

## NAG C Library Chapter Contents

### e04 – Minimizing or Maximizing a Function

e04 Chapter Introduction

<b>Routine Name</b>	<b>Mark of Introduction</b>	<b>Purpose</b>
e04abc	5	nag_opt_one_var_no_deriv Minimizes a function of one variable, using function values only
e04bbc	5	nag_opt_one_var_deriv Minimizes a function of one variable, requires first derivatives
e04ccc	4	nag_opt_simplex Unconstrained minimization using simplex algorithm
e04dgc	2	nag_opt_conj_grad Unconstrained minimization using conjugate gradients
e04fcc	2	nag_opt_lsq_no_deriv Unconstrained nonlinear least-squares (no derivatives required)
e04gbc	2	nag_opt_lsq_deriv Unconstrained nonlinear least-squares (first derivatives required)
e04hcc	2	nag_opt_check_deriv Derivative checker
e04hdc	5	nag_opt_check_2nd_deriv Checks second derivatives of a user-defined function
e04jbc**	2	nag_opt_bounds_no_deriv Bound constrained nonlinear minimization (no derivatives required)
e04kbc**	2	nag_opt_bounds_deriv Bound constrained nonlinear minimization (first derivatives required)
e04lbc	5	nag_opt_bounds_2nd_deriv Solves bound constrained problems (first and second derivatives required)
e04mfc	2	nag_opt_lp Linear programming
e04myc	5	nag_opt_sparse_mps_free Free memory allocated by nag_opt_sparse_mps_read (e04mzc)
e04mzc	5	nag_opt_sparse_mps_read Read MPSX data for sparse LP or QP problem from a file
e04ncc	5	nag_opt_lin_lsq Solves linear least-squares and convex quadratic programming problems (non-sparse)
e04nfc	2	nag_opt_qp Quadratic programming
e04nkc**	5	nag_opt_sparse_convex_qp Solves sparse linear programming or convex quadratic programming problems
e04npc	8	nag_opt_sparse_convex_qp_init Initialization function for nag_opt_sparse_convex_qp_solve (e04nqc)
e04nqc	8	nag_opt_sparse_convex_qp_solve LP or QP problem (suitable for sparse problems)
e04nrc	8	nag_opt_sparse_convex_qp_option_set_file Supply optional parameter values for nag_opt_sparse_convex_qp_solve (e04nqc) from external file
e04nsc	8	nag_opt_sparse_convex_qp_option_set_string Set a single option for nag_opt_sparse_convex_qp_solve (e04nqc) from a character string
e04ntc	8	nag_opt_sparse_convex_qp_option_set_integer Set a single option for nag_opt_sparse_convex_qp_solve (e04nqc) from an Integer argument

e04nuc	8	nag_opt_sparse_convex_qp_option_set_double Set a single option for nag_opt_sparse_convex_qp_solve (e04nqc) from a double argument
e04nxc	8	nag_opt_sparse_convex_qp_option_get_integer Get the setting of an Integer valued option of nag_opt_sparse_convex_qp_solve (e04nqc)
e04nyc	8	nag_opt_sparse_convex_qp_option_get_double Get the setting of a double valued option of nag_opt_sparse_convex_qp_solve (e04nqc)
e04ucc**	4	nag_opt_nlp Minimization with nonlinear constraints using a sequential QP method
e04ugc	6	nag_opt_nlp_sparse NLP problem (sparse)
e04unc	5	nag_opt_nlin_lsq Solves nonlinear least-squares problems using the sequential QP method
e04vgc	8	nag_opt_sparse_nlp_init Initialization function for nag_opt_sparse_nlp_solve (e04vhc)
e04vhc	8	nag_opt_sparse_nlp_solve General sparse nonlinear optimizer
e04vjc	8	nag_opt_sparse_nlp_jacobian Determine the pattern of nonzeros in the Jacobian matrix for nag_opt_sparse_nlp_solve (e04vhc)
e04vkc	8	nag_opt_sparse_nlp_option_set_file Supply optional parameter values for nag_opt_sparse_nlp_solve (e04vhc) from external file
e04vlc	8	nag_opt_sparse_nlp_option_set_string Set a single option for nag_opt_sparse_nlp_solve (e04vhc) from a character string
e04vmc	8	nag_opt_sparse_nlp_option_set_integer Set a single option for nag_opt_sparse_nlp_solve (e04vhc) from an Integer argument
e04vnc	8	nag_opt_sparse_nlp_option_set_double Set a single option for nag_opt_sparse_nlp_solve (e04vhc) from a double argument
e04vrc	8	nag_opt_sparse_nlp_option_get_integer Get the setting of an Integer valued option of nag_opt_sparse_nlp_solve (e04vhc)
e04vsc	8	nag_opt_sparse_nlp_option_get_double Get the setting of a double valued option of nag_opt_sparse_nlp_solve (e04vhc)
e04wcc	8	nag_opt_nlp_init Initialization function for nag_opt_nlp_solve (e04wdc)
e04wdc	8	nag_opt_nlp_solve Solves the nonlinear programming (NP) problem
e04wec	8	nag_opt_nlp_option_set_file Supply optional parameter values for nag_opt_nlp_solve (e04wdc) from external file
e04wfc	8	nag_opt_nlp_option_set_string Set a single option for nag_opt_nlp_solve (e04wdc) from a character string
e04wgc	8	nag_opt_nlp_option_set_integer Set a single option for nag_opt_nlp_solve (e04wdc) from an Integer argument
e04whc	8	nag_opt_nlp_option_set_double Set a single option for nag_opt_nlp_solve (e04wdc) from a double argument
e04wkc	8	nag_opt_nlp_option_get_integer Get the setting of an Integer valued option of nag_opt_nlp_solve (e04wdc)
e04wlc	8	nag_opt_nlp_option_get_double Get the setting of a double valued option of nag_opt_nlp_solve (e04wdc)
e04xac	5	nag_opt_estimate_deriv Computes an approximation to the gradient vector and/or the Hessian matrix

e04xxc	2	nag_opt_init Initialization function for option setting
e04xyc	2	nag_opt_read Read options from a text file
e04xzc	2	nag_opt_free Memory freeing function for use with option setting
e04yac	2	nag_opt_lsq_check_deriv Least-squares derivative checker for use with nag_opt_lsq_deriv (e04gbc)
e04ycc	2	nag_opt_lsq_covariance Covariance matrix for nonlinear least-squares

\*\* This routine has been superseded, although it will be retained in the Library until at least Mark 10. See the document 'Advice on Replacement Calls for Withdrawn/Superseded Routines' for details of the recommended replacement routine.

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