

--	Pipelines for NetRexx only; delegates to comment
<	Implemented as in CMS; delegates to diskr .
>	Implemented as in CMS; delegates to diskw .
>>	Implemented as in CMS; delegates to diska .
?	Not implemented. Help.
3270bfra	Not implemented. Old terminal support.
3270enc	Not implemented. Old terminal support.
abbrev	>>---ABBREV--+-----+----->< +--word--+-----+--+ +--number--+-----+--+ +--ANYCASE--+ Pipes for NetRexx only
aftfst	Not implemented. Open file information
ahelp	Not implemented. Author's help
all	Not implemented. Select all records containing a specified string or strings determined by an expression
apldecode	Not implemented. Old APL language
aplencode	Not implemented. Old APL language
append	>>---APPEND-- <i>string</i> -----><
array	Pipes for NetRexx
arraya	Pipes for NetRexx
arrayr	Pipes for NetRexx
arrayw	Pipes for NetRexx
asatomc	Not implemented. Old printer control
asmcont	Not implemented. Assembler language
asmfind	Not implemented. Assembler language
asmnfind	Not implemented. Assembler language
asmxpnd	Not implemented. Assembler language
between	>>---BETWEEN--+-----+--/string/--+--/string/--+----->< +--ANYcase-+ +--n-----+
bfs	Not implemented. Read Bit Stream File
bfsdirectory	Not implemented. Read Bit Stream Directory
bfsquery	Not implemented. Read Bit Stream current Directory
bfsreplace	Not implemented. Bit Stream file
bfsstate	Not implemented. Read Bit Stream file
bfsxecute	Not implemented. Read Bit Stream file
block	Not implemented. See fblock. Reformat records
buffer	>>---BUFFER--+-----+----->< +--n--+-----+--+ +--/string/--+
buildscr	Not implemented. Old terminal
casei	>>---CASEI-- <i>stage</i> -----><
change	+--1-*-----+ >>---CHANGE--+-----+-----+-----> +--ANYcase-+ +--inputRange-----+ <-----+ +--(--+range--+--)-+ >--+--/string1/string2/-----+--+----->< +--/string/--/string/--+ +--numorstar--+

chop	<pre> +--80-----+ >>--+-CHOP-----+--+-----+----->< +--TRUNCate--+ +--column--+ </pre>
cms	Not implemented. OS dependent.
collate	Not implemented. Match records from 2 streams.
combine	Not implemented. Joins bit-oriented streams.
command	<pre> >>--COMMAND--+-----+----->< +--string--+ </pre> <p>-- input stream 0 is for commands</p> <p>-- input stream 1 is stdin</p> <p>-- output stream 0 is stdout</p> <p>-- output stream 1 is the return code</p> <p>-- output stream 2 is stderr</p>
configure	Not implemented. Create specifications for CMS Pipelines in z/VM.
compare	<pre> +--TRINARY--+ (1) +--PAD SPACE--+ >>--COMPARE--+-----+----->< +--BINARY--+ (2) +--PAD-Xorc--+ <-----+ +--ANY DString-----+ (4) (5) +--EQUAL DString-----+ (4) +--LESS DString-----+ (3) (4) +--MORE DString-----+ (3) (4) +--NOTEQUAL DString--+ (4) </pre> <p>(1) -1 = Primary is shorter/less, 0 = equal, 1 = Secondary is shorter/less</p> <p>(2) 0 = equal, 1 = not equal</p> <p>(3) Primary is LESS/shorter (or MORE/longer) than secondary</p> <p>(4) <i>DStrings</i> can use any of the following escapes (or the lowercase) for the unequal situation:</p> <p>\C (count) for the record number,</p> <p>\B (byte) for column number</p> <p>\P (primary) for the primary stream record</p> <p>\S (secondary) for the secondary stream record</p> <p>\L (Least) for then stream number that is shortest, -1 if equal</p> <p>\M (Most) for the stream number that is longest, -1 if equal</p> <p>5. Equal or not, this <i>DString</i> precedes any of the others.</p> <p>Pipes for NetRexx only.</p>
configure	Not implemnted. OS dependent
console	<pre> >>--+-CONSOLE--+--+-----+----->< +--TERMinal--+ +--EOF--/string/--+ +--NOEOF-----+ </pre>
copy	<pre> >>--COPY----->< </pre> <p>copy from input stream to output without delaying the stream. See elastic for a more generic way to do this.</p>
count	<pre> <-----+ >>--COUNT--v--+--CHARACTers--+----->< +--WORDS-----+ +--LINES-----+ +--MINline-----+ +--MAXline-----+ </pre>
cp	Not implemented. OS specific.

crc	Not implemented. Compute a checksum
c14to38	Not implemented. Old printer.
dam	Do no pass any objects thru secondary streams until an object appears on the primary input stream. The primary output stream must not be connected. Pipes for NetRexx only.
dateconvert	Not implemented. Timestamp conversion and validation.
deal	<pre> +--STOP--ALLEOF-----+ >>--DEAL--+-----+----->> +--STOP--+--ALLEOF--+-----+ +--ANYEOF--+ +--n-----+ +--SECONDARY--+-----+-----+ +--RELEASE--+ +--KEY--inputRange--+-----+ +--STRIP--+ +--STREAMid--inputRange--+-----+ +--STRIP--+ </pre> <p>Since Java dispatches the stage threads. Deal may not see a sever immediately, as the severing thread can get multitasked. This can make options like 'ANYEOF' work in unexpected ways.</p>
deblock	<pre> +--FIXED--n--+-----+-----+ +--PAD--xorc--+ >>--DEBLOCK--+-----+----->> +--+--C-----+--+-----+-----+ +--J-----+ +--TERMINATE--+ +--EOF--+ +--CRLF-----+ +--LINEND xorc-----+ +--STRING--/string/--+ </pre> <p>?? System.getProperty('line.separator') ??</p>
delay	Not implemented. Wait for clock time
dict	Pipes for NetRexx only.
dicta	
dicta	
dictw	
disk	As in CMS, equivalent to diskr (Pipes for NetRexx Only) or <.
diska	Appends records on its input stream to the end of the supplied file, the file is created if its does not exist.
diskr	
diskslow	
diskw	
drop	<pre> +--FIRST--+ +--1--+ >>--DROP--+-----+----->> +--LAST---+ +--n--+ +--BYTES--+ +--*---+ </pre>
dup	<pre> +--1---+ >>--DUP--+-----+----->> +--n---+ +--*---+ +-- -1--+ </pre>
elastic	>>--ELASTIC----->>

ems	Not implemented. OS specific.
escape	Not implemented. Insert escape characters so special characters are treated a
fanin	>>--FANIN--+-----+----->< <-----+ +---stream--+
faninany	>>--FANINANY-----><
fanout	+--STOP--ALLEOF-----+ >>--FANOUT--+-----+----->< +--STOP--+--ANYEOF--+ +--n-----+
fblock	>>--FBLOCK--number--+-----+----->< +--xorc--+
file	As in CMS. Synonym of disk
filea	Pipes for NetRexx only. Synonym of diska
fileback	Not implemented. Read a CMS file backwards.
filefast	Not implemented. Read or write a CMS file.
filer	Pipes for NetRexx only. Synonym of diskr
filerand	Not implemented. Read specific records from a CMS file.
fileslow	Synonym for diskslow .
fileupdate	Not implemented. Change records in a CMS file.
filew	Pipes for NetRexx only. Synonym of diskw
find	>>--+--FIND--+-----+----->< +--string--+
fmtfst	Not implemented. OS specific
fmlabel	>>--+--FRLABEL--+-----+----->< +--string--+
frrtarget	>>--+--FRTARGET----+--stage--+-----+----->< +--FROMTARGet--+ +--operands--+
fullscreen	Not implemented. Old terminal.
fullscrq	Not implemented. Old terminal.
fullscrs	Not implemented. Old terminal.
gate	>>--GATE--+-----+----->< +--STRICT--+
gather	Not implemented. Read records in specified order.
getfiles	>>--GETfiles-----><
getovers	Input stream 0 should contain rexx objects. The getovers stage will output will output the index and contents of the stem on stream 0. If output stream 1 is connected, the root is placed there. Any severed streams will cause then stage to exit. Passing a non rexx object will cause the stage to exit with return code 13 Pipes for NetRexx only
getstems	Input stream 0 should contain rexx objects containing stems. The getstems stage will output the contents of the stem on stream 0. If output stream 1 is connected, the root is placed there. Any severed streams will cause then stage to exit. Passing a non rexx stem object will cause the stage to exit with return code 13 Pipes for NetRexx only.
hash	Pipes for NetRexx only. Synonym of dict
hasa	Pipes for NetRexx only. Synonym of dicta
hashr	Pipes for NetRexx only. Synonym of dictr
hashw	Pipes for NetRexx only.

help	Not implemented. Help for CMS Pipelines.
hole	>>--HOLE-----<<
hostbyaddr	Not implemented. Resolve IP address to domain and host name.
hostbyname	Not implemented. Resolve domain name to IP address.
hostid	Not implemented. Writes default IP address.
hostname	Not implemented. Writes host name of the TCP/IP system.
iebcopy	Not implemented. OS dependent.
immcmd	Not implemented. OS dependent.
insert	+--BEFORE--+ >>--INSERT--/string/--+-----+-----<< +--AFTER--+ insert a string into a record. Will be much more efficient than specs especially if the input is a Byte[] Pipes for NetRexx only.
inside	>>--INSIDE--/string1/--+--/string2/--+-----<< +--n-----+
instore	Not implemented. Read records into storage.
ip2socka	Not implemented. Convert IP address to special hex.
ispf	Not implemented. OS dependent.
join	+--1-----+ >>--JOIN--+-----+--+-----+--+-----<< +--n-----+ +--/string/--+ +--maxlength ⁽¹⁾ --+ +--*-----+ +--KEYLENgth--n--+ (1) The <i>maxlength</i> operand cannot be entered without specifying other operands.
joincont	+--TRAILING-----+ >>--JOINCONT--+-----+--+-----+--+-----<< +--ANYCase--+ +--NOT--+ +--RANGE--range--+ +--ANYof--+ +--LEADING-----+
juxtapose	>>--JUXTAPOSE-----<<
ldrtbls	Not implemented. Assembler: precompiled.
listpds	Not implemented. OS dependent.
literal	+--{-object-name}-+ >>--+--LITERAL--+-----+-----<< +--string--+ +--PREFACE--+
locate	>>--LOCATE--+-----+--+-----+--+-----+--+-----> +--ANYcase--+ +--inputRanges--+ +--ANYof--+ +--/string/--+

lookup	<p>in stream 0 are detail records</p> <p>in stream 1 are master records</p> <p>in stream 2 adds to masters</p> <p>in stream 3 delete from masters</p> <p>out stream 0 are matched records</p> <p>out stream 1 are unmatched detail records</p> <p>out stream 2 are unmatched or counted master records</p> <p>out stream 3 deleted masters</p> <p>out stream 4 duplicate masters</p> <p>out stream 5 unmatched master deletes</p> <p>lookup does not consider an unconnected output stream an error. It does propagate EOFs from output streams.</p> <p>To increase performance reorder the 'when type=' in method out so the type you use is first in the list and recompile the stage.</p> <pre> >>--LOOKUP--+-----+--+-----+--+-----+--+-----+-----> +--COUNT--+ +--ANYCASE--+ +--AUTOADD--+ +--BEFORE--+ >--+-----+--+-----+--+-----+--+-----+--+-----+--> +--KEYONLY--+ +--SETCOUNT--+ +--INCREMENT--+ +--TRACKCOUNT--+ >--+-----+-----> +--inputRange--+-----+ +--inputRange--+ >--+-----+-----> +--DETAIL MASTER-----+ +--DETAIL ALLMASTER PAIRWISE--+ +--DETAIL ALLMASTER-----+ +--DETAIL-----+ +--MASTER DETAIL-----+ +--MASTER-----+ +--ALLMASTER DETAIL PAIRWISE--+ +--ALLMASTER DETAIL-----+ +--ALLMASTER-----+ </pre>
maclib	Not implemented. OS dependent.
mctoasa	Not implemented. Old printer.
mdiskblk	Not implemented. OS dependent.
members	Not implemented. OS dependent.
merge	Not implemented. Merge up to 10 input streams.
nfind	<pre> >>----NFIND--+-----+-----> +--string--+ </pre>
ninside	Not implemented. Alias for notinside .
nlocate	<pre> >>--NLOCATE--+-----+--+-----+--+-----+--+-----+--> +--ANYcase--+ +--inputRanges--+ +--ANYof--+ +--/string/--+ </pre>
noEofBack	Pipes for NetRexx only. Do not propagate eof back thru this stage.
nop	Pipes for NetRexx only.
not	<pre> >>--NOT--stage--+-----+-----> +--operands--+ </pre>

notininside	>>--NOTINSIDE--+-+-----+--/string/--+--n-----+----->< +--ANYcase--+ +--/string/--+
notlocate	Not implemented. Alias for nlocate .
nuext	Not implemented. OS dependent.
optcdj	Not implemented. Old printer.
outside	>>--OUTSIDE--+-+-----+--/string/--+--n-----+----->< +--ANYcase--+ +--/string/--+
outstore	Not implemented. Writes records from storage.
over	Pipes for NetRexx only. Extract all the indexes of a rexx variable stem. Like
overlay	+--BLANK--+ >>--OVERlay--+-+-----+----->< +--SPACE--+ +--xorc--+
overstr	Not implemented. Old printer.
pack	Not implemented. Compacts data
pad	+--Right--+ +--BLANK----+ >>--PAD--+-+-----+--n--+-----+----->< +--Left----+ +--SPACE-----+ +--char-----+ +--hexchar--+
pause	Not implemented.
pdsdirect	Not implemented. OS dependent.
pick	>>--PICK--+-+-----+--+-----+--+-----+--+==--+--> +--ANYcase--+ +-PAD xorc-+ +-inputRanges-+ +--^==--+ +--<<--+ +--<=--+ +-->>--+ +-->=--+ >--+-----+----->< +--inputRanges--+ +--/string/-----+ The performance of Pick can be enhanced by reordering the compares in the comp method to put your compare first.
pipcmd	Not implemented.
pipestop	Not implemented.
predselect	Not implemented. Input to selected output.
preface	Not implemented. Invokes a subroutine/stage then copies records.
prefix	Blocks its primary input and executes stage supplied as an argument. The output from this stage are put to the primary output stream. When its compete the primary input is shorted. Pipes for NetRexx only.
printmc	Not implemented. Old printer.
punch	Not implemented. Old equipment.
qsam	Not implemented. Old equipment.
query	Implemented. Write info about Pipelines.
qsort	
reader	Not implemented. Old equipment.
Reverse	>>--REVERSE-----><
rexx	Not implemented. Run user written compiled stage.
rexxvars	Not implemented. Get info about defined REXX variables.

runpipe	Not implemented.
scm	Not implemented. Clean up comments in REXX and C.
serialize	<p>{class} if class is specified deserialize input to objects of this type other Pipes for NetRexx only.</p> <p>For some reason readObject does not like more than one object network in its examples/seretest.njp</p>
snake	Not implemented. Reformat one or more records into matrices.
socka2ip	Not implemented. Convert special 16-byte hex to IP address.
sort	<p>sort objects: sort {{{<Class>} {<size>} {A D} {IRange}}</p> <p>Where <Class> is a sortClass. The default is: Rexx and <size> is the maximum default.</p> <p>Pipes for NetRexx quirks.</p>
sortClass	<p>This is an interface class to allow a generic sort routine to handle objects implemented by sortRexx, which will sort rexx objects.</p> <p>Pipes for NetRexx only.</p>
sortRexx	<p>An implementation for sortClass for rexx objects. Part of the logic to generate sortClass stages is in sort's stageExit.</p> <p>Pipes for NetRexx only.</p>
specs	<p>Massage the data. Selections via start.length start-end, start-* and -from_e These selections can also be prefixed with 'word'.</p> <p>The conversion functions upper, lower, b2x, d2x, x2b and x2d are implemented format options left, right and center. The stop, select, read, readstop, pa work too.</p> <p>The number, TODclock and many other conversion functions are not implemented.</p> <pre> >>-SPECS--+-----+-----> +--STOP--+--ANYEOF--+--+ +-n-----+ +-----+ V >-----+-- Group -----+----->< +--READ-----+ +--READSTOP-----+ +--WRITE-----+ +--SELECT--+--streamnum--+-----+ +--streamid---+ +--PAD--+--char-----+ +--hexchar--+ +--BLANK----+ +--SPACE----+ +--WORDSEPARATOR--+--char-----+ +--WS-----+ +--hexchar--+ +--FIELDSEPARATOR--+ +--BLANK----+ +--FS-----+ +--SPACE----+ Group: -- Input -- Conversion -- Output -- Alignment ----- Input: --+--Words-----wnumberrange-----+ +--Fields-----fnumberrange-----+ +--cnumberrange-----+ +--/string/-----+ +--Xhexstring-----+ +--Hhexstring-----+ +--Bbinstring-----+ - +--FROM--1-----+ +--BY--1-----+ +--RECNO--+-----+ +-----+ - +--FROM--fromnum--+ +--BY--bynum--+ +--TODclock-----+ </pre>

split	<pre> >>--SPLIT--+-----+--+-----+-----> +--ANYCase--+ +--MINimum--number--+ +--AT-----+ +--BLANK-----+ >+-----+-----+-----+-----+----->< +--+-----+--+--BEFORE--+ +--NOT--+ +-- target --+-----+--+ +--snumber--+ +--AFTER--+ +--number--+ target: --+--xrange-----+--+ +--+--STRing--+--/string/--+ +--ANYof--+ </pre>
sql	Not implemented. OS dependent. See sqlselect for Pipes for NetRexx extension.
sqlcodes	Not implemented. OS dependent.
sqlselect	Pipes for NetRexx only. Extension to SQL uses jdbc to select from any jdbc en
stack	Not implemented. OS dependent.
Starmonitor	Not implemented. OS dependent.
starmsg	Not implemented. OS dependent.
starsys	Not implemented. OS dependent.
state	Not implemented. Determine if file(s) exist.
statew	Not implemented. Determine if file(s) exist.
stem	>>--STEM--stem-----><
stema	Pipes for NetRexx only. Append to an existing stem, exits if the argument is
stemr	Pipes for NetRexx only.
stemw	Pipes for NetRexx only.
storage	Not implemented.
strasmfind	Not implemented. Assembler.
strasmnfind	Not implemented. Assembler.
strfind	<pre> >>--+--STRFIND--+-----+--/string/----->< +--ANYcase--+ </pre>
strfrlable	<pre> >>--+--STRFRLABEL--+-----+--/string/----->< +--ANYcase--+ </pre>
strip	Not implemented. Remove leading / trailing characters.
strliteral	<pre> >>--STRLITERAL--+-----+--+-----+----->< +--APPEND--+ +--/string/--+ </pre>
strnfind	<pre> >>--STRNFIND--+-----+--/string/----->< +--ANYcase--+ </pre>
strtolabel	<pre> >>--STRTOLABel--+-----+--/string/----->< +--ANYcase--+ </pre>
strwhilelable	Not implemented. Select consecutive records.
subcom	Not implemented. OS dependent.
synchronize	Not implemented. Synchronizes a multistream pipeline.
take	<pre> +--FIRST--+ +--1--+ >>--TAKE--+-----+-----+----->< +--LAST--+ +--n--+ +--*--+ </pre>
tape	Not implemented. Old equipment.
timer	

tcpclient	<p>Simple tcpclient implementation. The options implemented are similar to the C</p> <p>linger - wait a bit before terminating the last read (units SECONDS)</p> <p>timeout - wait this long before timing reads out (units MS)</p> <p>deblock - If deblock is omitted a copy stage is used.</p> <p>group - similar to CMS. A delimited string containing a stage is expected. You can use a run of stages, but its is dangerous since you to know the stage sep character being used...</p> <p>greeting - expect a greeting message and discard it</p> <p>nodelay - use the nodelay option</p> <p>keepalive - enable keep alive socket option</p> <p>onerespone - synchronize cmds/replys</p>
tcpdata	<p>Simple tcpdata implementation.</p> <p>linger - wait a bit before terminating the last read (units SECONDS)</p> <p>timeout - wait this long before timing reads out (units MS)</p> <p>deblock - If deblock is omitted a copy stage is used.</p> <p>group - similar to cms. A delimited string containing a stage is expected. You can use a run of stages, but its is dangerous since you need to know the stage sep character being used...</p> <p>nodelay - use the nodelay option</p> <p>onerespone - synchronize requests/replies</p>
tcplisten	<p>Simple tcplisten implementation. You can only supply the port and a timeout value, which is ignored unless tcplisten's output stream has been severed, in which case tcplisten terminates.</p> <p>If input stream 0 is connected, tcplisten does a peekto before calling the accept method. The object is consumed after the output of the socket object returns.</p>
timestamp	<pre> +--8--+ >>--TIMEstamp--+-----+----->< +--n--+ </pre>
timer	Pipes for NetRexx only. Time pipes
tokenise	<pre> >>--+--TOKENISE--+--/string/--+-----+----->< +--TOKENIZE--+ +--/string/--+ </pre>
tolabel	<pre> >>--TOLABel--+-----+----->< +--string--+ </pre>
totarget	<pre> >>--TOTARGet---stage--+-----+----->< +--operands--+ </pre>
udp	Not implemented. Read / Write TCP records.

unique	<pre> +--NOPAD-----+ >>--UNIQUE--+-----+--+-----+--+-----+-----> +--COUNT--+ +--PAD--xorc--+ +--ANYcase--+ +--LAST-----+ >--+-----+--+-----+----->< +-- uniqueRanges --+ +--SINGLEs---+ +--FIRST-----+ +--MULTiple--+ +--PAIRwise--+ uniqueRanges: --+--inputRange-----+--+ <-----+ +--(---inputRange--+--+---)---+ +--NOPAD-----+ +--PAD--xorc--+ </pre>
unpack	Not implemented. Uncompress data.
untab	Not implemented. Expand tab characters to blanks for specific columns.
update	Not implemented. Modify a file according to UPDATE control statements. OS dep
uro	Not implemented. Write to old equipment.
var	<pre> >>--VAR--variable----->< Pipes for NetRexx: this can only read vars </pre>
varload	Not implemented. Set REXX variables.
vchar	Not implemented. Recode data to different number of bits per character.
vectora	Pipes for NetRexx only.
vectorr	Pipes for NetRexx only.
vectorw	Pipes for NetRexx only.
vmc	Not implemented. OS dependent.
whilelabel	Not implemented. Select consecutive records.
xab	Not implemented. Old equipment.
xedit	Not implemented. OS dependent.
xlate	<pre> <-----+ >>--+--XLATE-----+--+-----+--+-----+--+-----> +--TRANsLate--+ +--inputRange-----+ +- default-table --+ <-----+ +----(--inputRange--)-+--+ <-----+ >--+-----+--+----->< +--xrange--xrange--+ default-table: --+--UPper-----+----- +--LOWer-----+ +--INput-----+ { +--OUTput-----+ } { +--+--TO---+--+-----+--n--+ } { -+--FROM--+ +--CODEPAGE--+ } { } { Not yet in Pipes for NetRexx } </pre>
xmsg	Not implemented. OS dependent.
xpndhi	Not implemented. Old equipment.
xrange	Not implemented. Create one record of specified range of characters.

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zone      >>--ZONE--+-+-----+-----+-----+-----+----->
          +--+--WORDSEPARATOR--+--+--char--+--+
          +--WS-----+      +--hexchar--+
          +--FIELDSEPARATOR--+  +--BLANK-----+
          +--FS-----+      +--SPACE-----+

          >--+--Words-----wnumberrange--+----->
          +--Fields-----fnumberrange--+
          +--cnumberrange-----+

          >--+-----+--+-----+--+stage--+-----+----->X
          +--CASEI--+  +--REVERSE--+      +--operands--+
```