

# Package ‘qccrs’

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**Type** Package

**Title** Quality Control Charts under Repetitive Sampling

**Version** 0.1.0

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**Description** Functions to calculate Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k, k1 and k2 for quality control charts under repetitive sampling as given in Aslam et al. (2014) (<DOI:10.7232/iems.2014.13.1.101>).

**Depends** R (>= 3.1)

**Imports** dplyr, magrittr, purrr, stats, tibble

**License** GPL-2

**URL** <https://github.com/myaseen208/qccrs>,  
<https://myaseen208.github.io/qccrs/>

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 6.1.1

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**Suggests** testthat

**NeedsCompilation** no

**Repository** CRAN

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npcrs1	<i>NP Control Charts under Repetitive Sampling with single positive integer.</i>
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### Description

Calculates Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k for NP control charts under repetitive sampling as given in Aslam et al.(2014)

### Usage

```
## Default S3 method:
npcrs1(.n, .p0, .f, .ssize = NULL, .k = NULL,
       .kr = NULL)
```

### Arguments

.n	Sample Size
.p0	probability that process is in control
.f	Size of the Shift
.ssize	Number of samples with replacement at each iteration
.k	Positive Constant
.kr	Random Positive Constant

### Value

ARL0, ARL1 and K

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## References

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **13**(1):101-106.

## Examples

```
library(magrittr)
npcrs1(
  .n      = 60
  , .p0   = 0.10
  , .f    = 0.10
  , .k    = 2.6432
)
```

```
npcrs1(
  .n      = 60
  , .p0   = 0.10
  , .f    = 0.10
  , .ssize = 1000
  , .kr   = 4
)
```

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npcrs2

*Attributes Control Charts under Repetitive Sampling with two positive integers*

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## Description

Calculates Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k1 and k2 for attributes control charts under repetitive sampling as given in Aslam et al.(2014)

## Usage

```
npcrs2(.n, .p0, .f, .ssize = NULL, .k1 = NULL, .k2 = NULL,
       .k1r = NULL, .k2r = NULL)
```

## Default S3 method:

```
npcrs2(.n, .p0, .f, .ssize = NULL, .k1 = NULL,
       .k2 = NULL, .k1r = NULL, .k2r = NULL)
```

## Arguments

.n	Sample Size
.p0	probability that process is in control
.f	Size of the Shift

.ssize	Number of samples with replacement at each iteration
.k1	Fixed positive constant
.k2	Fixed positive constant
.k1r	Random positive constant
.k2r	Random positive constant

**Value**

ASN, ARL, K1 and K2

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**References**

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **13**(1):101-106.

**Examples**

```
library(magrittr)
npcrs2(
  .n      = 40
, .p0    = 0.10
, .f      = 0.1
, .ssize = 1000
, .k1r    = 4
, .k2r    = .95
)
```

```
npcrs2(
  .n      = 40
, .p0    = 0.10
, .f      = 0.1
, .k1     = 3.13
, .k2     = .731
)
```

**Description**

The qccrs package provides functionalities to calculate Average Sample Numbers (ASN), Average Run Length (ARL1) and value of k, k1 and k2 for quality control charts under repetitive sampling as given in Aslam et al. (2014).

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**References**

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **1**(13):101-106.

**Description**

Calculates the Average Sample Number and Average Run Length as given in Aslam et al. (2014)

**Usage**

```
xrs(.c, .n, .k1, .k2)

## Default S3 method:
xrs(.c, .n, .k1, .k2)
```

**Arguments**

.c	Size of the Shift
.n	Sample Size
.k1	Positive Integer
.k2	Positive Integer

**Value**

Average Sample Number (ASN) and Average Run Length (ARL1) for xbar control charts under repetitive sampling

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**References**

Aslam, M., Azam, M. and Jun, C. (2014). New Attributes and Variables Control Charts under Repetitive Sampling. *Industrial Engineering & Management Systems*. **1**(13):101-106.

**Examples**

```
library(magrittr)
library(purrr)

c(0.0, 0.1, 0.20, 0.3, 0.4, 0.5, 1.0, 1.5, 2, 3) %>%
purrr::map(
function(x)
  xrs(
    .c      = x
    , .n    = 10
    , .k1   = 2.9301
    , .k2   = 0.9825))
```

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