

### IX.3.3B-SYSTEM-FSTGQ SUBROUTINE FSTGQ

#### Description

Subroutine FSTGQ makes stage-discharge conversions or obtains information about a Rating Curve.

Missing values are allowed in the input time series for stage-discharge conversions.

#### Calling Sequence

CALL FSTGQ (RCID,ICONV,ITSPOS,NVALS,TSDELT,QDATA,HDATA,LOCPTR,T1,  
CURVLO,CURVUP,XSECLO,XSECUP,METHOD,FLSTAG,NEEDEX,CARRYO,  
JULDAY,INITHR,IRCHNG,IERROR,IPRWRN)

#### Argument List

<u>Argument</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
RCID	Input	A8	1	Rating Curve identifier
ICONV	Input	I*4	1	Conversion indicator: 0 = no conversion; get values for CURVLO, CURVUP, XSECLO, XSECUP, METHOD and FLSTAG 1 = convert stage to discharge 2 = convert discharge to stage
ITSPOS	Input	I*4	1	Position in QDATA and HDATA arrays where the first value to be converted is located; not used if ICONV=0
NVALS	Input	I*4	1	Number of stage or discharge values to be converted; not used if ICONV=0
TSDELT	Input	R*4	1	Data time interval of discharge and stage data in hours; not used if ICONV=0
QDATA	Input (ICONV=2) Output (ICONV=1)	R*4	*	Discharge data time series (units of CMS); not used if ICONV=0
HDATA	Output (ICONV=2) Input	R*4	*	Stage data time series (units of M); not used if ICONV=0

<u>Argument</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
	(ICONV=1)			
LOCPTR	Input	I*4	*	Work space for loop rating pointer array
T1	Input	R*4	*	Work space for loop rating timing array
CURVLO	Output	R*4	1	Lower stage limit of the Rating Curve (units of M)
CURVUP	Output	R*4	1	Upper stage limit of the Rating Curve (units of M)
XSECLO	Output	R*4	1	Lower elevation (above Mean Sea Level) limit of the cross-sectional data (units of M); not defined if NEEDEX = 1 or 4
XSECUP	Output	R*4	1	Upper elevation (above Mean Sea Level) limit of the cross-sectional data (units of M); not defined if NEEDEX = 1 or 4
METHOD	Output	I*4	1	Conversion method: 0 = single value Rating Curve used 1 = dynamic loop Rating Curve
FLSTAG	Output	R*4	1	Flood stage (units of M)
NEEDEX	Output	I*4	1	Extension indicator: 0 = no extension of Rating Curve 1 = log-log extension 2 = hydraulic extension 3 = log-log extension at lower end; hydraulic extension at upper end of Rating Curve 4 = linear extension 5 = linear extension at lower end; hydraulic extension at upper end of Rating Curve
CARRYO	Both	R*4	4	Carryover array; not used if ICONV=0: CARRYO(1) = previous stage (units of M) CARRYO(2) = previous discharge (units of CMS) CARRYO(3) = change in previous two discharge

<u>Argument</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
				values (ICONV=1) change in previous two stage values (ICONV=2) CARRYO(4) = number of missing data values immediately prior to ITSPOS
JULDAY	Input	I	2	Julian day (internal clock) of initial value to be converted; not used if ICONV=0
INITHR	Input	I	1	Hour (internal clock) of initial value to be converted; not used if ICONV=0
IRCHNG	Output	I	1	Rating Curve change indicator: 0 = no change occurred 1 = Calibration run exceeded last effective date of Rating Curve; CURVLO, CURVUP, XSECLO, XSECUP, METHOD and FLSTAG based on Rating Curve at the beginning of the period
IERROR	Output	I	1	Error indicator: 0 = normal return 1 = error occurred; output time series could not be filled
IPRWRN	Input	I	1	Print warning indicator: 0 = do not print warning if stage is below minimum allowable value 1 = print warning

### Method

Subroutine FSTGQ uses the information in common block FRATNG [[Hyperlink](#)] to make the stage-discharge conversions or supply the requested information about the Rating Curve. Stage-discharge conversions are based on a single valued Rating Curve or by the dynamic loop procedure described in Sections II.4-STAGEQ [[Hyperlink](#)] and II.4-STAGEQ-LOOP [[Hyperlink](#)]. Rating Curves are extended when necessary by using a hydraulic extension when cross-sectional data are available or a log-log or linear extension when there is no cross-sectional data.