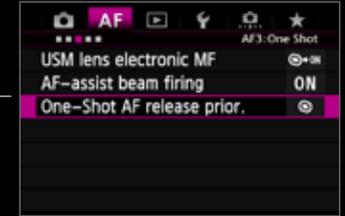
**Release priority**

This setting gives priority to shutter-release and will capture an image even if it is out of focus. It is effective when you want to minimize any delay when shooting, sacrificing AF performance
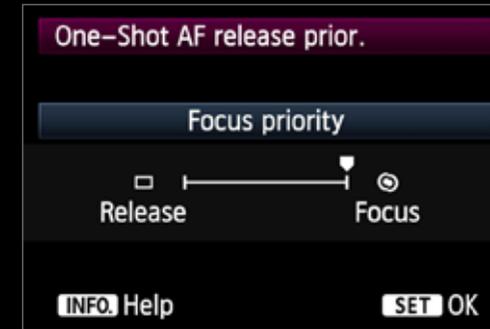
**Focus priority**

This setting gives priority to focusing on a subject and it cannot capture an image unless it is in focus. It is recommended when you want to ensure your images are in focus sacrificing response speed.

### 2   Parameters during continuous shooting [AI Servo 2nd image priority]

**Equal priority**

This setting gives an equal priority to both focus and shooting speed during continuous shooting. The speed of continuous shooting may also slow down when it is dark, or low contrast.

**Shooting speed priority**

This setting gives priority to a continuous shooting speed rather than priority on focus. Continuous shooting speed will not drop. Effective when you want to shoot with a fixed interval between photos.

**Focus priority**

This setting gives priority to focusing rather than continuous shooting speed. It cannot shoot a picture unless it is in focus, greatly reducing continuous shooting speed. It is recommended when you want to shoot only after focusing on the subject.

## Image/Focusing parameter for One-Shot AF [Set in the AF3 tab]

You can decide whether to put priority on focusing or shutter-release
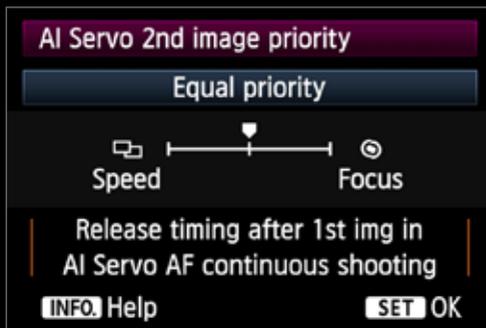
### [One-Shot AF release priority]

**Focus priority**

You cannot shoot a picture unless it is in focus. It is effective when you want to shoot only after focusing on the subject.

**Release priority**

Priority is on the shooting timing rather than focus. It is recommended only when you want to put priority on capturing brief photo opportunities rather than focus.

The [AF2] and [AF3] tabs include settings related to AF operation parameters and shutter-release timing. With these items it is possible to set which has priority (or a balance) between focusing with AF, and the shutter-release.
The [AF2] tab contains the [AI Servo 1st image priority] and [AI Servo 2nd image priority] parameters for AI Servo AF. The priority on focus and shutter-release can be set for both the 1st image and subsequent images during continuous shooting. With [Focus priority], shooting is delayed until after the camera has focus on a subject (this could be just a few milliseconds). With [Release priority/Shooting speed priority] shooting takes place instantly without waiting to focus, resulting in possible out of focus images. The default [Balance priority] sets equal priority on both (attempting to focus without major delays to shutter release timings), ideal for most shooting situations.
When using One Shot AF the shooting priority can also be altered via the [One-Shot AF release priority] option in the [AF3] tab. The priority of focusing and shutter-release can be altered in the same way as about during AI servo AF. However there is no [Balance priority], and instead [Focus priority] is the default setting.

# Automatically switching of AF points for horizontal and vertical shooting
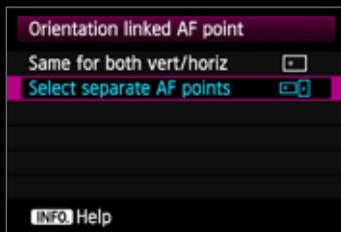Presetting the AF points, makes it easier to capture the desired composition for horizontal and vertical shooting
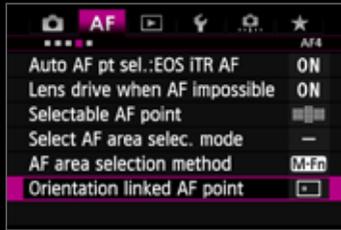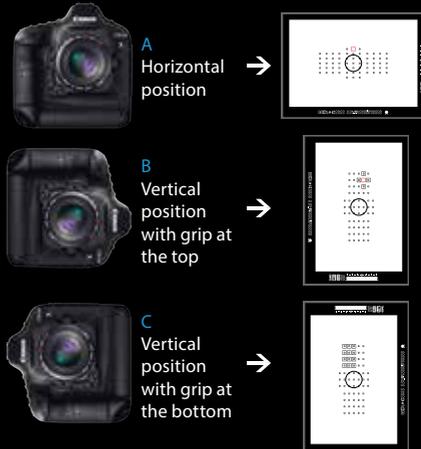
Use [Orientation linked AF point] in the [AF4] tab to set the AF points for each orientation

Set up steps

1  Select the [Select separate AF points] option from [Orientation linked AF point]

2  Change the camera position and select the desired AF point or AF mode

A
Horizontal position

B
Vertical position with grip at the top

C
Vertical position with grip at the bottom

3  By changing the camera's orientation, the set AF points and modes will switch automatically

First, select [Select separate AF points] from [Orientation linked AF point]. Next, select the AF area selection mode and the manually selected AF point for each of the positions (orientation) of A) Horizontal position, B) Vertical position with grip at the top, and if required C) Vertical position with grip at the bottom. The settings will automatically be remembered. Now, for each of these orientations the camera will automatically switch to the select mode and AF points.
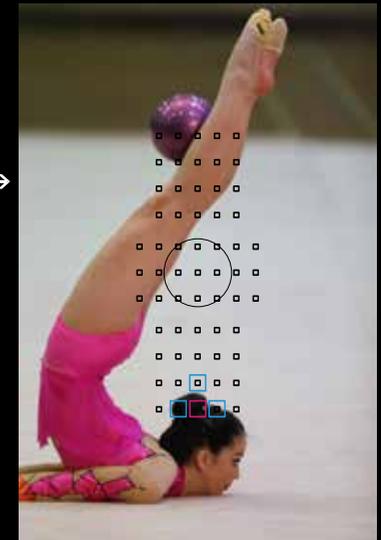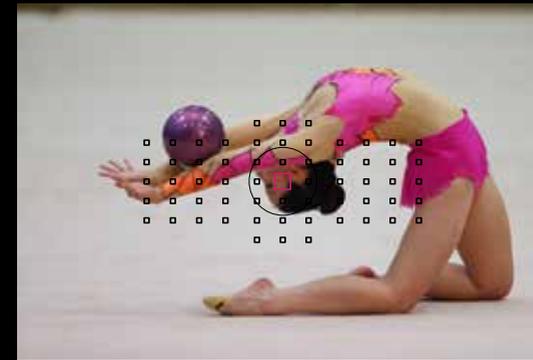
Note:

Be careful you do not forget that this setting has been set

When shooting with different orientations the camera will change between the AF area selection mode, and manually selected AF point settings, and the last setting will be remembered. Therefore, you should check the mode and AF point position before beginning a n

This shot was taken with the orientation option set so that when in the horizontal position the central AF point was set, but when the grip is at the top in a vertical position, the AF point is at the bottom center. In rhythmic gymnastics the head may be close to the floor during the performance, so the AF point was set beforehand with this in mind.

During sporting events, or concerts, it is common shoot while changing camera the orientation between horizontal and vertical positions. The EOS-1D X has 61 AF points to manually choose from which is a lot. This means it has a high degree of composition freedom, however, if you select the top left AF point in the horizontal position for example, if you change the orientation so the grip is at the top in the vertical position, the AF point will end up at the bottom left. If you want to capture the athlete's entire body and focus on their face when shooting, you will have to quickly select another AF point. In situations like this, AF point settings for each orientation is extremely useful.

By selecting [Select separate AF points] from [Orientation linked AF point], individual settings for each of the AF area selection modes and the manually selected AF points can be memorized. In the previous case for example, if you set the center upper edge AF point beforehand when in the vertical position with the grip at the top, when switching from the horizontal to vertical position, it is possible to have the AF point line up with the position of the face instantly. By envisioning the composition you want to capture and setting the appropriate AF point or AF mode beforehand, will result in you being able to carry on shooting as you change orientations.

# Instantly recalled AF points using [Switch to registered AF point]
Store your preferred AF point for instant access at the touch of a button



Use [Custom Controls]
from [C.Fn5: operation]

Using the [Custom Controls] option from the custom function [C.Fn5: operation] menu allows an AF point to be registered and recalled instantly. This function can also be used to assign various functions to the different camera controls.
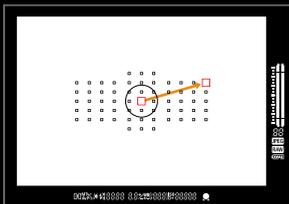


**Set up steps**

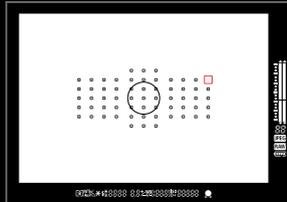**1** There are two options to customize the controls to register and AF point

A  Assign [Metering - AF start] to the AF-ON button, or the ✳ button then press info and select [Registered AF point)

B  Assign [Switch to registered AF point] to the ✪ button, LENS, or M-Fn2 button. Press info to select if the option is applied only when the button is held or not

**2** Manually select AF points you will want to recall. (This is possible with all AF area selection modes except Zone AF)



**3** Press the ⊞ button while pressing the ISO button until you hear a beep.



**4** After selecting another AF point or AF area mode, press the assigned button (selected in stage 1) to switch to the registered AF point.



AF point registration and usage is described above. Also, for more advanced usage this setting can be combined with [Orientation linked AF point] setting (described on pages 42-43). Selecting the option [Select separate AF points], from the [Orientation linked AF point] option makes it is possible to register and recall AF points separately for all three positions, vertical (grip top/bottom), and horizontal as well as the remembered AF point for orientation.

When the AF-ON button, or the ✳ button are assigned the function [Metering - AF start], instant switching of registered AF points becomes possible. Press the INFO. button in the [Customize Controls] assignment screen, and then select [Registered AF point]. Now when the button is held the AF will use the registered AF pointed.



⇕
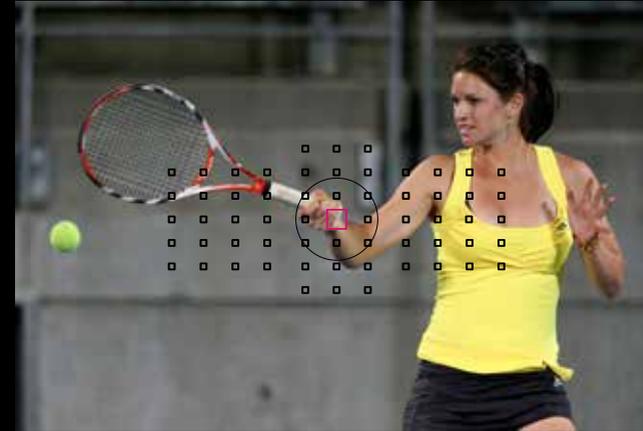


Shooting the side to side movement of tennis strokes. After photographing the player positioned to the right side with a manually selected AF point at the upper right, it was switched to the AF point registered at the upper left with a single push of a button, then the player was photographed returning a backhand shot positioned to the right side.

Another function that is effective for quickly switching AF points while shooting is AF point registration and recall feature possible using [Custom Controls]. There are several methods to achieve this; one is to assign registered AF points to a button via [Custom Controls] function. The second method is AF point or [AF area selection mode] registration. By carrying out either of the two options, you can press a buttons and instantly switch between registered AF points.
By registering frequently used AF points, or a

strategically placed AF point, enables instant response without the need to reframe or alter the cameras position. Further refinement in operation is possible, with the <Depth-of-field preview>, and the <Lens AF stop> buttons when set to ([Switch to registered AF point] setting). These buttons provide the possibility to [Switch only while pressed] or [Maintain switching until pressed again] settings, making detailed customization possible. Using these settings enables the camera suit the way you shoot.

# Instantly switching AF area selection modes with a single button

## Assigning the AF modes you want to switch is convenient using [Custom Controls]

Assigning functions



**AF-ON**
By pressing the assigned button
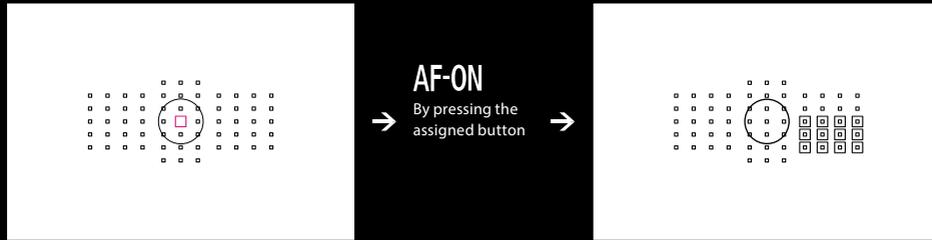
On shooting with optional 'AF area selection mode'

Switchable into set 'AF area selection mode'

By assigning an [AF area selection mode] to a specific button in the [Custom Control] screen, you can continue shooting and switch AF areas instantly with the press of single button without having to move your eye from the viewfinder.
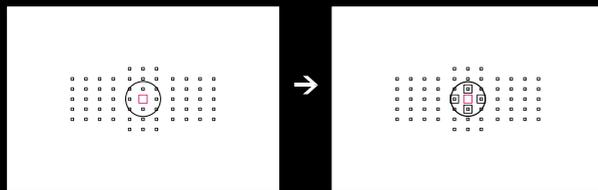
## Examples of instantly switching AF area selection modes

From [Single-point AF] to [Spot AF]
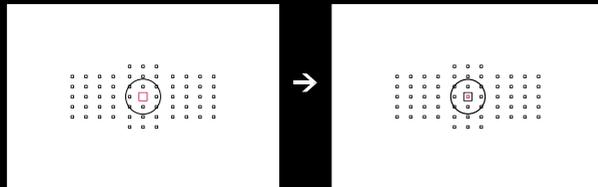


Shooting the pit stop in motor sports for example. After shooting wide shots at the wide angle end of a zoom lens with [Single-point AF], quickly zoom in, and when targeting the driver's eye avoiding the helmet using [Spot AF].

From [Single-point AF] to [AF point expansion]



An example is soccer etc. where the player appears quite small in the viewfinder, then comes closer to fill the screen. In this case, by switching to [AF point expansion], it is possible to steadily track low contrast portions of the uniform even as it gets larger.

From [AF point expansion] to [61-point automatic selection AF]
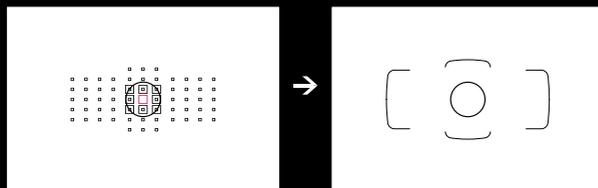


Switching to [61-point automatic selection AF] is effective with figure skating where the skater comes from far away to fill up the screen as they approach. You can leave AF point selection up to the camera, and concentrate on framing as you shoot.

## Buttons that can be assigned to switching AF area selection modes

There are the four buttons that can be assign to switch AF functions. The **AF-ON** button and ✳ button can be assigned with [Custom Controls] to [Register/apply shooting functions], and the **LENS** button and ✿ button can be assigned with [Switch to registered AF functions].

'Register/apply shooting functions' assigns.

**AF-ON** AF-ON button     ✳ AE lock button

'Switch to registered AF functions' assigns.

**LENS** lens AF stop button     ✿ depth-of-field preview button

**M-Fn2** Multi function2button

Set up steps

### [Register/apply shooting functions]



Assign to the **AF-ON** button, or the ✳ button to [Register/apply shooting functions]



Press the **INFO.** button



Select the [AF area selection mode]

Assign [Register/apply shooting functions] to the **AF-ON** button or the ✳ button with the custom function's [Custom Controls].  Press the **INFO.** button on the assign function's selection screen, (various functions can be set) and select the [AF area selection mode] that you want to use.
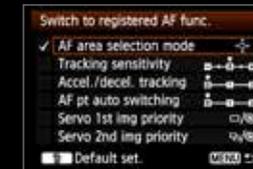
### [Switch to registered AF functions]



Assign to the **LENS** or depth of field preview button



Press the **INFO.** button now



Select the [AF area selection mode]

Assign [Switch to registered AF functions] to the **LENS** button or ✿ button with [Custom Controls]. Press the **INFO.** button on the assign function's selection screen, and from various AF functions, select the [AF area selection mode], and select the mode that you want to use.

AF area selection modes such as [Single-point AF] and [AF point expansion] are effective for switching according to the size and type of subjects. While looking through the viewfinder it can be difficult to change the mode while tracking the subject. However, by assigning the AF area selection modes you want to use, to specific buttons, you can switch instantly while continuing shooting. There four buttons that can be assigned. Think about the characteristics

of the sports and subjects you want to shoot beforehand, and assign the AF area selection modes you think you will use. By assigning different modes to each of the four buttons, you can control up to four modes at will. In addition, aside from the AF area selection modes, various functions can be registered and applied, so by making settings as needed, you have the flexibility to handle conditions as they change.