Precision 7750

Service Manual

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Bemærk, forsigtig og advarsel

BEMÆRK: En NOTE angiver vigtige oplysninger, som hjælper dig med at bruge produktet bedre.

FORSIGTIG: FORSIGTIG angiver enten en mulig beskadigelse af hardware eller tab af data, og oplyser dig om, hvordan du kan undgå dette problem.

ADVARSEL: ADVARSEL angiver risiko for tingskade, legemsbeskadigelse eller død.

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1

Sådan arbejder du med computeren

Sikkerhedsinstruktioner

Forudsætninger

Følg sikkerhedsinstruktionerne med henblik på din egen sikkerhed og for at beskytte computeren og arbejdsmiljøet mod mulige skader. Hvis intet andet er angivet bygger hver fremgangsmåde i dette dokument på følgende forudsætninger:

- Du har læst sikkerhedsoplysningerne, som fulgte med computeren.
- En komponent kan genmonteres eller, hvis købt separat, monteres ved at udføre fjernelsesproceduren i omvendt rækkefølge.

Om denne opgave

BEMÆRK: Alle strømkilder frakobles, inden computerens dæksel eller paneler åbnes. Når du er færdig med at arbejde med computerens indre dele, skal du genmontere alle dæksler, paneler og skruer, inden der tilsluttes til en strømkilde.

ADVARSEL: Før du arbejder med computerens indvendige dele, skal du læse de sikkerhedsinstruktioner, der fulgte med computeren. Du kan finde yderligere information om bedste praksis vedr. sikkerhed på hjemmesiden om overensstemmelse med bestemmelser og regulativer.

FORSIGTIG: Mange reparationer kan kun udføres af en certificeret servicetekniker. Du bør kun udføre fejlfinding og enkle reparationer, hvis de er godkendt i produktdokumentationen eller som er anvist af vores online- eller telefonbaserede service- og supportteam. Skade på grund af servicering, som ikke er godkendt af Dell, er ikke dækket af garantien. Læs og følg sikkerhedsinstruktionerne, der blev leveret sammen med produktet.

FORSIGTIG: For at undgå elektrostatisk afladning bør du jorde dig selv ved hjælp af en jordingsrem eller ved jævnligt at røre ved en umalet metaloverflade og samtidig røre ved et stik på computerens bagside.

FORSIGTIG: Komponenter og kort skal behandles forsigtigt. Rør ikke ved kortenes komponenter eller kontaktområder. Hold et kort i kanterne eller i dets metalbeslag. Hold en komponent som f.eks. en processor ved dens kanter og ikke ved dens ben.

FORSIGTIG: Når du frakobler et kabel, skal du tage fat i dets stik eller dets trækflig og ikke i selve kablet. Nogle kabler har stik med låsetappe. Hvis du frakobler et sådant kabel, bør du trykke på låsetappene, før du frakobler kablet. Når du trækker stik fra hinanden, skal du sikre at de flugter for at undgå at bøje stikkets ben. Du bør også sikre dig, at begge stik sidder rigtigt og flugter med hinanden, inden du sætter et kabel i.

BEMÆRK: Computerens og visse komponenters farve kan afvige fra, hvad der vist i dette dokument.

Før du udfører arbejde på computerens indvendige dele

Om denne opgave

For at undgå skader på din computer, skal du udføre de følgende trin, inden du får i gang med at arbejde inde i computeren.

Trin

1. Sørg for, at du følger Sikkerhedsinstruktionerne.
2. Sørg for, at arbejdsoverfladen er jævn og ren, for at forhindre, at computerdækslet bliver ridset.
3. Sluk for computeren.
4. Fjern alle netværkskabler fra computeren.

FORSIGTIG: Frakobl, for at frakoble et netværkskabel, først kablet fra computeren, og frakobl det derefter fra netværksenheden.

5. Tag stikkene til computeren og alle tilsluttede enheder ud af stikkontakterne.
6. Tryk på og hold tænd/sluk-knappen nede, efter at computeren er afbrudt, for at skabe jordforbindelse for systemkortet.

BEMÆRK: For at undgå elektrostatisk afladning bør du jorde dig selv ved hjælp af en jordingsrem eller ved jævnligt at røre ved en umalet metaloverflade og samtidig røre ved et stik på computerens bagside.

Sikkerhedsforanstaltninger

Kapitlet om sikkerhedsforanstaltninger giver oplysninger om de primære trin, der skal tages, før nogen instrukser til demontering udføres.

Vær opmærksom på følgende sikkerhedsforanstaltninger, før du udfører nogen installationer eller reparationsprocedurer, der omfatter demontering og efterfølgende samling igen:

- Sluk for systemet og alle tilknyttede perifere enheder.
- Frakobl systemet og alle tilsluttede perifere enheder fra AC-strøm.
- Frakobl alle netværkskabler, telefon og telekommunikationslinjer fra systemet.
- Brug en ESD-feltservicepakke, når du udfører arbejde indvendigt i en tabletnotebook for at undgå skade fra elektrostatisk afladning (ESD).
- Efter at have fjernet en systemkomponent skal du omhyggeligt placere den fjernede komponent på en antistatisk måtte.
- Hav sko på med isolerende gummisåler for at mindske chancen for at få stød.

Standby-strøm

Dell-produkter med standby-strøm skal være fuldstændigt frakoblede fra strøm, før processen kan startes. Systemer med indbygget standby-strøm er faktisk strømførte, når de er slukket. Den interne strøm sætter systemet i stand til at blive tændt på afstand (vågner ved LAN) og suspenderet i en dvaletilstand samt har andre avancerede strømstyringsfunktioner.

Hvis stikkene tages ud, og man holder tænd/sluk-knappen nede i 15 sekunder, bør det aflade den overskydende strøm i systemkortet. Fjern batteriet fra tablets.notebooks.

Tilknytning

Tilknytning er en metode til at forbinde to eller flere jordingsledere til den samme elektriske styrke. Dette gøres ved brug af en feltservicepakke til elektrostatisk afladning (ESD). Når en tilknytningsledning forbindes, skal man sikre sig, at den er forbundet til metal og aldrig til en malet eller umalet overflade. Håndledsremmen bør være sikret og i fuld kontakt med din hud, og du skal altid fjerne alle smykker, såsom ure, armbånd eller ringe, før du tilkobler dig selv eller udstyret.

Beskyttelse mod elektrostatisk afladning (ESD)

ESD er til stor bekymring, når du håndterer elektroniske komponenter, især følsomme komponenter som ekspansionskort, processorer, hukommelses-DIMM'er og systemkort. Meget små afladninger kan beskadige kredsløb på måder, som måske ikke er indlysende, såsom intermitterende problemer eller kortere levetid. I kraft med, at industrien råber på lavere strømkrav og øget tæthed, er ESD-beskyttelse af stigende bekymring.

På grund af den øgede tæthed i de halvledere, der anvendes i nyere Dell-produkter, er følsomheden over for statisk skade nu højere end i tidligere Dell-produkter. Af denne grund gælder nogle tidligere godkendte metoder til håndtering af dele ikke længere.

To kendte ESD-skadetyper er nedbrud og intermitterende fejl.

- **Nedbrud** – nedbrud udgør ca. 20 procent af ESD-relaterede fejl. Skaden medfører øjeblikkeligt og fuldstændigt tab af enhedens funktionalitet. Et eksempel på nedbrud er en hukommelses-DIMM, der har fået et statisk chok og straks genererer et "Ingen POST/Ingen Video"-symptom med en bipkode, der udsendes for manglende eller ikke-funktionel hukommelse.
- **Intermitterende fejl** – Intermitterende fejl udgør ca. 80 procent af ESD-relaterede fejl. Den høje procent af intermitterende fejl betyder, at skader det meste af tiden ikke umiddelbart kan genkendes. DIMM'en får et statisk chok, men sporing er kun svækket og frembringer ikke umiddelbart ydre symptomer relateret til skaden. Det kan tage det svækkede spor uger eller måneder at smelte, og i mellemtiden kan det forårsage en nedbrydning af hukommelsesintegritet, intermitterende hukommelsesfejl osv.

Intermitterende (også kaldet latent eller "walking wounded") fejl er den fejltype, der er vanskeligst at genkende og fejlfinde.

Udfør følgende trin for at forhindre ESD-skade:

- Brug en kablet ESD-håndledsrem, der er korrekt jordet. Brugen af trådløse antistatiske remme er ikke længere tilladt. De giver ikke tilstrækkelig beskyttelse. Det giver ikke tilstrækkelig ESD-beskyttelse af dele med øget følsomhed over for ESD-skade, at du rører ved chassis, inden du håndterer delene.
- Håndter alle statisk følsomme komponenter i et statisk sikkert område. Brug antistatisk gulv- og bordbelægning, hvor det er muligt.
- Når du pakker en statisk følsom komponent ud af emballagen, skal du ikke fjerne komponenten fra det antistatiske emballagemateriale, før du er klar til at installere komponenten. Sørg for at aflade statisk elektricitet fra din krop, inden du åbner det antistatiske emballagemateriale.
- Placer en statisk følsom komponent i en antistatisk beholder eller antistatisk emballage, inden du flytter den.

ESD-feltservicesæt

Det uovervågede feltservicesæt er det mest almindeligt brugte servicesæt. Hvert feltservicesæt inkluderer tre hovedkomponenter: Antistatisk måtte, håndledsrem og ståltråd.

Komponenter i et ESD-feltservicesæt

Komponenterne i et ESD-feltservicesæt er:

- **Antistatisk måtte** – Den anti-statiske måtte er dissipativ, og dele kan placeres på den under serviceprocedurer. Når du bruger en antistatisk måtte, bør din håndledsrem være stram, og ståltråden skal være forbundet til måtten og til alt blotlagt metal på det systemet, der arbejdes på. Når den er indsat korrekt, kan servicedele fjernes fra ESD-posen og placeres direkte på måtten. ESD-følsomme genstande er sikre i din hånd, på ESD-måtten, i systemet eller inde i en pose.
- **Håndledsrem og ståltråd** – Håndledsremmen og ståltråden kan forbindes enten direkte mellem dit håndled og det blotlagte metal på hardwaren, hvis ESD-måtten ikke er nødvendig, eller forbindes til den antistatiske måtte for at beskytte hardware, som er midlertidigt placeret på måtten. Den fysiske forbindelse mellem håndledsremmen og ståltråden og din hud, ESD-måtten og hardwaren kaldes "binding". Brug kun feltservicesæt med en håndledsrem, måtte og ståltråd. Brug aldrig trådløse håndledsremme. Vær altid opmærksom på, at de indvendige ledninger i en håndledsrem er tilbøjelige til at blive beskadiget ved normal brug, og at de skal tjekkes regelmæssigt med en remtester for at undgå utilsigtet ESD-hardwareskade. Det anbefales at teste håndledsremmen og bindingsledningen mindst én gang om ugen.
- **Tester til ESD-håndledsrem** – Ledningerne inde i en ESD-rem er tilbøjelige til at blive beskadiget over tid. Når et uovervåget sæt benyttes, er det bedste praksis regelmæssigt at teste remmen før brug og som minimum teste en gang om ugen. En håndledsremtester er den bedste metode til at udføre denne test. Hvis du ikke har din egen håndledsremtester, skal du kontakte regionskontoret for at høre, om de har en. For at udføre testen skal du sætte håndledsremmens bindingsledning ind i testeren, mens den er fastgjort til dit håndled, og trykke på knappen for at teste. Et grønt LED-lys er tændt, hvis testen går godt; et rødt LED-lys er tændt, og en alarm lyder, hvis testen mislykkes.
- **Isolatorelementer** – Det er afgørende at holde ESD-følsomme enheder, så som kølelegemehylstre af plastik, væk fra interne dele, som er isolatorer og ofte meget strømførende.
- **Arbejdsmiljø** – Før implementering af ESD-feltservicesættet skal situationen ved kundeplaceringen vurderes. For eksempel er implementering af sættet til et servermiljø anderledes end til et skrivebord eller bærbart miljø. Servere er typisk installeret i en rack inde i et datacenter; skriveborde eller bærbare er typisk placeret på kontorskriveborde eller i båse. Kig altid efter et stort, åbent arbejdsområde, der ikke roder, og som er stort nok til at implementere ESD-sættet, med yderligere plads til at rumme den type system, som bliver repareret. Arbejdspladsen bør også være uden isolatorer, der kan forårsage en ESD-hændelse. På arbejdsområder bør isolatorer så som Styrofoam og andre plasttyper altid flyttes mindst 12 tommer eller 30 centimeter væk fra følsomme dele inden håndtering af hardware-komponenter.
- **ESD-emballage** – Alle ESD-følsomme enheder skal sendes og modtages i emballage, der er fri for statisk elektricitet. Statisk elektricitet-afskærmede poser af metal foretrækkes. Dog bør du altid returnere den beskadigede del vha. den samme ESD-taske og emballage, som den nye del ankom i. ESD-posen bør foldes og lukkes med tape, og al emballage af skum bør bruges i den originale boks, som den nye del ankom i. ESD-følsomme enheder bør kun fjernes fra emballage på en ESD-beskyttet arbejdsoverflade, og dele bør aldrig placeres oven på ESD-posen, da kun posens inderside er afskærmet. Placér altid dele i din hånd, på ESD-måtten, i systemet eller inden i en pose fri for statisk elektricitet.
- **Transport af følsomme komponenter** – Ved transport af ESD-følsomme komponenter så som reservedele eller dele der skal returneres til Dell, er det afgørende,at disse dele placeres i poser uden statisk elektricitet for sikker transport.

Opsummering: ESD-beskyttelse

Det anbefales, at alle feltserviceteknikere altid bruger det traditionelle tilsluttede ESD-antistatiske armbånd og den beskyttende antistatiske måtte ved eftersyn af Dell-produkter. Derudover er det afgørende, at teknikere holder følsomme dele adskilte fra alle isolatordele under udførsel af eftersyn, og at de bruger antistatiske poser.

Efter du har udført arbejde på computerens indvendige dele

Om denne opgave

Når du har udført udskiftningsprocedurer, skal du sørge for at tilslutte eksterne enheder, kort, kabler osv., før du tænder computeren.

Trin

1. Tilslut telefon- eller netværkskabler til computeren.

   FORSIGTIG: For at tilslutte et netværkskabel skal du først sætte det i netværksenheden og derefter sætte det i computeren.

2. Tilslut computeren og alle tilsluttede enheder til deres stikkontakter.
3. Tænd computeren
4. Du kan om nødvendigt få bekræftet, at computeren fungerer korrekt, ved at køre **SupportAssist-diagnosticering**.

2

Teknologi og komponenter

Dette kapitel giver detaljerede oplysninger om teknologi og komponenter, der er tilgængelige i systemet.

Emner:

- USB-funktioner
- USB Type-C
- HDMI 2.0
- NVIDIA Quadro T1000
- NVIDIA Quadro RTX3000
- NVIDIA Quadro RTX4000
- NVIDIA Quadro RTX5000

USB-funktioner

Universal Serial Bus eller USB blev introduceret i 1996. Det forenklede markant forbindelsen mellem værtscomputere og eksterne enheder såsom muse, tastaturer, eksterne drivere og printere.

Tabel 1. USB-udvikling

Type	Dataoverførselshastighed	Kategori	Introduktionsår
USB 2.0	480 Mbps	High Speed (Høj hastighed)	2000
USB 3.2 Gen 1 (tidligere USB 3.0/USB 3.1 Gen 1)	5 Gbps	SuperSpeed	2010
USB 3.1 Gen 2	10 Gbps	SuperSpeed Plus	2013

USB 3.2 Gen 1 (SuperSpeed USB)

I mange år har USB 2.0 været veletableret som de facto standardgrænsefladen i pc-verdenen – med omkring 6 milliarder solgte enheder. Nu er der et stigende behov for højere hastigheder samt større båndbredder som følge af den endnu hurtigere computerhardware. USB 3.0/USB 3.1 Gen 1 har endelig svaret på kundernes krav med en teoretisk 10 gange højere hastighed end sin forgænger. I bund og grund er USB 3.2 Gen 1-funktionerne som følger:

- Højere overførselshastigheder (op til 20 Gbps).
- Øget multilane-driftshastighed på 10 Gbps pr. bane.
- Forøget maksimal buseffekt og forsyningsstrømstyrke som bedre opfylder de effekthungrende enheder.
- Nye strømstyringsfunktioner.
- Fuld-duplex dataoverførsel og understøttelse af nye overførselstyper.
- Bagudkompatibilitet med USB 3.1/3.0 og USB 2.0.
- Nye stik og kabler.

Emnerne herunder dækker nogle af de mest almindeligt stillede spørgsmål til USB 3.0/USB 3.2 Gen 1.

Hastighed

I øjeblikket er der fem hastighedstilstande defineret i de seneste USB 3.0/USB 3.1 Gen 1-specifikationer. Baseret på USB-dataoverførsel er de kategoriseret som Low Speed, Full Speed, High Speed (fra version 2.0 af specifikationen), SuperSpeed (fra version 3.0) og

SuperSpeed+ (fra version 3.1). Den nye SuperSpeed+ tilstand har en overførselshastighed på 20 Gbps. USB 3.2-standarden er bagudkompatibel med USB 3.1/3.0 og USB 2.0.

USB 3.2 Gen 1 opnår en meget højere ydeevne gennem de tekniske ændringer herunder:

- En ekstra fysisk bus der er tilføjet parallelt med den eksisterende USB 2.0-bus (se figuren nedenfor).
- USB 2.0 havde tidligere fire ledninger (strøm, jord og et par til differential-data). USB 3.1 Gen 1 tilføjer fire mere til to par differential-signaler (modtage og sende), dermed sammenlagt otte tilslutninger i stikkene og kabelføringen.
- USB 3.2 Gen 1 bruger en bidirektionel grænseflade i modsætning til halv-duplex som USB 2.0. Dette giver en 10-dobling af den teoretiske båndbredde.

Programmer

USB 3.1 Gen 1 åbner op for mulighederne og leverer mere frihøjde til, at enheder kan levere bedre oplevelser. Hvor USB-video tidligere kun lige akkurat kunne lade sig gøre (både hvad angår maksimal opløsning, forsinkelse og videokomprimering), er det nemt at forestille sig, at videoløsninger vil fungere meget bedre med 5-10 gange større båndbredde. Single-link DVI kræver næsten 2 Gbps overførselshastighed. Hvor 480 Mbps var begrænsende, er 5 Gbps mere end lovende. Med dens hastighed på 4,8 Gbps vil standarden bane vejen for produkter, der tidligere ikke var egnet til USB-grænsefladen, såsom eksterne RAID-lagersystemer.

Herunder er oplistet nogle tilgængelige SuperSpeed USB 3.0/USB 3.1 Gen 1-produkter:

- Eksterne USB 3.0/USB 3.2 Gen 1-harddiske
- Bærbare USB 3.2 Gen 1-harddiske
- Dockingstationer og adaptere til USB 3.2 Gen 1-drev
- USB 3.2 Gen 1-flashdrev og -læsere
- USB 3.2 Gen 1-SSD (Solid state-drev)
- USB 3.2 Gen 1-RAID-konfigurationer
- Drev til optiske medier
- Multimedieenheder
- Netværk
- Adapterkort og hubs til USB 3.2 Gen 1

Kompatibilitet

Den gode nyhed er, at USB 3.2 Gen 1 fra starten er designet til at kunne sameksistere med USB 2.0. Da USB 3.2 Gen 1 specificerer nye fysiske tilslutninger, kræver det således nye kabler, der kan klare de højere hastigheder i den nye protokol. Selve stikket er det samme rektangulære stik med fire USB 2.0-kontakter med præcis samme placering som før. Der er fem nye tilslutninger der kan modtage og sende data uafhængigt af hinanden i USB 3.0/USB 3.2 Gen 1-kabler, og de skaber kun kontakt, når de tilsluttes et ægte SuperSpeed USB-stik.

USB Type-C

USB Type-C er et nyt og meget lille fysisk stik. Stikket selv kan understøtte forskellige spændende nye USB-standarder som USB 3.1 og forsyning af USB-strøm (USB PD).

Alternativ tilstand

USB Type-C er en ny stikstandard, der er lille. Det drejer sig om en tredjedel af størrelsen på et gammelt USB Type-A stik. Dette er en enkeltstikstandard, som alle enheder kan anvende. USB Type-C-porte kan understøtte adskillige protokoller ved brug af "alternativ tilstand", hvilket gør det muligt for dig at have adaptere med HDMI-, VGA- og DisplayPort-udgange eller med andre typer forbindelser fra denne ene USB-port.

USB med strømforsyning

USB-strømforsyningsspecifikationen er også tæt forbundet med USB Type-C. I øjeblikket anvender smartphones, tablets og andre mobilenheder ofte en USB-forbindelse, når de skal lades op. En USB 2.0-forbindelse giver op til 2,5 W strøm – nok til at oplade din telefon, men så heller ikke mere. En bærbar pc kan eksempelvis kræve op til 60 W. USB-strømforsyningsspecifikationen booster strømforsyningen til 100 W. Den er tovejs, så en enhed kan både sende og modtage strøm. Strømmen kan desuden sendes samtidig med, at enheden sender data via forbindelsen.

Dette kan betyde et farvel til alle de mange producentspecifikke opladningskabler til bærbare pc'er – til fordel for en USB-standardforbindelse, der kan oplade alting. Du vil kunne oplade din bærbare pc vha. et af de bærbare batterier, du oplader dine smartphones og andre bærbare enheder med i dag. Du vil kunne slutte din bærbare pc til en ekstern skærm, der tilsluttet via et strømkabel, hvorefter den eksterne skærm kan oplade din bærbare pc og samtidig fungere som ekstern skærm – alt sammen via ét lille USB Type-C-stik. For at kunne gøre dette skal både enheden og kablet understøtte USB-strømforsyning. Blot fordi enhederne har en USB Type-C-stik, betyder det ikke nødvendigvis, at de gør dette.

USB Type-C og USB 3.2

USB 3.2 er en ny USB-standard. Den teoretiske båndbredde for USB 3 er 5 Gbps, mens den er 20 Gbps for USB 3.2, dvs. dobbelt så hurtig som første generation af Thunderbolt-stik. USB Type-C er ikke det samme som USB 3.2. USB Type-C er blot en stikform, og den underliggende teknologi kan sagtens være blot USB 2 eller USB 3.0. Faktisk anvender Nokias N1 Android-tablet et USB Type-C-stik, men indeni er det hele USB 2.0 – ikke engang USB 3.0. Teknologierne er dog nært beslægtede.

Thunderbolt over USB Type-C

Thunderbolt er et hardwarebrugergrænseflade, der kombinerer data, video, lyd og strøm i en enkelt forbindelse. Thunderbolt kombinerer PCI Express (PCIe) og DisplayPort (DP) i et serielt signal og leverer desuden DC-strøm. Alt sammen i et kabel. Thunderbolt 1 og Thunderbolt 2 bruger samme stik som mini-DP (DisplayPort) til at forbinde til eksterne enheder, mens Thunderbolt 3 bruger USB Type-C-stik.

Figur 1. Thunderbolt 1 og Thunderbolt 3

1. Thunderbolt 1 og Thunderbolt 2 (med mini-DP-stik)
2. Thunderbolt 3 (med USB Type-C-stik)

Thunderbolt 3 over USB Type-C

Thunderbolt 3 bringer Thunderbolt til USB Type-C med hastigheder på op til 40 Gbps, hvilket skaber en kompakt port, der gør det hele: leverer den hurtigste og mest alsidige forbindelse til enhver dock, skærm eller dataenhed som ekstern harddisk. Thunderbolt 3 bruger et USB Type-C-stik/port for at oprette forbindelse til understøttede eksterne enheder.

1. Thunderbolt 3 bruger USB Type-C-stik og -kabler – kompakt og reversibelt.
2. Thunderbolt 3 understøtter hastigheder op til 40 Gbps.
3. DisplayPort 1.4 – kompatibel med eksisterende DisplayPort-skærme, -enheder og -kabler.
4. USB-strømforsyning – op til 130 W på understøttede computere.

Hovedfunktioner ved Thunderbolt 3 over USB Type-C

1. Thunderbolt, USB, DisplayPort og USB Type-C med strømforsyning gennem et enkelt kabel (funktioner varierer mellem forskellige produkter).
2. USB Type-C-stik og -kabler, der er kompakte og reversible.
3. Understøtter Thunderbolt Networking (*varierer mellem forskellige produkter).
4. Understøtter skærme op til 4K.
5. Op til 40 Gbps

BEMÆRK: Dataoverførselshastigheden kan variere mellem forskellige enheder.

Thunderbolt-ikoner

Protocol	USB Type-A	USB Type-C	Notes
Thunderbolt	Not Applicable		Will use industry standard icon regardless of port style (i.e., mDP or USB Type-C)
Thunderbolt w/ Power Delivery	Not Applicable		Up to 130 Watts via USB Type-C

Figur 2. Thunderbolt-ikonografi – Variationer

HDMI 2.0

Dette emne forklarer HDMI (High-Definition Multimedia Interface) 2.0 og dens funktioner samt fordele.

HDMI er en branchestøttet, ukomprimeret og fuldstændigt digital lyd-/videogrænseflade. HDMI er et interface mellem en hver kompatibel audio/video-kilde, så som set-top-box, DVD-afspiller eller A/V-modtagere og en kompatibel digital audio og/eller videomonitor, så som et digitalt TV (DTV). Den tiltænkte anvendelse af HDMI-tv'er og DVD-afspillere. De primære fordele er kabelreduktion og indholdsbeskyttelse. HDMI understøtter standard, udvidet, eller high definition video, plus flerkanals digital audio over et enkelt kabel.

HDMI 2.0-funktioner

- **HDMI Ethernet-kanal** – Tilføjer højhastighedsnetværk til et HDMI-link, hvilket sæter brugeren i stand til at udnytte sine IP-aktiverede enheder fuldt ud uden et separat Ethernet-kabel.
- **Audioreturkanal** – Gør det muligt for et HDMI-tilsluttet TV med integreret modtager at sende lyddata "upstream" til et lydsystem med surround sound og derved eliminere behovet for et separat lydkabel.
- **3D** – Definerer input/output-protokoller for de fleste 3D-videoformater, og baner således vejen for 3D-gaming og 3D-hjemmeteater.
- **Indholdstype** – Realtidssignalering af indholdstyper mellem skærm og kildeenheder, der gør det muligt for et TV at optimere illustrationsindstillingerne efter indholdstype.
- **Ekstra farvepladser** – Understøtter de ekstra farvemodeller, som anvendes inden for digital fotografering og computergrafik.
- **4K-understøttelse** – Muliggør videoopløsninger langt over 1080p og understøtter dermed næste generation af skærme, som kan måle sig med de digitale biografsystemer, der anvendes i kommercielle biografer
- **HDMI Micro Connector (HDMI-microstik)** – et nyt mindre stik til telefoner og andre bærbare enheder, der understøtter videoopløsninger på op til 1080p.
- **Biltilslutningssystem** – Nye kabler og stik til bilvideosystemer, som er designet til at opfylde de unikke krav til bilmiljøet, og samtidig tilbyder den rigtige HD-kvalitet.

Fordele ved HDMI

- Kvalitet – HDMI overfører ukomprimeret digital audio og video med den allerfineste krystalklare billedkvalitet.
- Billig – HDMI giver kvalitet og funktionalitet i et digitalt interface, mens det også understøtter ukomprimerede videoformater på en enkel og kosteffektiv måde.
- Audio – HDMI understøtter flere audio-formater, fra standard stereo til flerkanals surround sound.
- HDMI kombinerer video og lyd fra flere kanaler i et enkelt kabel, hvilket eliminerer udgifter, kompleksitet og forvirringen med flere kabler, som i øjeblikket anvendes i A/V-systemer.
- HDMI understøtter kommunikation mellem videokilden (såsom en DVD-afspiller) og DTV'et, så der kan anvendes nye funktioner

NVIDIA Quadro T1000

Tabel 2. NVIDIA Quadro T1000

Funktion	Værdier
Grafikkorthukommelse	4 GB
Kerner	768
Hukommelsesbåndbredde	128 Gbps

Tabel 2. NVIDIA Quadro T1000(fortsat)

Funktion	Værdier
Hukommelsestype	GDDR6
Hukommelsesgrænseflade	128-bit
Urhastigheder	1395-1455 (Boost) MHz
GPU-basisur	8000 MHz (min. ved P0)
Skønnet maksimal kraft	50 W
Skærmunderstøttelse	eDP/mDP/HDMI/Type-C
Maksimal farvedybde	Op til 10 bit/farve
Operativsystemets grafik/understøttelse af video-API	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Understøttede opløsninger og maks genopfriskningshastigheder (Hz)	• Maks. digital: En DisplayPort 1.4 – 7680 x 4320 (8K) ved 30 Hz (mDP/Type-C til DP) • Maks digital: To DisplayPorts 1.4 – 7680 x 4320 (8K) ved 60 Hz (mDP/Type-C til DP)
Antal skærmsupport	Op til 4 skærme

NVIDIA Quadro RTX3000

Tabel 3. NVIDIA Quadro RTX3000

Funktion	Værdier
Grafikkorthukommelse	6 GB
Kerner	2304
Hukommelsesbåndbredde	336 Gbps
Hukommelsestype	GDDR6
Hukommelsesgrænseflade	192 bit
Urhastigheder	945-1380 (Boost) MHz
GPU-basisur	3504 MHz (min. ved P0)
Skønnet maksimal kraft	80 W
Skærmunderstøttelse	eDP/mDP/HDMI/Type-C
Maksimal farvedybde	Op til 10 bit/farve
Operativsystemets grafik/understøttelse af video-API	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Understøttede opløsninger og maks genopfriskningshastigheder (Hz)	• Maks. digital: En DisplayPort 1.4 – 7680 x 4320 (8K) ved 30 Hz (mDP/Type-C til DP) • Maks digital: To DisplayPorts 1.4 – 7680 x 4320 (8K) ved 60 Hz (mDP/Type-C til DP)
Antal skærmsupport	Op til 4 skærme

NVIDIA Quadro RTX4000

Table 4. NVIDIA Quadro RTX4000

Feature	Values
Graphics memory	8 GB
Cores	2560
Memory bandwidth	448 Gbps
Memory type	GDDR6
Memory Interface	256-bit
Clock Speeds	1110 - 1560 (Boost) MHz
GPU base clock	14000 MHz
Estimated Maximum Power	100 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	• Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/Type-c to DP) • Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/Type-c to DP)
Numbers of Display Support	Up to 4 displays

NVIDIA Quadro RTX5000

Table 5. NVIDIA Quadro RTX5000

Feature	Values
Graphics memory	16 GB
Cores	3072
Memory bandwidth	448 Gbps
Memory type	GDDR6
Memory Interface	256-bit
Clock Speeds	1035 / 1350 - 1545 / 1770 (Boost) MHz
GPU base clock	14000 MHz
Estimated Maximum Power	110 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10 bit/color
Operating Systems Graphics/ Video API Support	DirectX 12.0, OpenGL 4.6, DisplayPort 1.4, DirectX 12.1
Supported Resolutions and Max Refresh Rates (Hz)	• Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/Type-C to DP) • Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/Type-C to DP)
Numbers of Display Support	Up to 4 displays

3

Adskillelse og samling

SD-kort

Sådan fjernes SD-kortet

Forudsætninger

1. Følg proceduren i Før du udfører arbejde på computerens indvendige dele.

Om denne opgave

Figuren angiver placeringen af SD-kortet og giver en visuel fremstilling af fjernelsesproceduren. Billeder, der skal uploades i næste gennemgangscyklus.

Trin

1. Tryk på SD-kortet for at frigøre det fra computeren.
2. Skub SD-kortet ud af computeren.

Sådan monteres SD-kortet

Forudsætninger

Hvis du genmonterer en komponent, skal du fjerne den eksisterende komponent, før installationsproceduren foretages.

Om denne opgave

Figuren angiver placeringen af bunddækslet og giver en visuel fremstilling af installationsproceduren.

Billeder, der skal uploades i næste gennemgangscyklus

Trin

Skub SD-kortet ind i slottet på computeren, indtil det klikker på plads.

Næste trin

1. Følg proceduren i Efter du har udført arbejde på computerens indvendige dele

SSD-dæksel

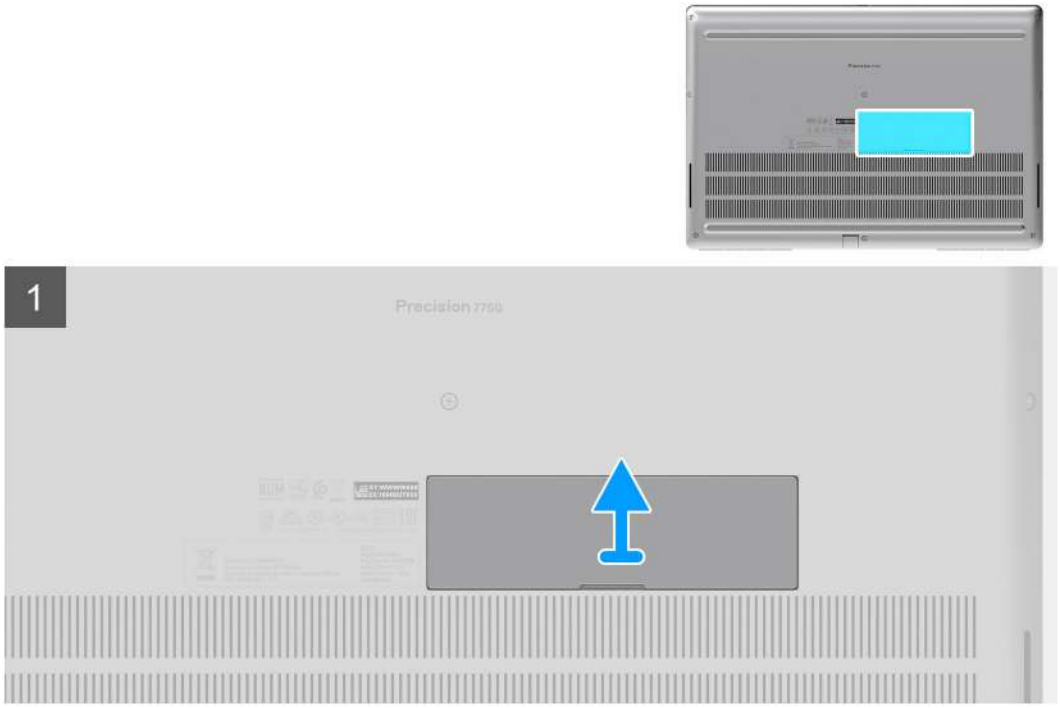
Removing SSD door

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.

About this task

The figure indicates the location of the SSD door reader and provides a visual representation of the removal procedure.



Steps

1. Push the SSD door towards left side to release the SSD door from the base cover.
2. Remove the SSD door from the base cover.

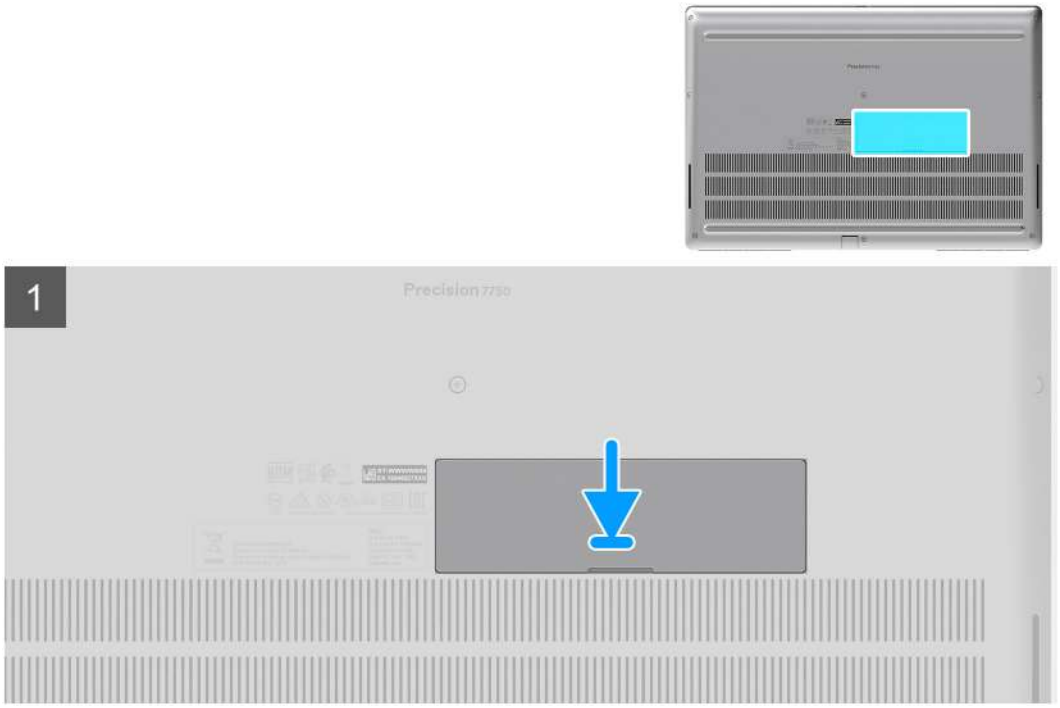
Installing SSD door

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the SSD door and provides a visual representation of the installation procedure.



Steps

1. Place the SSD door into its slot on the base cover.
2. Push the SSD door towards right side to lock the SSD door.

Next steps

1. Install the SD card.
2. Follow the procedure in after working inside your computer.

Sekundært M.2-solid state-drev

Removing the secondary M.2 Solid-state drive

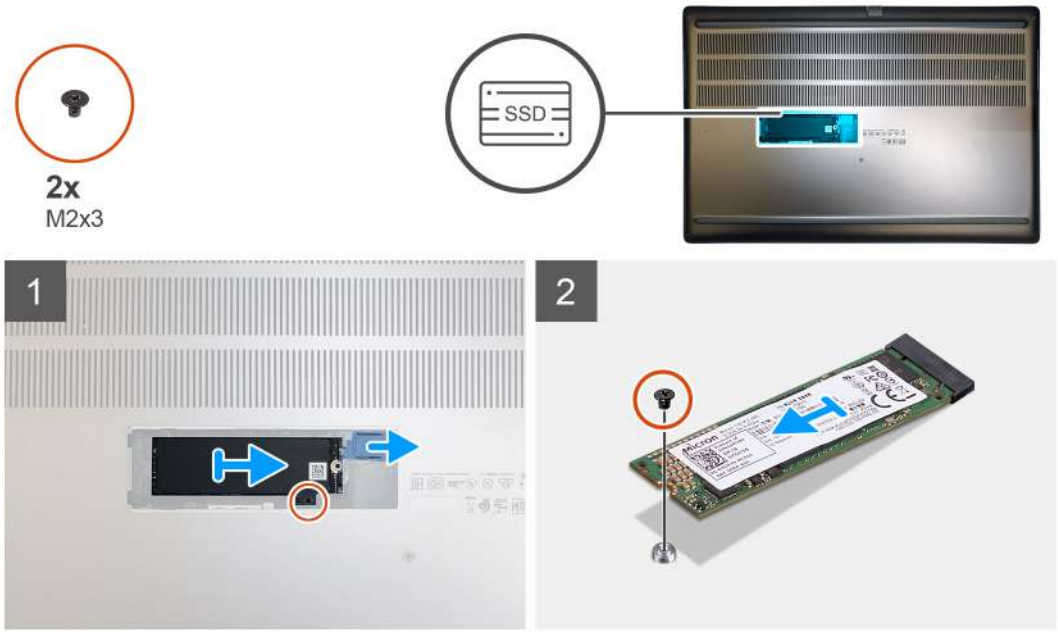
Prerequisites

NOTE: For computers shipped with M.2 2280 or 2230 SSD installed in slot 6.

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.

About this task

The figure indicates the location of the secondary M.2 SSD and provides a visual representation of the removal procedure.



Steps

1. Slide the SSD release latch to unlock the SSD module.
2. Remove the (M2x3) screw that secures the SSD module into its slot on the computer.
3. Remove the SSD module from the computer.
4. Remove the (M2x3) screw that secures the SSD thermal pad to the SSD carrier.
5. Remove the SSD thermal pad from the SSD module.
6. For M.2 2280 SSD:
   a. Remove the M.2 2280 SSD from the SSD carrier.
7. For M.2 2230 SSD:
   a. Remove the M.2 2230 SSD with its holder from the SSD carrier.
   b. Remove the (M2x2) screw to secure the M.2 2230 SSD to its holder.
   c. Remove the SSD from the holder.

Installing the secondary M.2 SSD module

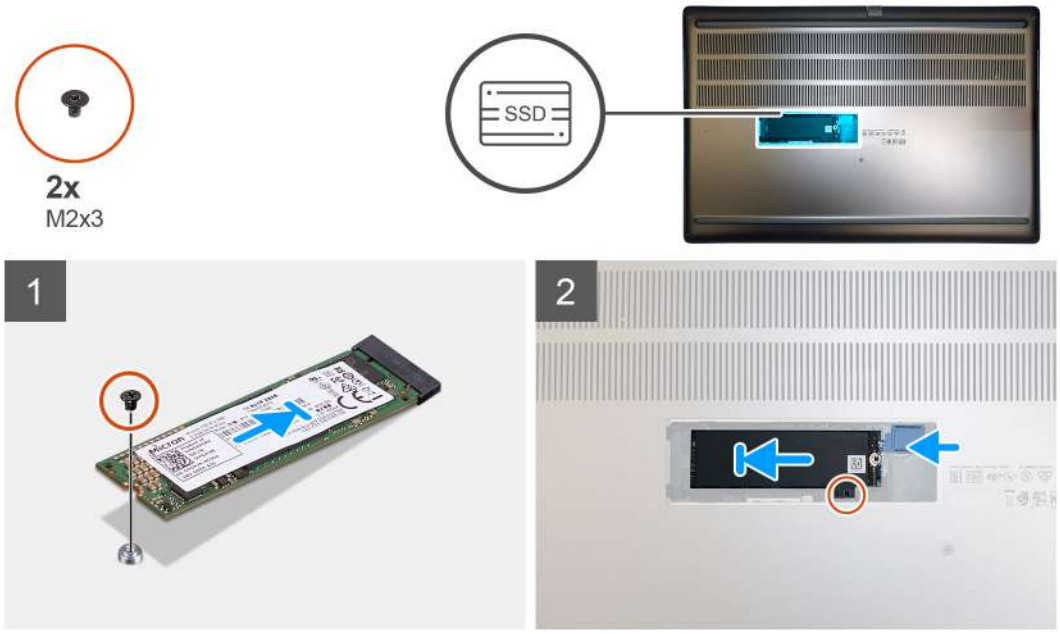
Prerequisites

NOTE: For computers shipped with M.2 2280 or 2230 SSD installed in slot 6.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the secondary M.2 SSD and provides a visual representation of the installation procedure.



Steps

1. For M.2 2280 SSD:
   a. Place the M.2 SSD onto its slot on SSD carrier.
2. For M.2 2230 SSD:
   a. Place the M.2 SSD into the SSD holder.
   b. Replace the (M2x2) screw to secure the M.2 SSD to the holder.
   c. Place the M.2 SSD with its holder on the SSD carrier.
3. Place the thermal plate above the M.2 SSD module.
4. Replace the (M2x3) screw to secure the SSD thermal plate to the M.2 SSD.
5. Replace the SSD module in its slot on the computer.
6. Replace the (M2x3) screw to secure the SSD module in place.

Next steps

1. Install the SSD door.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

Bunddæksel

Removing the base cover

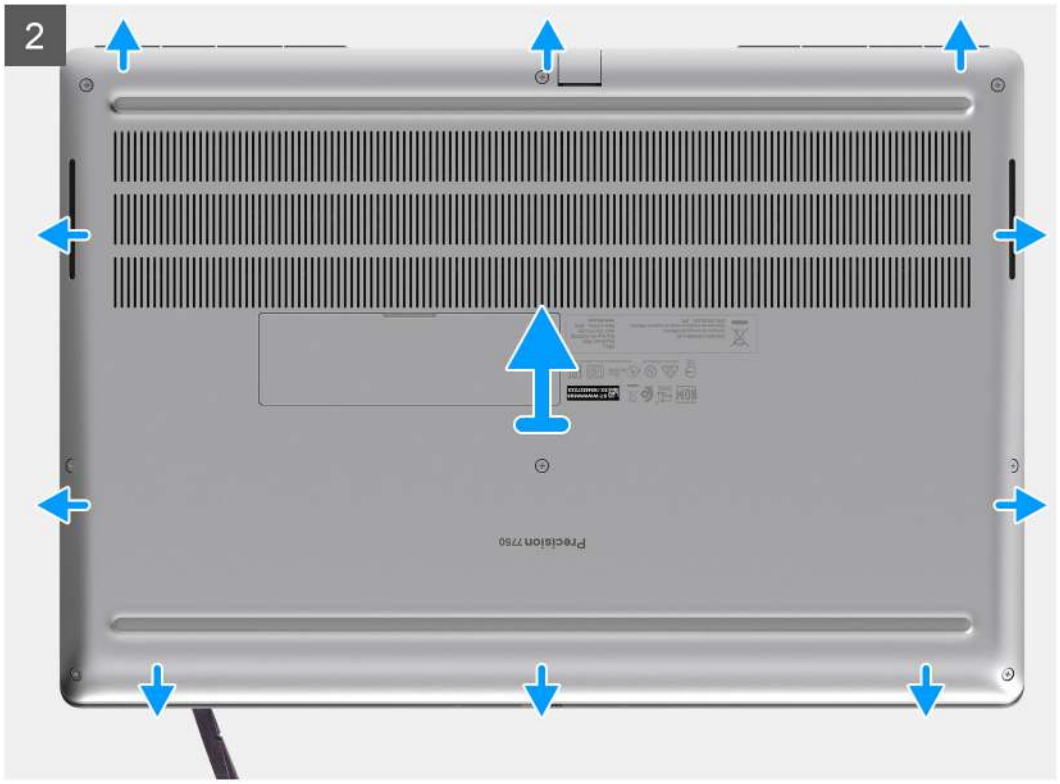
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.

About this task

The figure indicates the location of the base cover and provides a visual representation of the removal procedure

1
Precision 7750


2
Precision 7750

Steps

1. Loosen the eight captive screws that secure the base cover to the computer.
2. Using a plastic scribe, pry open the base cover starting from bottom edge of the cover.

NOTE: For models shipped without SmartCard reader, pry open the base cover from the smart card reader slot. Use your fingers to pry open the base cover as the use of plastic scribe or any other sharp objects may damage the base cover.

3. Lift the base cover starting from the bottom edge and remove it from the computer.
4. Disconnect the battery cable from the connector on the system board.

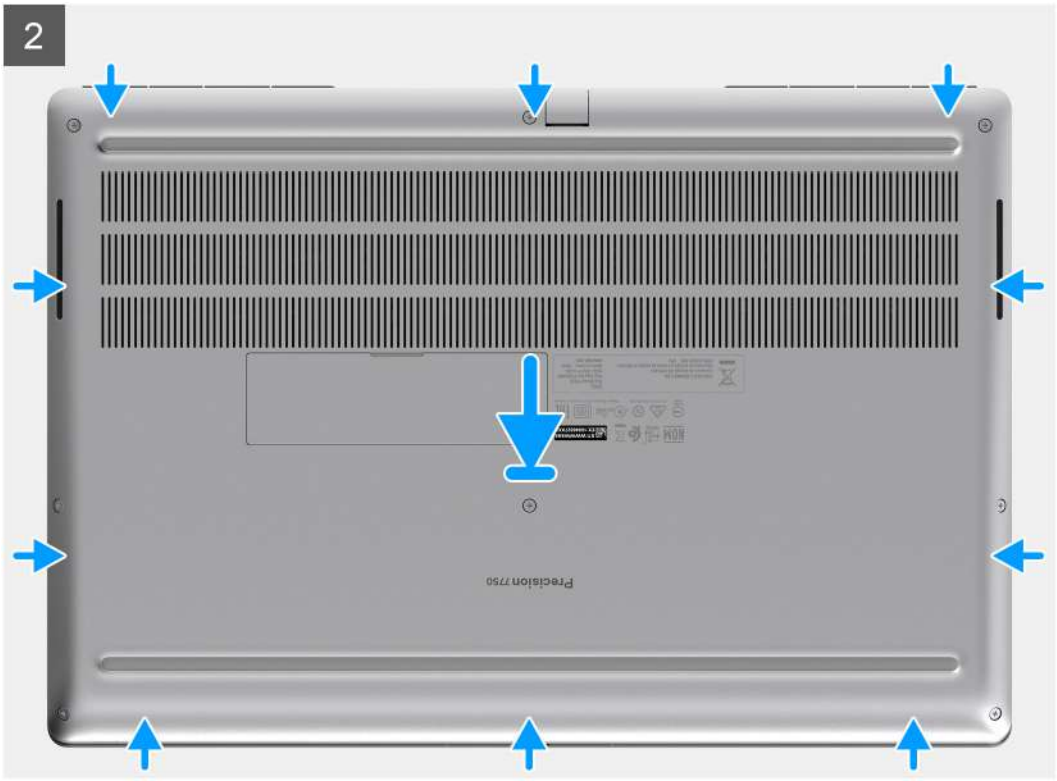
Installing the base cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the base cover and provides a visual representation of the installation procedure.


2

3

Steps

1. Connect the battery cable to the connector on the system board.
2. Slide the base cover into its slot until it clicks into place.
3. Tighten the eight captive screws to secure the base cover to the computer.

Next steps

1. Install the SD card.
2. Follow the procedure in after working inside your computer.

Batteri

Forholdsregler for litium-ion-batteri

FORSIGTIG:

- **Vær forsigtig, når du håndterer lithium-ion-batterier.**
- **Aflad batteriet så meget som muligt, inden du fjerner det fra systemet. Dette kan gøres ved at koble vekselstrømsadapteren fra systemet for derved at få opbrugt batteriet.**
- **Man må ikke knuse, smide, beskadige batteriet eller stikke fremmedlegemer ind i det.**
- **Udsæt ikke batteriet for høje temperaturer, og skil ikke batteripakker eller celler ad.**
- **Sæt ikke overfladen af batteriet under tryk.**
- **Bøj ikke batteriet.**
- **Brug ikke værktøj af nogen art til at lirke på batteriet.**
- **Sørg for, at alle skruer under serviceringen af dette produkt ikke forsvinder eller lægges det forkerte sted for at undgå, at batteriet eller andre systemkomponenter får huller eller tager skade.**
- **Hvis batteriet sidder fast i en enhed på grund af opsvulmning, må du ikke forsøge at frigøre det, da punktering, bøjning eller knusning af et litium-ion-batteri kan være farligt. I den type tilfælde skal du kontakte Dells tekniske support for at få assistance. Se www.dell.com/contactdell.**
- **Køb altid originalbatterier fra www.dell.com eller via en autoriseret Dell- partner og forhandler.**

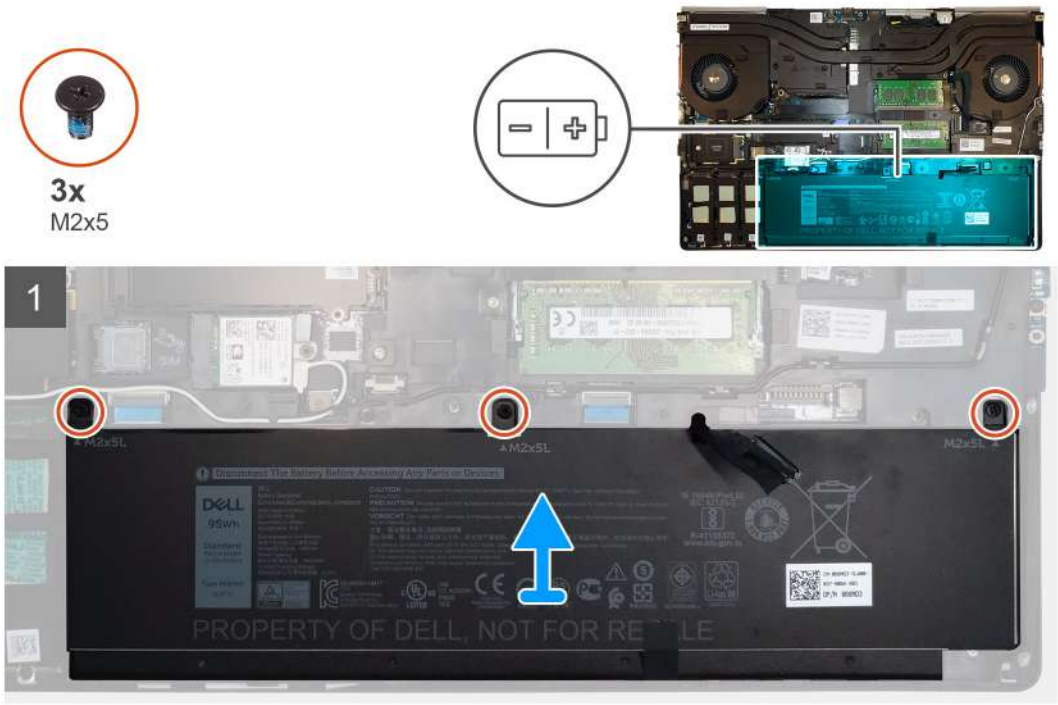
Removing the battery

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the battery and provides a visual representation of the removal procedure.



Steps

1. Remove the three (M2x5) screws that secure the battery to the computer.
2. Slightly lift the battery and disconnect the battery cable from the connector on the battery.
3. Remove the battery away from the computer.

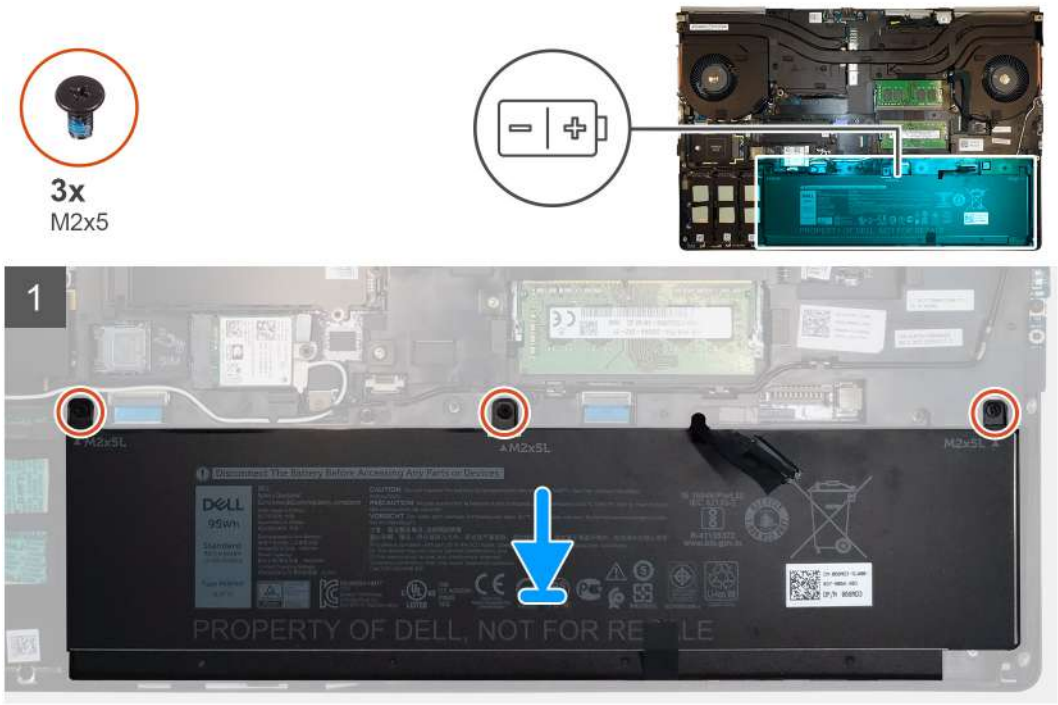
Installing the battery

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the battery and provides a visual representation of the installation procedure.



Steps

1. Connect the battery cable to the connector in the battery.
2. Place the battery onto its slot in the computer.
3. Replace the three (M2x5) screws to secure the battery to the computer.

Next steps

1. Install the base cover.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

Solid-state-drev

Removing the primary M.2 Solid-state drive

Prerequisites

NOTE: For computers shipped with M.2 2280 or 2230 SSD installed in slot 3, slot 4, and/or slot 5.

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the primary M.2 SSD and provides a visual representation of the removal procedure.

Steps

1. Remove the (M2x3) screw that secures the SSD thermal plate to the M.2 SSD module.
2. Remove the SSD thermal plate.
3. For M.2 2280 SSD:
   a. Remove the (M2x3) screw that secures the M.2 SSD to the computer.
   b. Remove the M.2 SSD.
4. For M.2 2230 SSD:
   a. Remove the (M2x3) screw that secures the SSD module.
   b. Remove the SSD module from the computer.
   c. Remove the (M2x2) screw that secures the SSD to SSD holder.
   d. Remove the SSD from the holder.
5. Repeat the above steps to remove the other SSD modules in the computer.

Installing the primary M.2 SSD module

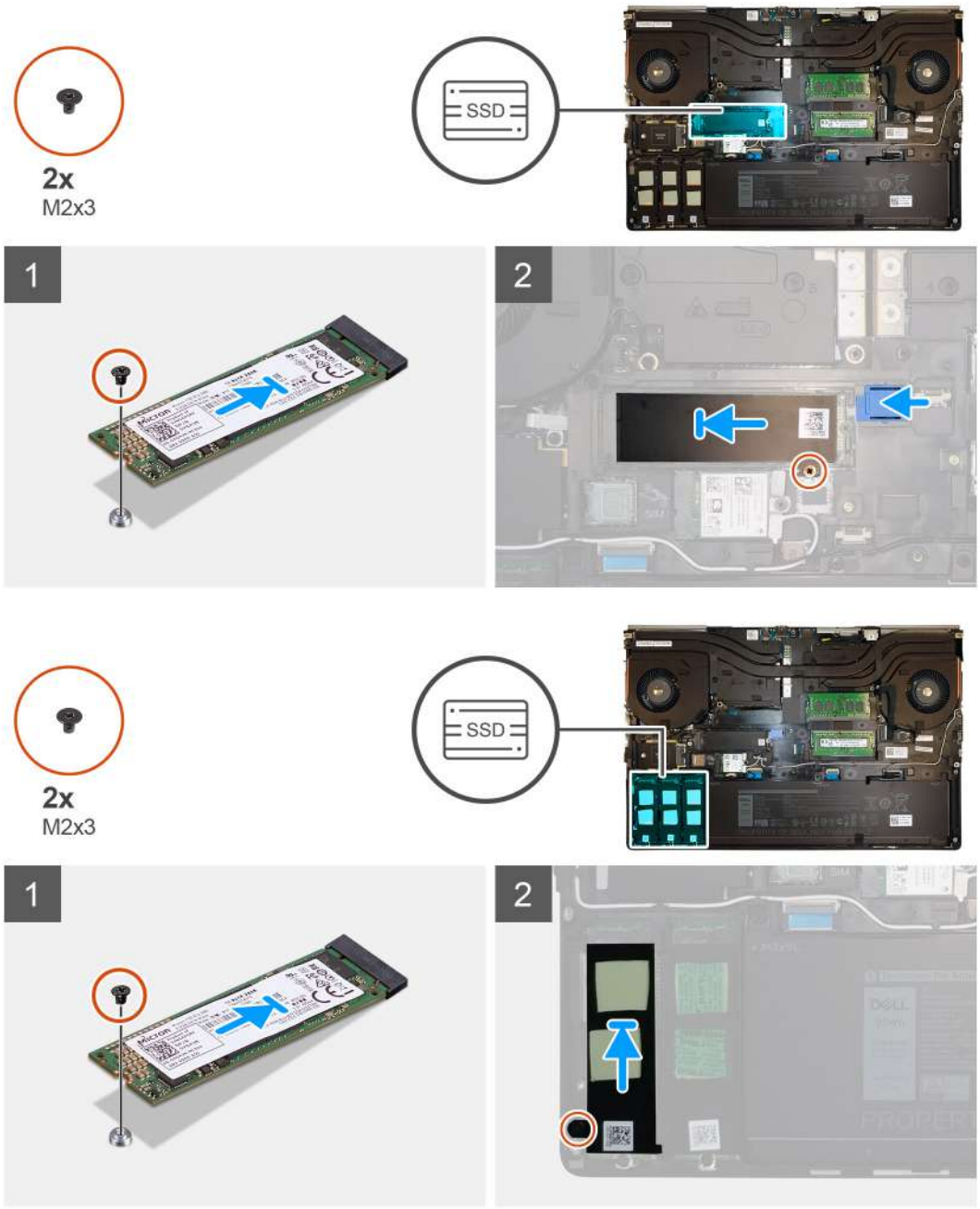
Prerequisites

NOTE: For computers shipped with M.2 2280 or 2230 SSD installed in slot 3, slot 4, and/or slot 5.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the primary M.2 SSD and provides a visual representation of the installation procedure.



Steps

1. For M.2 2280 SSD:
   a. Place the M.2 SSD onto its slot on the computer.
   b. Replace the (M2x3) screw to secure the M.2 SSD to the computer.

2. For M.2 2230 SSD:
   a. Place the M.2 SSD into the SSD holder.
   b. Replace the (M2x2) screw to secure the M.2 SSD to the holder.
   c. Place the M.2 SSD module onto its slot on the computer.
   d. Replace the (M2x3) screw to secure the M.2 SSD module to the computer.
3. Place the thermal plate above the M.2 SSD module.
4. Replace the (M2x3) screw to secure the SSD thermal plate to the M.2 SSD.
5. Repeat the above steps to install the other SSD modules in the computer.

Next steps

1. Install the base cover.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

Sekundært hukommelsesmodul

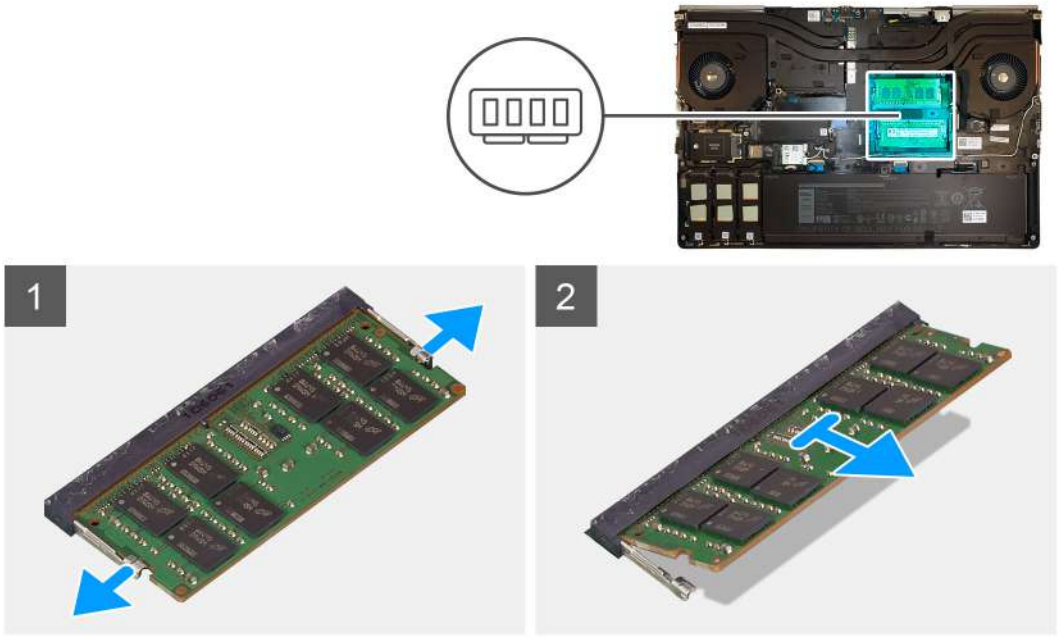
Removing the secondary memory module

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the secondary memory module and provides a visual representation of the removal procedure.



Steps

1. Pry the securing clips from both side of the memory module until the memory module pops up.
2. Remove the memory module from the memory-module slot.

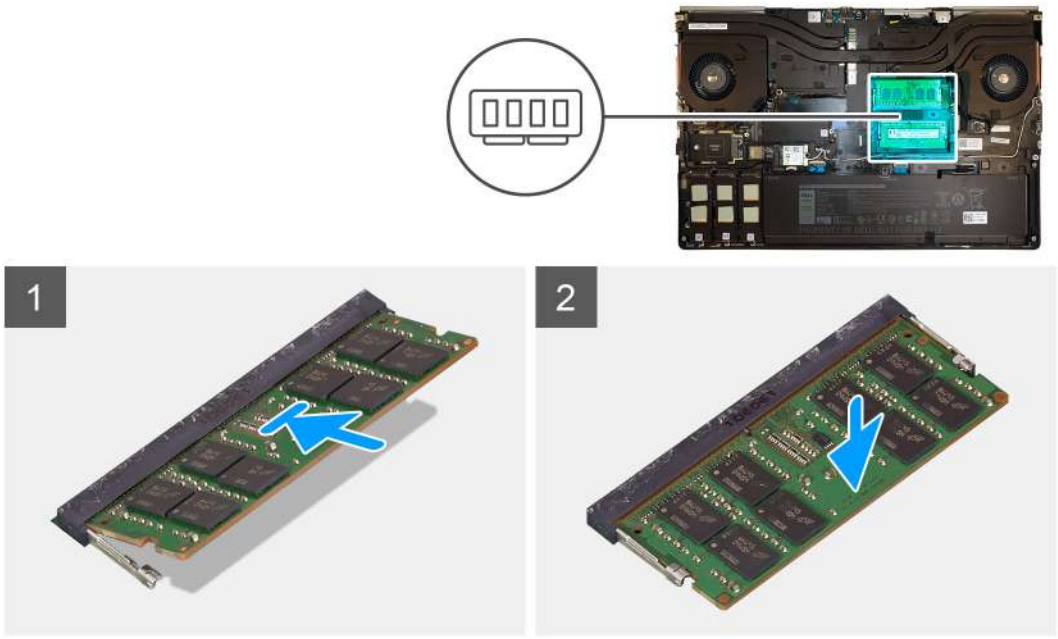
Installing the secondary memory module

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the secondary and provides a visual representation of the installation procedure.



Steps

1. Align the notch on the memory module with the tab on the memory-module slot.
2. Slide the memory module firmly into the slot and press the memory module until it clicks into place.

   NOTE: If you do not hear the click, remove the memory module and reinstall it.

Next steps

1. Install the base cover.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

SIM-kort

Removing the SIM card

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the SIM card and provides a visual representation of the removal procedure.

Steps

1. Gently slide the SIM card cover towards the left side of the system to unlock the SIM card cover.

   CAUTION: The SIM card cover is very fragile and can be easily damaged if it is not properly unlocked before opening.

2. Filp the right edge of the SIM card cover to open it.
3. Remove the SIM card from the SIM card slot.

Installing the SIM card

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the SIM card and provides a visual representation of the installation procedure.

Steps

1. Slide the SIM card into the SIM card slot.
2. Snap the SIM card cover down.
3. Slide the SIM card cover towards the right of the system to lock the cover.

Next steps

1. Install the base cover.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

WLAN-kort

Removing the WLAN card

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the WLAN card and provides a visual representation of the removal procedure.

Steps

1. Loosen the captive screw that secures the WLAN card bracket to the system board.
2. Remove the WLAN card bracket away from the WLAN card.
3. Disconnect the antenna cables from the WLAN card.
4. Slide at an angle and remove the WLAN card from the connector on the system board.

Installing the WLAN card

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the WLAN card and provides a visual representation of the installation procedure.

Steps

1. Insert the WLAN card to the connector on the system board.
2. Connect the antenna cables to the WLAN card.
3. Align and place the WLAN card bracket above the WLAN card to secure the antenna cables.
4. Tighten the captive screw to secure the WLAN card bracket to the system board.

Next steps

1. Install the base cover.

2. Install the SD card.
3. Follow the procedure in after working inside your computer.

WWAN-kort

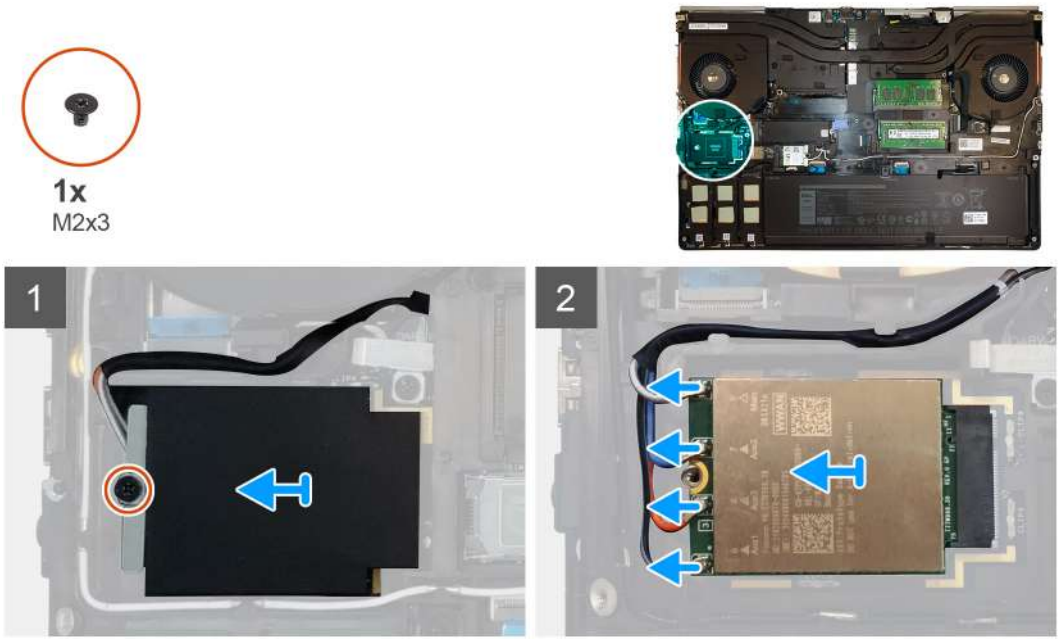
Removing the WWAN card

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the WWAN card and provides a visual representation of the removal procedure.



Steps

1. Loosen the (M2x3) screw that secures the WWAN card bracket to the system board.
2. Lift the WWAN card bracket from the WWAN card.
3. Disconnect the antenna cables from the connector on the WWAN card.
4. Slide and remove the WWAN card from its slot on the system board.

Installing the WWAN card

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the WWAN card and provides a visual representation of the installation procedure.

Steps

1. Align and slide the WWAN card to its slot on the system board.

2. Connect the antenna cables to the connectors on the WWAN card.
3. Place the WWAN card bracket above the WWAN card to secure the antenna cables.
4. Tighten the (M2x3) screw to secure the WWAN card bracket to the system board.

Next steps

1. Install the base cover.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

Tastaturgitter

Removing the keyboard lattice

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.

About this task

The figure indicates the location of the keyboard lattice and provides a visual representation of the removal procedure.

Steps

1. Using a plastic scribe, pry the top edge of the keyboard lattice starting from the recess points and working your way around the sides and bottom edge.
2. Remove the keyboard lattice from the keyboard.

Installing the keyboard lattice

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the M.2 SSD and provides a visual representation of the installation procedure.

Steps

1. Align the keyboard lattice to its position on the keyboard.
2. Press the edges on the keyboard lattice until it clicks into place.

Next steps

1. Install the base cover.
2. Install the SD card.
3. Follow the procedure in after working inside your computer.

Tastatur

Removing the keyboard

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the keyboard lattice.

About this task

The figure indicates the location of the keyboard and provides a visual representation of the removal procedure.

Steps

1. Lift the latch and disconnect the keyboard cable and the keyboard backlight cable from the connectors on the touchpad module.
2. Turn-over and open the system at 90° angle.
3. Remove the six (M2x2.5) screws that secure the keyboard to the palmrest.
4. Pry the bottom edge of the keyboard and then work along the left and the right sides of the keyboard.
5. Carefully unroute the keyboard backlight cable and the keyboard cable through the palmrest.
6. Remove the keyboard from the system.

Installing the keyboard

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the keyboard and provides a visual representation of the installation procedure.

Steps

1. Align the keyboard to its slot on the palmrest
2. Route the keyboard cable and the keyboard backlight cable through the bottom of the palmrest.
3. Replace the six (M2x2.5) screws to secure the keyboard to the palmrest.
4. Turn-over the system at 90° angle to access the keyboard and the keyboard backlight cables.
5. Connect the keyboard backlight cable and the keyboard cable to the connectors on the system board.

NOTE: Ensure that you fold the keyboard data cable in perfect alignment.

Next steps

1. Install the keyboard lattice.
2. Install the battery.
3. Install the base cover.
4. Install the SD card.
5. Follow the procedure in after working inside your computer.

Primære hukommelsesmodul

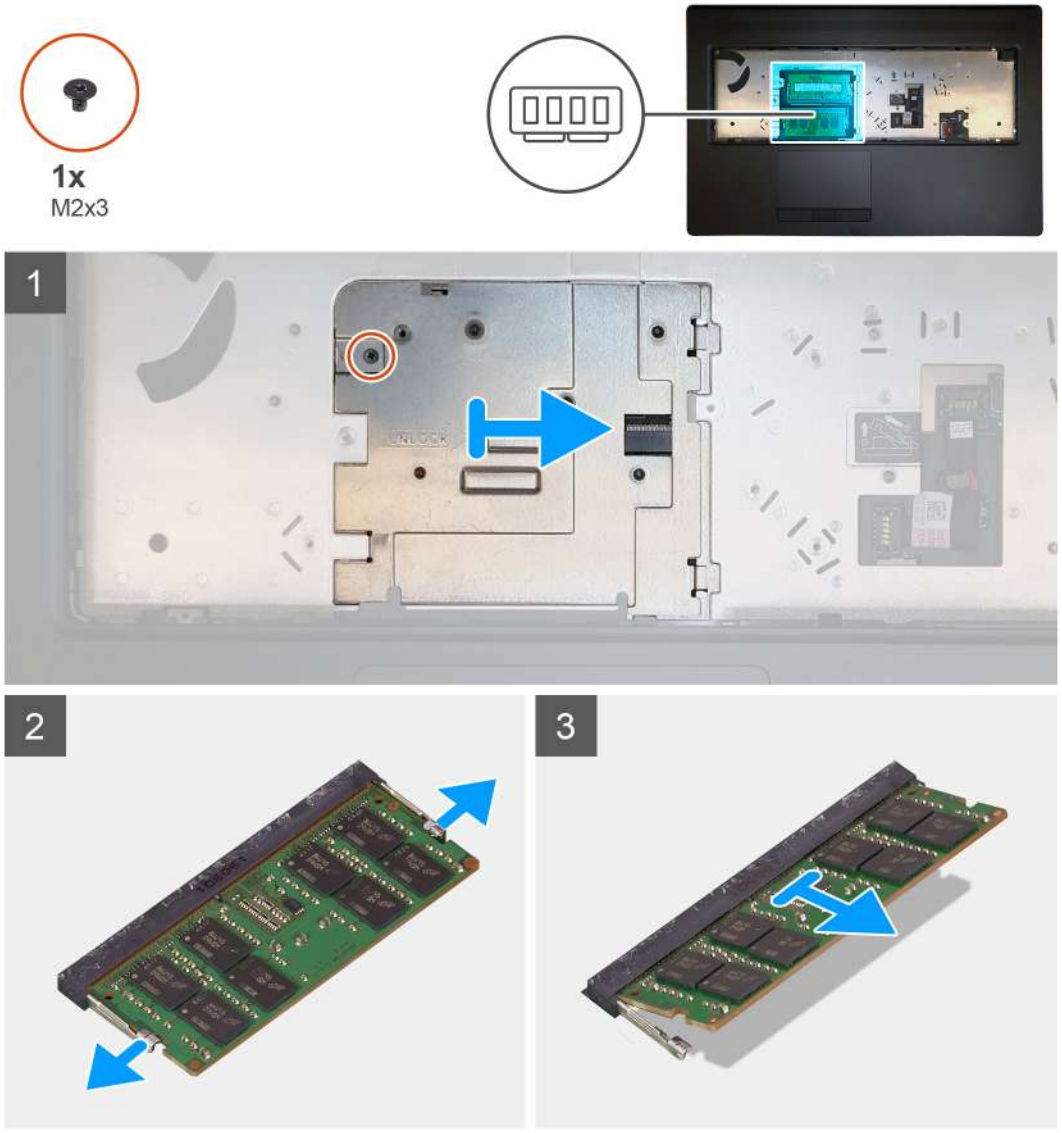
Removing the primary memory module

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the keyboard lattice.
6. Remove the keyboard.

About this task

The figure indicates the location of the primary memory module and provides a visual representation of the removal procedure.



Steps

1. Remove the (M2x3) screw that secures the memory shield in place.

2. Slide the memory shield towards the right side of the computer and lift the shield from the memory module.
3. Pry the securing clips from both side of the memory module until the memory module pops up.
4. Remove the memory module from the memory-module slot.

NOTE: Repeat the above steps if there are other memory installed.

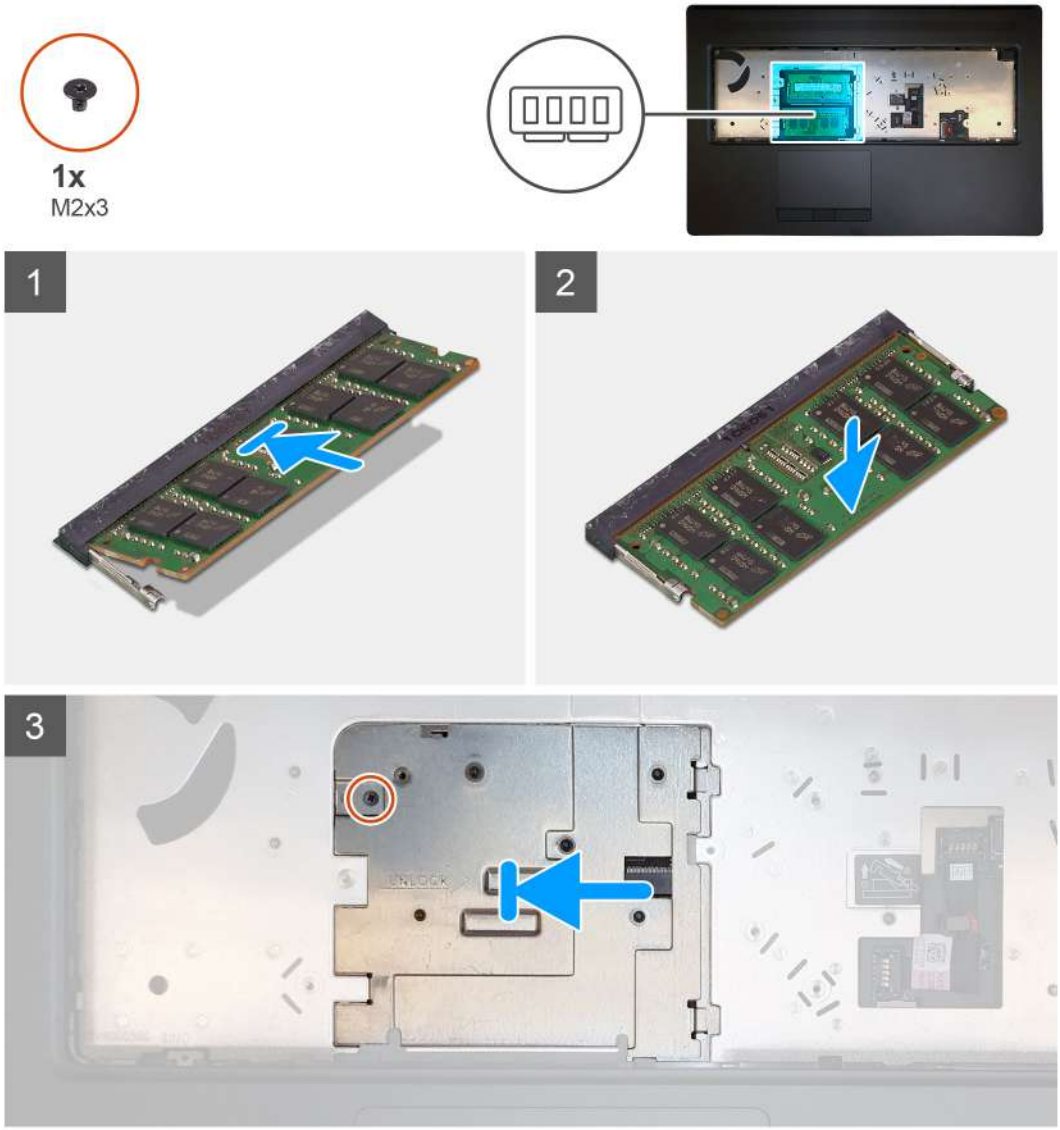
Installing the primary memory module

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the primary memory module and provides a visual representation of the installation procedure.



Steps

1. Align the notch on the memory module with the tab on the memory-module slot.
2. Slide the memory module firmly into the slot at an angle and press the memory module down until it clicks into place.
3. Carefully align the two clips on the memory shield with the slots on the computer chassis and insert the clips under the chassis.

4. Place the memory shield and slide it towards the left side of the computer to cover the memory module.
5. Replace the (M2x3) screw to secure the memory shield to the memory module.

Next steps

1. Install the keyboard.
2. Install the keyboard lattice.
3. Install the battery.
4. Install the base cover.
5. Install the SD card.
6. Follow the procedure in after working inside your computer.

Kølelegeme

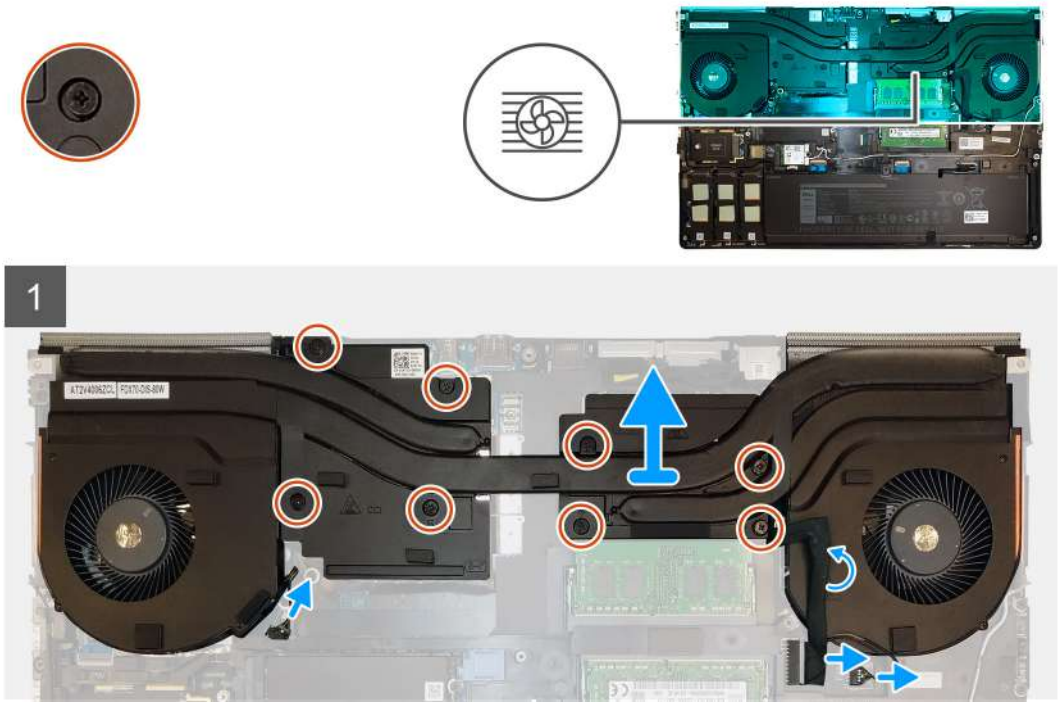
Removing the heat-sink assembly

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.

About this task

The figure indicates the location of the heat-sink assembly and provides a visual representation of the removal procedure.



Steps

1. Peel the power-adapter cable from the heat-sink assembly.
2. Disconnect the two fan cables from the connectors on the system board.
3. Loosen the eight captive screws that secure the heat-sink assembly to the system board.

NOTE: Loosen the captive screws in the order stamped onto the heat-sink assembly next to the screws [1 > 2 > 3 > 4 > 5 > 6 > 7 > 8].

4. Lift the heat-sink assembly to remove it from the computer.

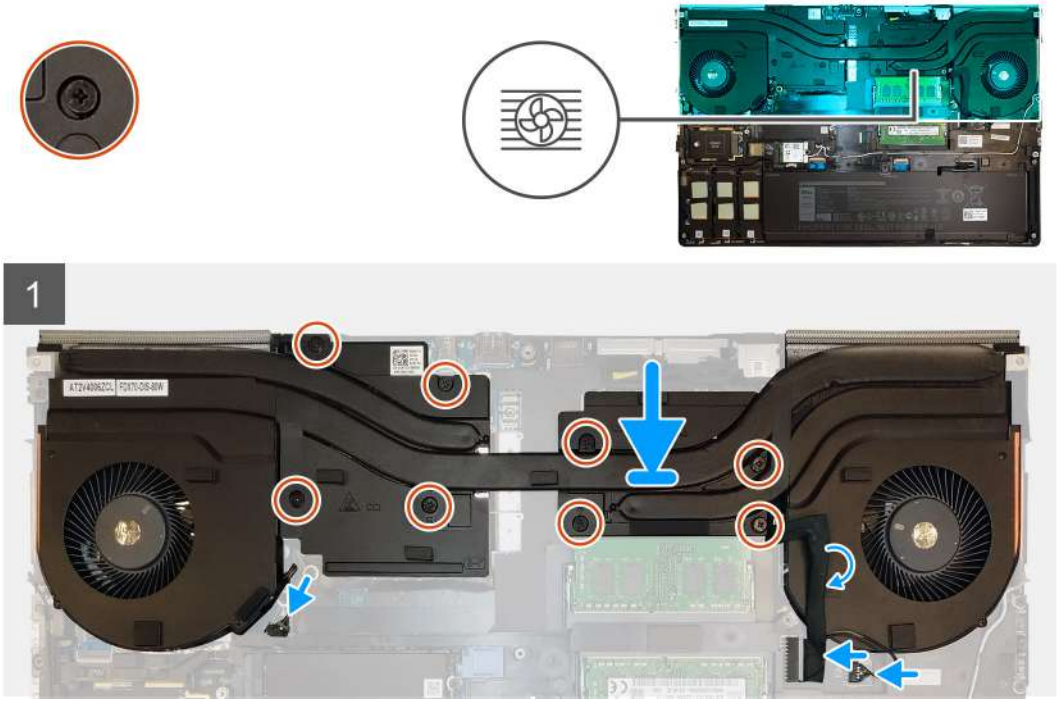
Installing the heat sink assembly

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the keyboard and provides a visual representation of the installation procedure.



Steps

1. Align and insert the heat-sink assembly into its slot on the computer.
2. Tighten the eight captive screws to secure the heat-sink assembly to the system board.

   NOTE: Tighten the captive screws in the order stamped onto the heat sink next to the screws [1 > 2 > 3 > 4 > 5 > 6 > 7 > 8].

3. Connect the two fan cables to the connector on the system board.
4. Adhere the power-adapter cable on the heat-sink assembly.

Next steps

1. Install the battery.
2. Install the base cover.
3. Install the SD card.
4. Follow the procedure in after working inside your computer.

Strømadapterport

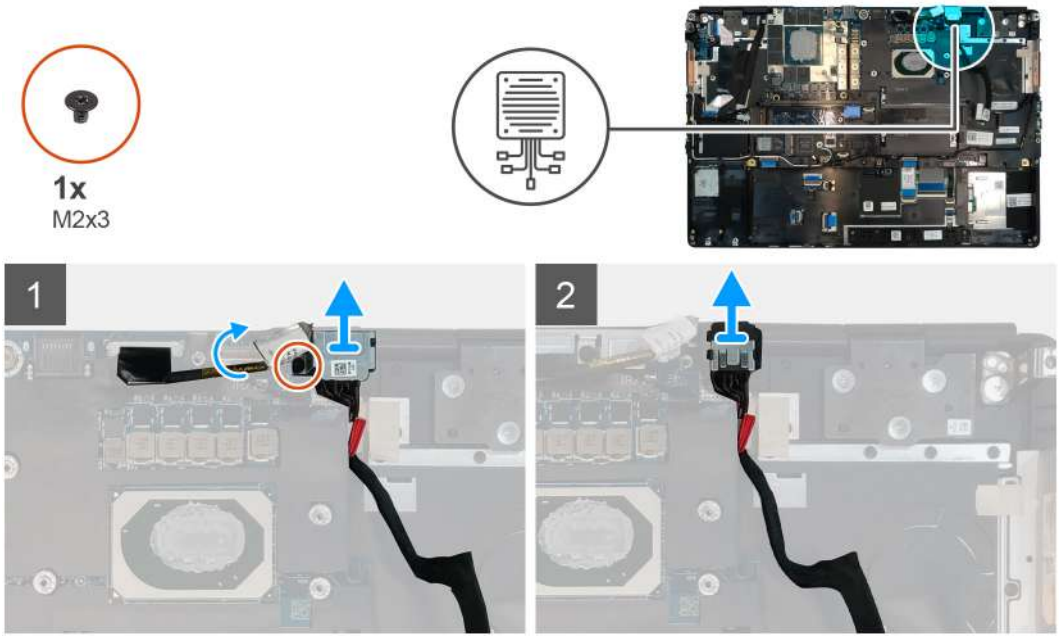
Removing the power-adapter port

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the heat-sink assembly.

About this task

The figure indicates the location of the power-adapter port and provides a visual representation of the removal procedure.



Steps

1. Remove the (M2x3) screw that secures power-adapter cable bracket.
2. Remove the power-adapter cable bracket from the computer.
3. Lift the power-adapter port from its slot on the palmrest.
4. Unroute and remove the power-adapter cable from the computer.

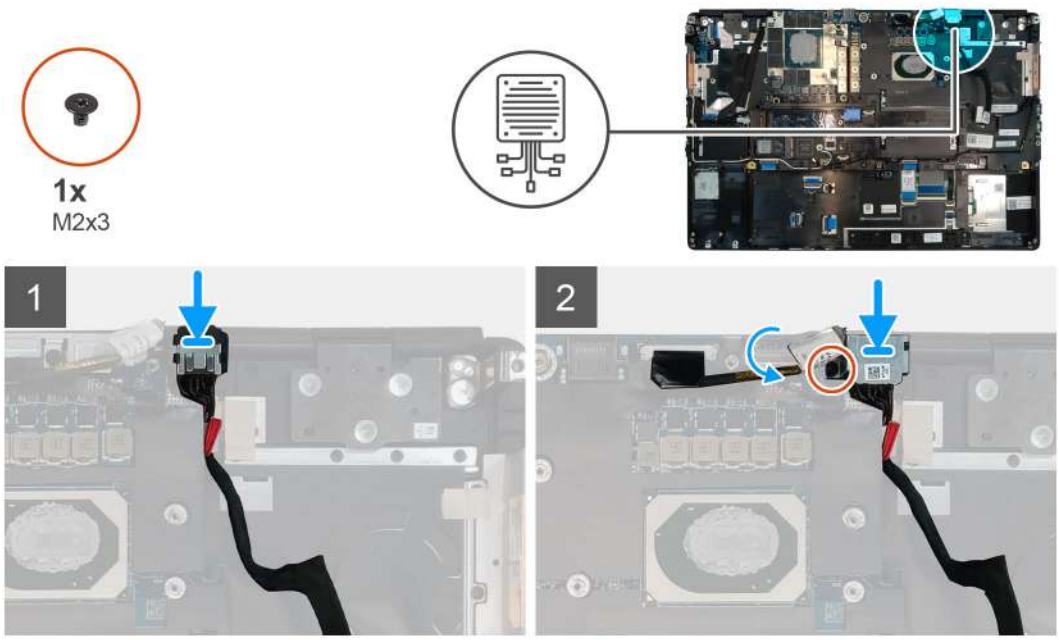
Installing the power-adapter port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the power-adapter port and provides a visual representation of the installation procedure.



Steps

1. Align and place the power-adapter cable on the computer.
2. Place the power-adapter port into its slot on the plamrest.
3. Replace the power-adapter cable bracket on the power-adapter port.
4. Replace the (M2x3) screw to secure the power-adapter cable bracket to the computer.
5. Connect the power-adapter cable to the connector on the system board.

Next steps

1. Install the heat-sink assembly.
2. Install the battery.
3. Install the base cover.
4. Install the SD card.
5. Follow the procedure in after working inside your computer.

Kort til tænd/sluk-knap

Removing the power button board

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the heat-sink assembly.

About this task

The figure indicates the location of the power button board and provides a visual representation of the removal procedure.

Steps

1. Disconnect the power button board cable from the connector on the system board.
2. Peel the power button board cable from the palmrest.

3. Remove the two (M2x3) screws that secure the power button board to the computer.
4. Remove the power button board with the power button board cable from the computer.
5. Disconnect the power button board cable from the power button board.

Installing the power button board

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the power button board and provides a visual representation of the installation procedure.

Steps

1. Connect the power button board cable to the power button board.
2. Align and place the power button board with power button cable into its slot on the computer.
3. Replace the two (M2x3) screws to secure the power button board.
4. Adhere the power button board cable to the palmrest.
5. Connect the power button board cable to the connector on the system board.

Next steps

1. Install the heat-sink assembly.
2. Install the battery.
3. Install the base cover.
4. Install the SD card.
5. Follow the procedure in after working inside your computer.

Kort til tænd/sluk-knap med fingeraftrykslæser

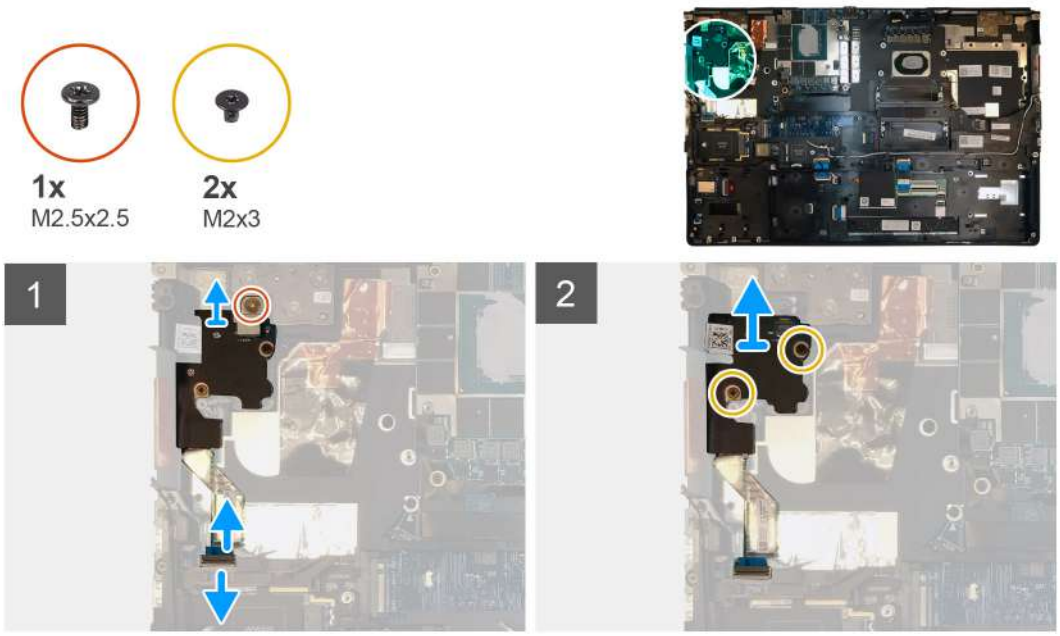
Removing the power button assembly with fingerprint reader

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the heat-sink assembly.

About this task

The figure indicates the location of the power button assembly with fingerprint reader and provides a visual representation of the removal procedure.



Steps

1. Remove the (M2.5x2.5) screw that secures the power button assembly with fingerprint reader cable bracket to the power button board.
2. Remove the power button assembly with fingerprint reader cable bracket from the power button board.
3. Disconnect the power button assembly with fingerprint reader cable from the power button board.
4. Disconnect the power button board cable from the connector on the system board.
5. Peel the power button board cable from the palmrest.
6. Remove the two (M2x3) screws that secure the power button board to the computer.
7. Remove the power button board with the power button board cable from the computer.
8. Disconnect the power button board cable from the power button board.

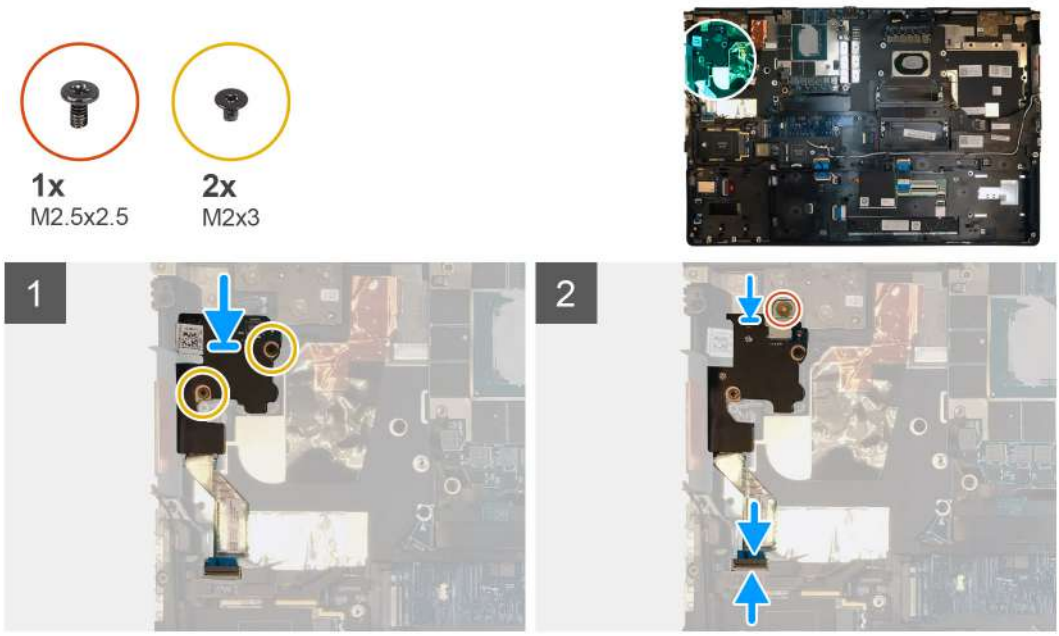
Installing the power button assembly with fingerprint reader

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the power button assembly with fingerprint reader and provides a visual representation of the installation procedure.



Steps

1. Connect the power button board cable to the power button board.
2. Align and place the power button board with power button cable into its slot on the computer.
3. Replace the two (M2x3) screws to secure the power button board.
4. Adhere the power button board cable to the palmrest.
5. Connect the power button board cable to the connector on the system board.
6. Connect the power button assembly with fingerprint reader cable to the power button board,
7. Replace the power button assembly with fingerprint reader cable bracket above the power button daughter board.
8. Replace the (M2.5x2.5) screw to secure the power button assembly with fingerprint reader cable bracket in place.

Next steps

1. Install the heat-sink assembly.
2. Install the battery.
3. Install the base cover.
4. Install the SD card.
5. Follow the procedure in after working inside your computer.

Inderramme

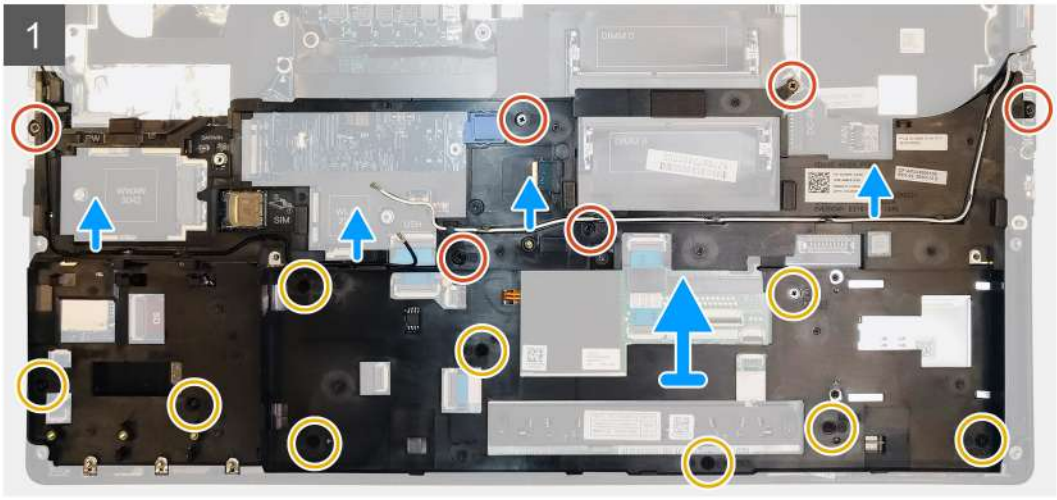
Removing the inner frame

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the WLAN card.
6. Remove the WWAN card.
7. Remove the primary M.2 SSD.

About this task

The figure indicates the location of the inner frame and provides a visual representation of the removal procedure.



Steps

1. Unroute the WLAN and WWAN antenna cables from the routing guide.
2. Disconnect the keyboard cable and the keyboard backlight cable from the connector on the touchpad module.
3. Remove the six (M2x5) and the nine (M2x3) screws that secure the inner frame to the computer chassis.
4. Remove the inner frame from the computer while carefully unthreading the keyboard cable and keyboard backlight cable through the opening on the inner frame.

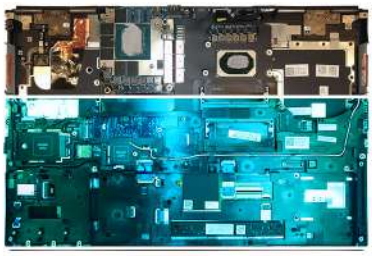
Installing the inner frame

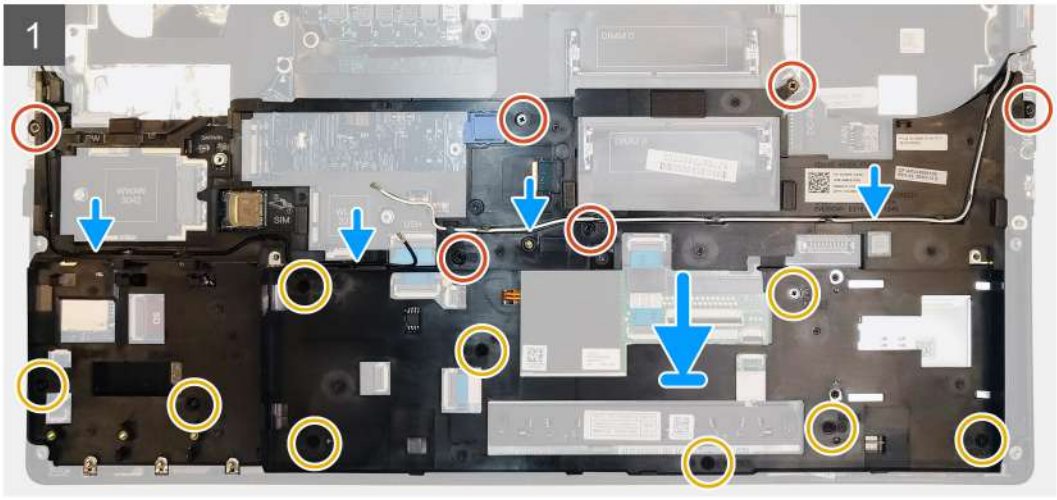
Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the inner frame and provides a visual representation of the installation procedure.





Steps

1. Carefully route the keyboard and keyboard backlight cable through the inner frame and place the inner frame on the computer chassis.
2. Replace the six (M2x5) and the nine (M2x3) screws to secure the inner frame in place.
3. Route the WLAN and WWAN antenna cables through the routing guide.

Next steps

1. Install the WLAN card.
2. Install the WWAN card.
3. Install the primary M.2 SSD.
4. Install the battery.
5. Install the base cover.
6. Install the SD card.
7. Follow the procedure in after working inside your computer.

Smartcard-bur

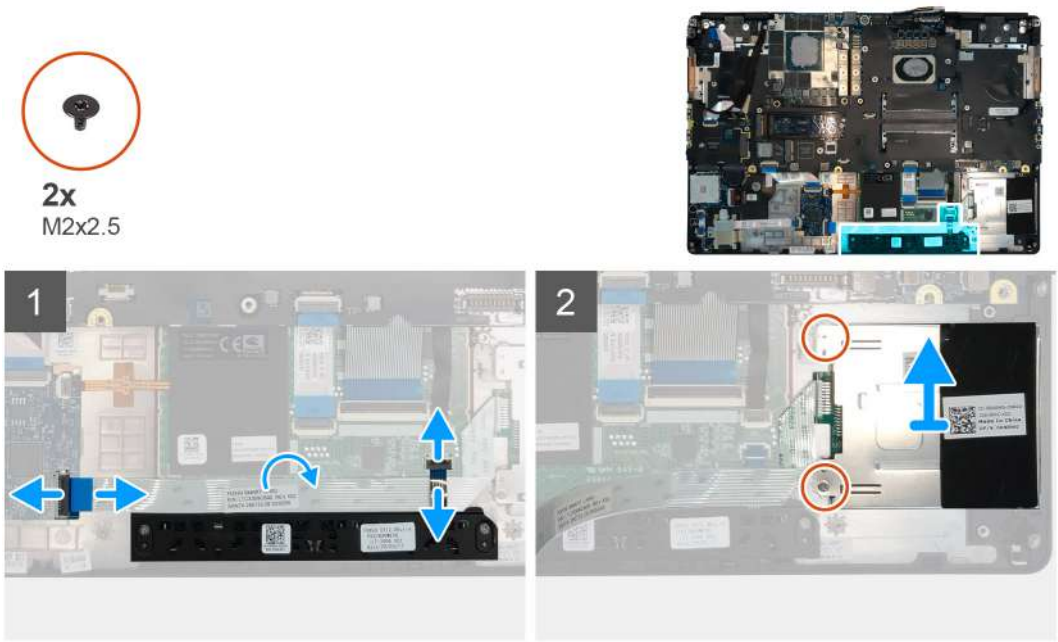
Removing the smart-card reader

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the primary M.2 SSD.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the inner frame.

About this task

The figure indicates the location of the smart-card reader and provides a visual representation of the removal procedure.



Steps

1. Disconnect the touchpad buttons cable from the touchpad.
2. Disconnect the smart-card reader cable from the connector on the USH daughter board.
3. Peel the smart-card reader cable from the touchpad.
4. Remove the two (M2x2.5) screws that secure the smart-card reader to the computer.
5. Remove the smart-card reader from the computer.

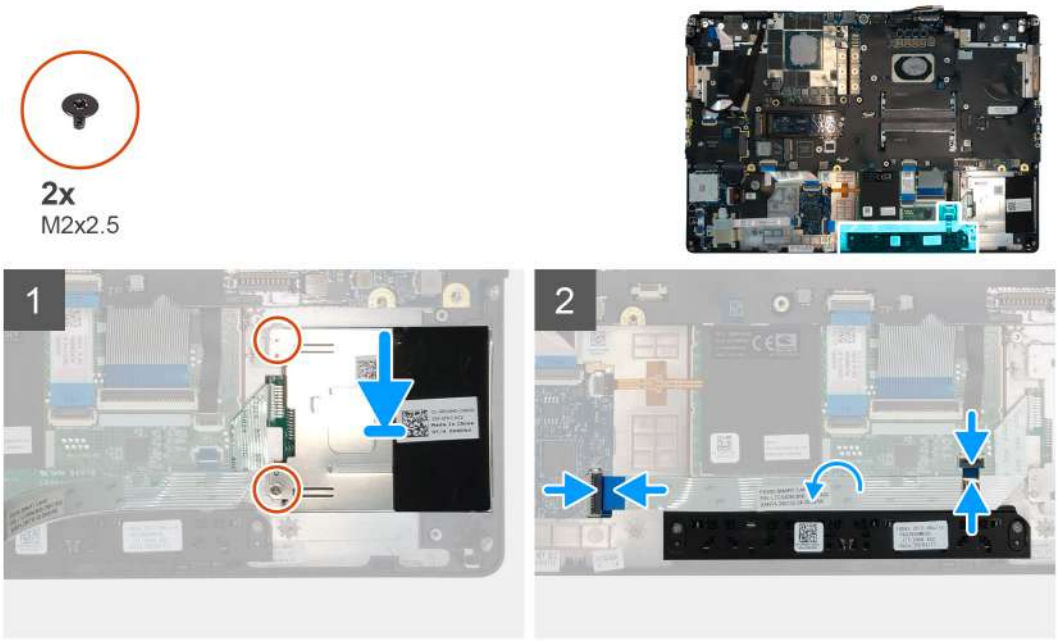
Installing the smart-card reader

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the smart-card reader and provides a visual representation of the installation procedure.



Steps

1. Align and place the smart-card reader into its slot on the computer.
2. Replace the two (M2x2.5) screws to secure the smart-card reader in place.
3. Adhere the smart-card reader cable to the touchpad.
4. Connect the smart-card reader cable to the connector on the USH daughter board.
5. Connect the touchpad button cable to the connector on the touchpad.

Next steps

1. Install the WLAN card.
2. Install the WWAN card.
3. Install the primary M.2 SSD.
4. Install the inner frame.
5. Install the battery.
6. Install the base cover.
7. Install the SD card.
8. Follow the procedure in after working inside your computer.

Pegefelt-knap

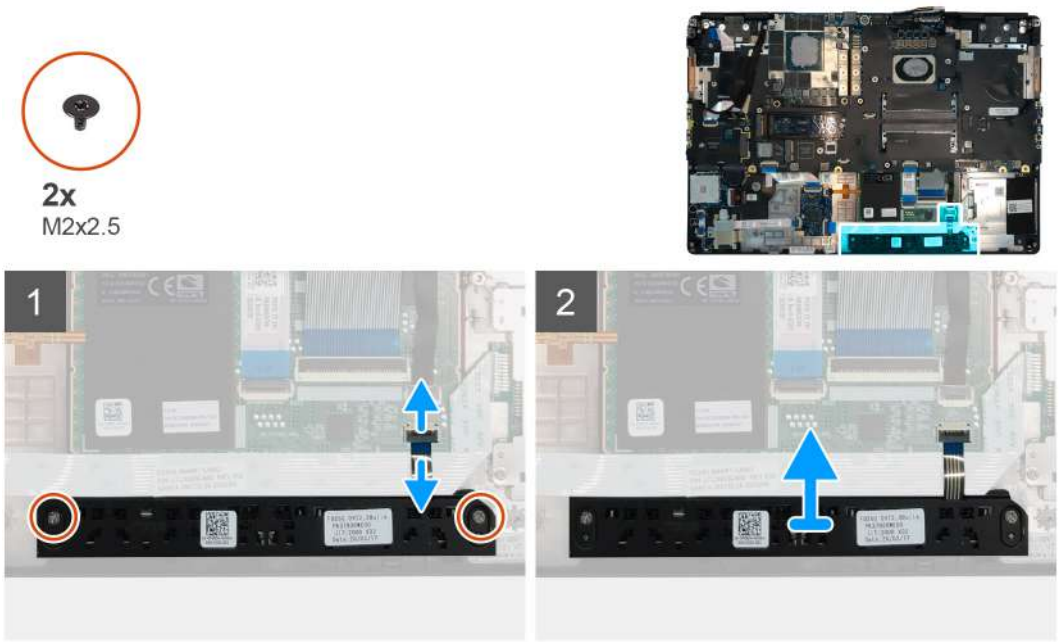
Removing the Touchpad buttons

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the primary M.2 SSD.
6. Remove the WLAN card.
7. Remove the WWAN card.
8. Remove the inner frame.

About this task

The figure indicates the location of the touchpad buttons and provides a visual representation of the removal procedure.



Steps

1. For models shipped with smart card reader, disconnect the smart card reader cable from the USH daughter board and peel the smart card reader cable from the touchpad.
2. Disconnect the touchpad buttons cable from the connector on the touchpad.
3. Remove the two (M2x2.5) screws that secure the touchpad buttons to the palmrest.
4. Remove the touchpad buttons from the palmrest.

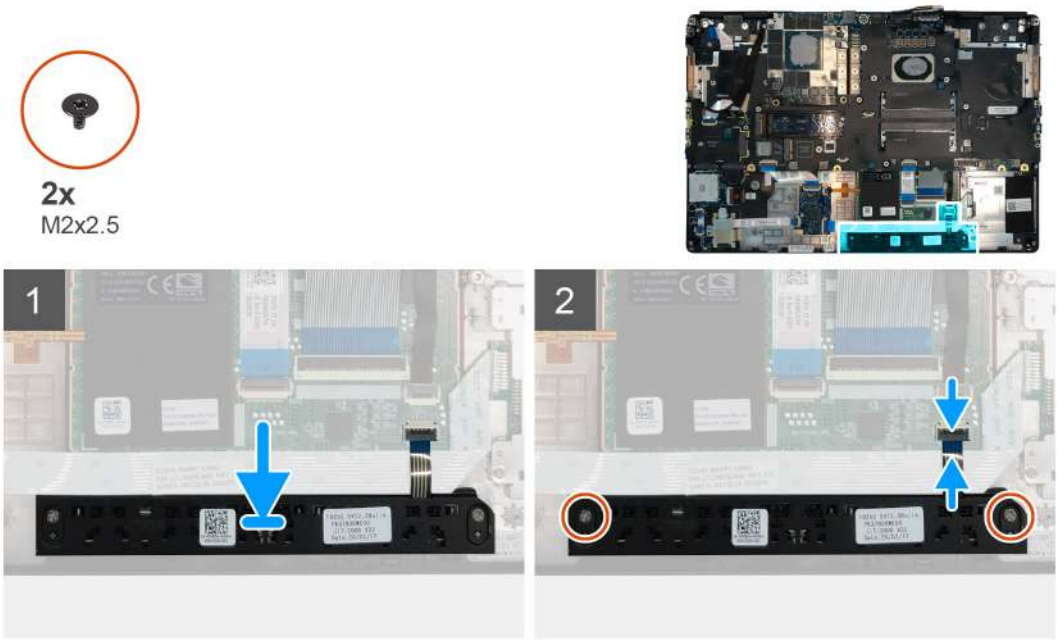
Installing the Touchpad buttons

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the touchpad buttons and provides a visual representation of the installation procedure.



Steps

1. Place the touchpad buttons into its slot in the palmrest.
2. Replace the two (M2x2.5) screws to secure the touchpad buttons to the palmrest
3. Connect the touchpad buttons cable to the connector in the touchpad.
4. For models shipped with smart card reader, connect the smart card reader cable to the USH daughter board and adhere the smart card reader cable on the touchpad.

Next steps

1. Install the inner frame.
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the primary M.2 SSD.
5. Install the battery.
6. Install the base cover.
7. Install the SD card.
8. Follow the procedure in after working inside your computer.

SD-kortlæser

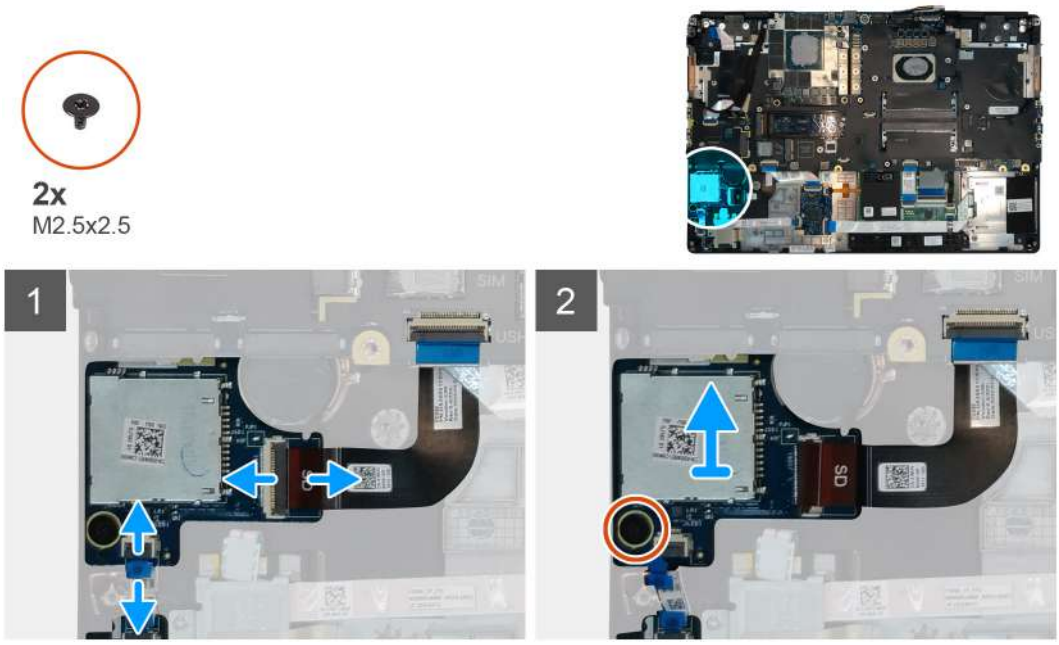
Removing SD card reader

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the primary M.2 SSD.
6. Remove the WWAN card.
7. Remove the WLAN card.
8. Remove the inner frame.

About this task

The figure indicates the location of the SD card reader and provides a visual representation of the removal procedure.



Steps

1. Disconnect the SD card reader cable from the connector on the system board.
2. Disconnect the LED board cable from the SD card reader on the bottom side of the computer.
3. Remove the (M2.5x2.5) screw that secures the SD card reader in place.
4. Slide and remove the SD card reader with its cable out of the computer.

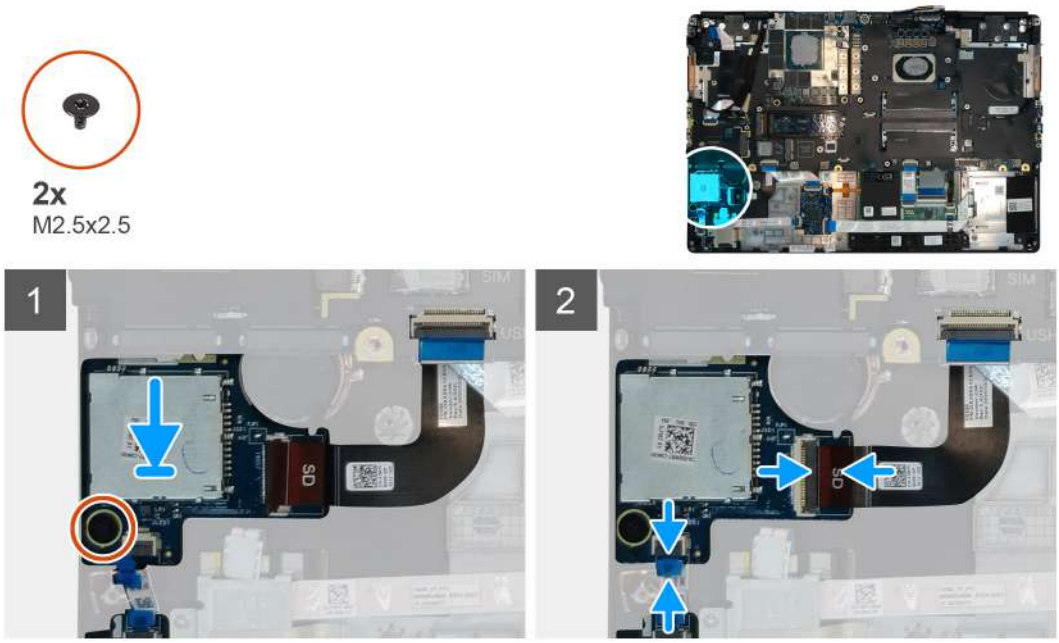
Installing SD card reader

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the SD card reader and provides a visual representation of the installation procedure.



Steps

1. Align and place the SD care reader with its slot on the palmrest.
2. Replace the (M2.5x2.5) screw to secure the SD card reader to the palmrest.
3. Connect the LED board cable to the SD card reader on the bottom side of the computer.
4. Connect the SD card reader cable to the connector on the system board.

Next steps

1. Install the inner frame.
2. Install the WLAN card.
3. Install the WWAN card.
4. Install the primary M.2 SSD.
5. Install the inner frame.
6. Install the battery.
7. Install the base cover.
8. Install the SD card.
9. Follow the procedure in after working inside your computer.

Tænd/sluk-knap

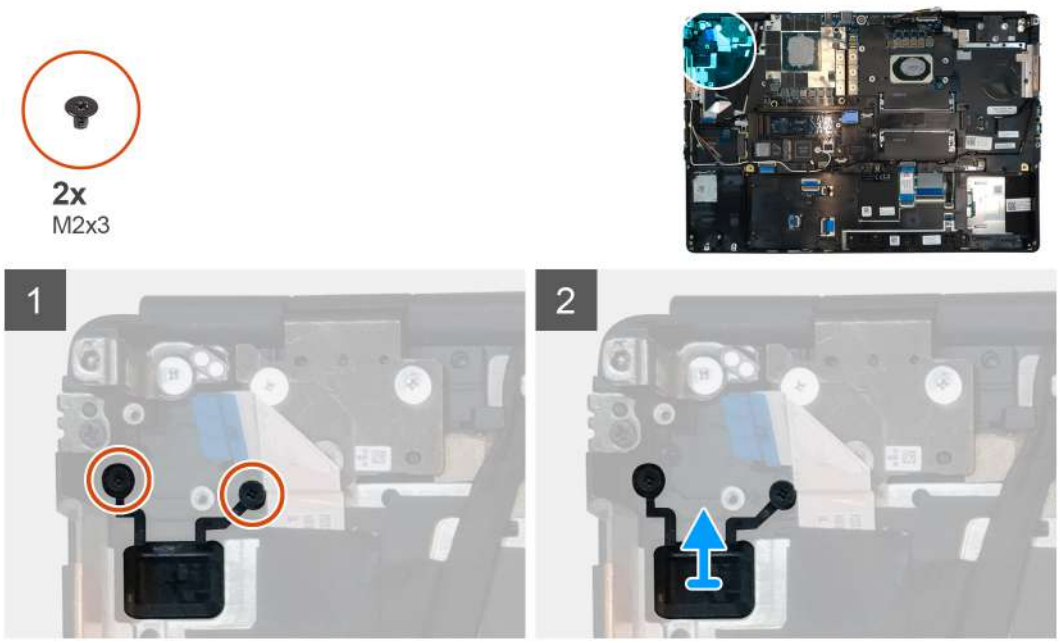
Removing the power button

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the heat-sink assembly.
6. Remove the power button board.

About this task

The figure indicates the location of the power button and provides a visual representation of the removal procedure.



Steps

1. Remove the two (M2x3) screws that secure the power button in its slot on the computer.
2. Remove the power button from the computer.

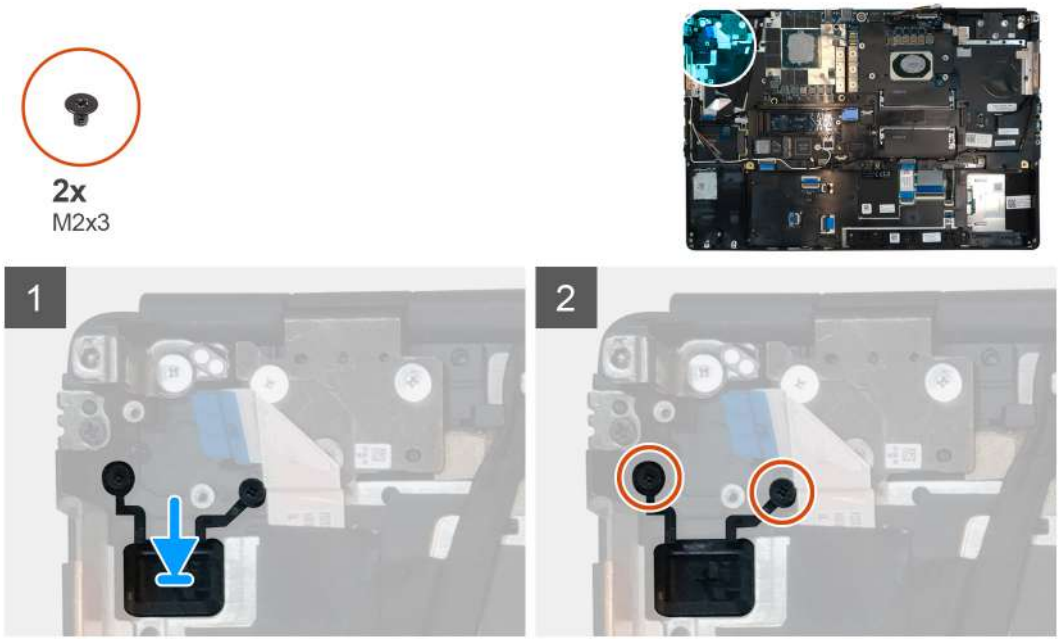
Installing the power button

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the power button and provides a visual representation of the installation procedure.



Steps

1. Place the power button into its slot on the computer.
2. Replace the two (M2x3) screws to secure the power button in place.

Next steps

1. Install the power button board.
2. Install the heat-sink assembly.
3. Install the battery.
4. Install the base cover.
5. Install the SD card.
6. Follow the procedure in after working inside your computer.

Tænd/sluk-knapmodul med fingeraftrykslæser

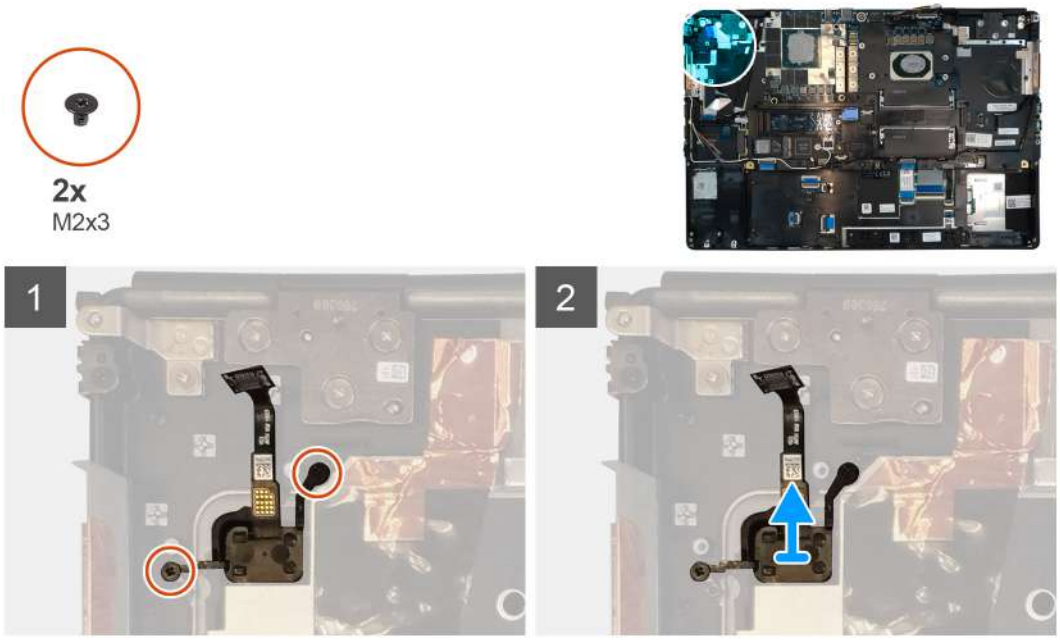
Removing the power button assembly with fingerprint reader

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.
5. Remove the heat-sink assembly.
6. Remove the power button board assembly with fingerprint reader.

About this task

The figure indicates the location of the power button and provides a visual representation of the removal procedure.



Steps

1. Remove the two (M2x3) screws that secure the power button assembly with fingerprint reader in its slot on the computer.
2. Remove the power button assembly with fingerprint reader from the computer.

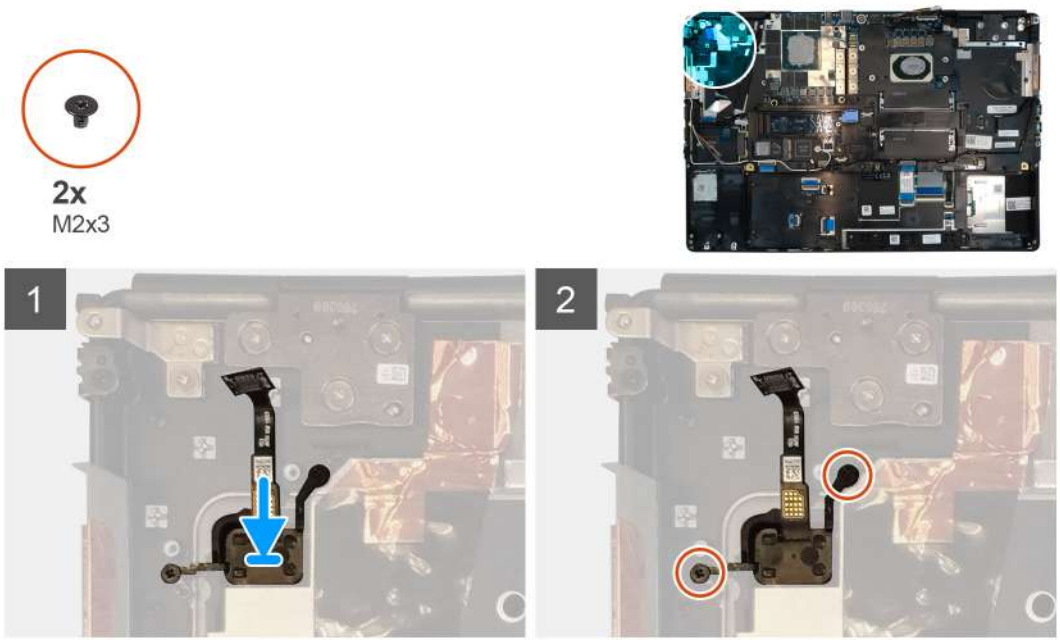
Installing the power button assembly with fingerprint reader

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the power button and provides a visual representation of the installation procedure.



Steps

1. Place the power button assembly with fingerprint reader into its slot on the computer.
2. Replace the two (M2x3) screws to secure the power button assembly with fingerprint reader in place.

Next steps

1. Install the power button board assembly with fingerprint reader.
2. Install the heat-sink assembly.
3. Install the battery.
4. Install the base cover.
5. Install the SD card.
6. Follow the procedure in after working inside your computer.

GPU-strømkabel

Removing the GPU power cable

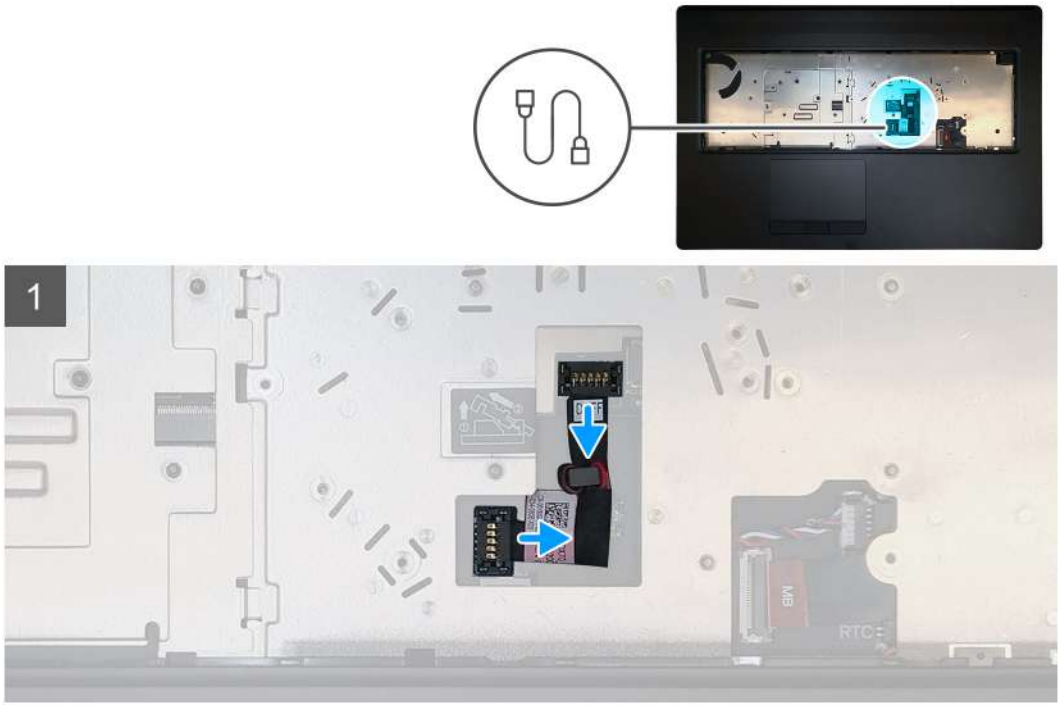
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the base cover.
4. Remove the battery.

5. Remove the keyboard lattice.
6. Remove the keyboard.

About this task

The figure indicates the location of the GPU power cable and provides a visual representation of the removal procedure.



Steps

1. Carefully pry the GPU power cable connector outside the end of the connector head to unlock the GPU power cable connector from the GPU card.
2. Slightly slide the GPU power cable connector outwards to disconnect the GPU power cable from the GPU card.
3. Repeat the above steps to disconnect the GPU power cable from the system board.
4. Peel the GPU power cable from the computer.

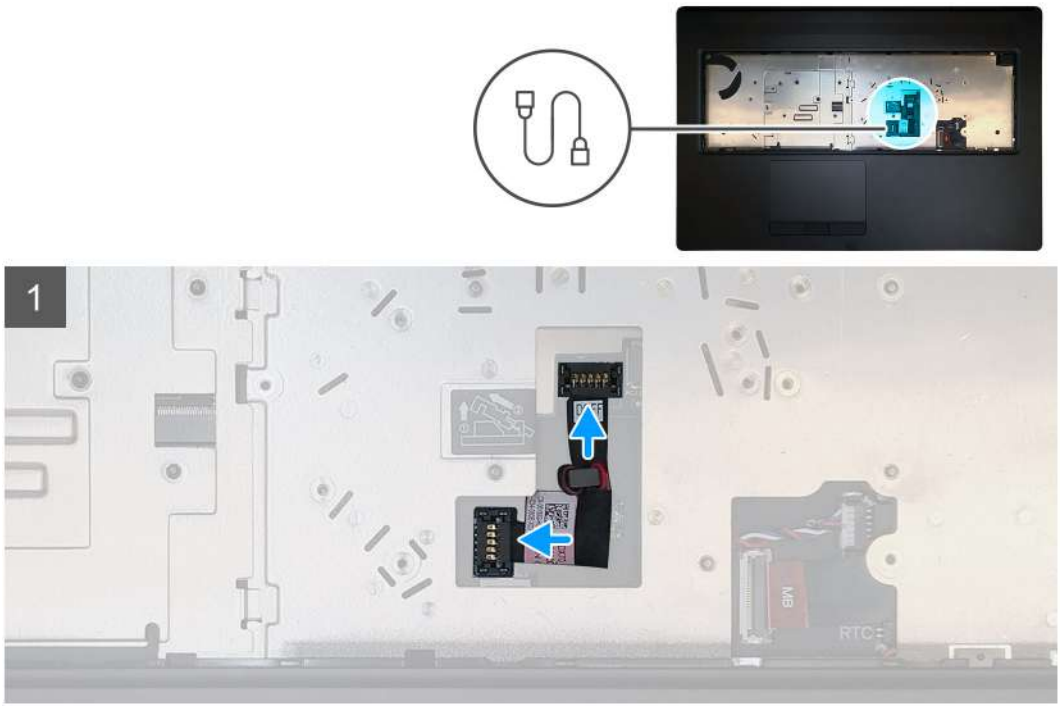
Installing the GPU power cable

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the GPU power cable and provides a visual representation of the installation procedure.



Steps

1. Adhere the GPU power cable into its slot on the computer.
2. Disconnect the GPU power cable from the connector on the system board.
3. Slide the GPU power cable connector into its slot to connect the GPU power cable to the GPU card.
4. Lock the GPU power cable connector to secure the GPU card.

Next steps

1. Install the keyboard.
2. Install the keyboard lattice.
3. Install the battery.
4. Install the base cover.
5. Install the SD card.
6. Follow the procedure in after working inside your computer.

Systemkort

Removing the system board

Prerequisites

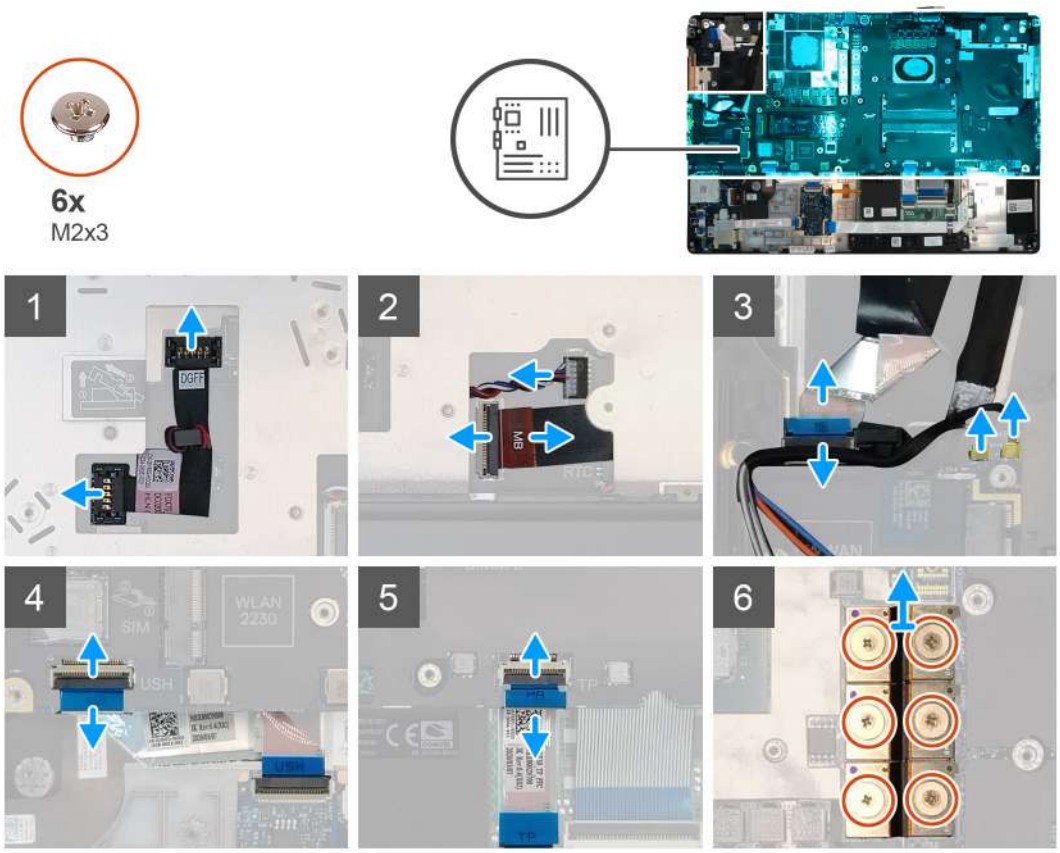
1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.

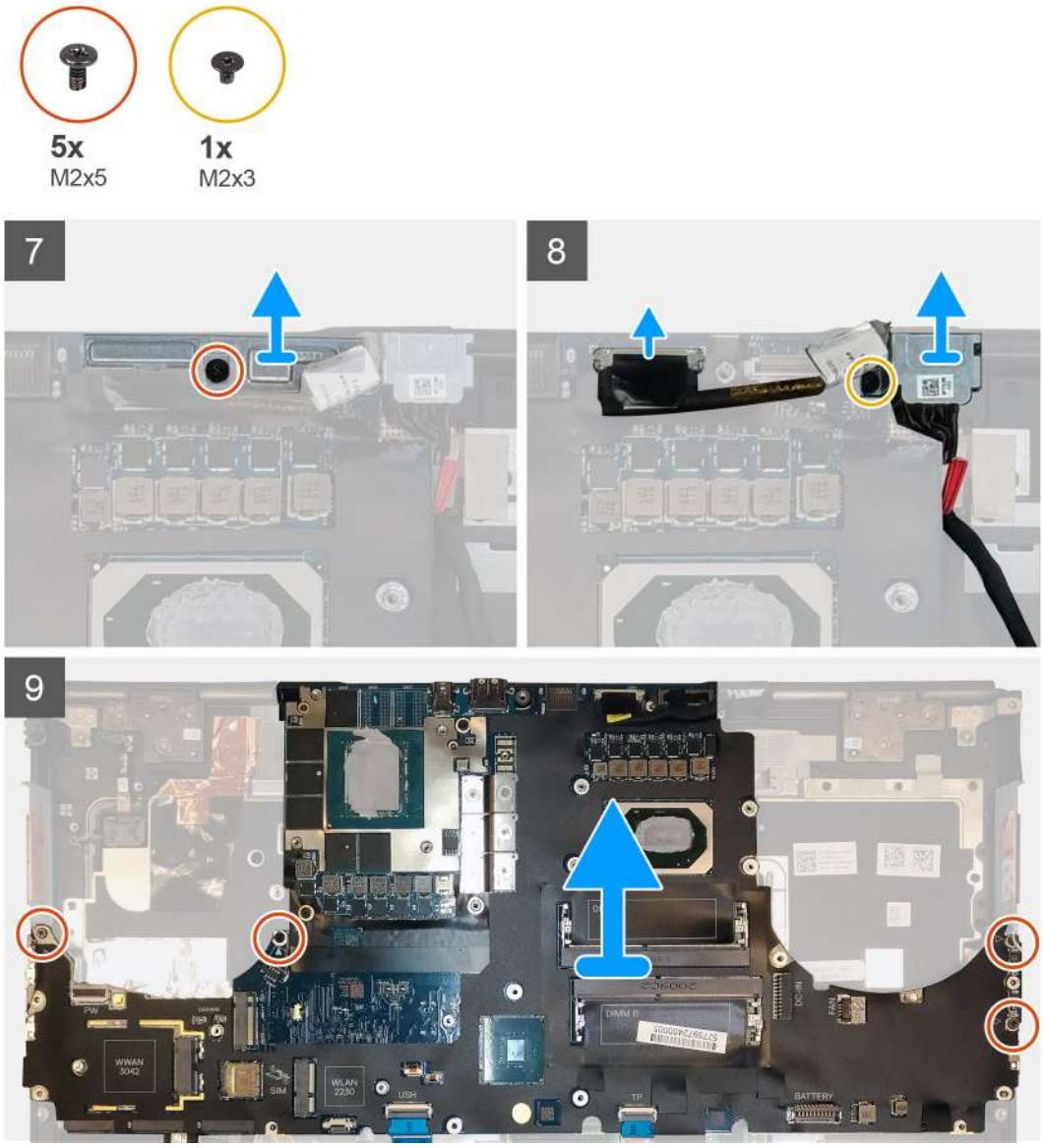
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.

About this task

The figure indicates the location of the system board and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.

NOTE: For discrete models shipped with GPU card:





Steps

1. Carefully pry the GPU power cable connector outside the end of the connector head to unlock the GPU power cable connector from the system board on top side of the system.
2. Slightly slide the GPU power cable connector outwards to disconnect the GPU power cable from the connector on the system board.
3. Disconnect the speaker cable and the SD card reader cable from the connectors on the system board.
4. Disconnect the touch screen cable (for models shipped with a touch screen) or IR camera cable (for models shipped with an IR camera), power adapter cable, touchpad cable, USH daughter board cable (for models shipped with a USH daughter board), and power button board cable from the system board.
5. Remove the (M2x3) screw that secures the Darwin cable bracket in place.
6. Remove the Darwin cable bracket.
7. Disconnect the Darwin cables from the connectors on the system board.
8. Remove the six (M2x3) screws that secure the three beam connectors in place on the bottom of the system.

   NOTE: This step is applicable for discrete models shipped with 256 MB VRAM GPU card.

9. Remove the four (M2x3) screws that secure the two beam connectors in place on the bottom of the system.

   NOTE: This step is applicable for discrete models shipped with 128 MB VRAM GPU card.

NOTE: For UMA models, remove the two (M2x3) screws that secure the single beam connector in place on the bottom of the system.

10. Remove the beam connectors from the computer.
11. Remove the (M2x5) screw that secures the display cable bracket in place.
12. Remove the display cable bracket from the computer.
13. Disconnect the display cable from the connector on the system board.
14. Remove the four (M2x5) screws that secure the system board to the computer.
15. Pry the coin-cell battery, located under the system board, from the palmrest while lifting the system board.
16. Remove the system board from the computer.

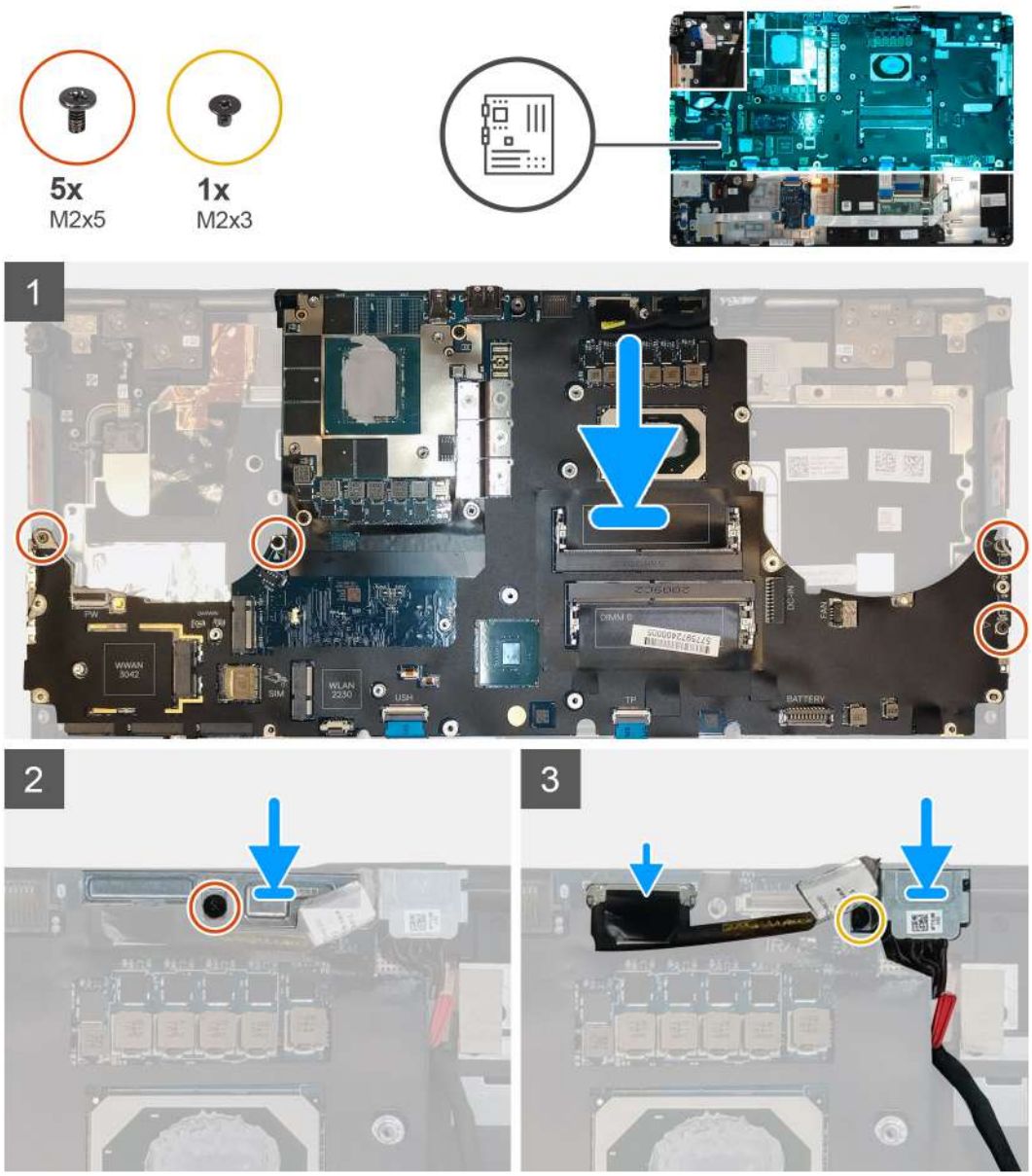
Installing the system board

Prerequisites

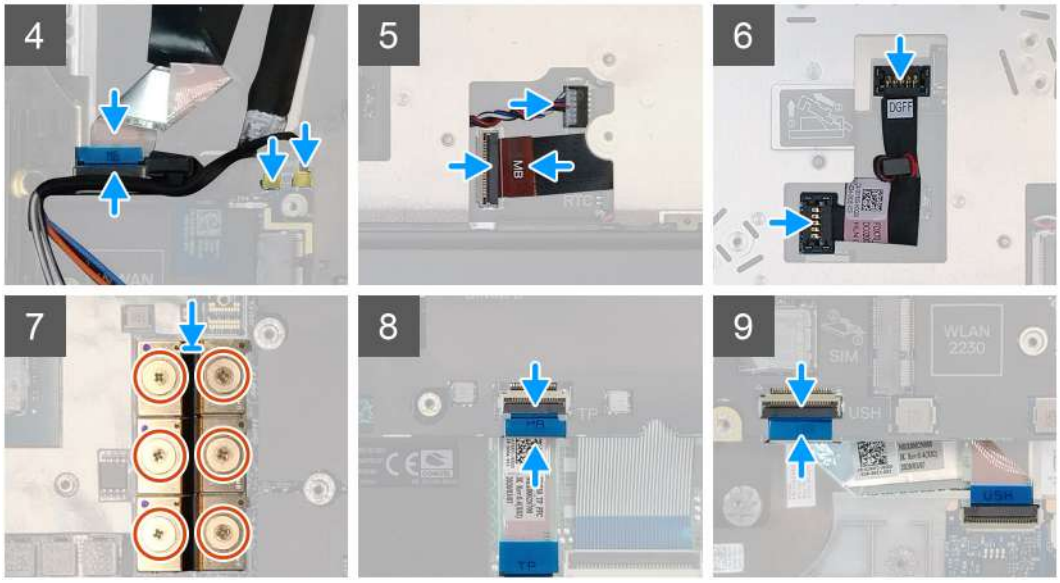
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the system board and provides a visual representation of the installation procedure.


5x
M2x5
1x
M2x3
1
2
3

6x
M2x3



Steps

1. Adhere the coin-cell battery to the palmrest and then place the system board on its slot on the palmrest.
2. Replace the four (M2x5) screws to secure the system board to the palmrest.
3. Connect the display cable, touch screen cable (for models shipped with a touch screen) or IR camera cable (for models shipped with an IR camera), power adapter cable, touchpad cable, USH daughter board FFC (for models shipped with a USH daughter board), and power button board cable to the connectors on the system board.
4. Replace the display cable bracket on the display cable.
5. Replace the (M2x5) screw to secure the display cable bracket to the system board.
6. Connect the Darwin cables to the connectors on the system board.
7. Replace the Darwin cable bracket on the Darwin cable connector.
8. Replace the (M2x3) screw to secure the Darwin cable bracket to the system board.
9. Connect the beam connectors on the system board.

NOTE:

- **For UMA models, replace the two (M2x3) screws to secure the single beam connector in place on the bottom side of the system.**
- **For discrete models shipped with a 128 MB vram GPU card, replace the four (M2x3) screws to secure the two beam connector in place on the bottom side of the system.**
- **For discrete models shipped with a 256 MB vram GPU card, replace the six (M2x3) screws to secure the three beam connector in place on the bottom side of the system.**

10. Connect the speaker cable and SD card reader cable to the connectors on the system board.
11. Connect the GPU power cable to the connector on the system board on the top side of the
12. Lock the GPU power cable connector on the system board.

Next steps

1. Install the inner frame.
2. Install the heat-sink assembly.
3. Install the primary memory.

4. Install the keyboard.
5. Install the keyboard lattice.
6. Install the WLAN card.
7. Install the WWAN card.
8. Install the secondary memory.
9. Install the SIM card.
10. Install the primary M.2 SSD.
11. Install the inner frame.
12. Install the battery.
13. Install the base cover.
14. Install the secondary M.2 SSD.
15. Install the SSD door.
16. Install the SD card.
17. Follow the procedure in after working inside your computer.

GPU-kort

Sådan fjernes GPU-kortet

Forudsætninger

1. Følg proceduren i Før du udfører arbejde på computerens indvendige dele.
2. Fjern SD-kortet.
3. Fjern SSD-dækslet
4. Fjern det sekundære M.2-SSD.
5. Fjern bunddækslet.
6. Fjern batteriet.
7. Fjern det primære M.2-SSD.
8. Fjern SIM-kortet.
9. Fjern den sekundære hukommelse.
10. Fjern WWAN-kortet.
11. Fjern WLAN-kort.
12. Fjern tastaturgitteret.
13. Fjern tastaturet.
14. Fjern GPU-strømkablet.
15. Fjern den primære hukommelse.
16. Fjern varmelegememodulet.
17. Fjern inderrammen.
18. Fjern systemkortet.

Om denne opgave

Figuren angiver placeringen af systemkortet og giver en visuel fremstilling af fjernelsesproceduren. Billeder, der skal uploades i næste gennemgangscyklus.

BEMÆRK: For dedikerede modeller med GPU-kort:

Trin

1. Fjern de tre skruer (M2x5), der fastgør GPU-kortet til håndledsstøtten.
2. Fjern GPU-kortet fra computeren.

Sådan monteres GPU-kortet

Forudsætninger

Hvis du genmonterer en komponent, skal du fjerne den eksisterende komponent, før installationsproceduren foretages.

Om denne opgave

Figuren angiver placeringen af GPU-kortet og giver en visuel fremstilling af installationsproceduren.

Billeder, der skal uploades i næste gennemgangscyklus

Trin

1. Ret GPU-kortet ind efter slottet på håndledsstøtten.
2. Genmonter de tre skruer (M2x5), der fastgør GPU-kortet til håndledsstøtten.

Næste trin

1. Monter systemkortet.
2. Monter inderrammen.
3. Monter varmelegememodulet.
4. Monter den primære hukommelse.
5. Monter GPU-strømkablet.
6. Monter tastaturet.
7. Monter tastaturgitteret.
8. Monter WLAN-kortet.
9. Monter WWAN-kortet.
10. Monter den sekundære hukommelse.
11. Monter SIM-kortet.
12. Monter det primære M.2-SSD.
13. Monter batteriet.
14. Monter bunddækslet.
15. Monter det sekundære M.2-SSD.
16. Monter SSD-dækslet
17. Monter SD-kortet.
18. Følg proceduren i Efter du har udført arbejde på computerens indvendige dele

Højttaler

Removing the speaker

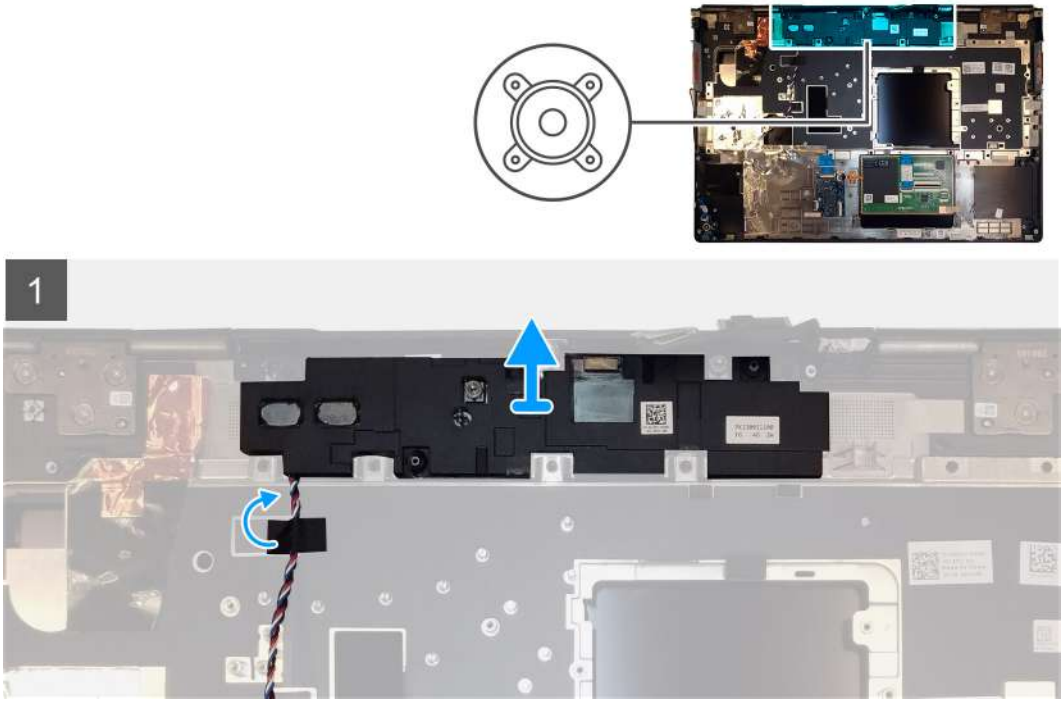
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.

14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.

About this task

The figure indicates the location of the speaker and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.



Steps

1. Peel the pieces of adhesive tape that secures the speaker cable to the palmrest.
2. Pry the speaker module from its slot on the top edge of the palmrest.
3. Remove the speaker module from the computer.

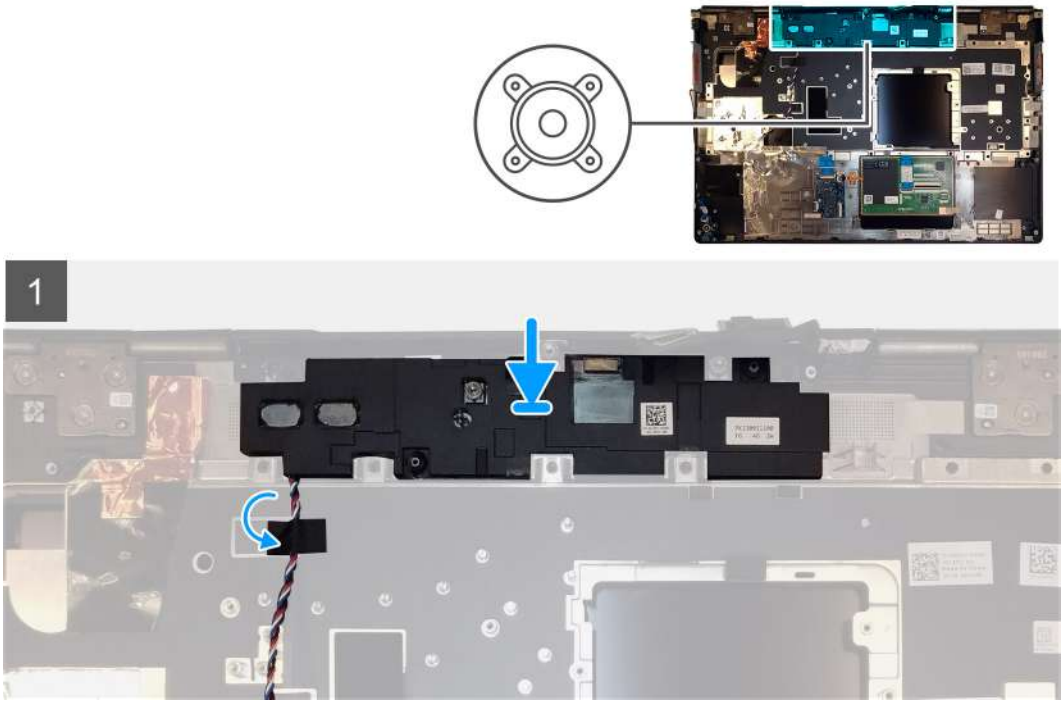
Installing the speaker

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the speaker and provides a visual representation of the installation procedure.



Steps

1. Align and place the speaker module into its slot on the top edge of the palmrest.
2. Adhere the three piece adhesive tape to secure the speaker cable in place on the palmrest.

Next steps

1. Install the system board.
2. Install the GPU card.
3. Install the GPU power cable.
4. Install the inner frame.
5. Install the heat-sink assembly.
6. Install the primary memory.
7. Install the keyboard.
8. Install the keyboard lattice.
9. Install the WLAN card.
10. Install the WWAN card.
11. Install the secondary memory.
12. Install the SIM card.
13. Install the primary M.2 SSD.
14. Install the battery.
15. Install the base cover.
16. Install the secondary M.2 SSD.
17. Install the SSD door.
18. Install the SD card.
19. Follow the procedure in after working inside your computer.

Midterhætte

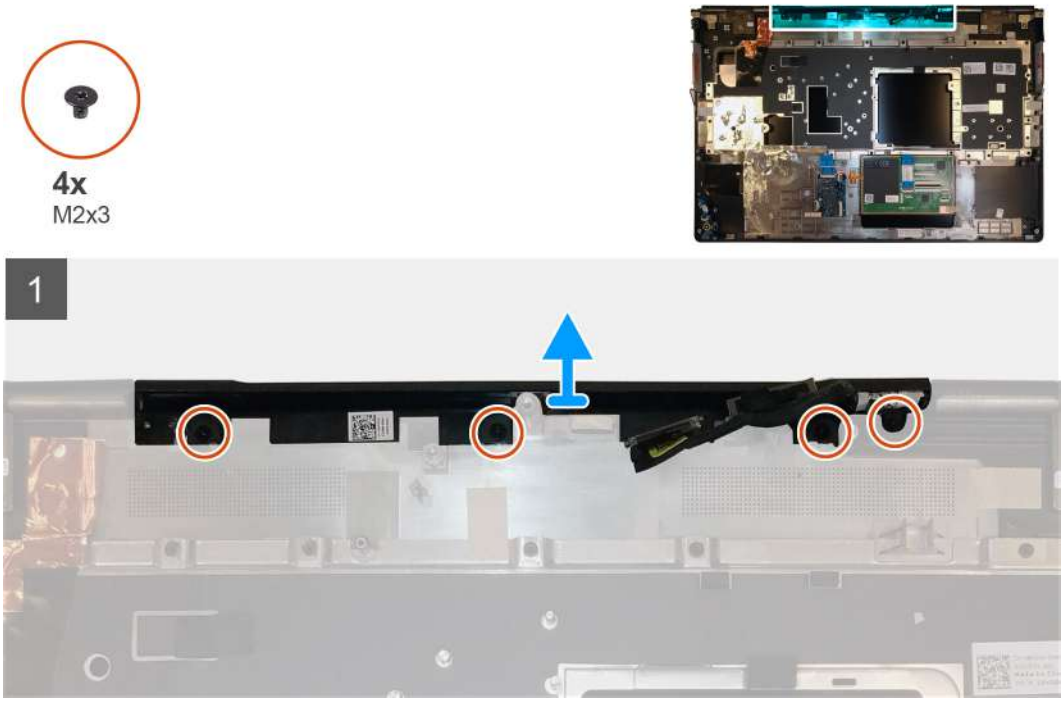
Removing the middle cap

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.

About this task

The figure indicates the location of the speaker and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.



Steps

1. Remove the four (M2x3) screws that secures the middle cap in place.

2. Remove the middle cap from the computer.

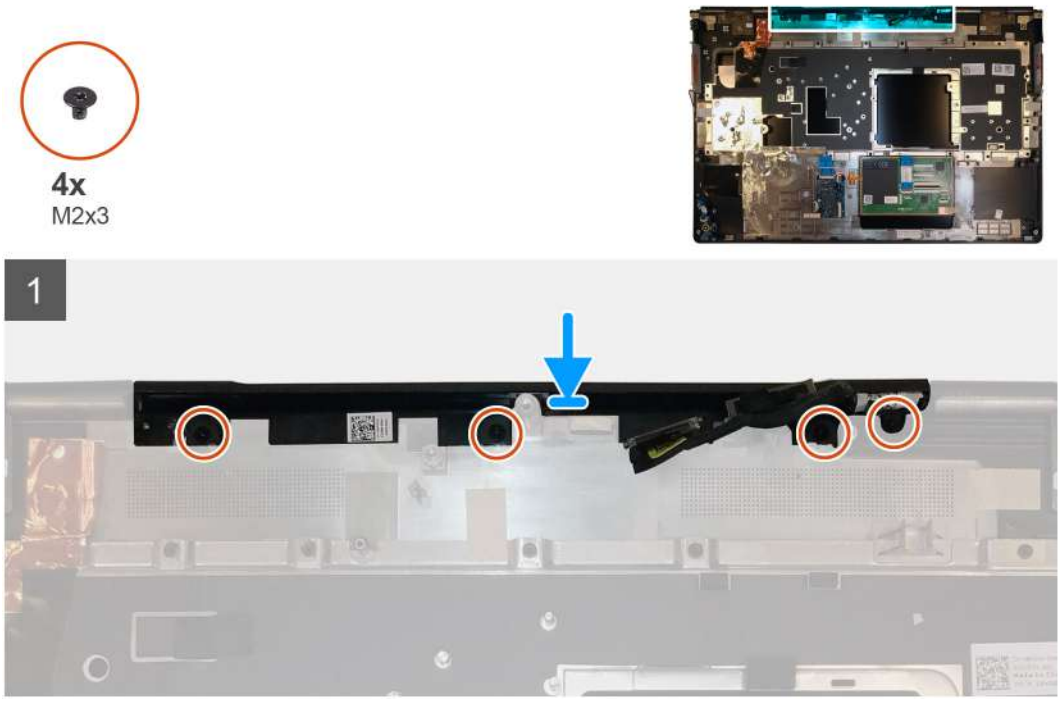
Installing the middle cap

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the middle cap and provides a visual representation of the installation procedure.



Steps

1. Align and insert the middle cap onto the palmrest.

   NOTE: Ensure that the middle cap is secured in place by the two pegs on the palmrest.

2. Replace the four (M2x3) screws to secure the middle cap in place.

Next steps

1. Install the system board.
2. Install the GPU card.
3. Install the GPU power cable.
4. Install the inner frame.
5. Install the heat-sink assembly.
6. Install the primary memory.
7. Install the keyboard.
8. Install the keyboard lattice.
9. Install the WLAN card.
10. Install the WWAN card.
11. Install the secondary memory.
12. Install the SIM card.
13. Install the primary M.2 SSD.
14. Install the battery.

15. Install the base cover.
16. Install the secondary M.2 SSD.
17. Install the SSD door.
18. Install the SD card.
19. Follow the procedure in after working inside your computer.

Skærmmodul

Removing the display assembly

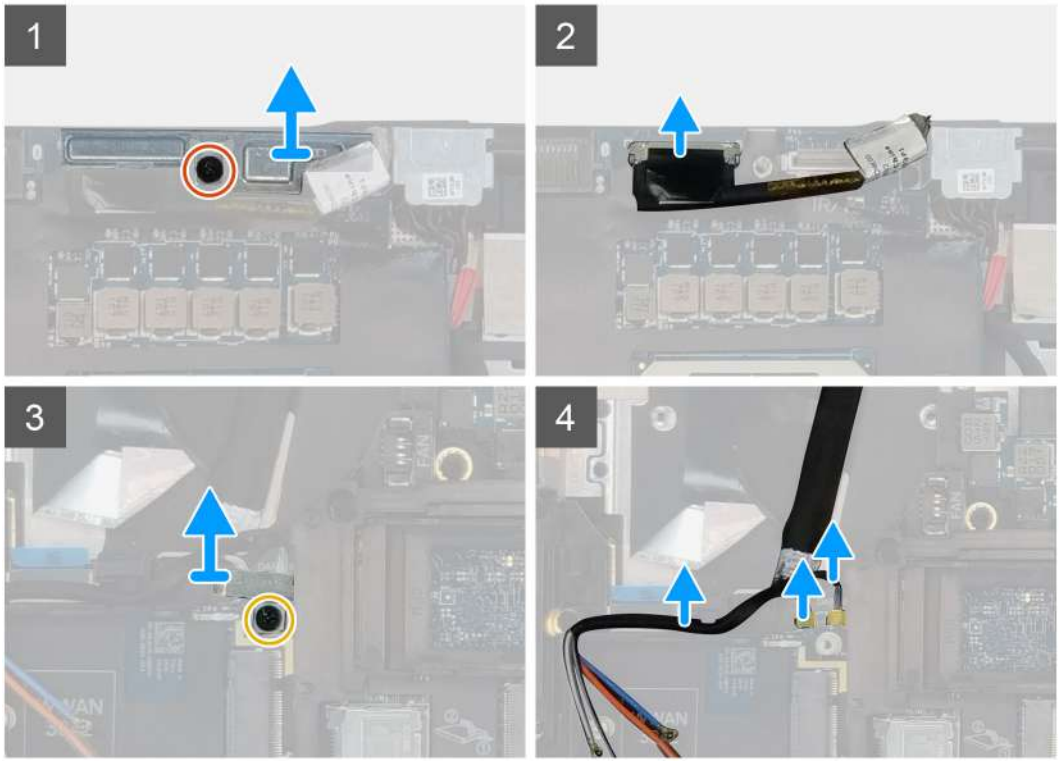
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.

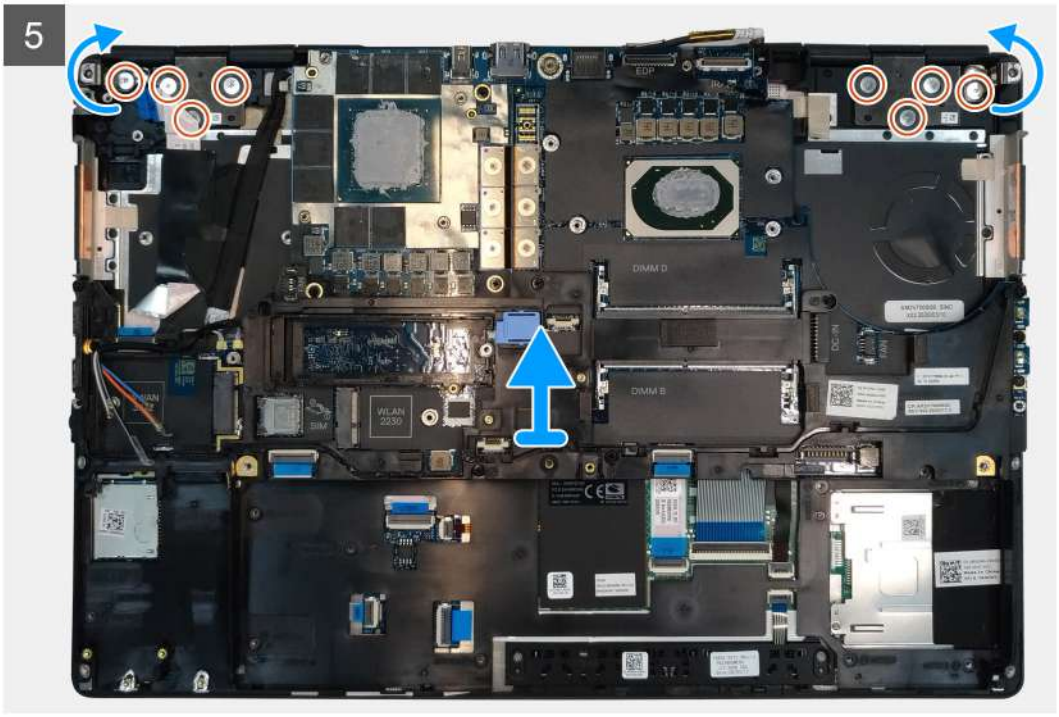
About this task

The figure indicates the location of the display assembly and provides a visual representation of the removal procedure.

1x
M2x5
1x
M2x3


1
2
3
4

8x
M2.5x2.5



Steps

1. Open the display assembly to a 140-degree angle and place the computer at the edge of a flat table so that the display assembly can extend below the table.
2. Remove the (M2x5) screw that secures the display bracket to the palmrest.
3. Disconnect the display cable from the connector on the system board.
4. Remove the (M2x5) screw that secures the Darwin bracket.
5. Peel and remove the WWAN cables and Darwin cables from the palmrest.
6. Remove the eight (M2.5x2.5) screws that secures the hinges to the palmrest.
7. Remove the display assembly from the palmrest.

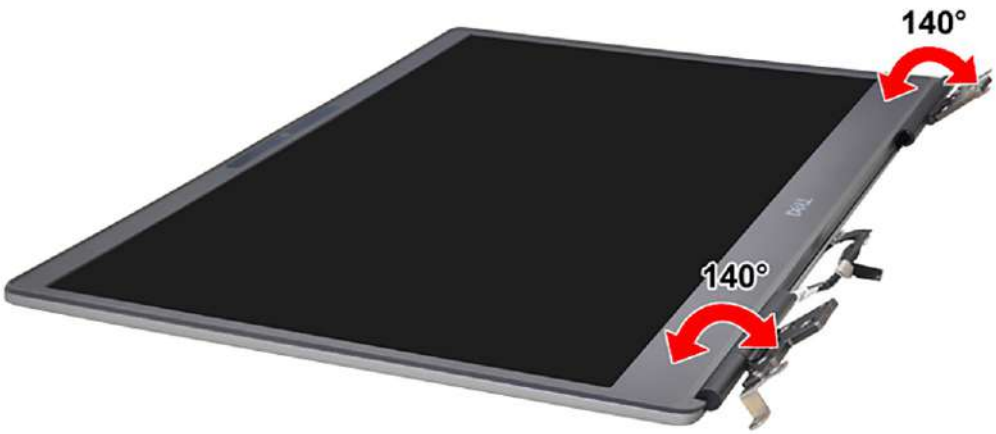
Installing the display assembly

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

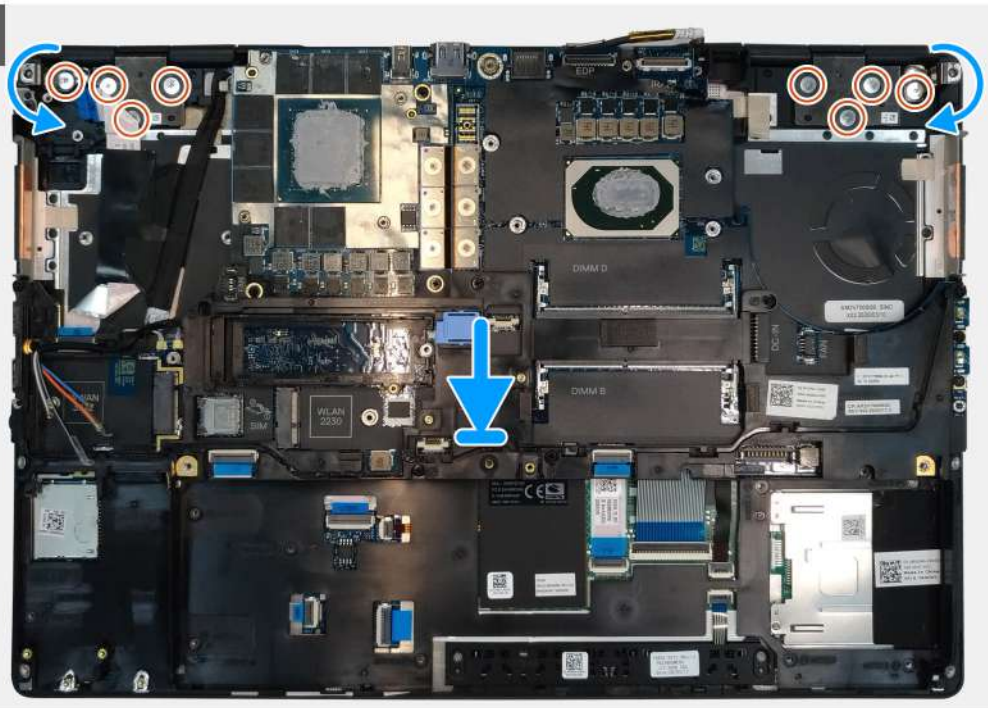
About this task

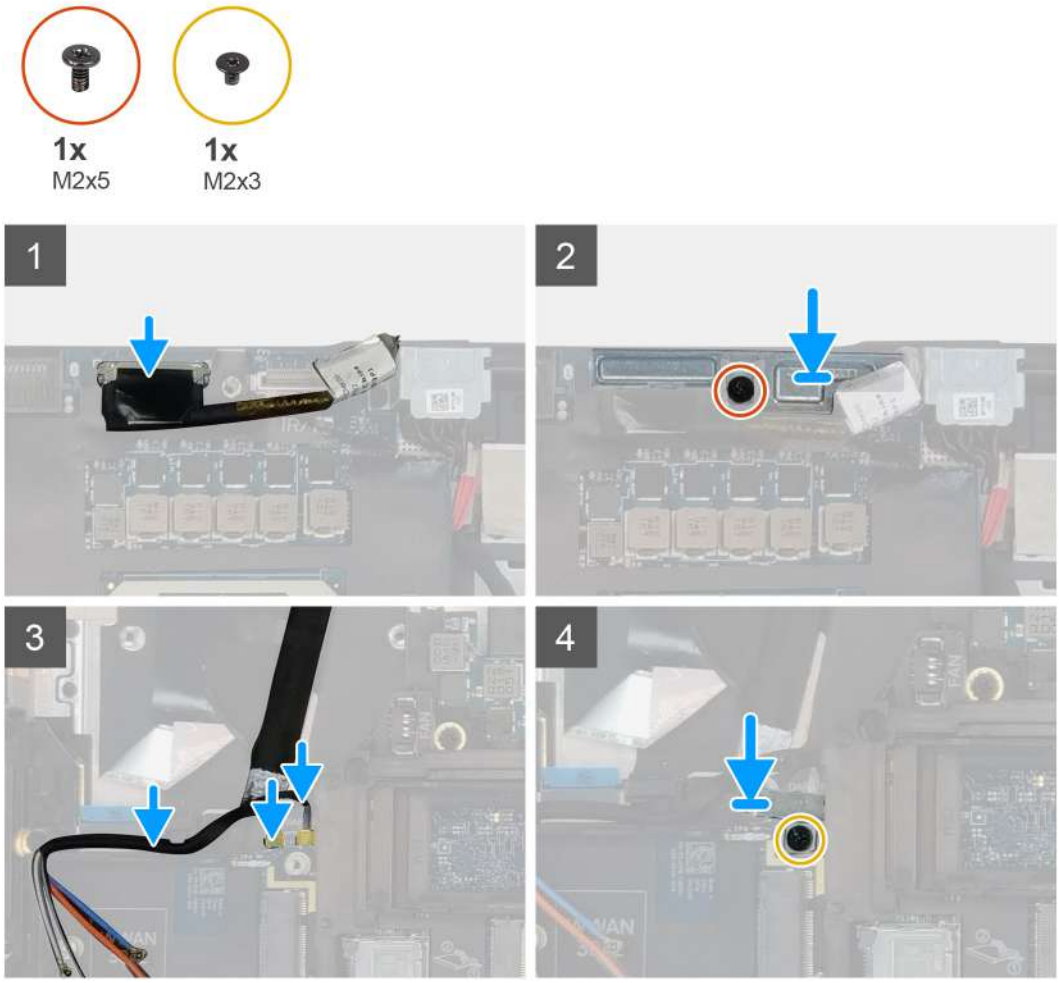
The figure indicates the location of the display assembly and provides a visual representation of the installation procedure.



8x
M2.5x2.5

1





Steps

1. **NOTE: Before installing the display assembly, ensure that the display hinges are opened to a 140-degree angle against the display assembly, to fit the display assembly to the palmrest.**

   Align the screw holes on the hinges on the display assembly to the screw holes on the palmrest.
2. Replace the eight (M2.5x2.5) screws to secure the hinges to the palmrest.
3. Replace the (M2x5) screw to secure the display bracket to the palmrest.
4. Connect the display cable to the connector on the system board.
5. Replace the (M2x5) screw to secure the Darwin bracket.
6. Adhere the WWAN cables and Darwin cables to the palmrest.

Next steps

1. Install the heat-sink assembly.
2. Install the primary memory.
3. Install the keyboard.
4. Install the keyboard lattice.
5. Install the WLAN card.
6. Install the WWAN card.
7. Install the secondary memory.
8. Install the SIM card.
9. Install the primary M.2 SSD.
10. Install the battery.
11. Install the base cover.
12. Install the secondary M.2 SSD.

13. Install the SSD door.
14. Install the SD card.
15. Follow the procedure in after working inside your computer.

Håndfladestøtte

Removing the palmrest

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the power adapter port.
16. Remove the power button board.
17. Remove the smart card reader.
18. Remove the touchpad buttons.
19. Remove the SD card reader.
20. Remove the power button. or power button assembly with fingerprint reader
21. Remove the heat-sink assembly.
22. Remove the inner frame.
23. Remove the GPU power cable.
24. Remove the GPU card.
25. Remove the system board.
26. Remove the speaker.
27. Remove the middle cap.
28. Remove the display assembly.

About this task

The picture below shows the palmrest after performing the pre-removal parts procedures for any palm rest replacement

Installing the palmrest

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the palmrest and before performing the pre-installation parts procedures for any palmrest installation procedure.

Next steps

1. Install the display assembly.

2. Install the middle cap.
3. Install the speaker.
4. Install the system board.
5. Install the GPU card.
6. Install the GPU power cable.
7. Install the inner frame.
8. Install the heat-sink assembly.
9. Install the power button or power button assembly with fingerprint reader.
10. Install the SD card reader.
11. Install the smart card reader.
12. Install the touchpad buttons.
13. Install the power button board.
14. Install the power adapter port.
15. Install the primary memory.
16. Install the keyboard.
17. Install the keyboard lattice.
18. Install the WLAN card.
19. Install the WWAN card.
20. Install the secondary memory.
21. Install the SIM card.
22. Install the primary M.2 SSD.
23. Install the battery.
24. Install the base cover.
25. Install the secondary M.2 SSD.
26. Install the SSD door.
27. Install the SD card.
28. Follow the procedure in after working inside your computer.

Skærmfacet

Removing the display bezel (non-touch)

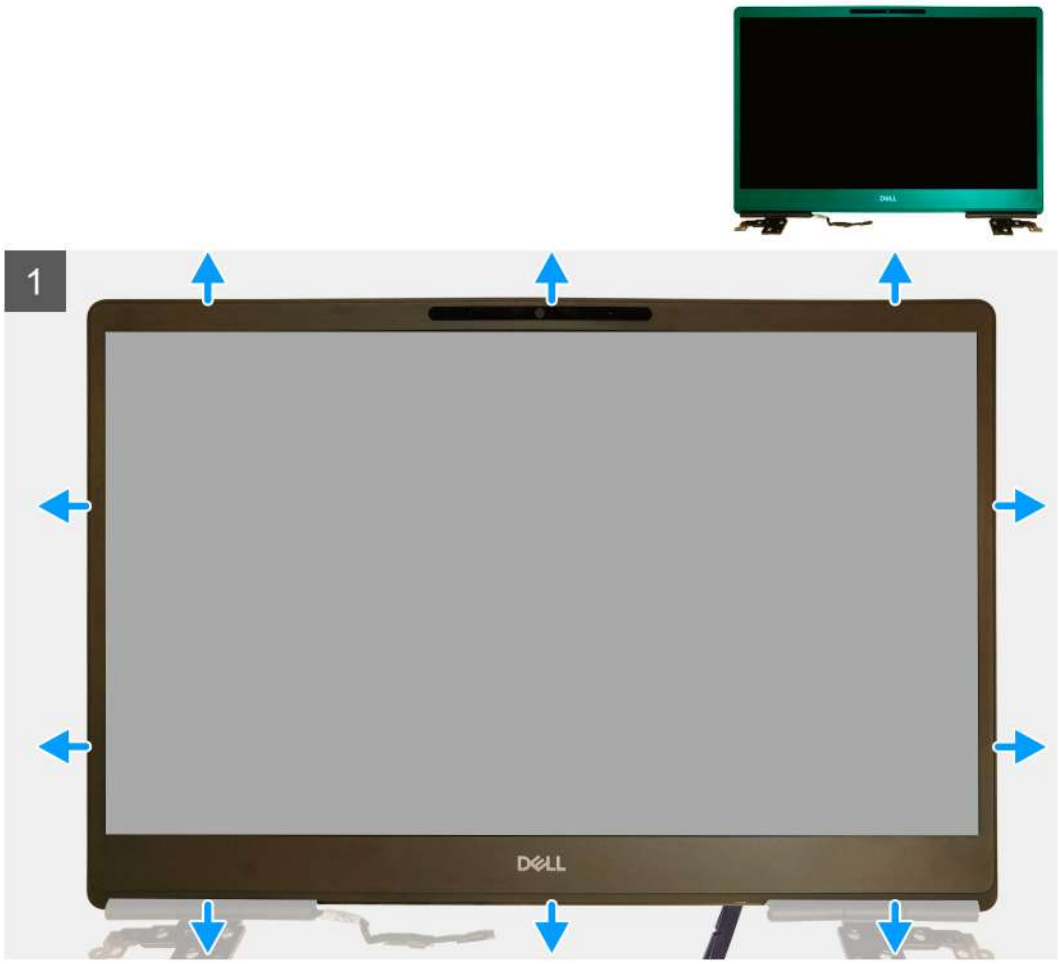
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.
20. Remove the speaker.
21. Remove the middle cap.

22. Remove the display assembly.

About this task

The figure indicates the location of the display bezel and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.



Steps

1. Using a flat head tool or a plastic scribe, pry open the display bezel from the two recess points on the bottom edge of the display bezel.
2. Working your way from the bottom edge, pry around the sides and top edge of the display bezel.

   NOTE: While prying the display bezel, make sure to pry along the outside edge of the display bezel using your hands- using a screw driver or other sharp objects may damage the display cover.

3. Remove the display bezel from the display assembly.

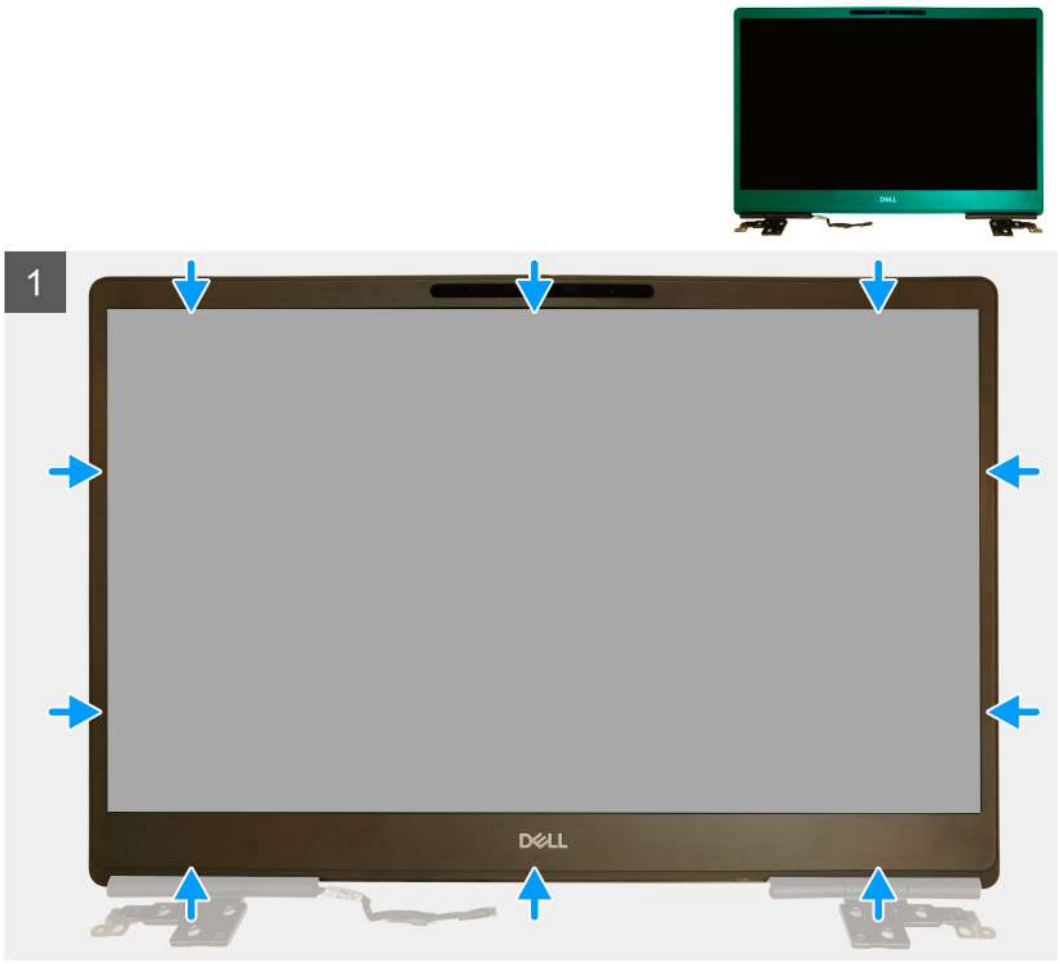
Installing the display bezel (non-touch)

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the display bezel and provides a visual representation of the installation procedure.



Steps

1. Place the display bezel on the display assembly.
2. Press the edges of the display bezel until it clicks onto the display assembly.

Next steps

1. Install the display assembly.
2. Install the middle cap.
3. Install the speaker.
4. Install the system board.
5. Install the GPU card.
6. Install the GPU power cable.
7. Install the inner frame.
8. Install the heat-sink assembly.
9. Install the primary memory.
10. Install the keyboard.
11. Install the keyboard lattice.
12. Install the WLAN card.
13. Install the WWAN card.
14. Install the secondary memory.
15. Install the SIM card.
16. Install the primary M.2 SSD.
17. Install the battery.
18. Install the base cover.
19. Install the secondary M.2 SSD.
20. Install the SSD door.

21. Install the SD card.
22. Follow the procedure in after working inside your computer.

Skærmpanel

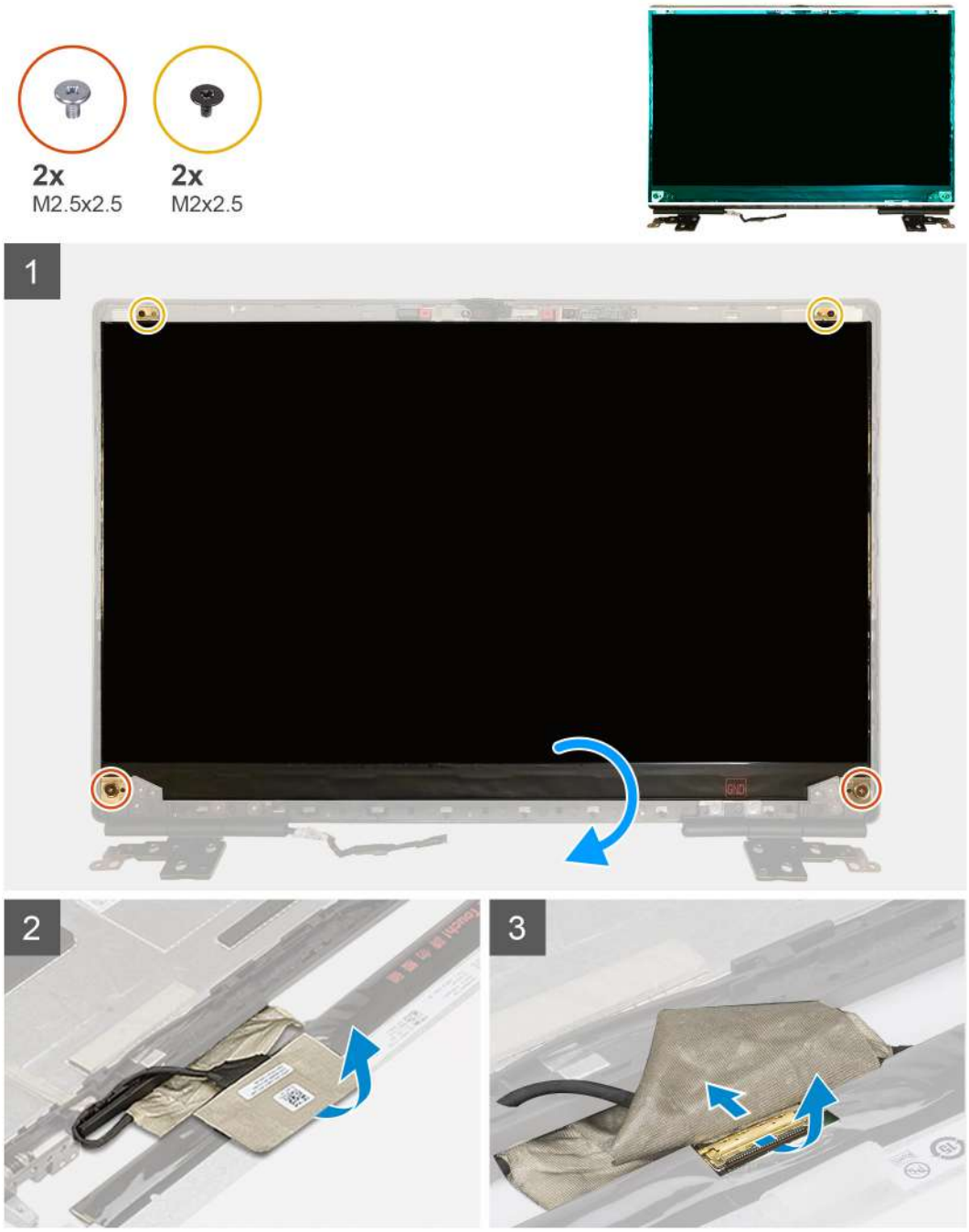
Removing the display panel (non-touch)

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.
20. Remove the display assembly.
21. Remove the speaker.
22. Remove the middle cap.
23. Remove the display assembly.
24. Remove the display bezel.

About this task

The figure indicates the location of the display panel and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.



Steps

1. Remove the two (M2.5x2.5) screws and the two (M2x2.5) screws that secures the display panel to the display assembly.
2. Lift the display panel and turn the display panel over to access the display cable
3. Peel the conductive tape covering the display cable.
4. Peel the adhesive tapes that secures the display cable.
5. Peel the adhesive rubber strip covering the display cable.
6. Unlock the display cable connector and then disconnect the display cable from the back of the display panel.
7. Remove the display panel form the display assembly.
8. Remove the display panel.

NOTE: The support brackets attached to the display panel are defined as a single service assembly part and cannot be further disassembled.

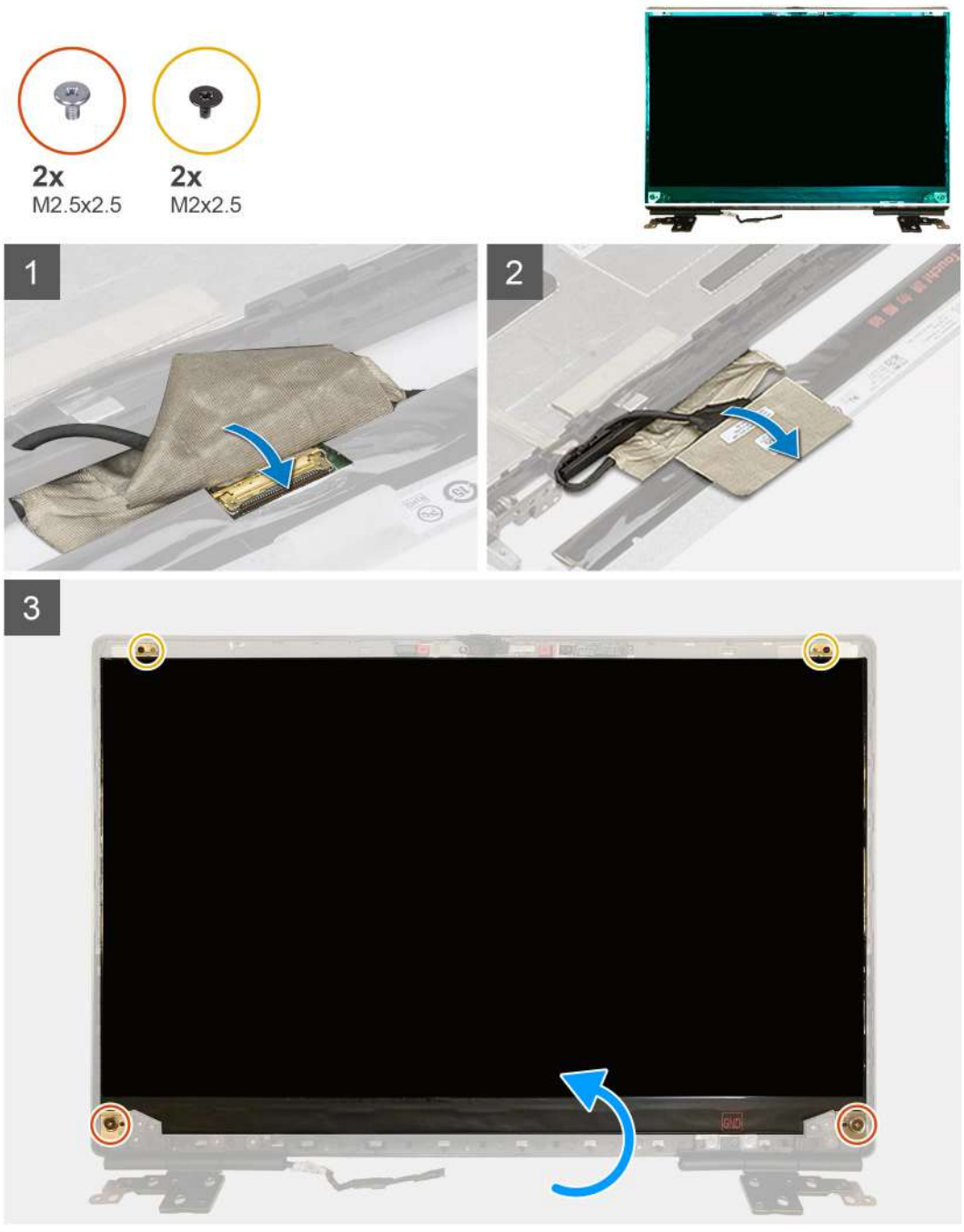
Installing the display panel (non-touch)

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the display panel and provides a visual representation of the installation procedure.



Steps

1. Connect the display cable to the connector on the back of the display panel and lock the display cable connector.
2. Adhere the adhesive rubber strip to cover the display cable.
3. Adhere the transparent tape and conductive tape above the rubber strip to cover the display cable.
4. Align the display panel with the tabs on the display assembly.

5. Replace the two (M2.5X2.5) and two (M2x2.5) screws to secure the display panel to the display assembly.

Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the middle cap.
4. Install the speaker.
5. Install the display assembly.
6. Install the system board.
7. Install the GPU card.
8. Install the GPU power cable.
9. Install the inner frame.
10. Install the heat-sink assembly.
11. Install the primary memory.
12. Install the keyboard.
13. Install the keyboard lattice.
14. Install the WLAN card.
15. Install the WWAN card.
16. Install the secondary memory.
17. Install the SIM card.
18. Install the primary M.2 SSD.
19. Install the battery.
20. Install the base cover.
21. Install the secondary M.2 SSD.
22. Install the SSD door.
23. Install the SD card.
24. Follow the procedure in after working inside your computer.

Skærmhængsler

Removing the display hinge

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.
20. Remove the display assembly.
21. Remove the speaker.

22. Remove the display bezel.
23. Remove the display panel.

About this task

The figure indicates the location of the display hinge and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.

Steps

1. Remove the eight (M2.5x2.5) screws that secures the display hinges to the display assembly.
2. Remove the display hinges.

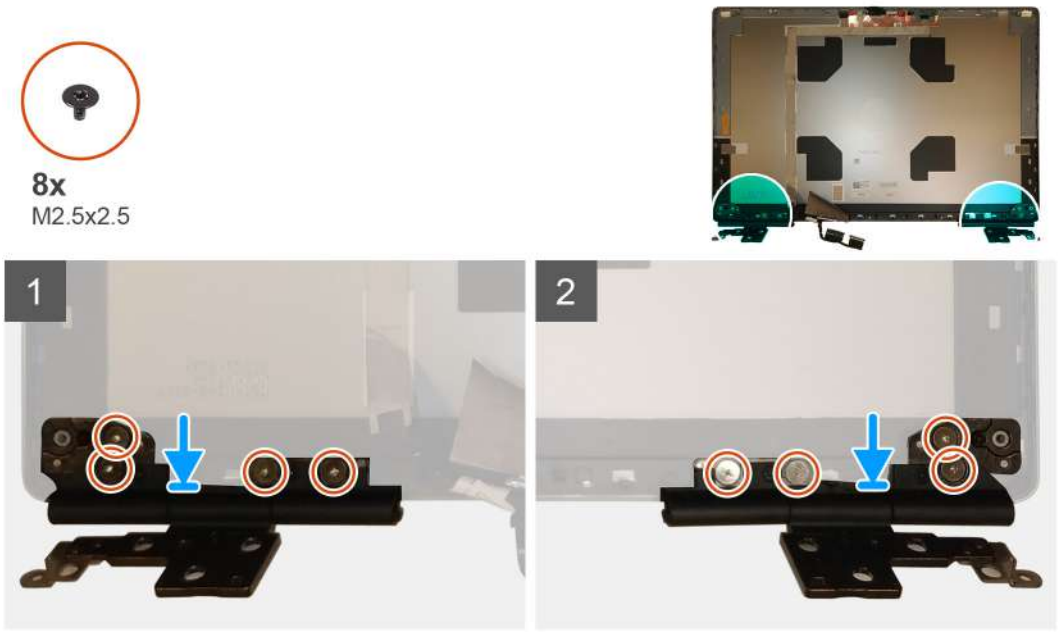
Installing the display hinge (non-touch)

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the display hinge and provides a visual representation of the installation procedure.



Steps

1. Place the display hinge in its slot on the display assembly.
2. Replace the eight (M2.5x2.5) screws to secure the display hinge to the display assembly.

Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the speaker.
4. Install the display assembly.
5. Install the system board.
6. Install the GPU card.
7. Install the GPU power cable.
8. Install the inner frame.
9. Install the heat-sink assembly.
10. Install the primary memory.
11. Install the keyboard.
12. Install the keyboard lattice.
13. Install the WLAN card.
14. Install the WWAN card.
15. Install the secondary memory.
16. Install the SIM card.
17. Install the primary M.2 SSD.
18. Install the battery.
19. Install the base cover.
20. Install the secondary M.2 SSD.
21. Install the SSD door.
22. Install the SD card.
23. Follow the procedure in after working inside your computer.

Kamera

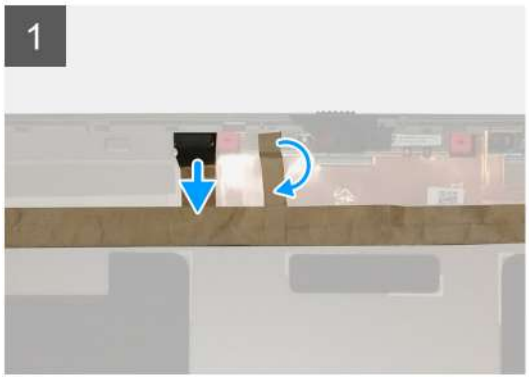
Removing the camera (non-touch)

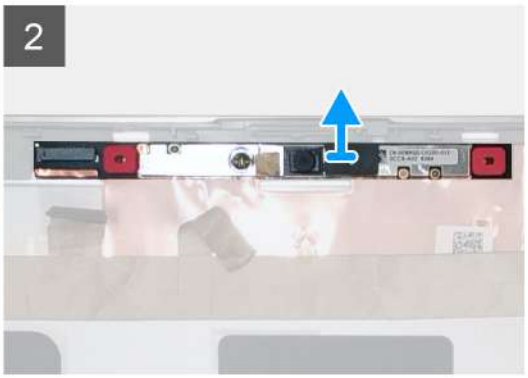
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.
20. Remove the display assembly.
21. Remove the speaker.
22. Remove the display bezel.
23. Remove the display panel.

About this task

The figure indicates the location of the camera and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.





Steps

1. Peel the adhesive tape that covers the camera module.
2. Disconnect the display cable from the camera module.
3. Gently pry the camera shutter cap from the top edge of the camera shutter and remove it from the display back cover.
4. Gently pry the camera module from the display back cover.

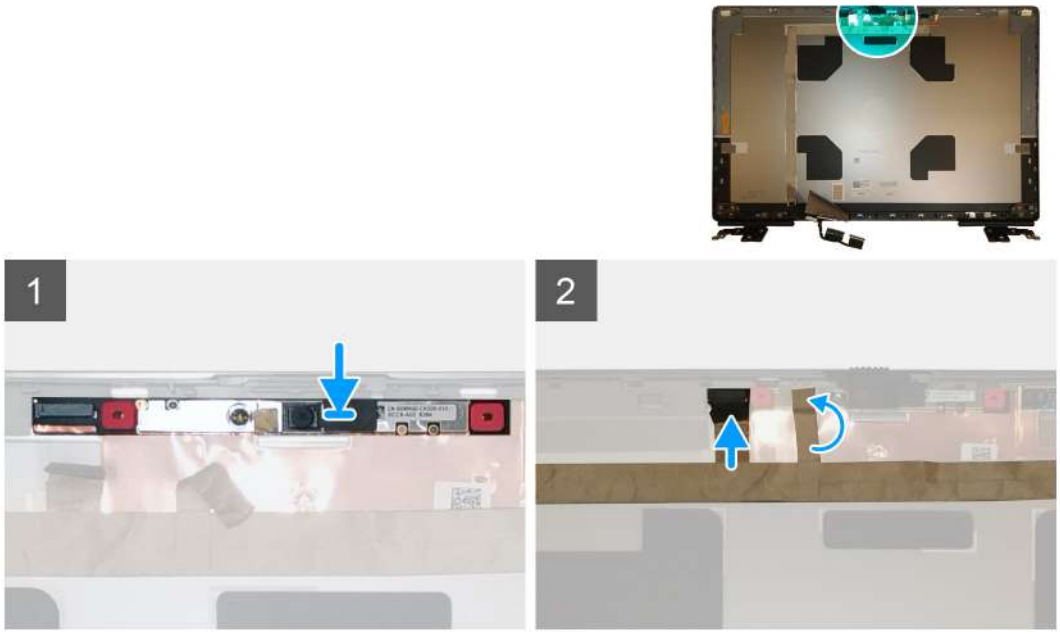
Installing the camera

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the camera and provides a visual representation of the installation procedure.



Steps

1. Place the camera module in its slot on the display back cover.
2. Place the camera shutter cap on the top edge of the camera shutter.
3. Connect the display cable to the camera module.
4. Adhere the adhesive tape to cover the camera module.

Next steps

1. Install the display panel.
2. Install the display bezel.
3. Install the speaker.
4. Install the display assembly.
5. Install the system board.
6. Install the GPU card.
7. Install the GPU power cable.
8. Install the inner frame.
9. Install the heat-sink assembly.
10. Install the primary memory.
11. Install the keyboard.
12. Install the keyboard lattice.

13. Install the WLAN card.
14. Install the WWAN card.
15. Install the secondary memory.
16. Install the SIM card.
17. Install the primary M.2 SSD.
18. Install the battery.
19. Install the base cover.
20. Install the secondary M.2 SSD.
21. Install the SSD door.
22. Install the SD card.
23. Follow the procedure in after working inside your computer.

P-sensorkort

Sådan fjernes P-sensorkortet

Forudsætninger

1. Følg proceduren i Før du udfører arbejde på computerens indvendige dele.
2. Fjern SD-kortet.
3. Fjern SSD-dækslet
4. Fjern det sekundære M.2-SSD.
5. Fjern bunddækslet.
6. Fjern batteriet.
7. Fjern det primære M.2-SSD.
8. Fjern SIM-kortet.
9. Fjern den sekundære hukommelse.
10. Fjern WWAN-kortet.
11. Fjern WLAN-kort.
12. Fjern tastaturgitteret.
13. Fjern tastaturet.
14. Fjern den primære hukommelse.
15. Fjern varmelegememodulet.
16. Fjern inderrammen.
17. Fjern GPU-strømkablet.
18. Fjern GPU-kortet.
19. Fjern systemkortet.
20. Fjern skærmmodulet.
21. Fjern højttaleren.
22. Fjern skærmrammen.
23. Fjern skærmpanelet.

Om denne opgave

Figuren angiver placeringen af P-sensorkortet og giver en visuel fremstilling af fjernelsesproceduren. Billeder, der skal uploades i næste gennemgangscyklus.

Billeder vises i næste gennemgangscyklus

Trin

1. Lirk forsigtigt P-sensorkortet ud af slottet på skærmens bagdæksel.
2. Vend P-sensorkortet om.
3. Kobl skærmkablet fra P-sensorkortet.
4. Fjern P-sensorkortet.

Sådan monteres P-sensorkortet

Forudsætninger

Hvis du genmonterer en komponent, skal du fjerne den eksisterende komponent, før installationsproceduren foretages.

Om denne opgave

Figuren angiver placeringen af P-sensorkortet og giver en visuel fremstilling af installationsproceduren.

Billeder, der skal uploades i næste gennemgangscyklus

Trin

1. Slut skærmkablet til P-sensorkortet.
2. Vend P-sensorkortet om, og placer det forsigtigt i slottet på skærmens bagdæksel.

Næste trin

1. Monter skærmpanelet.
2. Monter skærmrammen.
3. Monter højttaleren.
4. Monter skærmmodulet.
5. Monter systemkortet.
6. Monter GPU-kortet.
7. Monter GPU-strømkablet.
8. Monter inderrammen.
9. Monter varmelegememodulet.
10. Monter den primære hukommelse.
11. Monter tastaturet.
12. Monter tastaturgitteret.
13. Monter WLAN-kortet.
14. Monter WWAN-kortet.
15. Monter den sekundære hukommelse.
16. Monter SIM-kortet.
17. Monter det primære M.2-SSD.
18. Monter batteriet.
19. Monter bunddækslet.
20. Monter det sekundære M.2-SSD.
21. Monter SSD-dækslet
22. Monter SD-kortet.
23. Følg proceduren i Efter du har udført arbejde på computerens indvendige dele

Skærmkabel

Removing the display cable

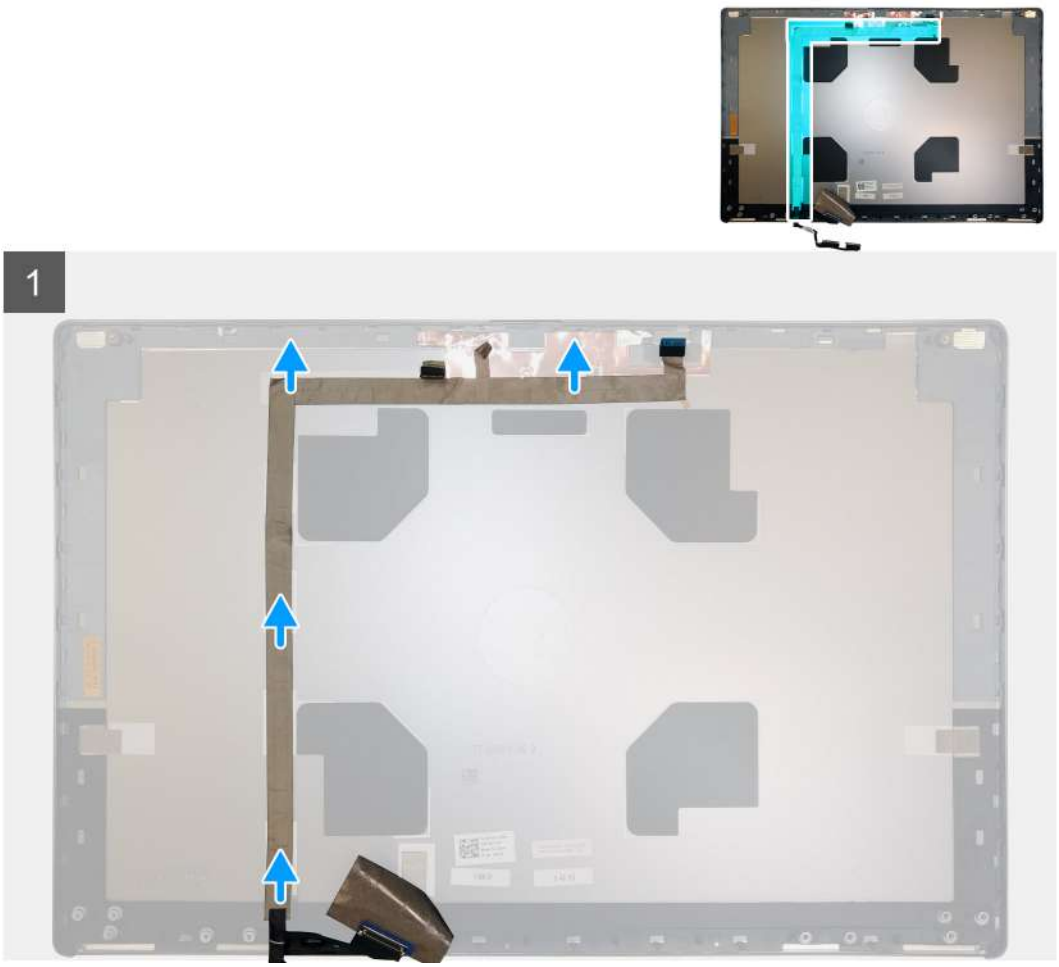
Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.

9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.
20. Remove the display assembly.
21. Remove the speaker.
22. Remove the display bezel.
23. Remove the display panel.
24. Remove the P-sensor board.

About this task

The figure indicates the location of the display cable and provides a visual representation of the removal procedure. Images to be uploaded in the next review cycle.



Steps

1. Peel the adhesive tape covering the camera module.
2. Disconnect the display cable from the camera module.
3. Peel the display cable from the display cover and unroute the cable from the routing channels

4. Remove the display cable from the display back cover.

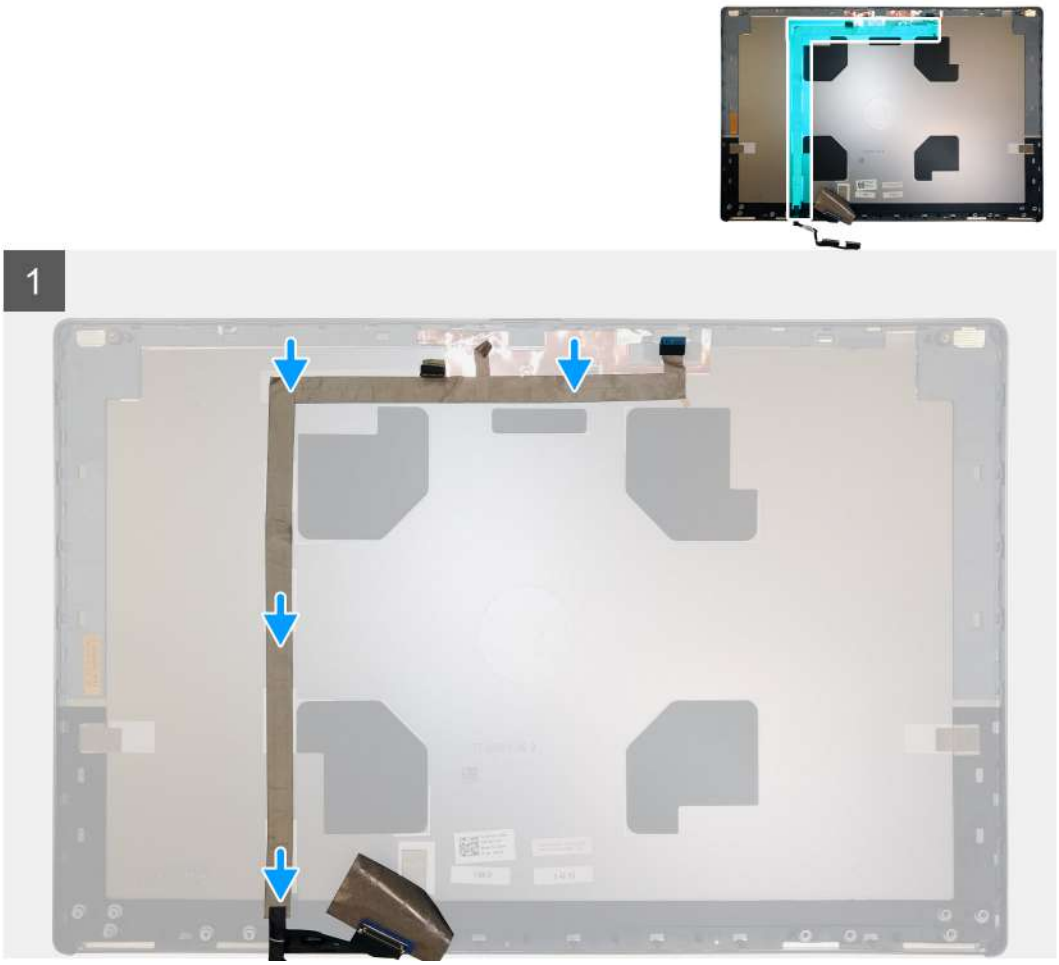
Installing the display cable

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the display cable and provides a visual representation of the installation procedure.



Steps

1. Route and adhere the display cable on the display back cover.
2. Connect the display cable to the connector on the camera module.
3. Adhere the adhesive tape to cover the camera module.

Next steps

1. Install the P-sensor board.
2. Install the display panel.
3. Install the display bezel.
4. Install the speaker.
5. Install the display assembly.
6. Install the system board.
7. Install the GPU card.

8. Install the GPU power cable.
9. Install the inner frame.
10. Install the heat-sink assembly.
11. Install the primary memory.
12. Install the keyboard.
13. Install the keyboard lattice.
14. Install the WLAN card.
15. Install the WWAN card.
16. Install the secondary memory.
17. Install the SIM card.
18. Install the primary M.2 SSD.
19. Install the battery.
20. Install the base cover.
21. Install the secondary M.2 SSD.
22. Install the SSD door.
23. Install the SD card.
24. Follow the procedure in after working inside your computer.

Display back cover

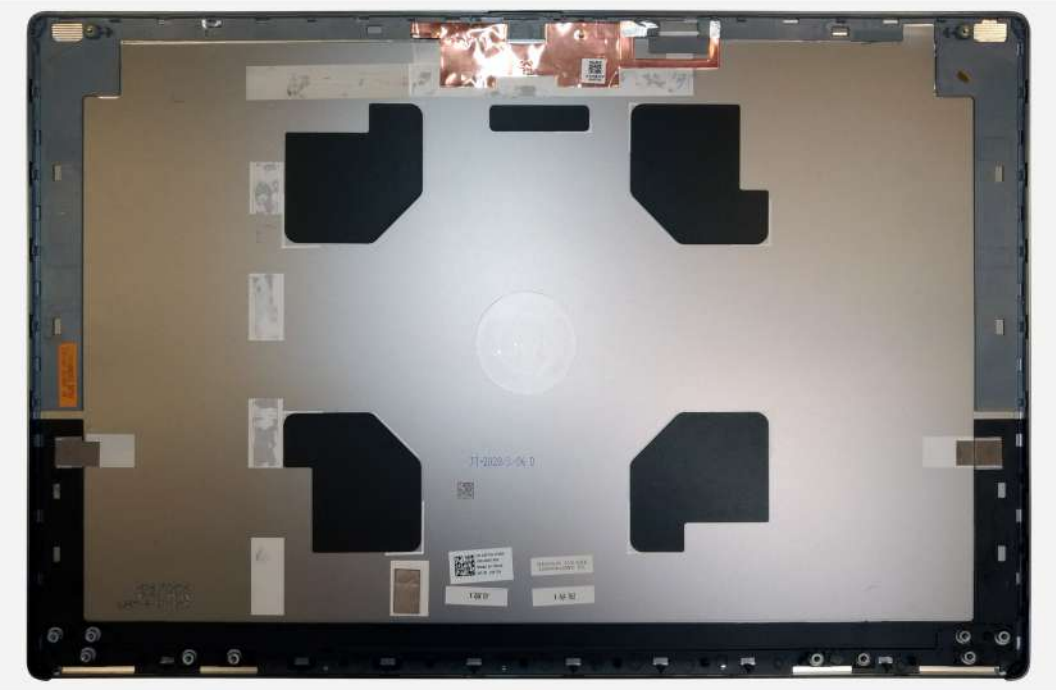
Replacing the display cable

Prerequisites

1. Follow the procedure in before working inside your computer.
2. Remove the SD card.
3. Remove the SSD door.
4. Remove the secondary M.2 SSD.
5. Remove the base cover.
6. Remove the battery.
7. Remove the primary M.2 SSD.
8. Remove the SIM card.
9. Remove the secondary memory.
10. Remove the WWAN card.
11. Remove the WLAN card.
12. Remove the keyboard lattice.
13. Remove the keyboard.
14. Remove the primary memory.
15. Remove the heat-sink assembly.
16. Remove the inner frame.
17. Remove the GPU power cable.
18. Remove the GPU card.
19. Remove the system board.
20. Remove the display assembly.
21. Remove the speaker.
22. Remove the display bezel.
23. Remove the display panel.
24. Remove the P-sensor board.
25. Remove the display hinges.
26. Remove the camera .
27. Remove the display cable.

About this task

The picture below shows the display back cover after performing the pre-removal parts procedures for any display back cover replacement



For installing the components, place the display back cover on a flat surface.

1. Install the display cable.
2. Install the camera.
3. Install the display hinges.
4. Install the P-sensor board.
5. Install the display panel.
6. Install the display bezel.
7. Install the speaker.
8. Install the display assembly.
9. Install the system board.
10. Install the GPU card.
11. Install the GPU power cable.
12. Install the inner frame.
13. Install the heat-sink assembly.
14. Install the primary memory.
15. Install the keyboard.
16. Install the keyboard lattice.
17. Install the WLAN card.
18. Install the WWAN card.
19. Install the secondary memory.
20. Install the SIM card.
21. Install the primary M.2 SSD.
22. Install the battery.
23. Install the base cover.
24. Install the secondary M.2 SSD.
25. Install the SSD door.
26. Install the SD card.
27. Follow the procedure in after working inside your computer.

4

Fejlfinding

Dell SupportAssist Pre-Boot System Performance Check-diagnostik

Om denne opgave

SupportAssist-diagnostik (også kendt som systemdiagnostik) udfører et fulstændigt tjek af din hardware. Dell SupportAssist Pre-Boot System Performance Check-diagnostik er integreret i BIOS og opstartes internt i BIOS. Den indlejrede systemdiagnostik leverer en række muligheder til særlige enheder eller enhedsgrupper, der tillader dig at:

- Køre tests automatisk eller i en interaktiv tilstand
- Gentage tests
- Vise eller gemme testresultaterne
- Køre tests igennem for at introducere yderligere testmuligheder for at give ekstra oplysninger om de mislykkede enheder
- Se statusmeddelelser, der informerer dig, hvis tests er udført ordentligt
- Se fejlmeddelelser, der informerer dig om problemer, som er opstået under testning

BEMÆRK: Nogle tests til specifikke enheder kræver brugerinteraktion. Sørg altid for, at du er tilstede ved computerterminalen, når diagnostiktestene er udført.

Find yderligere oplysninger under Resolve Hardware Issues With Built-in and Online Diagnostics (SupportAssist ePSA, ePSA or PSA Error Codes) .

Kørsel af SupportAssist Pre-Boot System Performance Check

Trin

1. Tænd computeren
2. Når computeren starter op, skal du trykke på F12-tasten, når Dell-logoet vises.
3. Vælg på startmenu-skærmen indstillingen **Diagnostics (Diagnosticering)**.
4. Tryk på pilen i nederste venstre hjørne.
   Diagnosticeringsforsiden vises.
5. Tryk på pilen i nederste højre hjørne for at gå til sidefortegnelsen.
   De registrerede poster angives.
6. For at køre en diagnosticeringstest på en bestemt enhed, tryk på Esc og klikke på **Yes** at stoppe diagnosticeringstesten.
7. Vælg enheden fra venstre rude og klik på **Run Tests (Kør tests)**.
8. Hvis der er problemer,,vises fejlkoder.
   Noter fejlkode og valideringsnummer, og kontakt Dell.

Indbygget selvtest af systemkort (M-BIST – Built-In Self-Test)

Om denne opgave

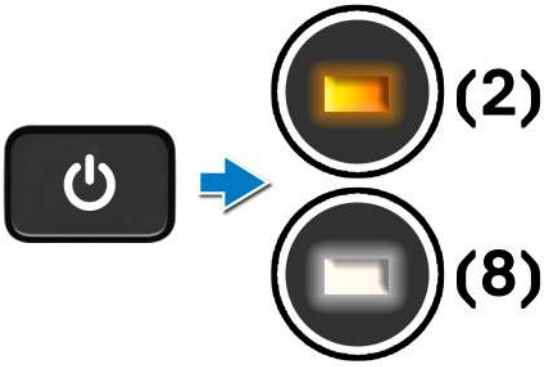
Trin

1. Tryk på både **M**-tasten og **tænd/sluk-knappen**, og hold dem nede for at starte M-BIST.
2. Batteristatusindikatoren lyser ravgult, når der er en fejl på systemkortet.
3. Udskift systemkortet for at løse problemet.

BEMÆRK: Batteristatus-LED'en lyser ikke, hvis systemkortet fungerer korrekt.

Indbygget selvtest af strømskinne til skærmpanel (L-BIST)

Om denne opgave

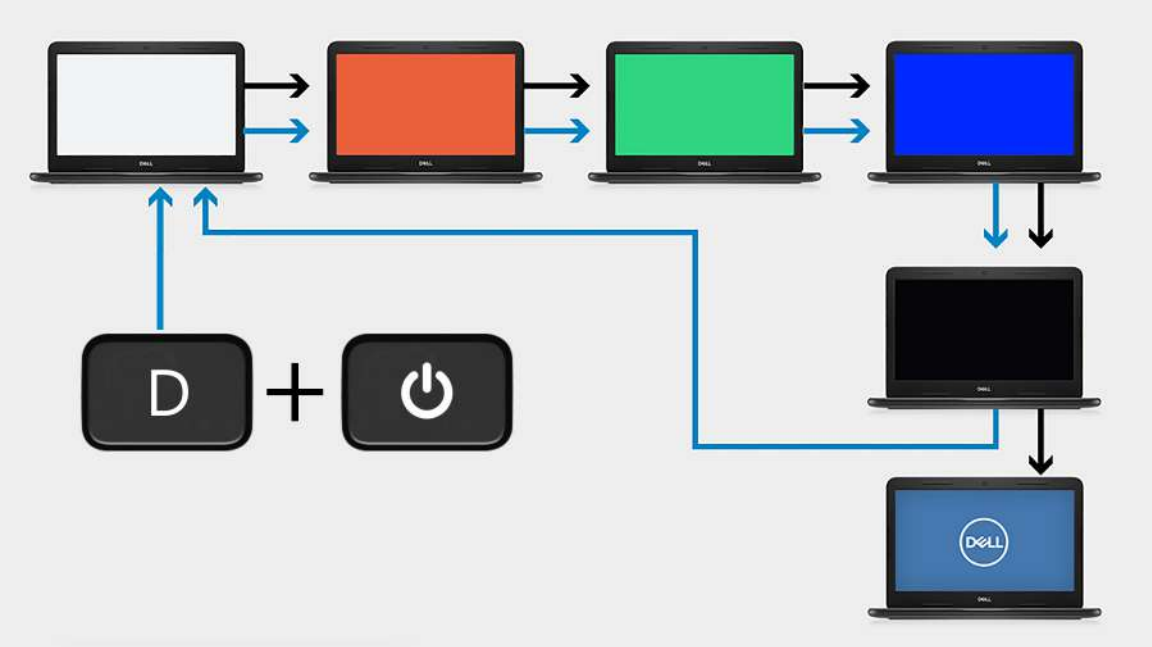


Næste trin

L-BIST (test af LCD-strømskinne) er en forbedring af diagnosticeringen, hvor kun én LED-fejlkode vises, og den **aktiveres automatisk** under **POST**. L-BIST isolerer, om LCD'et modtager strøm fra systemkortet. L-BIST kontrollerer, om systemkortet leverer strøm til LCD'et ved at udføre en test af LCD-strømskinnen. Hvis der ikke leveres strøm til LCD'et, blinker LED'en for batteristatus med en **[2,8] LED-fejlkode.**

Indbygget selvtest af skærmpanel (LCD-BIST)

Om denne opgave



Trin

1. Hold tasten **D** nede, og tryk på **tænd/sluk**-knappen.
2. Slip både tasten **D** og **tænd/sluk**-knappen, når computeren starter POST.
3. Skærmpanelet begynder at vise en enkelt farve eller skifte mellem forskellige farver.

   BEMÆRK: Farvesekvensen kan variere afhængigt af producenten af skærmpanelet. Brugeren skal blot sikre, at farverne vises korrekt uden forvrængning eller grafiske afvigelser.

4. Computeren genstartes, når den sidste farve er vist.

System diagnostic lights

Battery-status light

Indicates the power and battery-charge status.

Solid white — Power adapter is connected and the battery has more than 5 percent charge.

Amber — Computer is running on battery and the battery has less than 5 percent charge.

Off

- Power adapter is connected, and the battery is fully charged.
- Computer is running on battery, and the battery has more than 5 percent charge.
- Computer is in sleep state, hibernation, or turned off.

The power and battery-status light blinks amber along with beep codes indicating failures.

For example, the power and battery-status light blinks amber two times followed by a pause, and then blinks white three times followed by a pause. This 2,3 pattern continues until the computer is turned off indicating no memory or RAM is detected.

The following table shows different power and battery-status light patterns and associated problems.

Table 6. LED codes

Diagnostic light codes	Problem description	Recommended Solution
1,1	TPM Detection Failure	Replace System Board

Table 6. LED codes(continued)

Diagnostic light codes	Problem description	Recommended Solution
1,2	Unrecoverable SPI Flash Failure	Replace System Board
1, 5	EC unable to program i-Fuse	Replace System Board
1, 6	Generic catch-all for ungraceful EC code flow errors	Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing & holding down power button
2,1	CPU failure	Run the Intel CPU diagnostics tools. If problem persists, replace the system board
2,2	Motherboard covers BIOS corruption or ROM error	Flash latest BIOS version. If problem persists, replace the system board
2,3	No Memory/RAM detected	Confirm that the memory module is installed properly. If problem persists, replace the memory module
2,4	Memory/RAM Failure	Reset the memory module. If problem persists, replace the memory module
2,5	Invalid memory installed	Reset the memory module. If problem persists, replace the memory module
2,6	Motherboard/Chipset Error	Flash latest BIOS version. If problem persists, replace the system board
2,7	LCD failure - SBIOS message	Flash latest BIOS version. If problem persists, replace the LCD module
2,8	LCD failure - EC detection of power rail failure	Replace the system board
3,1	CMOS battery failure	Reset the CMOS battery connection. If problem persists, replace the RTC battery
3,2	PCI of Video card/chip failure	Replace the system board
3,3	BIOS Recovery Image not found	Flash latest BIOS version. If problem persists, replace the system board
3,4	Recovery Image found but invalid	Flash latest BIOS version. If problem persists, replace the system board
3,5	EC ran into power sequencing failure	Replace the system board
3,6	Flash corruption detected by SBIOS	Replace the system board
3,7	Timeout waiting on ME to reply to HECI message	Replace the system board

Camera status indicator: Indicates whether the camera is in use.

- Solid white — Camera is in use.
- Off — Camera is not in use.

Caps Lock status indicator: Indicates whether Caps Lock is enabled or disabled.

- Solid white — Caps Lock enabled.
- Off—Caps Lock disabled.

Wi-Fi-strømcyklus

Om denne opgave

Hvis din computer ikke er i stand til at gå på internettet på grund af problemer med Wi-Fi-forbindelsen, så kan du udføre en procedure for Wi-Fi-strømcyklus. Følgende procedure giver instruktioner til, hvordan man gennemfører en Wi-Fi-strømcyklus:

BEMÆRK: Nogle ISP'er (Internet Service Providers) har en kombineret modem/router-enhed.

Trin

1. Sluk for computeren.
2. Sluk for modemmet.
3. Sluk for den trådløse router.
4. Vent i 30 sekunder.
5. Tænd den trådløse router.
6. Tænd for modemmet.
7. Tænd computeren.

5

Sådan får du hjælp

Emner:

- Kontakt Dell

Kontakt Dell

Forudsætninger

BEMÆRK: Hvis du ikke har en aktiv internetforbindelse, kan du finde kontaktoplysninger på købskvitteringen, pakkeslippen, fakturaen eller i Dells produktkatalog.

Om denne opgave

Dell giver flere muligheder for online- og telefonbaseret support og service. Tilgængeligheden varierer for de enkelte lande og produkter, og nogle tjenester findes muligvis ikke i dit område. Sådan kontakter du Dell omkring salg, teknisk support eller kundeservice:

Trin

1. Gå til **Dell.com/support.**
2. Vælg supportkategori.
3. Bekræft dit land eller område i rullemenuen **Choose a Country/Region (Vælg land/område)** fra listen nederst på siden.
4. Vælg det relevante service- eller supportlink alt afhængigt af, hvad du har brug for.