

## NAG Library Chapter Contents

### f01 – Matrix Operations, Including Inversion

f01 Chapter Introduction – a description of the Chapter and an overview of the algorithms available

Function Name	Mark of Introduction	Purpose
f01ecc	9	nag_real_gen_matrix_exp Real matrix exponential
f01edc	9	nag_real_symm_matrix_exp Real symmetric matrix exponential
f01efc	23	nag_matop_real_symm_matrix_fun Function of a real symmetric matrix
f01ejc	23	nag_matop_real_gen_matrix_log Real matrix logarithm
f01ekc	23	nag_matop_real_gen_matrix_fun_std Exponential, sine, cosine, sinh or cosh of a real matrix (Schur–Parlett algorithm)
f01elc	24	nag_matop_real_gen_matrix_fun_num Function of a real matrix (using numerical differentiation)
f01emc	23	nag_matop_real_gen_matrix_fun_usd Function of a real matrix (using user-supplied derivatives)
f01enc	24	nag_matop_real_gen_matrix_sqrt Real matrix square root
f01epc	24	nag_matop_real_tri_matrix_sqrt Real upper quasi-triangular matrix square root
f01eqc	24	nag_matop_real_gen_matrix_pow General power of a real matrix
f01fcc	23	nag_matop_complex_gen_matrix_exp Complex matrix exponential
f01fdc	23	nag_matop_complex_herm_matrix_exp Complex Hermitian matrix exponential
f01ffc	23	nag_matop_complex_herm_matrix_fun Function of a complex Hermitian matrix
f01fjc	23	nag_matop_complex_gen_matrix_log Complex matrix logarithm
f01fk c	23	nag_matop_complex_gen_matrix_fun_std Exponential, sine, cosine, sinh or cosh of a complex matrix (Schur–Parlett algorithm)
f01flc	24	nag_matop_complex_gen_matrix_fun_num Function of a complex matrix (using numerical differentiation)
f01fmc	23	nag_matop_complex_gen_matrix_fun_usd Function of a complex matrix (using user-supplied derivatives)
f01fnc	24	nag_matop_complex_gen_matrix_sqrt Complex matrix square root
f01fpc	24	nag_matop_complex_tri_matrix_sqrt Complex upper triangular matrix square root
f01fqc	24	nag_matop_complex_gen_matrix_pow General power of a complex matrix
f01gac	24	nag_matop_real_gen_matrix_actexp Action of a real matrix exponential on a real matrix
f01gbc	24	nag_matop_real_gen_matrix_actexp_rcomm Action of a real matrix exponential on a real matrix (reverse communication)

f01hac	24	nag_matop_complex_gen_matrix_actexp Action of a complex matrix exponential on a complex matrix
f01hbc	24	nag_matop_complex_gen_matrix_actexp_rcomm Action of a complex matrix exponential on a complex matrix (reverse communication)
f01jac	24	nag_matop_real_gen_matrix_cond_std Condition number for the exponential, logarithm, sine, cosine, sinh or cosh of a real matrix
f01jbc	24	nag_matop_real_gen_matrix_cond_num Condition number for a function of a real matrix (using numerical differentiation)
f01jcc	24	nag_matop_real_gen_matrix_cond_usd Condition number for a function of a real matrix (using user-supplied derivatives)
f01jdc	24	nag_matop_real_gen_matrix_cond_sqrt Condition number for square root of real matrix
f01jec	24	nag_matop_real_gen_matrix_cond_pow Condition number for real matrix power
f01jfc	24	nag_matop_real_gen_matrix_frcht_pow Fréchet derivative of real matrix power
f01jgc	24	nag_matop_real_gen_matrix_cond_exp Condition number for real matrix exponential
f01jhc	24	nag_matop_real_gen_matrix_frcht_exp Fréchet derivative of real matrix exponential
f01jjc	24	nag_matop_real_gen_matrix_cond_log Condition number for real matrix logarithm
f01jkc	24	nag_matop_real_gen_matrix_frcht_log Fréchet derivative of real matrix logarithm
f01kac	24	nag_matop_complex_gen_matrix_cond_std Condition number for the exponential, logarithm, sine, cosine, sinh or cosh of a complex matrix
f01kbc	24	nag_matop_complex_gen_matrix_cond_num Condition number for a function of a complex matrix (using numerical differentiation)
f01kcc	24	nag_matop_complex_gen_matrix_cond_usd Condition number for a function of a complex matrix (using user-supplied derivatives)
f01kdc	24	nag_matop_complex_gen_matrix_cond_sqrt Condition number for square root of complex matrix
f01kec	24	nag_matop_complex_gen_matrix_cond_pow Condition number for complex matrix power
f01kfc	24	nag_matop_complex_gen_matrix_frcht_pow Fréchet derivative of complex matrix power
f01kgc	24	nag_matop_complex_gen_matrix_cond_exp Condition number for complex matrix exponential
f01khc	24	nag_matop_complex_gen_matrix_frcht_exp Fréchet derivative of complex matrix exponential
f01kjc	24	nag_matop_complex_gen_matrix_cond_log Condition number for complex matrix logarithm
f01kkc	24	nag_matop_complex_gen_matrix_frcht_log Fréchet derivative of complex matrix logarithm
f01mcc	1	nag_real_cholesky_skyline $LDL^T$ factorization of real symmetric positive definite variable-bandwidth (skyline) matrix
f01vac	25	nag_dtrttp Copies a real triangular matrix from full format to packed format
f01vbc	25	nag_ztrttp Copies a complex triangular matrix from full format to packed format

f01vcc	25	nag_dtptr Copies a real triangular matrix from packed format to full format
f01vdc	25	nag_ztptr Copies a complex triangular matrix from packed format to full format
f01vec	25	nag_dtrttf Copies a real triangular matrix from full format to Rectangular Full Packed format
f01vfc	25	nag_ztrttf Copies a complex triangular matrix from full format to Rectangular Full Packed format
f01vgc	25	nag_dtfttr Copies a real triangular matrix from Rectangular Full Packed format to full format
f01vhc	25	nag_ztfttr Copies a complex triangular matrix from Rectangular Full Packed format to full format
f01vjc	25	nag_dtpddf Copies a real triangular matrix from packed format to Rectangular Full Packed format
f01vkc	25	nag_ztpddf Copies a complex triangular matrix from packed format to Rectangular Full Packed format
f01vlc	25	nag_dtfdtp Copies a real triangular matrix from Rectangular Full Packed format to packed format
f01vmc	25	nag_ztfddp Copies a complex triangular matrix from Rectangular Full Packed format to packed format

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